

Industrial Automation Headquarters

Delta Electronics, Inc.
Taoyuan Technology Center
No.18, Xinglong Rd., Taoyuan District,
Taoyuan City 33068, Taiwan
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

Asia

Delta Electronics (Shanghai) Co., Ltd.
No.182 Minyu Rd., Pudong Shanghai, P.R.C.
Post code : 201209
TEL: 86-21-6872-3988 / FAX: 86-21-6872-3996
Customer Service: 400-820-9595

Delta Electronics (Japan), Inc.

Tokyo Office
Industrial Automation Sales Department
2-1-14 Shibadaimon, Minato-ku
Tokyo, Japan 105-0012
TEL: 81-3-5733-1155 / FAX: 81-3-5733-1255

Delta Electronics (Korea), Inc.

Seoul Office
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,
Seoul, 08501 South Korea
TEL: 82-2-515-5305 / FAX: 82-2-515-5302

Delta Energy Systems (Singapore) Pte Ltd.

4 Kaki Bukit Avenue 1, #05-04, Singapore 417939
TEL: 65-6747-5155 / FAX: 65-6744-9228

Delta Electronics (India) Pvt. Ltd.

Plot No.43, Sector 35, HSIEDC Gurgaon,
PIN 122001, Haryana, India
TEL: 91-124-4874900 / FAX : 91-124-4874945

Delta Electronics (Thailand) PCL.

909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),
Pattana 1 Rd., T.Phraksa, A.Muang,
Samutprakarn 10280, Thailand
TEL: 66-2709-2800 / FAX : 662-709-2827

Delta Energy Systems (Australia) Pty Ltd.

Unit 20-21/45 Normanby Rd., Notting Hill Vic 3168, Australia
TEL: 61-3-9543-3720

Americas

Delta Electronics (Americas) Ltd.

Raleigh Office
P.O. Box 12173, 5101 Davis Drive,
Research Triangle Park, NC 27709, U.S.A.
TEL: 1-919-767-3813 / FAX: 1-919-767-3969

Delta Greentech (Brasil) S/A

São Paulo Office
Rua Itapeva, 26 – 3° Andar - Bela Vista
CEP: 01332-000 – São Paulo – SP - Brasil
TEL: 55-11-3530-8642 / 55-11-3530-8640

Delta Electronics International Mexico S.A. de C.V.

Mexico Office
Via Dr. Gustavo Baz No. 2160, Colonia La Loma,
54060 Tlalnepantla Estado de Mexico
TEL: 52-55-2628-3015 #3050/3052

EMEA

Headquarters: Delta Electronics (Netherlands) B.V.

Sales: Sales.IA.EMEA@deltaww.com
Marketing: Maketing.IA.EMEA@deltaww.com
Technical Support: iatechnicalsupport@deltaww.com
Customer Support: Customer-Support@deltaww.com
Service: Service.IA.emea@deltaww.com
TEL: +31(0)40 800 3800

BENELUX: Delta Electronics (Netherlands) B.V.

De Witbogt 20, 5652 AG Eindhoven, The Netherlands
Mail: Sales.IA.Benelux@deltaww.com
TEL: +31(0)40 800 3800

DACH: Delta Electronics (Netherlands) B.V.

Coesterweg 45, D-59494 Soest, Germany
Mail: Sales.IA.DACH@deltaww.com
TEL: +49(0)2921 987 0

France: Delta Electronics (France) S.A.

ZI du bois Challand 2, 15 rue des Pyrénées,
Lisses, 91090 Evry Cedex, France
Mail: Sales.IA.FR@deltaww.com
TEL: +33(0)1 69 77 82 60

Iberia: Delta Electronics Solutions (Spain) S.L.U

Ctra. De Villaverde a Vallecas, 265 1º Dcha Ed.
Hormigueras – P.I. de Vallecas 28031 Madrid
TEL: +34(0)91 223 74 20
C/Llull, 321-329 (Edifici CINC) | 22@Barcelona, 08019 Barcelona
Mail: Sales.IA.Iberia@deltaww.com
TEL: +34 93 303 00 60

Italy: Delta Electronics (Italy) S.r.l.

Ufficio di Milano Via Senigallia 18/2 20161 Milano (MI)
Piazza Grazioli 18 00186 Roma Italy
Mail: Sales.IA.Italy@deltaww.com
TEL: +39 02 64672538

Russia: Delta Energy System LLC

Vereyskaya Plaza II, office 112 Vereyskaya str.
17 121357 Moscow Russia
Mail: Sales.IA.RU@deltaww.com
TEL: +7 495 644 3240

Turkey: Delta Greentech Elektronik San. Ltd. Sti. (Turkey)

Şerifali Mah. Hendem Cad. Kule Sok. No:16-A
34775 Ümraniye – İstanbul
Mail: Sales.IA.Turkey@deltaww.com
TEL: + 90 216 499 9910

GCC: Delta Energy Systems AG (Dubai BR)

P.O. Box 185668, Gate 7, 3rd Floor, Hamarain Centre
Dubai, United Arab Emirates
Mail: Sales.IA.MEA@deltaww.com
TEL: +971(0)4 2690148

Egypt + North Africa: Delta Electronics

511 Cairo Business Plaza, North 90 street,
New Cairo, Cairo, Egypt
Mail: Sales.IA.MEA@deltaww.com

DOPSoft User Manual



DOPSoft User Manual

Table of Contents

1

Welcome to DOPSoft

1.1	Features of DOPSoft	1-2
1.2	Operating environment	1-2
1.3	List of supported models	1-3

2

Installation and General Operation

2.1	How to install DOPSoft	2-4
2.1.1	Install DOPSoft on Windows XP operating system.....	2-4
2.1.2	Install DOPSoft on Windows 7 operating system.....	2-11
2.2	Window taskbar	2-17
2.2.1	File	2-29
2.2.1.1	New.....	2-30
2.2.1.2	Open.....	2-34
2.2.1.3	Close.....	2-37
2.2.1.4	Save.....	2-38
2.2.1.5	Save As	2-39
2.2.1.6	Create Screen Data File.....	2-39
2.2.1.7	Create Auto Update Data File	2-41
2.2.1.8	Open Screen Data File.....	2-43
2.2.1.9	Create Download Screen Exe. File.....	2-44
2.2.1.10	Password Protect	2-47
2.2.2	Edit.....	2-51
2.2.2.1	Duplicate	2-52
2.2.2.2	Edit Points	2-54
2.2.2.3	Find.....	2-55
2.2.2.4	Replace	2-58
2.2.2.5	Replace PLC Address	2-60
2.2.2.6	Group	2-62
2.2.2.7	UnGroup	2-64
2.2.2.8	Order.....	2-65
2.2.2.9	Align.....	2-69
2.2.2.10	Make Same Size	2-74
2.2.2.11	Text Process.....	2-76

2.2.2.12	Bitmap Process	2-80
2.2.2.13	Import Multi-language Text / Export Multi-language Text	2-85
2.2.3	View	2-91
2.2.3.1	Screen Management	2-93
2.2.3.2	Zoom In	2-96
2.2.3.3	Zoom Out	2-97
2.2.3.4	Actual Size	2-98
2.2.3.5	Full Screen	2-99
2.2.3.6	I/O Screen	2-99
2.2.3.7	Grid Settings	2-100
2.2.3.8	Element Address List	2-101
2.2.3.9	Memory List	2-102
2.2.4	Screen	2-104
2.2.4.1	New Screen	2-104
2.2.4.2	Open Screen	2-105
2.2.4.3	Screensaver	2-106
2.2.4.4	Cut Screen	2-108
2.2.4.5	Copy Screen	2-108
2.2.4.6	Paste Screen	2-109
2.2.4.7	Delete Screen	2-109
2.2.4.8	Export	2-109
2.2.4.9	Import	2-111
2.2.4.10	Clear imported data	2-112
2.2.4.11	Screen Properties	2-112
2.2.4.12	Screen Map	2-120
2.2.5	Tools	2-123
2.2.5.1	Compile	2-123
2.2.5.2	Compile All	2-124
2.2.5.3	Download All Data	2-124
2.2.5.4	Upload All Data	2-126
2.2.5.5	Download Screen	2-128
2.2.5.6	Upload Recipe	2-129
2.2.5.7	Download Recipe	2-129
2.2.5.8	Download Boot Screen	2-130
2.2.5.9	Reset Default Boot Screen	2-131
2.2.5.10	On-line Simulation	2-131
2.2.5.11	Off-line Simulation	2-139
2.2.5.12	Firmware Update	2-139
2.2.5.13	Get Firmware Information	2-140
2.2.5.14	Reset HMI	2-141

2.2.6	Window	2-142
2.2.6.1	Close Current Window	2-142
2.2.6.2	Close All Windows	2-142
2.2.6.3	Next Window	2-143
2.2.6.4	Previous Window	2-144
2.2.7	Help	2-145
2.3	How to create a project?	2-146
2.3.1	Flowchart of creating a project	2-146

3

Internal Memory

3.1	Internal Register (\$)	3-2
3.2	Non-volatile Internal Register (\$M)	3-3
3.3	Indirect Address Register (*\$)	3-3
3.4	Internal Parameter	3-5

4

Control Block and Status Block

4.1	Control Block	4-8
4.2	Status Block	4-21

5

Buttons

5.1	Set to On / Set to Off / Maintained / Momentary	5-3
5.2	Multistate	5-26
5.3	Set Value	5-51
5.4	Set Constant	5-73
5.5	Increment / Decrement	5-94
5.6	Goto Screen	5-113
5.7	Other elements	5-138
5.7.1	System Date and Time	5-138
5.7.2	Password Table Setup	5-139
5.7.3	Enter Password	5-140
5.7.4	Contrast Brightness	5-140
5.7.5	Set Low Security	5-141
5.7.6	System Menu	5-141
5.7.7	Print Output	5-141
5.7.8	Report List	5-142
5.7.9	Screen Capture	5-142
5.7.10	Remove Storage	5-143
5.7.11	Import / Export Recipe	5-144
5.7.12	Calibration	5-144

5.7.13	Language Change	5-145
5.7.14	Import / Export FileSlot	5-146
5.7.15	Shared properties of other elements	5-147
5.8	Multiple actions	5-153

6

Meter

6.1	Meter(1) / Meter(2) / Meter(3) / Meter(4)	6-2
-----	-------------------------------------------	-----

7

Bar Chart

7.1	Normal bar	7-2
7.2	Differential bar	7-13

8

Pipe Chart

8.1	Pipe(1) / Pipe(2)	8-2
8.2	Pipe(3) / Pipe(4) / Pipe(5)	8-13
8.3	Pipe(6) / Pipe(7)	8-18

9

Pie Chart

9.1	Pie(1) / Pie(2) / Pie(3) / Pie(4)	9-2
-----	-----------------------------------	-----

10

Indicator

10.1	Multistate Indicator	10-2
10.2	Range Indicator	10-20
10.3	Simple Indicator	10-36

11

Data Display

11.1	Numeric Display	11-2
11.2	Character Display	11-25
11.3	Date Display / Time Display / Week Display	11-34
11.2.1	Date Display	11-35
11.2.2	Time Display	11-41
11.2.3	Week Display	11-47
11.4	General Message Display	11-56
11.5	Moving Sign	11-69

12

Graph Display

12.1	State Graphic	12-2
12.2	Animated Graphic	12-17
12.3	Real-time Image	12-30

13

Input

13.1	Numeric Entry	13-2
13.2	Character Entry	13-33
13.3	Barcode Input	13-54
13.4	Multi-language Input	13-69

14

Curve

14.1	Trend Graph	14-2
14.2	X-Y Chart	14-19
14.3	X-Y Distribution	14-36
14.4	Curve Input	14-47

15

Sampling

15.1	History Buffer	15-2
15.2	Historical Trend Graph	15-40
15.3	Historical Data Table	15-62
15.4	Historical Event Table	15-78
15.5	Historical Overview Table	15-90
15.6	Operation Log Table	15-113

16

Alarm

16.1	Alarm Settings	16-2
16.2	Alarm History Table	16-29
16.3	Active Alarm List	16-45
16.4	Alarm Frequency Table	16-61
16.5	Alarm Moving Sign	16-77

17

Keypad

17.1	Keypad(1)	17-2
17.2	Keypad(2)	17-13

17.3 Keypad(3)	17-24
----------------------	-------

18

Analog

18.1 Slider	18-2
-------------------	------

19

List

19.1 ComboBox	19-2
19.2 ListBox	19-23
19.3 GridBox	19-42
19.4 PDF Viewer	19-86

20

Frame

20.1 Embedded Subscreen	20-2
-------------------------------	------

21

Basic Shape

21.1 Rhombus	21-3
21.2 Right Triangle	21-9
21.3 Pentagon	21-15
21.4 Pie Chart	21-21
21.5 Arc	21-27
21.6 Hexagon	21-33
21.7 Star Shape	21-39
21.8 Triangle	21-45
21.9 Hollow Circle	21-51
21.10 Stop Circle	21-57
21.11 1/4 Arc	21-63

22

Drawing

22.1 Line	22-3
22.2 Rectangle	22-10
22.3 Circle	22-23
22.4 Polygon	22-31
22.5 Text	22-37
22.6 Scale	22-46
22.7 Table	22-54

23

Recipe

23.1	16-bit Recipe	23-3
23.2	32-bit Recipe	23-20
23.3	Indirect recipe index register (*RCP)	23-37
23.4	Enhanced recipe	23-40
23.5	Enhanced indirect recipe index register (*ENRCP)	23-62

24

Macro

24.1	Types of macro	24-3
24.1.1	On Macro / Off Macro	24-4
24.1.2	Before Execute Macro	24-5
24.1.3	After Execute Macro	24-6
24.1.4	Screen Open Macro	24-7
24.1.5	Screen Close Macro	24-8
24.1.6	Screen Cycle Macro	24-9
24.1.7	Submacro	24-12
24.1.8	Initial Macro	24-21
24.1.9	Background Macro	24-23
24.1.10	Clock Macro	24-25
24.2	Macro edit window	24-28
24.3	Macro commands	24-34
24.3.1	Arithmetic	24-40
24.3.2	Logical Operation	24-61
24.3.3	Data transfer	24-70
24.3.4	Data Conversion	24-80
24.3.5	Comparison	24-97
24.3.6	Flow Control	24-145
24.3.7	Bit Setting	24-151
24.3.8	Communication	24-155
24.3.9	Drawing	24-182
24.3.10	File Access	24-189
24.3.11	Others	24-197
24.4	Macro error codes	24-243

25	Multi-language	
25.1	Multi-language setup	25-2

26	Print Setup	
26.1	Screen print setup	26-4
26.2	ePrinter	26-10
26.2.1	PrnServer	26-11
26.2.2	HMI link settings	26-14
26.3	Error code of printer	26-19

27	Parameter Settings	
27.1	Configuration	27-2
27.2	Communication Settings	27-46
27.3	Change model	27-59
27.4	Environment settings	27-60

28	Advanced Settings	
28.1	Tag Table	28-2
28.2	HMI Identifier	28-13
28.3	FileSlot File Management	28-15
28.4	Device Data table	28-22
28.5	Picture Bank	28-27
28.6	Text Bank	28-31
28.7	Multi-Lang input character count calculation	28-35

Appendix

A

System Screen

A.1	System screen overview	A-3
A.2	System Setting	A-8
A.3	Up/Download	A-29
A.4	System Info	A-38
A.5	HMI Doctor	A-39

B

Multi-Drop

B.1	Multi-drop example	B-2
-----	--------------------------	-----

C

Communication Error Messages

C.1	Communication error messages	C-2
-----	------------------------------------	-----

D

Write and Read Offset Address

D.1	Write and read offset address	D-2
-----	-------------------------------------	-----

(This page is intentionally left blank.)

Welcome to DOPSoft

1

This chapter provides the information about the features, operating environment, and the list of supported models.



1.1	Features of DOPSoft	1-2
1.2	Operating environment	1-2
1.3	List of supported models	1-3

1

1.1 Features of DOPSoft

DOPSoft software supports editing the DOP-100 series HMI screens. This version provides more advanced and user-friendly functions as below:

- (1) User-friendly editing interface
- (2) Versatile 3D image library
- (3) Delicate elements
- (4) Smooth display for Meter and other elements
- (5) Faster software download speed
- (6) Powerful search function
- (7) Improved readability for the output results after compilation

1.2 Operating environment

Hardware / software	Specifications
PC	Pentium 4; 1.6 GHz and above
Backup memory	2 GB and above
Hard disc	400 MB and above
Display	Supports 1024x768 solution full-color display
Printer	Printers compatible with Windows XP / Windows 7 / Windows 8 / Windows 10
Operation system	Windows XP / Windows 7 / Windows 8 / Windows 10

1.3 List of supported models

Series	Model	Note
DOP-100	DOP-103BQ	The software can open and convert the DOP-B, DOP-W, and DOP-H series projects into the DOP-100 series projects.
	DOP-103WQ	
	DOP-107BV	
	DOP-107CV	
	DOP-107EG	
	DOP-107EV	
	DOP-107WV	
	DOP-110CS	
	DOP-110WS	

1

(This page is intentionally left blank.)

1

Installation and General Operation

2

This chapter covers the information about how to install the software, the general function bars in the software window, how to create a project, select a controller, edit screens, and download the screens to the HMI.

2.1	How to install DOPSoft.....	2-4
2.1.1	Install DOPSoft on Windows XP operating system	2-4
2.1.2	Install DOPSoft on Windows 7 operating system	2-11
2.2	Window taskbar	2-17
2.2.1	File	2-29
2.2.1.1	New... ..	2-30
2.2.1.2	Open... ..	2-34
2.2.1.3	Close	2-37
2.2.1.4	Save	2-38
2.2.1.5	Save As.....	2-39
2.2.1.6	Create Screen Data File... ..	2-39
2.2.1.7	Create Auto Update Data File.....	2-41
2.2.1.8	Open Screen Data File... ..	2-43
2.2.1.9	Create Download Screen Exe. File.....	2-44
2.2.1.10	Password Protect	2-47
2.2.2	Edit	2-51
2.2.2.1	Duplicate	2-52
2.2.2.2	Edit Points.....	2-54
2.2.2.3	Find	2-55
2.2.2.4	Replace.....	2-58
2.2.2.5	Replace PLC Address.....	2-60
2.2.2.6	Group	2-62
2.2.2.7	UnGroup.....	2-64
2.2.2.8	Order	2-65
2.2.2.9	Align	2-69
2.2.2.10	Make Same Size	2-74
2.2.2.11	Text Process.....	2-76
2.2.2.12	Bitmap Process.....	2-80
2.2.2.13	Import Multi-language Text / Export Multi-language Text	2-85

2

2.2.3	View	2-91
2.2.3.1	Screen Management	2-93
2.2.3.2	Zoom In	2-96
2.2.3.3	Zoom Out	2-97
2.2.3.4	Actual Size	2-98
2.2.3.5	Full Screen	2-99
2.2.3.6	I/O Screen	2-99
2.2.3.7	Grid Settings	2-100
2.2.3.8	Element Address List	2-101
2.2.3.9	Memory List	2-102
2.2.4	Screen	2-104
2.2.4.1	New Screen	2-104
2.2.4.2	Open Screen	2-105
2.2.4.3	Screensaver	2-106
2.2.4.4	Cut Screen	2-108
2.2.4.5	Copy Screen	2-108
2.2.4.6	Paste Screen	2-109
2.2.4.7	Delete Screen	2-109
2.2.4.8	Export	2-109
2.2.4.9	Import	2-111
2.2.4.10	Clear imported data	2-112
2.2.4.11	Screen Properties	2-112
2.2.4.12	Screen Map	2-120
2.2.5	Tools	2-123
2.2.5.1	Compile	2-123
2.2.5.2	Compile All	2-124
2.2.5.3	Download All Data	2-124
2.2.5.4	Upload All Data	2-126
2.2.5.5	Download Screen	2-128
2.2.5.6	Upload Recipe	2-129
2.2.5.7	Download Recipe	2-129
2.2.5.8	Download Boot Screen	2-130
2.2.5.9	Reset Default Boot Screen	2-131
2.2.5.10	On-line Simulation	2-131
2.2.5.11	Off-line Simulation	2-139
2.2.5.12	Firmware Update	2-139
2.2.5.13	Get Firmware Information	2-140
2.2.5.14	Reset HMI	2-141
2.2.6	Window	2-142
2.2.6.1	Close Current Window	2-142

2.2.6.2 Close All Windows2-142

2.2.6.3 Next Window2-143

2.2.6.4 Previous Window.....2-144

2.2.7 Help.....2-145

2.3 How to create a project?2-146

2.3.1 Flowchart of creating a project.....2-146

2

2.1 How to install DOPSoft

You can install the DOPSoft on Windows XP / Vista / Windows 7 / Windows 8. The following section introduces the methods of installing the software on Windows XP and Windows 7.

To download the DOPSoft, go to Delta's website at

<http://www.deltaww.com/services/DownloadCenter2.aspx?secID=8&pid=2&tid=0&CID=06&itemID=060302&typeID=1&downloadID=,&title=--%20%E8%AB%8B%E9%81%B8%E6%93%87%20--&dataType=8;&check=1&hl=zh-TW>

2.1.1 Install DOPSoft on Windows XP operating system

After downloading the DOPSoft software at Delta's website, you can start your PC and launch the Windows XP operating system. Then, execute the DOPSoft software and follow the installation steps below.

Select the Installer Language. There are four languages available, Traditional Chinese, Simplified Chinese, English, and Turkish. After selecting the language, click **OK**.

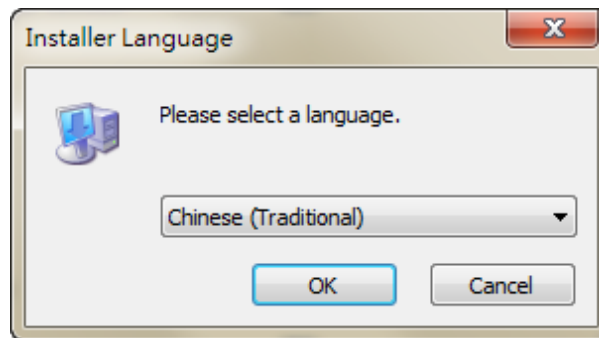
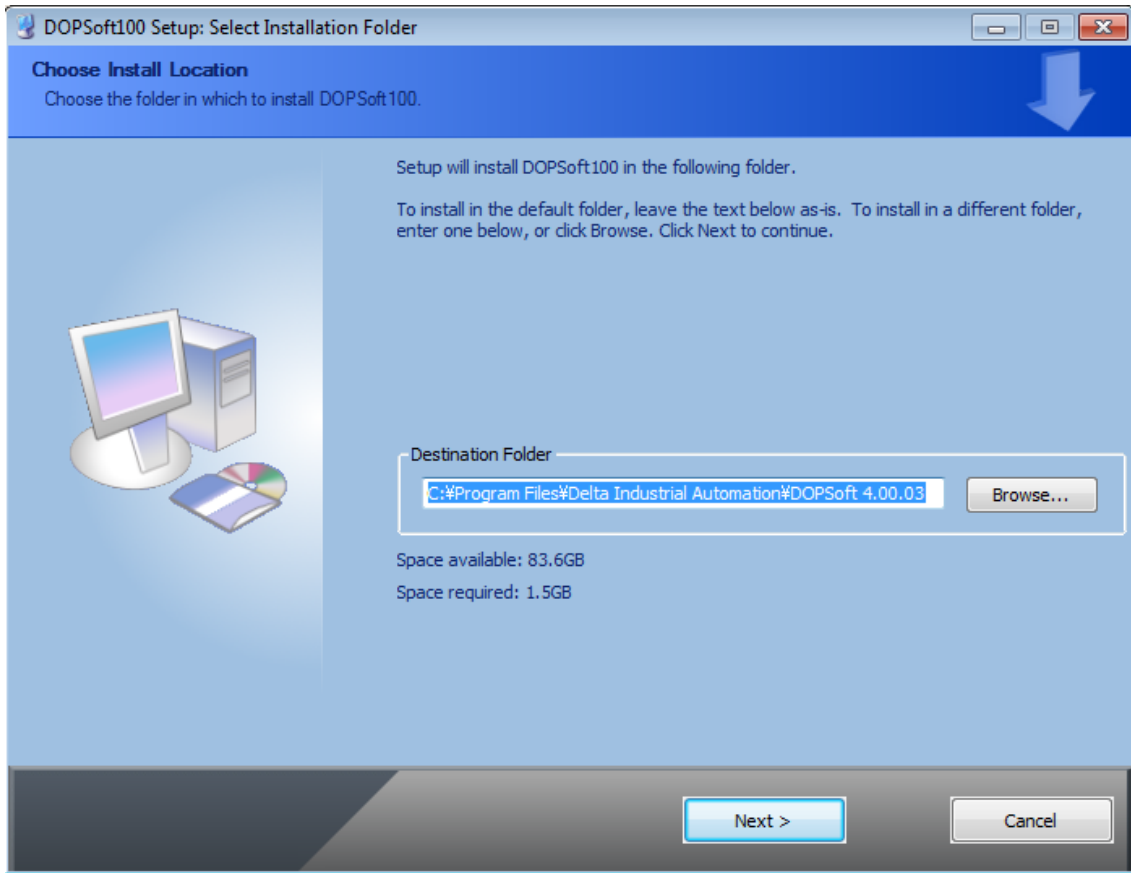


Figure 2.1.1.1 Installer Language on Windows XP

Click **Browse** to select the installation location for the software; to use the default location, click **Next**.



2

Figure 2.1.1.2 Choose Installation Location on Windows XP

Make sure you have checked the DOPSoft100 component, as shown in Figure 2.1.1.3, and click **Install**.

2

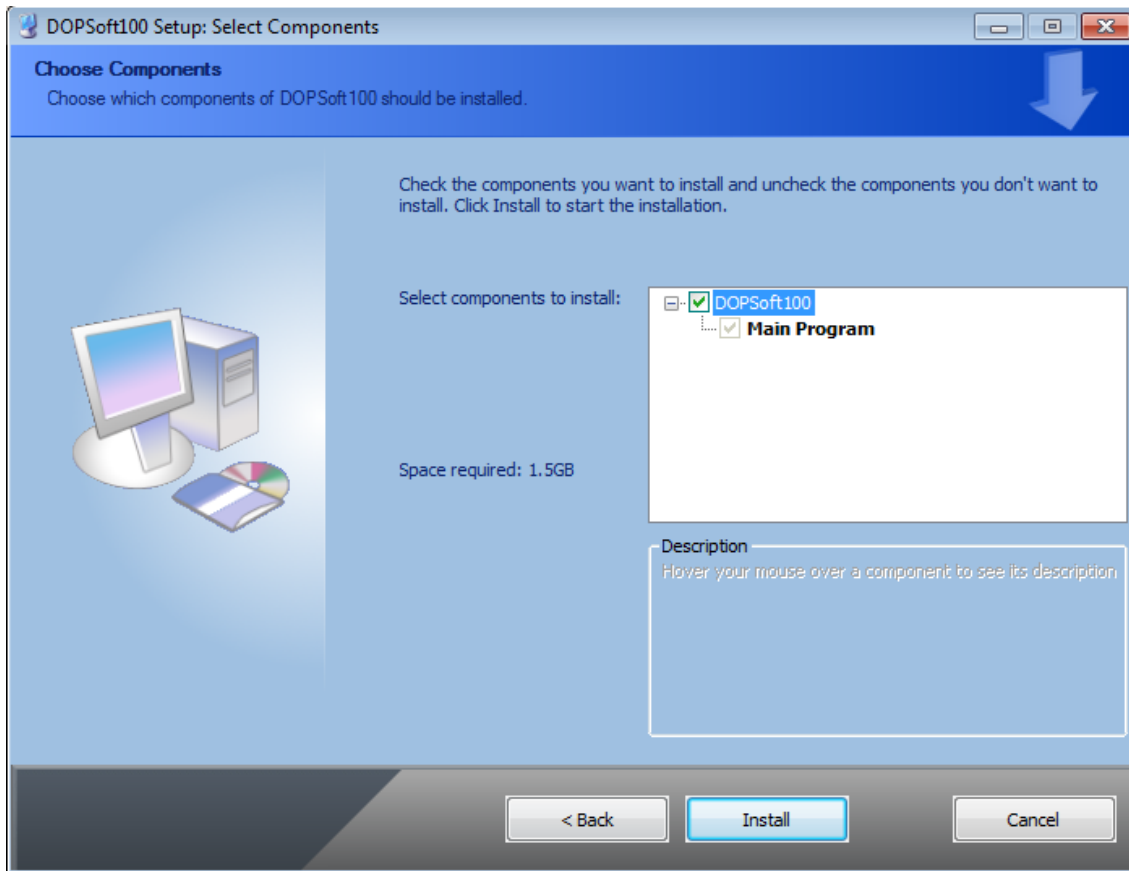
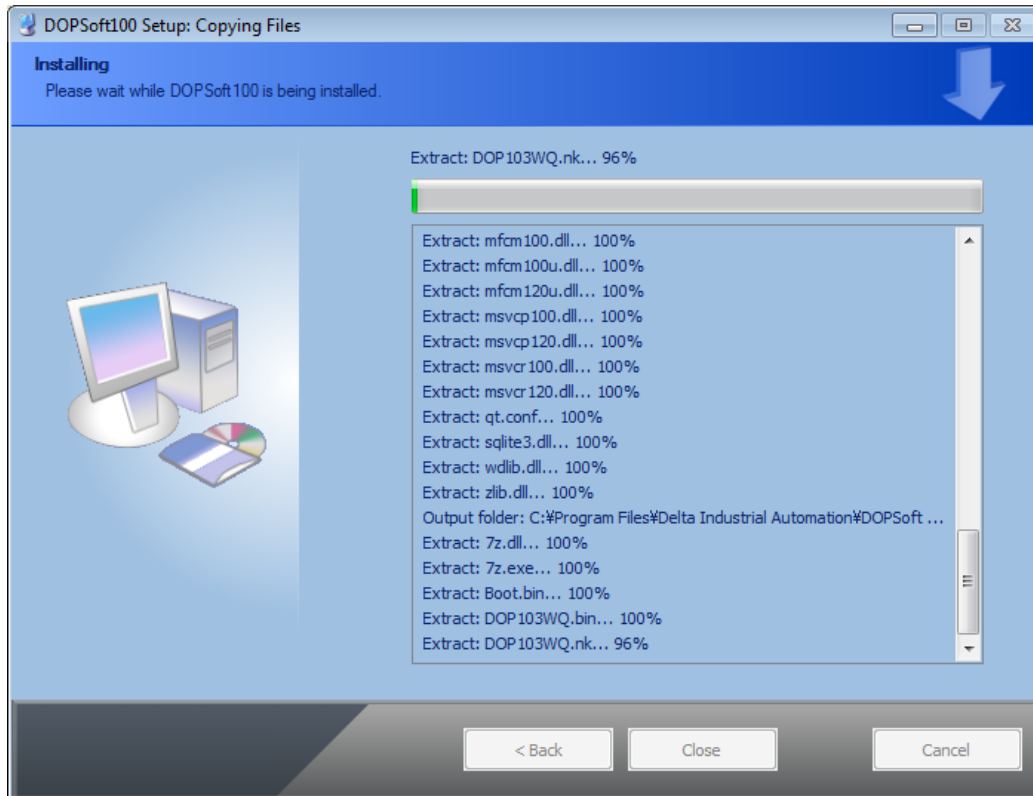


Figure 2.1.1.3 Select the component to install on Windows XP

After you click **Install**, the software displays the installation progress bar.



2

Figure 2.1.1.4 The installation progress bar displayed on Windows XP

When the installation is complete, the progress bar displays "Completed". Then, the PC displays the device driver for installation, click **Next** to continue.

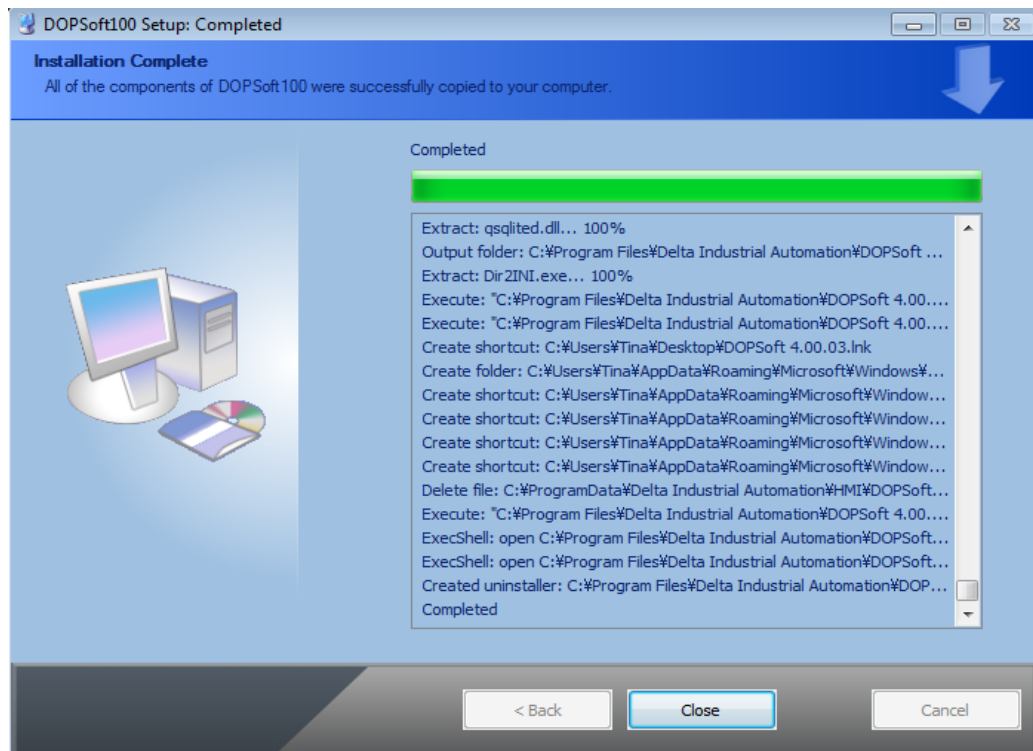


Figure 2.1.1.5 The progress bar shows the installation on Windows XP is complete

2

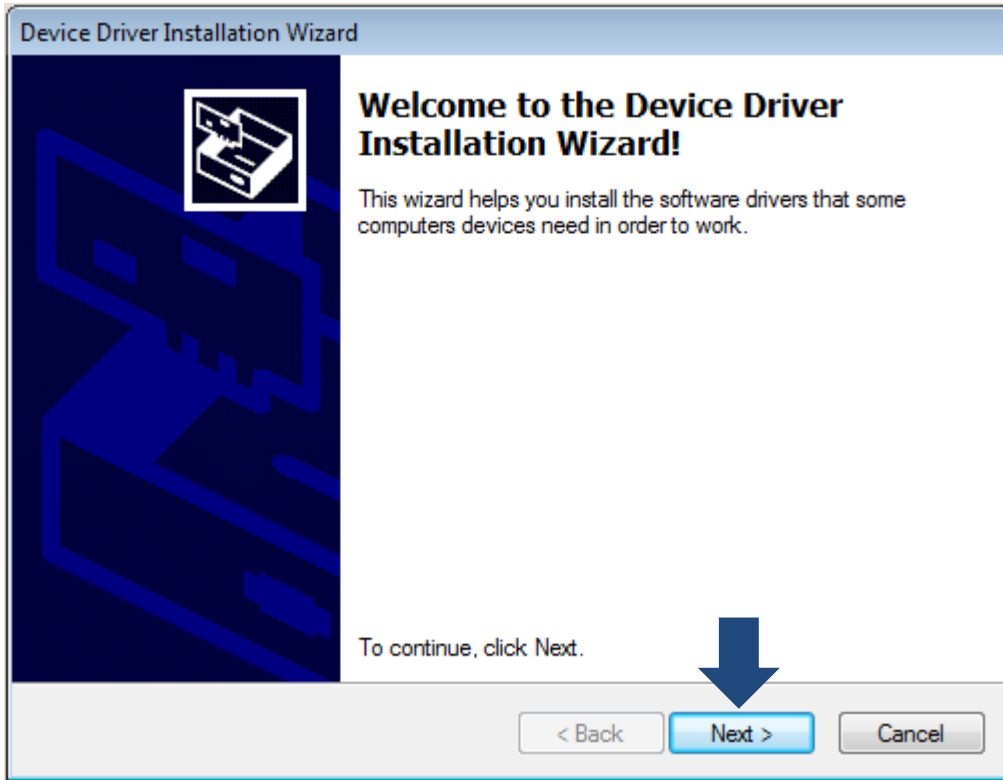


Figure 2.1.1.6 Device Driver Installation Wizard

After the driver is installed, you will see the screen showing installation completed. Click **Finish** to close the driver installation window and then click **Close** to close the DOPSoft installation screen.

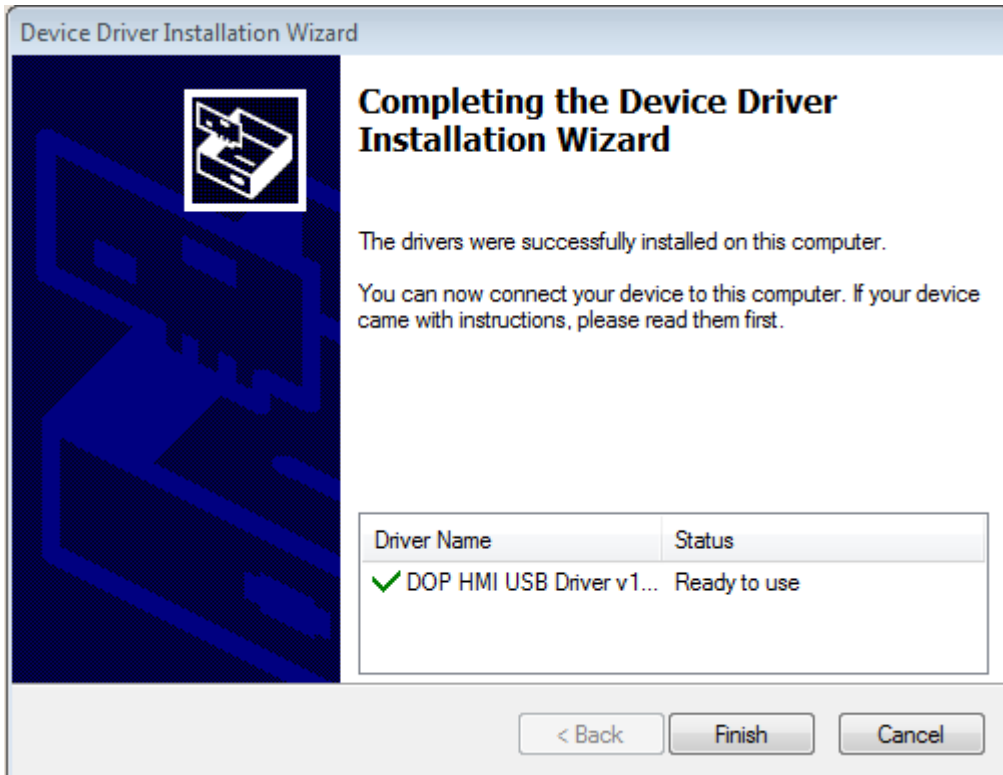


Figure 2.1.1.7 Device Driver installation is complete

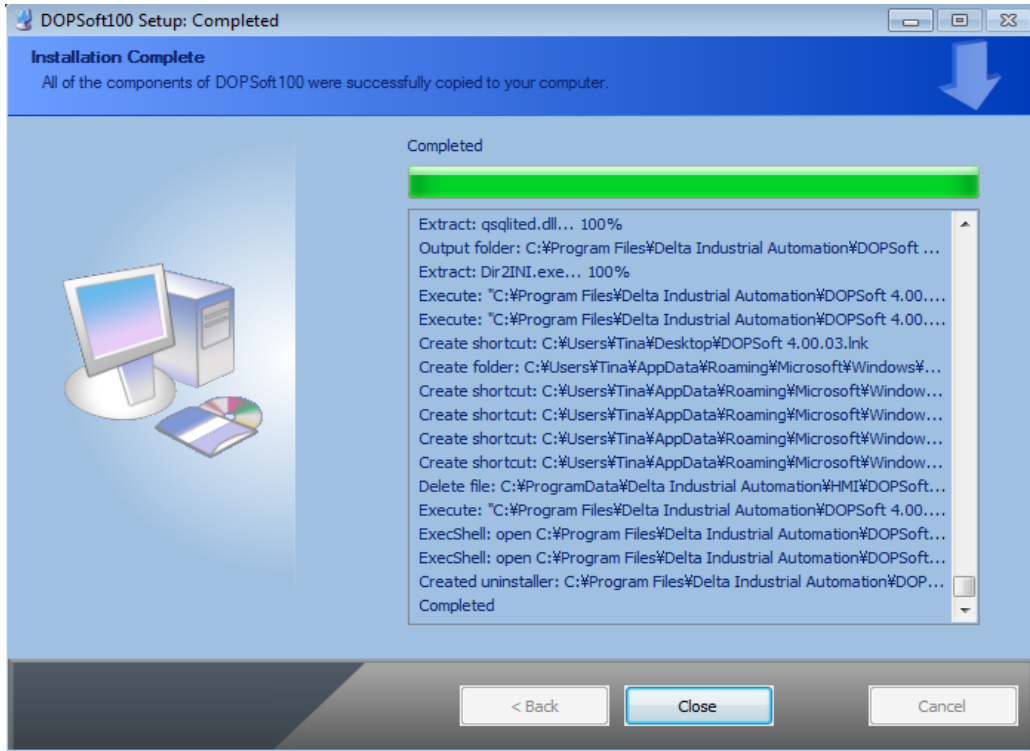


Figure 2.1.1.8 Windows XP completes the installation

2

After the installation is complete, go to the toolbar at the bottom of the PC screen. Select [Start] > [All Programs] > [Delta Industrial Automation] > [HMI] > [DOPSoft 4.00.0x] > [DOPSoft 4.00.0x] to execute the DOPSoft application.

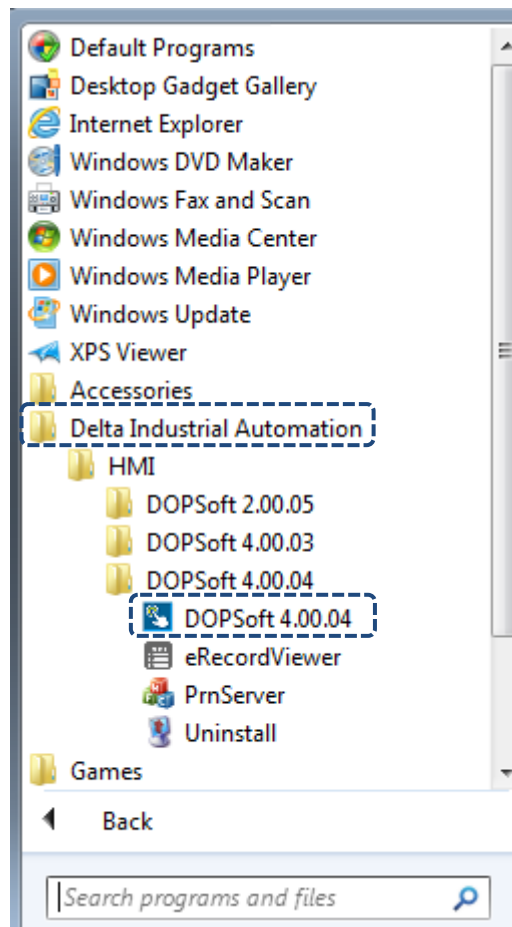
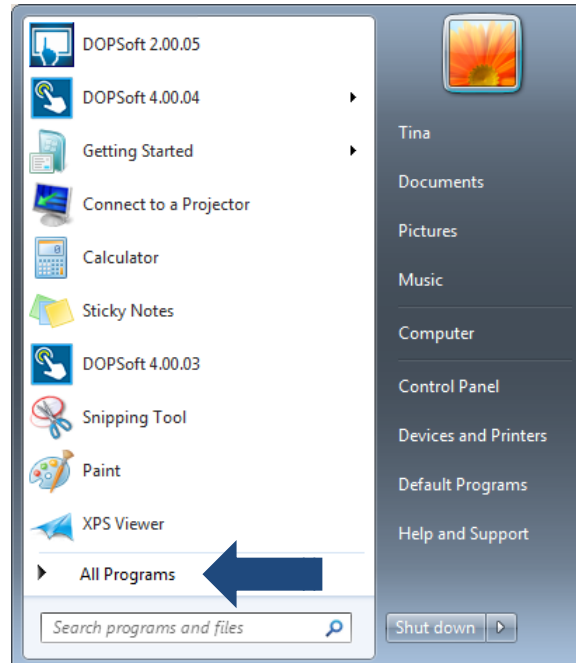


Figure 2.1.1.10 Follow the path to install the software on Windows XP

2.1.2 Install DOPSoft on Windows 7 operating system

After downloading the DOPSoft software at Delta’s website, you can start your PC and enter the Windows 7 operating system. Before executing the DOPSoft, please go to [Control Panel] > [User Accounts and Family Safety] > [User Accounts] > [Change User Account Control settings] and set Never notify for the account level, as shown in Figure 2.1.2.1 and 2.1.2.2.



Figure 2.1.2.1 Change User Account Control settings on Windows 7

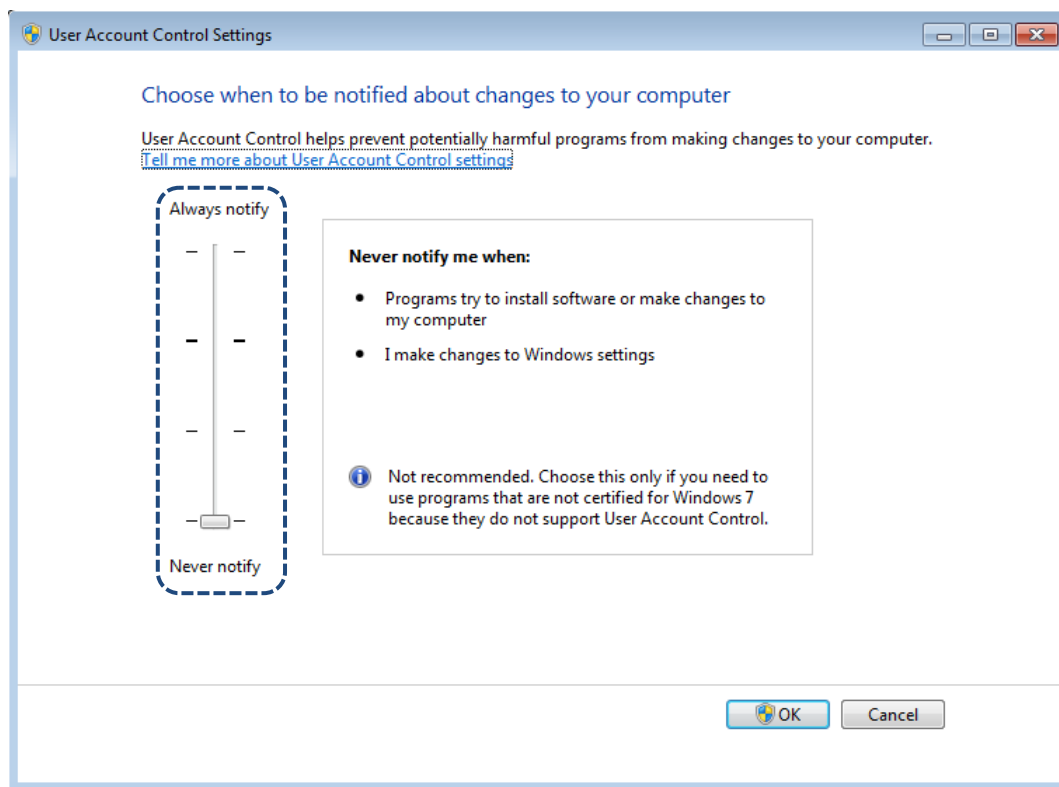


Figure 2.1.2.2 Select Never notify for the User Account Control Settings on Windows 7

After completing the User Account Control Settings, please execute the DOPsoft and follow the installation instructions:

2

- Select the Installer Language. There are four languages available, Traditional Chinese, Simplified Chinese, English, and Turkish. After selecting the language, click **OK**.

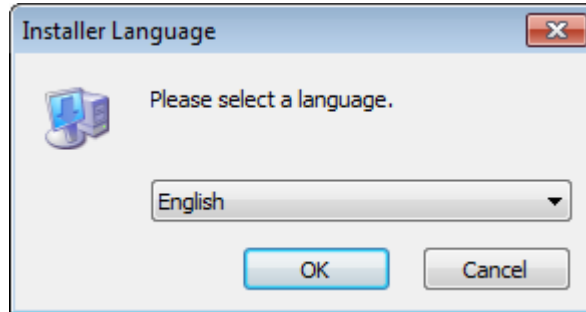


Figure 2.1.2.3 Installer Language on Windows 7

- Click **Browse** to select the installation location for the software; to use the default location, click **Next**.

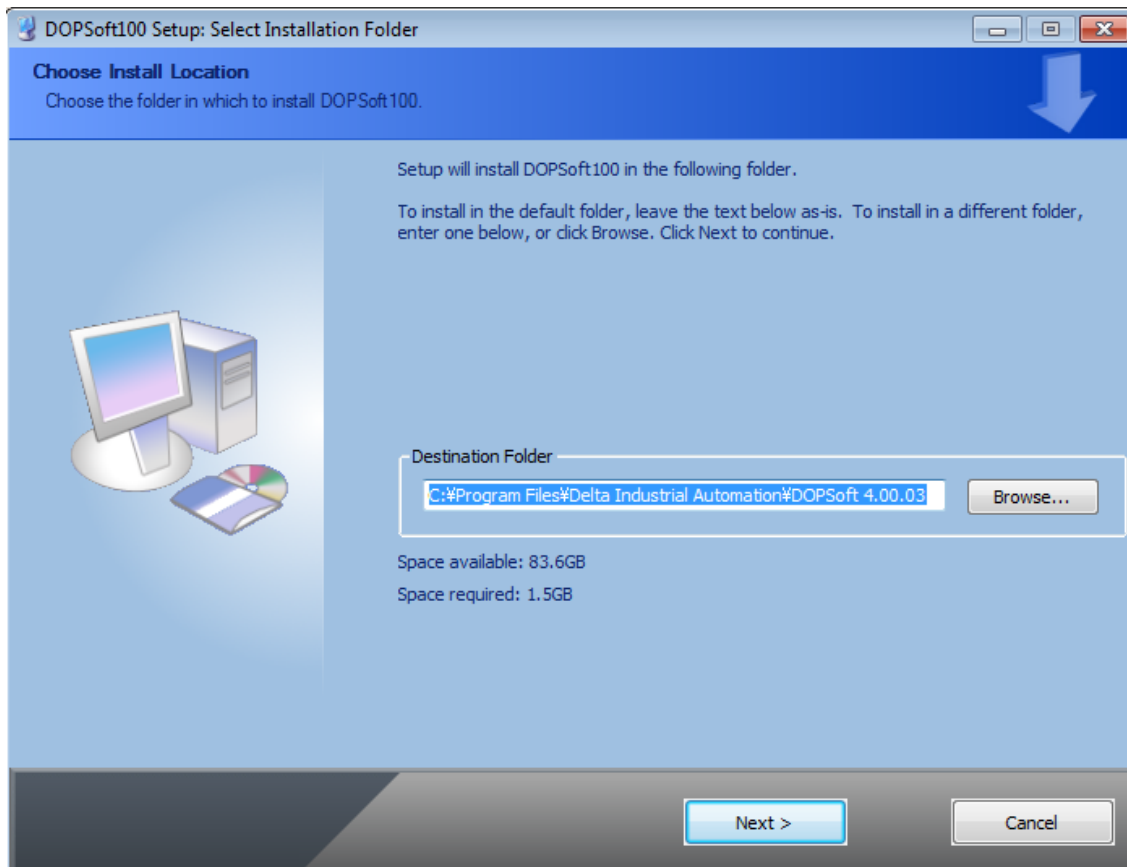


Figure 2.1.2.4 Choose Installation Location on Windows 7

- Make sure you have checked the DOPSoft100 component, as shown in Figure 2.1.2.5, and click **Install**.

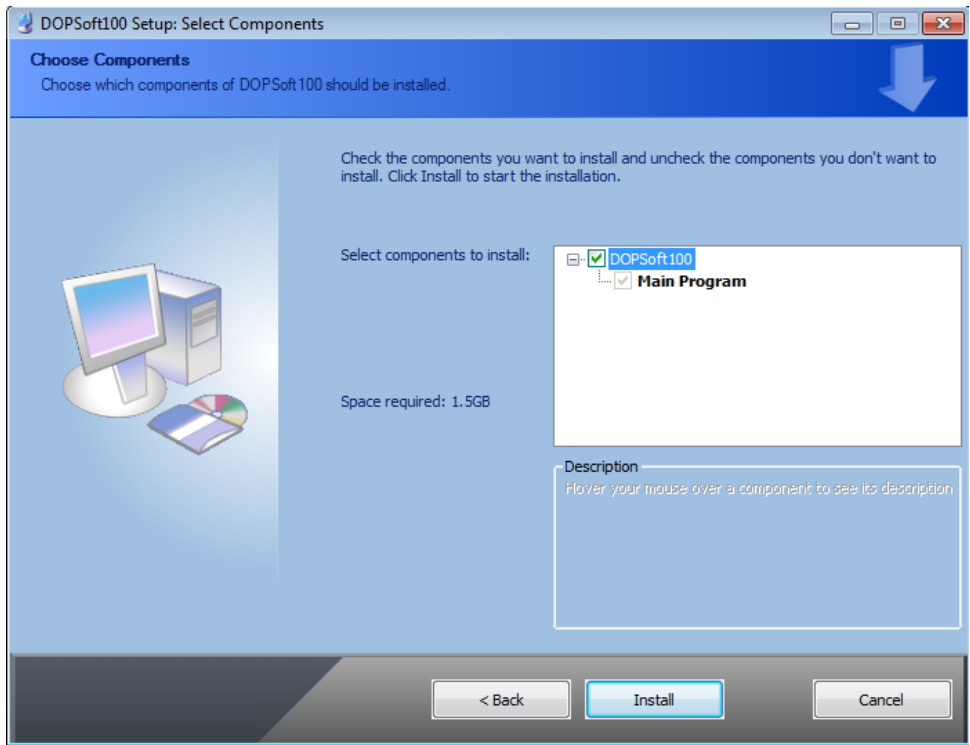


Figure 2.1.2.5 Select the component to install on Windows 7

- After you click **Install**, the software displays the installation progress bar.

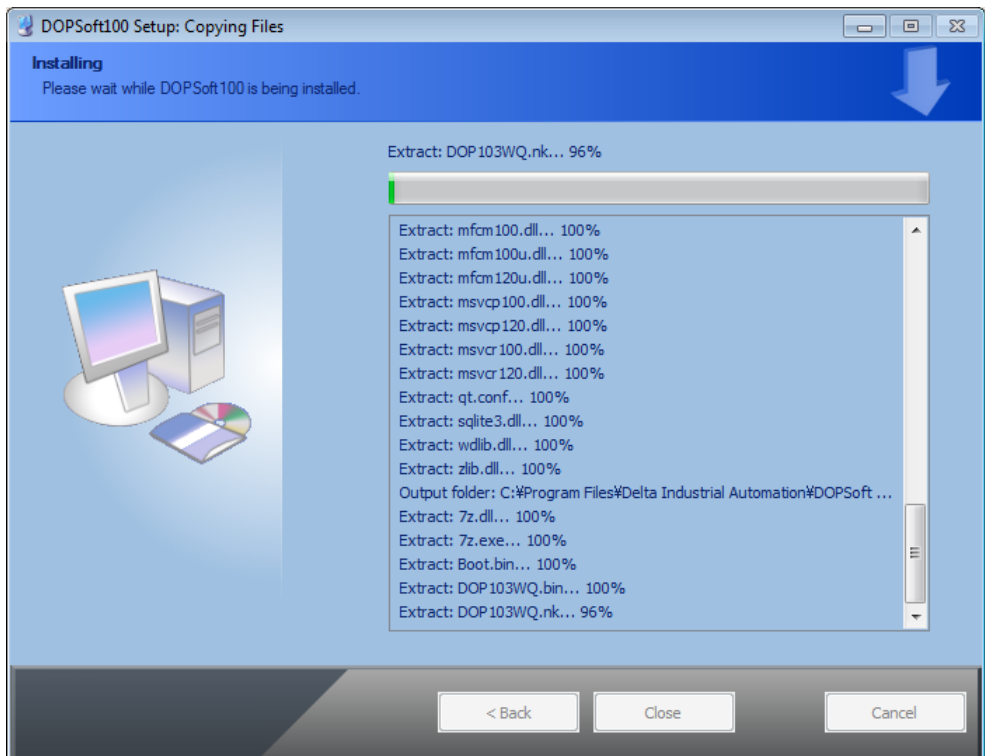


Figure 2.1.2.6 The installation progress bar on Windows 7

2

- When the installation is complete, the progress bar displays “Completed”. Then, the PC displays the device driver for installation, click **Next** to continue.

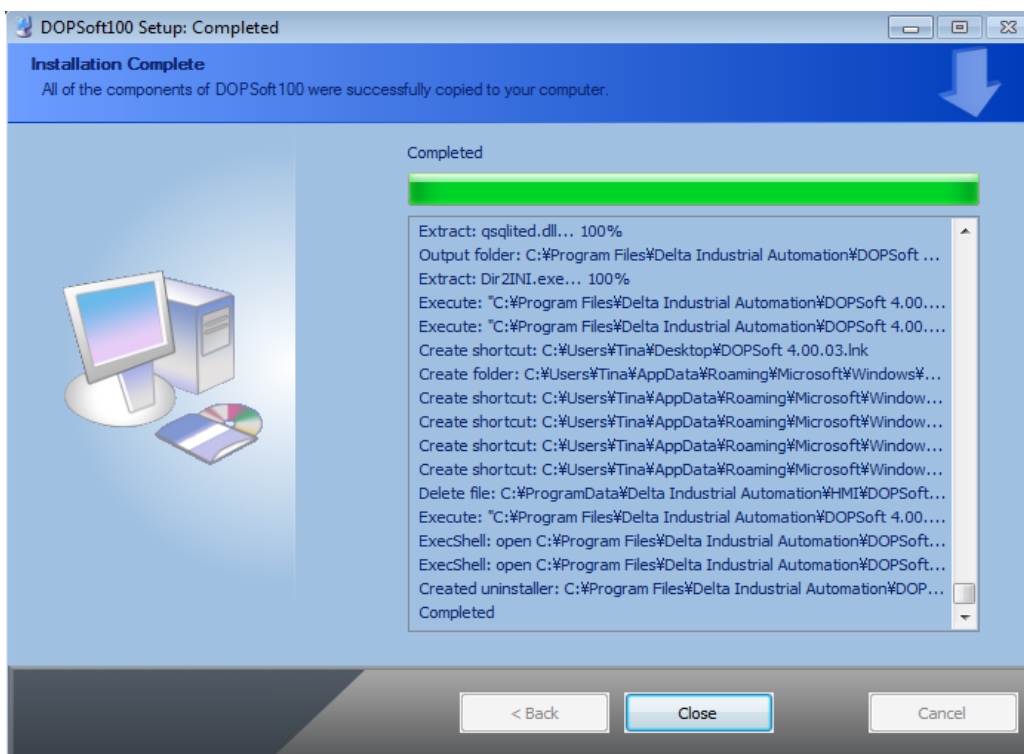


Figure 2.1.2.7 The progress bar shows the installation on Windows 7 is complete

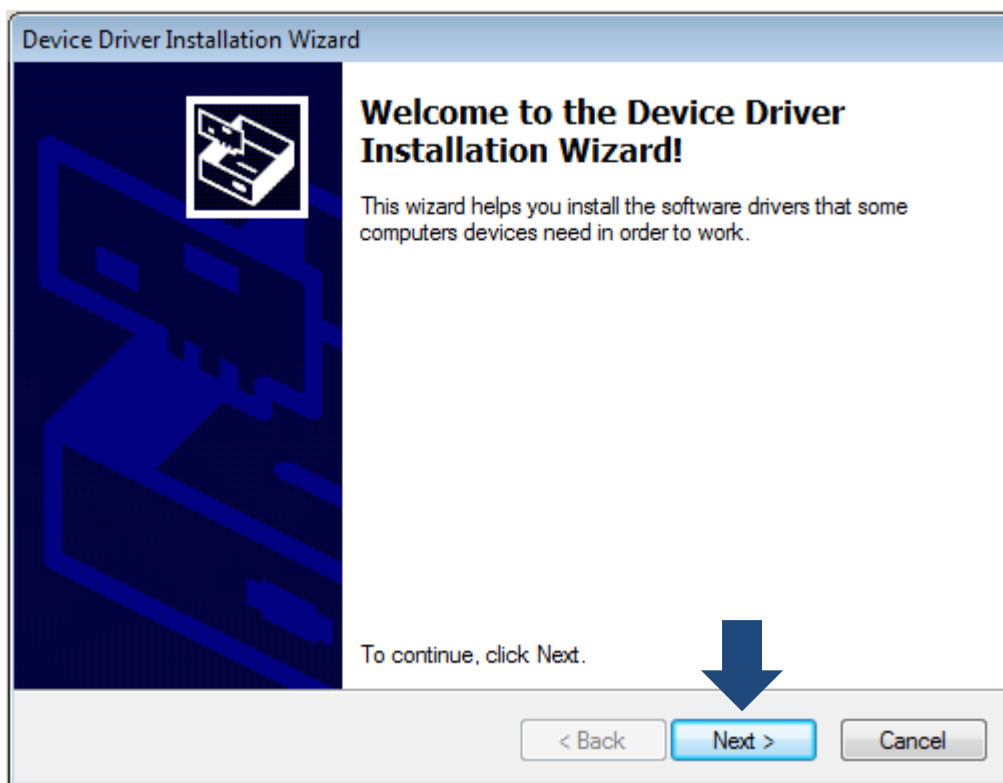


Figure 2.1.2.8 Device Driver Installation Wizard

- After the driver is installed, you will see the screen showing installation completed. Click **Finish** to close the driver installation window and then click **Close** to close the DOPSoft installation screen.

2

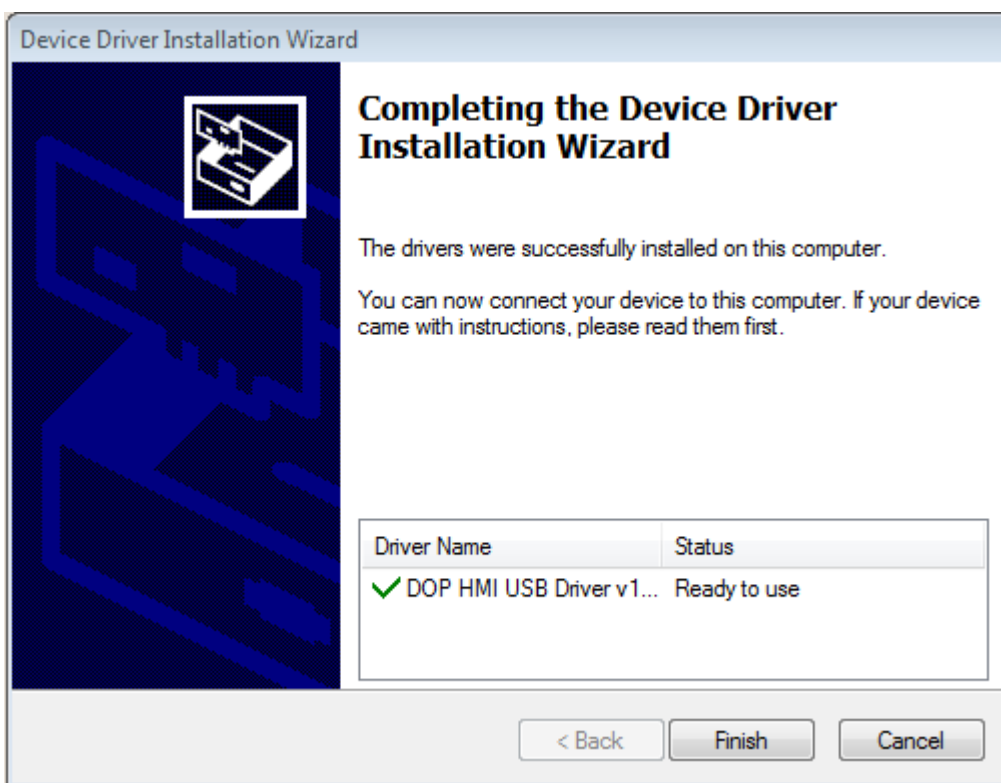


Figure 2.1.2.9 Device Driver installation is complete

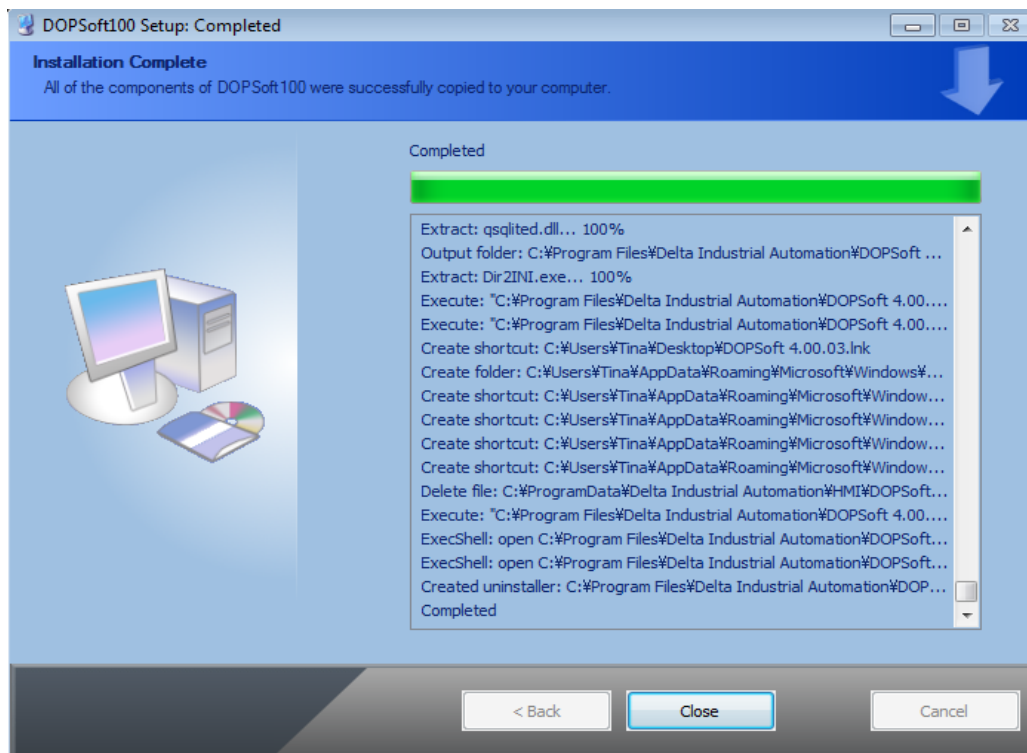


Figure 2.1.2.10 Windows 7 installation completed

2

- Go to the toolbar at the bottom of the PC screen. Select [Start] > [All Programs] > [Delta Industrial Automation] > [HMI] > [DOPSoft 4.00.0x] > [DOPSoft 4.00.0x] to execute the DOPSoft application.

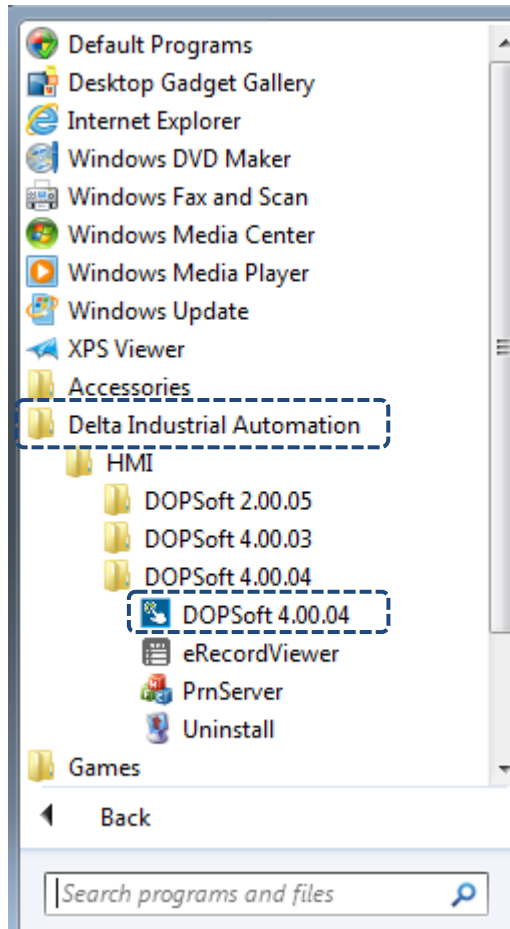


Figure 2.1.1.11 Follow the path to install the software on Windows 7

2.2 Window taskbar

The editing window of the DOPSoft has eight sections, which include a function list, toolbars, element windows (Element List and Element Bank), a properties window, an output window, a screen management window, a screen editing window, and a status bar as shown in Figure 2.2.1. The parts marked with arrows are the toolbars provided by the software.

The toolbars are standard Windows® programs so they work the same ways as that in Windows®. They are customizable; for example, the element toolbar can be moved to the left side of the screen. You can drag the toolbars to the position based on your preference as shown in Figure 2.2.2.

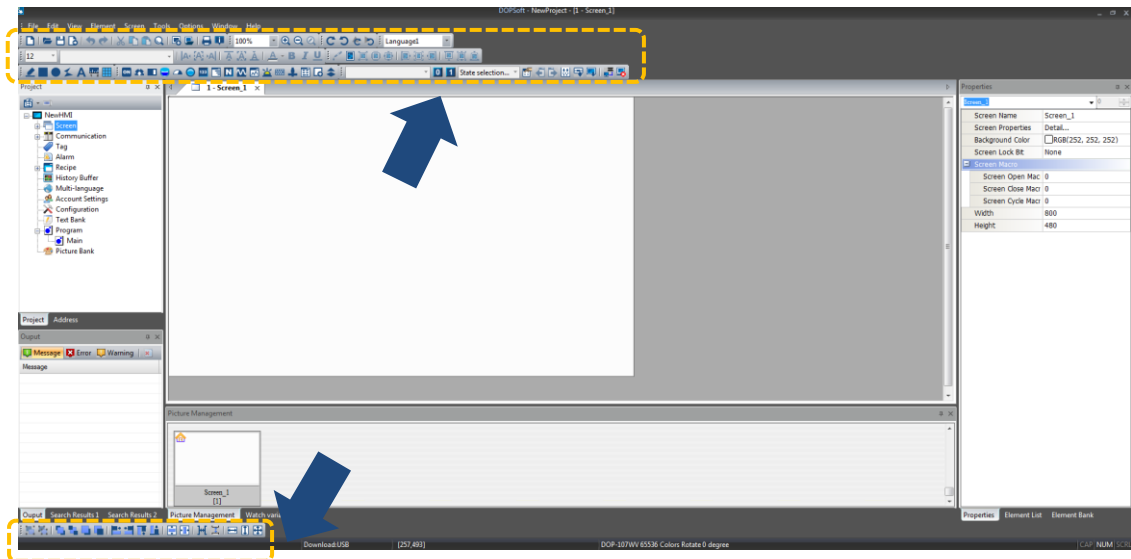


Figure 2.2.1 DOPSoft toolbars

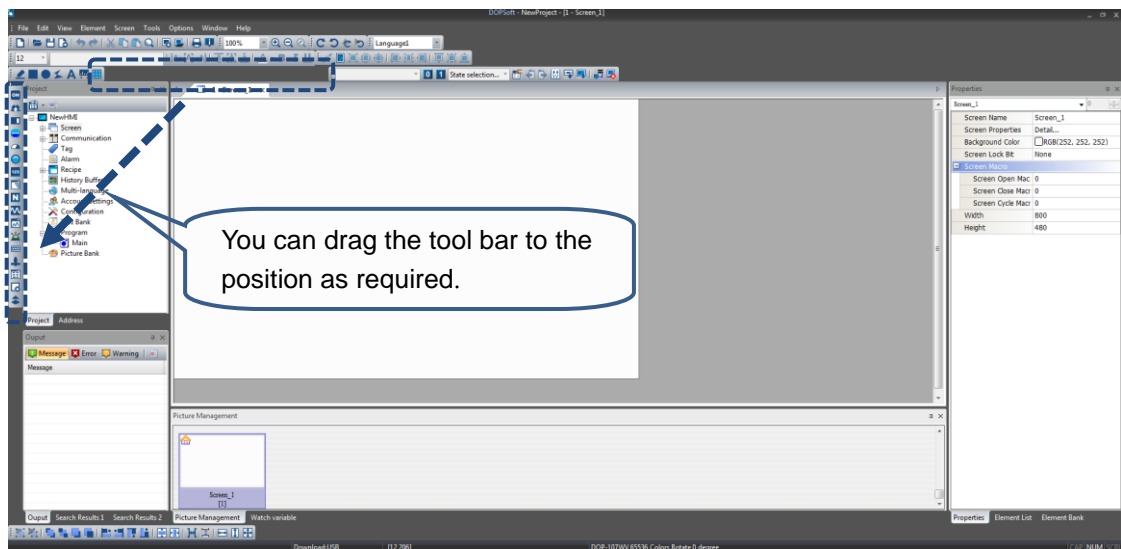
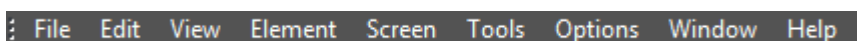


Figure 2.2.2 DOPSoft draggable toolbar

■ Function list

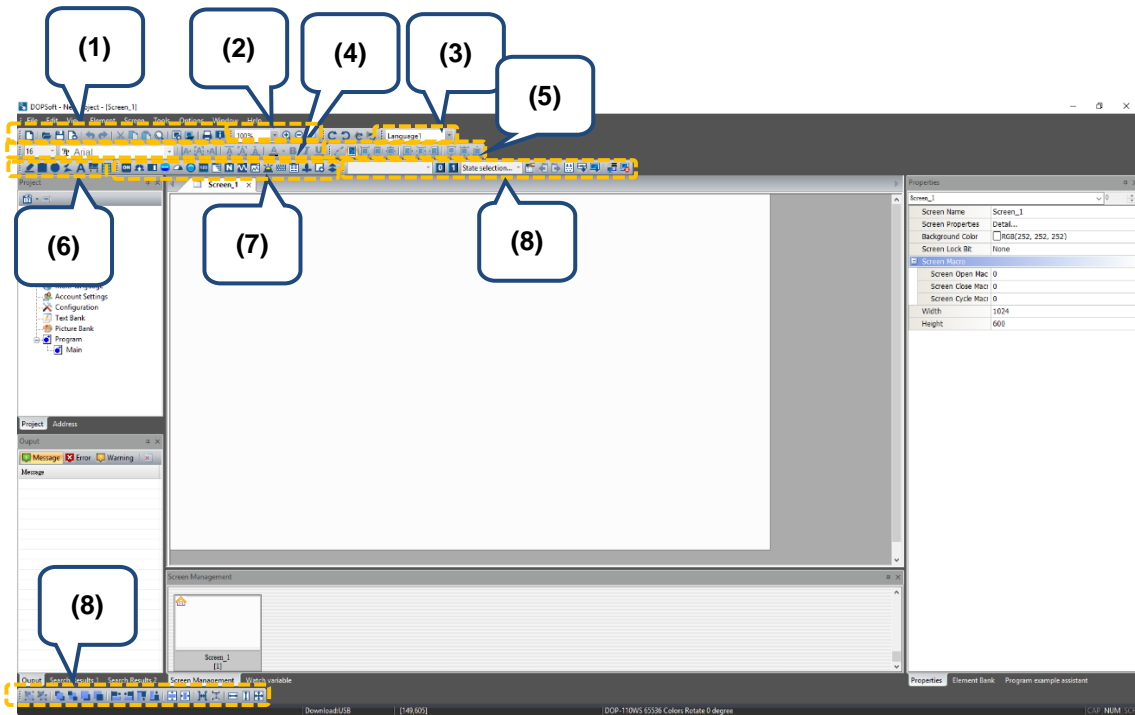
As shown in the following figure, the DOPSoft provides nine function categories.



2

■ **Toolbar**

The DOPSoft provides 8 toolbars.



(1) General toolbar	
(2) Zoom in / out toolbar	
(3) Language selection bar	
(4) Text toolbar	
(5) Picture toolbar	
(6) Drawing toolbar	
(7) Element toolbar	
(8) Layout toolbar	

■ Element Tool

The Element Tool includes the Element Bank and Cust-keypad, providing the customized keypad templates and element banks for saving the edited elements. You can save the edited elements in the Element Bank and drag it to the editing screen next time you need to reuse it.

2

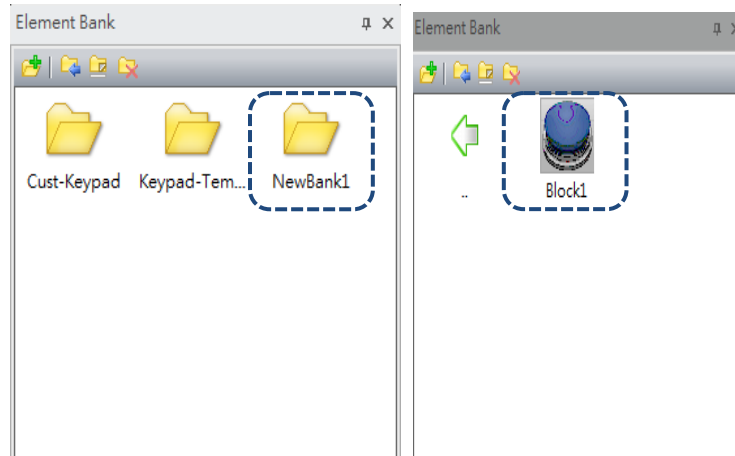




Figure 2.2.3 Element Bank

Figure 2.2.4 illustrates how to create an Element Bank. (1) Go to the Element Bank page. (2) Click  to create a new Element Bank. (3) Create an element; (4) Click  to import the element data.

2

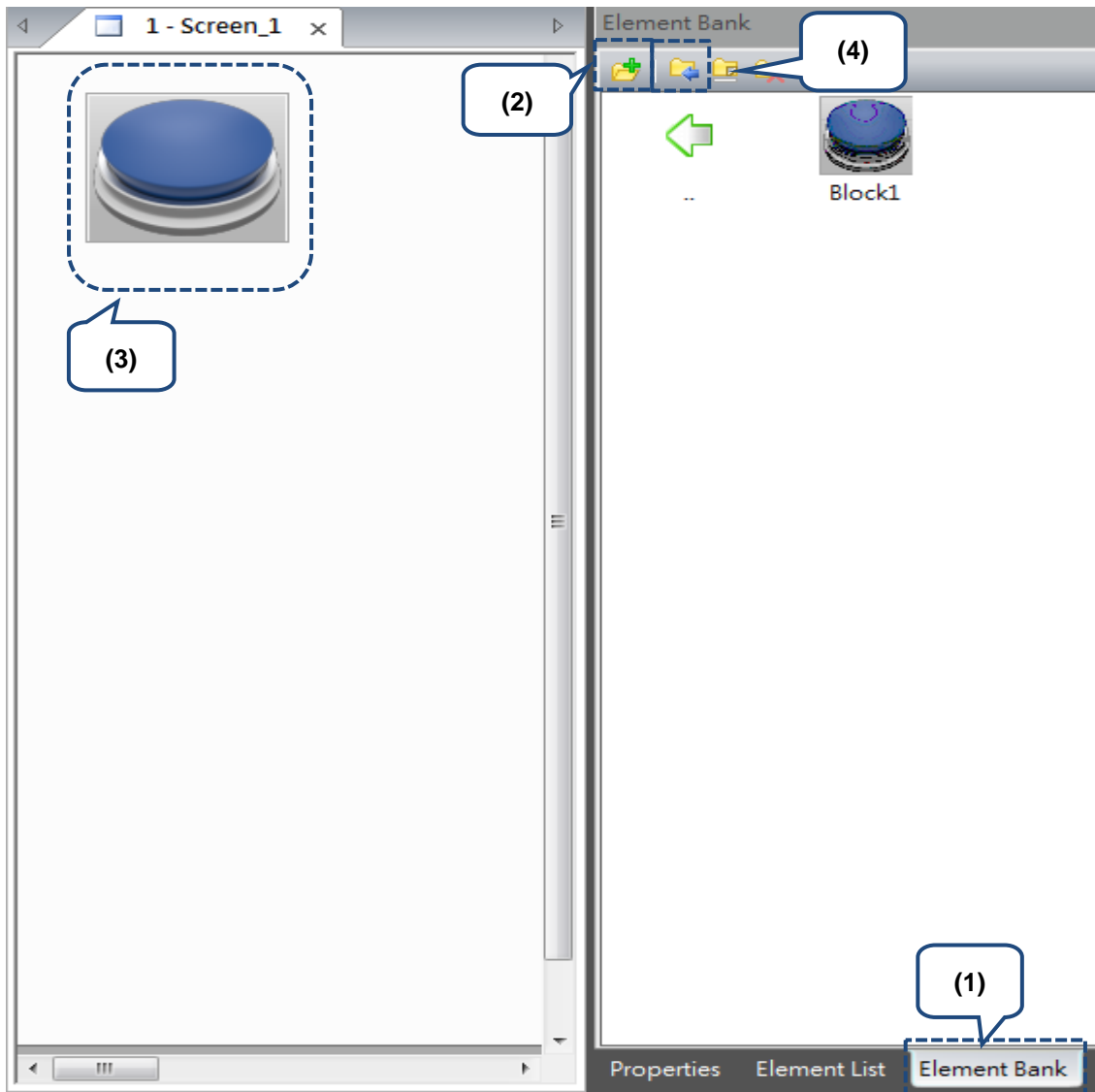


Figure 2.2.4 Steps to create the Element Bank

To use the customized keypad, go to the Element Bank to select the keypad style and drag it to the screen. Click [Element Bank] > [Keypad-Template], and you can see the 16 keypad template styles provided by the software.

- KP (1): decimal keypad (two styles with two different sizes for each, large and small)
- KP (2): hexadecimal keypad (two styles with two different sizes for each, large and small)
- KP (3): ASCII keypad (two styles with two different sizes for each, large and small)
- EASCII (3): extended ASCII keypad (one style with two different sizes, large and small)
- KP_Swedish: Swedish keypad (one style with two different sizes, large and small)

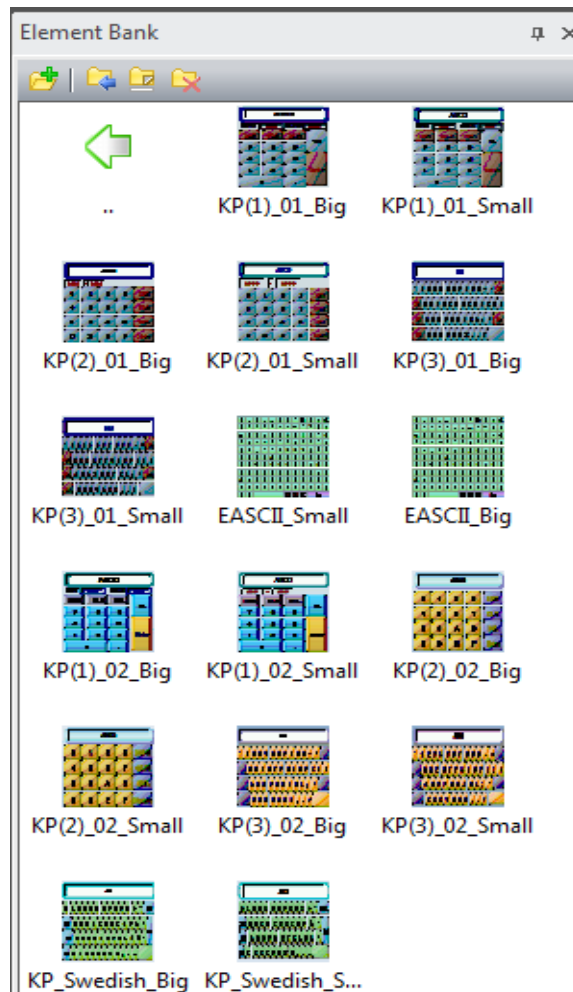
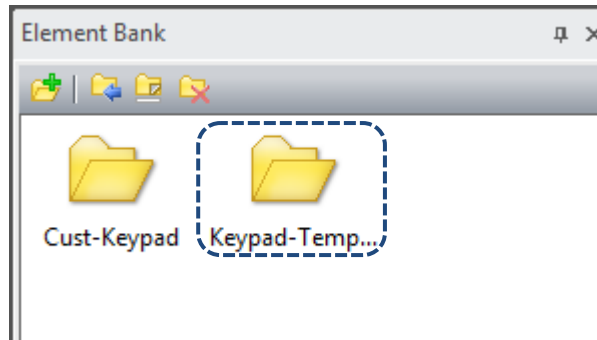


Figure 2.2.5 Element Bank - Keypad styles

Apart from the built-in keypad styles of the software, you can also use the customized elements in Cust-Keypad to create customized keypad styles.

2

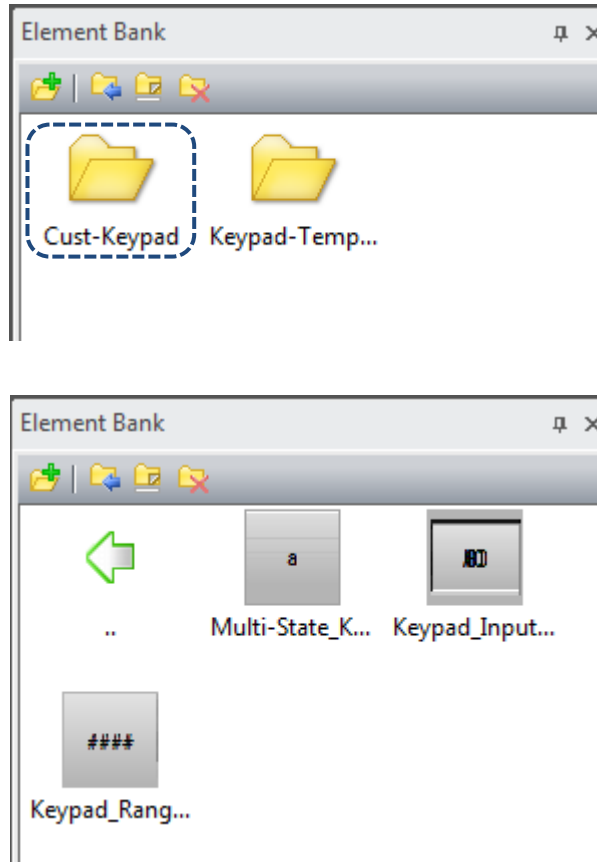


Figure 2.2.6 Cust-Keypad elements

With the customized elements, you can replace the original keypad provided by the software by simply ungrouping the keypad elements and adding the elements of the Cust-Keypad into the keypad. See figure below.

2

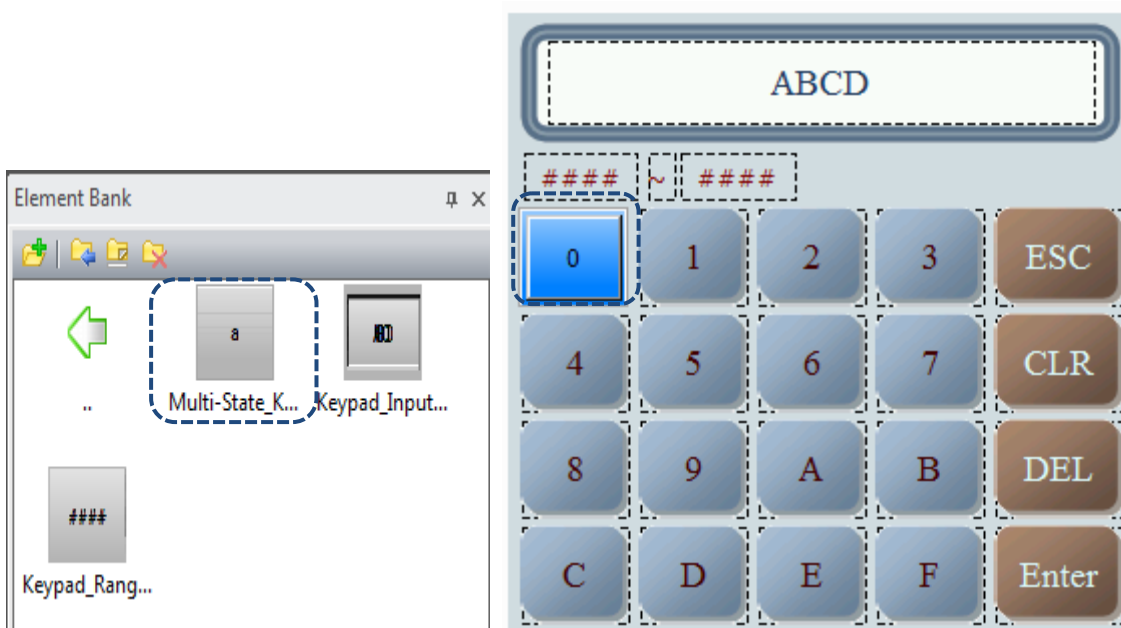
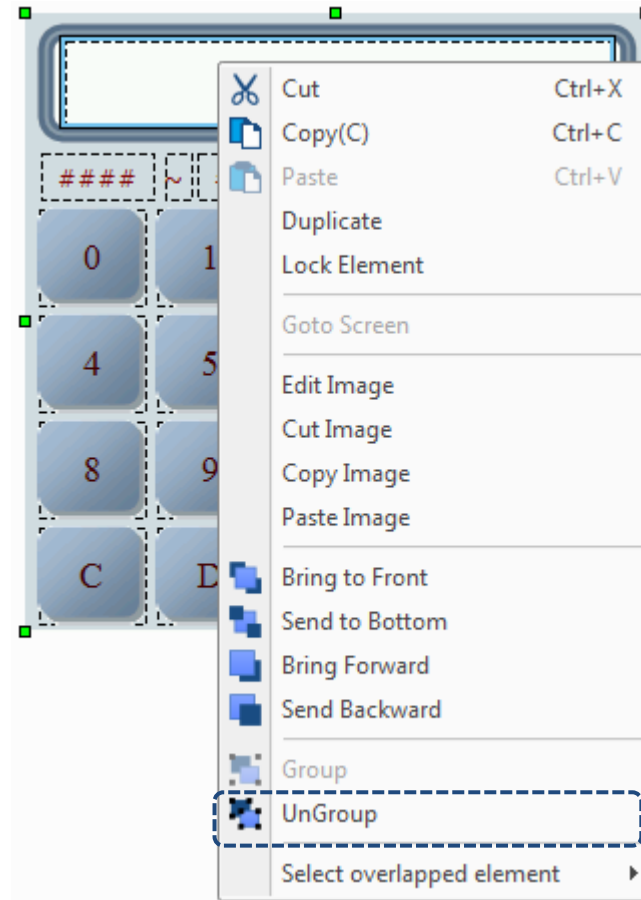


Figure 2.2.7 Replace the keypad with customized elements

■ Properties

2

All elements of the current editing screen

Properties	
Write Address	None
Read Address	None
Invisible Address	None
Offset Address	
Write Offset Addr	None
Read Offset Addr	None
Text	
Size	16
Color	RGB(0, 0, 0)
Font	Verdana
Others	
Border Color	RGB(180, 180, 180)
Background Color	RGB(180, 180, 180)
Style	Raised
Prefix Zero	No
Detail..	Detail...
User Security Level	0
Set Low Security	No
Input Mode	Touch Popup
Mark as Asterisk(*)	No
Trigger Addr.	None
Trigger Mode	Before Writing
Interlock Address	None
Interlock State	On
Show overrange r	Yes
Show #### whe	Yes
Unit Conversion S	Detail...
Transparent	255
Element Descripti	Numeric Entry_001

Element state count

Figure 2.2.8 Properties window

■ Output window

This window records users' editing operations and output messages for screen data compilation. When you execute the Compile function, the DOPSoft compiles the program data; when the compilation completes, you can use the filter in the Output window to promptly check errors and warning messages. The Message tab displays all compiling records; the Error tab displays the error message only; the Warning tab displays the warning messages only, as shown in Figure 2.2.9. By clicking on the error message, you are automatically directed to the screen where the error element is located.

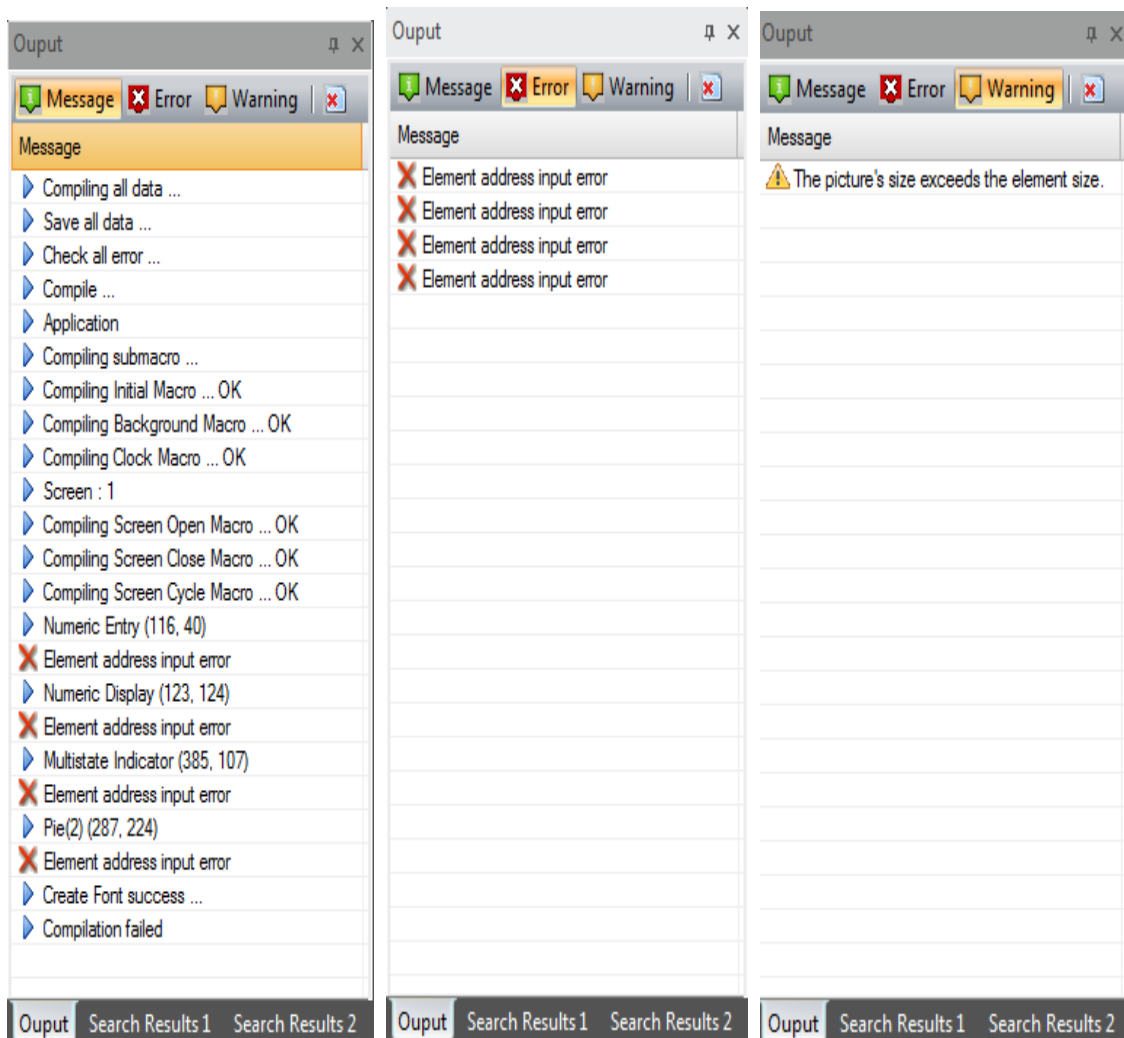


Figure 2.2.9 Output window

■ Project window

The Project window has two tabs, Project and Address.

2

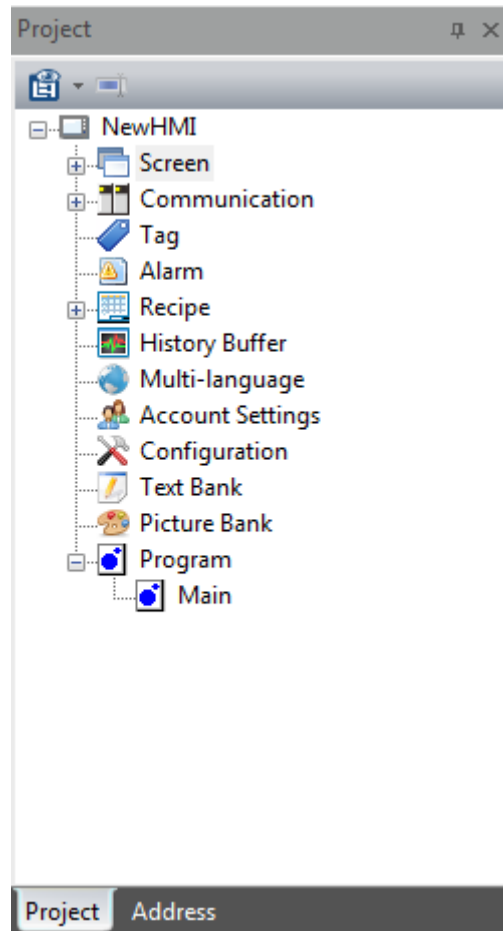


Figure 2.2.10 Project window

The Project tab displays the frequently used functions in the Options toolbar. You can double-click the Project window to open the editing window. The Address tab displays the register addresses used for the editing screens. Apart from the memory addresses set by the screen elements, the address list shows all the addresses used for the macros, and the control section, status section, alarms, recipes, and history in the global setting.

Note: the external PLC address display is currently only available on Delta PLCs.

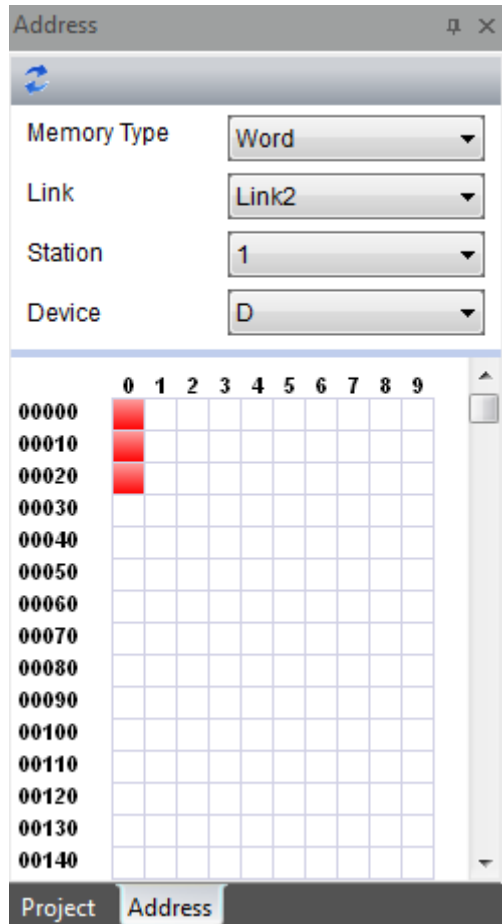


Figure 2.2.11 Address window

2

■ Screen Management window

If you have created multiple screens, you can use the Screen Management window to preview the screens. It allows you to check which elements are in the screen without switching to the actual screen. You can also double-click the screen you need to view and switch to this screen.

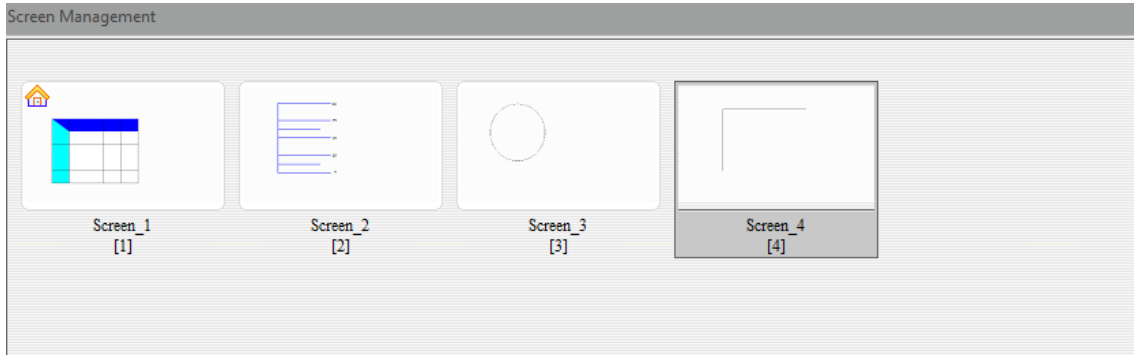


Figure 2.2.12 Screen Management window

■ Status Bar

The Status Bar displays the current editing status, as shown in Figure 2.2.13.

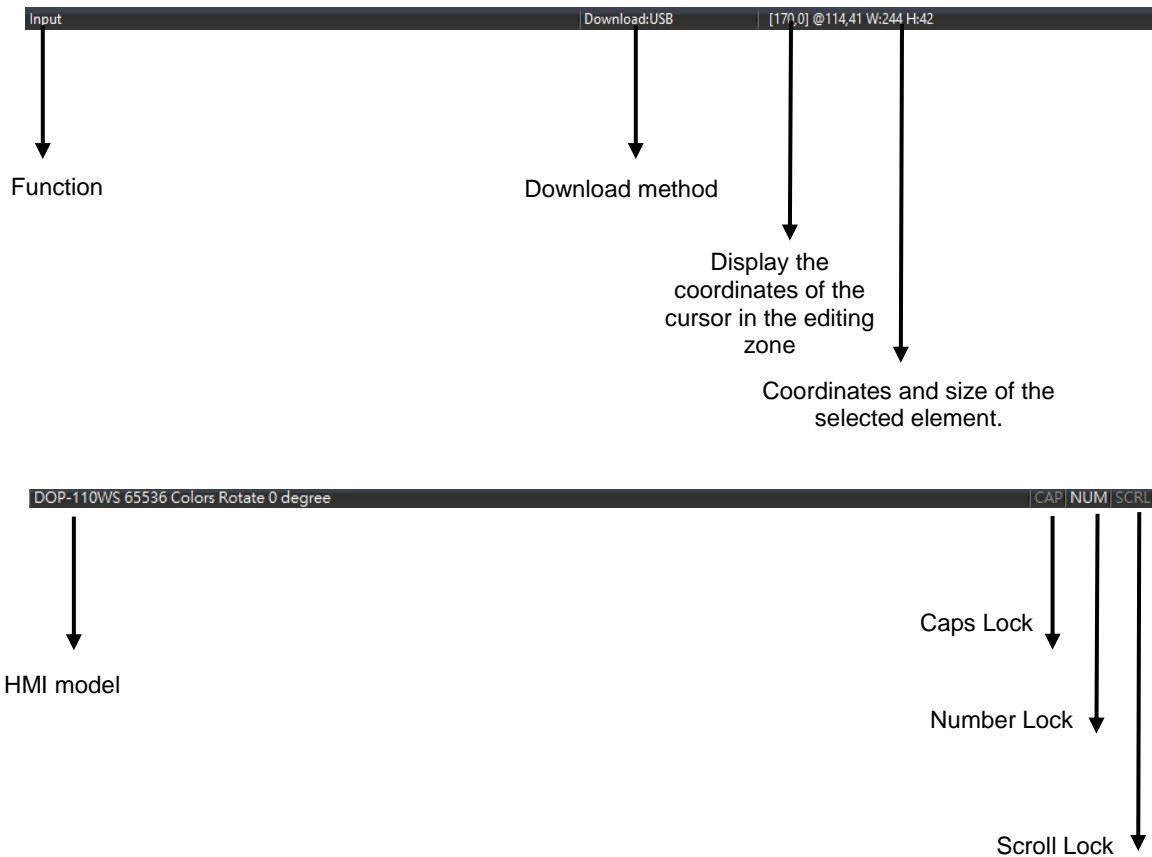
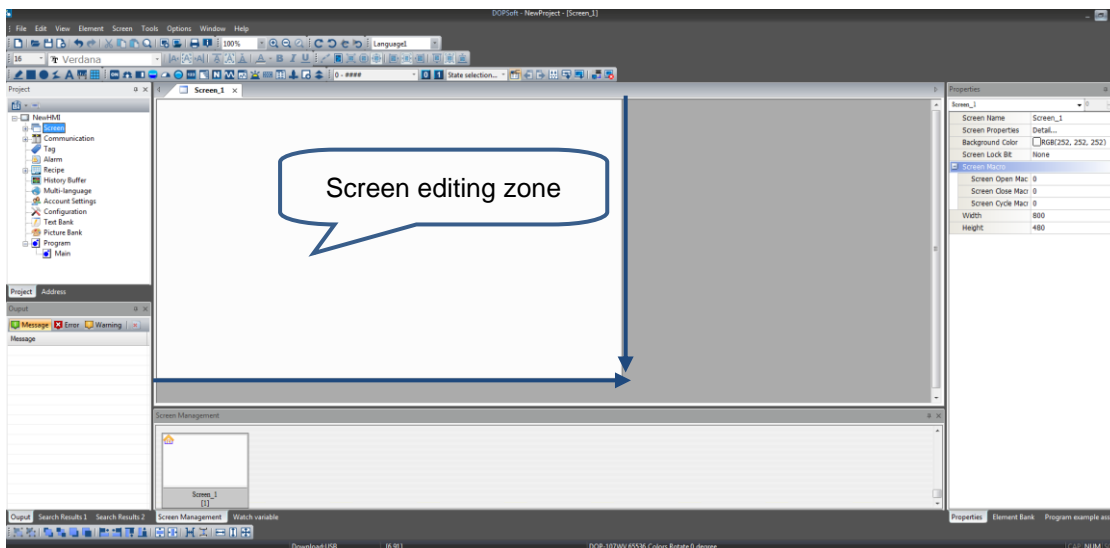


Figure 2.2.13 Status Bar

■ Screen editing zone

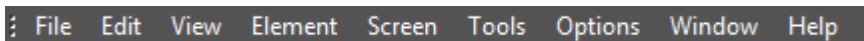
Provide applicable editing range based on the selected HMI model.



2

Figure 2.2.14 Screen editing zone

The following introduces the general function lists such as File, Edit, View, Screen, Tools, Window, and Help.



2.2.1 File

In addition to general functions of opening, closing, and saving files, the File list also provides options of Create Screen Data File, Create Auto Update Data File, Open Screen Data File, Create Download Screen Exe. File, and Password Protect.

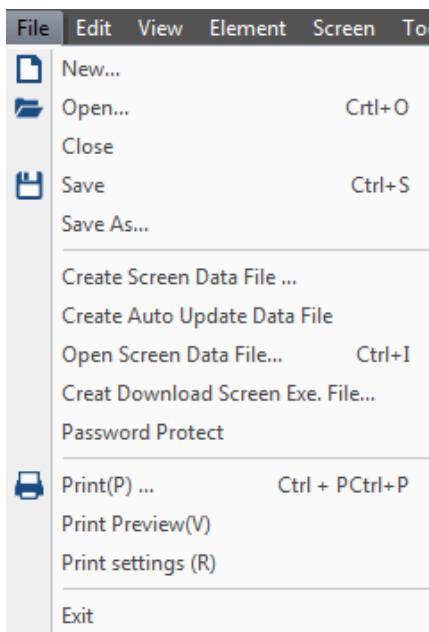



Figure 2.2.1.1 File function list

2.2.1.1 New...

2

When you click  or use the system keyboard shortcut **Ctrl+N** to create a new project, the DOPSoft prompts the Project Wizard as shown in the figure below, and you can select the HMI model or printer to use and edit the project name and screen name. After completing the basic settings, click **Next** to go to the Communication Settings.

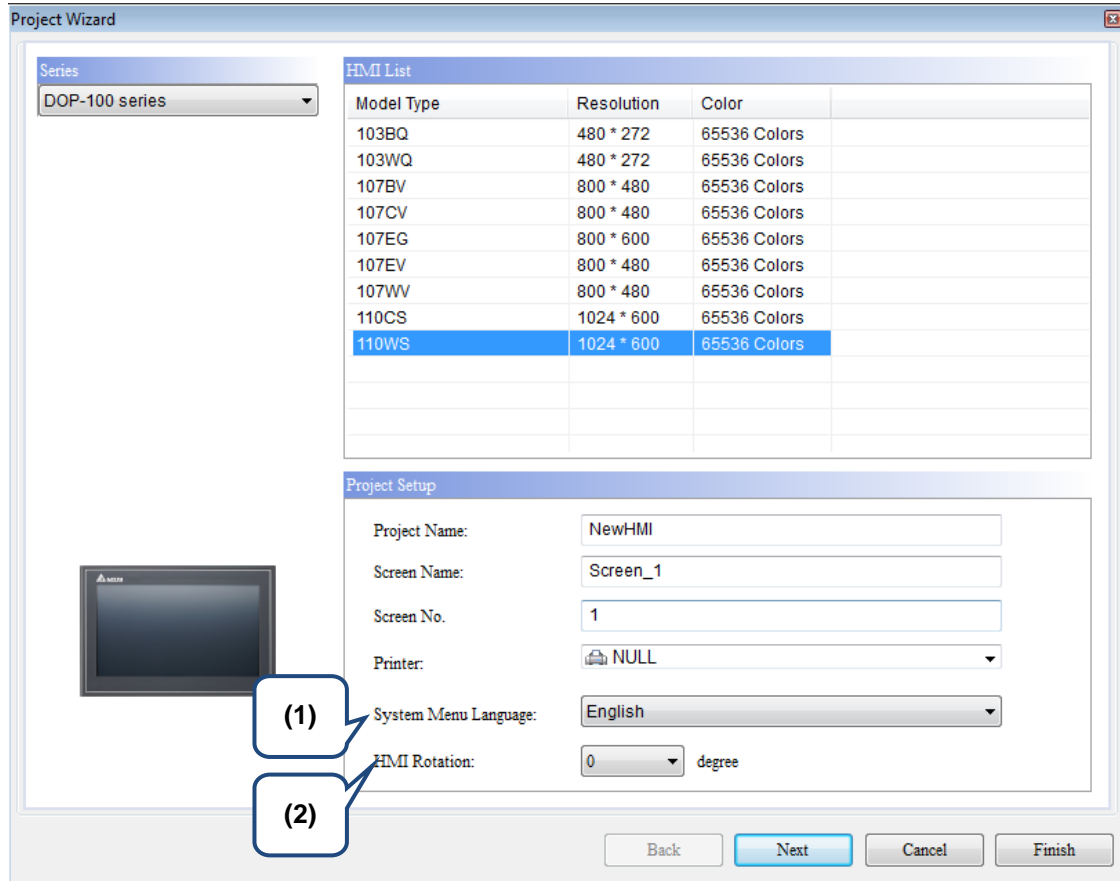


Figure 2.2.1.1.1 Project Wizard

No.	Item	Description
(1)	System Menu Language	Available system languages are English, Traditional Chinese, Simplified Chinese and Spanish.
(2)	HMI Rotation	Selectable rotation degrees are 0°, 90°, 180°, and 270°.

For Communication Settings, you can set the controller model and COM port or Ethernet port to use, as well as the parameters for communications between the HMI and controller, as shown in Figure 2.2.1.1.2.

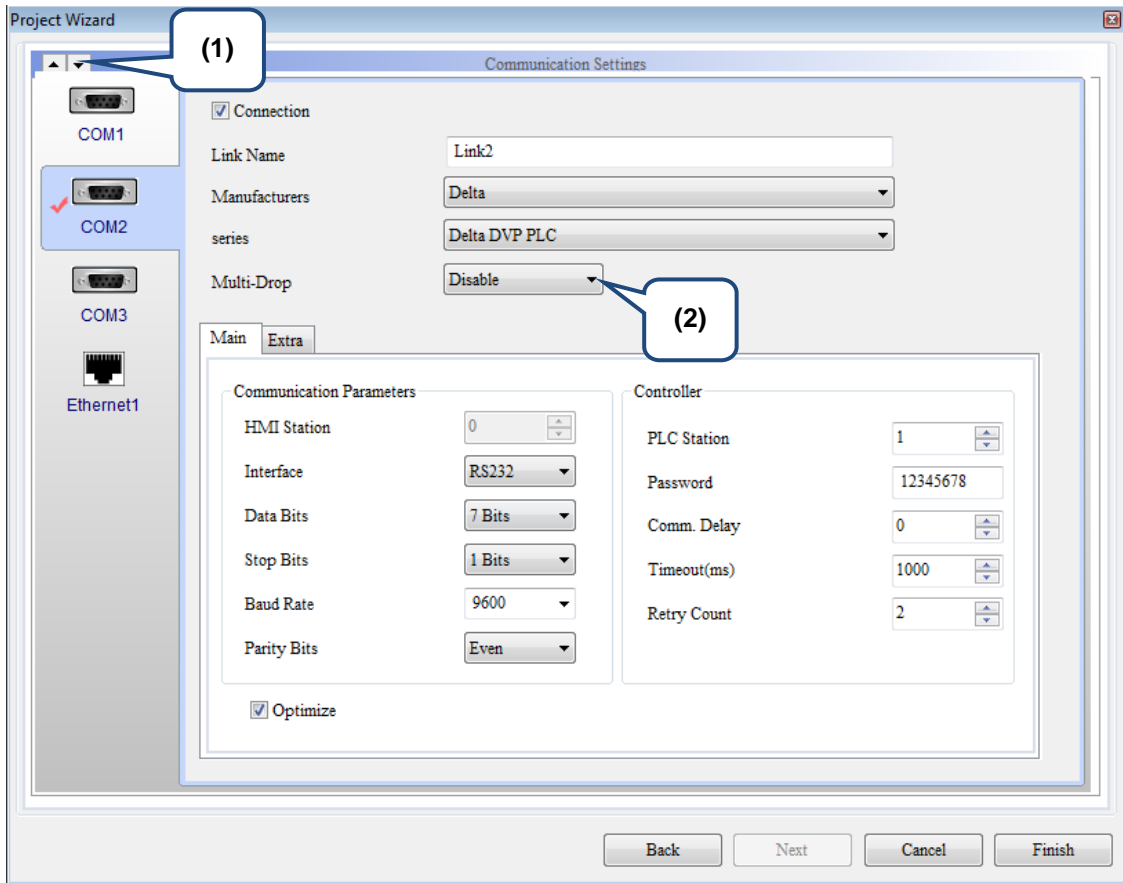



Figure 2.2.1.1.2 Project Wizard

No.	Item	Description
(1)	Up and Down arrows	Use the up and down arrows to switch among COM1, COM2, and COM3.
(2)	Multi-Drop	To use the Multi-Drop communication mode, you can simply select Host or Client for Multi-Drop; to disable the Multi-Drop mode, select Disable.

2

If you are using Ethernet for communication, click the Ethernet1 icon to set the controller parameters. Go to the Device page and click  to add an Ethernet link and set its Controller model, Controller IP address, Comm. Delay Time, and parameters for Timeout and Retry, as shown in Figure 2.2.1.1.3.

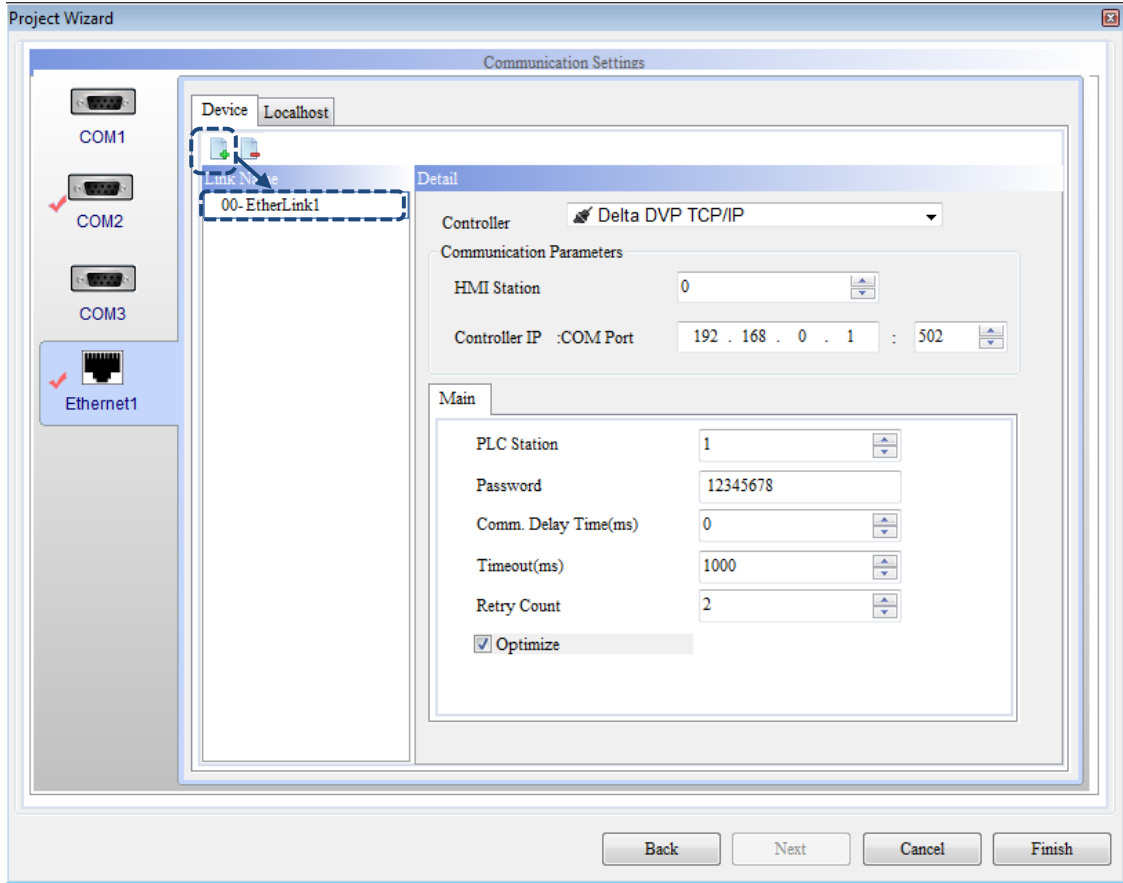
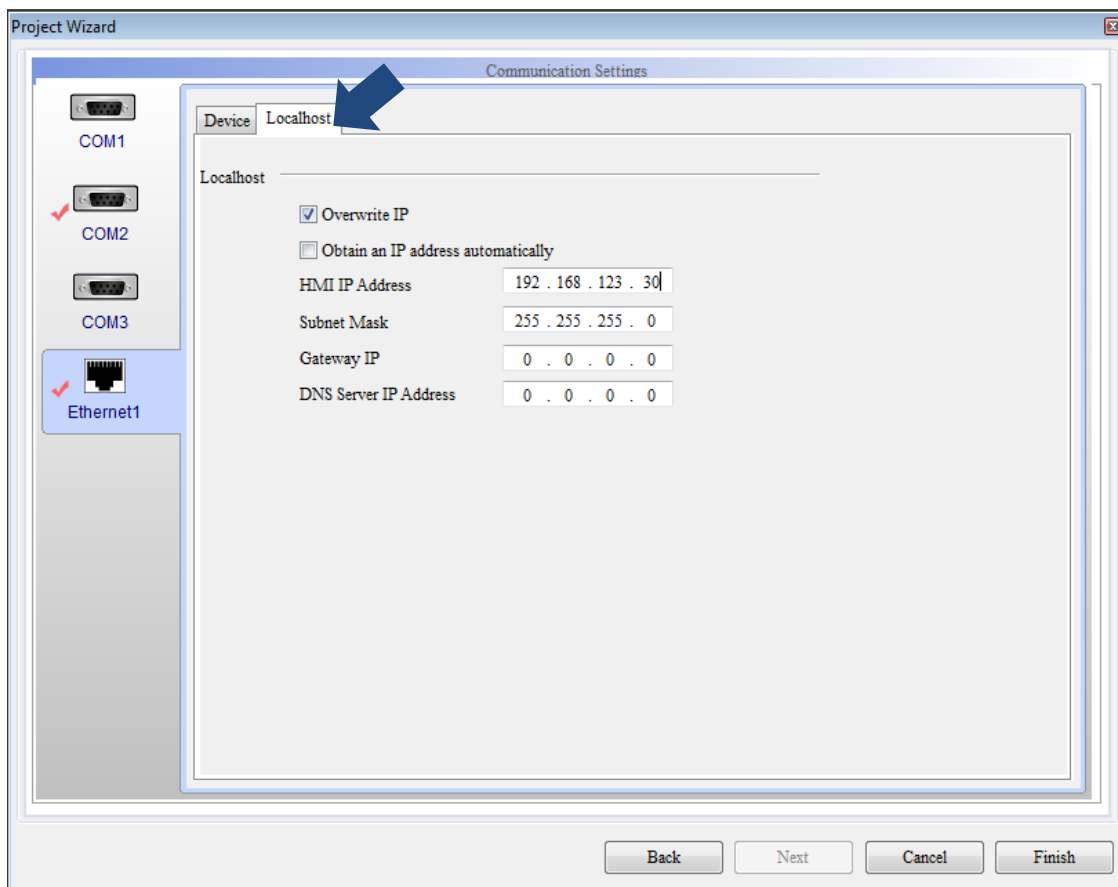


Figure 2.2.1.1.3 Project Wizard

You can also switch to the Localhost page to set the Localhost IP address and enable the network applications, as shown in Figure 2.2.1.1.4.



2

Figure 2.2.1.1.4 Project Wizard

About the Localhost:

This is the Localhost IP address of the HMI, which you can set the IP address or to obtain an IP address automatically.

- Uncheck [Overwrite IP]:
When you leave this checkbox unchecked, the HMI uses the default IP address, 0.0.0.0. If you choose not to use the Overwrite IP option in the software, you can go to [System Setting] > [Network] to change its IP address.
- Check [Overwrite IP]:
If you check [Overwrite IP], it means you are going to change the IP address with the software, so you can set the IP address to be written and the HMI model name.
- Check both [Overwrite IP] and [Obtain an IP address automatically]:
If you check both options, it means the HMI uses the DHCP mode to get the IP address. To know the exact IP address, you can go to [System Setting] > [Network] to check.

After you complete all the settings, click **Finish** to go the DOPSoft project editing screen.

2

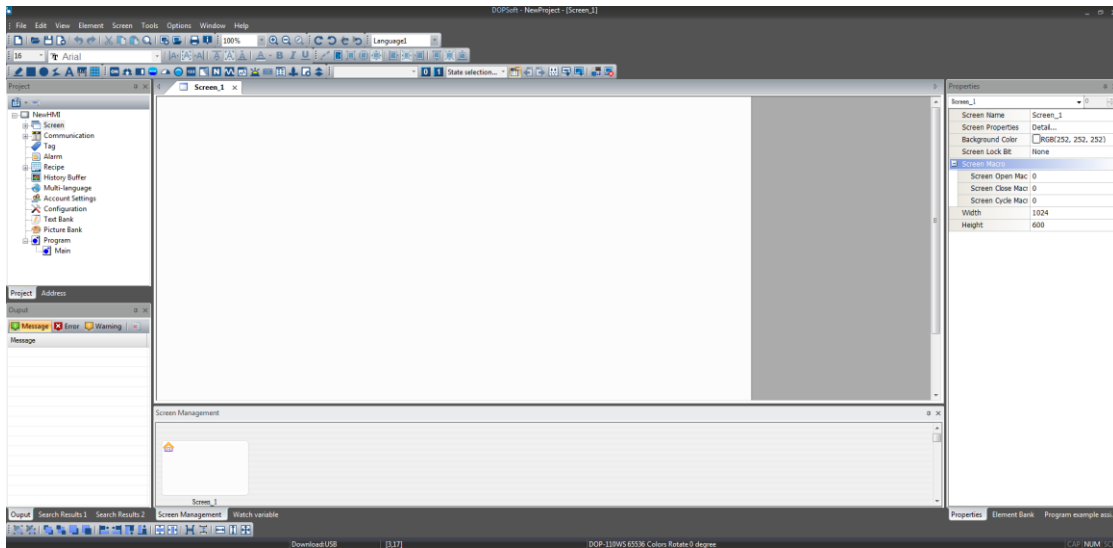



Figure 2.2.1.1.5 DOPSoft editing screen

2.2.1.2 Open...

To open the project file that has been saved in the DOPSoft, you can click [File] > [Open...], as shown in Figure 2.2.1.2.1, click  in the toolbar, or use the system keyboard shortcut **Ctrl+O**.

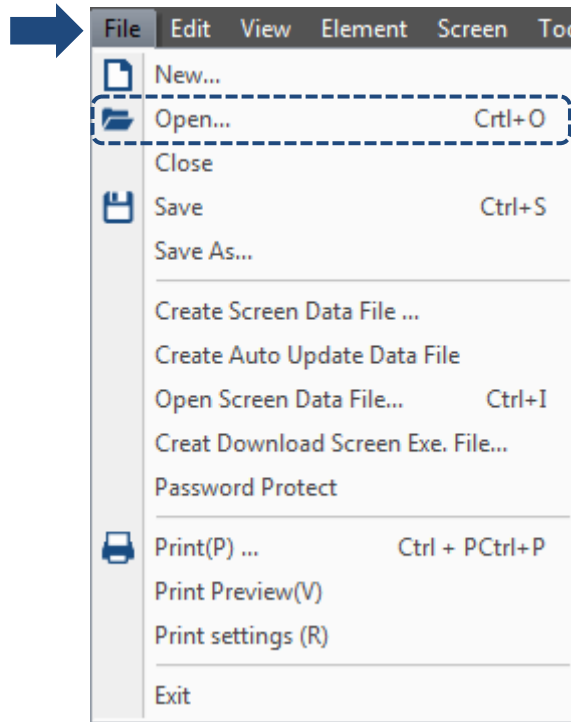


Figure 2.2.1.2.1 Open... option

If there is a modified project in the software editing screen and you click **Open...**, the software reminds you that the program has been changed and asks if you want to save the changes, as shown in Figure 2.2.1.2.2.

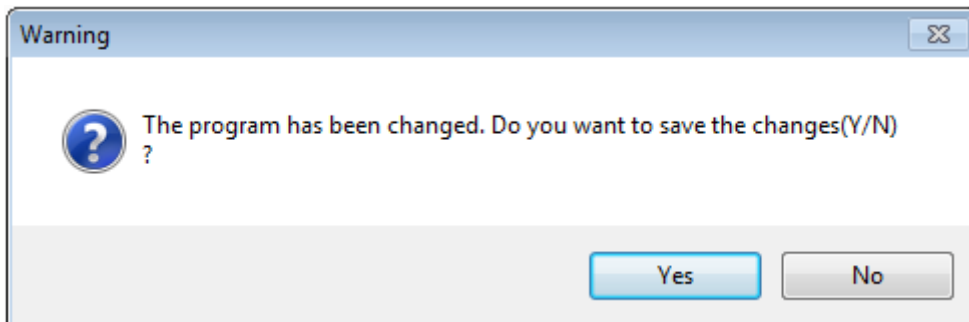


Figure 2.2.1.2.2 Confirmation dialog box for saving the changes

You can click **Yes** to save or click **No** to not to save the project. Whether the project is saved, the previous project will be opened, as shown in Figure 2.2.1.2.3.

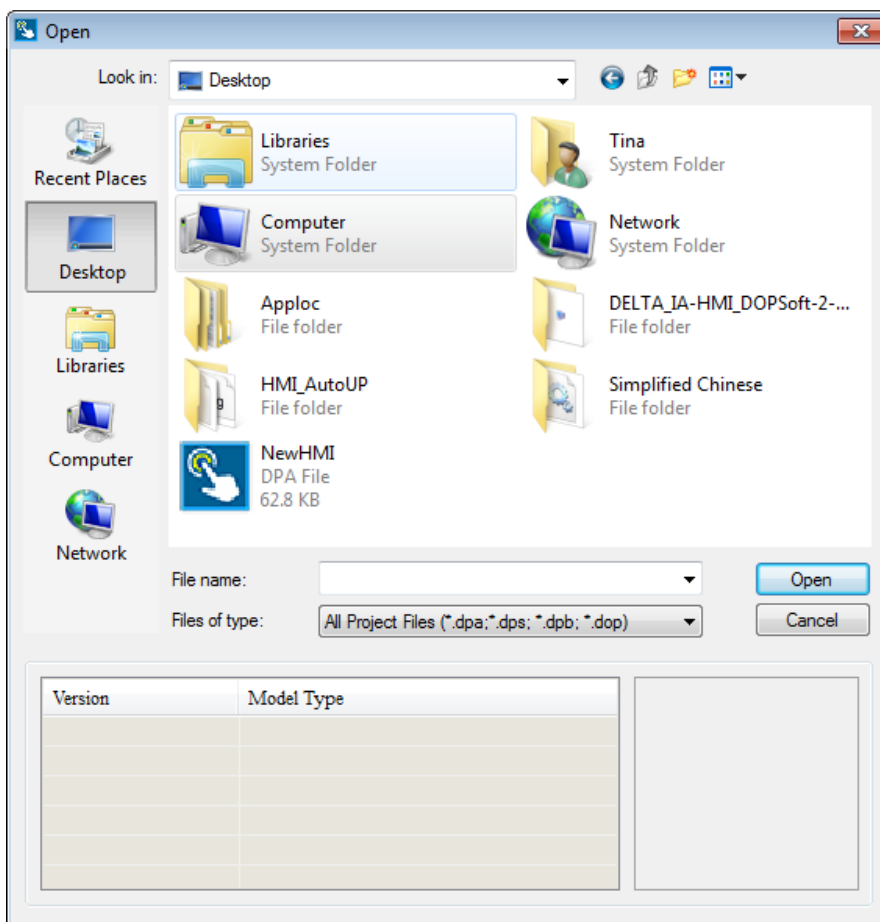


Figure 2.2.1.2.3 Open the previous project

The filename extension for the file in DOPSoft 4.0 is “.dpa”, but it can also be “.dps”(edited with DOPSoft 2.00.0x), “.dpb”(edited with Screen Editor 2.00.xx) or “.dop”(edited with Screen Editor 1.05.xx). If you open a “.dpb”file, it means the previous screen data is copied to the DOPSoft for editing without anything changed.

If you select a “.dop”file to open, the DOPSoft converts all the data in the A series HMI into the data for the 100 series for screen editing. So, the software prompts a message asking you which series of HMI to use, as shown in Figure 2.2.1.2.4 and Figure 2.2.1.2.5.

2

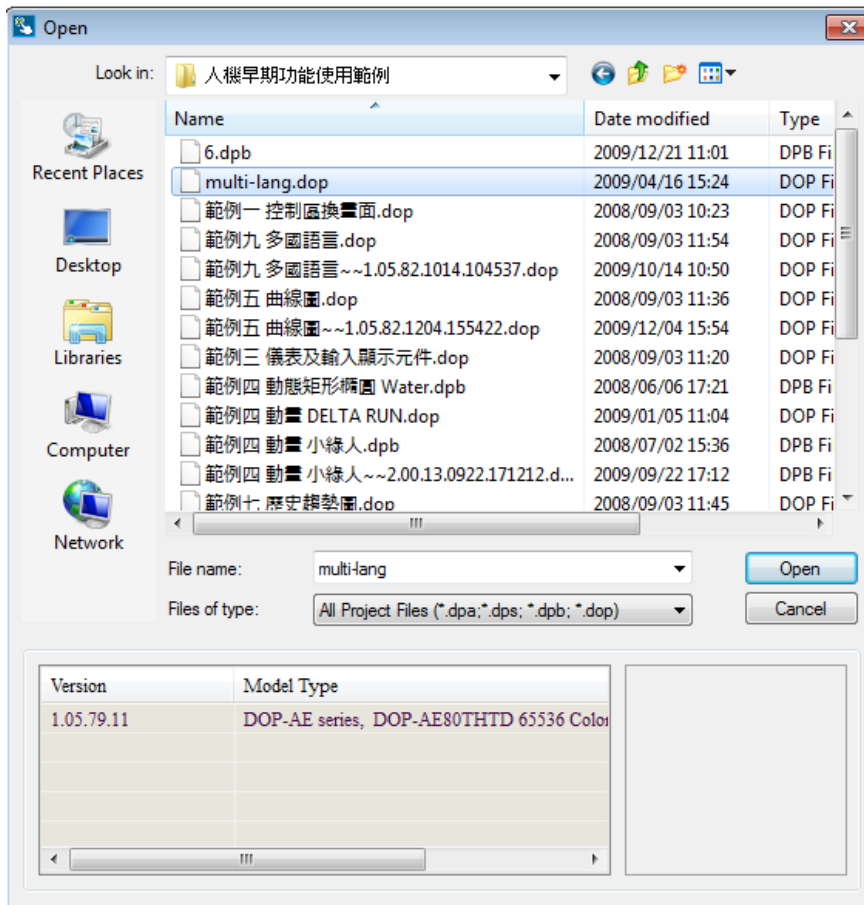


Figure 2.2.1.2.4 Open file of the A series HMI

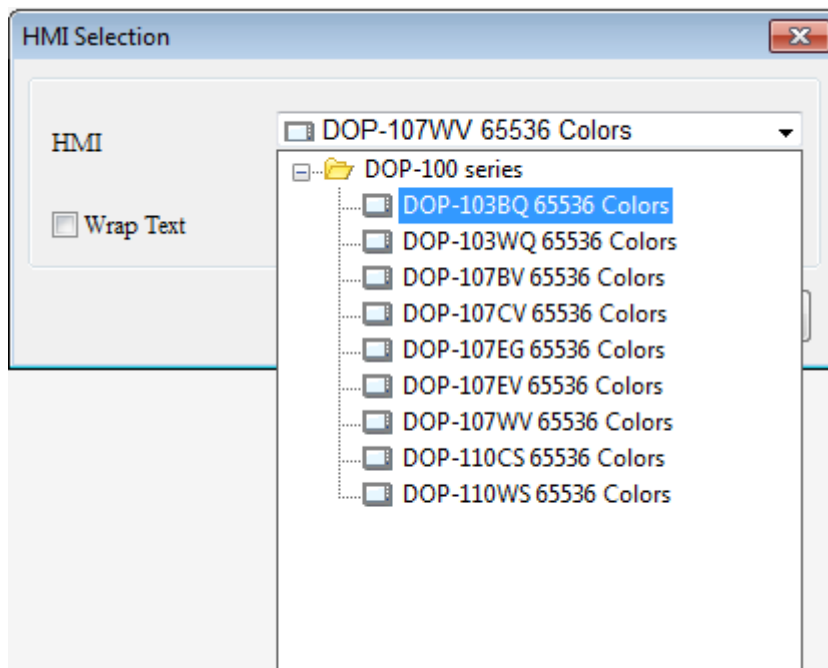
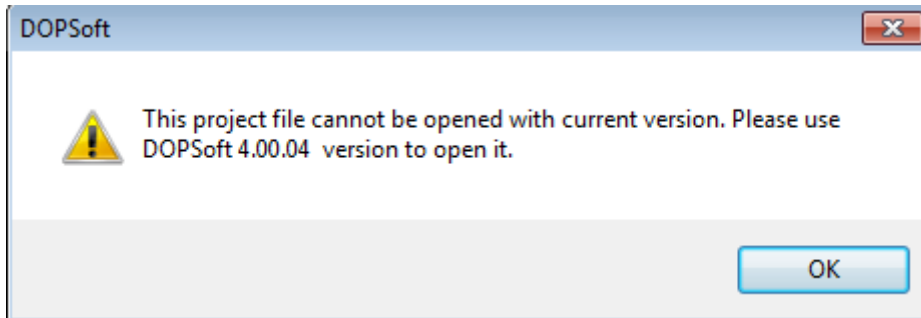


Figure 2.2.1.2.5 Select the HMI model to convert to

Note: if you open an old version HMI project such as a .dpb or .dop file that has been edited with the Screen Editor, and assume you have compiled the file with the DOPSoft and overwrite the original file, then you are unable to open this file with the previous Screen Editor. Therefore, please backup the old file for future use if needed.



2.2.1.3 Close

To close the file, you can only go to [File] > [Close]. After the file is closed, if there are edited projects in the window, a window pops up to check whether you want to save this project. Click **Yes** to save the changes before closing the project; click **No** to discard the changes and directly close the project; or click **Cancel** to cancel the action of closing the project.

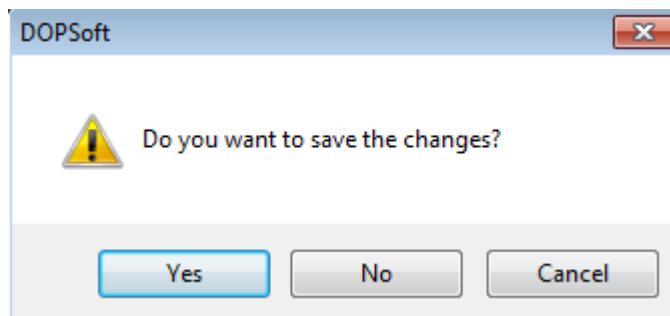



Figure 2.2.1.3.1 Close the project

2.2.1.4 Save

To save the current project file, you can go to [File] > [Save], use  on the toolbar, or use the keyboard shortcut **Ctrl+S** provided by the software. You can use all the above three methods to save the file. When you use any of the three methods, the software detects whether the current project file is newly created or existing. If it is a newly created project file, the software prompts a Save As window asking you to save the current project file, as shown in Figure 2.2.1.4.1. On the other hand, if it is an existing project file and you click **Save**, the current project file is directly saved without any window popping up.

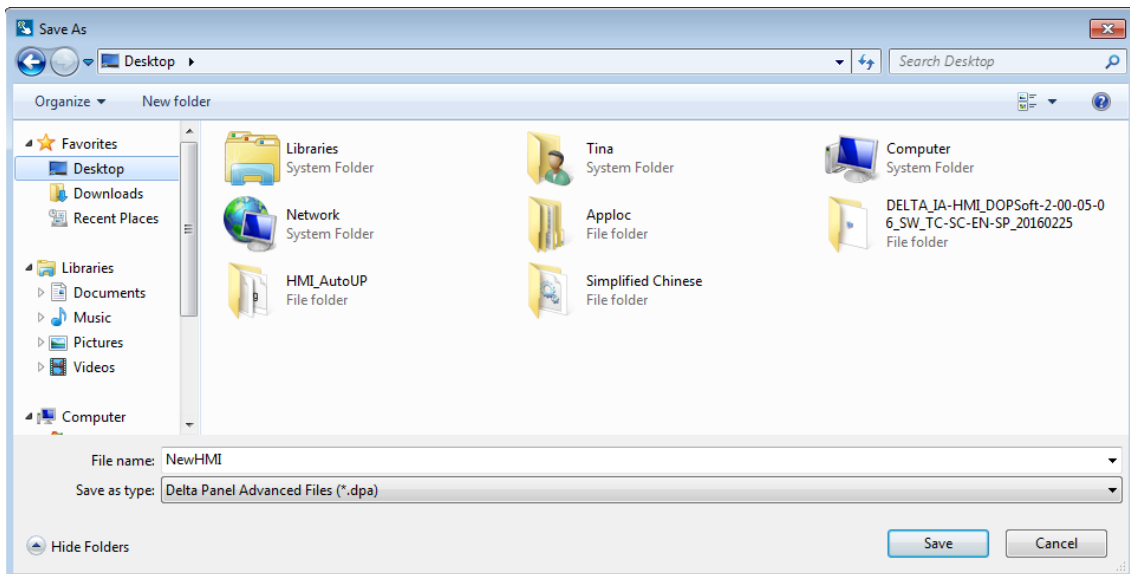


Figure 2.2.1.4.1 Save the file

2.2.1.5 Save As

Save As is to save the screen data you are editing to the system disk and you can name the file. You can execute this action only by going to [File] > [Save As]. Whether the project file is a new or an existing one, as long as you execute this function, the software prompts a Save As window, as shown in Figure 2.2.1.5.1. Click **Save** and the project will be saved in the path you specified for Save As.

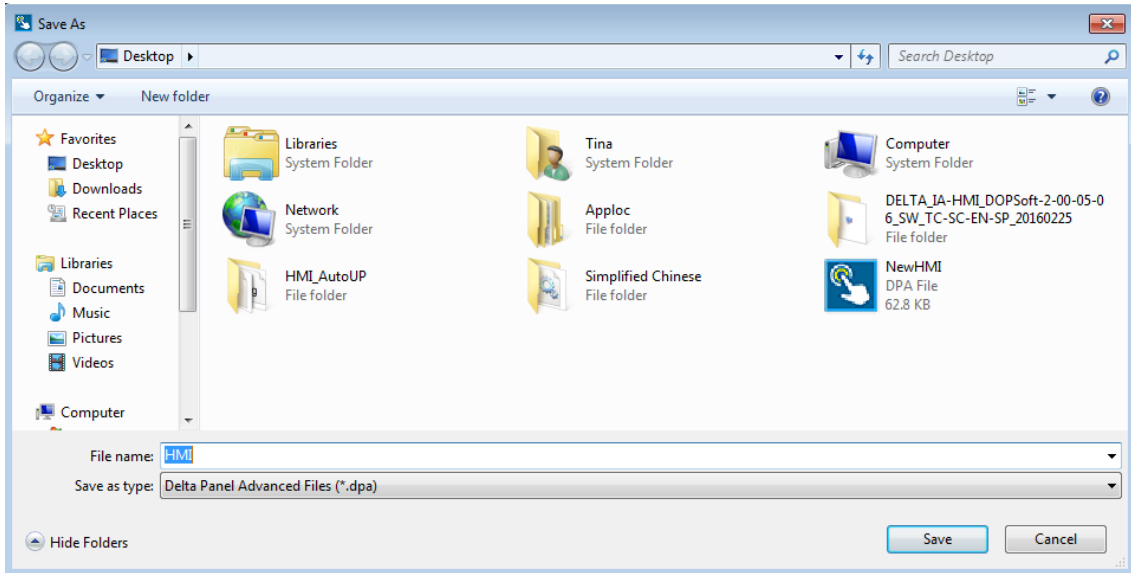


Figure 2.2.1.5.1 Save As

2.2.1.6 Create Screen Data File...

After creating the screen data file, the DOPSoft will ask you whether to enable the protection. When you check Enable Protection, you can set the password for copying the files. The default is 12345678, as shown in Figure 2.2.1.6.1. Next, the software prompts a saving directory for you to select. After you select the directory, the software copies the compiled screen data to the specified directory, which is usually in the SD Card or USB Disk, as shown in Figure 2.2.1.6.2. You can insert the SD Card or USB Disk and start the HMI. Go to the system screen and click [System Setting] > [File Manager] to use the functions of Copy File, F/W Update, and Multi-Screen File. Details for these three functions are described in Appendix A System Screen.

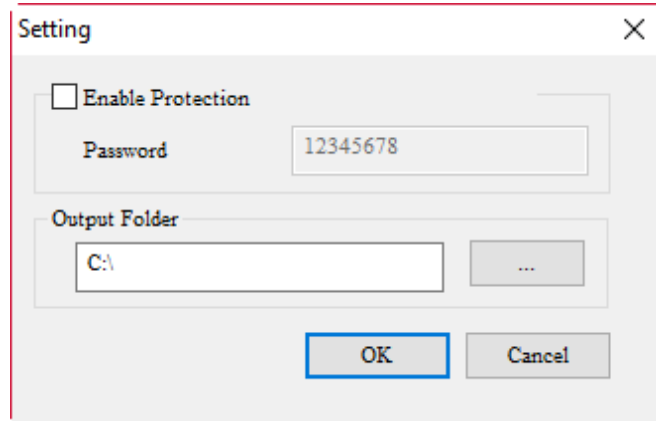


Figure 2.2.1.6.1 Enable Protection and password for copying files

2

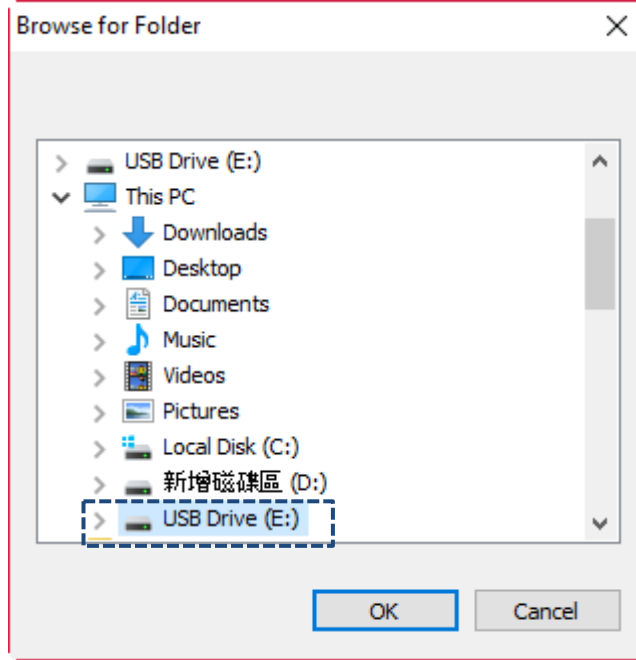


Figure 2.2.1.6.2 Directory for saving the create screen data file

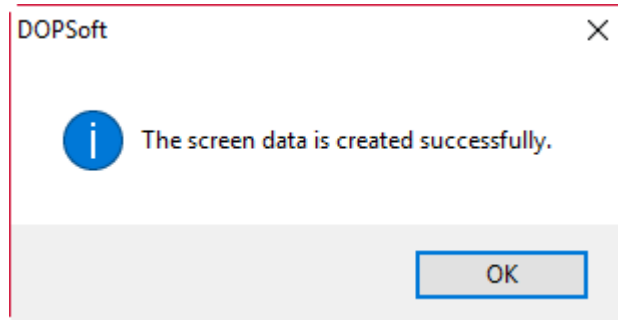


Figure 2.2.1.6.3 The screen data is created successfully

2.2.1.7 Create Auto Update Data File

After you execute Create Auto Update Data File, the DOPSoft will ask you whether to enable the protection. When you check Enable Protection, you can set the password for copying the files. The default is 12345678, as shown in Figure 2.2.1.7.1. Next, the software prompts a saving directory for you to select. After you select the directory, the software copies the compiled screen data to the specified directory, which is usually in the SD card or USB drive, as shown in Figure 2.2.1.7.2. The only difference between this function and Create Screen Data File is that before HMI powering on or returning to the system screen, if you insert a USB Disk, the HMI detects whether there is an auto update file (Disk auto update check). If detected, the HMI prompts a window to ask if you want to start the automatic update, as shown in Figure 2.2.1.7.4. Select **YES** and the HMI automatically updates the firmware and screens; select **NO** and the HMI is unchanged.

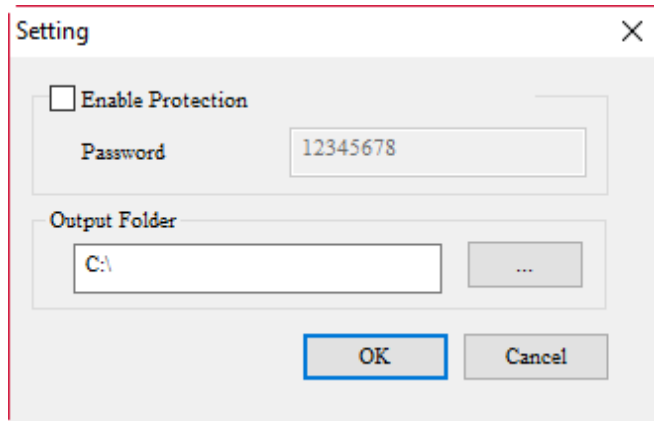


Figure 2.2.1.7.1 Enable Protection and password for copying files

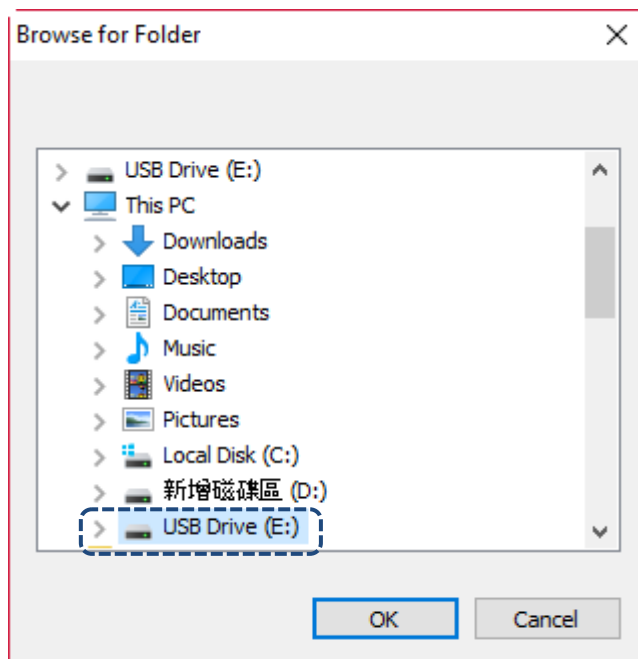


Figure 2.2.1.7.2 Directory for saving the create screen data file

2

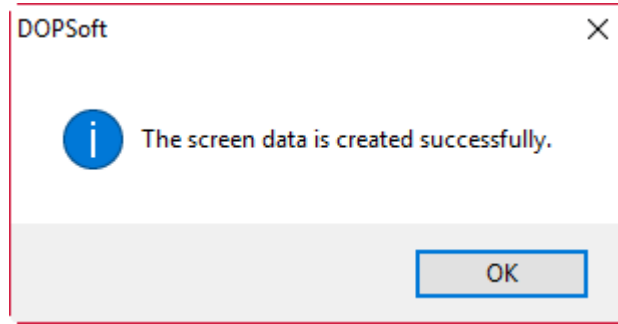


Figure 2.2.1.7.3 The screen data is created successfully

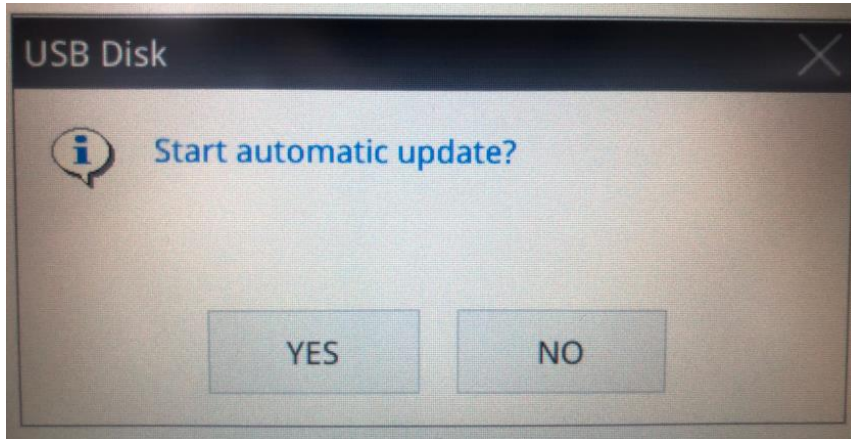


Figure 2.2.1.7.4 The HMI confirmation window for starting the auto update procedure

Once the auto update screen file is created, there will be an HMI_AutoUP folder saved in the external device.

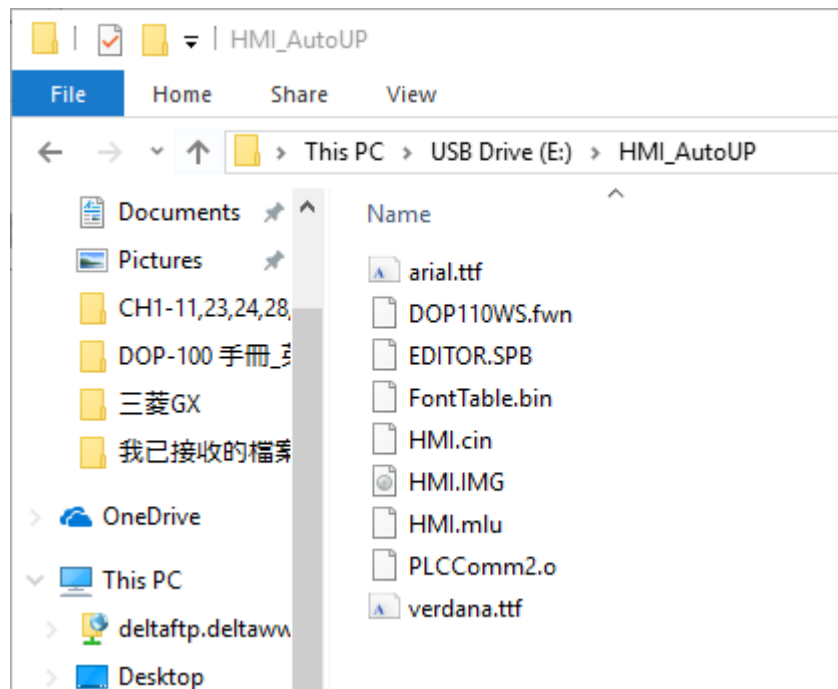


Figure 2.2.1.7.5 The directory generated by the auto update screen file you created

Note: if the external devices, the USB Disk and SD Card, both have this HMI_AutoUP folder for firmware and screen update, the HMI first updates the USB Disk and then the SD Card.

The rest of the functions are the same as the function of Create Screen Data File. You can insert the SD Card or USB Disk and start the HMI to go to the system screen. Click [System Setting] > [File Manager] to use the functions of Copy File, F/W Update, and Multi-Screen File. Details for these three functions are described in Appendix A System Screen.

2.2.1.8 Open Screen Data File...

Once you click [Open Screen Data File], the software prompts you to select the directory where the screen data file is saved, as shown in Figure 2.2.1.8.1.

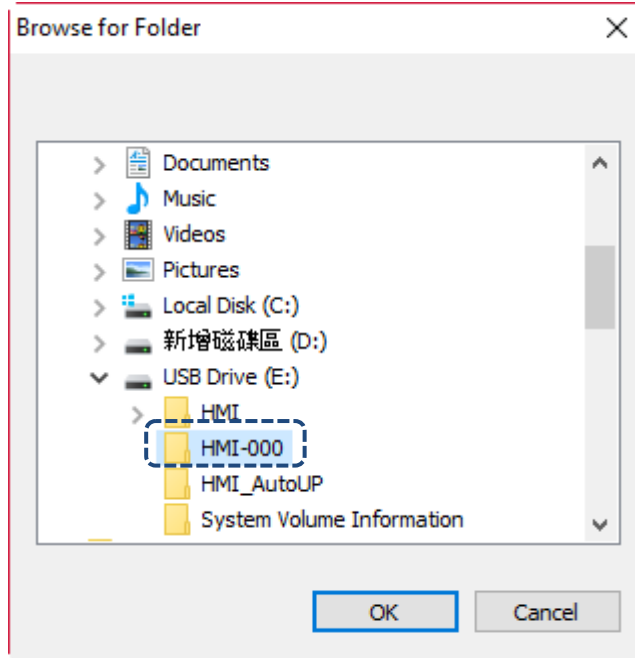


Figure 2.2.1.8.1 Select the screen data file

2

After you select the screen data file to open, the software will again ask you whether to rename or save the screen data file you open, as shown in Figure 2.2.1.8.2.

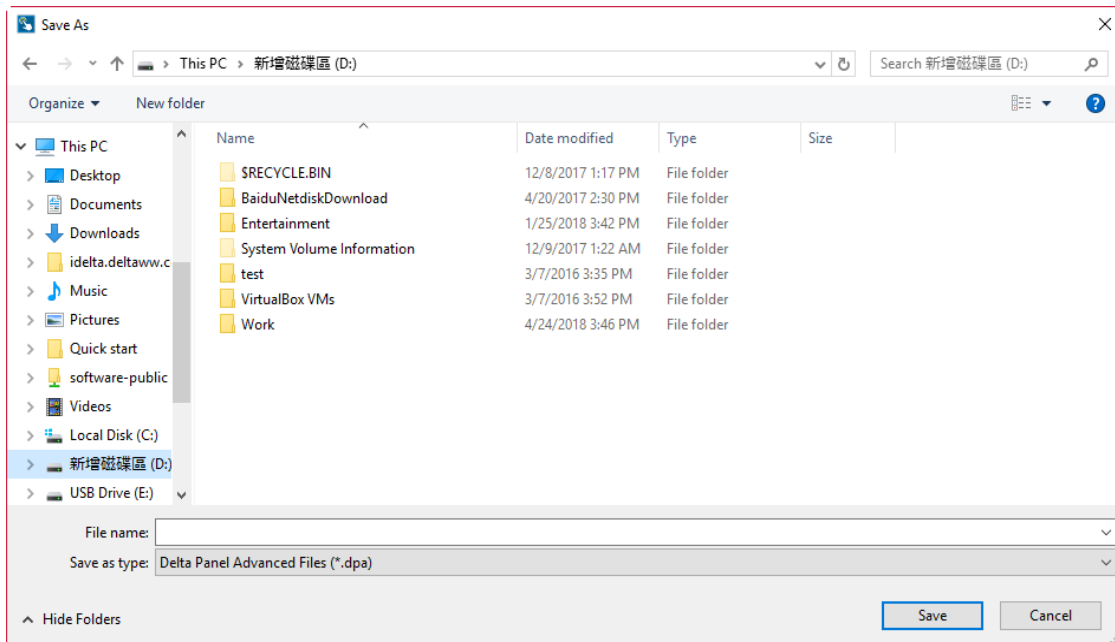
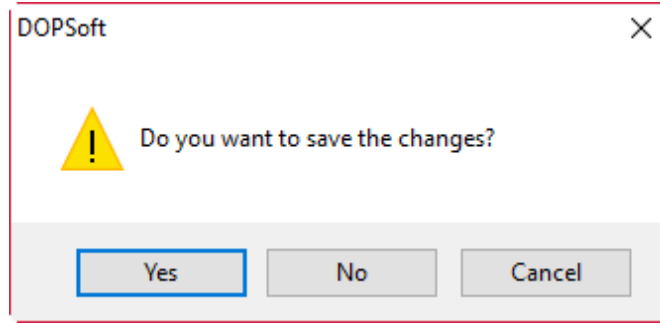


Figure 2.2.1.8.2 Save screen data file

2.2.1.9 Create Download Screen Exe. File...

This function is mainly for generating the execution file, which allows you to download the screen projects to the HMI without the DOPSoft. Click [Create Download Screen Exe. File...], and the software will prompt a directory for you to save the download screen execution file, as shown in Figure 2.2.1.9.1.

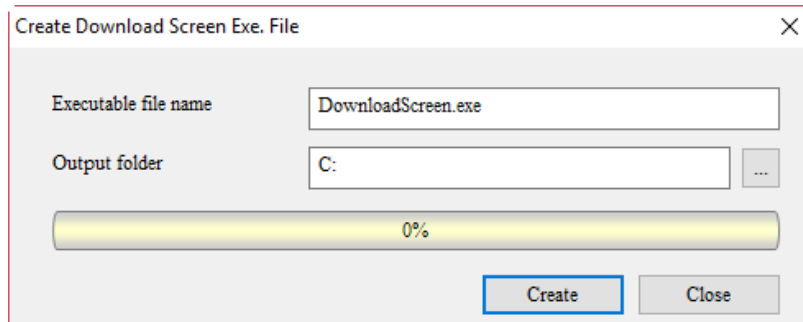


Figure 2.2.1.9.1 Select the output folder

Select the output folder and execution filename. You can also change the output folder, as shown in Figure 2.2.1.9.2.

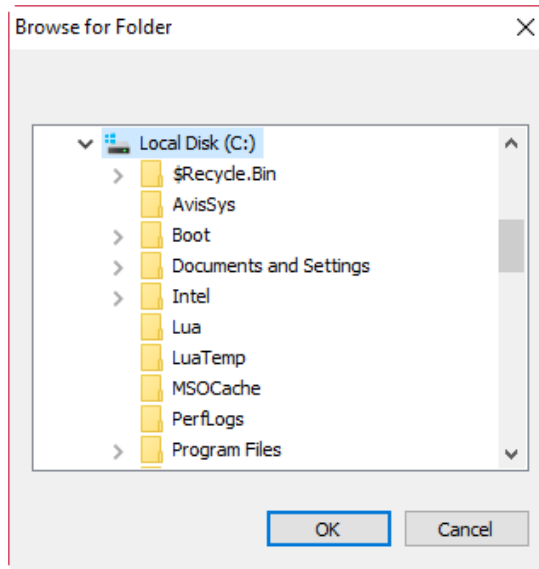


Figure 2.2.1.9.2 Directory for saving the created download screen execution file

Click **Create** to start creating the download execution file.

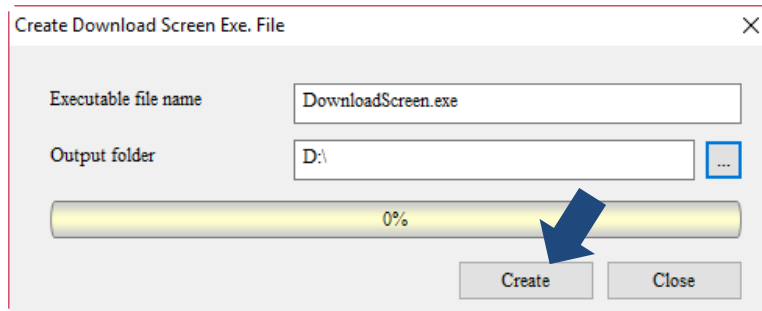


Figure 2.2.1.9.3 Start creating the download execution file

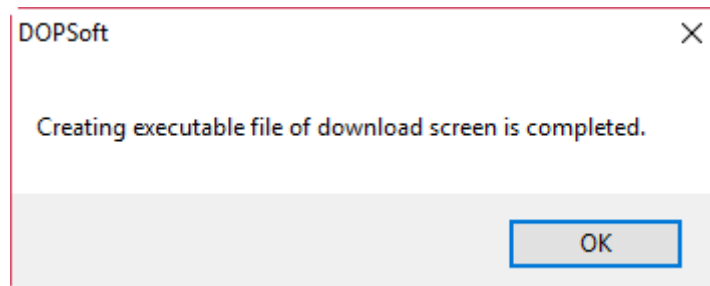


Figure 2.2.1.9.4 Creating the download execution file is complete

2

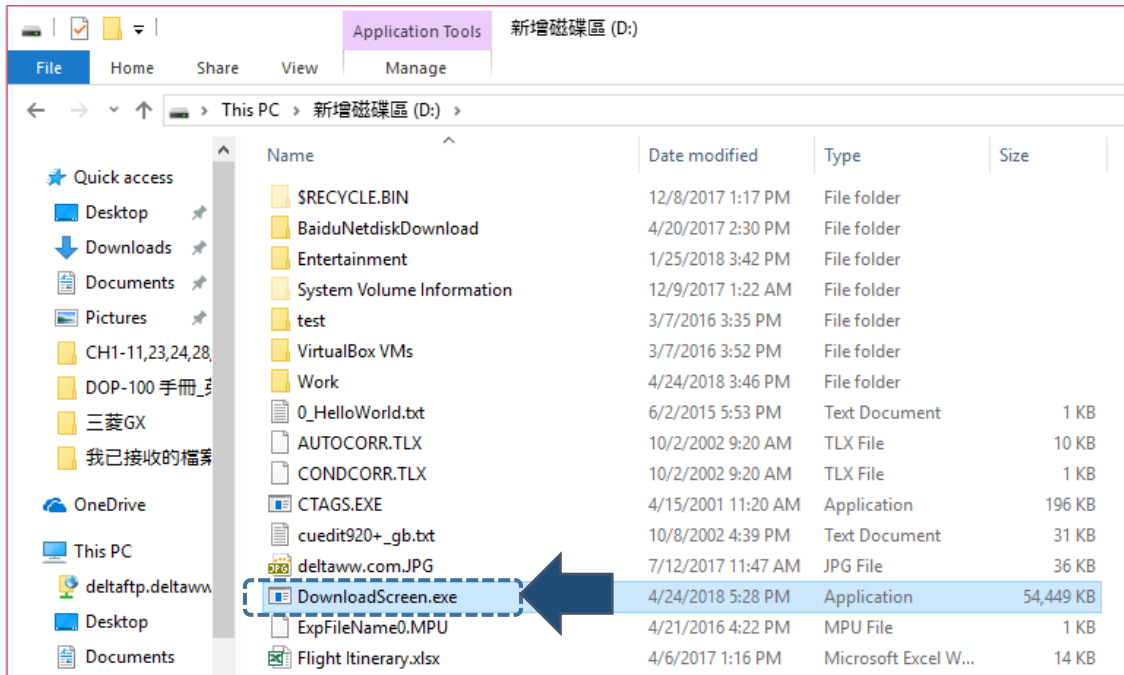


Figure 2.2.1.9.5 Execution file icon

The output folder will display the DownloadScreen.exe. file, and you can double-click the mouse left button to execute it and download the screen project to the HMI without the DOPSoft installed in your PC.

Click the DownloadScreen.exe file and the screen is shown as follows.

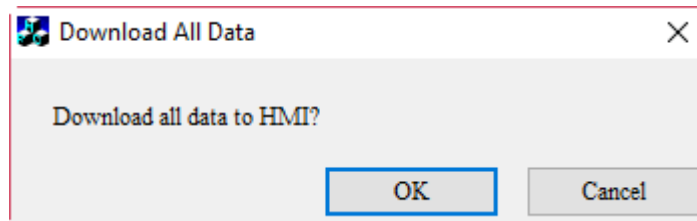


Figure 2.2.1.9.6 Execute download

Click **OK** and you can download the screen project to the HMI.

2.2.1.10 Password Protect

To execute password protection, you can go to [File] > [Password Protect] to enable this function. After you click Password Protect, the software prompts a message to notify that the password protection is enabled.

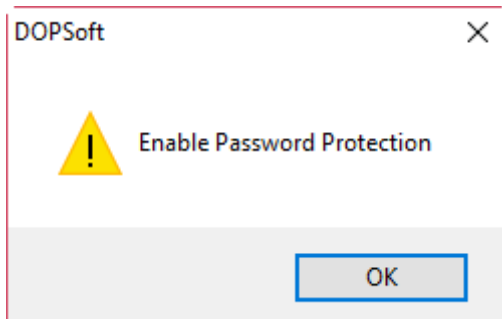


Figure 2.2.1.10.1 Password protection enabled

You can again click [File] > [Password Protect] to check if password protection is enabled for this project file. If enabled, the function list is shown as Figure 2.2.1.10.2.

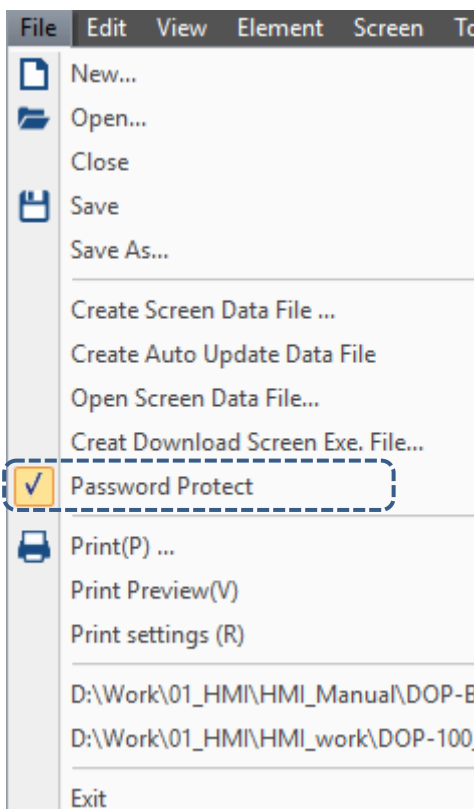


Figure 2.2.1.10.2 Password Protect enabled successfully

2

After Password Protect is enabled, you can change the password by going to [Options] > [Configuration] to change to a new set of password from the default Highest security password “12345678”.

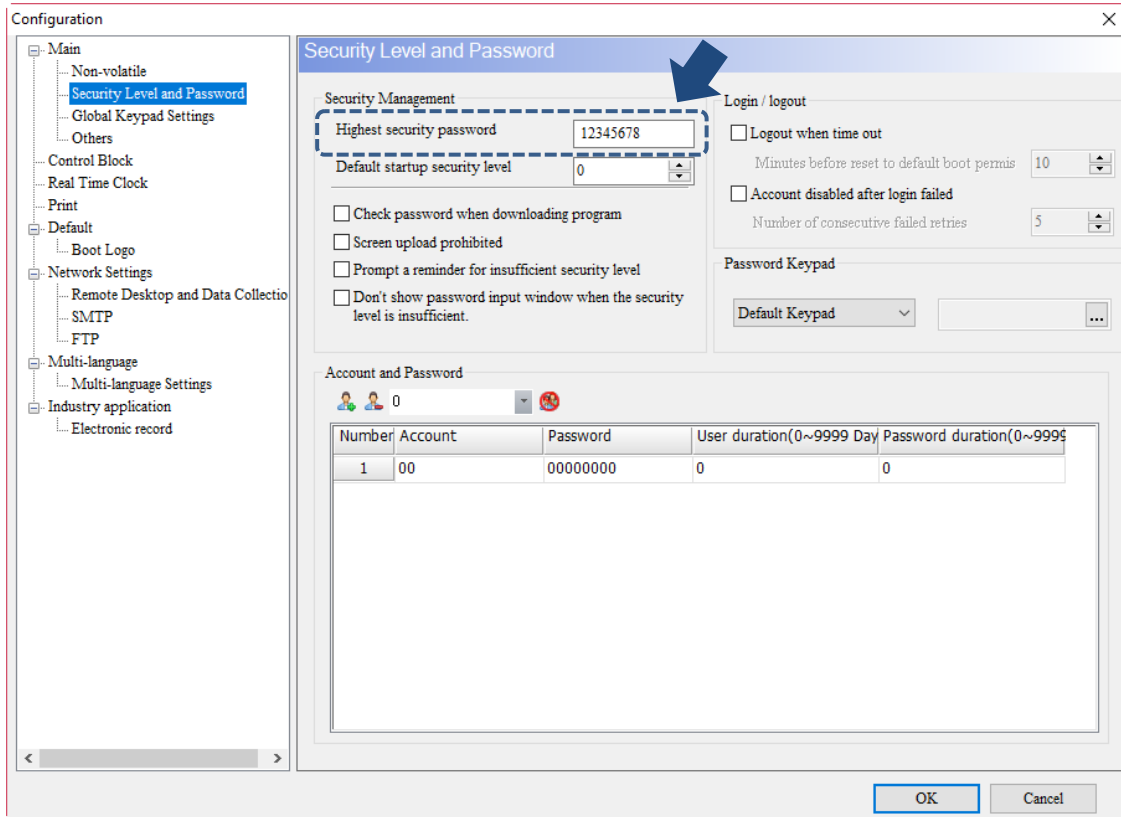


Figure 2.2.1.10.3 Security Level and Password settings

Once you complete the setting for the Highest security password, please exit and save the project. And the next time you try to open the project, you will be asked to enter the password for opening this protected file.

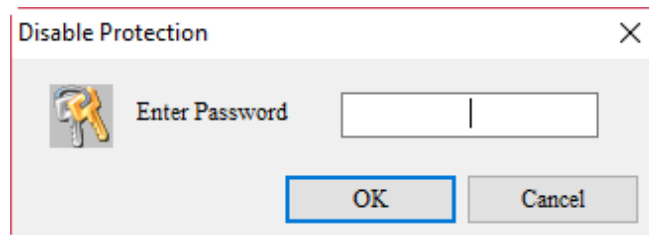


Figure 2.2.1.10.4 Request for entering the Highest security password

If you enter the wrong password, the software prompts a message window of incorrect password.

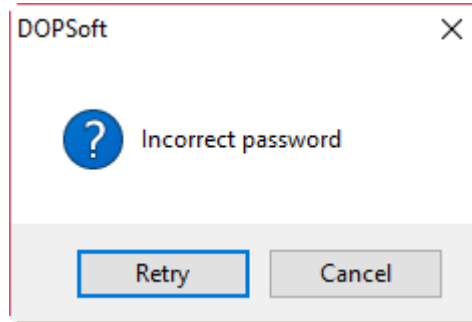


Figure 2.2.1.10.5 Enter the wrong password for the Highest security password

You can click **Retry** to re-enter the password or click **Cancel** to exit the password input window.

If the password is correct, you can open the password-protected project file.

To disable the password protection, you need to go to [File] > [Password Protect] to disable this function. And the software will also prompt you that the Password Protect is disabled.

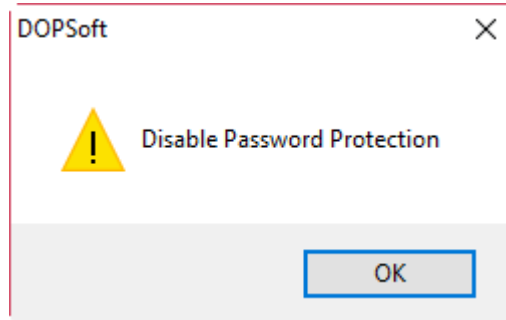


Figure 2.2.1.10.6 Password protection disabled

In the same way, you can go to [File] > [Password Protect] to check if this password protection is disabled for this project file. If it is disabled successfully, the Password Protect option is unchecked as shown in Figure 2.2.1.10.7.

2

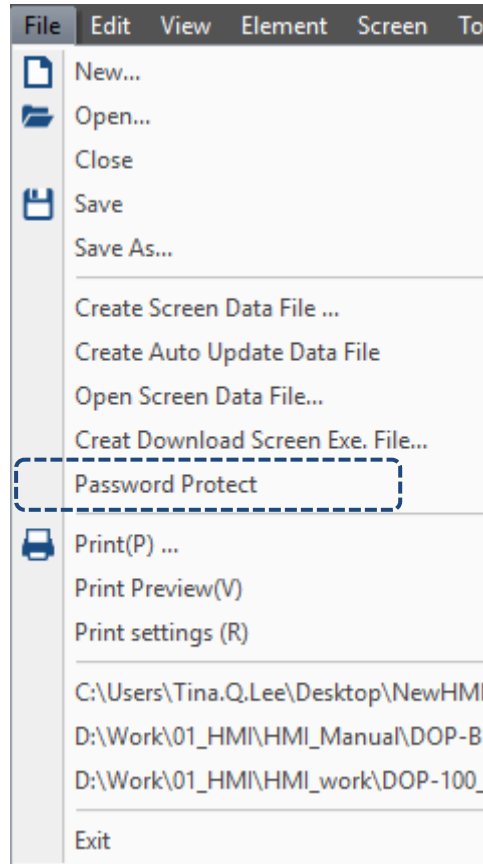


Figure 2.2.1.10.7 Password Protect disabled successfully

Once the Password Protect is disabled, please exit and save the project. You do not need password verification the next time you open the project.

2.2.2 Edit

There is an Edit function list with the following functions for you to use.

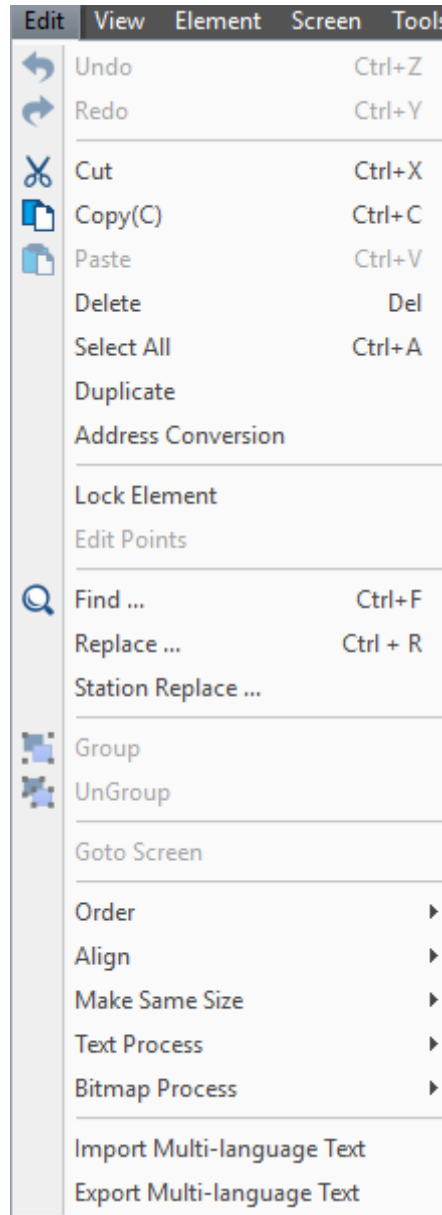


Figure 2.2.2.1 Edit function list

2

2.2.2.1 Duplicate

The Duplicate function allows you to select one element and then right-click the mouse button to execute multiple duplicate actions. With this function, you can select one element and duplicate the element based on the addresses in descending or ascending order, which saves the time for manually setting the element addresses. You can also go to [File] > [Duplicate] to execute this function. Click Duplicate and the window is shown as Figure 2.2.2.1.1.

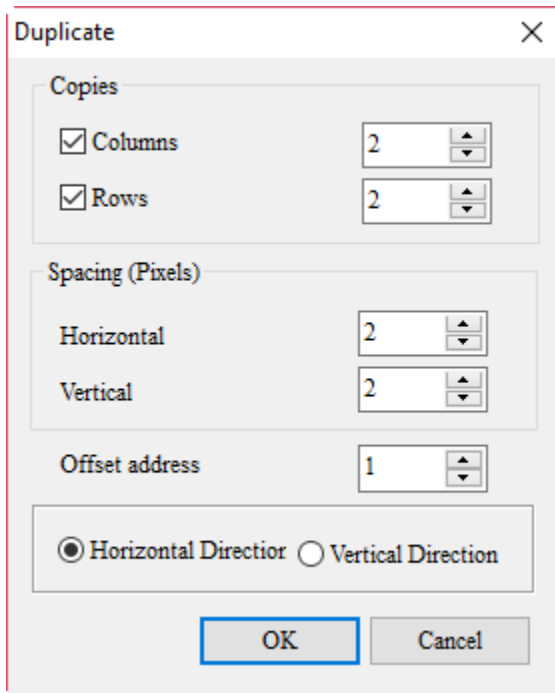
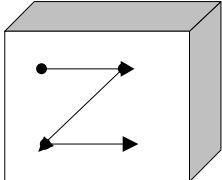
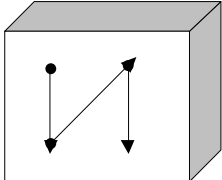


Figure 2.2.2.1.1 Duplicate

The following table is the detailed description for Duplicate, including Copies, Spacing, and Offset address.

Table 2.2.2.1.1 Duplicate

Copies	Columns	In the Copies section, select the number of columns (X) and number of rows (Y) to get a total number of X * Y elements. To duplicate the element in single direction, select Horizontal Direction or Vertical Direction to enable this function.	
	Rows		
Spacing (Pixels)	Horizontal	The spacing between each element. After you select the spacing value, the new elements will automatically be separated based on the spacing you set after the duplication is complete.	
	Vertical		
Offset address	Horizontal Direction	You can first determine the address to be set in ascending order (positive value) or descending order (negative value), and then execute Duplicate based on the settings of Horizontal Direction and Vertical Direction. If the element data type is Word, the address value increases / decreases in Word as the unit; on the other hand, if the element data type is Bit, then the address increases / decreases in Bit as the unit.	
	Vertical Direction		
		Horizontal Direction	Vertical Direction
			

For the Duplicate function example settings, please refer to the following table.

2.2.2.1.2 Duplicate example

Duplicate														
Element address	Word	Bit												
	\$0	\$0.0												
Copies														
Spacing (Pixels)														
Offset address														
Execution results	<table border="1"> <thead> <tr> <th>Word</th> <th>Bit</th> </tr> </thead> <tbody> <tr> <td>W:\$0 \$0</td> <td>W:\$1 \$1</td> </tr> <tr> <td>W:\$2 \$2</td> <td>W:\$3 \$3</td> </tr> </tbody> </table>	Word	Bit	W:\$0 \$0	W:\$1 \$1	W:\$2 \$2	W:\$3 \$3	<table border="1"> <thead> <tr> <th>Word</th> <th>Bit</th> </tr> </thead> <tbody> <tr> <td>W:\$0.0 \$0.0</td> <td>W:\$0.1 \$0.1</td> </tr> <tr> <td>W:\$0.2 \$0.2</td> <td>W:\$0.3 \$0.3</td> </tr> </tbody> </table>	Word	Bit	W:\$0.0 \$0.0	W:\$0.1 \$0.1	W:\$0.2 \$0.2	W:\$0.3 \$0.3
Word	Bit													
W:\$0 \$0	W:\$1 \$1													
W:\$2 \$2	W:\$3 \$3													
Word	Bit													
W:\$0.0 \$0.0	W:\$0.1 \$0.1													
W:\$0.2 \$0.2	W:\$0.3 \$0.3													


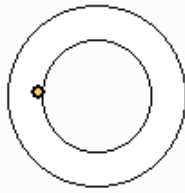
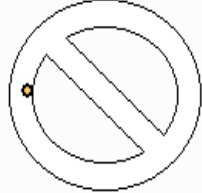

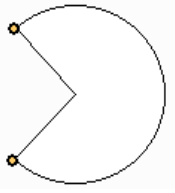
2

2.2.2.2 Edit Points

The DOPSoft also provides another function, Edit Points. This function allows you to edit the polygon, hollow circle, stop circle, arc, and pie chart elements. To use this function, please create one of the elements mentioned above before clicking [Edit] > [Edit Points].

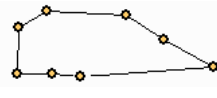
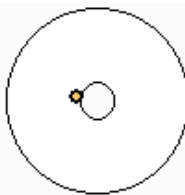
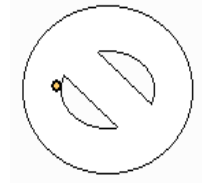
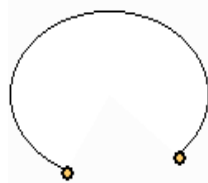
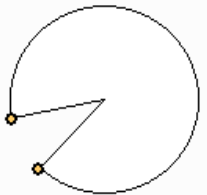
After you create the element and click [Edit] > [Edit Points], the editing points on the polygon, hollow circle, stop circle, arc, and pie chart elements are shown as the diagrams in the table below .

Table 2.2.2.2.1 Before using Edit Points

Before using Edit Points				
Polygon	Hollow Circle	Stop Circle	Arc	Pie Chart
				

You can adjust the shape as required as shown in Table 2.2.2.2.2.

Table 2.2.2.2.2 After using Edit Points

After using Edit Points				
Polygon	Hollow Circle	Stop Circle	Arc	Pie Chart
				

2.2.2.3 Find

To find the specified text and address, you can go to [Edit] > [Find] or use the keyboard shortcut **CTRL + F** provided by the system. This function allows you to quickly find the result. The Find function also adds the Data Type options so the results are more accurate and can be categorized in the displaying result window. After you click the Find function, please enter the content to be found and then go to Options to select Current Screen or All Screens. The Type search options are Text, Element read address, Element write address, and All Addresses. In addition, the selectable search options for Data Type are Bit, WORD, or DWORD. See Figure 2.2.2.3.1.

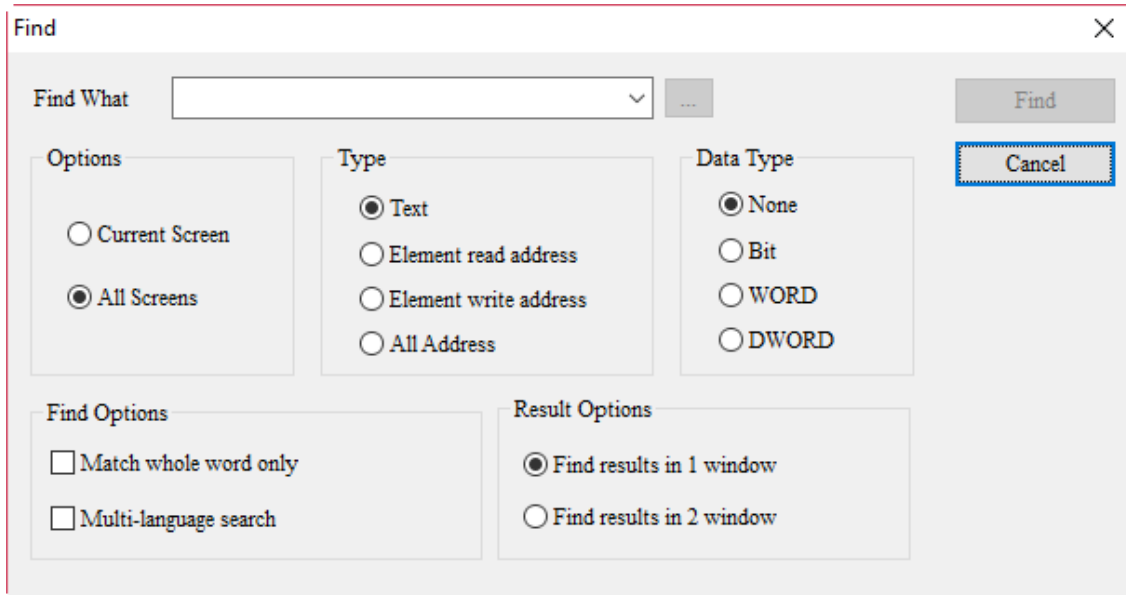


Figure 2.2.2.3.1 Find

2

Set the Type and Data Type to search and show the results in Search Results 1 or Search Results 2. Then, click **Find** and the system finds the matched contents for you. When the contents are found, the found elements are output to the specified result window. If you click the items in the output window, the cursor automatically specifies the corresponding element as shown in Figure 2.2.2.3.2.

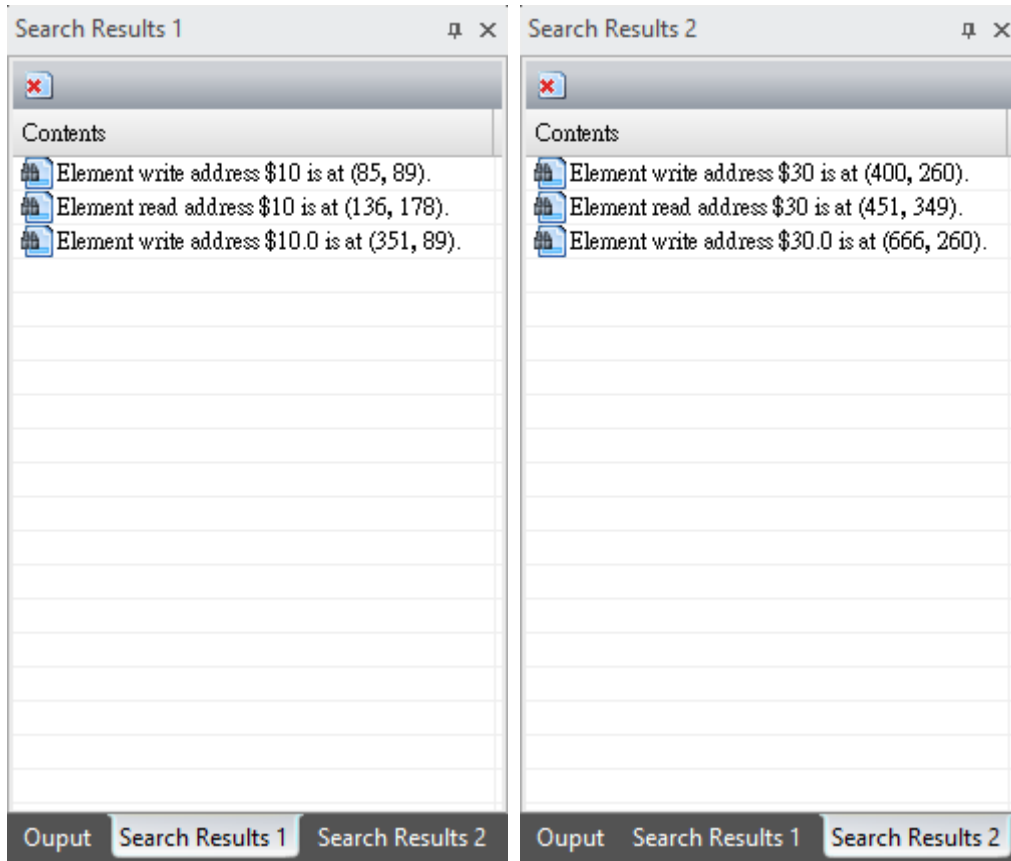


Figure 2.2.2.3.2 Output results

The following provides the setting screens for the Find function.

Table 2.2.2.3.1 Description for Find function

Find		
Find What	Enter the content to be found.	
Options	Current Screen	The system scans the current screens to compare each element in the current screen, and then displays the matched results in the output window. You can double-click the items in the output window to find the searched elements.
	All Screens	The system scans all screens to compare every element in each screen, and then displays the matched results in the output window. You can also double-click the items in the output window to find the searched elements.
Type	Text	Compare the element text.
	Element read address	Compare the element read address.
	Element write address	Compare the element write address.
	All Addresses	Compare the read and write addresses of the element.
Data Type	None	Select None to search the register address without specifying the data type.
	Bit	Search for the address in Bit.
	WORD	Search for the address in WORD.
	DWORD	Search for the address in DWORD.
Find Options	Match whole word only	Compare all input contents when searching. If this box is unchecked, it means the HMI searches the contents that are both partly and fully matched; if this box is checked, the HMI only searches the content that is fully matched.
	Multi-language search	This is only available for searching texts. If this box is unchecked, the HMI only searches for the contents based on the currently used language; if the box is checked, the HMI searches for the contents for all languages.
Result Options	Find results in 1 window	Output the search results to Search Results 1.
	Find results in 2 window	Output the search results to Search Results 2.

2

2.2.2.4 Replace

To replace the specified text or address, click [Edit] > [Replace] or use the system keyboard shortcut **CTRL + R**. Input the contents to find and replace, and select Current Screen or All Screens. The Type for Replace can be Text, Read Address, or Write Address. The Data Type becomes selectable only when you select Read Address or Write Address for Type. The options are Bit, WORD, and DWORD, as shown in Figure 2.2.2.4.1.

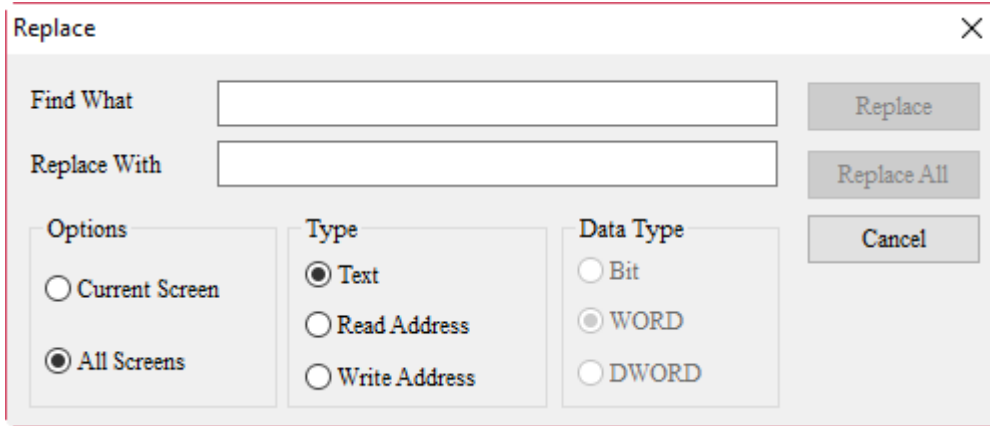


Figure 2.2.2.4.1 Replace

The following introduces the setting screens of the Replace function.

Table 2.2.2.4.1 Description for the Replace function

Replace		
Find What	Enter the content to be found.	
Replace With	Enter the content to be replaced.	
Options	Current Screen	The system scans the current screens to compare each element in the current screen, and then replaces the matched items.
	All Screens	The system scans all screens to compare every element in each screen, and then replaces the matched items.
Type	Text	Replace the matched text.
	Read Address	Replace the matched read address.
	Write Address	Replace the matched write address.
Data Type	Bit	This is enabled only when the target to be replaced is a read address or a write address; the available data types are Bit, WORD, and DWORD. The Data Type you select is determined by the element data type you search.
	WORD	
	DWORD	
Filter	It is enabled when the target to be replaced is a read address or a write address. The available options are Element, Macro, Control/Status Block, History Buffer, Alarm, Recipe, Sound, and Screen Print Setup.	
Example	<p>(1) Set \$555 for the write addresses of the Increment and Decrement buttons.</p> <p>(2) Execute the Replace function. Input \$555 for Find What and \$999 for Replace With. Since the addresses of the Increment and Decrement buttons are write addresses, you must select Write Address for Type of the replacement. And you need to select Word because the Data Type set for the Increment and Decrement buttons is Word.</p> <p>(3) After you click Replace All, the addresses \$555 of the Increment and Decrement buttons are replaced with \$999.</p>	

2

2.2.2.5 Replace PLC Address

To replace the station number, click [Edit] > [Replace PLC Address]. This function allows you to quickly find the station number and replace it with a new station number, and select its Link Name and Options. If the project file has multiple links, you can specify the link name for replacement.

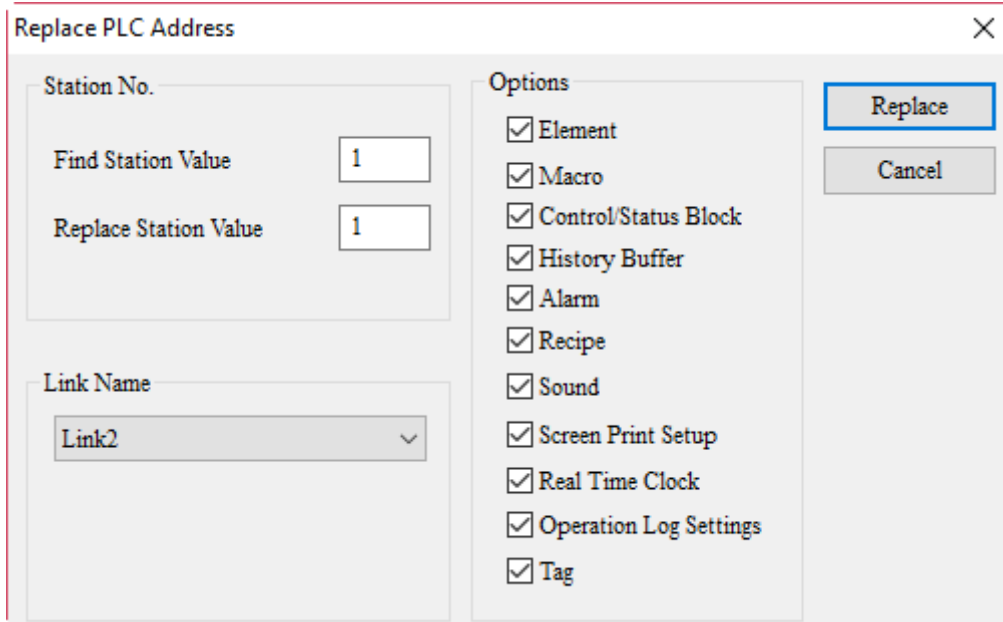


Figure 2.2.2.5.1 Replace PLC Address


Table 2.2.2.5.1 Replace PLC Address example

Replace PLC Address	
Find Station Value	Enter the content to be found.
Replace Station Value	Enter the content to be replaced.
Link Name	<p>You can determine the Link Name to be replaced based on the base port you created, as shown in the figure below.</p>

Replace PLC Address		
Options	<p>There are ten categories for you to select for replacement, as shown in the figure below.</p> <div style="border: 1px solid gray; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Options</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Element <input checked="" type="checkbox"/> Macro <input checked="" type="checkbox"/> Control/Status Block <input checked="" type="checkbox"/> History Buffer <input checked="" type="checkbox"/> Alarm <input checked="" type="checkbox"/> Recipe <input checked="" type="checkbox"/> Sound <input checked="" type="checkbox"/> Screen Print Setup <input checked="" type="checkbox"/> Real Time Clock <input checked="" type="checkbox"/> Operation Log Settings <input checked="" type="checkbox"/> Tag </div>	
Example	<p>Before replacing station No.</p>	
	<p>After replacing station No.</p>	<p style="text-align: center;">Click Replace and {Link2}1 is replaced with {Link2}10.</p>

2.2.2.6 Group

To use the Group function, select two or more elements before grouping the elements.

You can go to [Edit] > [Group], click  on the Layout toolbar

, or use the right-click menu to select Group.

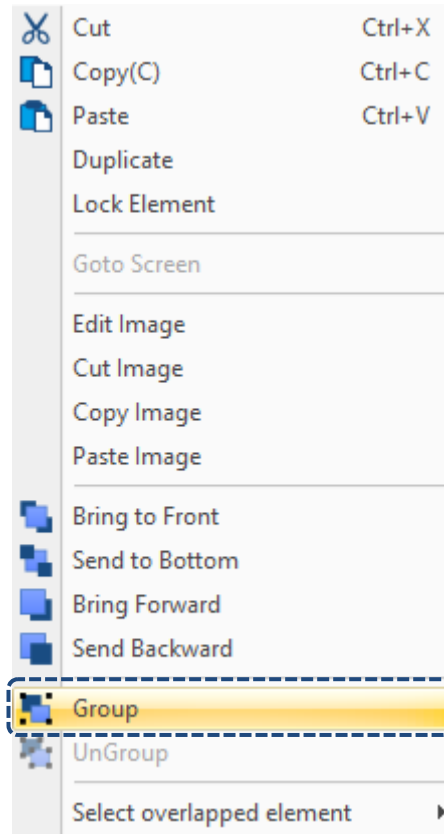


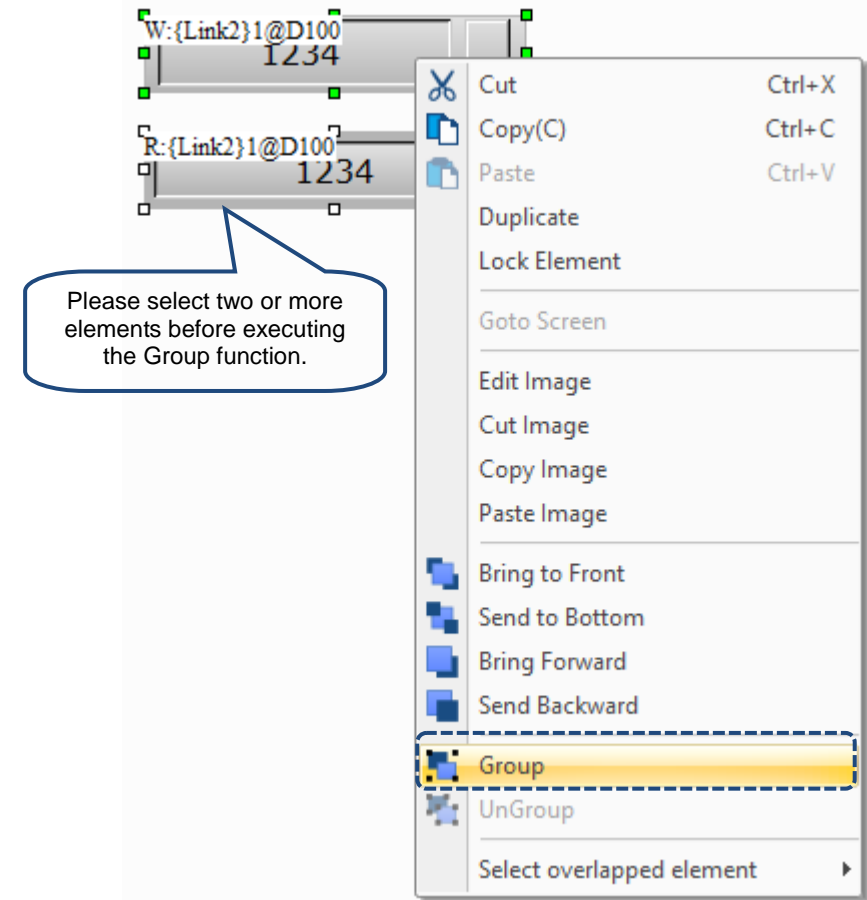
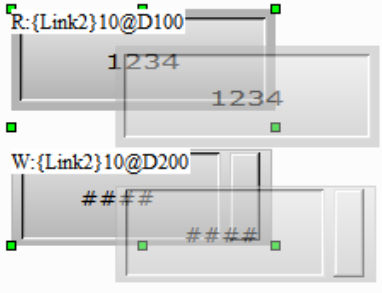
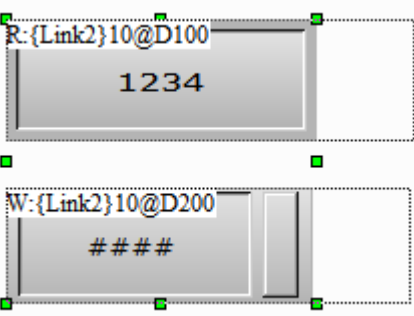
Figure 2.2.2.6.1 Group

To edit a single element in the grouped elements, you can simply click on the group, and select and double-click the element to be edited.

Note: regardless of how many elements you select, once these elements are grouped, the software treats this group of elements as one element. When you move the elements, all the grouped elements are moved all at once; when resizing the elements, the grouped elements are resized all at once.

2


Table 2.2.4.8 Group function example

Group	
Before grouping	 <p>Please select two or more elements before executing the Group function.</p>
After grouping	Move
	 <p>Move the grouped elements at once.</p>
	Resize
	 <p>Resize the grouped elements at once.</p>

2.2.2.7 UnGroup

To use the UnGroup function, please first select the grouped elements. Then, go to [Edit] >

[UnGroup], click  in the Layout toolbar

, or use the right-click menu to select UnGroup. The software treats the ungrouped elements as independent elements, so you can only operate them individually.

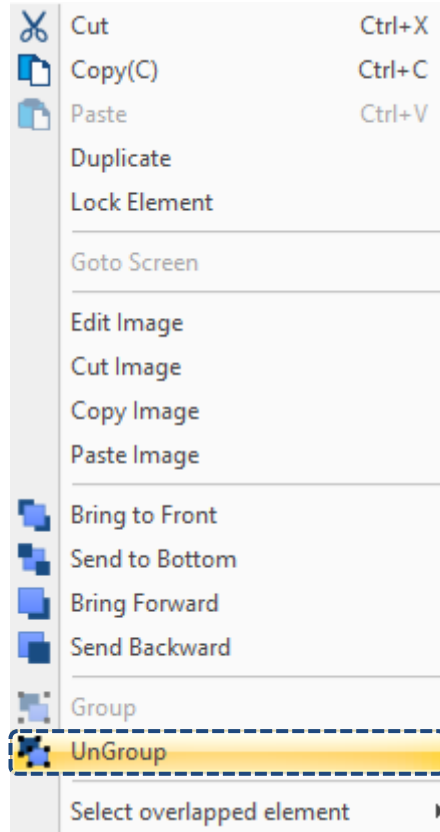


Figure 2.2.2.7.1 UnGroup

2


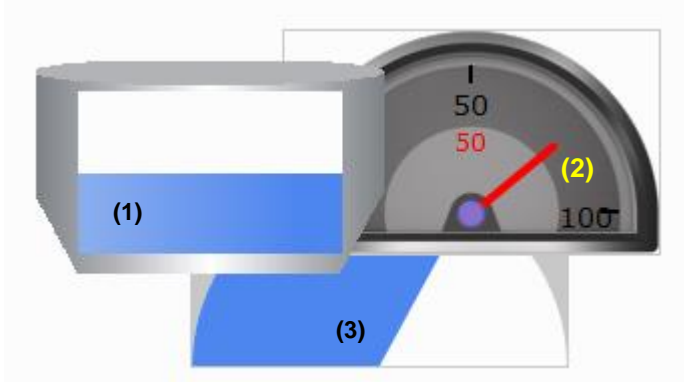
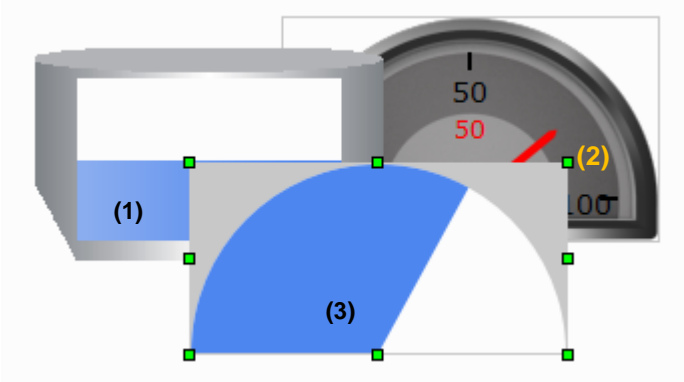
2.2.2.8 Order

The Order function includes options of Bring to Front, Sent to Bottom, Bring Forward, and Bring Backward. After you set the order for the elements, the element layer order changes depending on the element creation order. To use this function, please go to [Edit] > [Order] or click


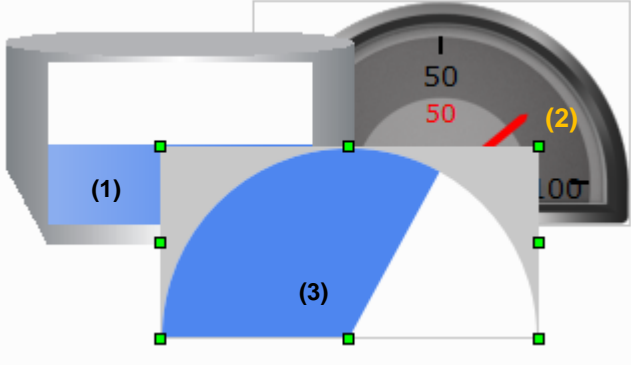
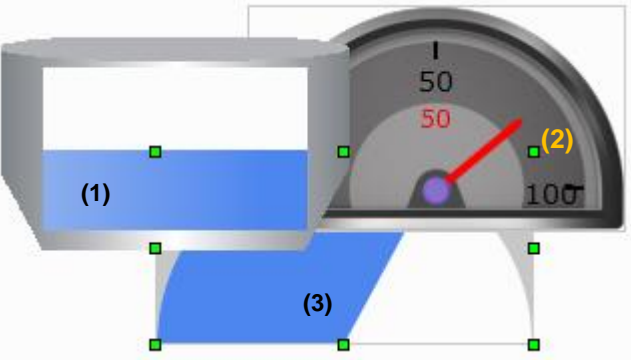



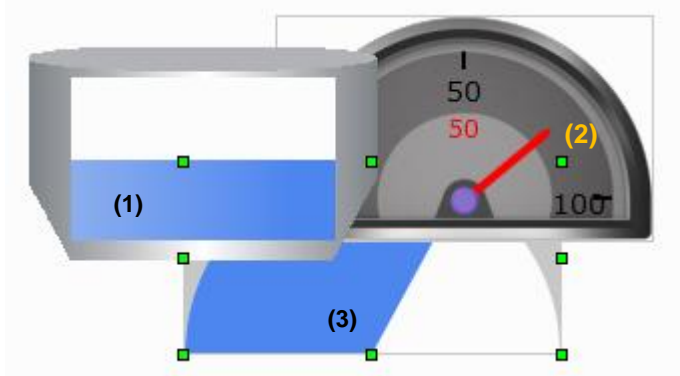
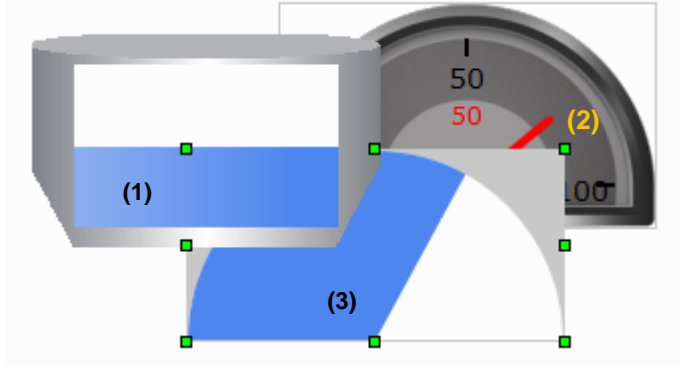
on the layout toolbar.

Table 2.2.2.8.1 Order example


Order		
Icon	Item	Content
	Bring to Front	<p>Before</p> <p>There are three elements in the figure below; in this example, it executes Bring to Front for element (3).</p> 
		<p>After</p> <p>After the execution, element (3) is brought to the top of the three elements.</p> 

2


Order		
Icon	Item	Content
	Send to Bottom	<p>Before</p> <p>Select element (3) to execute Send to Bottom.</p> 
		<p>After</p> <p>After the execution, element (3) is sent to the bottom of the three elements.</p> 

Order		
Icon	Item	Content
	Bring Forward	<p>Before</p> <p>Select element (3) to execute Bring Forward.</p> 
		<p>After</p> <p>After the execution, element (3) is moved up one layer, becoming the second layer of the three elements.</p> 

2

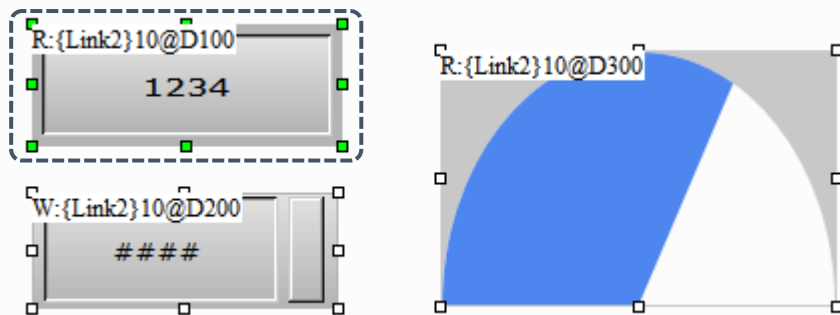
Order		
Icon	Item	Content
	Send Backward	<p>Before</p> <p>Select element (3) to execute Send Backward.</p>
		<p>After</p> <p>After the execution, element (3) is moved down one layer, becoming the bottom layer of the elements.</p>

2.2.2.9 Align

The Align function includes options of Align left, Align Right, Align Top, Align Bottom, Vertical Centering, Horizontal Centering, Horizontal Equal Space, and Vertical Equal Space. This function allows you to align the element coordinates. To use this function, please go to [Edit] > [Align] or click  on the Layout toolbar.

Note:


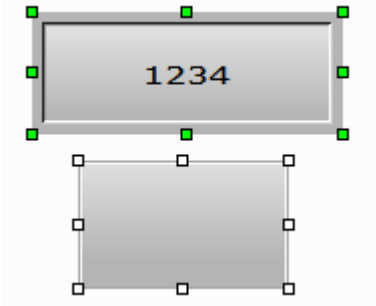
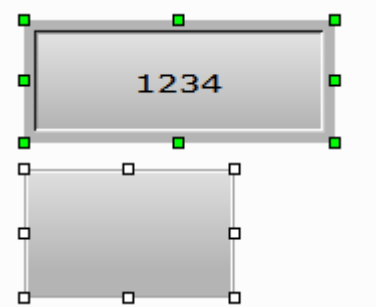

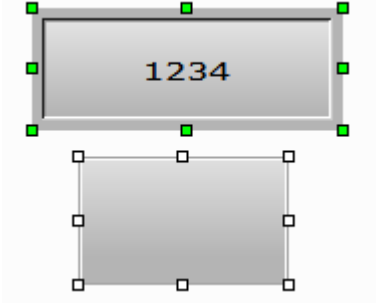
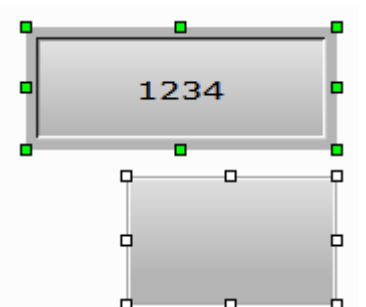
1. The reference element is the element first selected. The reference element is displayed with green squares when you select multiple elements.


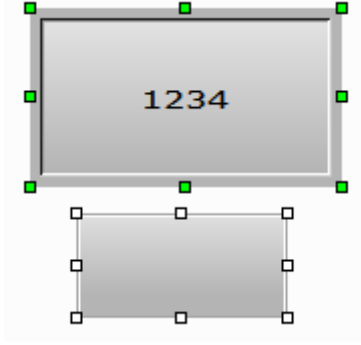
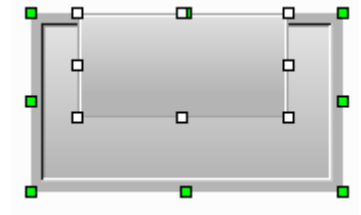

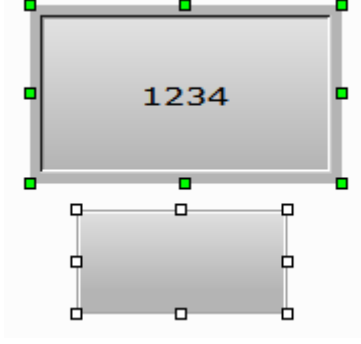
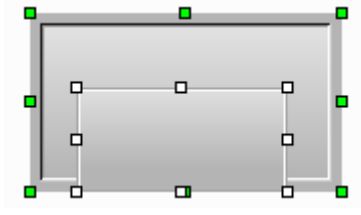


2. To execute Align Left, Align Right, Align Top, and Align Bottom, you must select at least two elements. It is because the alignment function uses the coordinates of the selected reference element's very left, right, top, and bottom as the new coordinates for all elements.
3. You can use Vertical Centering and Horizontal Centering independently. When used, these functions automatically align the element center based on the setting.
4. To execute Horizontal Equal Space and Vertical Equal Space, you must select at least three elements. When you execute Horizontal Equal Space, the software calculates the equal spaces between each element in horizontal direction and realign the elements. When you execute Vertical Equal Space, the software calculates the equal spaces between each element in vertical direction and realign the elements.


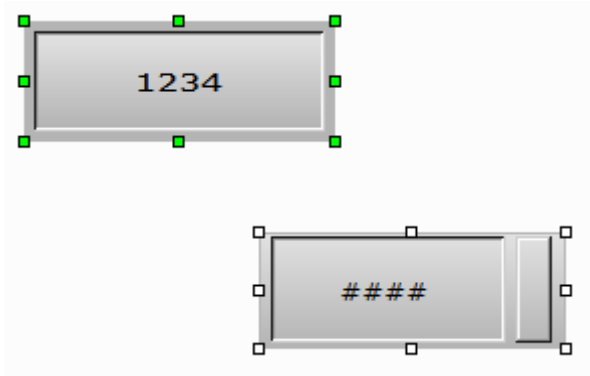
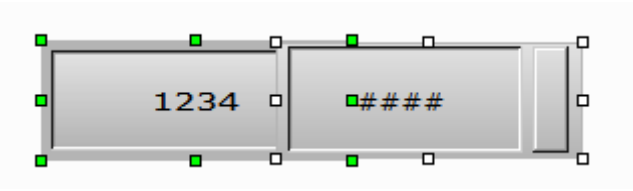

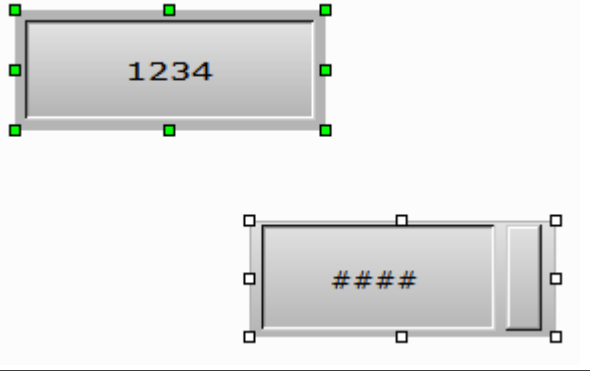
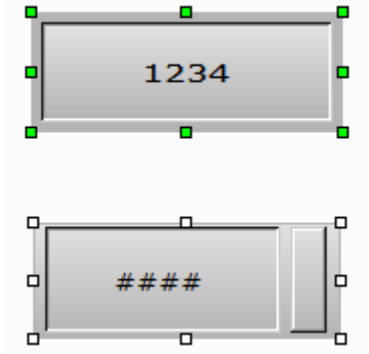
2





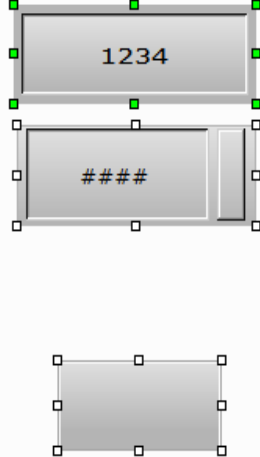
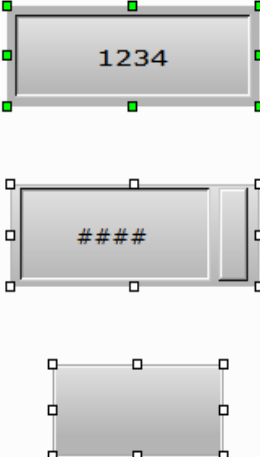
Table 2.2.2.9.1 Align function example

Align		
Icon	Item	Content
	Align Left	<p>Before</p> <p>To execute Align Left, you must select at least two elements.</p> 
		<p>After</p> 
	Align Right	<p>Before</p> <p>To execute Align Right, you must select at least two elements.</p> 
		<p>After</p> 

Align		
Icon	Item	Content
	Align Top	<p>Before</p> <p>To execute Align Top, you must select at least two elements.</p> 
		<p>After</p> 
	Align Bottom	<p>Before</p> <p>To execute Align Bottom, you must select at least two elements.</p> 
		<p>After</p> 


2

Align			
Icon	Item	Content	
	Vertical Centering	Before	
		After	
	Horizontal Centering	Before	
		After	

Align		
Icon	Item	Content
	Horizontal Equal Space	<p>Before</p> <p>To execute Horizontal Equal Space, you must select at least three elements.</p> 
		<p>After</p> <p>The software calculates the equal spaces between the three elements in horizontal direction and realign them to make equal spaces between the three in horizontal direction.</p> 
	Vertical Equal Space	<p>Before</p> <p>To execute Vertical Equal Space, you must select at least three elements.</p> 
		<p>After</p> <p>The software calculates the equal spaces between the three elements in vertical direction and realign them to make equal spaces between the three in vertical direction.</p> 

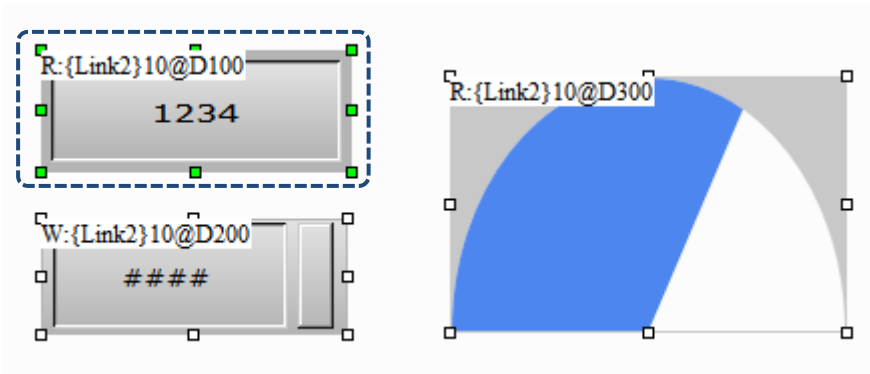
2

2.2.2.10 Make Same Size

This function includes Make Same Width, Make Same Height, and Make Same Size. It allows you to make same size of the elements. You can go to [Edit] > [Make Same Size] or click  on the Layout toolbar.


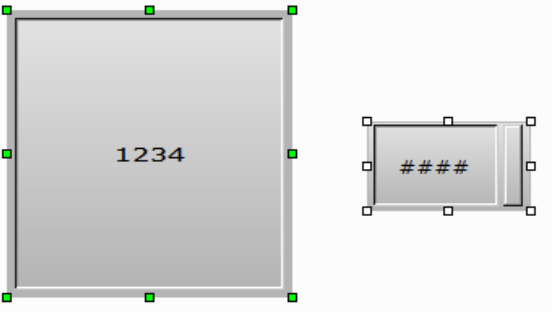
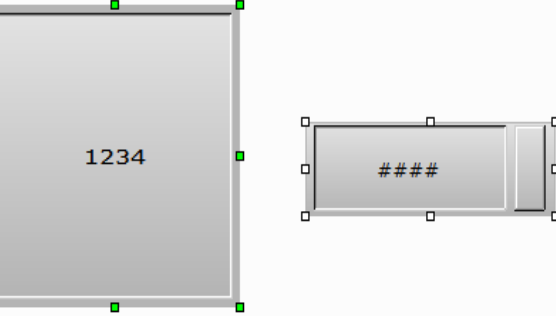
Note:


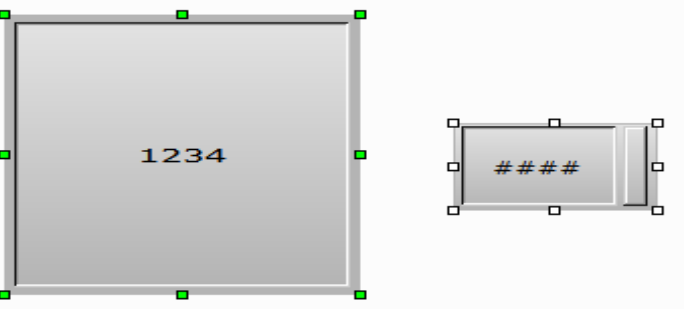
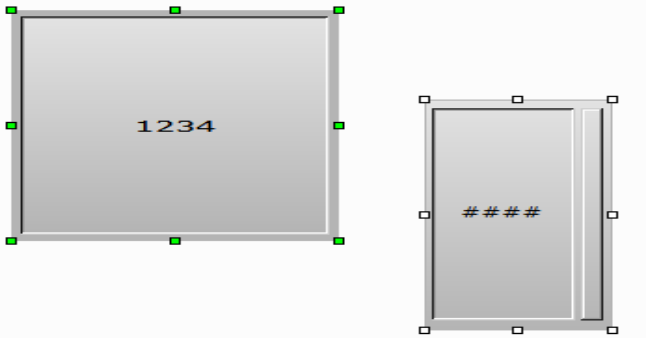

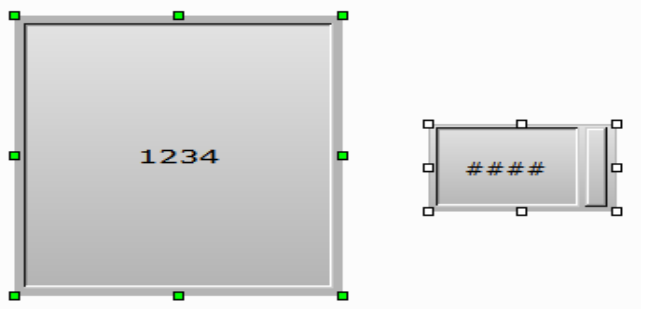
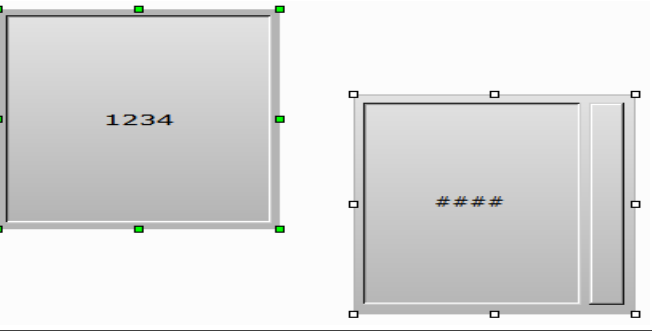
1. The reference element is the element first selected. The reference element is displayed with green squares when you select multiple elements.



2. To execute Make Same Size, please select at least two elements. The software takes the selected reference element as the standard to make the elements the same width, height, or size.

Table 2.2.2.10.1 Make Same Size example

Make Same Size		
Icon	Item	Content
	Width	<p>Before</p> <p>Use the element on the left as the reference element to make the elements the same width.</p> 
		<p>After</p> <p>The element on the right is made as the same width referring to the reference element on the left.</p> 

Make Same Size			
	Height	Before	<p>Use the element on the left as the reference element to make the elements the same height.</p> 
		After	<p>The element on the right is made as the same height referring to the reference element on the left.</p> 
	Both	Before	<p>Use the element on the left as the reference element to make the elements the same height.</p> 
		After	<p>The element on the right is made as the same size referring to the reference element on the left.</p> 

2

2.2.2.11 Text Process




This function processes the state of the element text, such as aligning the text to the left, to the right, and to the center. To use this function, you can go to [Edit] > [Text Process] or select



on the Text toolbar.

Table 2.2.2.11.1 Text Process function example

Text Process			
Icon	Item	Content	
	Align Left	Before	
		After	
	Horiz. Centering	Before	
		After	
	Align Right	Before	
		After	
	Align Top	Before	
		After	
	Vert. Centering	Before	
		After	

Text Process			
	Align Bottom	Before	
		After	

2

The Text Process function allows you to link with the Text Bank and import the edited texts into the selected element, as shown in the figure below.

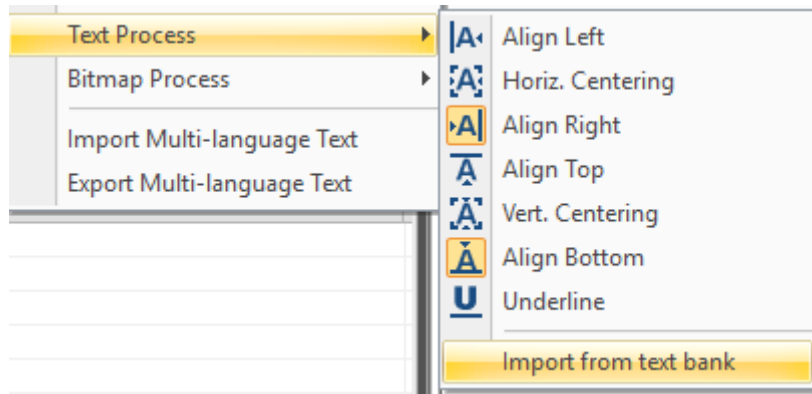


Figure 2.2.2.10.1 Import texts from Text Bank

If you have set the multi-language data, you can edit the text data in the Text Bank in advance, as shown in Figure 2.2.2.10.2.

2

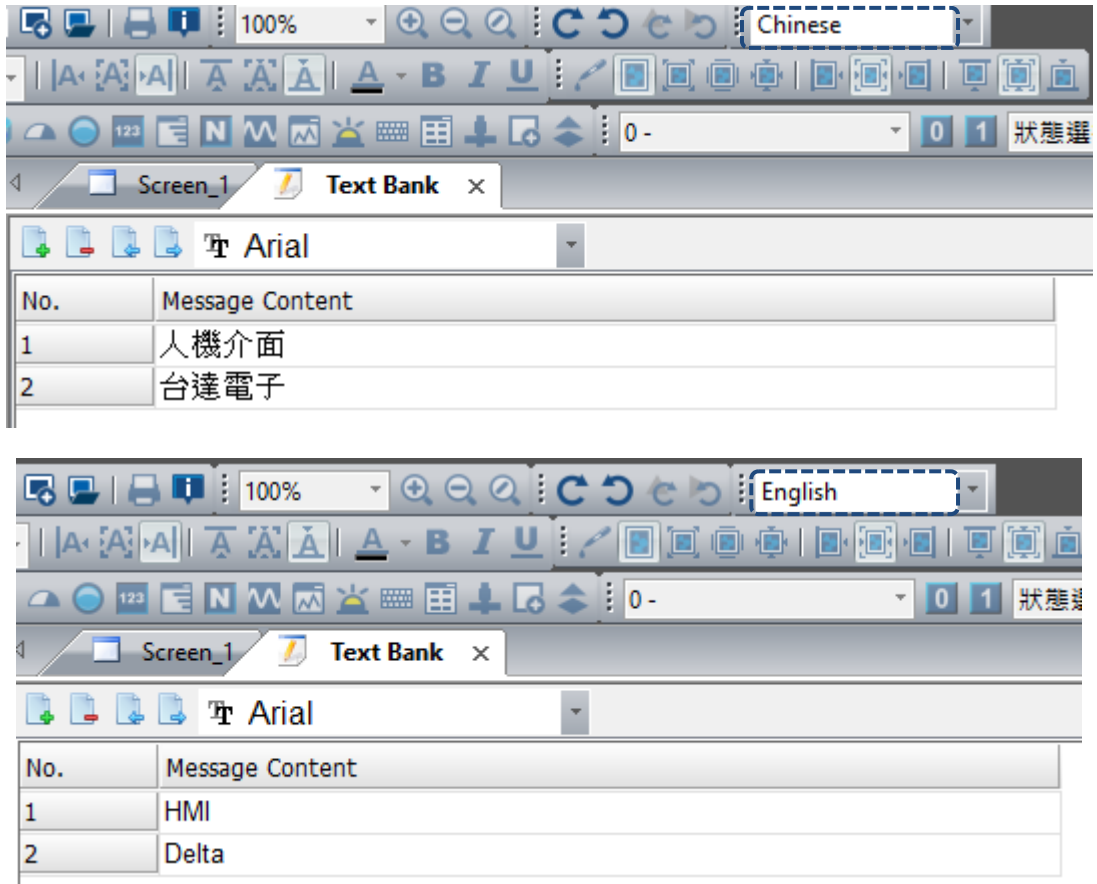
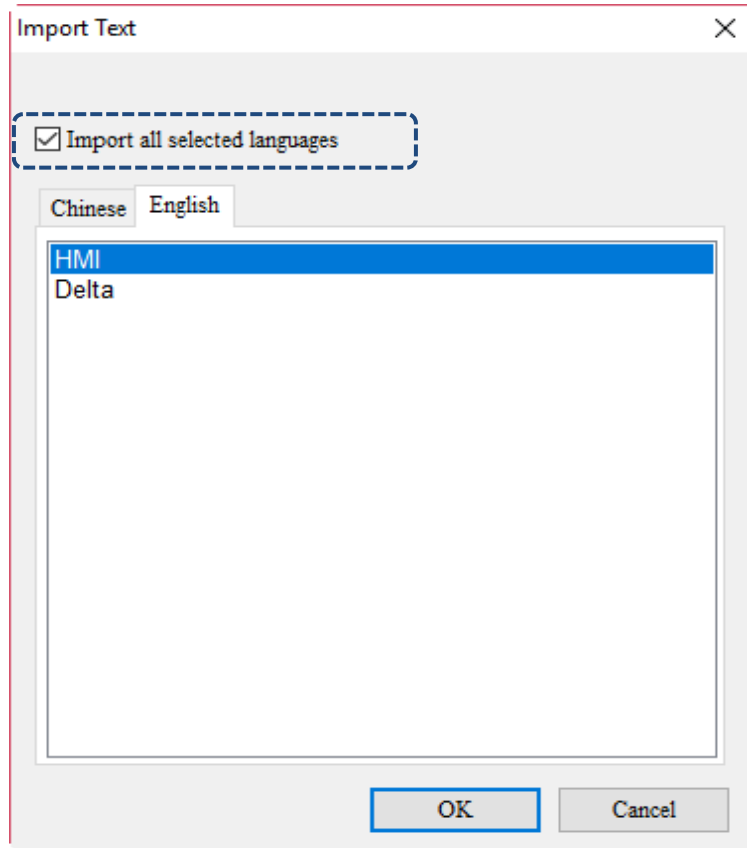


Figure 2.2.2.10.2 Edit multi-language text in the Text Bank

Go to [Text Process] > [Import Text] and select [Import all selected languages] to import the multi-language data from the Text Bank to the specified element.



2

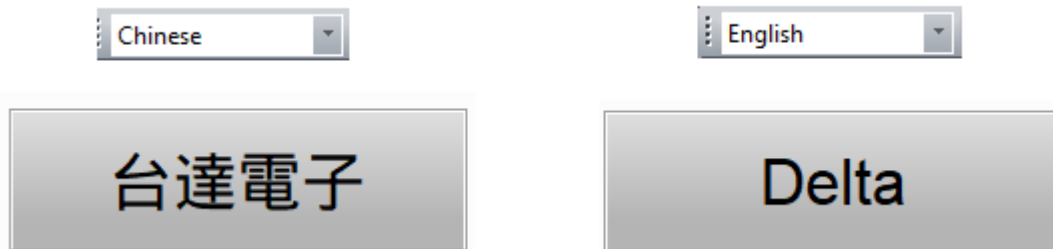


Figure 2.2.2.10.3 After importing the multi-language text data from the Text Bank

2

After importing the text from the Text Bank, you can go to the Text Bank to change the imported text messages. Click **Close** and you will be asked whether to update the messages. Select **Yes** to update the text message; select **No**, the text message remains unchanged.

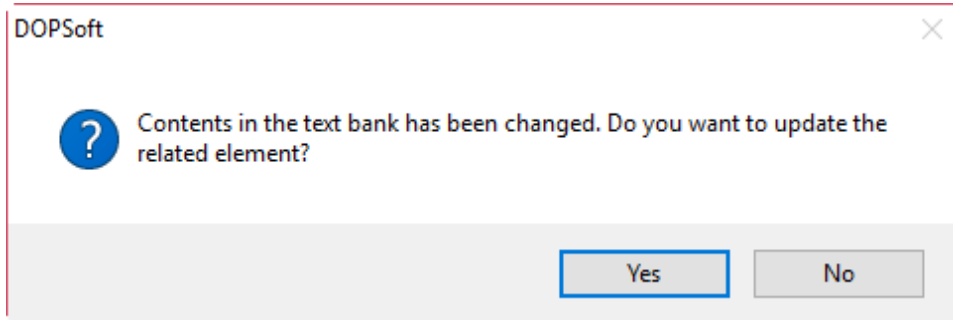


Figure 2.2.2.10.4 Synchronize the contents in Text Bank and element displaying texts

For the details on creating and using the Text Bank, please refer to the introduction of Section 28.6 Text Bank.

2.2.2.12 Bitmap Process




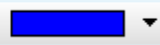











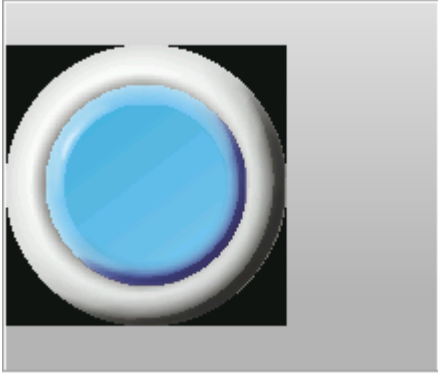
This function processes the states of the element pictures such as execute Align Left, Align Right, and Align Center for the picture. You can go to [Edit] > [Bitmap Process] or use the Picture toolbar .


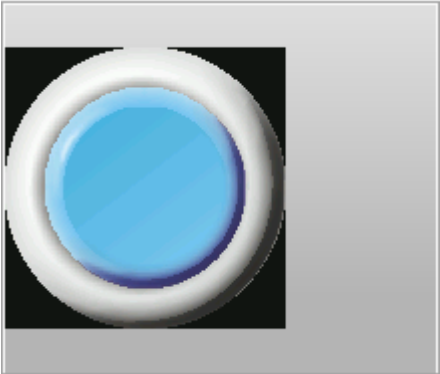




Table 2.2.2.12.1 Bitmap Process function example

Bitmap Process		
Icon	Item	Content
	Transparent Color	<p>You can specify a color in the picture and turn this color into transparent with this function. As shown in the figure below, create one element and set the Foreground Color to blue. Next, import one picture and click the  icon to select the orange part of the broom, and the software turns this part into transparent, which becomes the element foreground color blue.</p> <p>Foreground Color: </p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid gray; background-color: #cccccc; width: 100px; height: 100px; margin-right: 20px; display: flex; align-items: center; justify-content: center;">Before</div> <div style="border: 1px solid gray; padding: 5px;"> <p>Preview</p>  </div> </div>

Bitmap Process				
Icon	Item	Content		
		After		
	Process pictures of all states	If you select the icon of Process pictures of all states, assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.		
	Stretch to fit the element	Stretch to fit the element	Picture Stretch 1:1	Actual Size
	Picture Stretch 1:1			
	Actual Size	<p>If you select Stretch to fit the element, the picture fills the full element display area.</p> 	<p>If you select Picture Stretch 1:1, the picture displays in 1:1 size without referring to the element width and length.</p> 	<p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p> 
	Left	Before		
		After		


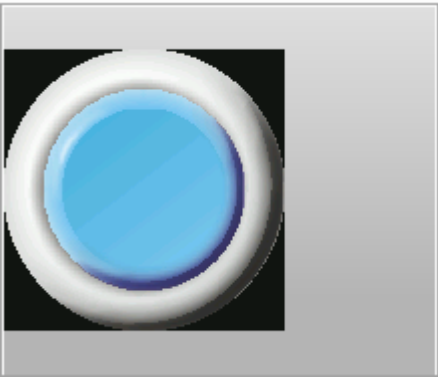

2

Bitmap Process			
Icon	Item	Content	
	Center	Before	
		After	
	Right	Before	
		After	

Bitmap Process			
Icon	Item	Content	
	Top	Before	
		After	
	Center	Before	
		After	

2

2

Bitmap Process			
Icon	Item	Content	
	Bottom	Before	
		After	

2.2.2.13 Import Multi-language Text / Export Multi-language Text

These two functions allow you to import or export the text more easily when you edit multi-language texts. They are useful especially when you have multi-language texts or multiple states to edit. In addition, the import and export formats are both .xls which you can use in Excel. Contents in the import or export files are the text language data of all elements in the displaying screen.

- Export Multi-language Text

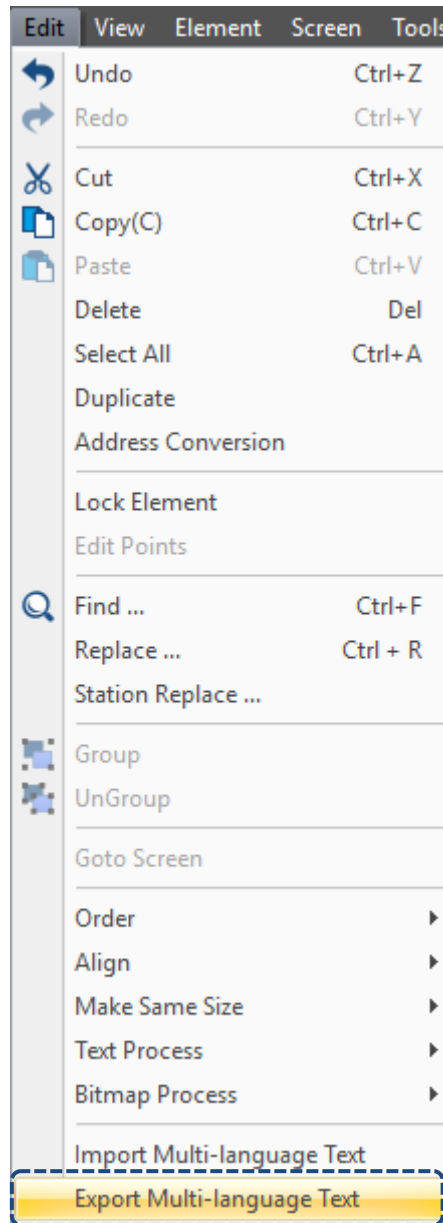


Figure 2.2.2.13.1 Export Multi-language Text

After you export the multi-language text, the software will ask you to save the file to be exported.

2

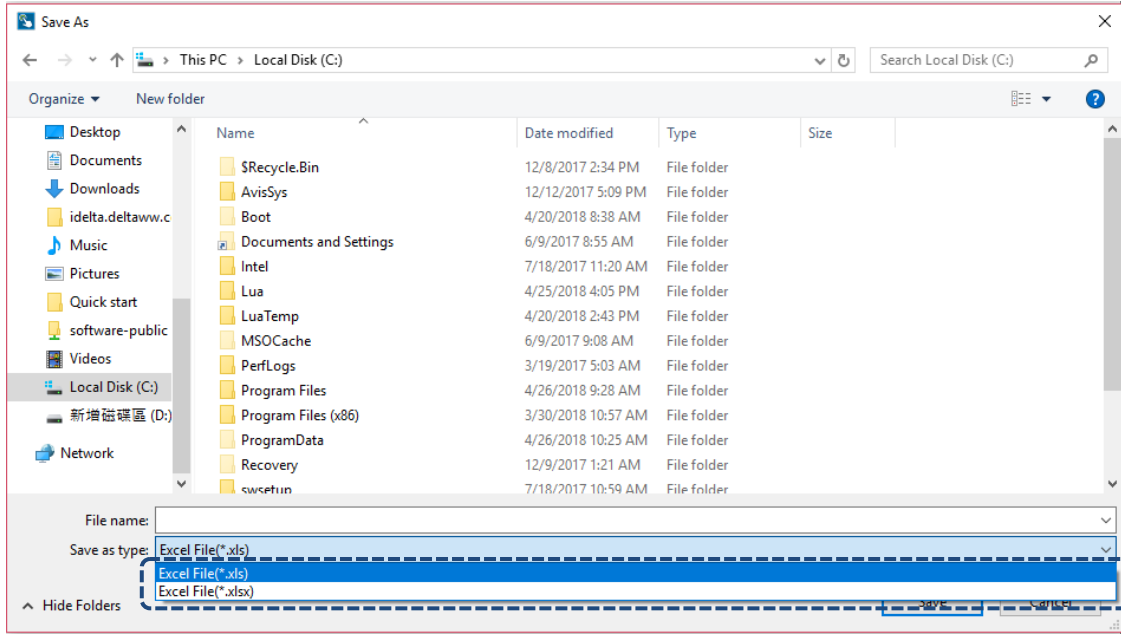


Figure 2.2.2.13.2 Save the multi-language text export file

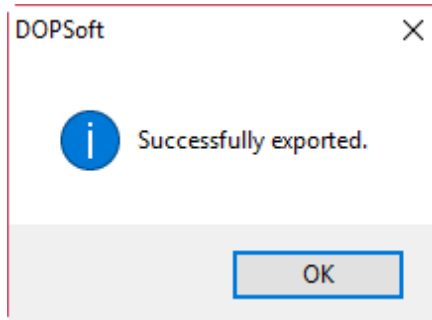
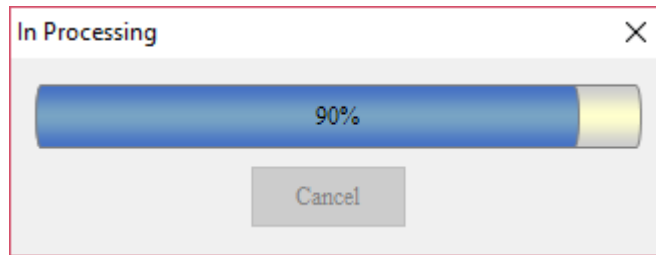


Figure 2.2.2.13.3 Saving complete for the multi-language text export file

When saving is complete, please follow the path to open this file. You can see this file contains the multi-language text data of all the elements in the current project file, as shown in the figure below.

	D	E
1	Chinese	English
2		
3		
4		
5	\$0.0	
6		
7		
8	換畫面	change screen
9		
10	回前頁	go back
11		
12	系統時間日期	system time and date
13		
14	系統目錄	system menu
15		
16	設定密碼表	set password table
17		
18	調整對比亮度	contrass
19		
20	設為最低權限	level 0
21		
22	輸出報表	report list
23		
24	擷取畫面	capture
25		
26	移除儲存媒體	remove storage
27		
28	匯出配方	Export Recipe
29		
30	匯入配方	Import Recipe
31		
32	觸碰校正	Calibrate
33		
34	語系切換至英文	change language to EN
35		

Figure 2.2.2.13.4 Contents of the multi-language text export file

2

■ Import Multi-language Text

You can first edit the exported multi-language text before importing the data. See the example below. Change the Chinese text of the 5th line \$0.0 to “設 ON 按鈕” and add the English text “ON Button”.

	D	E
1	Chinese	English
2		
3		
4		
5	設ON按鈕	ON Button
6		
7		
8	換畫面	change screen
9		
10	回前頁	go back
11		
12	系統時間日期	system time and date
13		
14	系統目錄	system menu
15		
16	設定密碼表	set password table
17		
18	調整對比亮度	contrass
19		
20	設為最低權限	level 0
21		
22	輸出報表	report list
23		
24	擷取畫面	capture
25		
26	移除儲存媒體	remove storage
27		
28	匯出配方	Export Recipe
29		
30	匯入配方	Import Recipe
31		
32	觸碰校正	Calibrate
33		
34	語系切換至英文	change language to EN
35		

Figure 2.2.2.13.5 Contents of the multi-language text import file

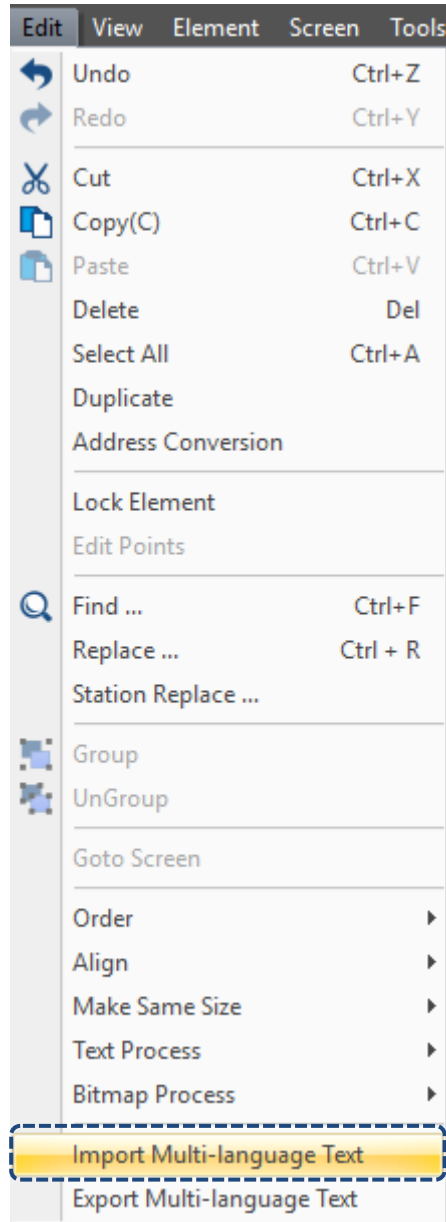


Figure 2.2.2.13.6 Import Multi-language Text

When you execute Import Multi-language Text, the software will ask you to select the file to be imported.

2

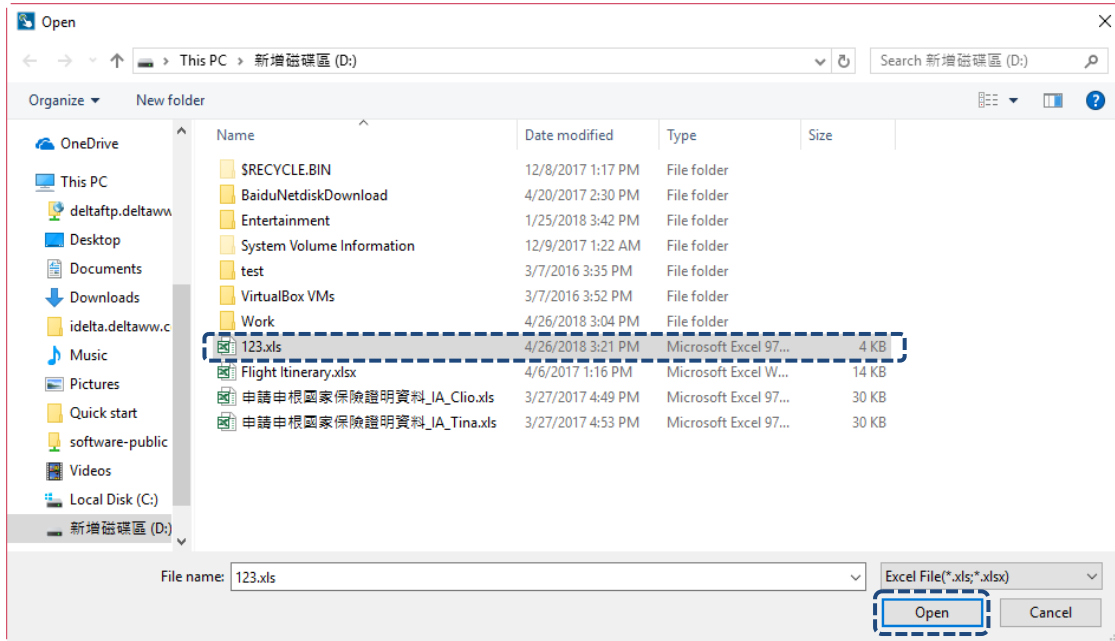


Figure 2.2.2.13.7 Select the Multi-language Text file to be imported

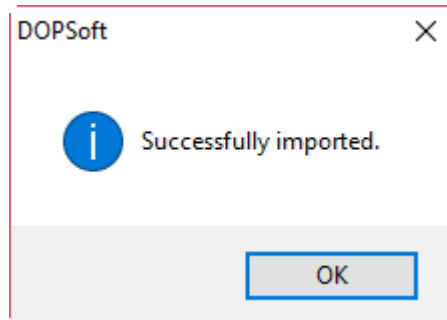
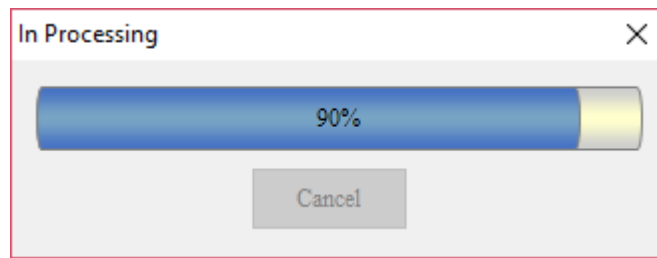


Figure 2.2.2.13.8 Import complete for the Multi-language Text file

After you import the multi-language text, you can check whether the edited data is completely imported.

	Chinese	English
Not imported	\$0.0	
Imported	設ON按鈕	ON Button

Please refer to Chapter 25 for the usage of Multi-language.

2.2.3 View

The View option on the function list provides the following functions.

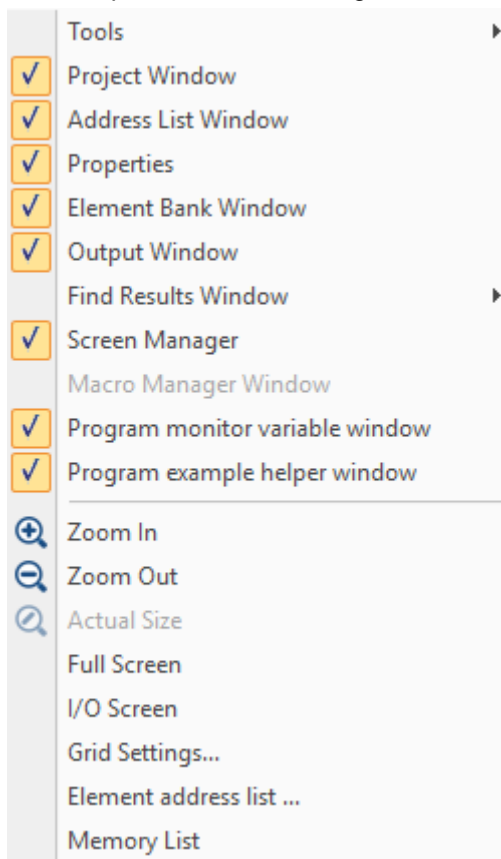


Figure 2.2.3.1 View function list

Below is the introduction of Screen Management (Manager) window, Zoom In, Zoom Out, Actual Size, Full Screen, I/O Screen, Grid Settings, Address Cross Reference Table, Element Address List, and Memory List.

2

2.2.3.1 Screen Management

The Screen Management window provided by the DOPSoft allows you to easily view the elements in all screens. You can go to [View] > [Screen Manager] to determine whether to display its window.

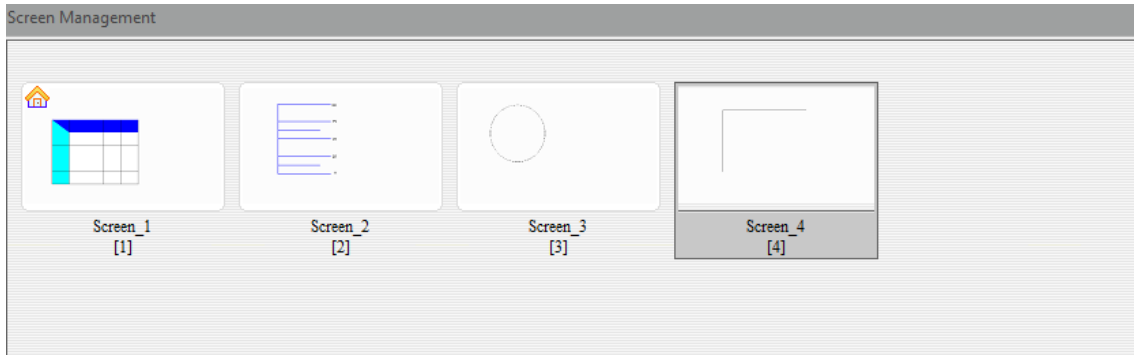


Figure 2.2.3.1.1 Screen Management window

You can right-click the Screen Management window and execute the actions relevant to the screens.

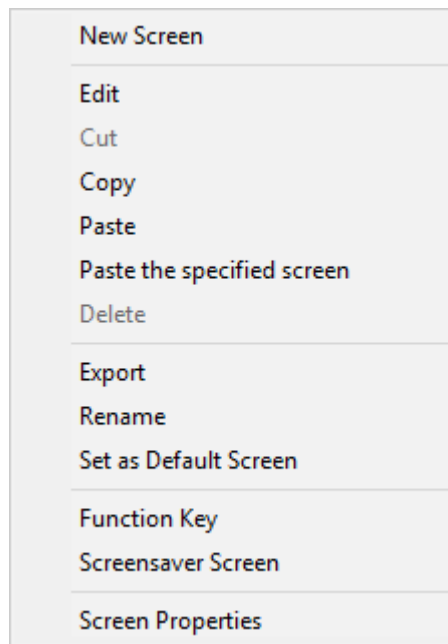
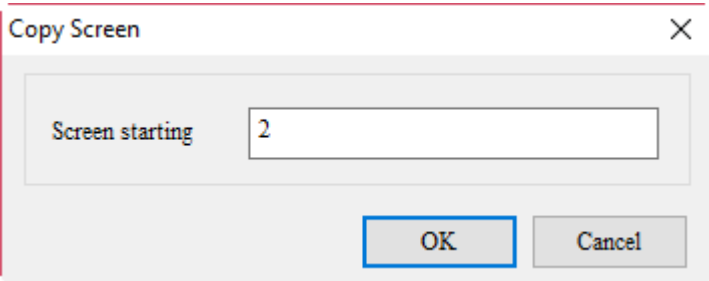
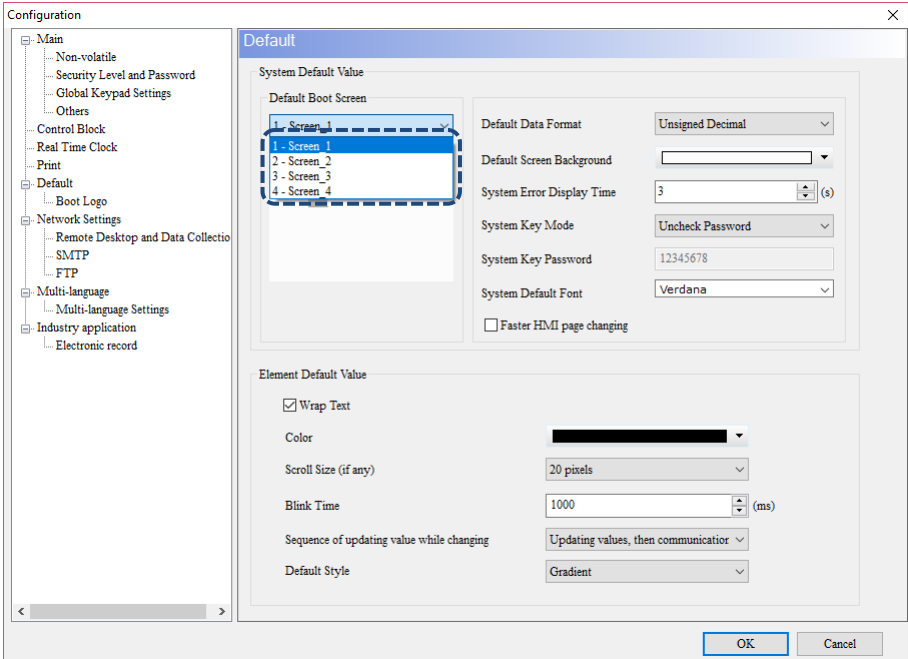


Figure 2.2.3.1.2 Screen Management window settings


Table 2.2.3.1.1 Screen Management window description

2

Screen Management window	
New Screen	Like the case of going to [Screen] > [New Screen], you can create a new screen after executing New Screen. Please refer to Section 2.2.4.1 New Screen for the detailed settings.
Edit	In the Screen Management window, you can select one screen and click Edit to go to the editing window for this screen.
Cut	The actions of Cut, Copy, Paste, and Delete are identical to the actions you execute by going to [Screen] > [Cut Screen] / [Copy Screen] / [Paste Screen] / [Delete Screen]. For the detailed settings, please refer to Section 2.2.4.4 Cut Screen, 2.2.4.5 Copy Screen, 2.2.4.6 Paste Screen, and 2.2.4.7 Delete Screen.
Copy	
Paste	
Delete	
Paste the specified screen	<p>After you copy the screen in the Screen Management window, you can use this function to paste this screen to the screen with the number you specified. This function also supports batch copy, which you can copy multiple screens at once and specify the screen start number and the system automatically number them in sequence.</p>  <p>Note: if the specified screen number already exists, the system automatically set the screen number plus 1.</p>
Export	Like the case of executing the function by going to [Screen] > [Export], the Export function can export the selected screens and determine whether to display the border. Please refer to Section 2.2.4.8 Export for detailed settings.
Rename	Rename the screen name that has previously been set.
Set as Default Screen	<p>This is the same as setting the default screen by going to [Options] > [Configuration] > [Default]. It can set the first screen after HMI booting.</p> 

Screen Management window	
Function Key	The function keys are supported on models of B07S201, B07S211, B07S401K, B07S411K, and DOP-H series. If the HMI has no function keys, this function is disabled. Please refer to Section 2.2.4.11 Function Keys for details.
Screensaver Screen	It is the same as setting the screensaver screen by going to [Screen] > [Screensaver]. Please refer to Section 2.2.4.3 Screensaver for detailed settings.
Screen Properties	Click Screen Properties and you can set the relevant properties for the screen. You can also set the screen as the subscreen, and specify the screen name, screen height and width, and the X-Y coordinates, etc. Please refer to Section 2.2.4.12 Screen Properties for detailed settings.

2.2.3.2 Zoom In

Use this function to zoom in the screen for editing. You can also use the icon  in the zoom toolbar to zoom in the image as shown in Table 2.2.3.2.1.

2

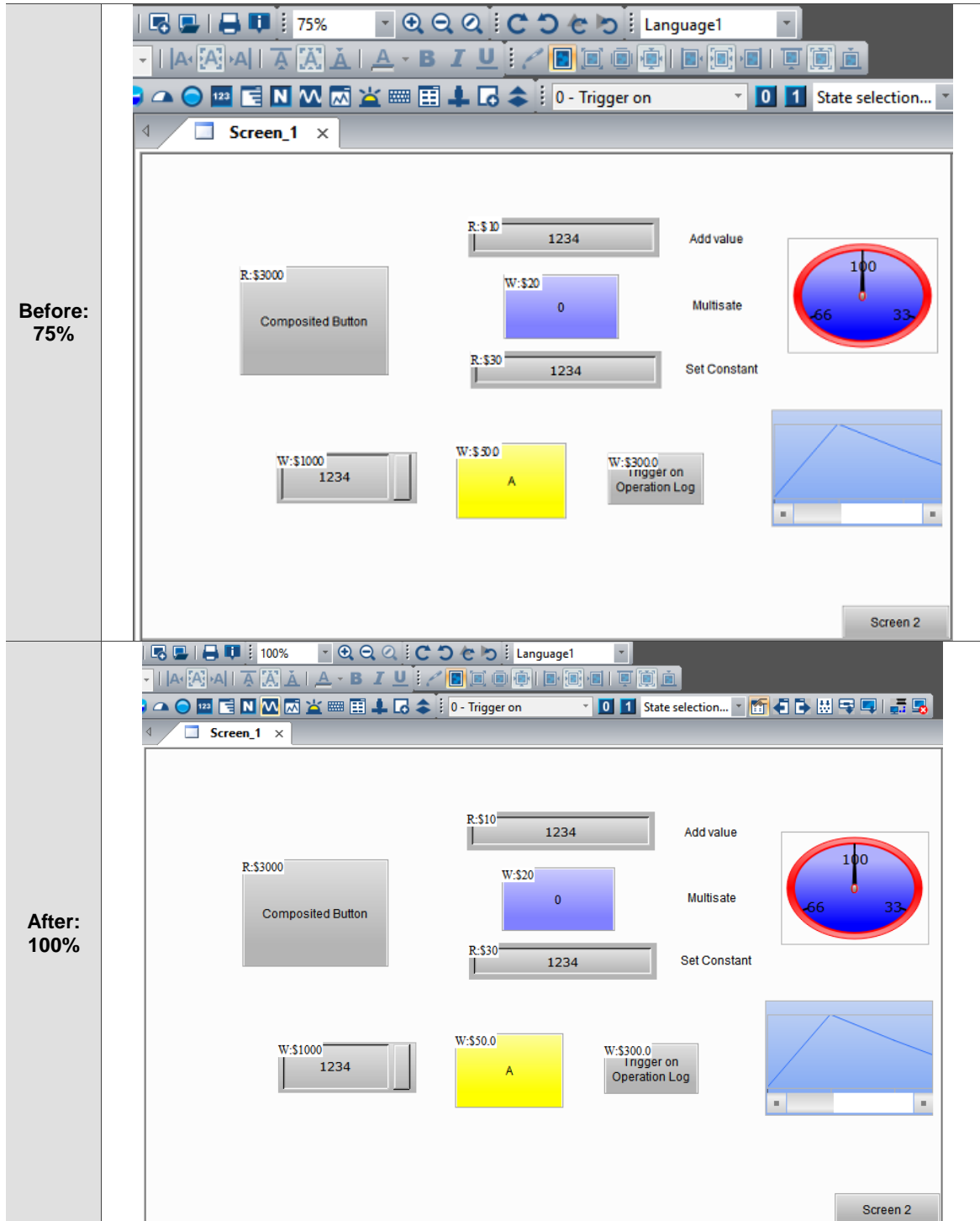



Table 2.2.3.2.1 Zoom In function example

2.2.3.3 Zoom Out

Use this function to zoom out the editing screen. You can also click the  icon in the zoom toolbar to zoom out the screen as shown in Table 2.2.3.3.1.

2

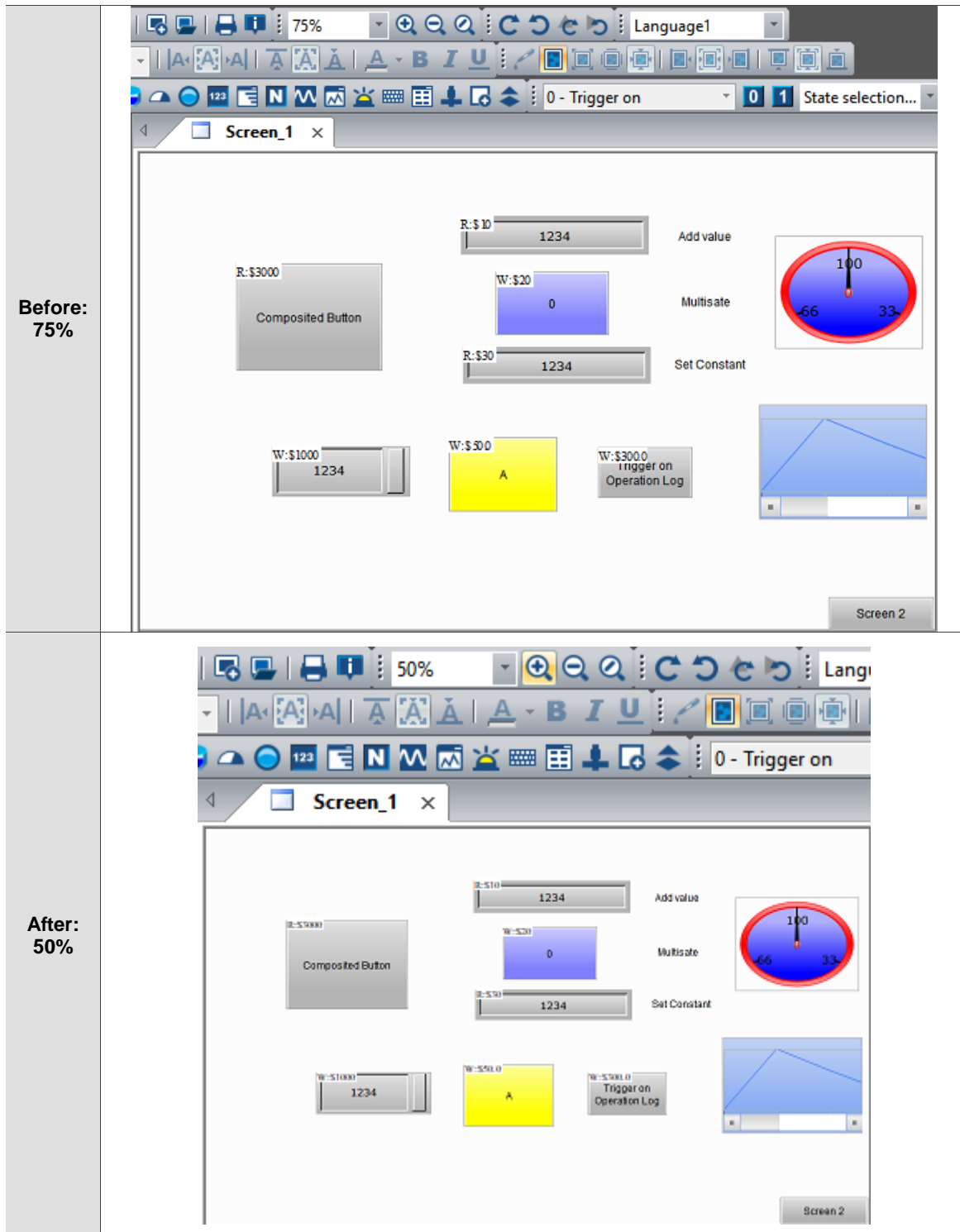



Table 2.2.3.2.1 Zoom Out function example

2

2.2.3.4 Actual Size

The Actual Size is to reset the screen display to ratio 100%; this ratio is adjusted based on the HMI screen. You can also click  in the zoom toolbar to reset the display to 100% as shown in Table 2.2.3.4.1.

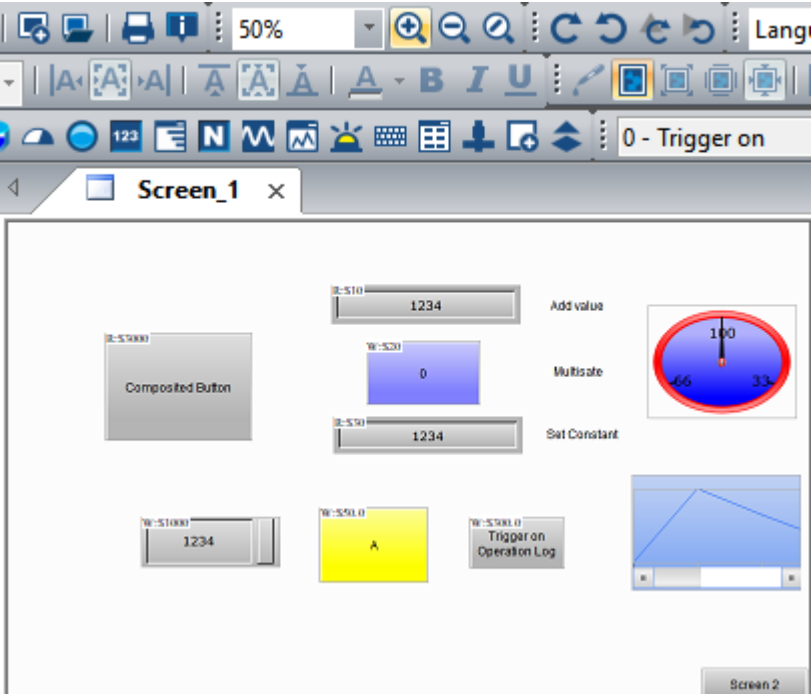
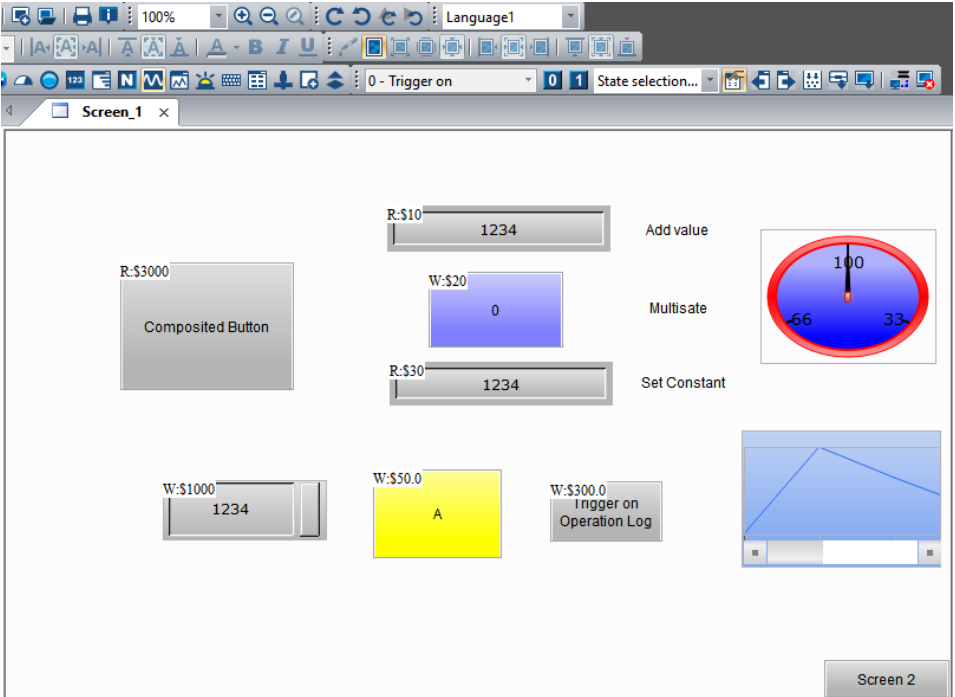
<p>Before: 50%</p>	
<p>After: 100%</p>	

Table 2.2.3.4.1 Actual Size function example

2.2.3.5 Full Screen

This function enables the editing screen to display in full screen and have the set macro line number displayed in the lower left corner of the screen. You can use **ESC** or left-click the mouse to cancel the display in full screen.

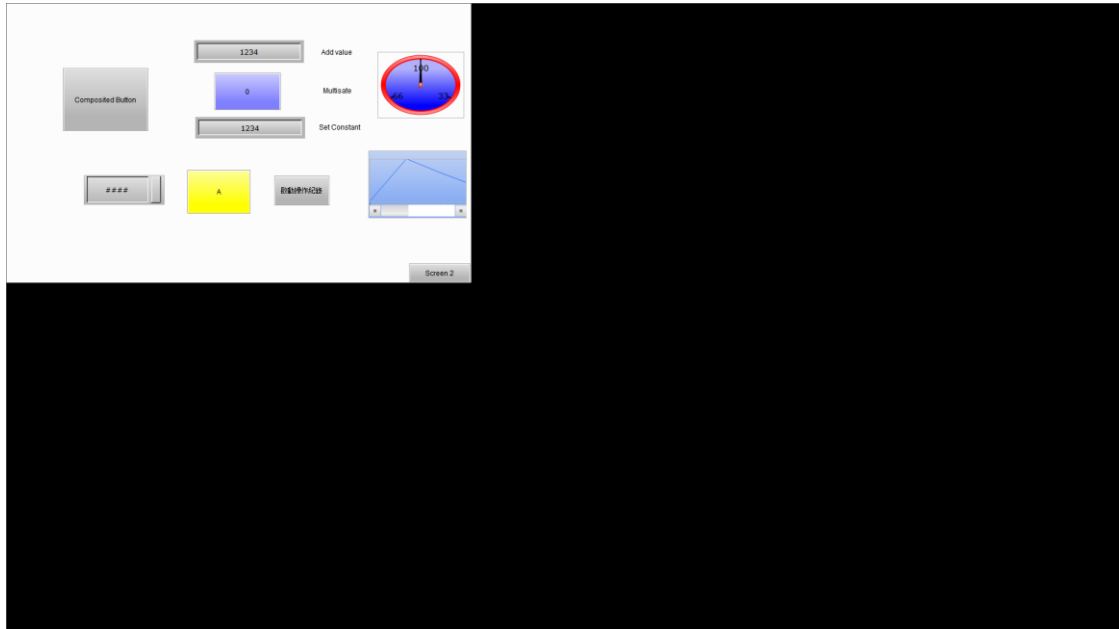


Figure 2.2.3.5.1 Full Screen

2.2.3.6 I/O Screen

It is very similar to the Full Screen function, the only difference is that the I/O Screen displays the memory addresses on the elements. Similarly, the macro line number set in the editing screen is also displayed and you can click **ESC** or left-click the mouse to exit the display in full screen.

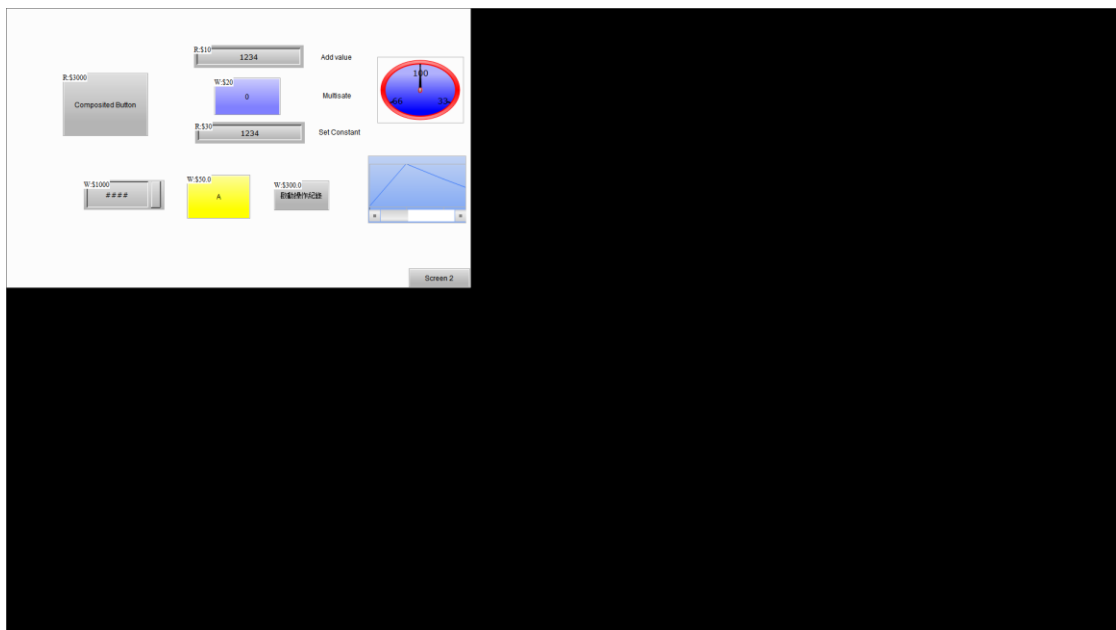


Figure 2.2.3.6.1 I/O Screen

2

2.2.3.7 Grid Settings

The Grid Settings has two options, Show Grid and Snap to Grid. When you check Show Grid, the grid is displayed on the editing screen; Snap to Grid helps you to better align the elements while moving them. Apart from that, you can set the spacing for the alignment grid in the range of 4 - 50 in integer. The default spacing of Height and Width is 4.

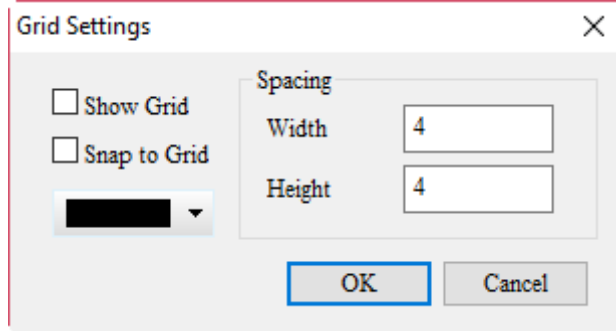
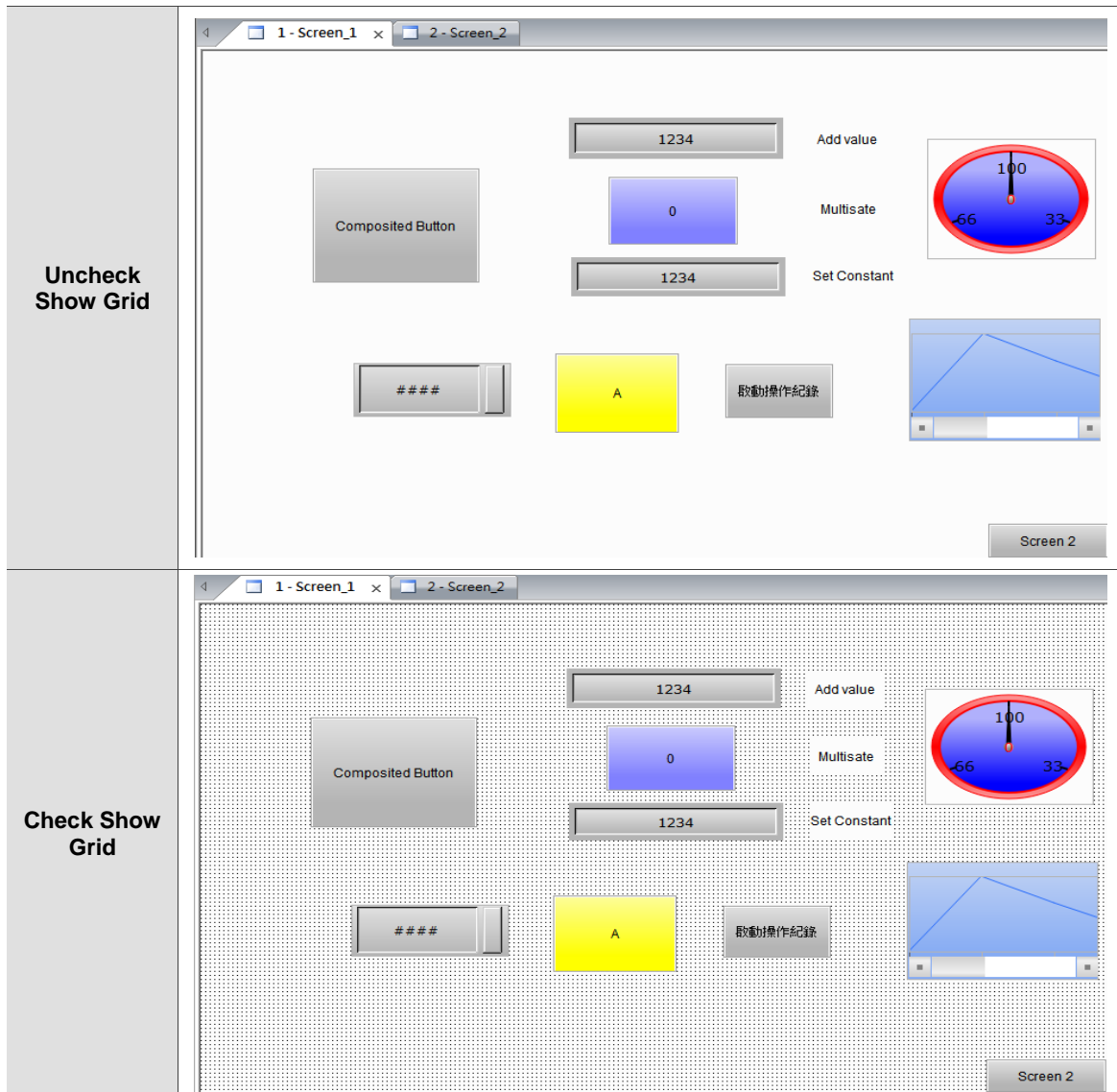


Figure 2.2.3.7.1 Grid Settings



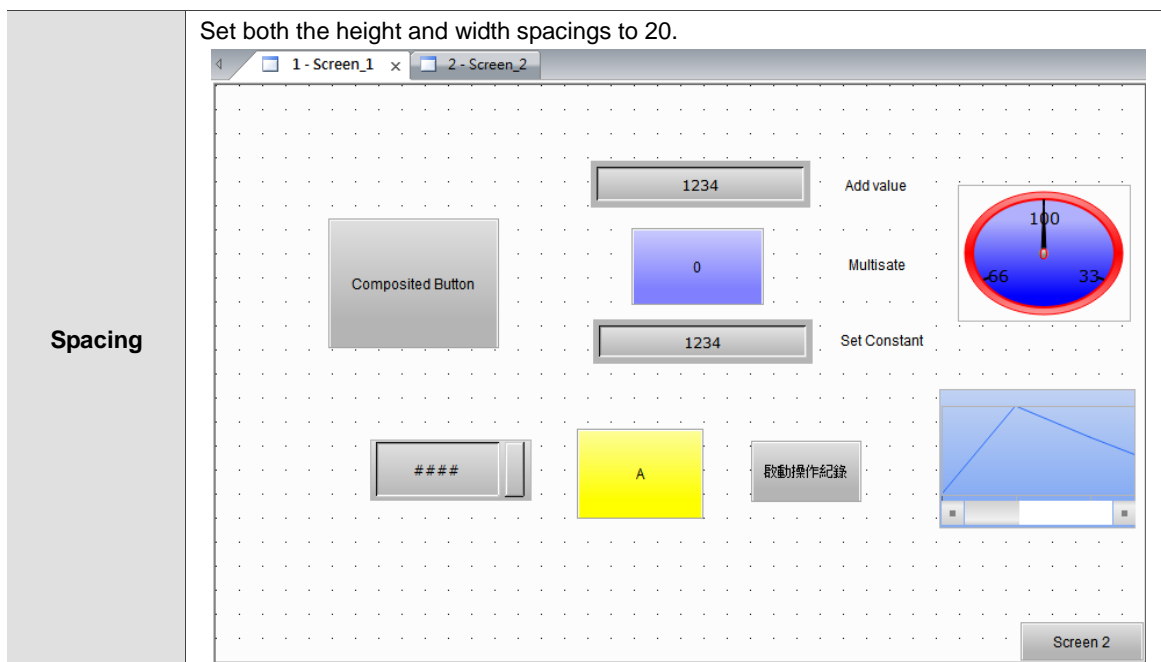


Figure 2.2.3.7.1 Grid Settings example

2.2.3.8 Element Address List

You can use this function to sort all elements in the screen by the screen number and by element type or address. All properties of the element are listed on the list by their sorting types, including Element Name, Write Address, Read Address, Trigger Address, Trigger Mode, Interlock Address, Interlock State, Data Type, Data Format, and Coordinates, and Height and Width of the element.

■ By Element

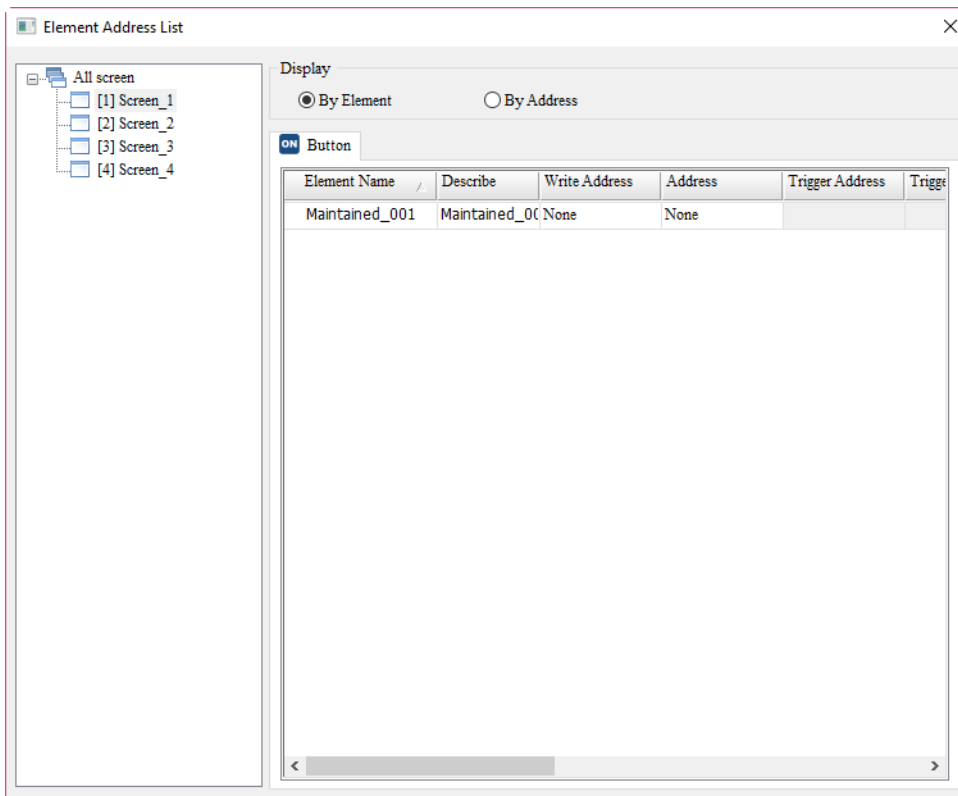


Figure 2.2.3.9.1 Element Address List - By Element

2

■ By Address

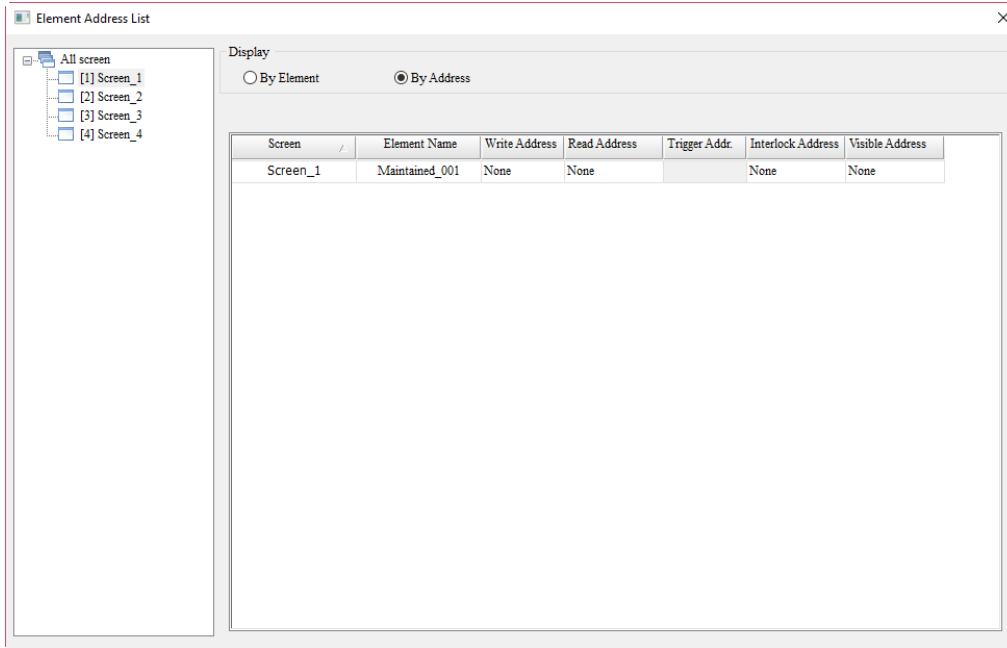


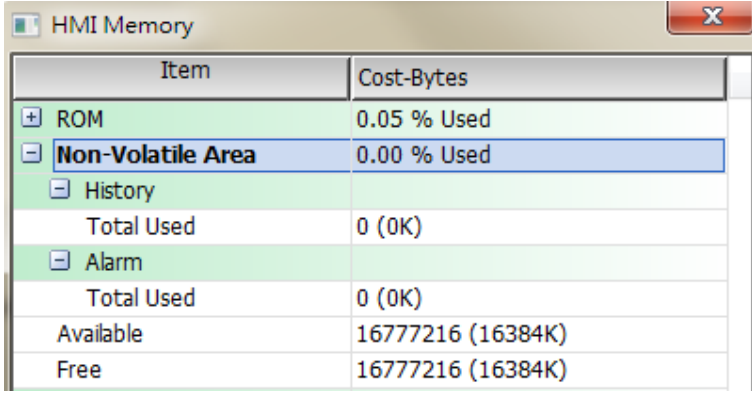
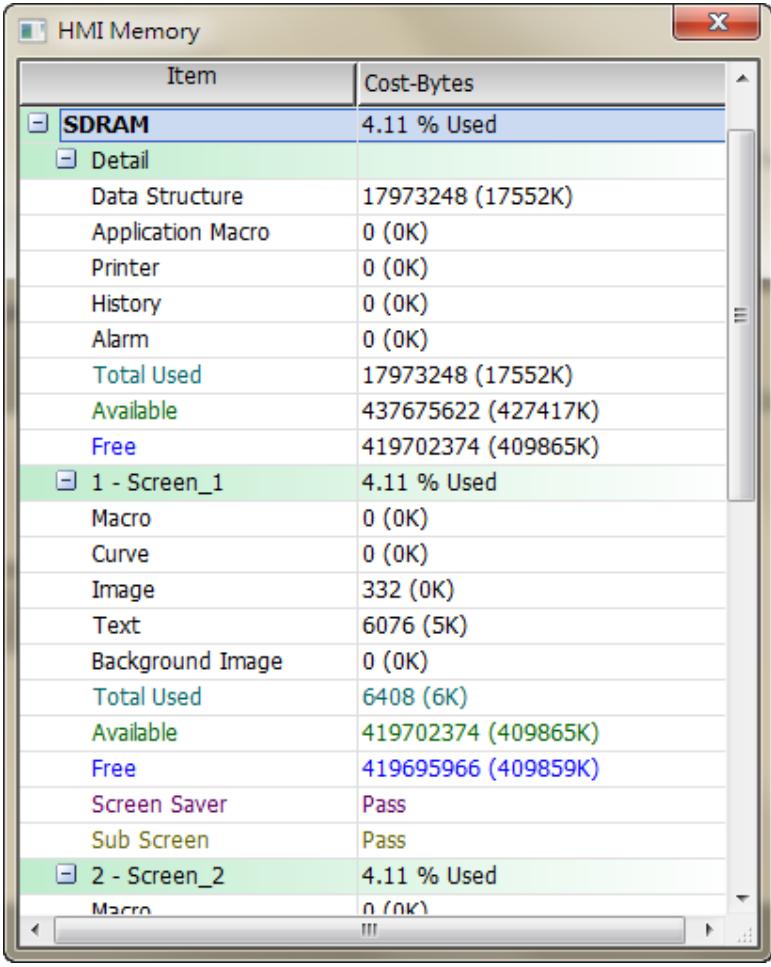
Figure 2.2.3.9.2 Element Address List - By Address

2.2.3.9 Memory List

This list enables you to check the memory used by the HMI screen and the remaining memory. You must create the project and compile the data to get this information. The list includes four parts, ROM, Non-Volatile Area, SDRAM, and External Storage.

Table 2.2.3.10.1 Memory List

ROM	The memory used after you download the screen data to the HMI (including the recipe, screen data, printer data, etc.)	
	ROM	0.05 % Used
	Total Used	40960 (40K)
	Available	85983232 (83968K)
	Free	85942272 (83928K)
	Detail	
	Controller	20480 (20K)
	Printer	0 (0K)
	Screen Data	16384 (16K)
Recipe 32	0 (0K)	
Enhanced Recipe	4096 (4K)	

<p>Non-Volatile Area</p>	<p>The default storage location of the non-volatile data is the Non-Volatile Area. When the project file you edited has created data such as the history records and alarms, you can use this section to check the memory usage.</p>  <table border="1"> <thead> <tr> <th>Item</th> <th>Cost-Bytes</th> </tr> </thead> <tbody> <tr> <td>ROM</td> <td>0.05 % Used</td> </tr> <tr> <td>Non-Volatile Area</td> <td>0.00 % Used</td> </tr> <tr> <td> History</td> <td></td> </tr> <tr> <td> Total Used</td> <td>0 (0K)</td> </tr> <tr> <td> Alarm</td> <td></td> </tr> <tr> <td> Total Used</td> <td>0 (0K)</td> </tr> <tr> <td> Available</td> <td>16777216 (16384K)</td> </tr> <tr> <td> Free</td> <td>16777216 (16384K)</td> </tr> </tbody> </table>	Item	Cost-Bytes	ROM	0.05 % Used	Non-Volatile Area	0.00 % Used	History		Total Used	0 (0K)	Alarm		Total Used	0 (0K)	Available	16777216 (16384K)	Free	16777216 (16384K)																														
Item	Cost-Bytes																																																
ROM	0.05 % Used																																																
Non-Volatile Area	0.00 % Used																																																
History																																																	
Total Used	0 (0K)																																																
Alarm																																																	
Total Used	0 (0K)																																																
Available	16777216 (16384K)																																																
Free	16777216 (16384K)																																																
<p>SDRAM</p>	<p>Display the SDRAM space required for the operation of each screen. The calculation of SDRAM is by page. If the project has two pages, the SDRAM displays the data for the two pages.</p>  <table border="1"> <thead> <tr> <th>Item</th> <th>Cost-Bytes</th> </tr> </thead> <tbody> <tr> <td>SDRAM</td> <td>4.11 % Used</td> </tr> <tr> <td> Detail</td> <td></td> </tr> <tr> <td> Data Structure</td> <td>17973248 (17552K)</td> </tr> <tr> <td> Application Macro</td> <td>0 (0K)</td> </tr> <tr> <td> Printer</td> <td>0 (0K)</td> </tr> <tr> <td> History</td> <td>0 (0K)</td> </tr> <tr> <td> Alarm</td> <td>0 (0K)</td> </tr> <tr> <td> Total Used</td> <td>17973248 (17552K)</td> </tr> <tr> <td> Available</td> <td>437675622 (427417K)</td> </tr> <tr> <td> Free</td> <td>419702374 (409865K)</td> </tr> <tr> <td> 1 - Screen_1</td> <td>4.11 % Used</td> </tr> <tr> <td> Macro</td> <td>0 (0K)</td> </tr> <tr> <td> Curve</td> <td>0 (0K)</td> </tr> <tr> <td> Image</td> <td>332 (0K)</td> </tr> <tr> <td> Text</td> <td>6076 (5K)</td> </tr> <tr> <td> Background Image</td> <td>0 (0K)</td> </tr> <tr> <td> Total Used</td> <td>6408 (6K)</td> </tr> <tr> <td> Available</td> <td>419702374 (409865K)</td> </tr> <tr> <td> Free</td> <td>419695966 (409859K)</td> </tr> <tr> <td> Screen Saver</td> <td>Pass</td> </tr> <tr> <td> Sub Screen</td> <td>Pass</td> </tr> <tr> <td> 2 - Screen_2</td> <td>4.11 % Used</td> </tr> <tr> <td> Macro</td> <td>0 (0K)</td> </tr> </tbody> </table>	Item	Cost-Bytes	SDRAM	4.11 % Used	Detail		Data Structure	17973248 (17552K)	Application Macro	0 (0K)	Printer	0 (0K)	History	0 (0K)	Alarm	0 (0K)	Total Used	17973248 (17552K)	Available	437675622 (427417K)	Free	419702374 (409865K)	1 - Screen_1	4.11 % Used	Macro	0 (0K)	Curve	0 (0K)	Image	332 (0K)	Text	6076 (5K)	Background Image	0 (0K)	Total Used	6408 (6K)	Available	419702374 (409865K)	Free	419695966 (409859K)	Screen Saver	Pass	Sub Screen	Pass	2 - Screen_2	4.11 % Used	Macro	0 (0K)
Item	Cost-Bytes																																																
SDRAM	4.11 % Used																																																
Detail																																																	
Data Structure	17973248 (17552K)																																																
Application Macro	0 (0K)																																																
Printer	0 (0K)																																																
History	0 (0K)																																																
Alarm	0 (0K)																																																
Total Used	17973248 (17552K)																																																
Available	437675622 (427417K)																																																
Free	419702374 (409865K)																																																
1 - Screen_1	4.11 % Used																																																
Macro	0 (0K)																																																
Curve	0 (0K)																																																
Image	332 (0K)																																																
Text	6076 (5K)																																																
Background Image	0 (0K)																																																
Total Used	6408 (6K)																																																
Available	419702374 (409865K)																																																
Free	419695966 (409859K)																																																
Screen Saver	Pass																																																
Sub Screen	Pass																																																
2 - Screen_2	4.11 % Used																																																
Macro	0 (0K)																																																
<p>External Storage</p>	<p>This refers to the memory space of the external storage. When you set the location of the non-volatile area as an external storage device, such as the USB Disk or SD Card, the data blocks originally stored in the non-volatile area (SRAM) are moved to the external storage device.</p>																																																

2.2.4 Screen

The Screen option on the function list provides the following functions.

2

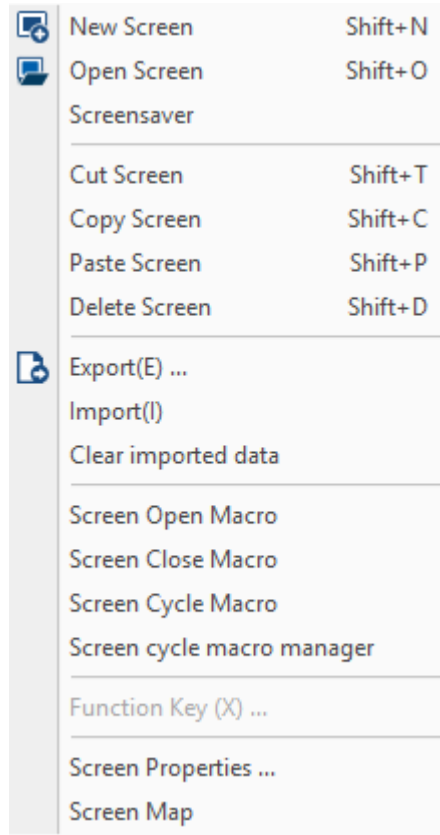



Figure 2.2.4.1 Screen function list

2.2.4.1 New Screen

To create a new editing screen, you can go to [Screen] > [New Screen], use  in the General toolbar, or use the system keyboard shortcut **Shift + N**. After creating a new screen, you can set the Screen Name, Screen No., and Screen Type to create. And the Screen Type includes Screen, Subscreen, and Keypad Screen.

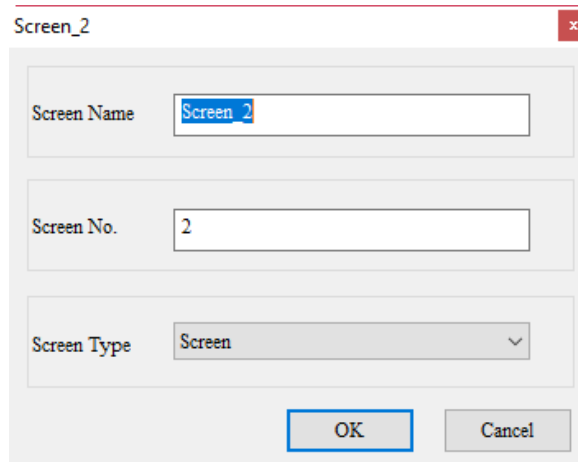



Figure 2.2.4.1.1 New Screen

2.2.4.2 Open Screen

To open a previously created screen, you can go to [Screen] > [Open Screen], use  in the General toolbar, or use the system keyboard shortcut **Shift + O**. When you select the screen to open, you can view all the elements in the screen from the Preview section on the right.

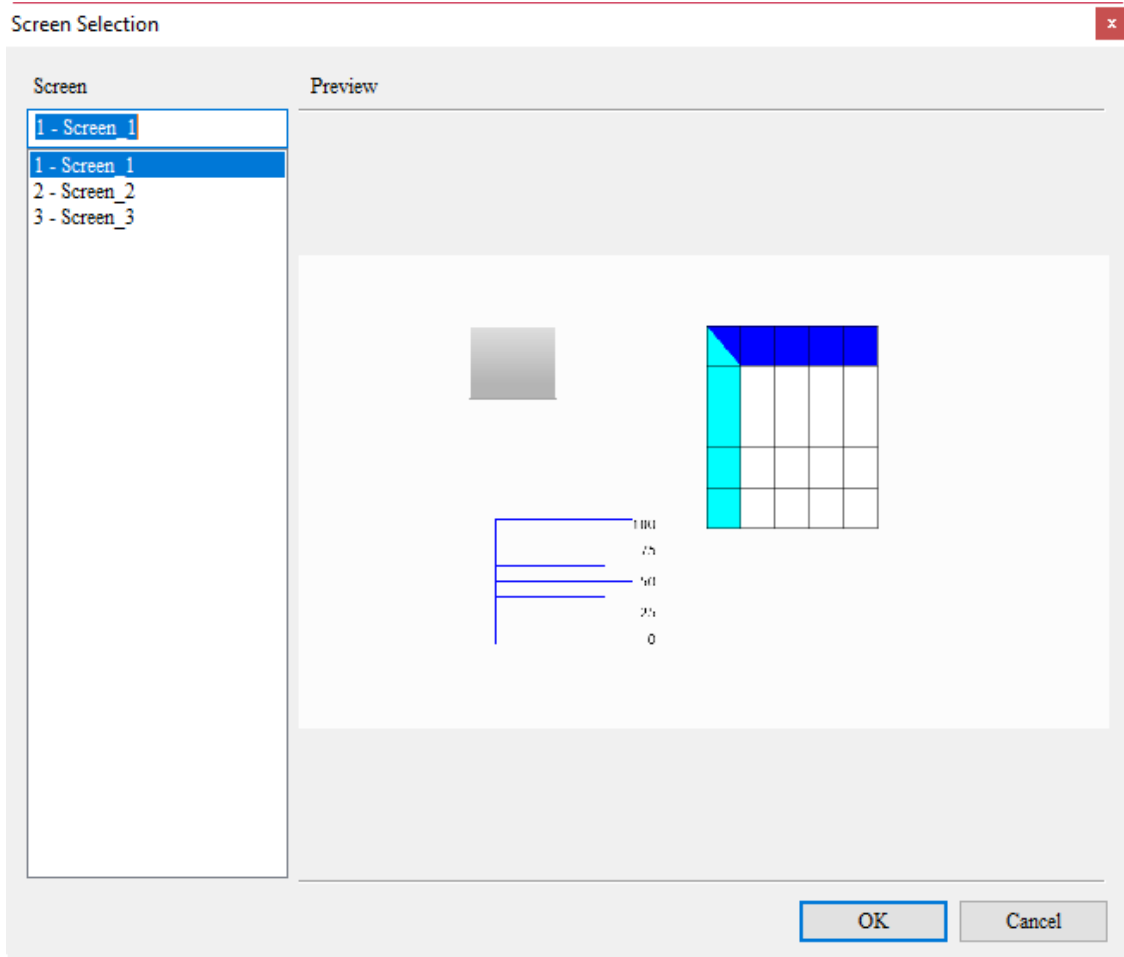


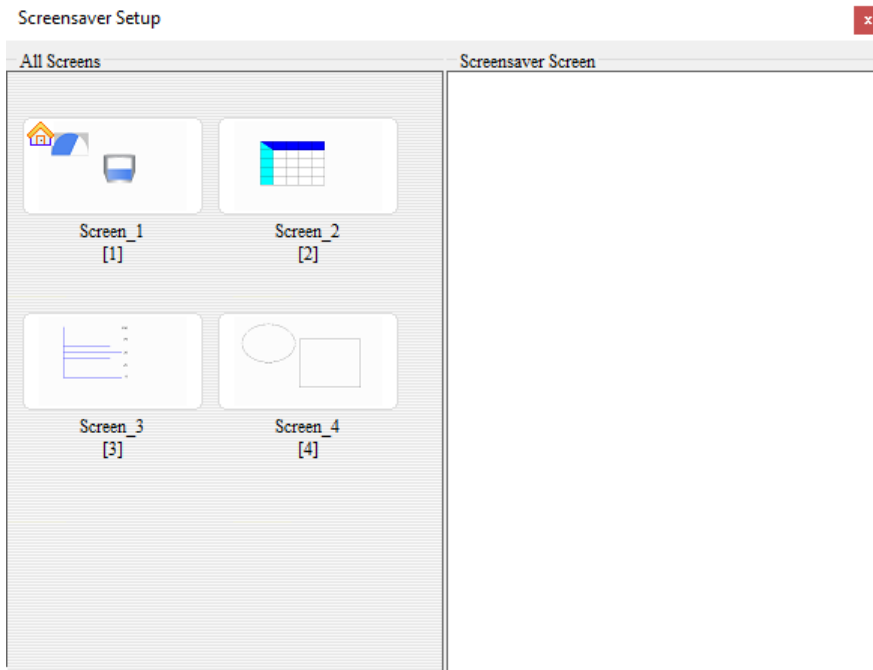
Figure 2.2.4.2.1 Open Screen

2

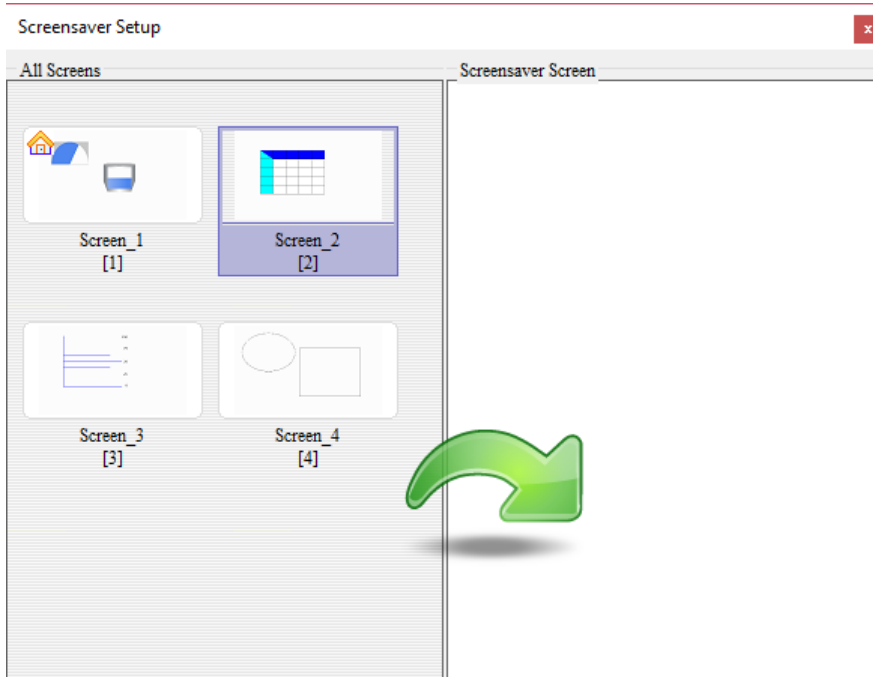
2.2.4.3 Screensaver

The setting of the DOPSoft Screensaver is the same as that of Windows. To set the screen for the screensaver, drag the screen to the Screensaver Screen section on the right. The steps are as follows:

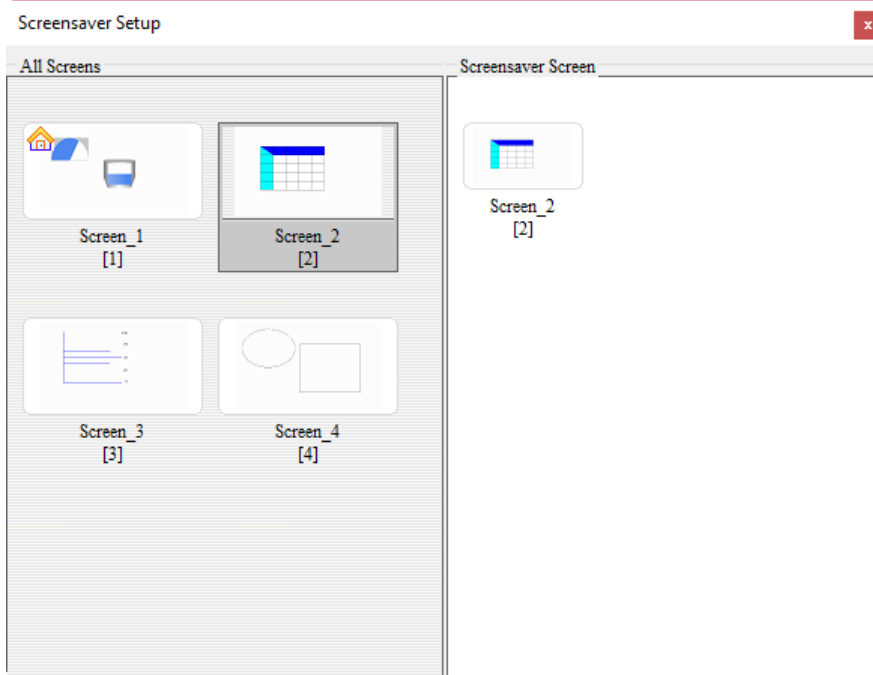
1. Go to [Screen] > [Screensaver] to go to the Screensaver Setup page.



2. Select the screen for the screensaver from the left section. Left-click the mouse and hold, a green arrow directs you to drag the selected screen.

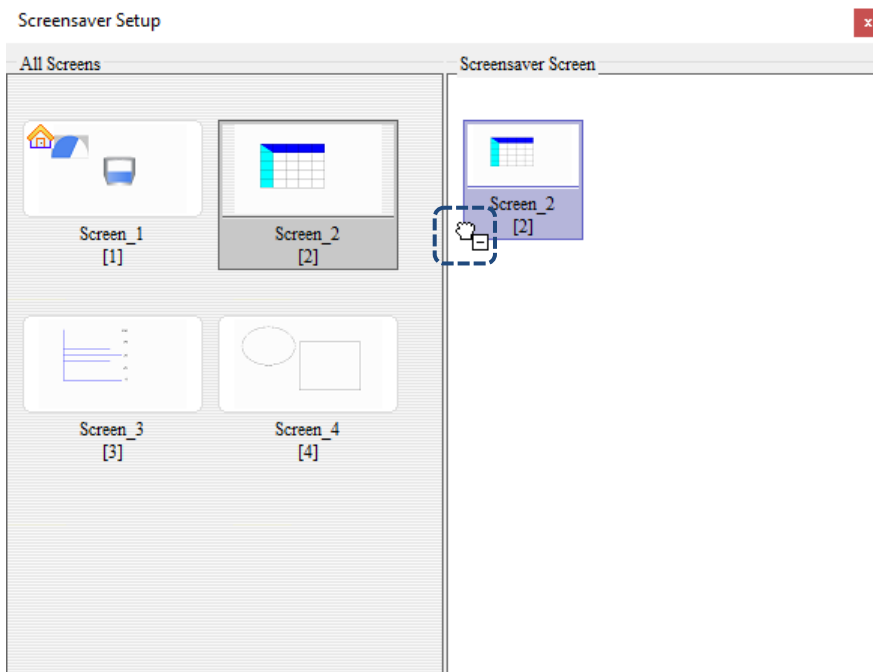


- 3. Once the green arrow displays, you can start dragging the screen. In the figure below, Screen_2 is dragged to the Screensaver Screen.



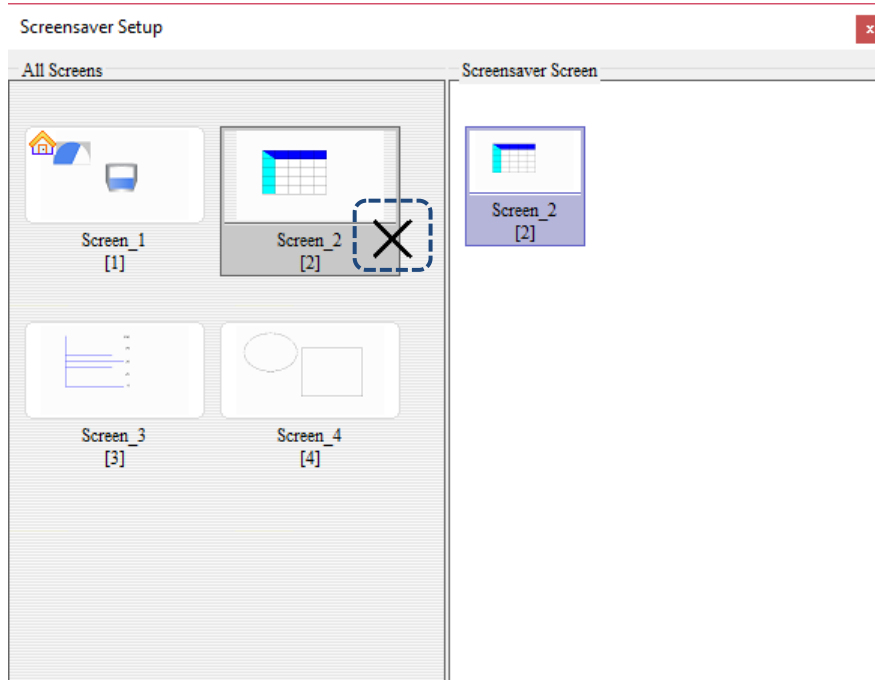
2

- 4. To delete the screensaver screen, click and hold the screen to be deleted, and the screen with the mark is as shown as follows.



2

- Next, left-click the screen to be deleted and hold the mouse button, drag the screen to the All Screens section on the left, and a black X sign will display, then you can release the mouse left button to delete the screen for the Screensaver.



2.2.4.4 Cut Screen

To cut the screen, you can go to [Screen] > [Cut Screen], or use the system keyboard shortcut **Shift + T**. Cut Screen is the same as the cut action for editing general texts. You can cut the screen and paste the screen.

Note: you cannot undo the action after you cut the screen.

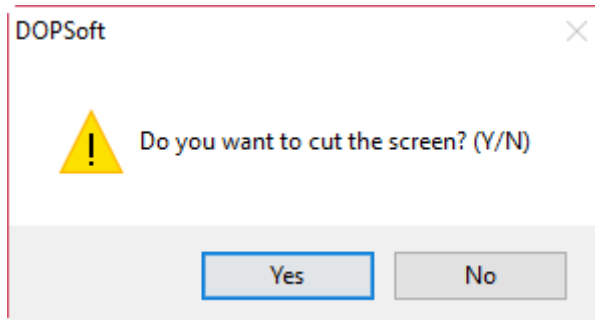


Figure 2.2.4.4.1 Cut Screen

2.2.4.5 Copy Screen

To copy the screen, you can go to [Screen] > [Copy Screen], or use the system keyboard shortcut **Shift + C**. You can first copy the screen, click Paste Screen, and then the screen you copied will be pasted, which is similar to the copy action for text editing.

2.2.4.6 Paste Screen

To paste the screen, you can go to [Screen] > [Paste Screen], or use the system keyboard shortcut **Shift + P**. Paste Screen is operable after you cut or copy the screen. After you paste the screen, the software automatically assigns the screen number.

2.2.4.7 Delete Screen

To delete the screen, you can go to [Screen] > [Delete Screen], or use the system keyboard shortcut **Shift + D**.

Note: you cannot undo the action after you delete the screen.

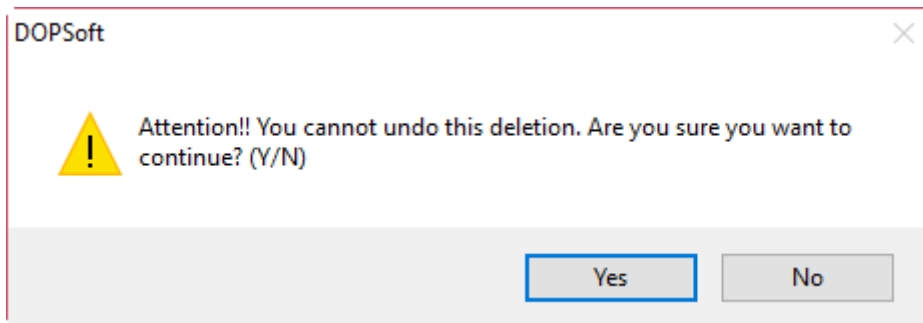



Figure 2.2.4.7.1 Delete Screen

2.2.4.8 Export

Save the current screen data as a .bmp image file in the disk. You can go to [Screen] > [Export], use  in the General toolbar, or use the system keyboard shortcut **Shift + E**. After you execute Export, you will be asked whether to show the border on the exported screen.

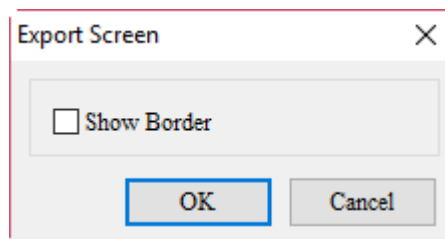


Figure 2.2.4.8.1 Export

Click **OK** and the default file name is "NewHMI" and the file format is .bmp.

2

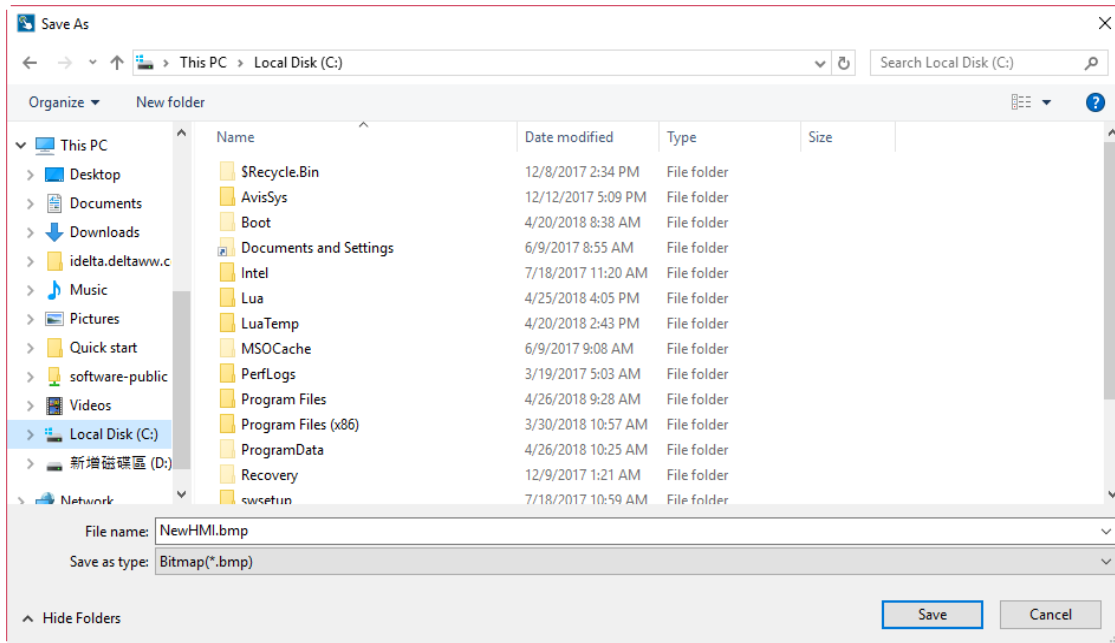


Figure 2.2.4.8.2 Export and save file

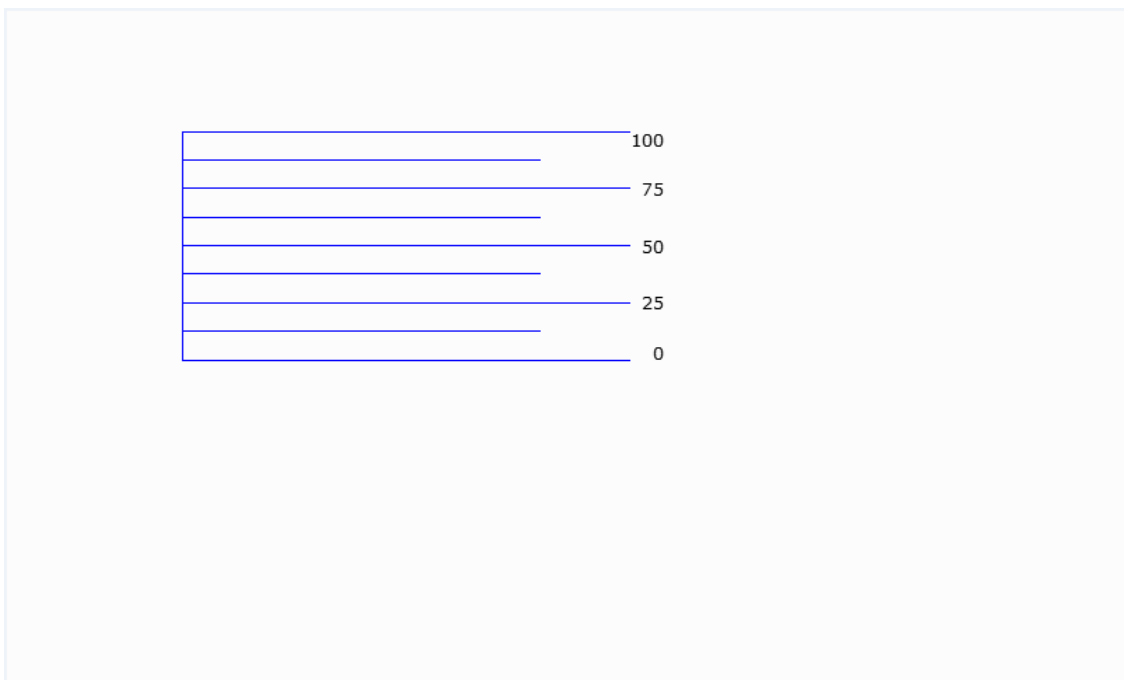


Figure 2.2.4.8.3 Image format after exported

If you have checked Show Border, the image is presented with a bold black border line.

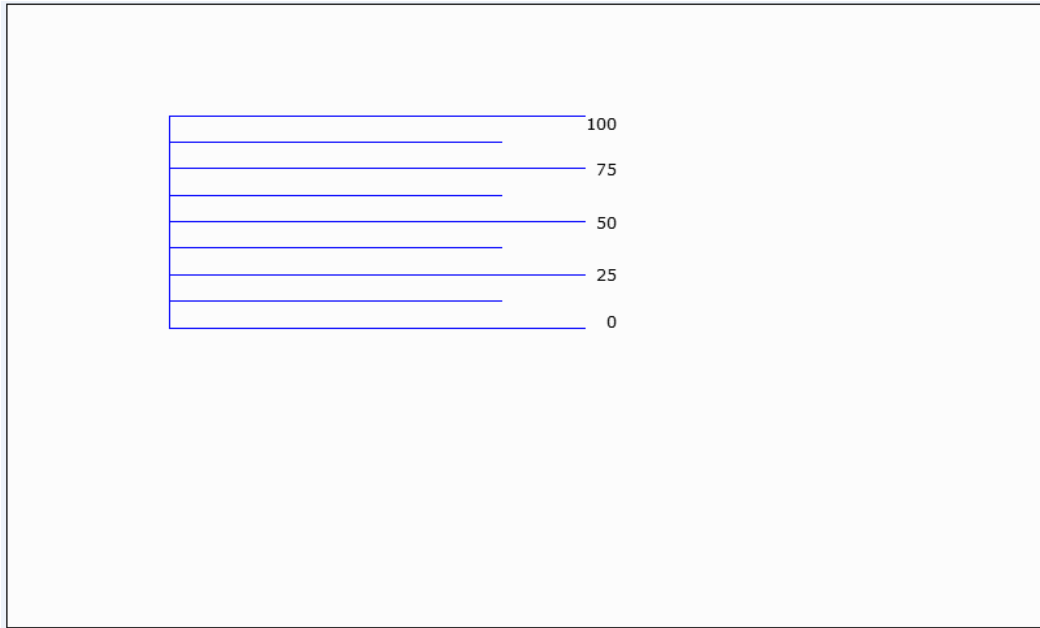


Figure 2.2.4.8.4 Image with black border

2.2.4.9 Import

Import any of the images from the file and set it as the background image for this editing screen. Supported image file formats for Import include BMP, JPG, GIF, ICO, and PNG. You can go to [Screen] > [Import] or use the system keyboard shortcut **Shift + I**.

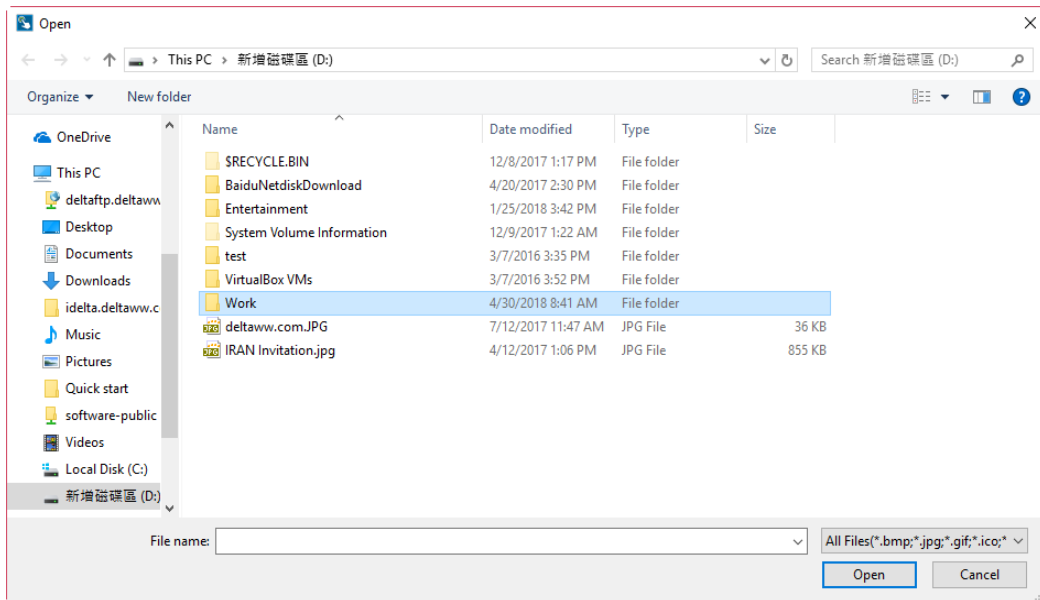


Figure 2.2.4.9.1 Supported file format for Import

Note:

1. The imported background image is different from the base screen. The imported image data is not treated as an element whereas the base screen is saved as an element in the editing screen after it is compiled.
2. For the definition and usage of the base screen, please refer to 2.2.4.11 Screen Properties.

2

2.2.4.10 Clear imported data

To clear the imported background image, you can simply go to [Screen] > [Clear imported data] to clear the external background image in the current editing screen.

2.2.4.11 Screen Properties

The Screen Properties is for setting the properties of the screen. It allows you to set the screen as a subscreen, Display Title Bar, Width and Height, and X-Y coordinates of the subscreen. You can go to [Screen] > [Screen Properties] or click the screen and then select the Screen Properties of the Properties table, as shown in Figure 2.2.4.12.1 and 2.2.4.12.2.

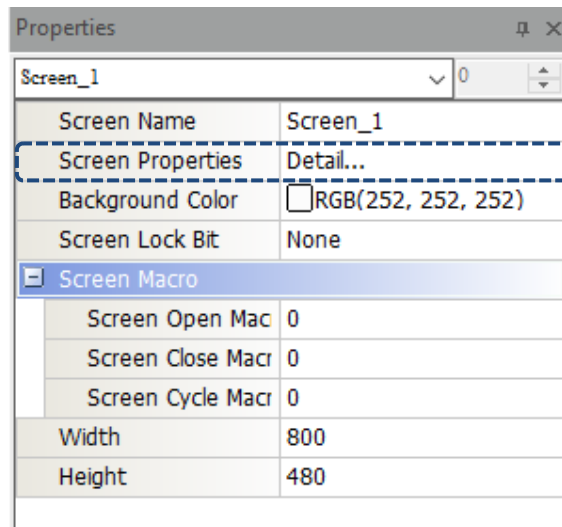


Figure 2.2.4.12.1 Screen Properties

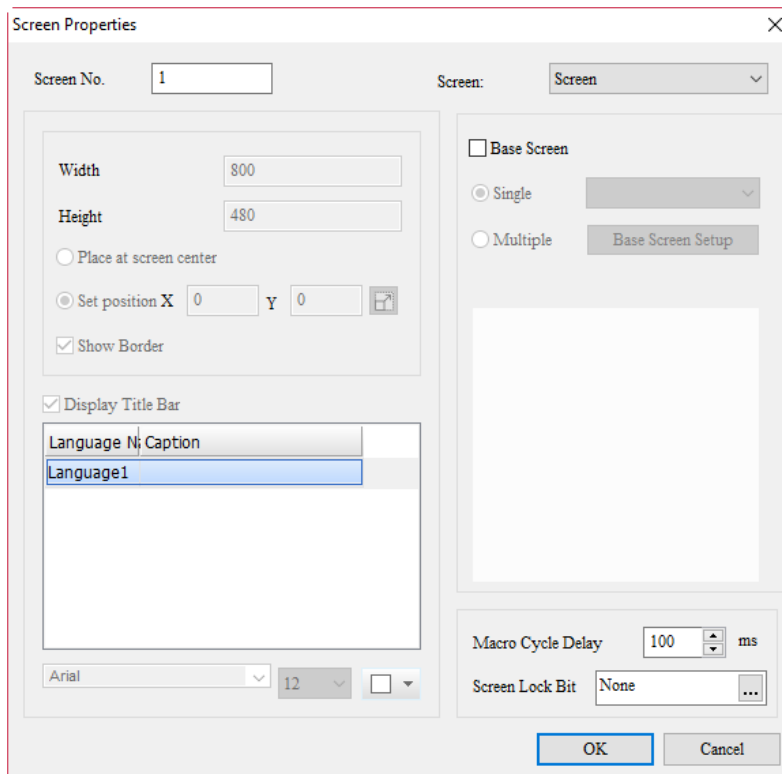


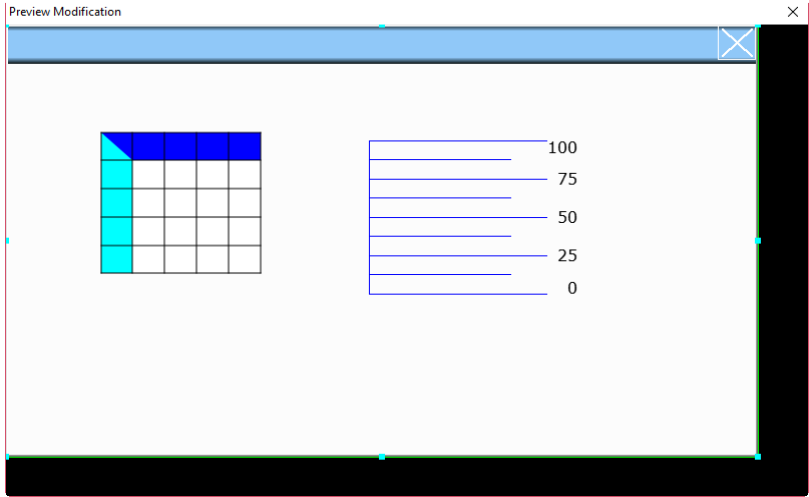
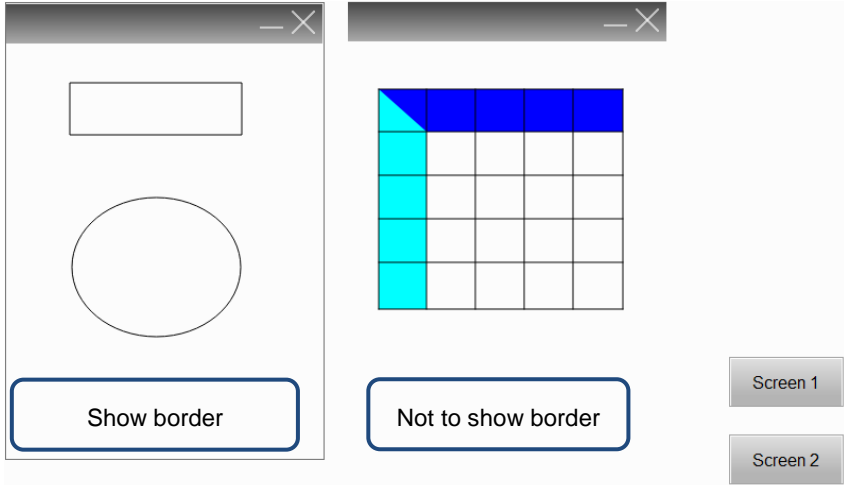
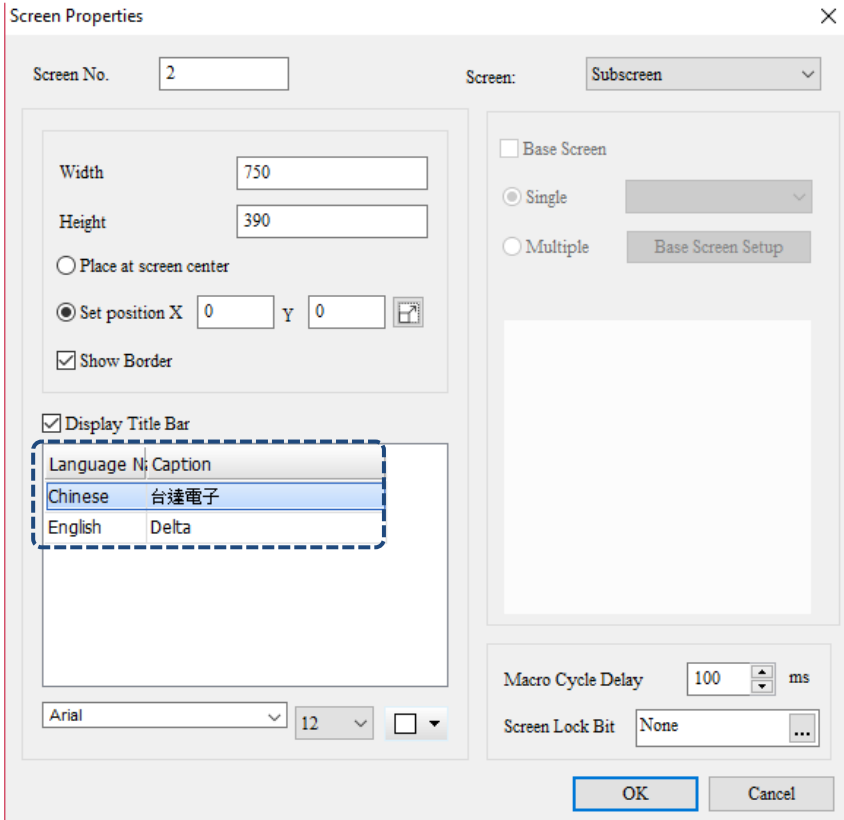


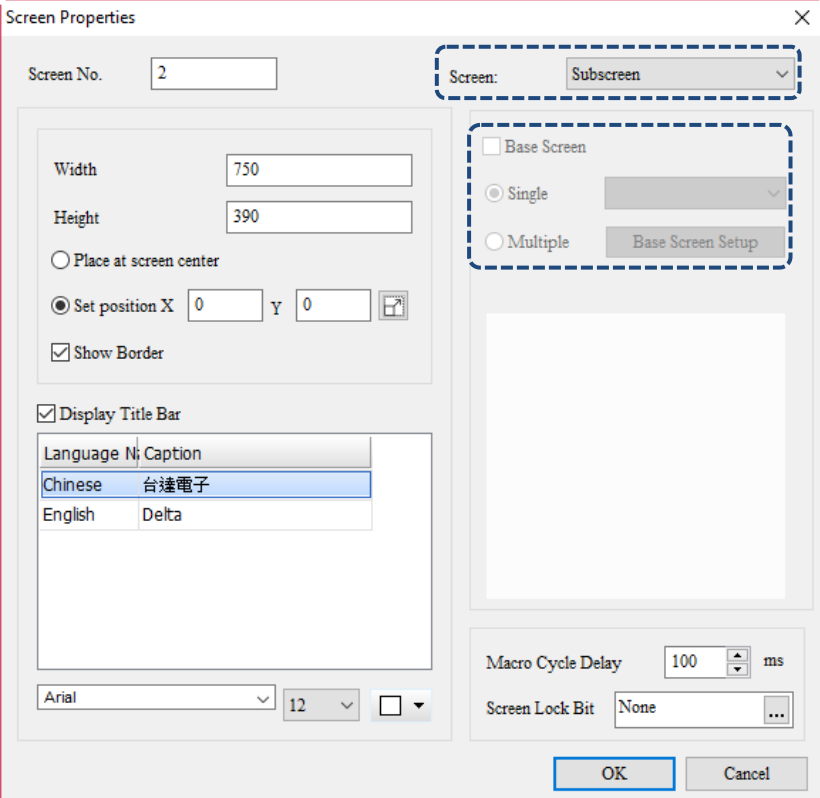
Figure 2.2.4.12.2 Screen Properties settings

Please refer to the table below for the parameter settings of Screen Properties.

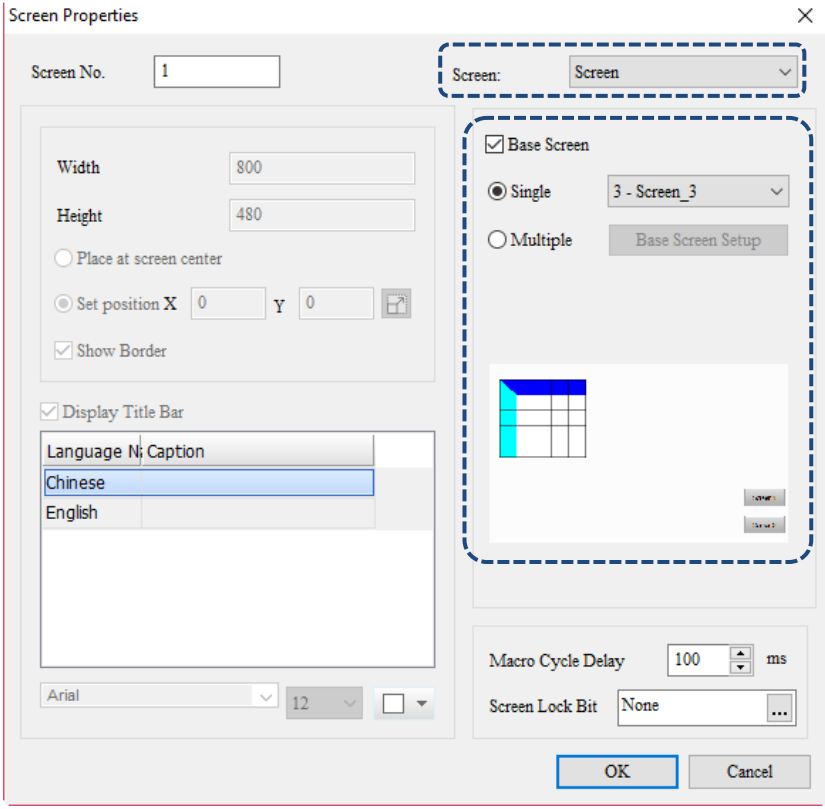
Item		Description
Screen No.		The Screen No. is from 1 to 65535 and repeating number for different screens is not allowed.
Screen application	General View Screen	Set as the General View Screen
	Apply Print Screen	Set the screen as the print screen. This option is only operable when the the project file specifies the printer model. For more details, please refer to Chapter 26 Print Setup.
Screen:		It can set the screen as Screen, Subscreen, Keypad Screen, and Print Screen. 
Subscreen settings	Width	Set the width of the subscreen. The unit is pixel.
	Height	Set the height of the subscreen. The unit is pixel.
	Position of subscreen display	In the subscreen settings, you can set to [Place at Screen center] or specify its position when screen opened. Please directly input the coordinates or click  to go to the Preview Modification screen to adjust the size or position of the screen, as shown in the figure below. 

2

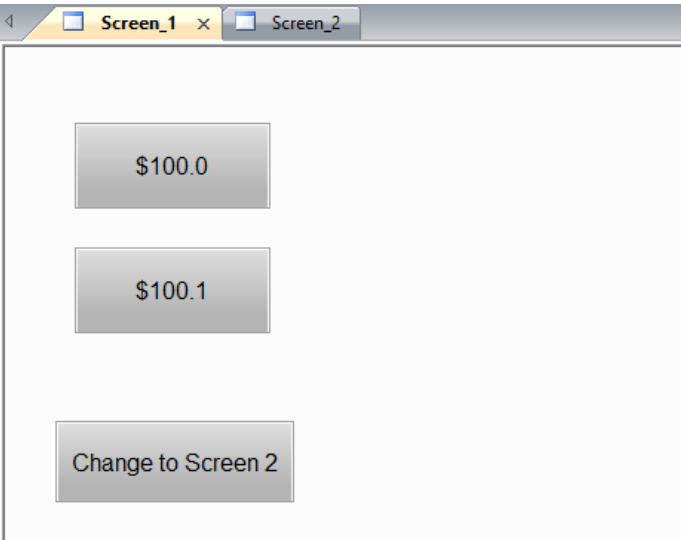
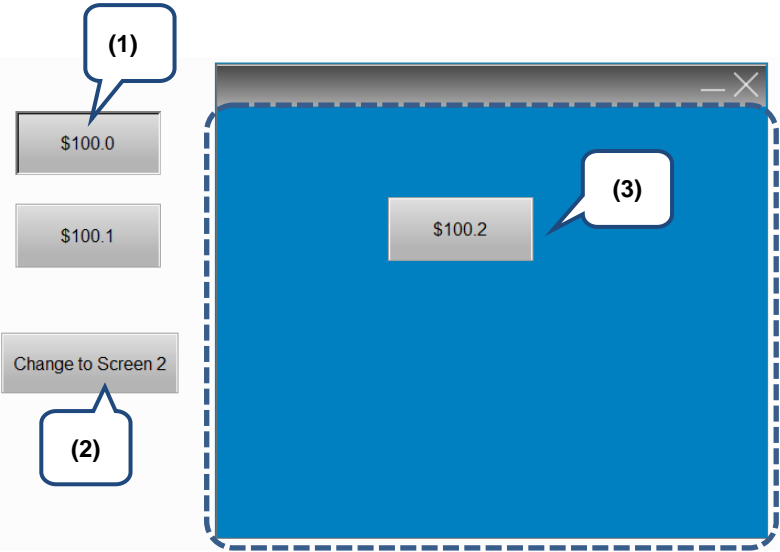
Item	Description
<p>Show Border</p>	<p>Checking Show Border means the subscreen displays with a border; leaving Show Border unchecked means the subscreen displays without a border, as shown in the figure below.</p> 
<p>Display Title Bar</p>	<p>You can set whether to display the title bar and set the corresponding text title based on the set language. In addition, you can set the text size, font, and color.</p> 
<p>Macro Cycle Delay</p>	<p>The interval for executing the Screen Cycle Macro. The range is 100 ms - 5000 ms with the default of 100 ms.</p>

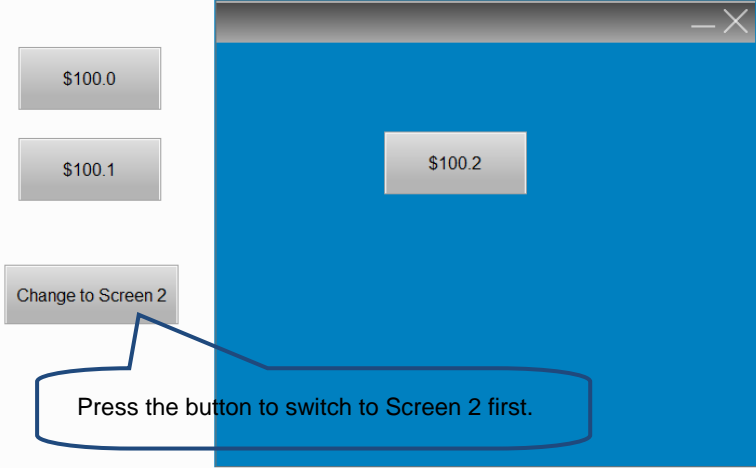
Item		Description
Hard Copy Print range	Setting	This is operable only when the project file specifies the printer model. For more details, please refer to Chapter 26 Print Setup.
	Top-Left	Set the range to print. The unit is pixel.
	Right-Bottom	
Base Screen	Select the Base Screen you need.	<p>If you set the Screen as Subscreen, the base screen options are grayed out.</p>  <p>If you set the Screen as Screen, then you can set any of the editing screens as the base screen in all screens. The base screen is placed at the bottom layer as the background image in the editing section.</p>

2

Item	Description
	
Single	<p>You can go to any of the screens (except for the current screen) and set it as the base screen. The Single option indicates the base screen has only one screen.</p>
Multiple	<p>The Multiple option indicates all screens except for the current one can be set as the base screen. The main difference between options of Single and Multiple is that you can use multiple screens as base screens when selecting Multiple.</p>

2

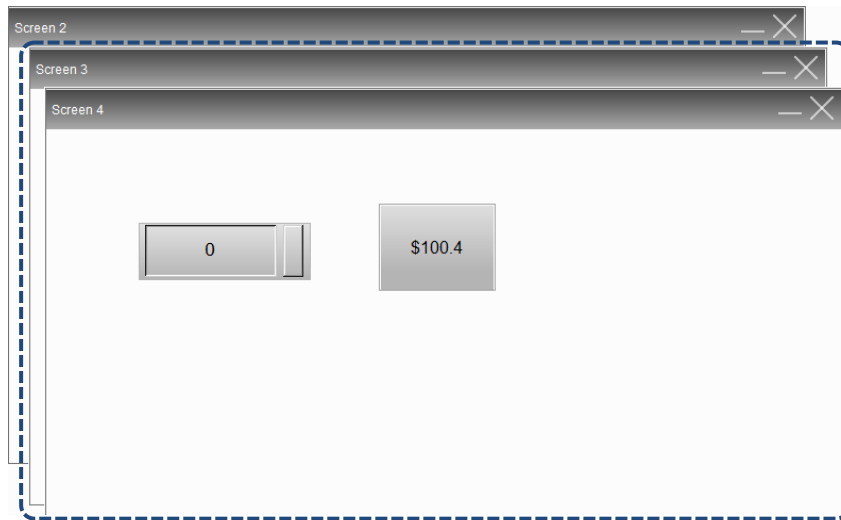
Item	Description
	<p>Create a change screen button in Screen 1 and set it to switch to Screen 2.</p> 
<p>Screen Lock Bit</p> <p>Execution results</p>	<p>After creating the element, please compile and download the elements to the HMI. Next, press \$100.0 and then press Change to Screen 2. In this case, Screen 2 is locked and you can only press \$100.2 on Screen 2. You must close Screen 2 before pressing \$100.1 on Screen 1.</p>  <p>(1) Press \$100.0 to lock Screen 2. (2) Go to Screen 2. (3) After you lock Screen 2, only the element on Screen 2 is operable.</p>

Item	Description
Execution results	<p>On the other hand, if you switch to Screen 2 without pressing \$100.0, as Screen 2 is unlocked, all buttons in Screen 1 and Screen 2 are operable.</p> <p>If you do not execute \$100.0 to lock Screen 2, all buttons in the HMI are operable.</p> 

When multiple screens use the Screen Lock Bit, the operable range is determined by the screen opening sequence. The screens opened following the lock screen are all operable; for example, if you switch from Screen 1, Screen 2, Screen 3, and then to Screen 4, if you lock Screen 3, then the selectable range will be Screen 3 and 4, so all elements in Screen 3 and 4 are operable.

Screen Lock Bit

After Screen 3 is locked, the operable range is Screen 3 and Screen 4.



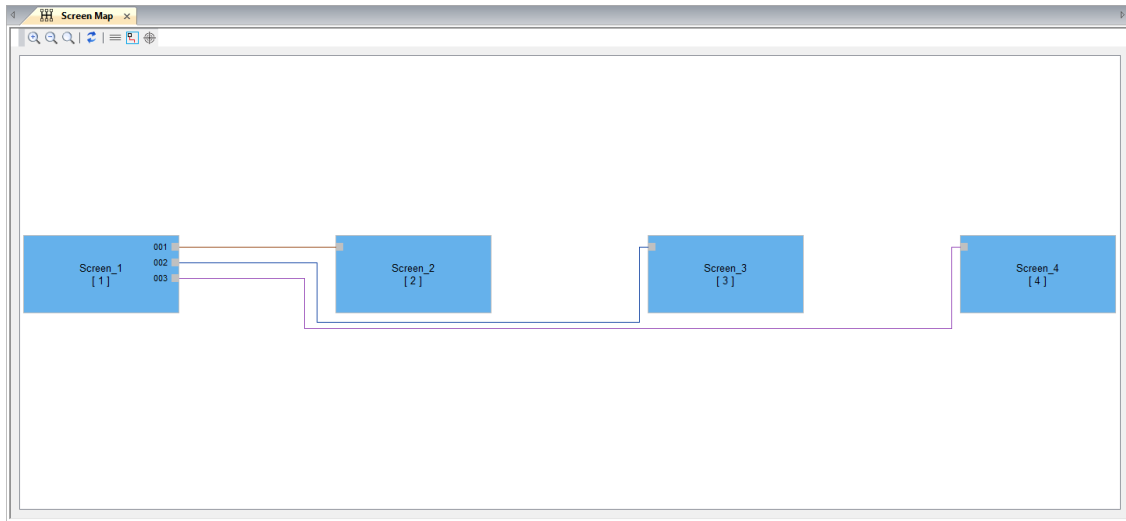
Note:

1. The embedded subscreen does not support Screen Lock Bit.
2. The subscreen remains locked even when you minimize the screen.
3. You can lock the subscreen even when it has no title setting. Make sure you created the change page button in case the subscreen cannot be closed.
4. For models without the System Key (refer to Appendix A), when the screen is locked, you can press and hold the background image to go the system directory.

2.2.4.12 Screen Map

The Screen Map enables you to view the linkage between each screen and also allows you to directly change the screen number as required.


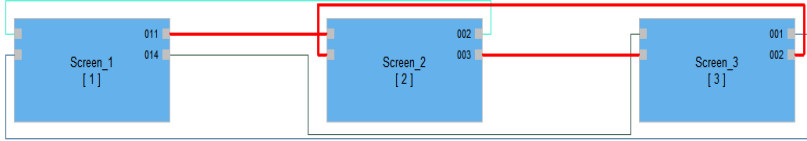

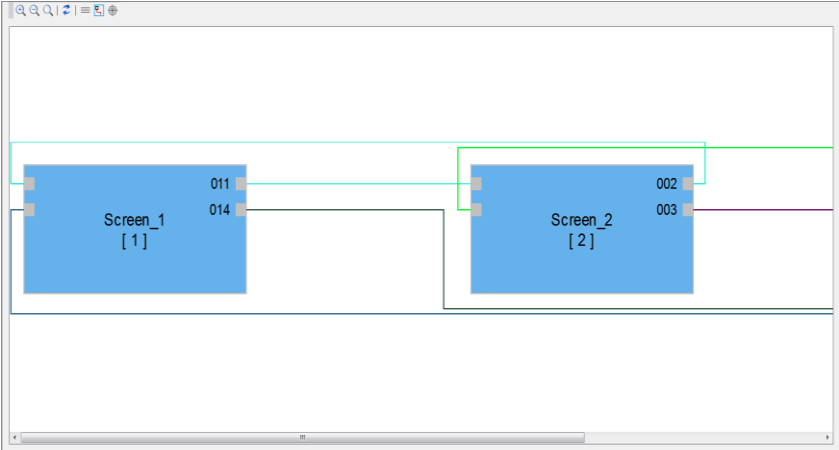

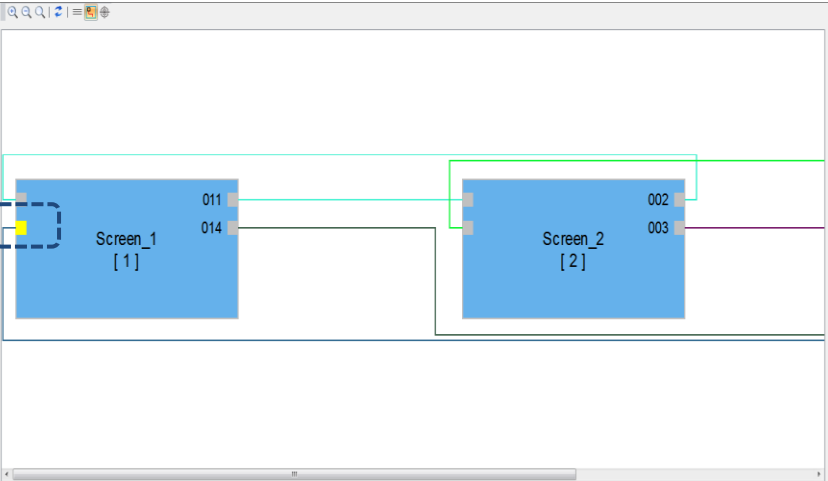
2




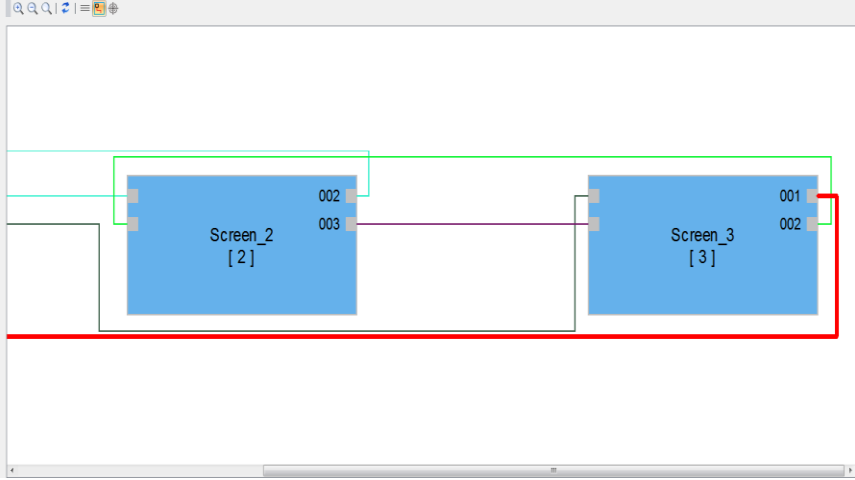

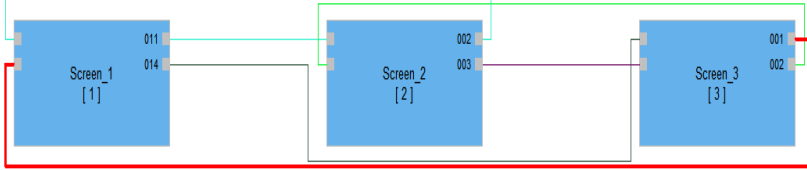

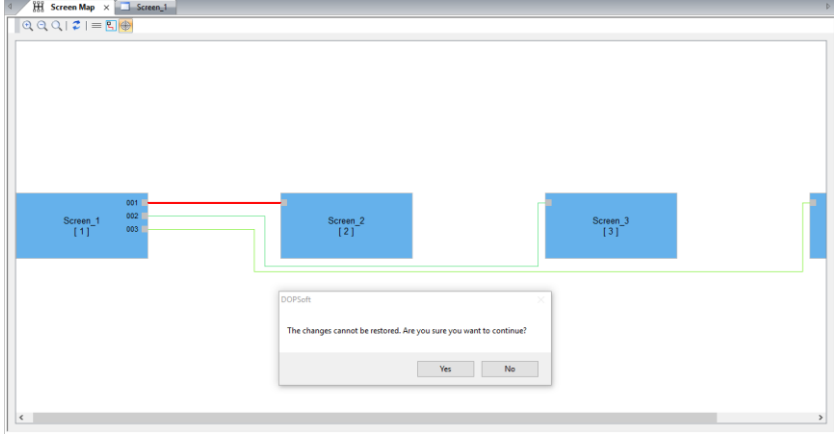
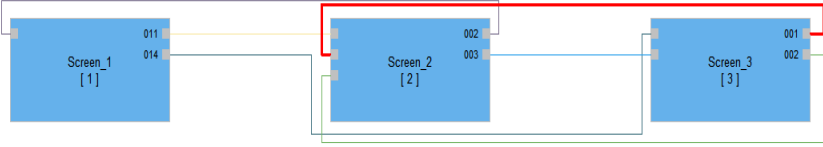
The toolbar for Screen Map:



Icon	Function	Description
	Zoom In	Zoom in to make the screen map appear larger.
	Zoom Out	Zoom out to make the screen map appear smaller.
	1:1	Show the screen map in the original size.
	Update	<p>If you add, modify, or delete any screen button, the background color shows in pale yellow when you open the screen map, meaning the linkage between screens have been changed; meanwhile, you can click this button to update all screen numbers.</p>

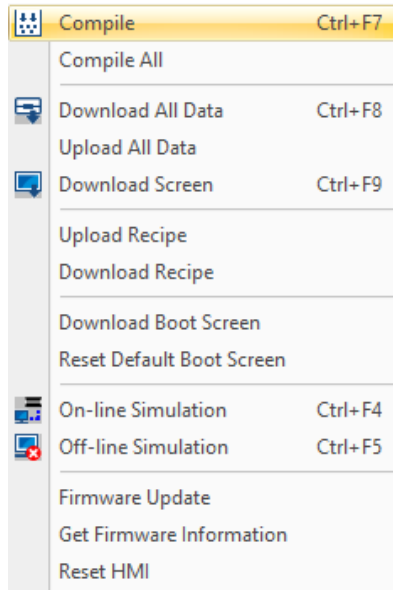
Icon	Function	Description
	<p>Multiple Selection</p>	<p>It is for selecting the relation lines of multiple screens. The selected screens are linked with red lines.</p> 
	<p>Display nodes on the screen after selection</p>	<p>When the Screen Map is zoomed in and becomes too large so the screen number cannot be identified, you can use this button to select the node and switch to the linked screen number.</p> <p>1. Zoom in the Screen Map</p>  <p>2. Click  to select the yellow node of Screen_1.</p> 

2

Icon	Function	Description
	<p>Display nodes on the screen after selection</p>	<p>3. You will be directed to the screen number linking the yellow node of Screen_1.</p> 
	<p>Select Target Screen</p>	<p>This function directly changes the original linked screen number to another number on the Screen Map.</p> <p>1. Select node 001 of Screen_1.</p>  <p>2. After you click  and select Screen_2, the software prompts a message window showing the original linkage cannot be restored after this change. If you want to continue, click Yes and node 001 of Screen_1 that is originally linked to Screen_3 is changed to link to Screen_2.</p>  <p>3. The screen number linking to node 001 is changed to Screen_2.</p> 

2.2.5 Tools

The Tools option on the function list provides the following functions.



2

Figure 2.2.5.1 Toolbar function list

2.2.5.1 Compile

For more user-friendly operation and usage, the DOPSoft provides the Compile function for individual pages. When you create multiple screens but only modify one of them, you can use Compile instead of Compile All to save the time for compiling all the screens.

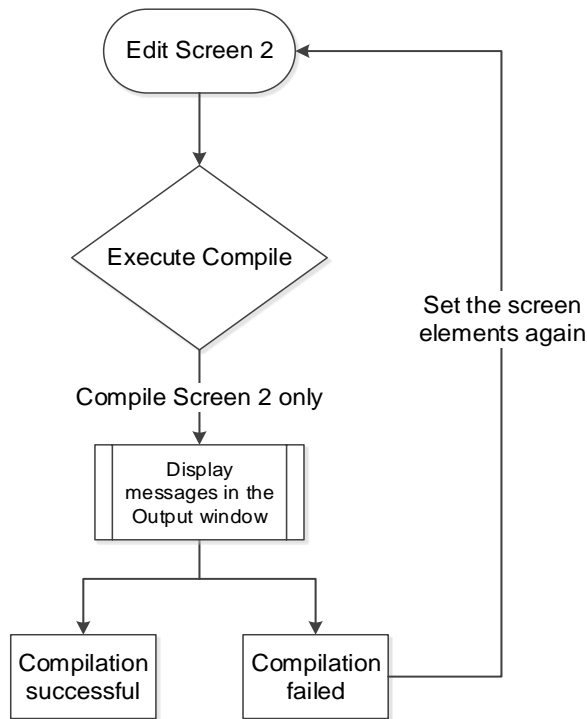



Figure 2.2.5.1.1 Flowchart of Compile

You can go to [Tools] > [Compile], use  on the Layout toolbar, or use the system keyboard shortcut **Ctrl+ F7**.

2

2.2.5.2 Compile All

This function is the same as Compile but Compile All is for compiling all screens. In the compiling process, the output column will display the related message. If an error occurs after you execute Compile, the output column also displays the error message to remind you. You can click on this message to check the element in error.

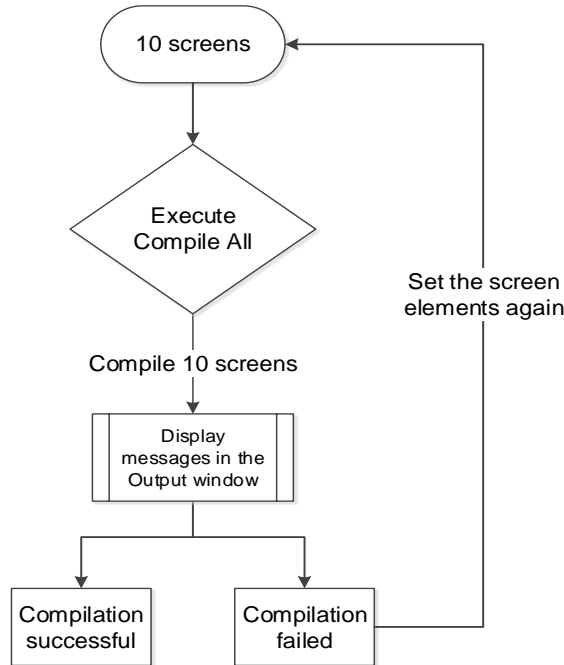



Figure 2.2.5.2.1 Flowchart of Compile All

Compile and Compile All functions are to ensure no error occurs in the edited screen.

2.2.5.3 Download All Data

Download All Data is for downloading both the screen data and recipes to the HMI. You can go to [Tools] > [Download All Data], use  on the Layout toolbar, or use the system keyboard shortcut **Ctrl+ F8**. When you execute Download All Data, the software detects whether the HMI is connected with the PC, and if the transmission interface is not enabled, then an error message will pop up for warning.

■ Normal transmission

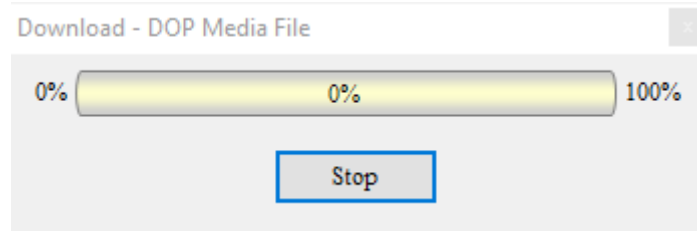
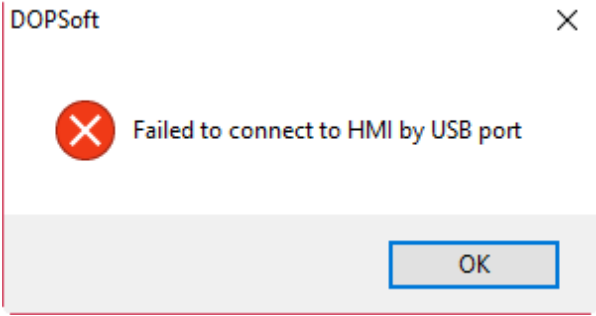
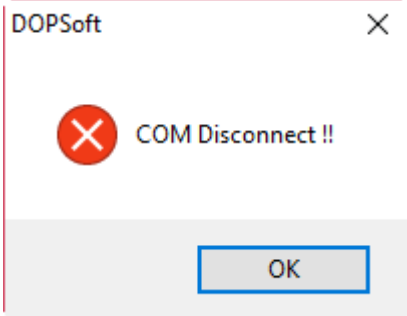
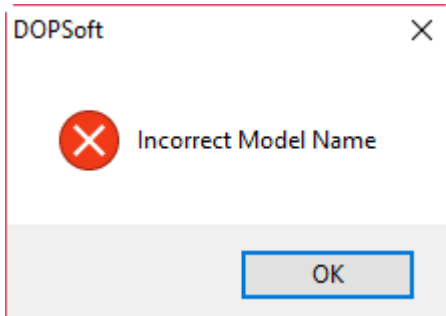


Figure 2.2.5.3.1 Download all data

■ Abnormal transmission

USB channel check	<p>The error message pops up when the software fails to access the USB channel.</p> 
	<p>The error message pops up when the transmission cable is removed or the communication is disconnected during data download.</p> 
Model check	<p>The HMI model name is incorrect.</p> 

2

2.2.5.4 Upload All Data

When uploading all data, the software will prompt you to enter the password, as shown in Figure 2.2.5.4.2. The system default password “12345678” is input here. You can go to [Options] > [Configuration] to set its password.

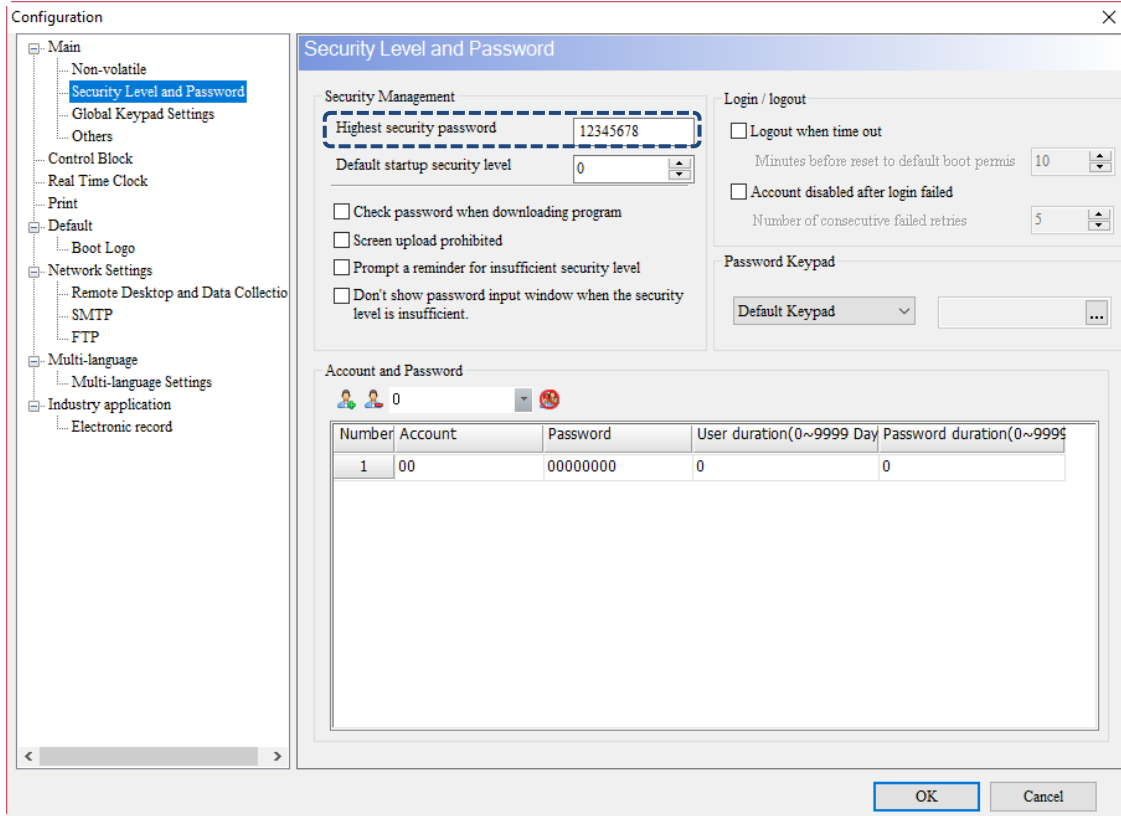


Figure 2.2.5.4.1 Set the security password

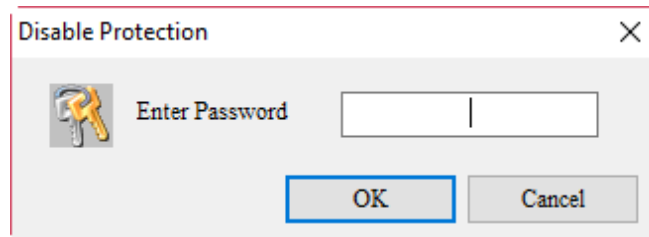


Figure 2.2.5.4.2 Upload All Data

After you enter the password, the software will ask you to save the screen file to be uploaded, as shown in Figure 2.2.5.4.3.

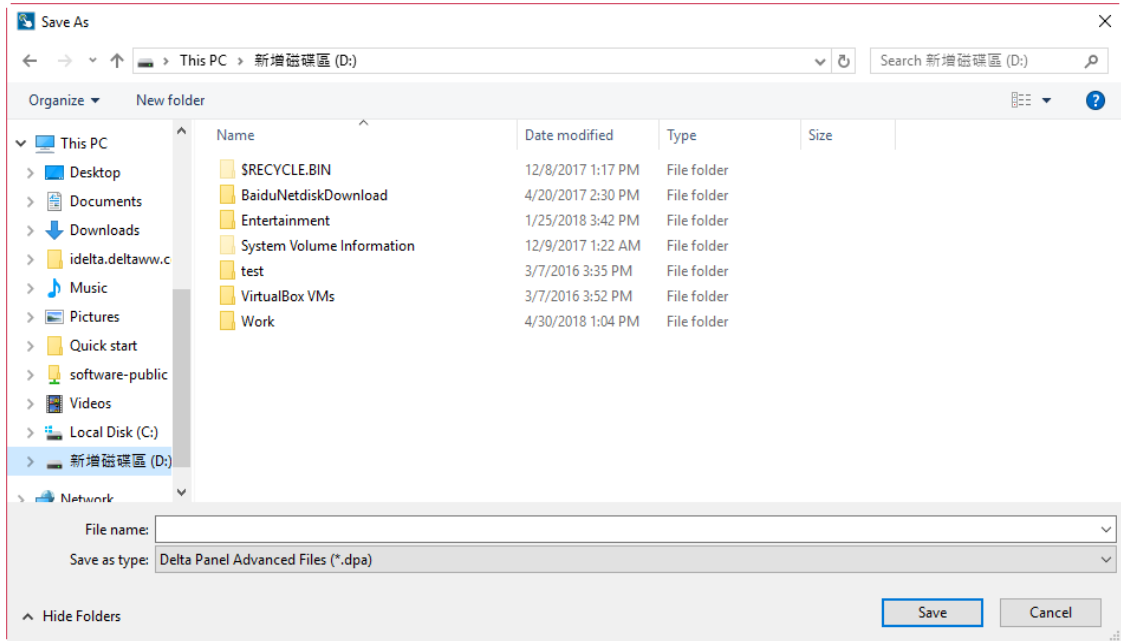


Figure 2.2.5.4.3 Save the uploaded data as another file

After you set the file and path to be saved, the screen data starts uploading until it reaches 100%. You can also click **Stop** to stop the data upload.

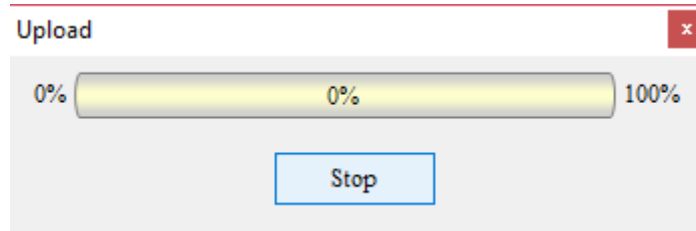


Figure 2.2.5.4.4 Data uploading

2

In addition to uploading the screen data to the PC, you can also go to [Options] > [Environment] to set whether to include the picture data when uploading.

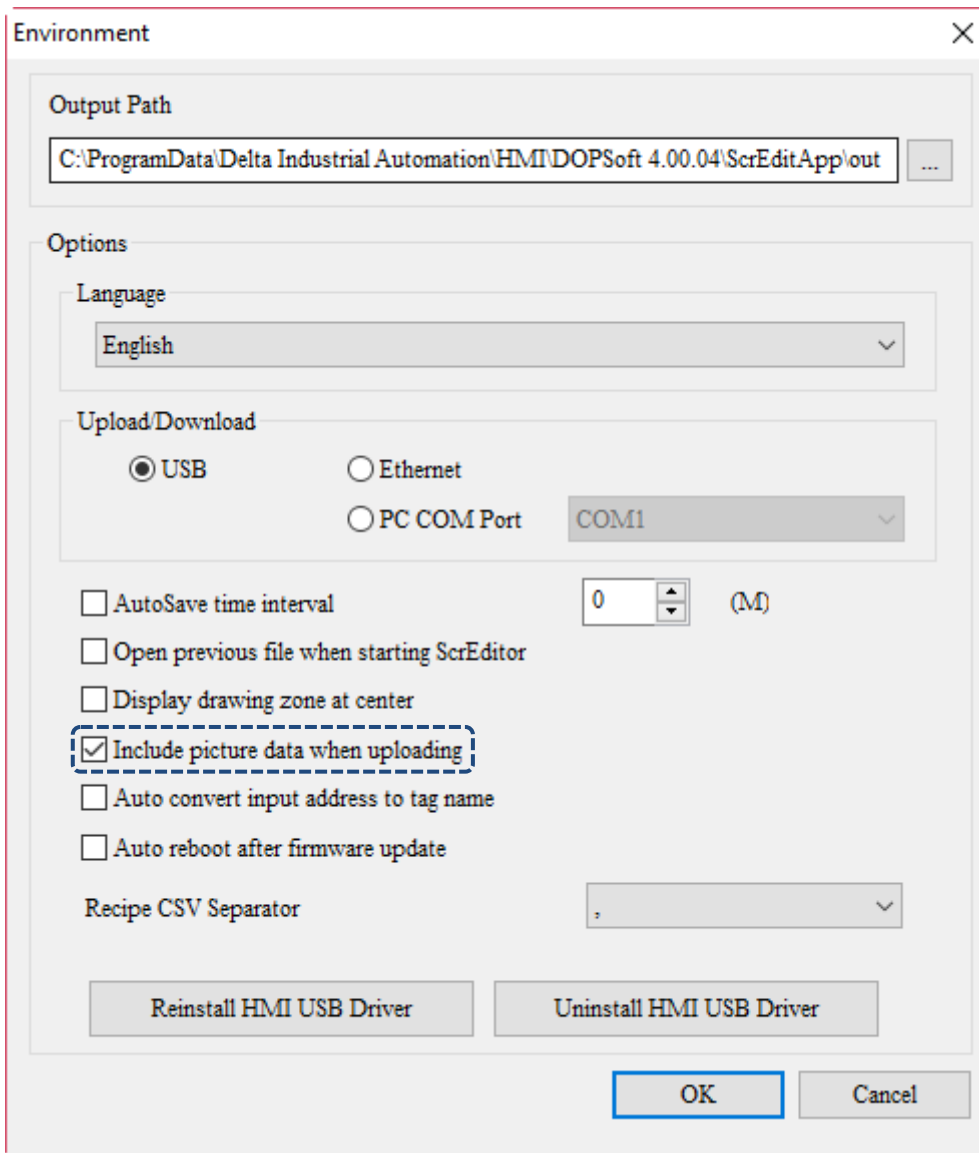



Figure 2.2.5.4.5 Include picture data when uploading

2.2.5.5 Download Screen

This function is to download the screen data without any recipe. Its download method is the same as that of Download All Data (you can refer to Section 2.2.5.3 Download All Data). You can go to [Tools] > [Download Screen], use  on the Layout toolbar, or use the system keyboard shortcut **Ctrl+ F9**.

2.2.5.6 Upload Recipe

The method of uploading the recipe and uploading all data is the same; you must enter the password before uploading the recipe. The steps to set the password is identical to the description in Section 2.2.5.4 Upload All Data and you can refer to it if needed.

2.2.5.7 Download Recipe

To download the recipe only, you can simply execute Download Recipe. This function allows you to save the time for downloading the screens when you need to change the recipe without changing other screen data. After you execute the function, the software will ask you to select the recipe file (.rcp) to download. Once selected, you can start downloading this recipe file to the HMI.

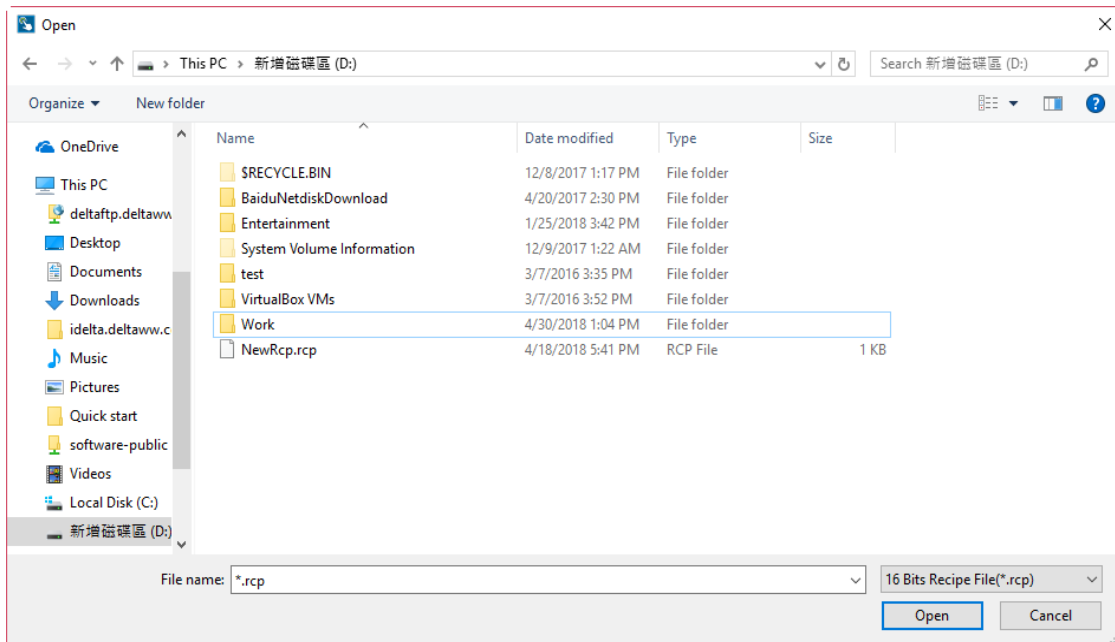


Figure 2.2.5.7.1 Download Recipe - select the recipe file

2.2.5.8 Download Boot Screen

To download the boot screen only, you can simply execute Download Boot Screen and then the [Download Logo...] window will pop up.

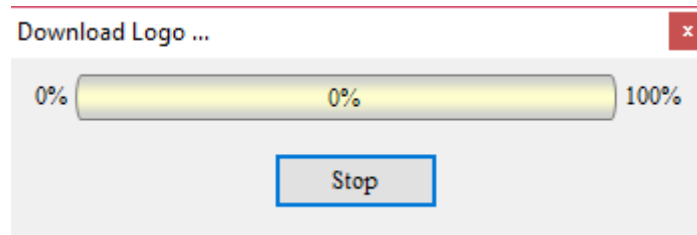


Figure 2.2.5.8.1 Download Boot Screen

When the boot screen function is disabled and you execute Download Boot Screen, an error occurs as shown below.

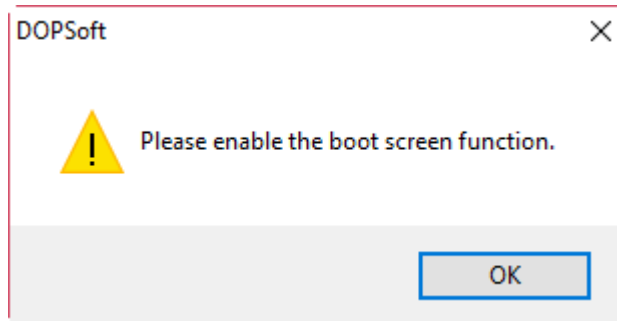


Figure 2.2.5.8.2 Enable Download Boot Screen

When you do not select any of the boot screens and execute Download Boot Screen, an error occurs as shown below.

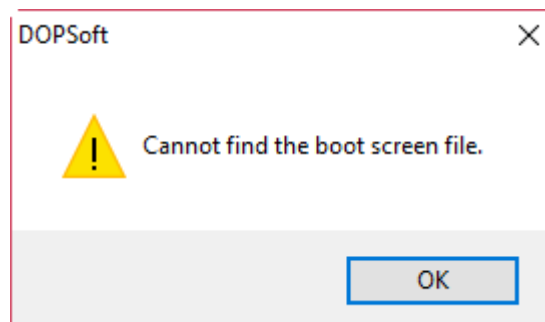


Figure 2.2.5.8.3 Cannot find the boot screen file


Note:

1. After downloading the boot screen or executing Reset Boot Screen, please cycle power on the HMI.
2. The following models do not support boot screens: B04S211, B05S100, B05S101, B07S201, and B07S211.
3. Supported image file formats include BMP, JPG, GIF, ICO, and PNG.

2.2.5.9 Reset Default Boot Screen

To use the Delta HMI default boot screen, you can simply execute Reset Default Boot Screen.

2.2.5.10 On-line Simulation

The On-line simulation is to simulate the PC as the HMI to communicate with the PLC. Its way of communication is to use the PC's COM port and PLC as the communication interface. If the communication of the On-line Simulation is OK, the PC is able to simulate the PLC operation. After executing the On-line Simulation, the software first compiles the data and checks if the screens are correct. You can go to [Tools] > [On-line Simulation], use  on the Layout toolbar, or use the system keyboard shortcut **Ctrl+F4**.

■ Procedure of On-line Simulation

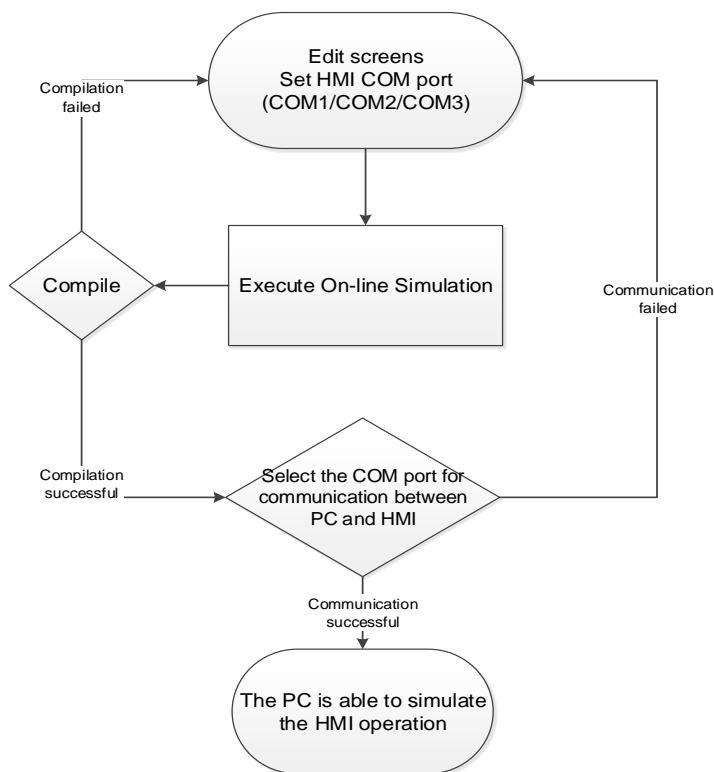


Figure 2.2.5.10.1 Flowchart of On-line Simulation

2

After you execute the On-line Simulation, the software will ask you to set the PC port number for communicating with the HMI, as shown in the figure below.

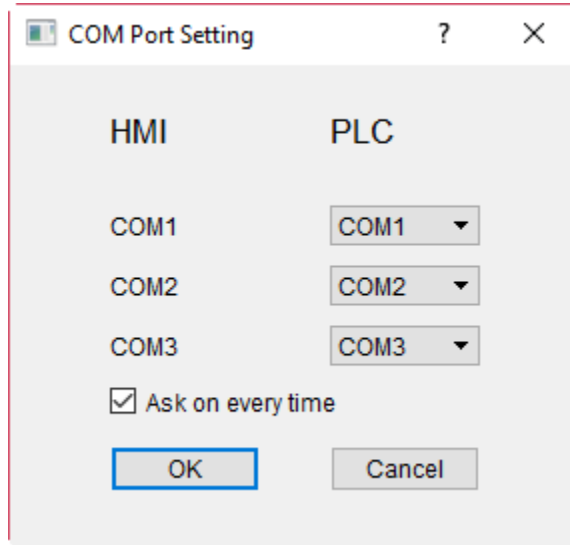


Figure 2.2.5.10.2 COM Port Setting

When all settings are correct, the On-line Simulation can start the communication with the PLC on behalf of the HMI.

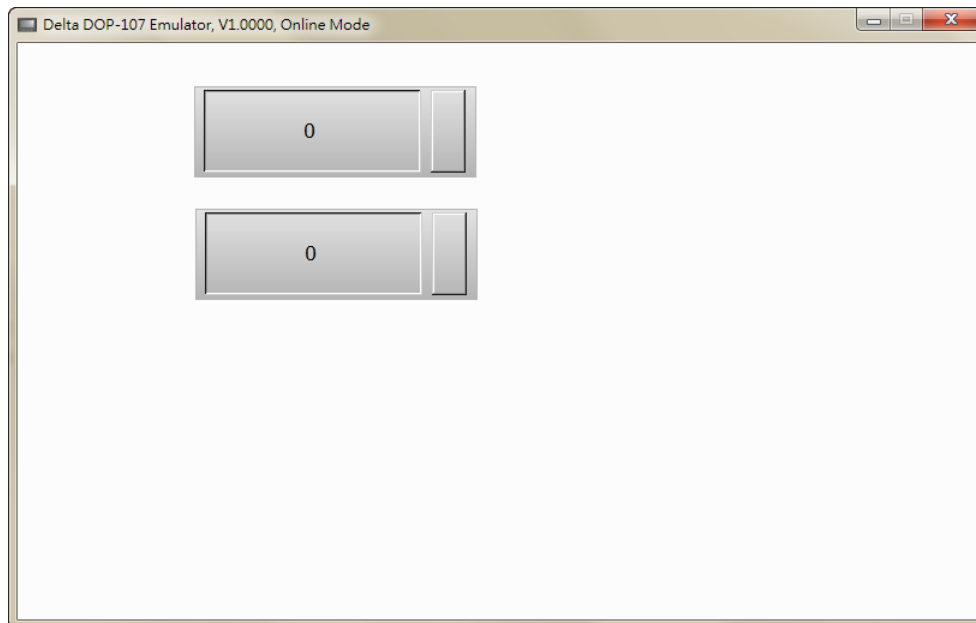


Figure 2.2.5.10.3 On-line simulation result

There is an option [Ask on every time] in the COM Port Setting which allows you to determine whether to prompt the COM Port Setting window each time you execute the On-line Simulation. If [Ask on every time] is unchecked, you can right-click the mouse on the On-line Simulation screen and select COM Setting to have the window show again, as shown in Figure 2.2.5.10.2.

2

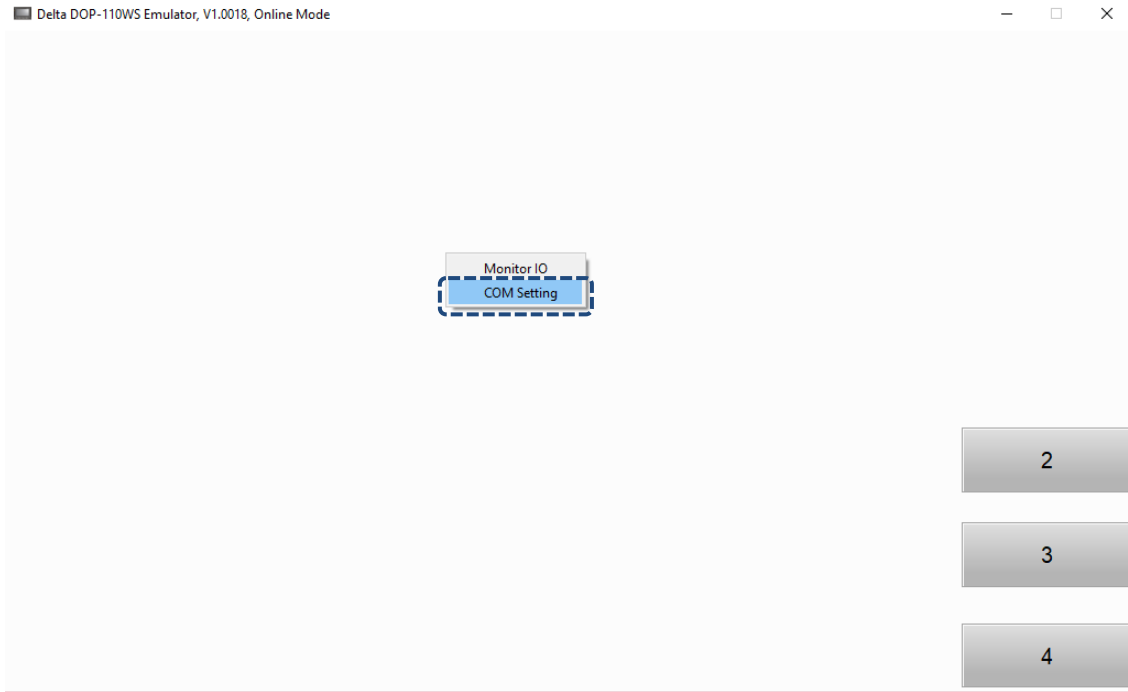


Figure 2.2.5.10.4 Right-click to enter COM Setting

2

The Monitoring IO function allows you to monitor values of the I/O devices. Right-click the On-line Simulation screen and select Monitor IO, a window pops up (shown in Figure 2.2.5.12.5) and you can start setting and monitoring the I/O devices.

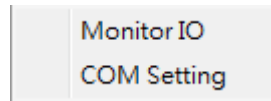


Figure 2.2.5.10.5 Right-click to go to Monitor IO screen

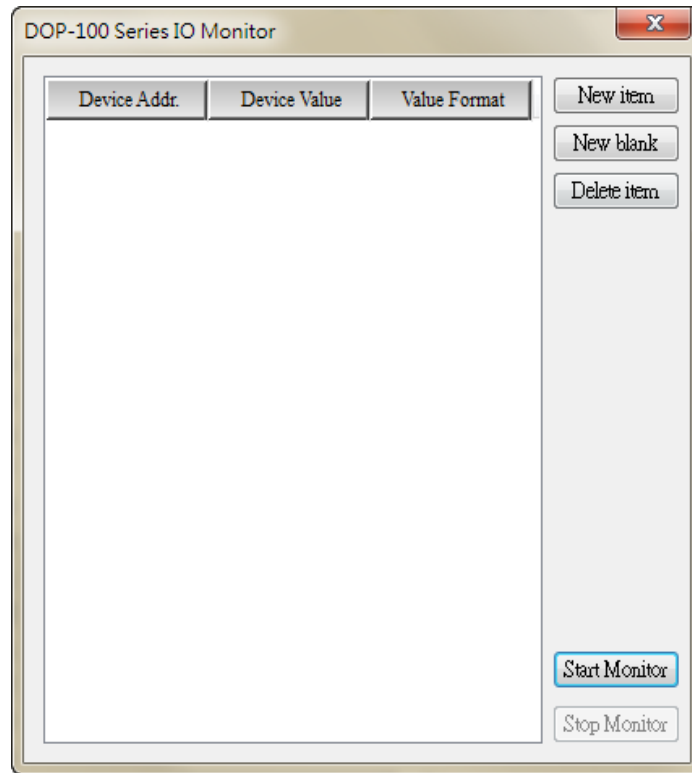
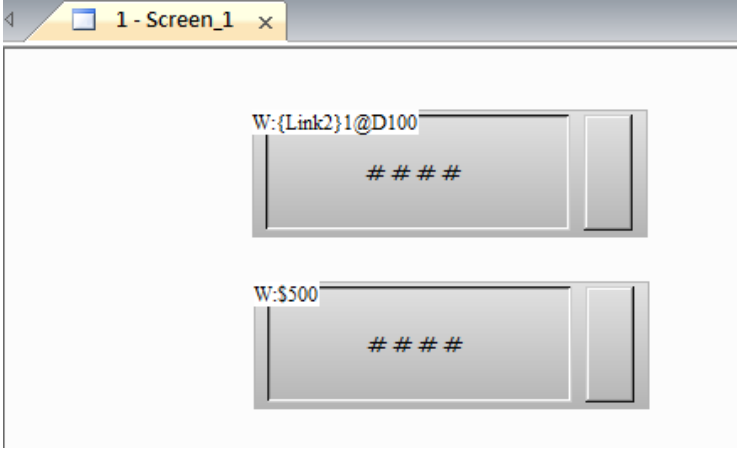
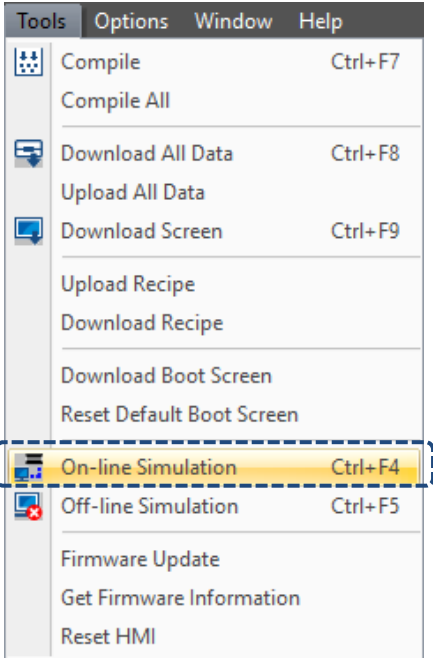
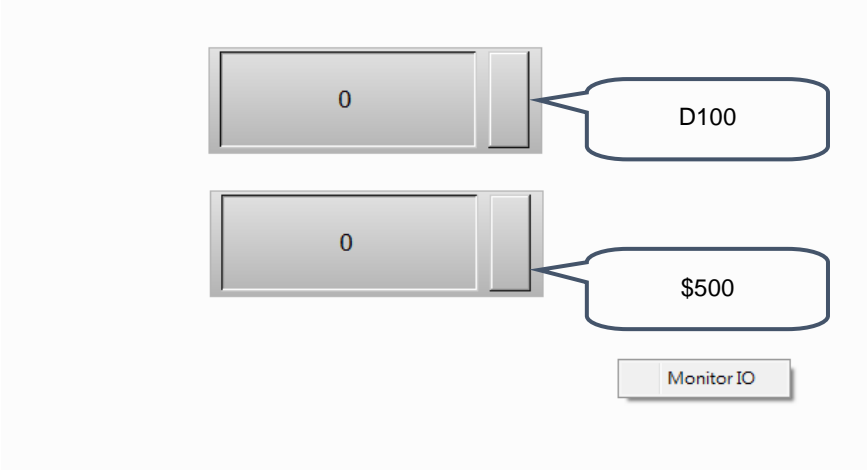


Table 2.2.5.10.1 Properties of Monitor IO

Properties of Monitor IO	
New item	Create a new monitoring address with an input box.
New blank	Add a new monitoring column. Different from New item, you can directly copy and paste the monitoring address instead of using an input box to enter the address.
Delete item	Delete the selected monitoring address.
Start Monitor	Click this button to start monitoring.
Stop Monitor	Click this button to stop monitoring.
Device Addr.	Available options are internal memory and controller register address.
Device Value	<ul style="list-style-type: none"> ■ Display the values of the monitoring internal memory or controller register and it also promptly changes the values. ■ If you are using Delta PLCs, setting the length is not required.
Value Format	There are four selectable formats: Signed Decimal, Unsigned Decimal, Hexadecimal, and Bit.

The following section is the example of Monitor IO.

Table 2.2.5.10.2 Monitor IO example

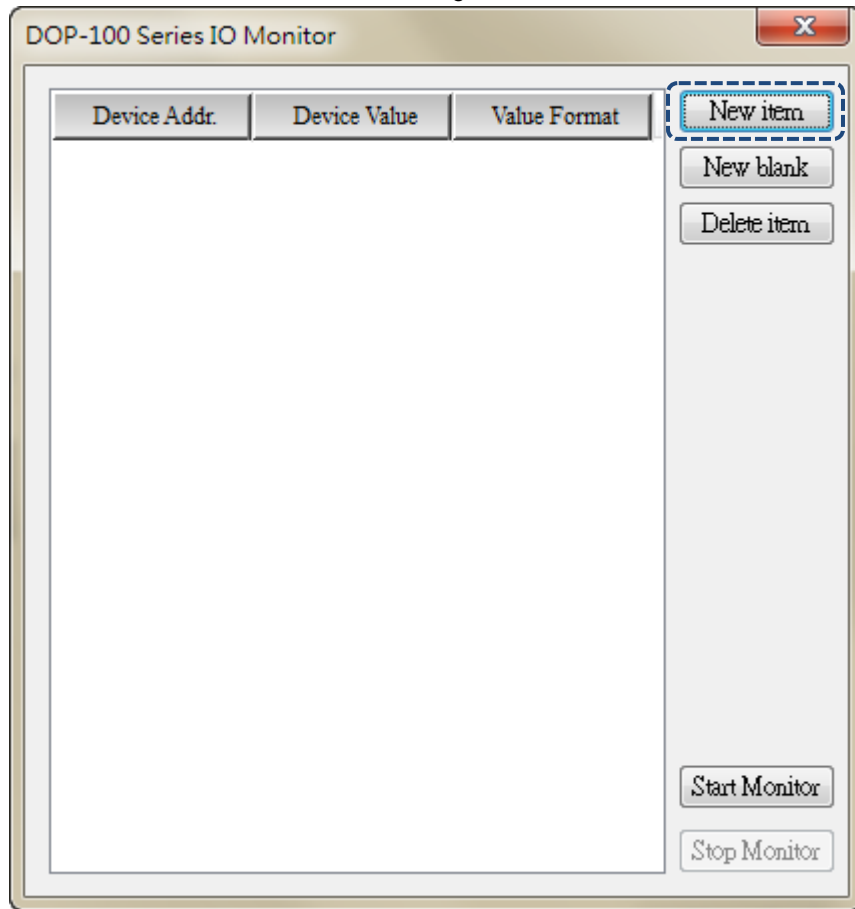
Monitor IO example	
<p>Create Numeric Entry elements</p>	<p>Create two Numeric Entry elements, and set the write memory address to \$500 and {Link2}2@D100.</p> 
<p>Enter the Monitor IO window.</p>	<p>Step1: click [Tools] > [On-line Simulation].</p>  <p>Step 2: right-click the simulation screen and select Monitor IO.</p> 

2

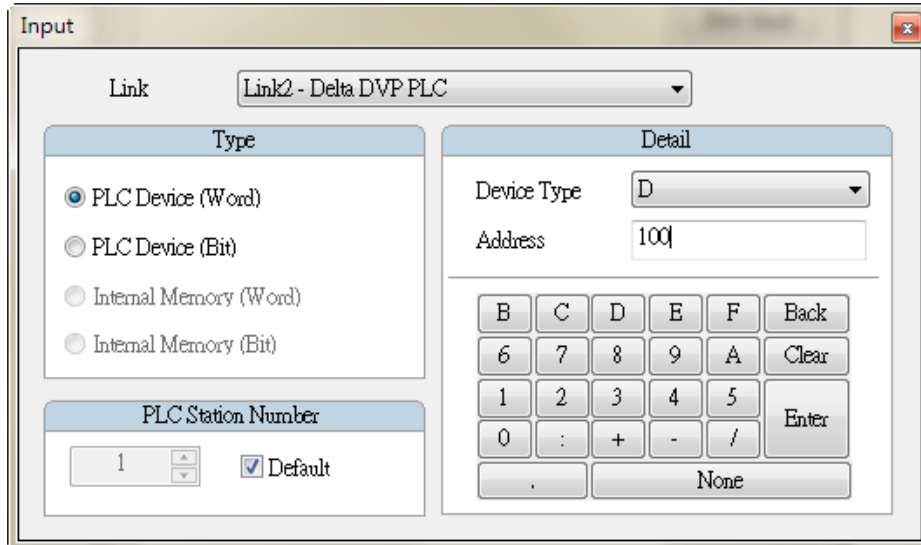
Monitor IO example

Step1: click **New item** to create a new monitoring address.

Set the monitoring address



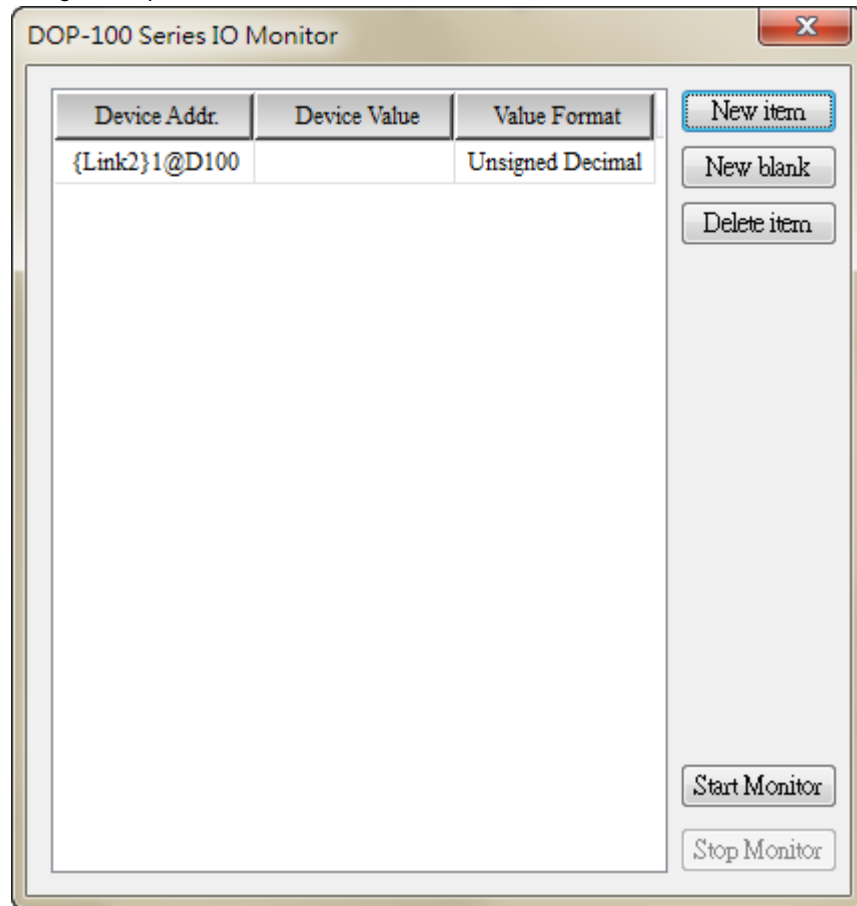
Step 2: select {Link2}2@D100 as the monitoring address.



Monitor IO example

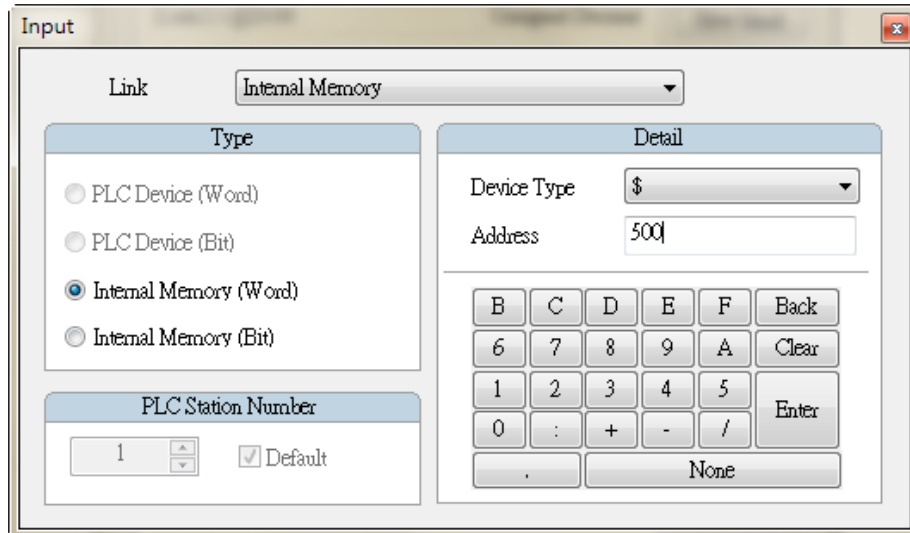
After setting is completed, the screen is as follows:

Set the monitoring address



2

Repeat Step 1 and 2 to set the other monitoring address \$500:

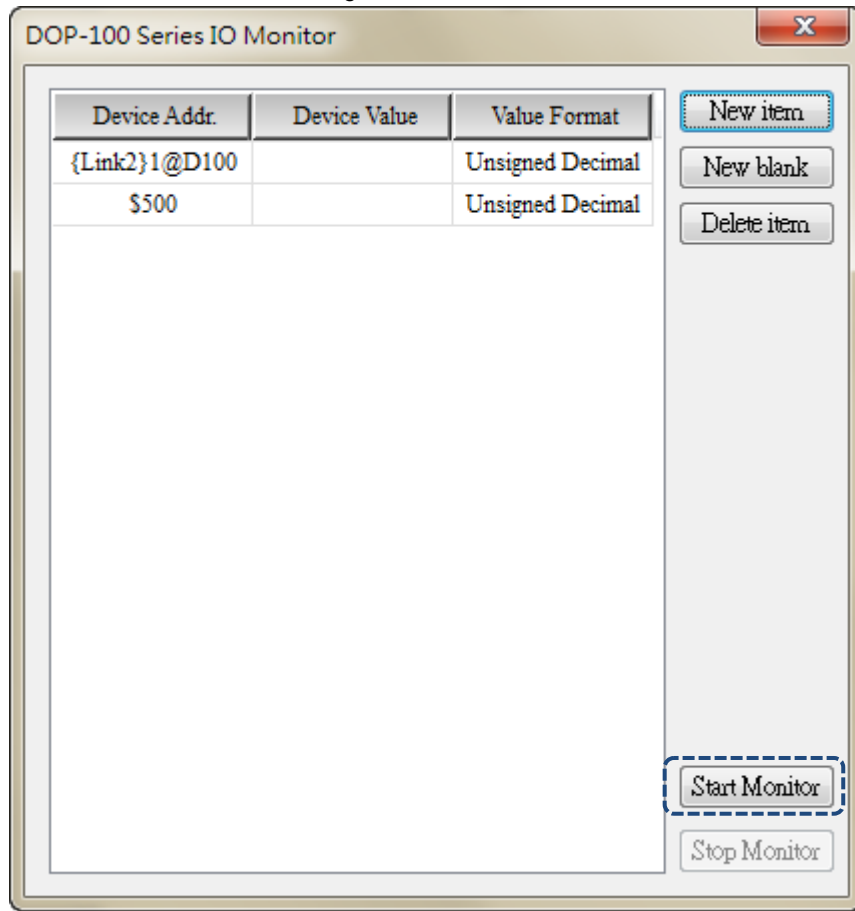


2

Monitor IO example

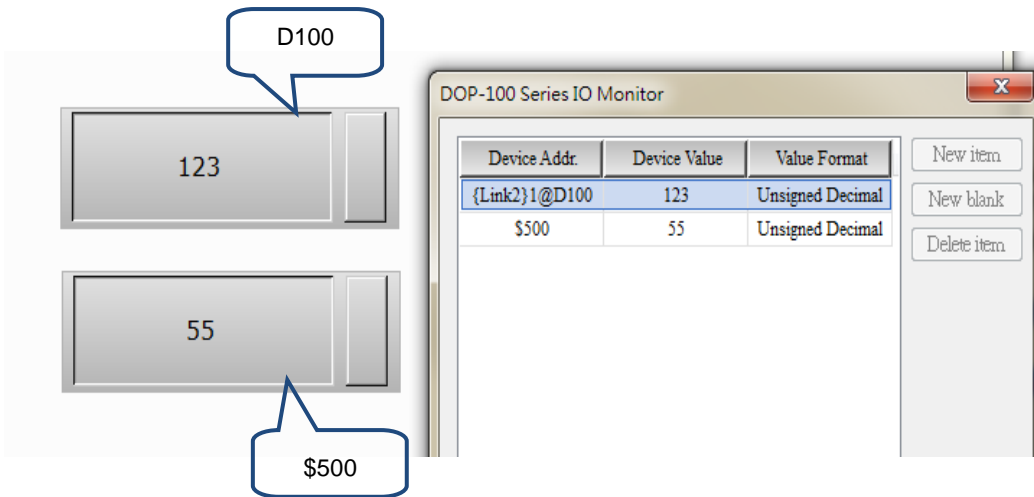
Press **Start Monitor** to start monitoring.

Start monitoring the address



The Monitor IO window enables you to promptly monitor the set address and monitor the values of {Link2}2@D100 and \$500 in the Device Value column as well as modifying the device values in this window.

Execution results



2.2.5.11 Off-line Simulation

The main difference between the Off-line Simulation and On-line Simulation is that the Off-line Simulation does not require PLC communication. In this case, the off-line mode is mainly for checking the correctness of the edited screens, read/write memory addresses, and macros.

You can use [Tools] > [Off-line Simulation], the  icon on the Layout toolbar, or the system keyboard shortcut **Ctrl+F5**.

After you execute the Off-line Simulation, the software first compiles the data and then goes to the Off-line Simulation screen.

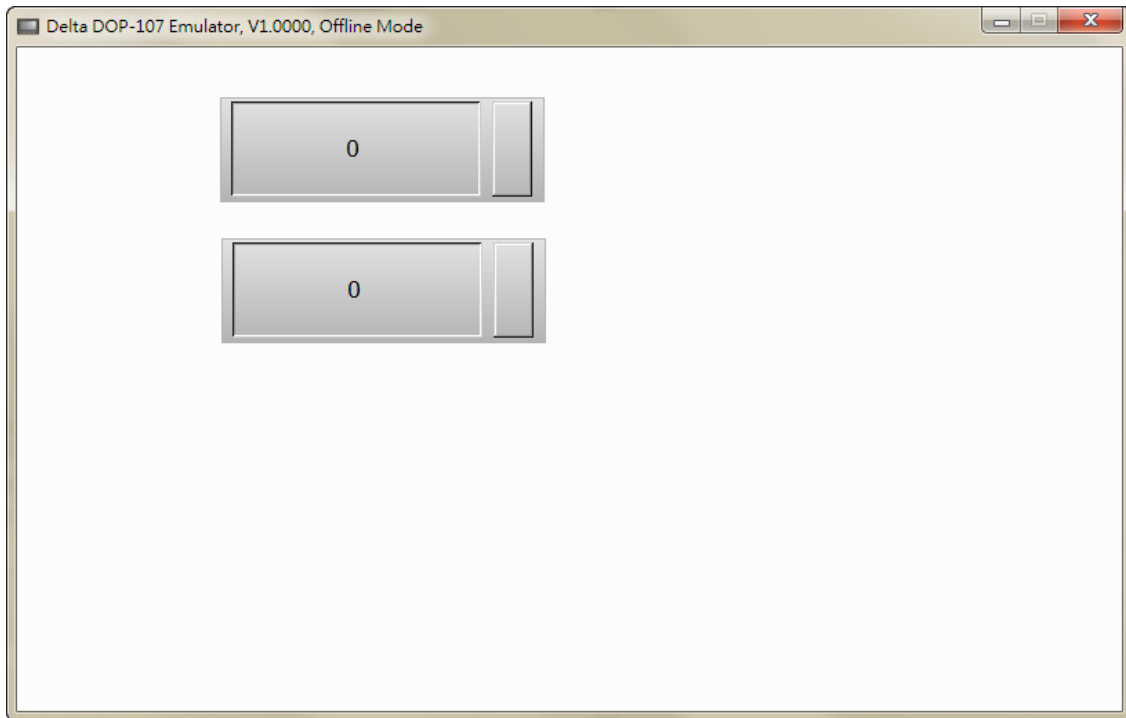


Figure 2.2.5.11.1 Off-line Simulation screen

2.2.5.12 Firmware Update

Firmware Update is to update the HMI firmware. This is to ensure the HMI firmware is the latest version and enables the HMI become more stable. Therefore, make sure your software version and HMI firmware version are consistent before using the DOPSoft.

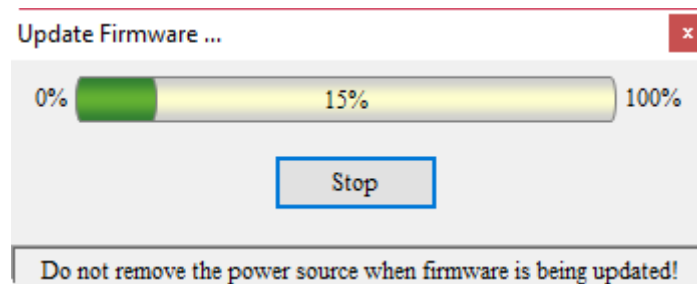


Figure 2.2.5.12.1 Firmware Update

2.2.5.13 Get Firmware Information

You can get the firmware version and related information of the HMI by using the option of Get Firmware Information.

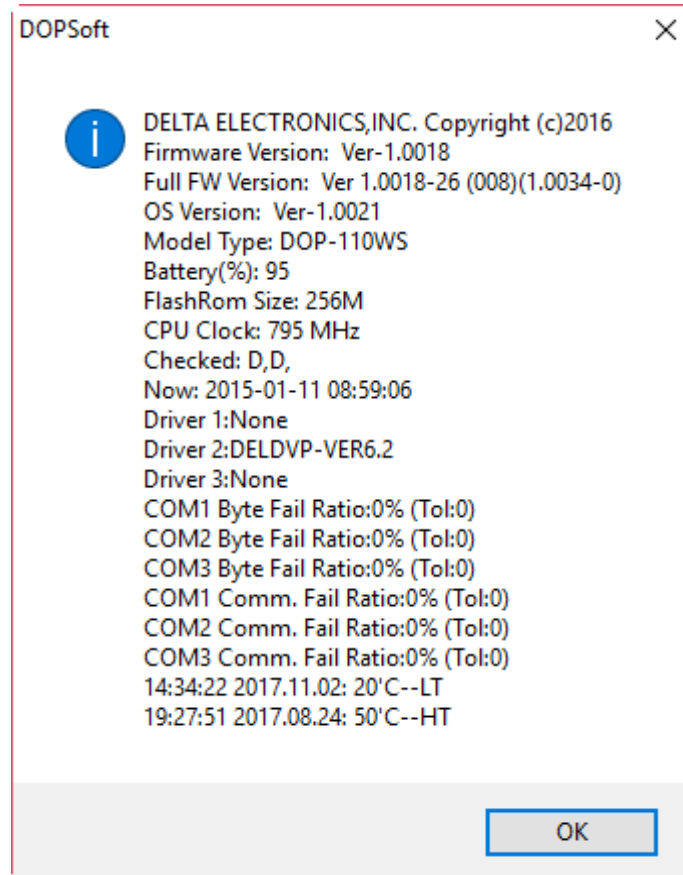


Figure 2.2.5.13.1 Get Firmware Information

2.2.5.14 Reset HMI

If you forget the Highest security password and you have selected [Check password when downloading program], you need to enter the password after uploading data to the PC. If you need to go to the system screen to format the screen, password verification is also required. In this condition, HMI data download/upload or screen formatting cannot be done. Therefore, the DOPSoft provides the Reset HMI option for you to restore your HMI to the factory setting, which includes formatting files, deleting all screen data, and clearing passwords, etc.

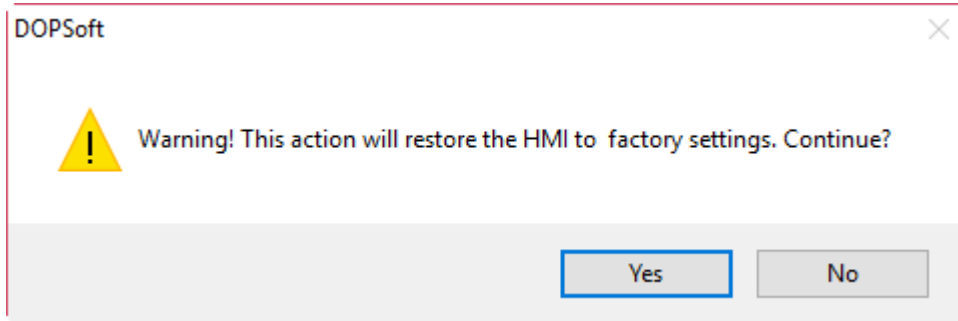


Figure 2.2.5.14.1 Reset HMI

Select **Yes** to reset the HMI.

Note:

1. After executing this function, the HMI is reset to the default values.
2. After executing this function, the screen data is completely cleared and you are unable to recover the file of which you forget the password.

2

2.2.6 Window

The Window function enables you to efficiently arrange the window layout and display, etc.

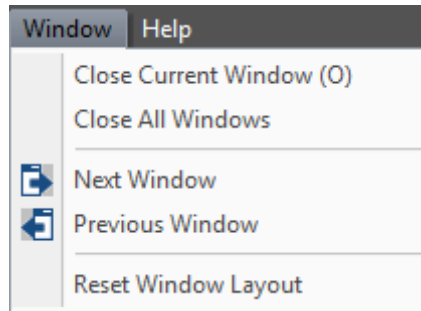


Figure 2.2.6.1 Window function list

2.2.6.1 Close Current Window

Current editing screen displayed in the software is closed after you execute this function.

2.2.6.2 Close All Windows

When you execute this function, all windows in the project are closed and no editing window is displayed.

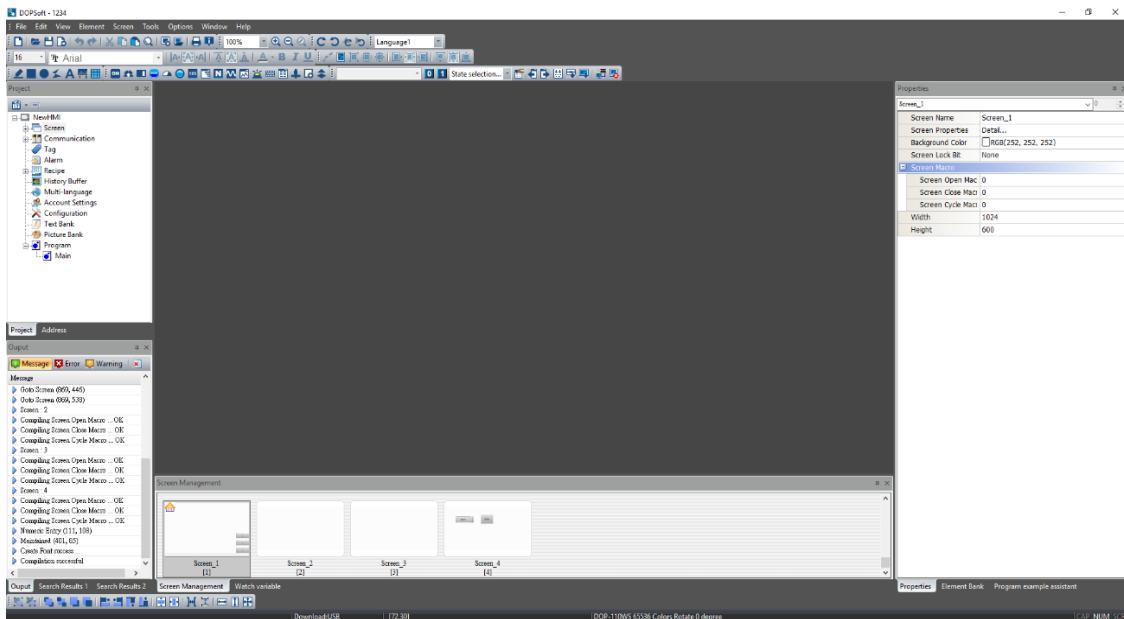
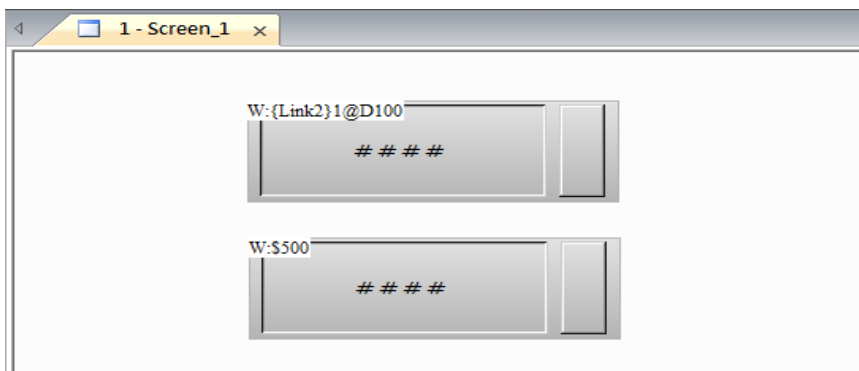
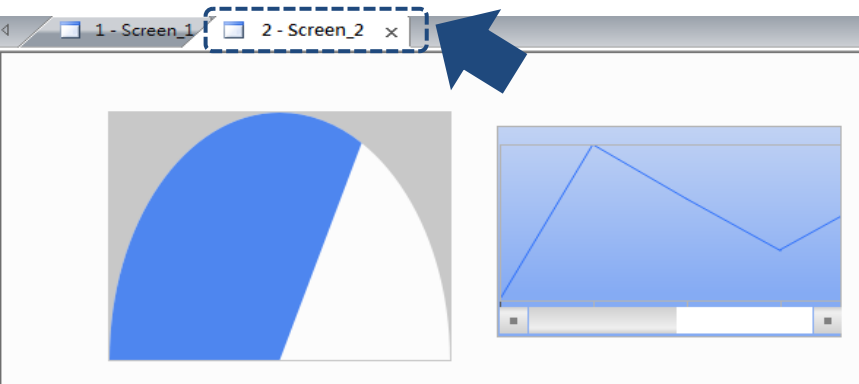


Figure 2.2.6.2.1 Close All Windows

2.2.6.3 Next Window

Use this function to go to the next window with the screen number in ascending order.

Table 2.2.6.3.1 Next Window

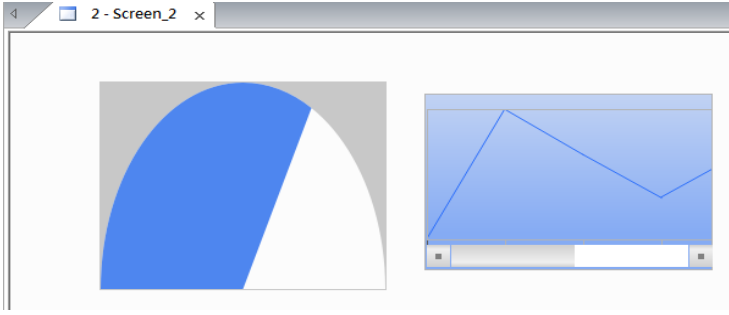
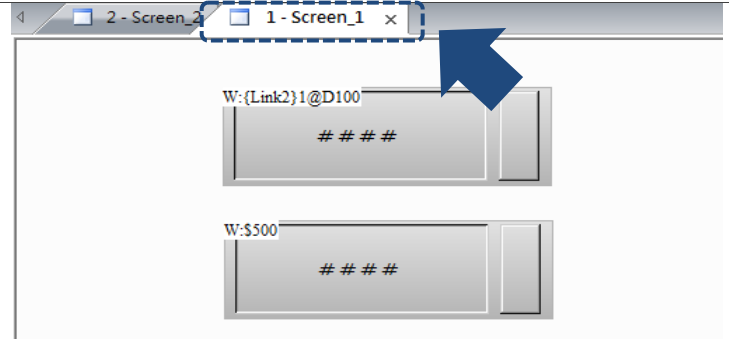
<p>Before</p>	
<p>After</p>	

2.2.6.4 Previous Window

Use this function to go the previous window with the screen number in descending order.

Table 2.2.6.4.1 Previous Window

2

Before	
After	

2.2.7 Help

This is for you to acquire the information about the current software version and firmware version.

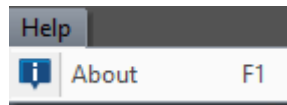


Figure 2.2.7.1 Help function list

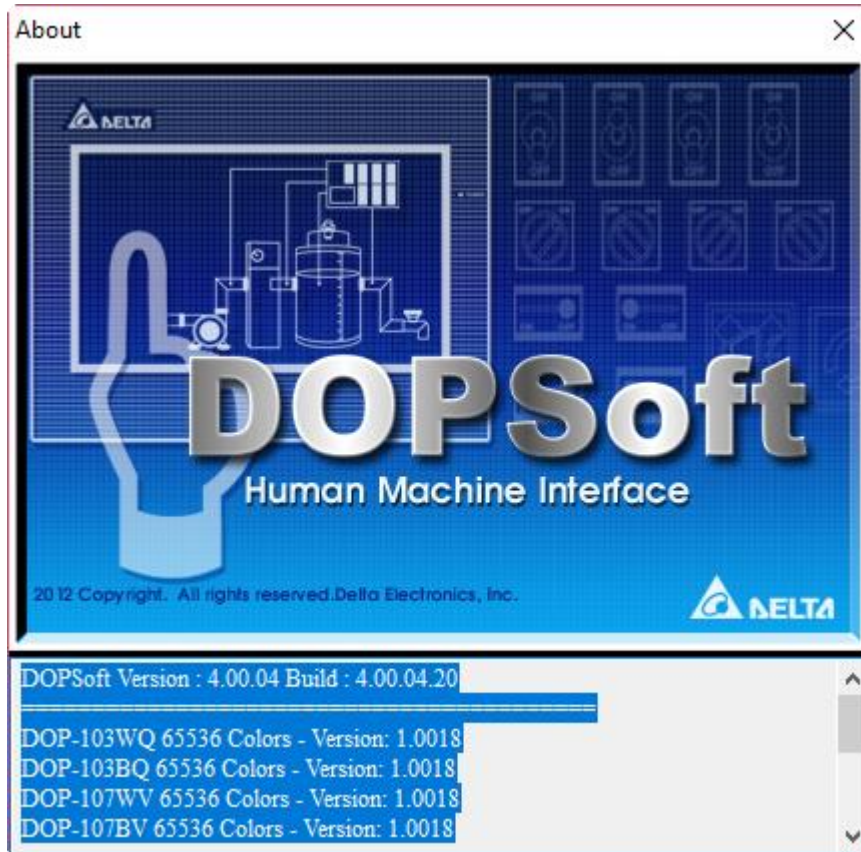


Figure 2.2.7.2 Software / firmware version information

2.3 How to create a project?

The following section provides a simple example of how to create a project.

2.3.1 Flowchart of creating a project

Please refer to the flowchart below. This includes the basic steps to create a project.

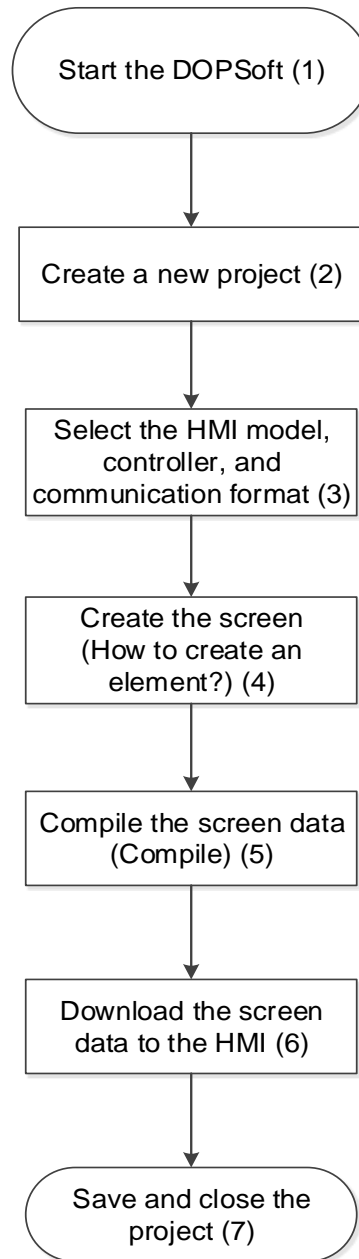
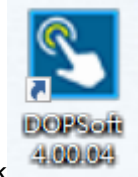
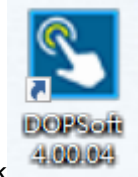


Figure 2.3.1.1 Flowchart of creating a project

Next, each step in the procedure is described as follows.

1. Start the DOPSoft.



- a. Double-click  on the desktop or go to [Start] > [All Programs] > [Delta Industrial Automation] > [DopSoft 4.00.0x] and execute the DOPSoft 4.00.0x application.

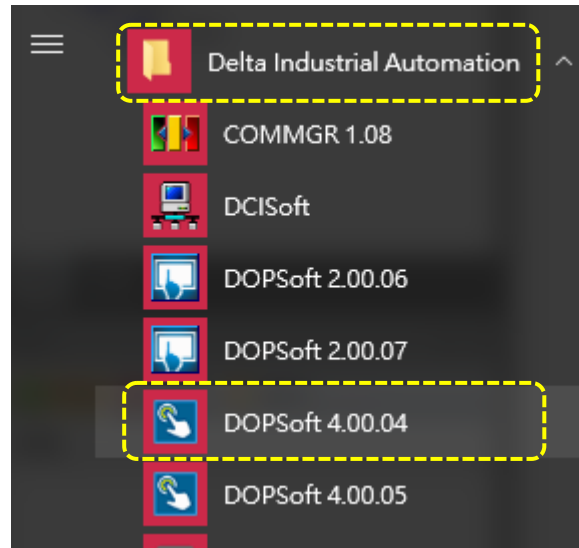


Figure 2.3.1.2 Start the DOPSoft software.

- b. Execute the DOPSoft 4.00.0x application, and the screen is shown as follows.

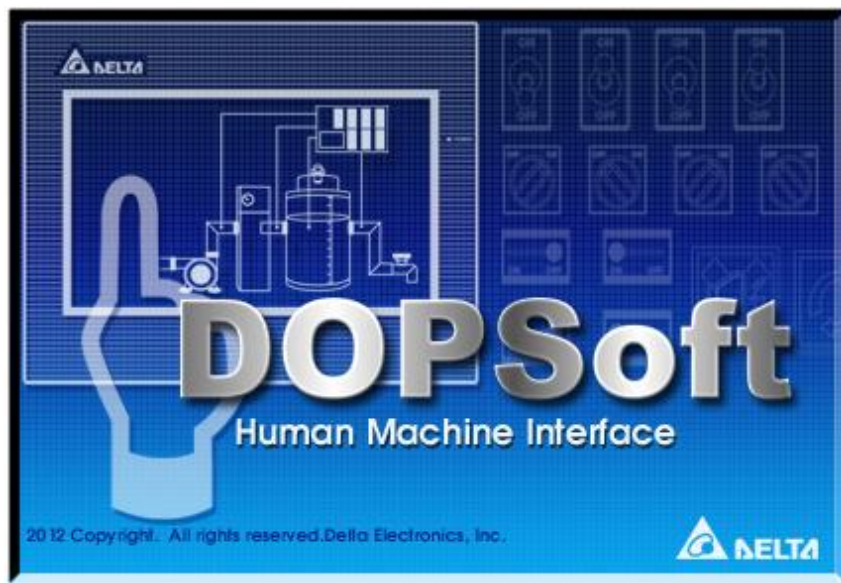



Figure 2.3.1.3 DOPSoft displaying screen

2

2. Create a new project.
 - a. When you successfully start the DOPSoft, the following window pops up. Please click the Create Project icon  or go to [File] > [New] to create a new project.

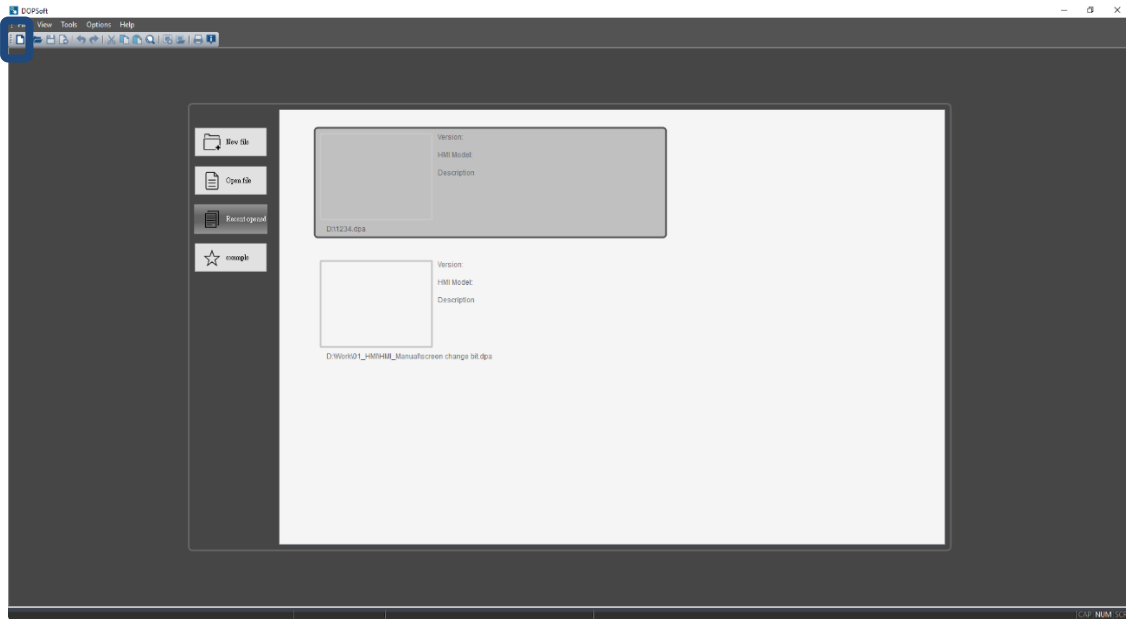


Figure 2.3.1.4 Click the icon to create a new project

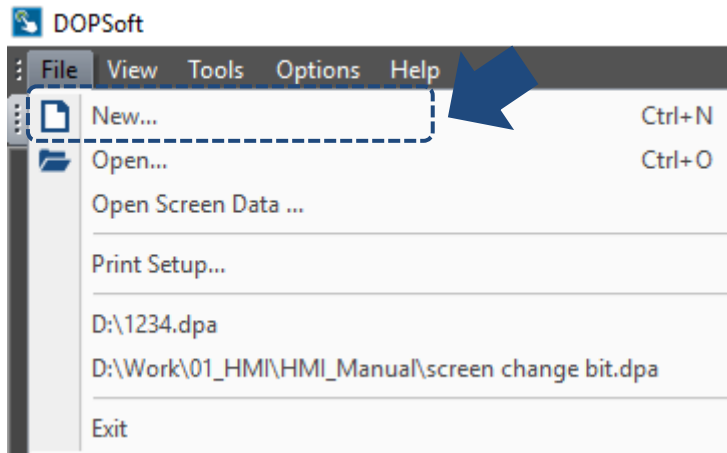


Figure 2.3.1.5 Click **New...** to create a new project

3. Select the HMI model, controller, and communication format.
 - a. After the project is created, the Project Wizard will guide you to select the HMI model, controller, and communication format. In the example below, it selects DOP-107WV as the model and name this project as “NewHMI”.

The steps are as follows:

- (1) Select the HMI model.
- (2) Input the project name.
- (3) Click **Next**.

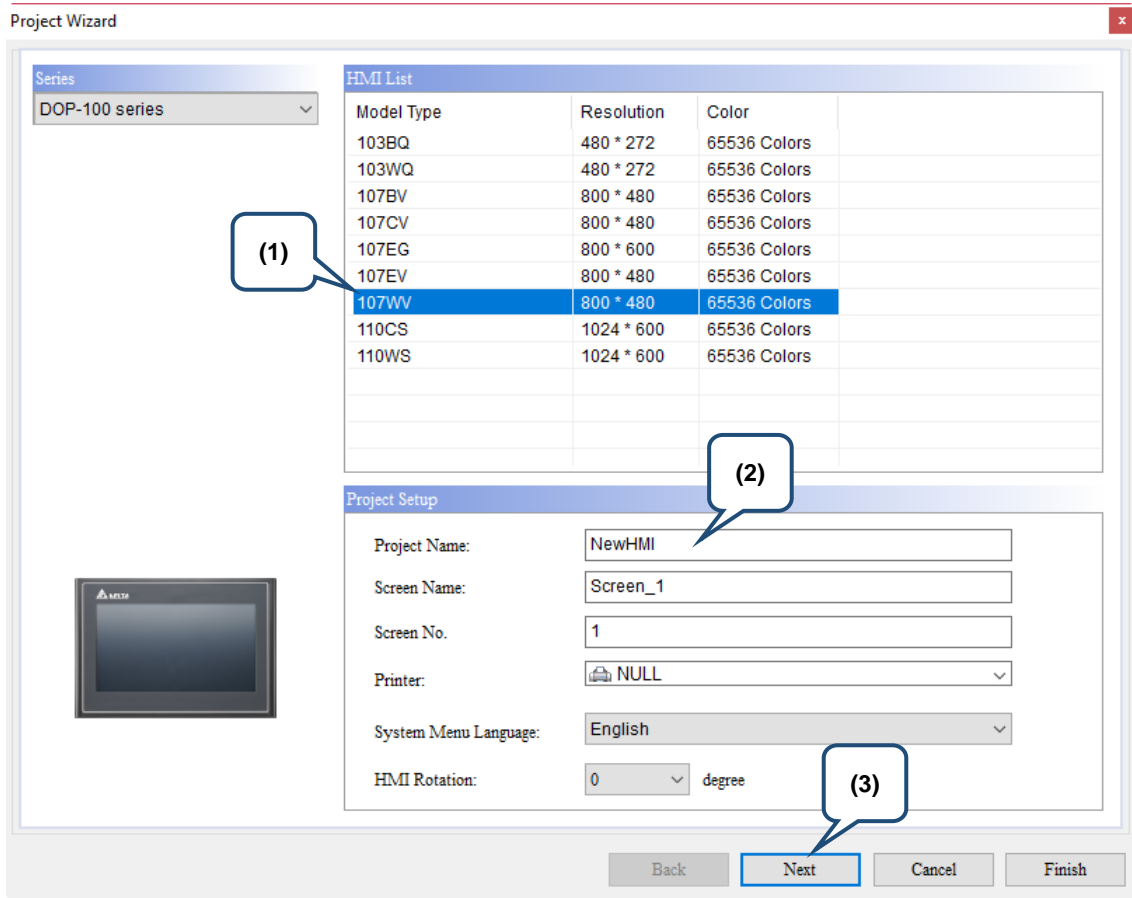


Figure 2.3.1.6 Select the HMI model and input project name

2

- b. Next, please select the communication port, controller, and communication format, etc. You can use the up and down arrows at the upper left corner to select COM1, COM2, or COM3 to be used. Please refer to Section 27.2 Communication Settings for more details. In the example below, COM 2 and Delta DVP PLC is selected.

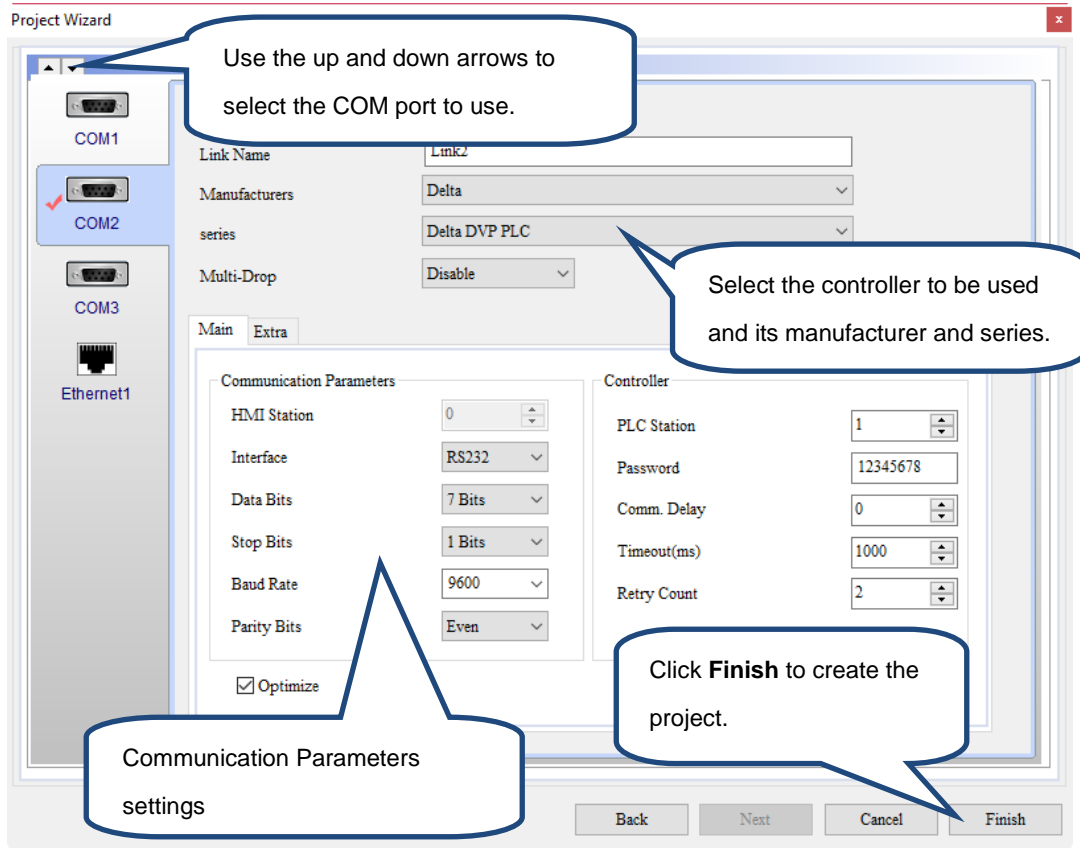


Figure 2.3.1.7 Select the communication port, controller, and communication format

- 4. Create the screen (How to create an element)
 - a. Follow the Project Wizard and you can start creating a new project. Now, you can start editing the screen and creating elements.

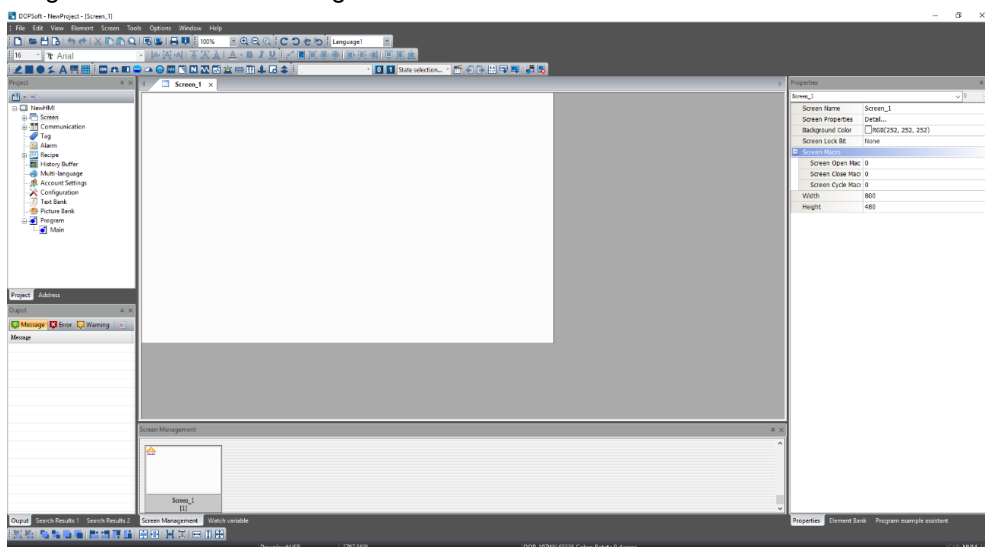


Figure 2.3.1.8 Editing screen

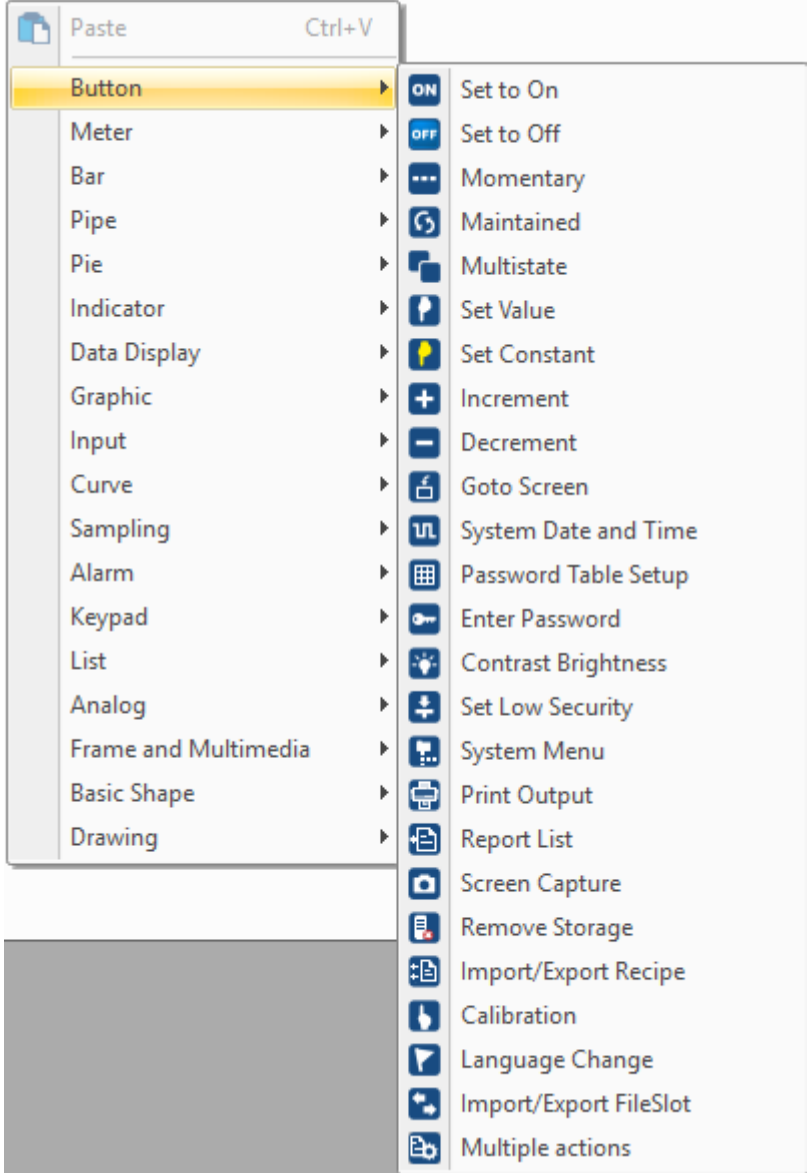
Below is the demonstration for using the Set to On, Set to Off, Momentary, and Maintained buttons (go to [Element] > [Button]) with the Multistate indicator (go to [Element] > [Indicator]). The software provides three methods for you to create the element and you can choose based on your preference. Please refer to the table for the available methods.

2

Method 1: Function list		Method 2: Element toolbar																																																																																																																																																																																																													
<div style="border: 1px solid gray; padding: 5px;"> <table border="1"> <tr> <th>Element</th> <th>Screen</th> <th>Tools</th> <th>Options</th> <th>Window</th> <th>Help</th> </tr> <tr> <td>Button</td> <td></td> <td>ON</td> <td>Set to On</td> <td></td> <td></td> </tr> <tr> <td>Meter</td> <td></td> <td>OFF</td> <td>Set to Off</td> <td></td> <td></td> </tr> <tr> <td>Bar</td> <td></td> <td>...</td> <td>Momentary</td> <td></td> <td></td> </tr> <tr> <td>Pipe</td> <td></td> <td>↻</td> <td>Maintained</td> <td></td> <td></td> </tr> <tr> <td>Pie</td> <td></td> <td>☐</td> <td>Multistate</td> <td></td> <td></td> </tr> <tr> <td>Indicator</td> <td></td> <td>👤</td> <td>Set Value</td> <td></td> <td></td> </tr> <tr> <td>Data Display</td> <td></td> <td>📌</td> <td>Set Constant</td> <td></td> <td></td> </tr> <tr> <td>Graphic</td> <td></td> <td>+</td> <td>Increment</td> <td></td> <td></td> </tr> <tr> <td>Input</td> <td></td> <td>-</td> <td>Decrement</td> <td></td> <td></td> </tr> <tr> <td>Curve</td> <td></td> <td>📄</td> <td>Goto Screen</td> <td></td> <td></td> </tr> <tr> <td>Sampling</td> <td></td> <td>⌚</td> <td>System Date and Time</td> <td></td> <td></td> </tr> <tr> <td>Alarm</td> <td></td> <td>📅</td> <td>Password Table Setup</td> <td></td> <td></td> </tr> <tr> <td>Keypad</td> <td></td> <td>🔑</td> <td>Enter Password</td> <td></td> <td></td> </tr> <tr> <td>List</td> <td></td> <td>💡</td> <td>Contrast Brightness</td> <td></td> <td></td> </tr> <tr> <td>Analog</td> <td></td> <td>🔒</td> <td>Set Low Security</td> <td></td> <td></td> </tr> <tr> <td>Frame and Multimedia</td> <td></td> <td>☰</td> <td>System Menu</td> <td></td> <td></td> </tr> <tr> <td>Basic Shape</td> <td></td> <td>🖨️</td> <td>Print Output</td> <td></td> <td></td> </tr> <tr> <td>Drawing</td> <td></td> <td>📄</td> <td>Report List</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>📷</td> <td>Screen Capture</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>🗑️</td> <td>Remove Storage</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>📄</td> <td>Import/Export Recipe</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>👤</td> <td>Calibration</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>🗣️</td> <td>Language Change</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>📁</td> <td>Import/Export FileSlot</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>⚙️</td> <td>Multiple actions</td> <td></td> <td></td> </tr> </table> </div>	Element	Screen	Tools	Options	Window	Help	Button		ON	Set to On			Meter		OFF	Set to Off			Bar		...	Momentary			Pipe		↻	Maintained			Pie		☐	Multistate			Indicator		👤	Set Value			Data Display		📌	Set Constant			Graphic		+	Increment			Input		-	Decrement			Curve		📄	Goto Screen			Sampling		⌚	System Date and Time			Alarm		📅	Password Table Setup			Keypad		🔑	Enter Password			List		💡	Contrast Brightness			Analog		🔒	Set Low Security			Frame and Multimedia		☰	System Menu			Basic Shape		🖨️	Print Output			Drawing		📄	Report List					📷	Screen Capture					🗑️	Remove Storage					📄	Import/Export Recipe					👤	Calibration					🗣️	Language Change					📁	Import/Export FileSlot					⚙️	Multiple actions			<div style="border: 1px solid gray; padding: 5px;"> <table border="1"> <tr> <td>ON</td> <td>Set to On</td> </tr> <tr> <td>OFF</td> <td>Set to Off</td> </tr> <tr> <td>...</td> <td>Momentary</td> </tr> <tr> <td>↻</td> <td>Maintained</td> </tr> <tr> <td>☐</td> <td>Multistate</td> </tr> <tr> <td>👤</td> <td>Set Value</td> </tr> <tr> <td>📌</td> <td>Set Constant</td> </tr> <tr> <td>+</td> <td>Increment</td> </tr> <tr> <td>-</td> <td>Decrement</td> </tr> <tr> <td>📄</td> <td>Goto Screen</td> </tr> <tr> <td>⌚</td> <td>System Date and Time</td> </tr> <tr> <td>📅</td> <td>Password Table Setup</td> </tr> <tr> <td>🔑</td> <td>Enter Password</td> </tr> <tr> <td>💡</td> <td>Contrast Brightness</td> </tr> <tr> <td>🔒</td> <td>Set Low Security</td> </tr> <tr> <td>☰</td> <td>System Menu</td> </tr> <tr> <td>🖨️</td> <td>Print Output</td> </tr> <tr> <td>📄</td> <td>Report List</td> </tr> <tr> <td>📷</td> <td>Screen Capture</td> </tr> <tr> <td>🗑️</td> <td>Remove Storage</td> </tr> <tr> <td>📄</td> <td>Import/Export Recipe</td> </tr> <tr> <td>👤</td> <td>Calibration</td> </tr> <tr> <td>🗣️</td> <td>Language Change</td> </tr> <tr> <td>📁</td> <td>Import/Export FileSlot</td> </tr> <tr> <td>⚙️</td> <td>Multiple actions</td> </tr> </table> </div>	ON	Set to On	OFF	Set to Off	...	Momentary	↻	Maintained	☐	Multistate	👤	Set Value	📌	Set Constant	+	Increment	-	Decrement	📄	Goto Screen	⌚	System Date and Time	📅	Password Table Setup	🔑	Enter Password	💡	Contrast Brightness	🔒	Set Low Security	☰	System Menu	🖨️	Print Output	📄	Report List	📷	Screen Capture	🗑️	Remove Storage	📄	Import/Export Recipe	👤	Calibration	🗣️	Language Change	📁	Import/Export FileSlot	⚙️	Multiple actions
Element	Screen	Tools	Options	Window	Help																																																																																																																																																																																																										
Button		ON	Set to On																																																																																																																																																																																																												
Meter		OFF	Set to Off																																																																																																																																																																																																												
Bar		...	Momentary																																																																																																																																																																																																												
Pipe		↻	Maintained																																																																																																																																																																																																												
Pie		☐	Multistate																																																																																																																																																																																																												
Indicator		👤	Set Value																																																																																																																																																																																																												
Data Display		📌	Set Constant																																																																																																																																																																																																												
Graphic		+	Increment																																																																																																																																																																																																												
Input		-	Decrement																																																																																																																																																																																																												
Curve		📄	Goto Screen																																																																																																																																																																																																												
Sampling		⌚	System Date and Time																																																																																																																																																																																																												
Alarm		📅	Password Table Setup																																																																																																																																																																																																												
Keypad		🔑	Enter Password																																																																																																																																																																																																												
List		💡	Contrast Brightness																																																																																																																																																																																																												
Analog		🔒	Set Low Security																																																																																																																																																																																																												
Frame and Multimedia		☰	System Menu																																																																																																																																																																																																												
Basic Shape		🖨️	Print Output																																																																																																																																																																																																												
Drawing		📄	Report List																																																																																																																																																																																																												
		📷	Screen Capture																																																																																																																																																																																																												
		🗑️	Remove Storage																																																																																																																																																																																																												
		📄	Import/Export Recipe																																																																																																																																																																																																												
		👤	Calibration																																																																																																																																																																																																												
		🗣️	Language Change																																																																																																																																																																																																												
		📁	Import/Export FileSlot																																																																																																																																																																																																												
		⚙️	Multiple actions																																																																																																																																																																																																												
ON	Set to On																																																																																																																																																																																																														
OFF	Set to Off																																																																																																																																																																																																														
...	Momentary																																																																																																																																																																																																														
↻	Maintained																																																																																																																																																																																																														
☐	Multistate																																																																																																																																																																																																														
👤	Set Value																																																																																																																																																																																																														
📌	Set Constant																																																																																																																																																																																																														
+	Increment																																																																																																																																																																																																														
-	Decrement																																																																																																																																																																																																														
📄	Goto Screen																																																																																																																																																																																																														
⌚	System Date and Time																																																																																																																																																																																																														
📅	Password Table Setup																																																																																																																																																																																																														
🔑	Enter Password																																																																																																																																																																																																														
💡	Contrast Brightness																																																																																																																																																																																																														
🔒	Set Low Security																																																																																																																																																																																																														
☰	System Menu																																																																																																																																																																																																														
🖨️	Print Output																																																																																																																																																																																																														
📄	Report List																																																																																																																																																																																																														
📷	Screen Capture																																																																																																																																																																																																														
🗑️	Remove Storage																																																																																																																																																																																																														
📄	Import/Export Recipe																																																																																																																																																																																																														
👤	Calibration																																																																																																																																																																																																														
🗣️	Language Change																																																																																																																																																																																																														
📁	Import/Export FileSlot																																																																																																																																																																																																														
⚙️	Multiple actions																																																																																																																																																																																																														

Method 3: right-click the mouse in the editing screen.

2



- b. If you use the Element function list to create the Set to On, Set to Off, Momentary, and Maintained buttons from the Button option and the Multistate Indicator element from the Indicator option, you must input the memory addresses to have these elements work. To have users to know the function of each element, all the created elements will have their own text description and the set memory addresses. Please refer to the following steps to create the elements:

Steps to create the elements:

- Go to [Element] > [Button], and select the Set to On, Set to Off, Momentary, and Maintained elements.
- Double-click or select the elements to set the memory address with the Properties window on the right. Set M0 as the Write Addresses for Set to On and Set to Off; set M10 as the Write Address for the Momentary button; set M20 as the Write Address for the Maintained button.

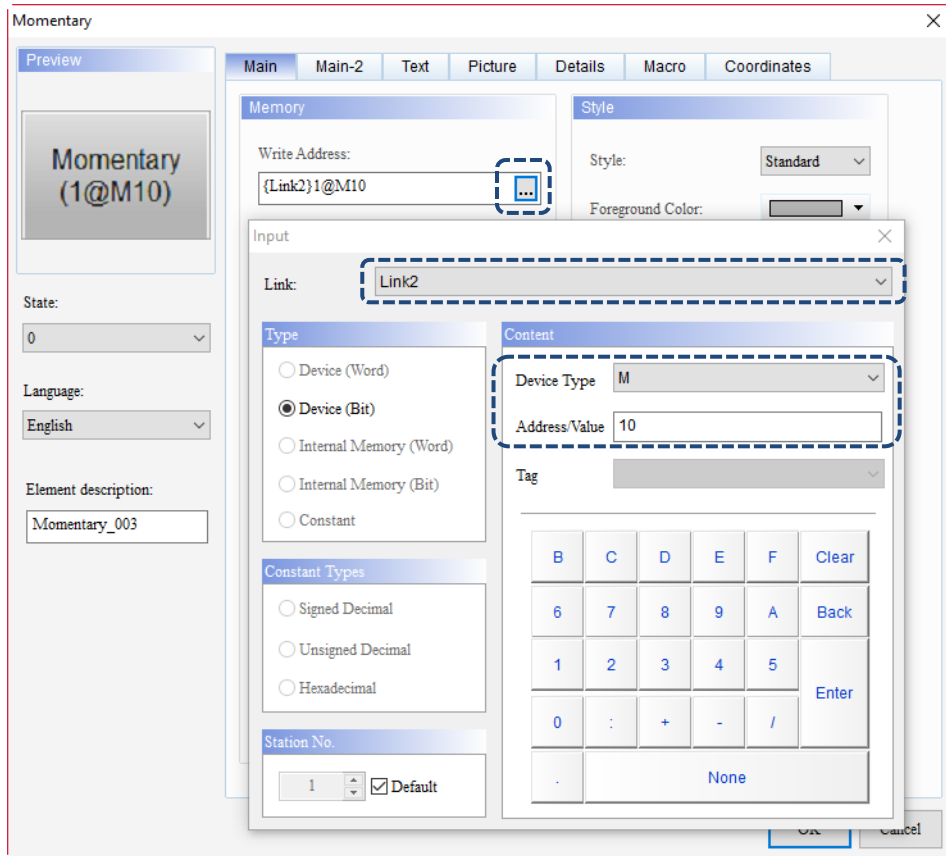
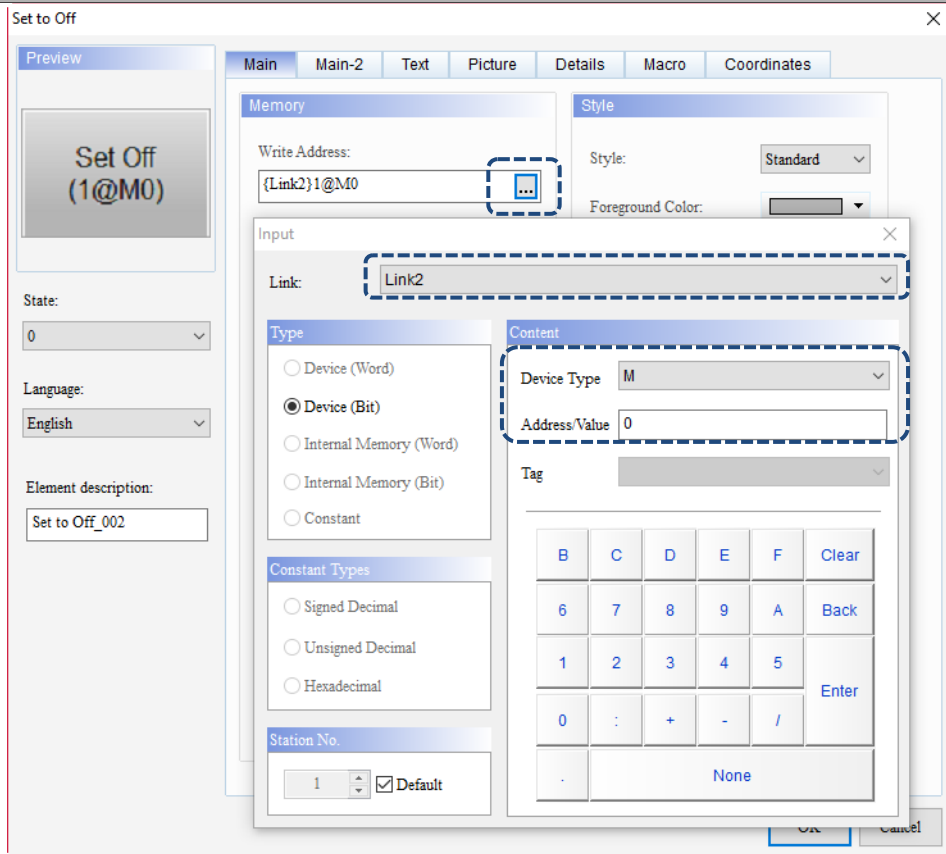
Step1

The screenshot shows the 'Set to On' configuration window. The 'Memory' section has a 'Write Address' field containing '{Link2}1@M0'. The 'Style' section has a 'Style' dropdown set to 'Standard' and a 'Foreground Color' field. An 'Input' dialog box is open over the 'Details' tab, with a 'Link' dropdown set to 'Link2'. The 'Input' dialog has 'Type' and 'Content' sections. The 'Type' section has radio buttons for 'Device (Word)', 'Device (Bit)', 'Internal Memory (Word)', 'Internal Memory (Bit)', and 'Constant', with 'Device (Bit)' selected. The 'Content' section has a 'Device Type' dropdown set to 'M', an 'Address/Value' field set to '0', and a 'Tag' dropdown. Below the 'Content' section is a numeric keypad with buttons for digits 0-9, '+', '-', '/', 'Clear', 'Back', 'Enter', and 'None'.

2

Steps to create the elements:

Step1



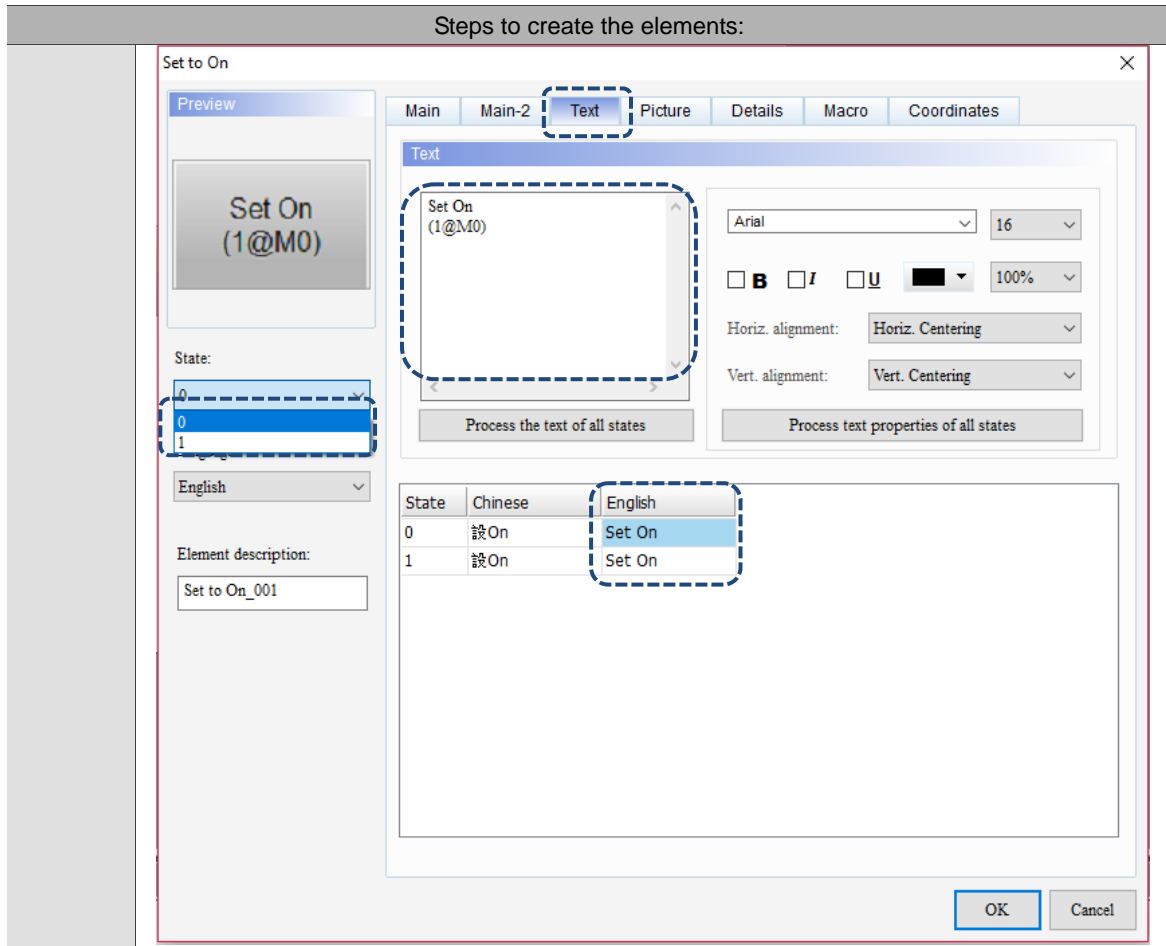
Steps to create the elements:

Step1

The screenshot shows the 'Maintained' software window with the 'Text' tab selected. The 'Write Address' field contains the text '{Link2}1@M20'. A dashed blue box highlights this field. Below it, the 'Input' dialog is open, showing 'Link2' selected in the 'Link' dropdown. The 'Content' section has 'Device Type' set to 'M' and 'Address/Value' set to '20', both highlighted with dashed blue boxes. A numeric keypad is visible at the bottom right of the dialog.

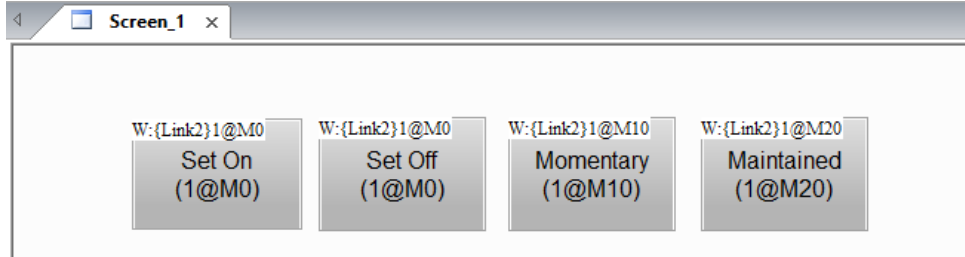
- Double-click the element and go to the Text page to input the corresponding text. Input “Set On (1@M0)” for both State 0 and State 1 of the Set to On button. Input “Set Off (1@M0)” for State 0 and State 1 of the Set to Off button. Input “(1@M10)” for State 0 and State 1 of the Momentary button. Input “(1@M20)” for State 0 and State 1 of the Maintained button.

2



Steps to create the elements:

- After you created the Set to On, Set to Off, Momentary, and Maintained elements, the screen is shown as follows.



Note: Set to On, Set to Off, Momentary, and Maintained elements all have actions for State 0 and State 1. You can double-click the elements to set State 0 and State 1 or use the upper right corner of the Properties window to view State 0 and State 1.

Step1

Offset Address	
Write Offset Addr	None
Read Offset Addr	None

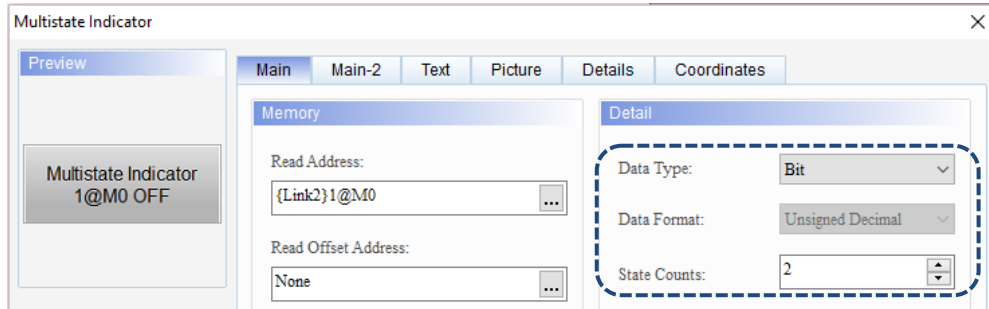
Text	
Text	Set On
Size	16
Font	Arial
Color	■ RGB(0, 0, 0)
Ratio	100%

Picture	
Picture Bank Nam	None
Picture Name	None
Transparent Effec	No
Transparent Color	■ RGB(0, 0, 0)

2

Steps to create the elements:

- Click [Elements] > [Indicator] > [Multistate Indicator]. Create three Multistate Indicator elements corresponding to Write addresses of the Set to On / Set to Off, Momentary and Maintained elements respectively.
 - After you double-click or select the element, use the Properties window on the right to set the memory address. The setting method of memory address is the same as that of button elements; you can set Data Type to Bit and State Counts to 2.
- a. Set the Read Address of the Multistate Indicator as M0 to correspond to the Set to On and Set to Off buttons.
 - b. Set the Read Address of the Multistate Indicator as M10 to correspond the Momentary button.
 - c. Set the Read Address of the Multistate Indicator as M20 to correspond to the Maintained button.



R:{Link2}1@M0

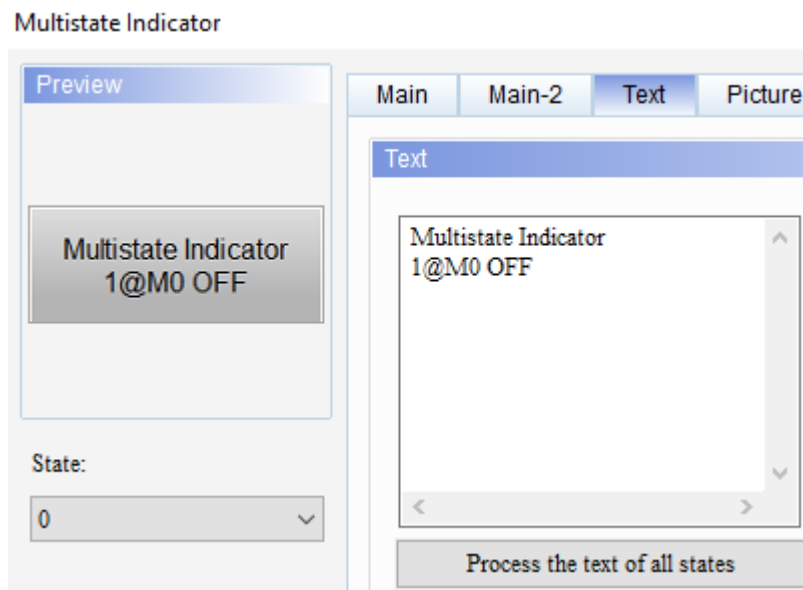
R:{Link2}1@M10

R:{Link2}1@M20

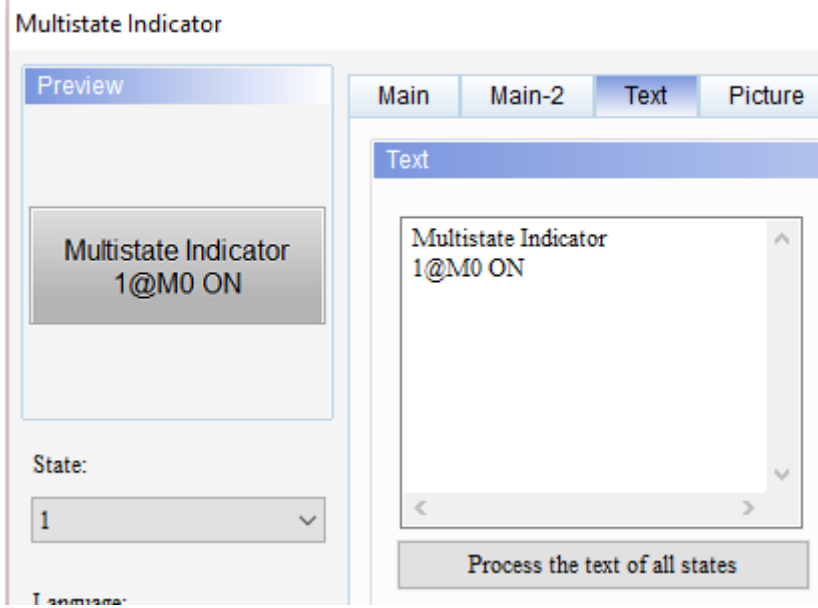
Step2

- Double-click the element and go to the Text page to input the corresponding text.
1. Input "Multistate Indicator(1 @M0) OFF "for State 0; input "Multistate Indicator(1 @M0) ON " for State 1.

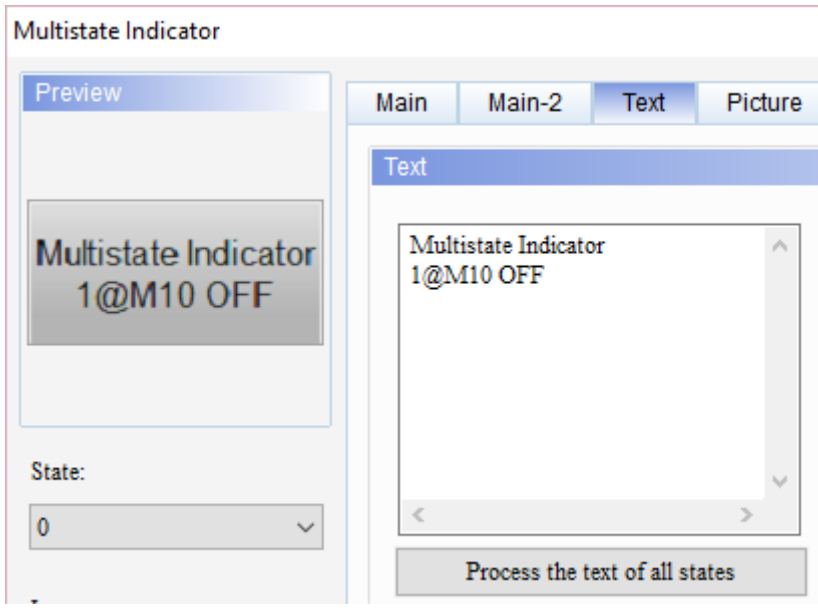
State 0



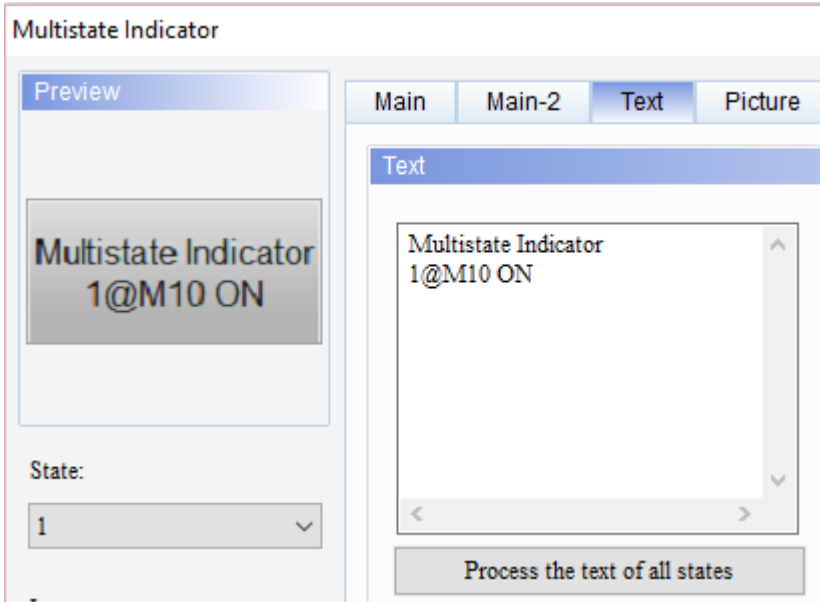
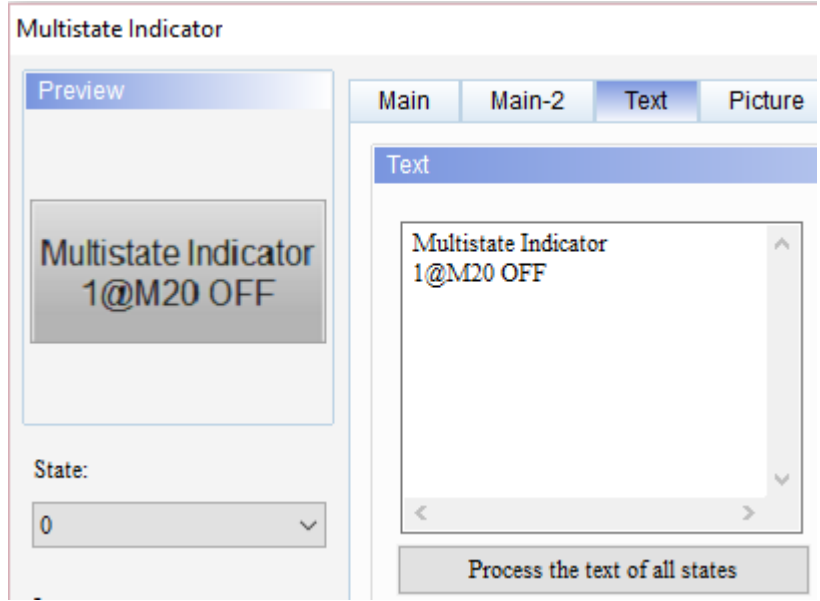
Steps to create the elements:

	State 1	
--	---------	------------------------------------------------------------------------------------

- 2. Input "Multistate Indicator 1@M10 OFF" for State 0; input "Multistate Indicator 1@M10 ON " for State 1.

Step2	State 0	
-------	---------	-------------------------------------------------------------------------------------

2

Steps to create the elements:		
State 1		
3. Input "Multistate Indicator(1 @M20) OFF "for State 0; input "Multistate Indicator(1 @M20) ON "for State 1.		
Step2 State 0		

Steps to create the elements:

	State 1	<div style="border: 1px solid gray; padding: 5px;"><p>Multistate Indicator</p><div style="border: 1px solid gray; padding: 5px;"><p>Preview</p><div style="border: 1px solid gray; padding: 10px; text-align: center;"><p>Multistate Indicator 1@M20 ON</p></div></div><p>State:</p><div style="border: 1px solid gray; padding: 2px; width: 50px;"><p>1</p></div></div>	<div style="border: 1px solid gray; padding: 5px;"><p>Main Main-2 Text Picture</p><div style="border: 1px solid gray; padding: 5px;"><p>Text</p><div style="border: 1px solid gray; padding: 5px; min-height: 100px;"><p>Multistate Indicator 1@M20 ON</p></div></div><div style="border: 1px solid gray; padding: 5px; text-align: center; margin-top: 5px;"><p>Process the text of all states</p></div></div>
--	---------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

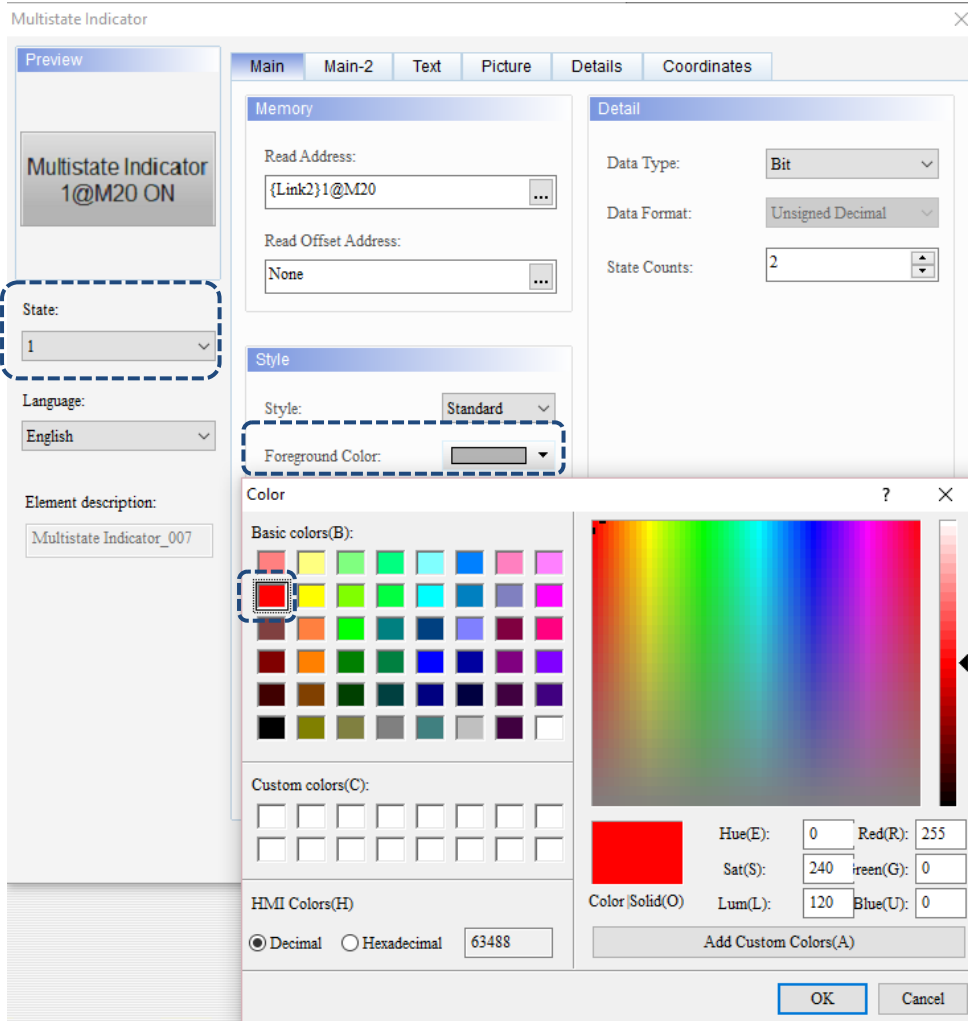
2

2

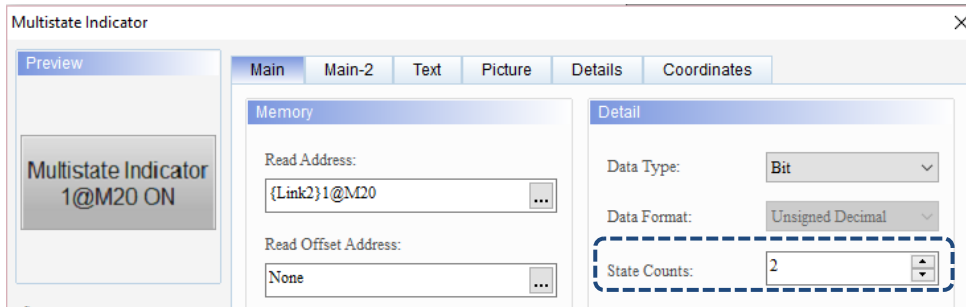
Steps to create the elements:

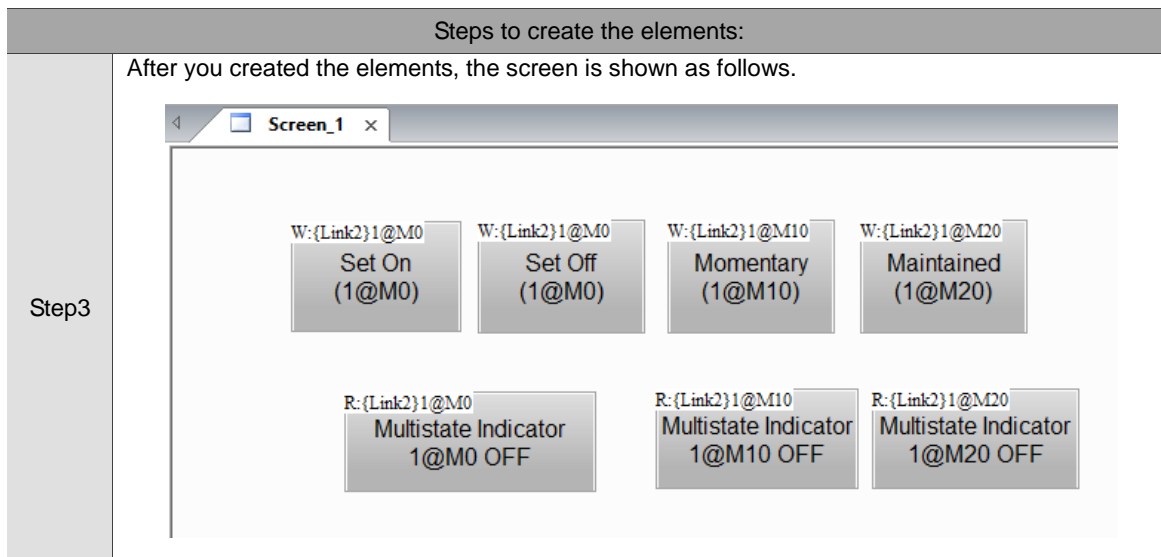
- Double-click the three Multistate Indicator elements you just created and go to the Main page. Change the Foreground Color of State 1 to red for differentiating State 0 from State 1.

Step2



Note: the Multistate Indicator changes its state value depending on the State Counts. Since there are different settings, Set to On, Set to Off, Momentary, and Maintained (with State 0 and 1), you can double-click the element to set the State Counts in the Main page.





5. Compile

The purpose of compiling the screens is to ensure the memory address format you use is correct and check if you have input the memory address. There are two compiling methods. The first is to go to [Tools] > [Compile All] in the function list.

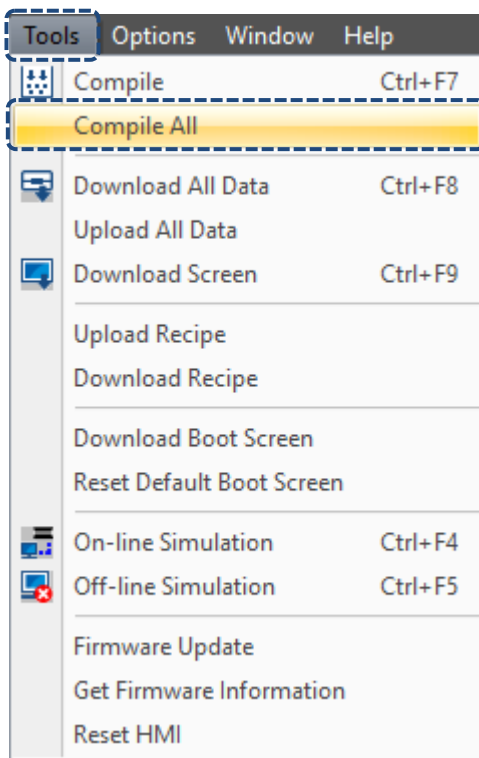

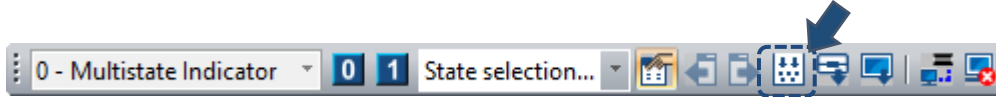


Figure 2.3.1.9 Compile All

2

The second method is using the Compile All icon  on the Layout toolbar.



After the compilation, the Output Message is shown as Figure 2.3.1.10.

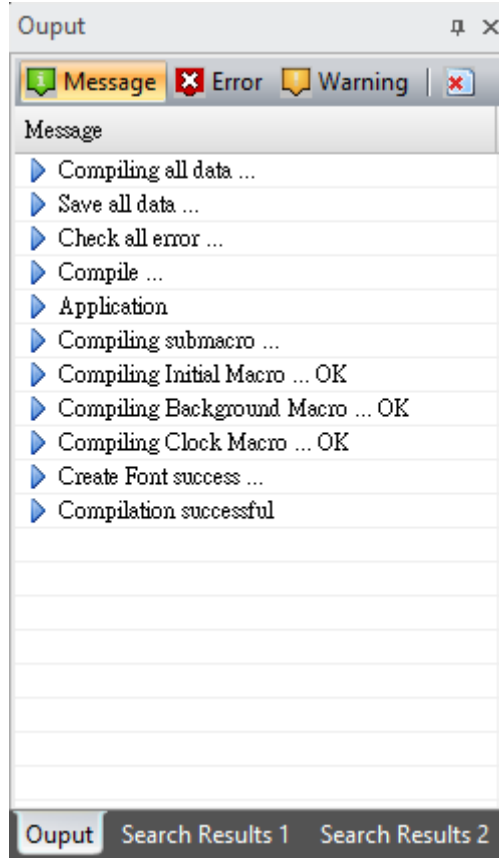


Figure 2.3.1.10 Output window for data compilation

6. Download screen data to the HMI

When compilation is successful, it means the screen you configure is correct and you can start downloading the screen data to the HMI. The following is the three methods of downloading screen data.

Method 1: go to [Tools] > [Download All Data].

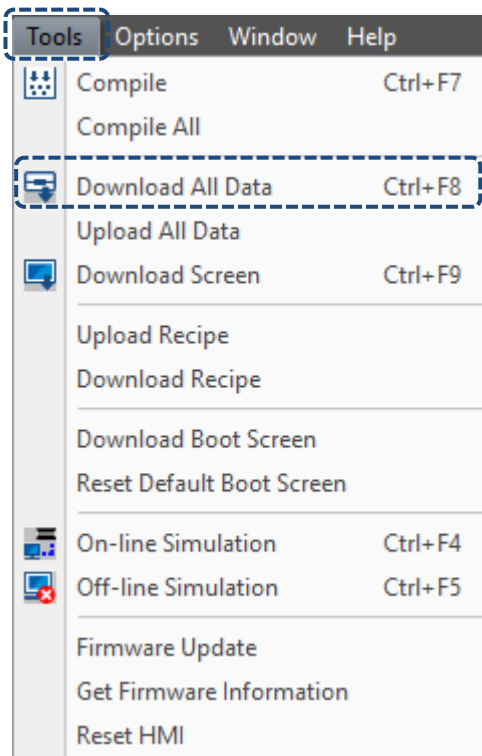
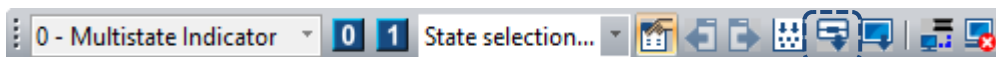


Figure 2.3.1.11 Tools function list - Download All Data

Method 2: use the download screen data icon  on the Layout toolbar.



Method 3: use the system keyboard shortcut **Ctrl + F8**.

Make sure the USB cable is connected between the HMI and PC and the PLC communication cable is connected to COM 2.

Next, you can start downloading the screen data to the HMI. Then, the software displays the downloading progress as shown in the figure below.

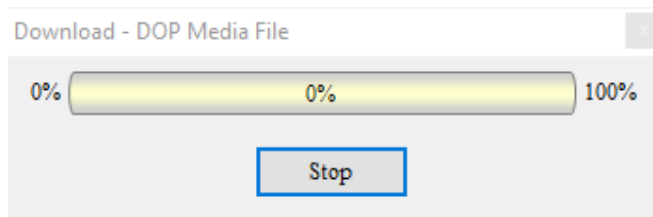


Figure 2.3.1.12 Downloading the screen data

- a. After downloading the screen data is complete, you can check the HMI to see if the screen is identical to the screen edited with the PC and check if an error occurs.

2

b. The following is the button actions.

Operation	
Touch button	Results
Set to ON	<p>Press Set to On and the Multistate Indicator 1@M0 displays ON.</p>
Set to OFF	<p>If you press Set to Off, the Multistate Indicator 1@M0 displays OFF.</p>
Momentary	<p>If you press Momentary, the Multistate Indicator 1@M10 displays ON; once you release this button, the Multistate Indicator 1@M10 displays OFF.</p>
Maintained	<p>If you press Maintained, the Multistate Indicator 1@M20 continues to display ON. To cancel the ON state, re-press Maintained.</p>

7. Save and close the project.

Please save the screen you just edited before closing the project. You can save the project with three methods:

Method 1: go to [File] > [Save] in the function list.

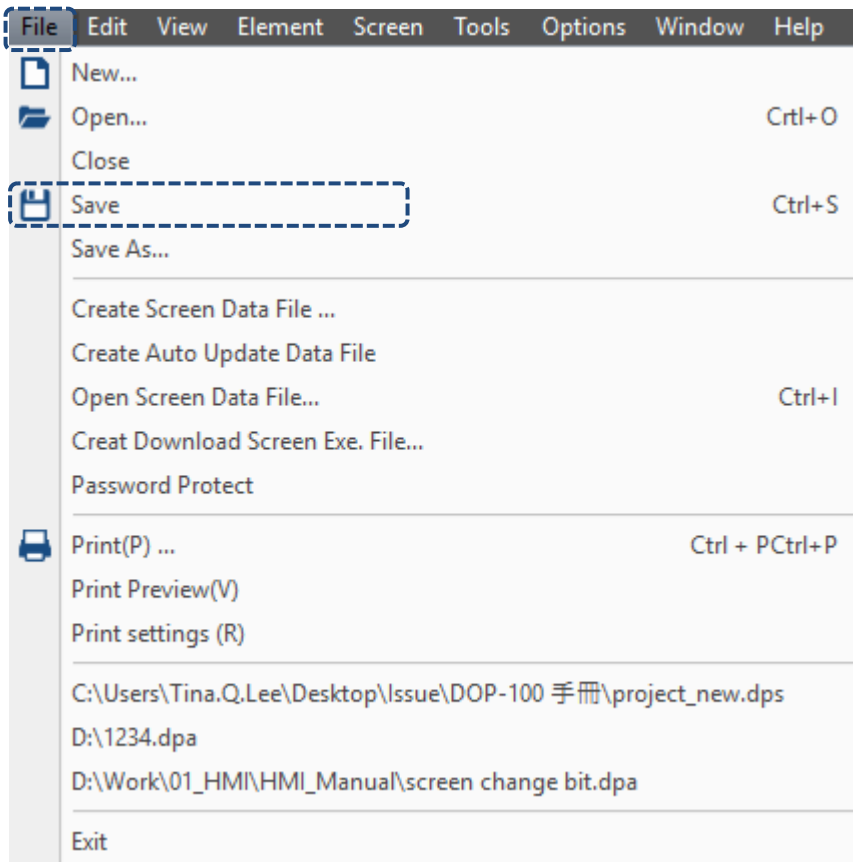


Figure 2.3.1.13 File function list - Save file

Method 2: use the save icon  in the General toolbar.



Method 3: use the system keyboard shortcut **Ctrl + S**.

Once you saved the project, the software prompts a window to ask for the file saving destination and filename. If you follow the Project Wizard to create a project, the default project name is “test”, so the filename remains “test ”after you click **Save**. You can change the filename and this action will not change the project operation.

2

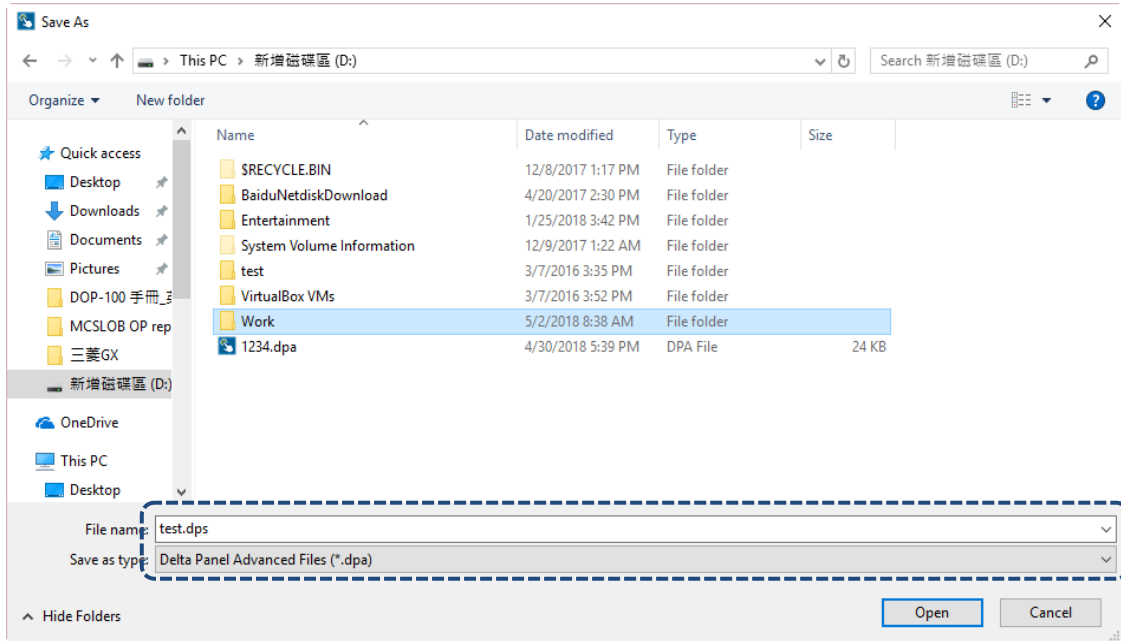


Figure 2.3.1.15 Save as file window

After saving the project, you can go the destination folder to check if the project file is saved. To re-open the project, double-click the file or directly execute the DOPSoft and go to [File] > [Open...], as shown in the figure below.

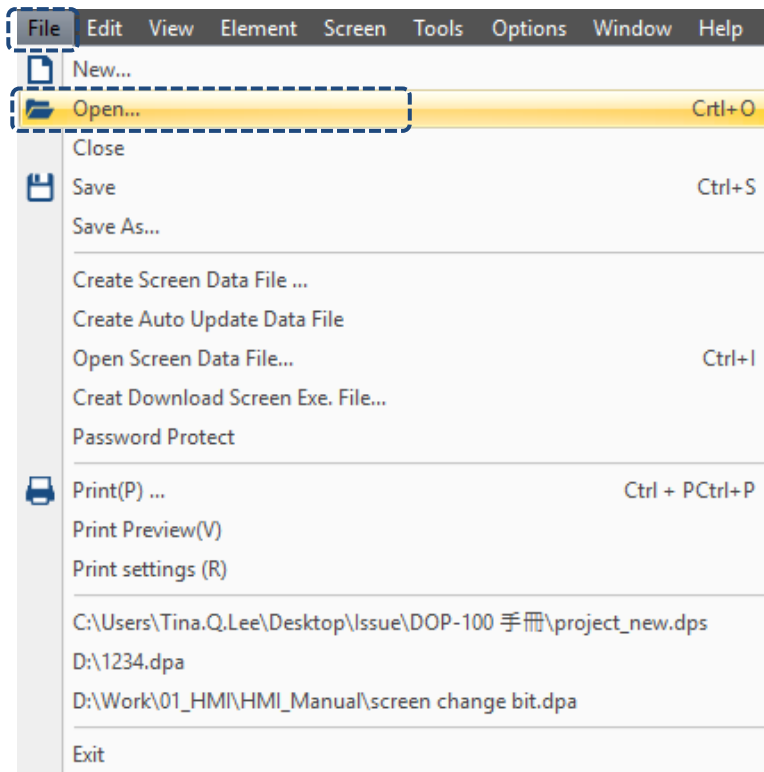



Figure 2.3.1.16 File function list – Open...

You can also click the open file icon  in the General toolbar to open the existing file.



Internal Memory

3

This chapter introduces the internal memory addresses and storage range of the HMI.



- 3.1 Internal Register (\$) 3-3
- 3.2 Non-volatile Internal Register (\$M) 3-3
- 3.3 Indirect Address Register (*\$)..... 3-3
- 3.4 Internal Parameter 3-5

3

Delta's HMI has registers of twelve different functions, including:

1. Internal register (\$)
2. Non-volatile internal register (\$M)
3. Indirect address register (*\$)
4. Recipe register (RCP)
5. Recipe number register (RCPNO)
6. Recipe group register (RCPG)
7. Recipe indirect address register (*RCP)
8. Enhanced recipe register (ENRCP)
9. Enhanced recipe number register (ENRCPNO)
10. Enhanced recipe group register (ENRCPG)
11. Enhanced recipe group name register (ENRCPGNAME)
12. Enhanced recipe indirect address register (*ENRCP)

The fourth to twelfth registers are introduced and explained along with the 16-bit, 32-bit, and enhanced recipe in Chapter 23.

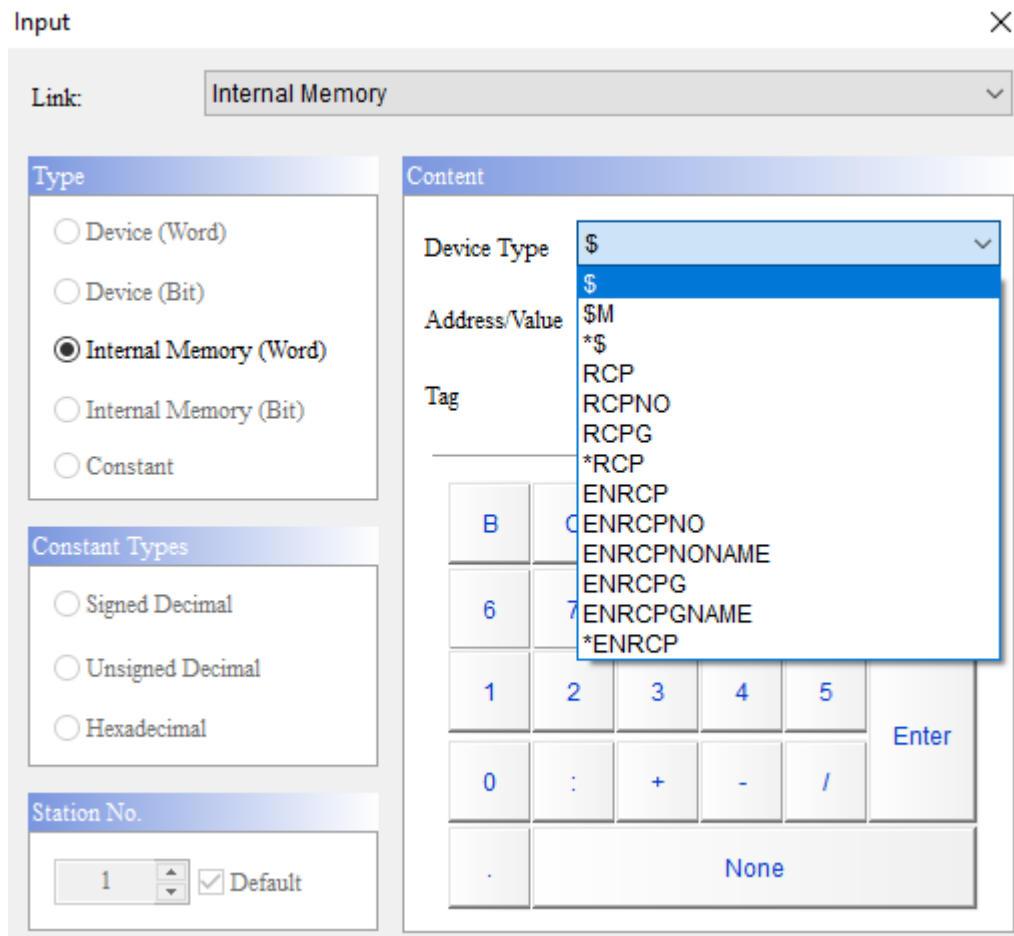


Figure 3.1.1 HMI Internal Memory

3.1 Internal Register (\$)

The internal register is the HMI internal memory that freely reads data and supports all kinds of configurations, such as the element communication address, etc. The internal register is volatile so the data in the register is not maintained when the power is off. The HMI provides 65536 sets of 16-bit internal registers.

Access type	Device type	Storage range
Word	\$n	\$0 - \$65535
Bit	\$n.b	\$0.0 - \$65535.15

Note: n = Word (0 - 65535); b = Bit (0 - 15)

3.2 Non-volatile Internal Register (\$M)

The register is a non-volatile register. The data in the register is maintained when the power is off so that you can record important data in this register. The HMI provides 1024 sets of 16-bit non-volatile internal registers (\$M0.0 - \$M1023.15).

Access type	Device type	Storage range
Word	\$Mn	\$0 - \$1023
Bit	\$Mn.b	\$0.0 - \$1023.15

Note: n = Word (0 - 1023); b = Bit (0 - 15)

3.3 Indirect Address Register (*\$)

The indirect address register is volatile so the data in the register is not maintained when the power is off.

Access type	Device type	Storage range
Word	*\$n	\$0 - \$65535

Note: n = Word (0 - 65535)

The indirect address register (*\$n) obtains the value from \$n, sets the value as a new address, and then accesses the value from the new address. For instance, \$10 = 101, and \$101 = 55, so *\$10 = 55. See Figure 3.3.1.

3

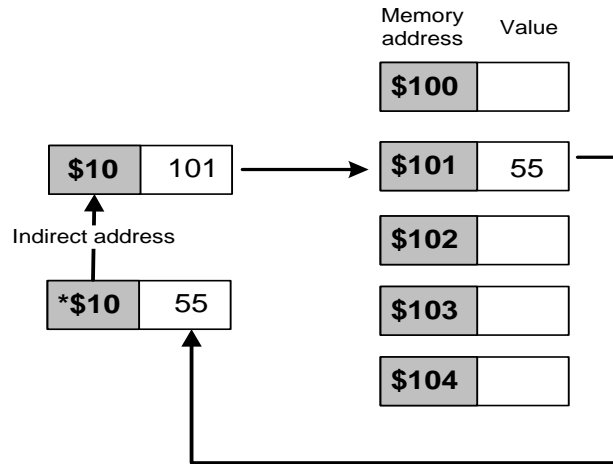


Figure 3.3.1 Diagram of indirect address

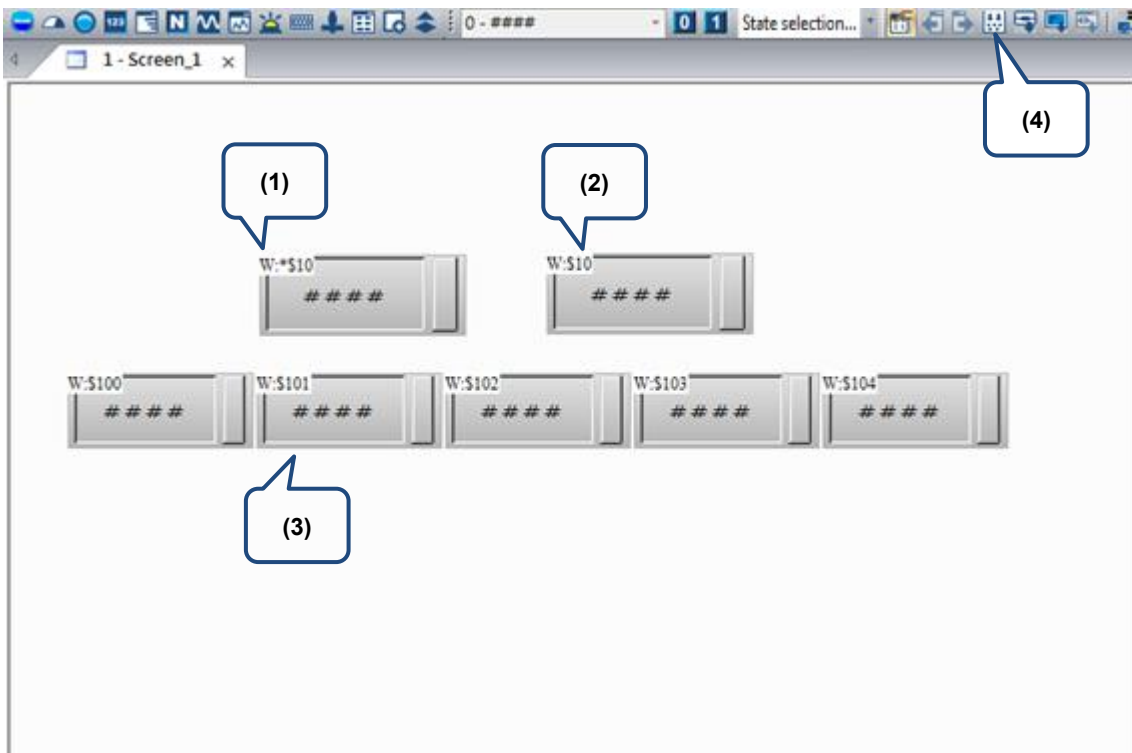



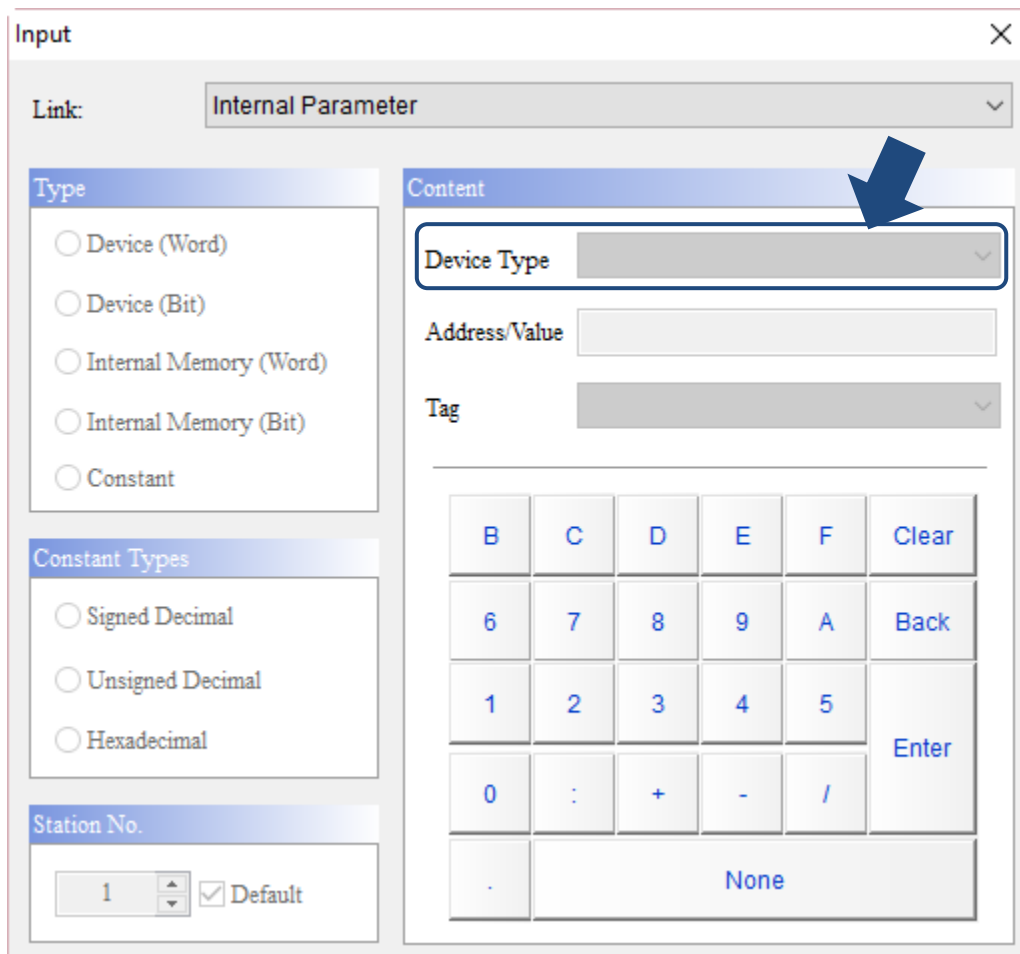
Figure 3.3.2 Example of indirect address register

Function element	Step	Executing content
Indirect address register	1	Create a Numeric Entry element and set the write address to \$10.
	2	Create a Numeric Entry element and set the write address to \$10.
	3	Create a Numeric Entry element and set the write address to \$101.
	4	Use the button  to compile the data and download to the HMI. Firstly, input 101 to the element \$10; next, input any value to the element \$101; then, you can find that *\$10 automatically generates the value data inputted to \$101.

3.4 Internal Parameter

The HMI provides the Internal Parameter aside from the eleven kinds of internal memory. The Internal Parameter enables you to check the HMI internal state values through these parameters, including system time value (TIME_YEAR, TIME_MONTH, etc.), external storage device status (SD_STATUS and USB_STATUS), touch X / Y coordinate (TP_X and TP_Y), touch status (TP_STATUS), remaining battery voltage in percentage (BATTERY_VOLTAGE), network parameter (NET1_IP1, NET1_IP2, NET1_IP3, NET1_IP4), and firmware version (FW_VERSION1 and FW_VERSION2), etc.

Note: the Internal Parameter function is available only for Word elements. You are unable to select this function if you create Bit elements.



When using Word elements to set the memory address, you can select Internal Parameter from the pull-down menu of the Link to select the 39 kinds of internal parameters available from the HMI.

3

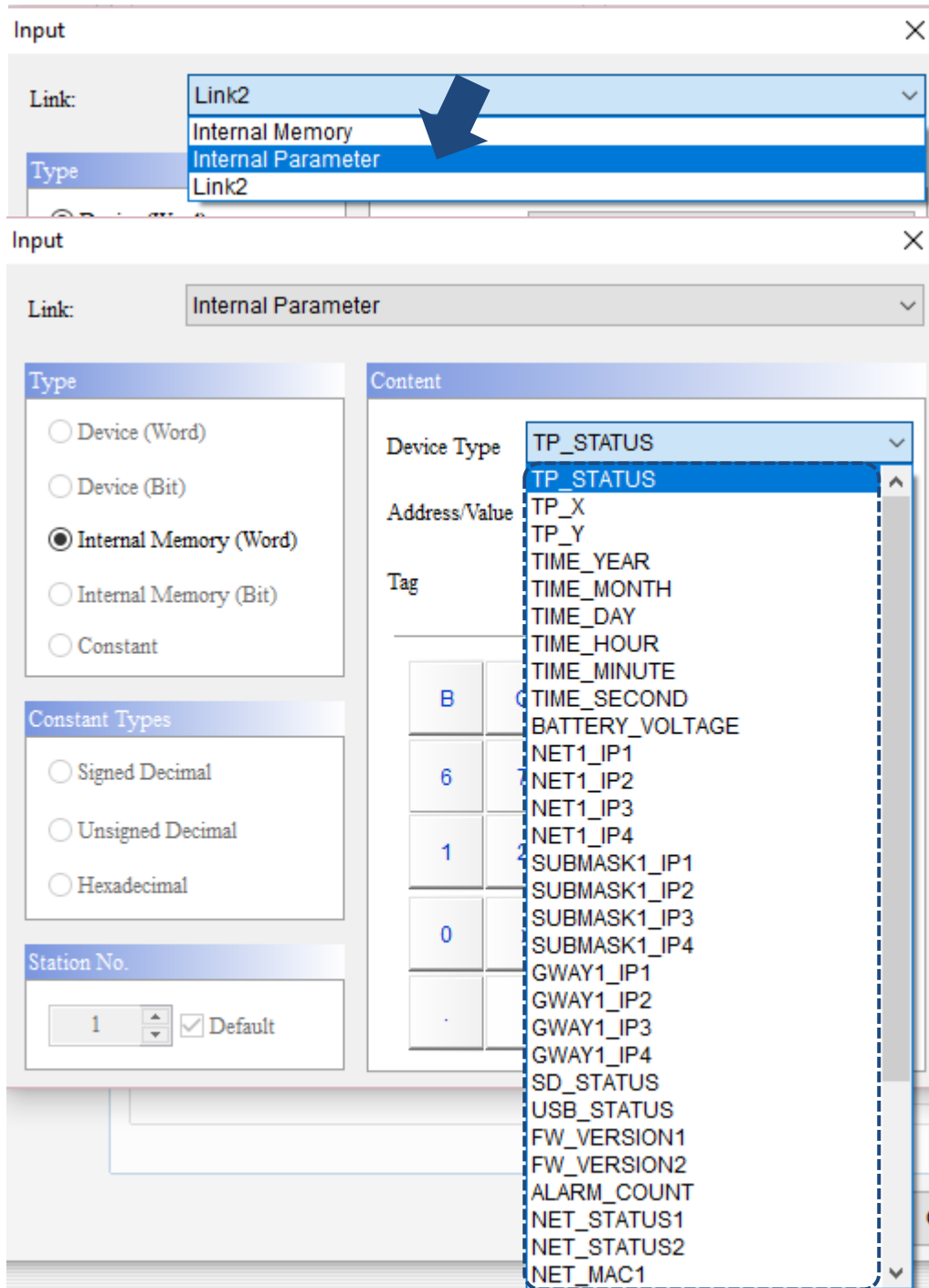






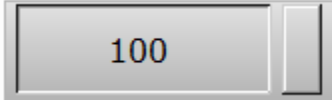









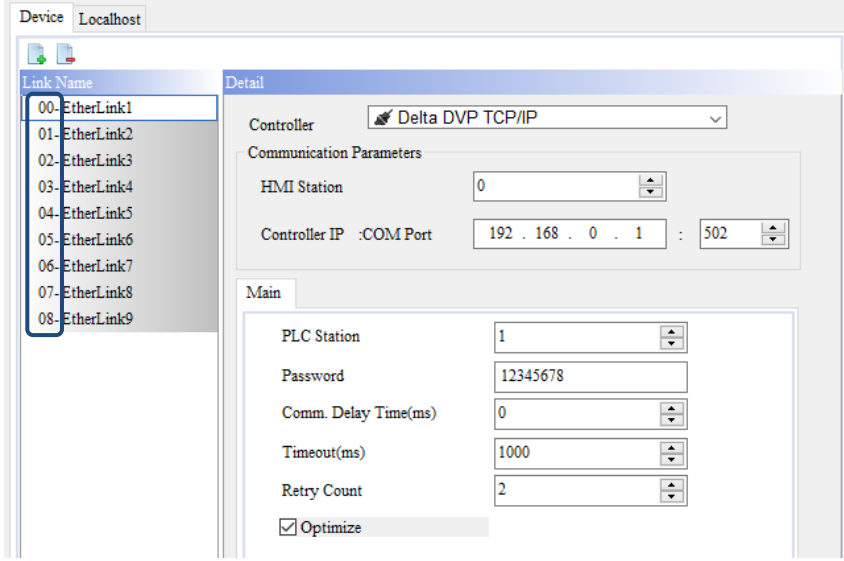


Figure 3.4.1 Internal Parameter

Table 3.4.1 Internal Parameter

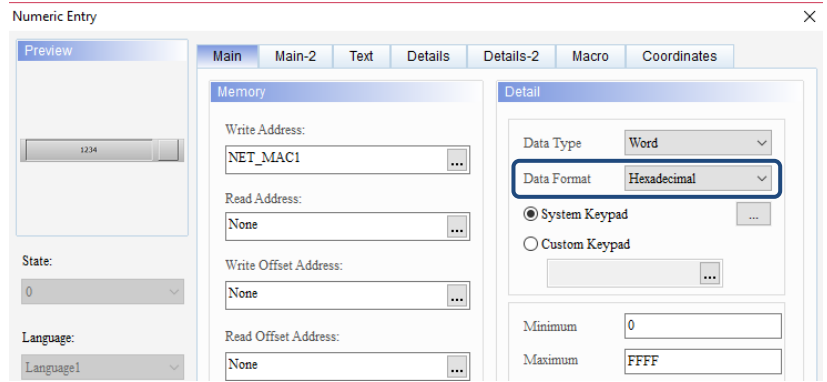
Internal Parameter										
TP_STATUS	HMI panel state value									
	<table border="1"> <thead> <tr> <th>State value</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Panel not touched, 0.</td> </tr> <tr> <td>1</td> <td>Panel touched, 1.</td> </tr> </tbody> </table>	State value	Result	0	Panel not touched, 0.	1	Panel touched, 1.			
	State value	Result								
0	Panel not touched, 0.									
1	Panel touched, 1.									
TP_X	X / Y coordinate when touching the panel.									
	<table border="1"> <thead> <tr> <th>Coordinate</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>X</td> <td rowspan="2">  </td> </tr> <tr> <td>Y</td> </tr> </tbody> </table>	Coordinate	Result	X		Y				
Coordinate	Result									
X										
Y										
TP_Y										
TIME_YEAR	Display the HMI system time, including yyyy / mm / dd / hr / mi / se.									
	<table border="1"> <thead> <tr> <th>Time / Date</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>TIME_YEAR (yyyy)</td> <td rowspan="7">  </td> </tr> <tr> <td>TIME_MONTH (mm)</td> </tr> <tr> <td>TIME_DAY (dd)</td> </tr> <tr> <td>TIME_HOUR (hr)</td> </tr> <tr> <td>TIME_MINUTE (mi)</td> </tr> <tr> <td>TIME_SECOND (se)</td> </tr> </tbody> </table>	Time / Date	Result	TIME_YEAR (yyyy)		TIME_MONTH (mm)	TIME_DAY (dd)	TIME_HOUR (hr)	TIME_MINUTE (mi)	TIME_SECOND (se)
Time / Date	Result									
TIME_YEAR (yyyy)										
TIME_MONTH (mm)										
TIME_DAY (dd)										
TIME_HOUR (hr)										
TIME_MINUTE (mi)										
TIME_SECOND (se)										
TIME_MONTH										
TIME_DAY										
TIME_HOUR										
TIME_MINUTE										
TIME_SECOND										
BATTER_VOLTAGE	Display the remaining battery voltage in percentage (%).									
										
NET_IP1	Display the HMI IP address, e.g. 192.168.123.62:									
	<table border="1"> <thead> <tr> <th>NET_IP</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>NET_IP1</td> <td rowspan="4">  </td> </tr> <tr> <td>NET_IP2</td> </tr> <tr> <td>NET_IP3</td> </tr> <tr> <td>NET_IP4</td> </tr> </tbody> </table>	NET_IP	Result	NET_IP1		NET_IP2	NET_IP3	NET_IP4		
NET_IP	Result									
NET_IP1										
NET_IP2										
NET_IP3										
NET_IP4										
NET_IP2										
NET_IP3										
NET_IP4										

3

Internal Parameter								
SUBMASK_IP1	Display the HMI SUBMASK_IP address, e.g. 255.255.255.0:							
SUBMASK_IP2	<table border="1"> <thead> <tr> <th>SUBMASK_IP</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>SUBMASK_IP1</td> <td rowspan="4">  </td> </tr> <tr> <td>SUBMASK_IP2</td> </tr> <tr> <td>SUBMASK_IP3</td> </tr> <tr> <td>SUBMASK_IP4</td> </tr> </tbody> </table>	SUBMASK_IP	Result	SUBMASK_IP1		SUBMASK_IP2	SUBMASK_IP3	SUBMASK_IP4
SUBMASK_IP	Result							
SUBMASK_IP1								
SUBMASK_IP2								
SUBMASK_IP3								
SUBMASK_IP4								
SUBMASK_IP3								
SUBMASK_IP4								
GWAY_IP1	Display the HMI GATEWAY_IP address, e.g. 192.168.123.254:							
GWAY_IP2	<table border="1"> <thead> <tr> <th>GWAY_IP</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>GWAY_IP1</td> <td rowspan="4">  </td> </tr> <tr> <td>GWAY_IP2</td> </tr> <tr> <td>GWAY_IP3</td> </tr> <tr> <td>GWAY_IP4</td> </tr> </tbody> </table>	GWAY_IP	Result	GWAY_IP1		GWAY_IP2	GWAY_IP3	GWAY_IP4
GWAY_IP	Result							
GWAY_IP1								
GWAY_IP2								
GWAY_IP3								
GWAY_IP4								
GWAY_IP3								
GWAY_IP4								
SD_STATUS	Display the HMI state value for an external storage device SD card. <table border="1"> <thead> <tr> <th>State value</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>SD card not inserted, 0.</td> </tr> <tr> <td>1</td> <td>SD card inserted, 1.</td> </tr> </tbody> </table>	State value	Result	0	SD card not inserted, 0.	1	SD card inserted, 1.	
State value	Result							
0	SD card not inserted, 0.							
1	SD card inserted, 1.							
USB_STATUS	Display the HMI state value for an external storage device USB disk. <table border="1"> <thead> <tr> <th>State value</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>USB disk not inserted, 0.</td> </tr> <tr> <td>1</td> <td>USB disk inserted, 1.</td> </tr> </tbody> </table>	State value	Result	0	USB disk not inserted, 0.	1	USB disk inserted, 1.	
State value	Result							
0	USB disk not inserted, 0.							
1	USB disk inserted, 1.							
NET_STATUS	<ul style="list-style-type: none"> ■ Display the HMI network connection. ■ The parameter function sorts the newly-added EthernetLink device number in sequence. If the device is connected, it displays 1; not connected, 0. ■ Please set the Data Format as Binary when setting the internal parameter. 							

Internal Parameter

NET_MAC1	<ul style="list-style-type: none"> ■ Display the MAC address of the HMI network port. ■ Please set the Data Format as Hexadecimal when setting this internal parameter.
NET_MAC2	
NET_MAC3	



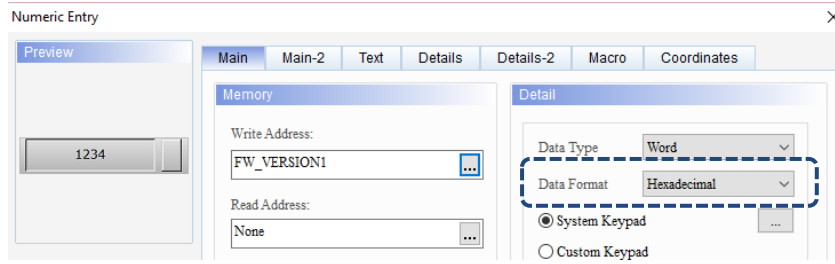
REMO_COUNT	<ul style="list-style-type: none"> ■ Display the amount of HMI being connected to remote devices, including eServer, asynchronous eRemote, and LUA Online debug.
------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

FW_VERSION1	<p style="text-align: center;">DOP-103WQ 65536 Colors – Version: 1.0018</p> <p style="text-align: center;">Main version Sub-version</p>
-------------	---------------------------------------------------------------------------------------------------------------------------------------------------

3

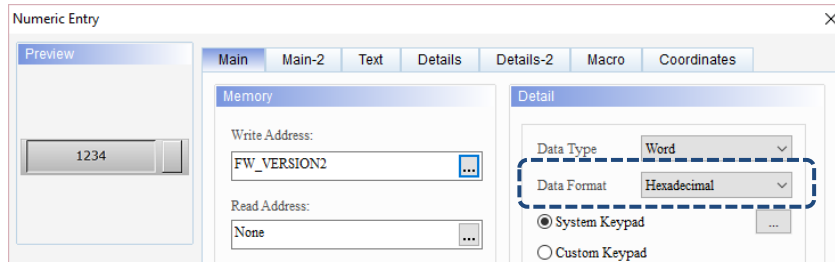
Internal Parameter

- Display the HMI firmware main version
- Please set the Data Format as Hexadecimal when setting this internal parameter.



FW_VERSION2

- Display the HMI firmware sub-version.
- Please set the Data Format as Hexadecimal when setting this internal parameter.



Internal Parameter

- Display the total amount of alarm triggered so far, including the triggered and canceled ones.
- DOP-100 presents the alarm messages by recording the triggered and canceled alarm messages within one set of data. As a result, Alarm_Count shows ten sets of data when there are ten alarm messages.

1	2	3	4	5
6	7	8	9	10

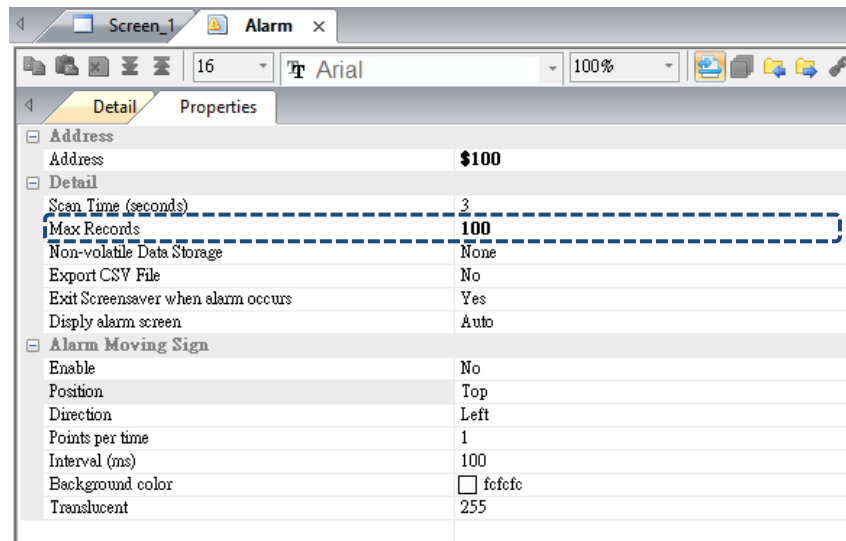
Alarm_Count

10

ALARM_COUNT

0001	1	09:59:18 05/04/2016	09:59:19 05/04/2016	1	A
0002	2	09:59:20 05/04/2016	09:59:26 05/04/2016	1	
0003	3	09:59:23 05/04/2016	09:59:26 05/04/2016	1	
0004	4	09:59:23 05/04/2016	09:59:26 05/04/2016	1	
0005	5	09:59:23 05/04/2016	09:59:26 05/04/2016	1	
0010	10	09:59:24 05/04/2016	09:59:27 05/04/2016	1	
0008	8	09:59:25 05/04/2016	09:59:29 05/04/2016	1	
0009	9	09:59:25 05/04/2016	09:59:27 05/04/2016	1	
0006	6	09:59:25 05/04/2016	09:59:28 05/04/2016	1	
0007	7	09:59:25 05/04/2016	09:59:28 05/04/2016	1	

- The function reminds you to export alarm messages to prevent the initial alarm message contents from being removed when the sets of data reach the set maximum amount.

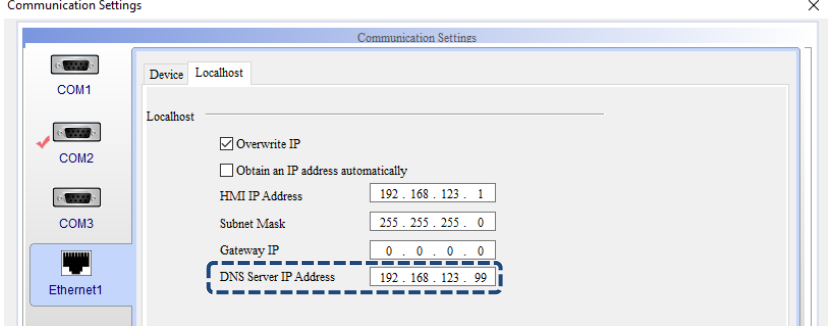


ACCOUNT Display the current account logged in.
If your account contains English and figures, you can use the Character Display elements to display; if your account contains non-ASCII characters, please use the Multi-language input elements for display.

Program_Status This parameter acquires Lua's operating state.

State value	Result
0	Stop
1	Operate
2	Break point
3	Pause

3

Internal Parameter	
DNS1_IP1	Display the Domain Name Server IP address of the HMI. 
DNS1_IP2	
DNS1_IP3	
DNS1_IP4	

Control Block and Status Block

4

This chapter illustrates how the HMI uses the Control Block and Status Block commands.

4.1	Control Block	4-8
4.2	Status Block.....	4-21

4

The DOPSoft provides the Control Block and Status Block functions for you to execute or monitor part of the system operation or status. You can define the memory start address of the Control Block and Status Block by going to [Options] > [Configuration] > [Control Block].

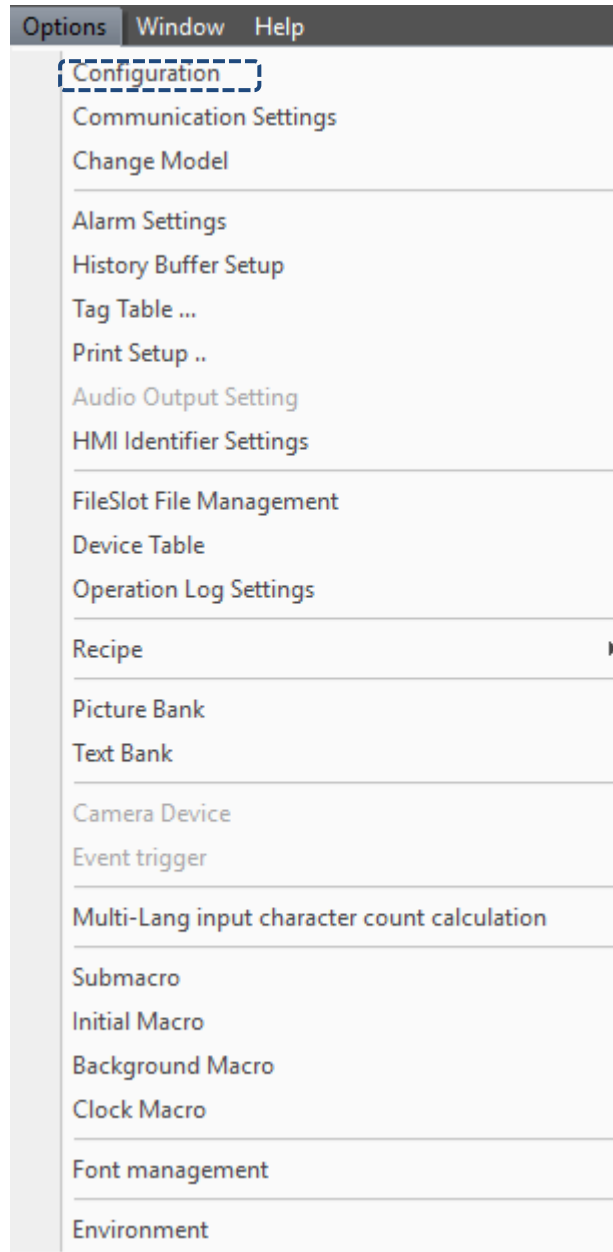
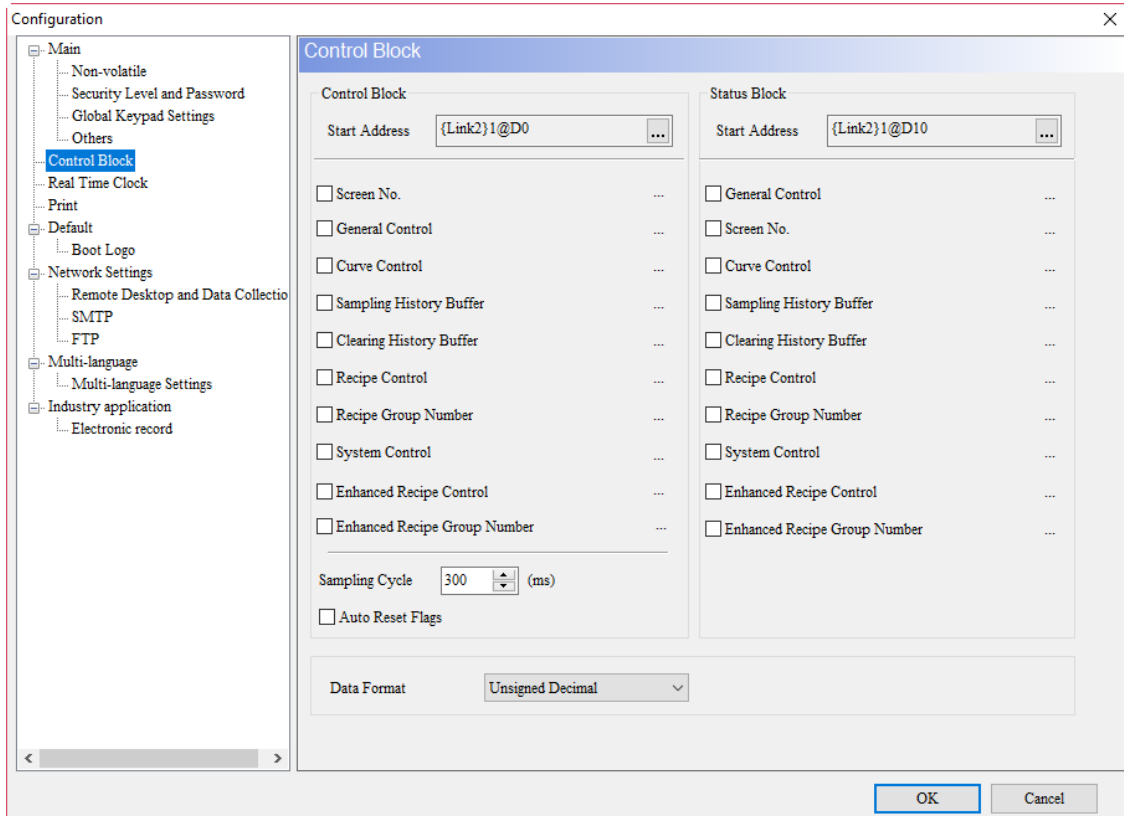


Figure 4.1 Configuration



4

Figure 4.2 Control Block and Status Block

4

The DOPSoft provides the Control Block and Status Block configurations for you to select the functions based on your needs, which is different from the conventional Screen Editor. Take the Control Block for instance. As long as you check Screen No. and Recipe Group Number, the Control Block configures them in continuous address automatically, and enables the applications of screen switch and recipe group number. See Figure 4.3.

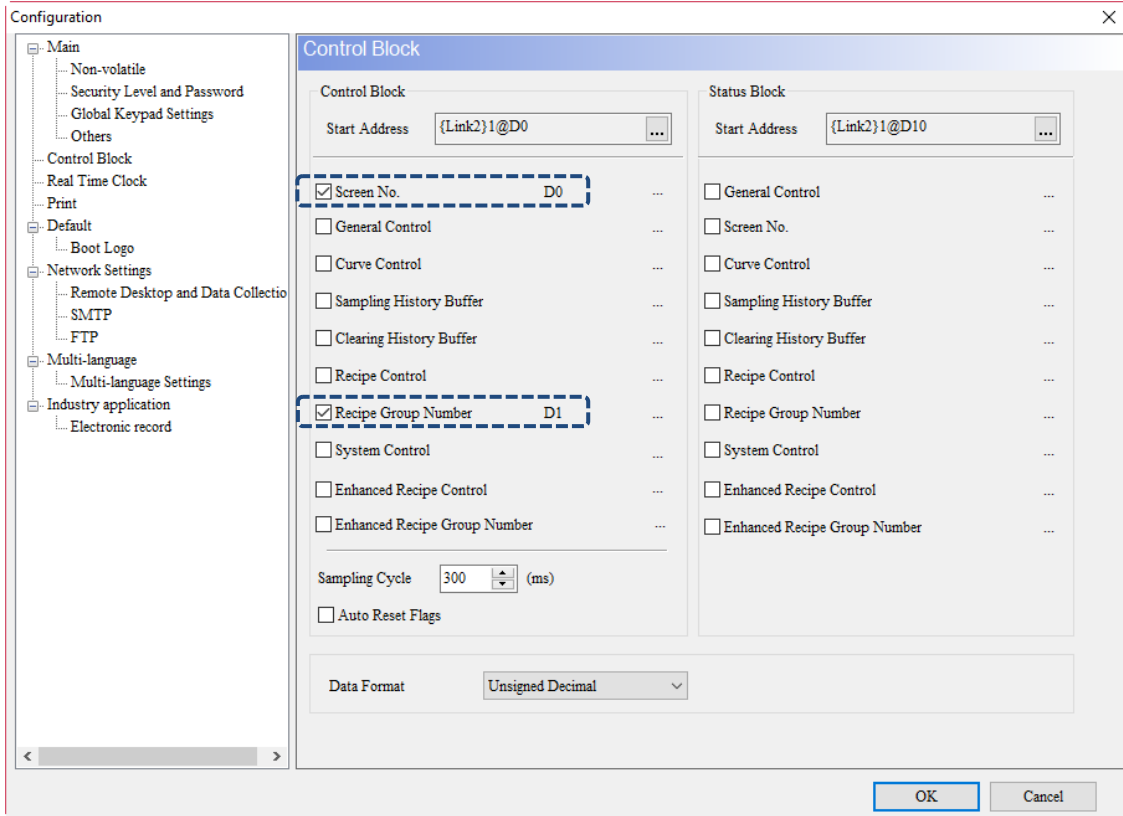


Figure 4.3 DOPSoft Control Block

If you check one more function, General Control, the memory addresses are arranged in continuous sequence from top to bottom. See Figure 4.4.

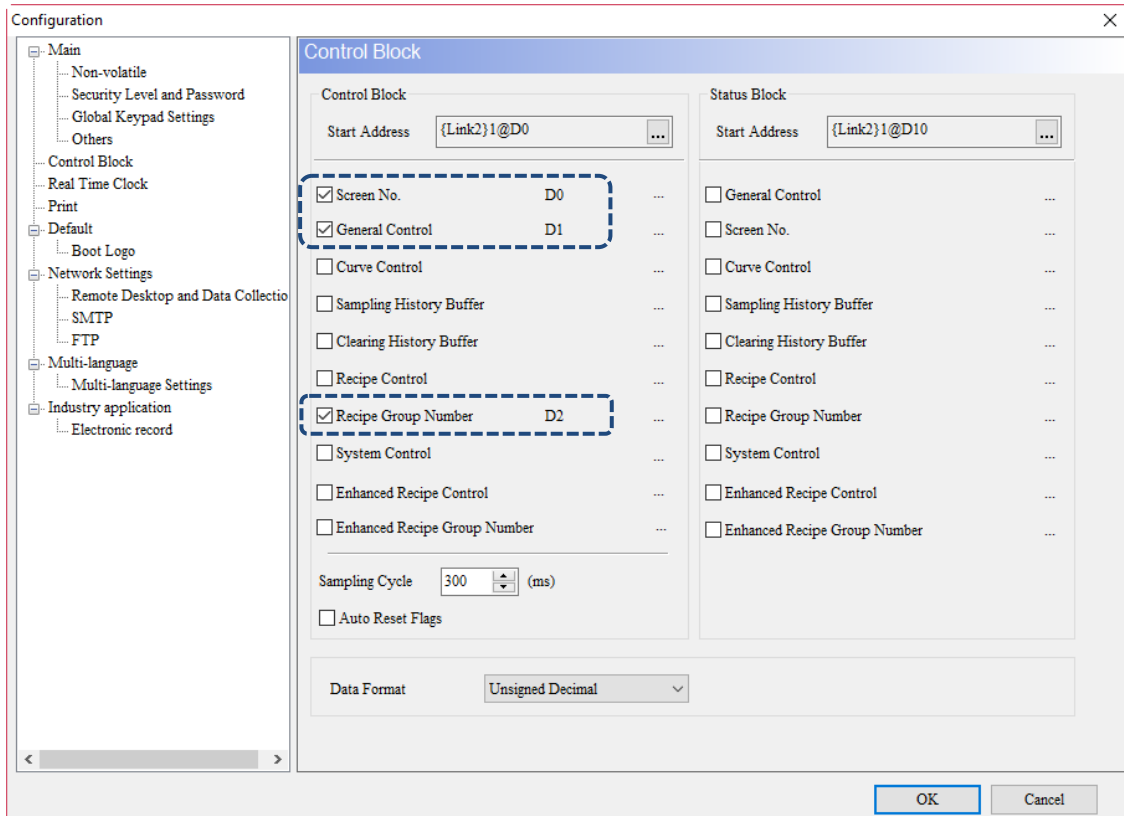
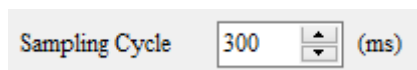


Figure 4.4 DOPSoft Control Block

■ Sampling Cycle

The Sampling Cycle enables you to control the sampling time flexibly. The default sampling cycle time is 300 ms, denoting that the interval for executing sampling is 300 ms. The minimum sampling cycle is 200 ms; the maximum sampling cycle is 1000 ms.



4

■ Auto Reset Flags

To reactivate some of functions in the Control Block, you must turn the flag OFF and then ON again. You can check Auto Reset Flags and the HMI automatically resets the flags.

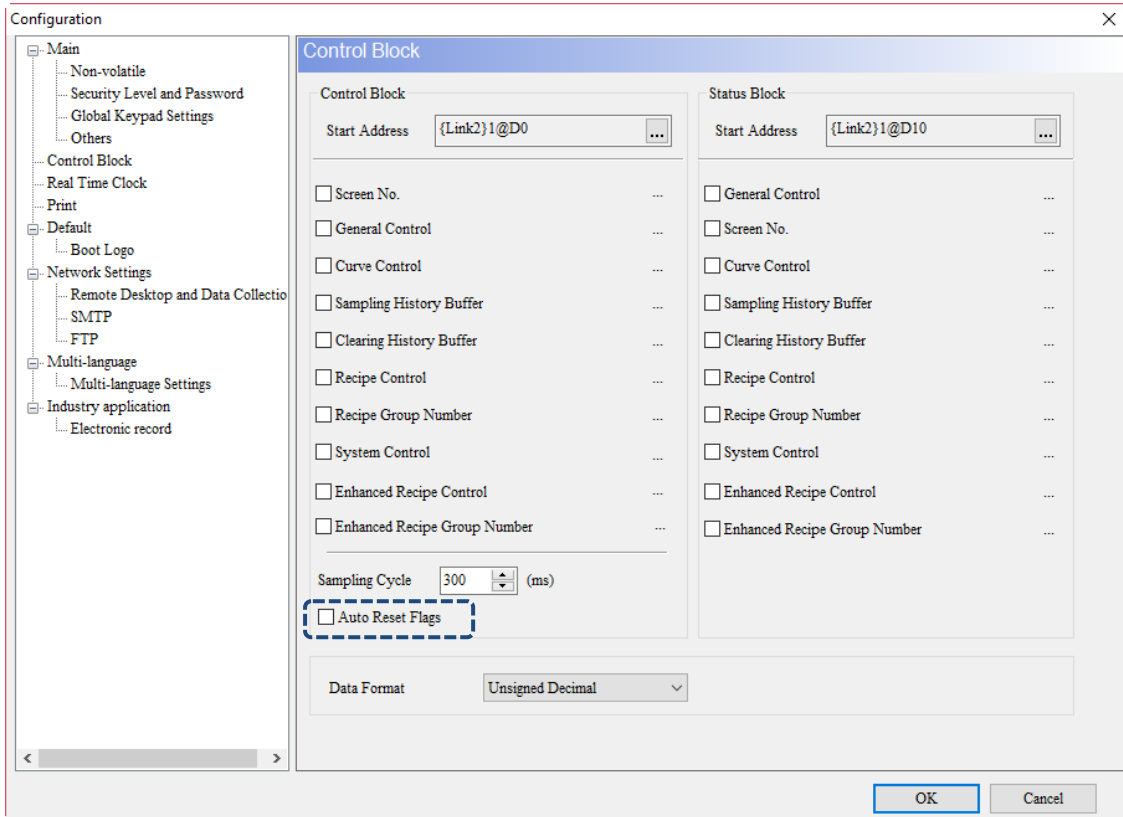
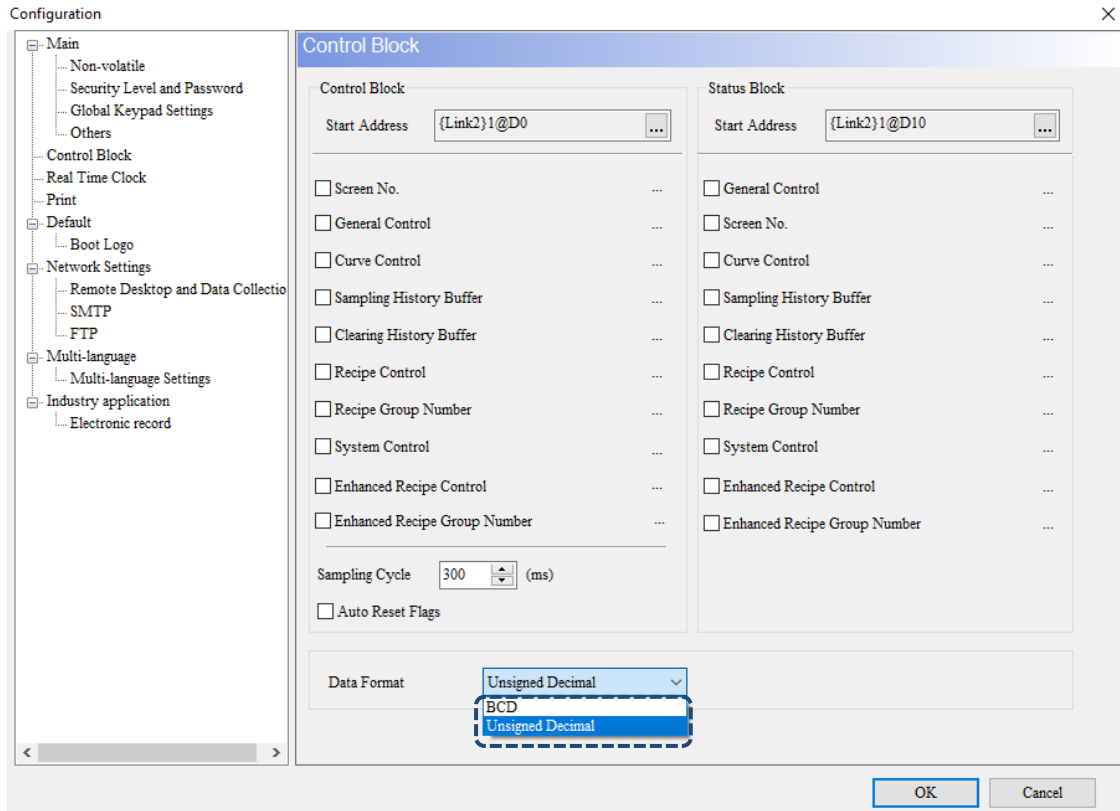


Figure 4.5 Auto Reset Flags

■ Control Block Data Format

You can set the Data Format to either Unsigned Decimal or BCD.



4

Figure 4.6 Control Block - Data Format

4

4.1 Control Block

You can define the register addresses of the Control Block in the controller or the HMI internal memory. You can control the HMI operations with the Control Block settings, such as screen switch, backlight disabling, security settings, curve and history buffer sampling or clearing, recipe control, enhanced recipe control, multi-language settings, printing, etc. The Control Block is a continuous data block in word as the unit.

Table 4.1.1 Control Block - Register type

Control Block register type	Controller register		Internal memory	
	Register (D)	Example	Register (\$)	Example
Screen No.	Dn	D0	\$n	\$15
General control	Dn+1	D1	\$n+1	\$16
Curve control	Dn+2	D2	\$n+2	\$17
History buffer sampling	Dn+3	D3	\$n+3	\$18
History buffer clearing	Dn+4	D4	\$n+4	\$19
Recipe control	Dn+5	D5	\$n+5	\$20
Recipe group number	Dn+6	D6	\$n+6	\$21
System control flag	Dn+7	D7	\$n+7	\$22
Enhanced recipe control	Dn+8	D8	\$n+8	\$23
Enhanced recipe group control	Dn+9	D9	\$n+9	\$24

■ Screen number register

Table 4.1.2 Control Block - Screen number register

Screen number register

- Write the designated screen number into the register, and the HMI switches to the designated screen.
- As the example shown below, if you set the address of a Numeric Entry element as D0 and input its value as 1, the HMI switches to the first screen.

b0 - b15 –
Screen
number

Screen 2

Screen 1

Configuration

- [-] Main
 - [-] Non-volatile
 - [-] Security Level and Password
 - [-] Global Keypad Settings
 - [-] Others
 - [-] Control Block
 - [-] Real Time Clock
 - [-] Print
 - [-] Default
 - [-] Boot Logo
 - [-] Network Settings
 - [-] Remote Desktop and Data Collectio
 - [-] SMTP
 - [-] FTP
 - [-] Multi-language
 - [-] Industry application
 - [-] Electronic record

Control Block

Control Block

Start Address:

Screen No. D0

General Control

Curve Control

Sampling History Buffer

Clearing History Buffer

Recipe Control

Recipe Group Number

System Control

Enhanced Recipe Control

Enhanced Recipe Group Number

Sampling Cycle: (ms)

Auto Reset Flags

■ Control Block - General control register

Table 4.1.3 Control Block - General control register

General control register																		
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0			
				(10)			(9)			(8)		(7)	(6)	(5)	(4)	(3)	(2)	(1)

- (1) b0 Communication enable / disable flag
- (2) b1 Backlight enable / disable flag
- (3) b2 Buzzer enable / disable flag
- (4) b3 Alarm buffer clear flag
- (5) b4 Alarm counter clear flag
- (6) b5 External storage device cache write flag
- (7) b6 Remote control lock
- (8) b7 HMI ↔VGA mode (B10VS511)
- (9) b8 - b10 Set user security level
- (10) b11 - b15 Reserved

b0 –
Communication
enable / disable
flag

- Enable / disable the HMI communication. To use the communication enable / disable flag, click [Options] > [Communication Settings], check [Disconnect after communication interrupt], and set the retry times. See the following figure.

- When the HMI communicates with the controller, the HMI automatically stops the communication with the controller and turns the flag ON after the interruption times reach the set retry times without a communication error message popping up (this does not affect the communication between the HMI and other controllers). You can restore the communication between the HMI and the controller by turning the flag OFF.

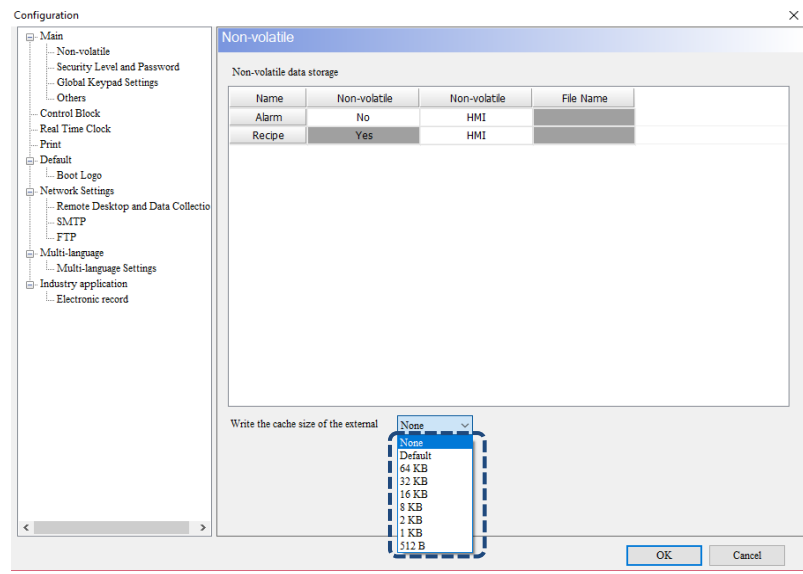
4

General control register	
	<p style="text-align: center;">Communication enable / disable flag</p> <p style="text-align: center;">OFF ON OFF</p> <ul style="list-style-type: none"> ■ The flag is only for restoring the communication when it is automatically stopped. You cannot directly stop the communication between the HMI and any controller by turning the flag ON. ■ The Auto Reset Flags function is not applicable to this flag.
b1 – Backlight enable / disable flag	<ul style="list-style-type: none"> ■ Enable / disable the HMI backlight. When the flag is ON, the HMI backlight is disabled. When the flag is OFF, the HMI backlight is enabled. ■ The Auto Reset Flags function is not applicable to this flag.
b2 – Buzzer enable / disable flag	<ul style="list-style-type: none"> ■ Enable / disable the HMI buzzer. When the flag is ON, the HMI buzzer is enabled. When the flag is OFF, the HMI buzzer is disabled. ■ The Auto Reset Flags function is not applicable to this flag.
b3 – Alarm buffer clear flag	<p>Clear the HMI alarm buffer. When the flag is turned ON, the HMI clears the alarm buffer. To reactivate the function, you must turn the flag OFF and then ON again.</p>
b4 – Alarm counter clear flag	<p>Clear the HMI Alarm Frequency Table. When the flag is turned ON, the data in the Alarm Frequency Table is cleared. To reactivate the function again, you must turn the flag OFF and then ON again.</p>

General control register

- Update the HMI cache data into a USB Disk or an SD Card in real time. If the alarm buffer, history buffer or recipe function is activated, and the non-volatile storage location is set to a USB Disk or an SD Card, when the flag is turned ON, the HMI updates the data temporarily stored in the cache into a USB Disk or an SD Card in real time. To reactivate the function again, you must turn the flag OFF and then ON again.
- The data written into a USB Disk or an SD Card by the HMI is temporarily stored in the cache first. Before the cache data size reaches the set limit, the data is not written into a USB Disk or an SD Card. This is to keep the USB Disk or SD Card from being damaged by frequent overwriting. However, if the data volume you are accessing is less than the buffer capacity or the power is cut off unexpectedly, part of the data may be lost. To keep the data, you can have the flag turned ON in a cyclic pattern to write the data into the USB Disk or SD Card.

b5 – External storage device cache write flag



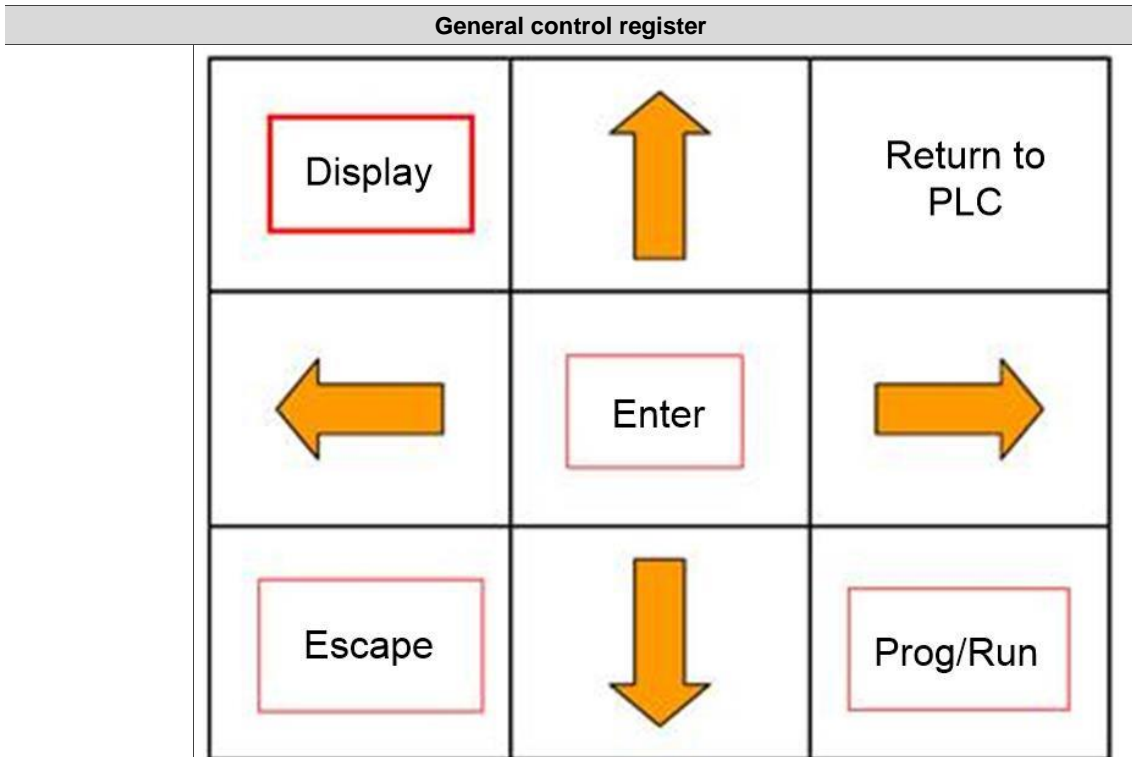
- Enable / disable the operation of eRemote. When the flag is ON, eRemote can only be monitored rather than be operated. When the flag is OFF, eRemote can be operated properly.
- The Auto Reset Flags function is not applicable to this flag.

b6 – Remote control lock

- This bit is only available for the B10VS511 series.
 - Interconnect COM1 from B10VS511 and COM from DMV; interconnect VGA Port from B10VS511 and VGA Port from DMV. Then, enable the Bit to enter VGA mode.
- Note:
1. Set the communication protocol station number on DMV communication settings.
 2. Complete the output settings in DMV program menu / Output / RS-232. (The PLC station number is not equal to DMV station number in this case. Please do not change the PLC station number. Select MODBUS mode in the output settings.)
 3. The communication between DMV and HMI must apply RS-232 and no crossover. (2 ↔ 2, 3 ↔ 3).
 4. Please select Delta Controller ASCII for communication setting on the HMI side, and the station number must be consistent with DMV.
- When it is in VGA mode, a nine-square grid appears on the HMI. You can return to the HMI mode by clicking the top-right corner.

b7 – HMI <-> VGA Mode (B10VS511)

4



- The Auto Reset Flags function is not applicable to this flag.
- You can change the current HMI user security by activating the flags of Bit 8, Bit 9, and Bit 10 provided by the general control registers. The HMI internal security level includes:
 - a. Security level 0 - 7: 0 refers to the lowest security level.
 - b. Highest security level: cannot be controlled by these three flags.
- You can set security level 0 to 7 with the three flags. Refer to the following table for more details on settings.

b8, b9, b10 –
Set user
security level

Security level	Flag control		
	Bit 10	Bit 9	Bit 8
Security level 0	0	0	0
Security level 1	0	0	1
Security level 2	0	1	0
Security level 3	0	1	1
Security level 4	1	0	0
Security level 5	1	0	1
Security level 6	1	1	0
Security level 7	1	1	1

■ Curve control register

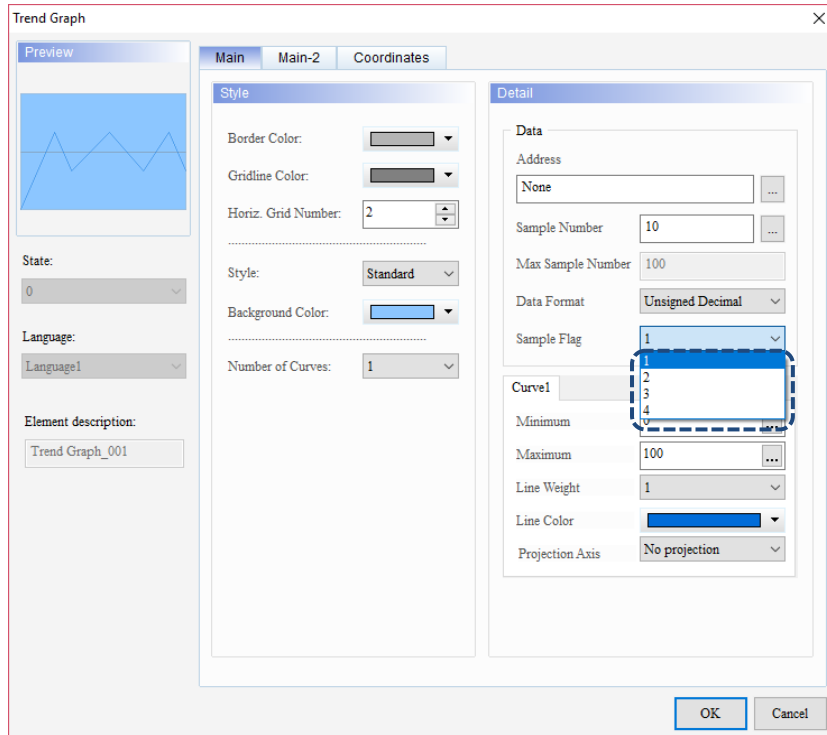
Table 4.1.4 Control Block - Curve control register

Curve control register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(4)				(3)				(2)				(1)			

(1) b0 - b3 Curve sampling flags 1 - 4
 (2) b4 - b7 Reserved
 (3) b8 - b11 Curve clear flags 1 - 4
 (4) b12 - 15 Reserved

- The DOPSoft provides four curve sampling flags. The curves include the Trend Graph and X-Y Chart of which curve drawing action is controlled by the curve sampling flags.
- If the flag is turned ON, the corresponding curve element samples and draws the curve on the elements. To reactivate the function, you must turn flag OFF and then ON again.
- The sampling flag 1 of the Trend Graph element corresponds to the curve sampling flag 1; the sampling flag 2 of the Trend Graph element corresponds to the curve sampling flag 2, and so forth.

b0 - b3 –
Curve
sampling flags
(1 - 4)

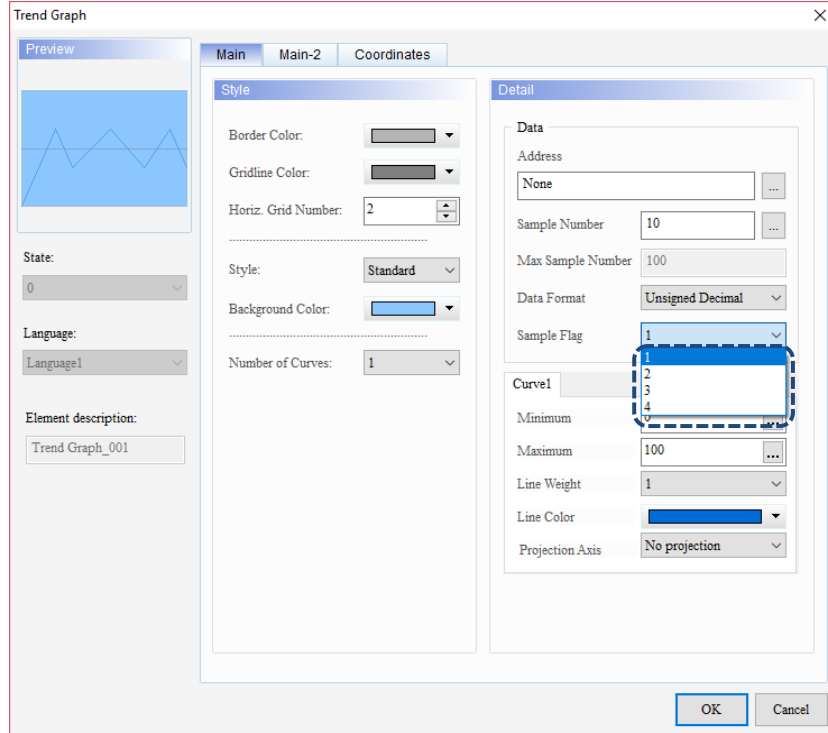


4

Curve control register

- The DOPSoft provides four curve clear flags. The curves include the Trend Graph and X-Y Chart of which curve clearing action is controlled by the curve clear flags.
- If the flag is turned ON, the corresponding Curve element clears the element curves. To reactivate the function, you must turn the flag OFF and then ON again.
- The curve element sampling flag 1 corresponds to the curve clear flag 1; the curve element sampling flag 2 corresponds to the curve clear flag 2, and so forth.

b8 - b11 –
Curve clear
flags (1 - 4)



History buffer sampling register

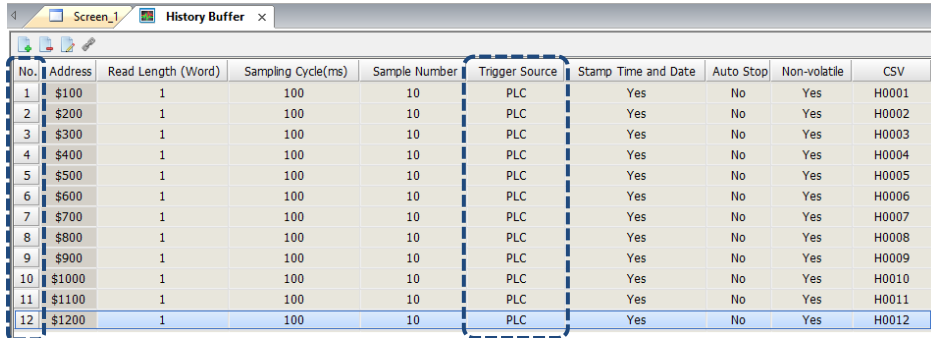
Table 4.1.5 Control Block - History buffer sampling register

History buffer sampling register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(2)								(1)							

(1) b0 - b11 History buffer sampling flags 1 - 12 (b0 refers to flag 1, and so forth.)
 (2) b12 - b15 Reserved

b0 - b11 – History buffer sampling flags (1 - 12)

- The history buffer sampling register can record up to twelve sets of history buffer data. Each buffer corresponds to a history buffer sampling flag. To execute sampling with the history buffer sampling flags of the control block, you must set PLC for Trigger Source of the history buffer.



- You can determine the sampling timing by triggering the history buffer sampling flags. When the history buffer sampling flag is ON, the register samples one time. To reactivate the function, you must turn the flag OFF and then ON again.

History buffer clear register

Table 4.1.6 Control Block - History buffer clear register

History buffer clear register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(2)								(1)							

(1) b0 - b11 History buffer clear flags 1 - 12 (b0 refers to flag 1, and so forth.)
 (2) b12 - b15 Reserved

b0 - b11 – History buffer clear flags (1 - 12)

You can clear the buffer by triggering the history buffer clear flags. When the history buffer clear flag is ON, the HMI clears the buffer. To reactivate the function, you must turn the flag OFF and then ON again.

4

■ Recipe control register

Table 4.1.7 Control Block - Recipe control register

Recipe control register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
						(6)				(5)		(4)	(3)	(2)	(1)
<p>(1) b0 Recipe group change flag (16-bit)</p> <p>(2) b1 Recipe read flag (PLC → HMI)</p> <p>(3) b2 Recipe write flag (HMI → PLC)</p> <p>(4) b3 Recipe group change flag (32-bit)</p> <p>(5) b4 - b7 Reserved</p> <p>(6) b8 - b15 Designate recipe group number</p>															
b0 –Recipe group change flag		<ul style="list-style-type: none"> This is applicable to 16-bit recipes. There are two ways to call or change the recipe group number: <ol style="list-style-type: none"> Directly change from the HMI internal register RCPNO. <div> </div> Change with the recipe group change flag <ul style="list-style-type: none"> To change the HMI recipe group number with this flag, you should first write the recipe group to be changed into the recipe group control register (Table 4.1.8 recipe group control register) and trigger the recipe group change flag. When the recipe group change flag is turned ON, the recipe group number is changed according to the number defined in the recipe group control register, and the number of the RCPBO internal register is changed automatically. To reactivate the function, you must turn the flag OFF and then ON again. 													
b1 – Recipe read flag (PLC → HMI)		When the recipe read flag is turned ON, the HMI reads the controller recipe data and writes them into the designated recipe data register. To reactivate the function, you must turn the flag OFF and then ON again.													
b2 – Recipe write flag (HMI → PLC)		When recipe write flag is turned ON, the HMI writes the designated recipe data into the controller register. To reactivate the function, you must turn the flag OFF and then ON again.													
b3 – Recipe group change flag		<ul style="list-style-type: none"> This is applicable to 32-bit recipes. There are two ways to call or change the recipe group number: <ol style="list-style-type: none"> Directly change from the HMI internal register RCPG. <div> </div> Change with the recipe group change flag. <ul style="list-style-type: none"> When the recipe group change flag is turned ON, the recipe group number is changed according to the number defined in the recipe group change bits (b8 - b15), and the number of the RCPG internal register is changed automatically. To reactivate the function, you must turn the flag OFF and then ON again. 													
b8 - b15 Designate recipe group number to be changed		You can designate the recipe group number to be changed with the high byte (Bits 8 - 15) from the recipe control register. By activating the recipe group change flag, the HMI changes the number of the RCPG internal register, thus changing the recipe group.													

■ Recipe group control register

Table 4.1.8 Control Block - Recipe group control register

Recipe group control register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
										<div style="border-top: 1px solid black; border-left: 1px solid black; border-right: 1px solid black; padding: 5px;"> Recipe group designation </div>					
b0 - b15 – Recipe group designation		You can designate the recipe group number to be changed with the recipe group control register. By activating the recipe group change flag (Table 4.1.7 recipe control register b0), the HMI automatically changes the number of the RCPG internal register, thus changing the recipe group.													

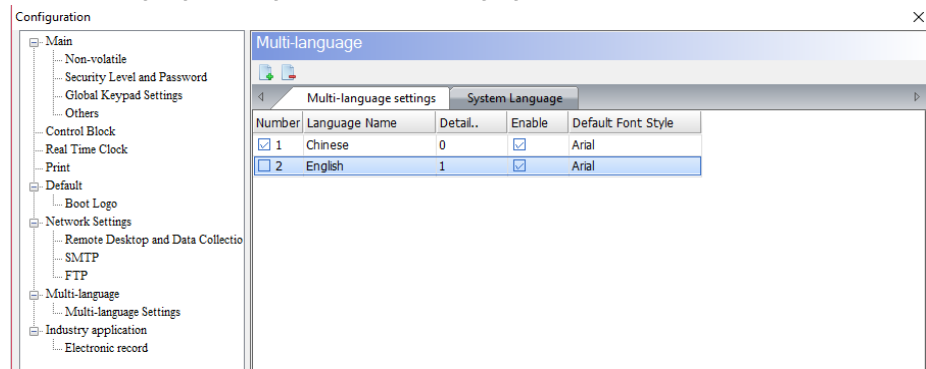
■ System control flag register

Table 4.1.9 Control Block - System control flag register

System control flag register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
				(4)			(3)	(2)							(1)
b0 - b7 – Multi-language setting values		The system supports 32 languages. You can change the multi-language settings to switch languages. You can click [Options] > [Configurations] > [Multi-language] to edit the multi-language settings. See the following figure.													

- (1) b0 - b7 Multi-language setting values
- (2) b8 Printer flag
- (3) b9 Printer form feed flag
- (4) b10 - b15 Reserved

The system supports 32 languages. You can change the multi-language settings to switch languages. You can click [Options] > [Configurations] > [Multi-language] to edit the multi-language settings. See the following figure.

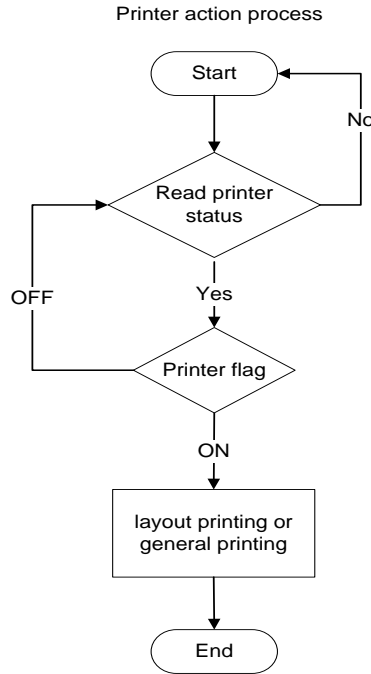


4

System control flag register

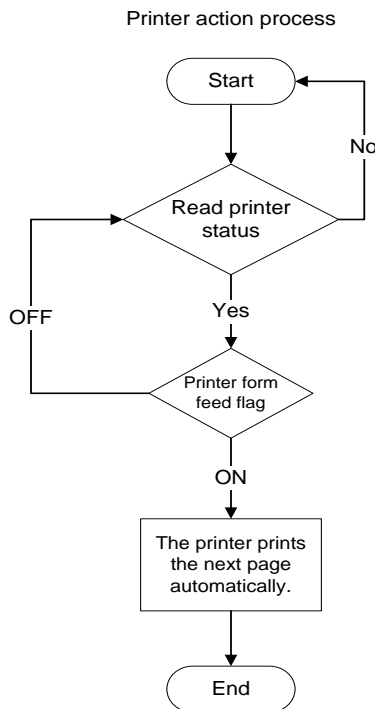
- Please note that only one option is enabled at the same time. The screen layout mode is prioritized.
- When the printer flag is turned ON, the printing task runs according to the set mode: Print general screen or Screen Print Setup; when the printer flag is OFF, the printer function is idled.

b8 – Printer flag





When the printer form feed flag is turned ON, the printer retracts the paper and align the paper for the next run automatically; when the flag is OFF, the printer form feed function is idled.

b9 - Printer form feed flag



■ Enhanced recipe control register

Table 4.1.10 Control Block - Enhanced recipe control register

Enhanced recipe control register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
						(6)				(5)		(4)	(3)	(2)	(1)
<ul style="list-style-type: none"> (1) b0 Enhanced recipe group change flag (ENRCPNO) (2) b1 Enhanced recipe read flag (PLC → HMI) (3) b2 Enhanced recipe write flag (HMI → PLC) (4) b3 Enhanced recipe group change flag (ENRCPG) (5) b4 - b7 Reserved (6) b8 - b15 Designate enhanced recipe group number to be changed 															
b0 – Enhanced recipe group change flag		<ul style="list-style-type: none"> ■ This is applicable to enhanced recipes. ■ There are two ways to call or change the enhanced recipe group: <ol style="list-style-type: none"> a. Directly change from the HMI internal register ENRCPNO. <div style="text-align: center;">  </div> <ol style="list-style-type: none"> b. Change with the enhanced recipe group change flag. <ul style="list-style-type: none"> ■ To change the HMI enhanced recipe group number with this flag, you should first write the enhanced recipe group to be changed into the recipe group control register (Table 4.1.11 enhanced recipe group control register) and trigger the enhanced recipe group change flag. ■ When the enhanced recipe group change flag is turned ON, the enhanced recipe group number is changed according to the number defined in the enhanced recipe group control register, and the number in the internal register ENRCPNO is changed automatically. To reactivate the function, you must turn the flag OFF and then ON again. 													
b1 – Enhanced recipe read flag (PLC → HMI)		When the enhanced recipe read flag is turned ON, the HMI reads the controller enhanced recipe data and writes them into the designated enhanced recipe data register. To reactivate the function, you must turn the flag OFF and then ON again.													
b2 – Enhanced recipe write flag (HMI → PLC)		When the enhanced recipe write flag is turned ON, the HMI writes the designated enhanced recipe data into the controller register. To reactivate the function, you must turn the flag OFF and then ON again.													
b3 – Enhanced recipe group change flag		<ul style="list-style-type: none"> ■ This is applicable to enhanced recipes. ■ There are two ways to call or change enhanced recipe group: <ol style="list-style-type: none"> a. Directly change from the HMI internal register ENRCPG. <div style="text-align: center;">  </div> <ol style="list-style-type: none"> b. Change with the enhanced recipe group change flag. <ul style="list-style-type: none"> ■ When the enhanced recipe group change flag is turned ON, the enhanced change recipe group number is changed according to the number defined in the enhanced change recipe group (b8 - b15), and the number in the internal register ENRCPG is changed automatically. To reactivate the function, you must turn the flag OFF and then ON again. 													
b8 - b15 Designate enhanced recipe group number to be changed		You can designate the enhanced recipe group number to be changed with the high byte (Bits 8 - 15) from the enhanced recipe control register. By activating the enhanced recipe group change flag, the HMI changes the number in the internal register ENRCPG, thus changing the enhanced recipe group.													

4

- Enhanced recipe group control register

Table 4.1.11 Control Block - Enhanced recipe group control register

Enhanced recipe group control register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
										└─ Enhanced recipe group designation					
b0 - b15 – Enhanced recipe group designation		You can designate the enhanced recipe group number to be changed with the enhanced recipe group control register. By activating the enhanced change recipe group flag (Table 4.1.10 enhanced recipe control register b0), the HMI changes the number of the ENRCPNO internal register, thus changing the enhanced recipe group.													

4.2 Status Block

You can define the register addresses of the Status Block in the controller or the HMI internal memory. You can view the present HMI status with the Status Block settings, such as current screen number, current security level, curves and history buffer sampling status, recipe control, enhanced recipe control, multi-language settings, printing, etc. The Status Block is a continuous data block in word as the unit as well.

Note: when the function of Control Block is not configured, the Status Block cannot monitor the status. Furthermore, the addresses of the Control Block and the Status Block must not be identical.

Table 4.2.1 Status Block - Register type

Status Block register type	Controller register		Internal memory	
	Register (D)	Example	Register (\$)	Example
General control status	Dn	D10	\$n	\$25
Screen number status	Dn+1	D11	\$n+1	\$26
Curve control status	Dn+2	D12	\$n+2	\$27
History buffer sampling status	Dn+3	D13	\$n+3	\$28
History buffer clear status	Dn+4	D14	\$n+4	\$29
Recipe control status	Dn+5	D15	\$n+5	\$30
Recipe group control status	Dn+6	D16	\$n+6	\$31
System control flag status	Dn+7	D17	\$n+7	\$32
Enhanced recipe control status	Dn+8	D18	\$n+8	\$33
Enhanced recipe group control status	Dn+9	D19	\$n+9	\$34

4

■ General control status register

Table 4.2.2 Status Block - General control register

General control status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(9)				(8)			(7)	(6)	(5)	(4)	(3)	(2)		(1)	
<ul style="list-style-type: none"> (1) b0 Screen switch status (2) b1 - b2 Reserved (3) b3 Alarm buffer clear flag (4) b4 Alarm counter clear flag (6) b5 External storage device cache write flag (5) b6 Remote control lock (7) b7 Reserved (8) b8 – b10 Set user security level (9) b11 - b15 Reserved 															
<ul style="list-style-type: none"> ■ When the screen is switched, the flag is turned ON. ■ When the screen switch is completed, the flag is turned OFF. 															
<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>b0 – Screen switch status flag</p> </div> <div style="flex: 2;"> <p style="text-align: center;">Screen switch status flag</p> </div> </div>															
<ul style="list-style-type: none"> ■ When the HMI is clearing the alarm buffer, the flag is turned ON. ■ When clearing the alarm buffer is completed, the flag is turned OFF. 															
<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>b3 – Alarm buffer clear flag</p> </div> <div style="flex: 2;"> <p style="text-align: center;">Alarm buffer clear flag</p> </div> </div>															

General control status register																																								
b4 – Alarm counter clear flag	<ul style="list-style-type: none"> When the HMI clears the alarm counter, the flag is turned ON. When clearing the alarm counter is completed, the flag is turned OFF. <p style="text-align: center;">Alarm counter clear flag</p>																																							
b5 – External storage device cache write flag	<ul style="list-style-type: none"> When the HMI cache data is updated into a USB Disk or an SD Dard, the flag is turned ON. When data update is completed, the flag is turned OFF. <p style="text-align: center;">Instant flag for USB or SD card data update</p>																																							
b6 – Remote control lock	<ul style="list-style-type: none"> This bit determines whether VNC is operable. When this flag is turned ON, VNC is not operable but can be monitored. When this flag is turned OFF, VNC is operable. The Auto Reset Flags function is not applicable to this flag. 																																							
b8 - b10 – Set user security level	<p>You can find the present HMI operator security level from BIT8, BIT9 and BIT10.</p> <table border="1"> <thead> <tr> <th rowspan="2">Security level</th> <th colspan="3">Flag control</th> </tr> <tr> <th>Bit 10</th> <th>Bit 9</th> <th>Bit 8</th> </tr> </thead> <tbody> <tr> <td>Security level 0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Security level 1</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>Security level 2</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Security level 3</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>Security level 4</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>Security level 5</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>Security level 6</td> <td>1</td> <td>1</td> <td>0</td> </tr> <tr> <td>Security level 7</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>	Security level	Flag control			Bit 10	Bit 9	Bit 8	Security level 0	0	0	0	Security level 1	0	0	1	Security level 2	0	1	0	Security level 3	0	1	1	Security level 4	1	0	0	Security level 5	1	0	1	Security level 6	1	1	0	Security level 7	1	1	1
Security level	Flag control																																							
	Bit 10	Bit 9	Bit 8																																					
Security level 0	0	0	0																																					
Security level 1	0	0	1																																					
Security level 2	0	1	0																																					
Security level 3	0	1	1																																					
Security level 4	1	0	0																																					
Security level 5	1	0	1																																					
Security level 6	1	1	0																																					
Security level 7	1	1	1																																					

4

■ Screen number status register

Table 4.2.3 Status Block - Screen number register

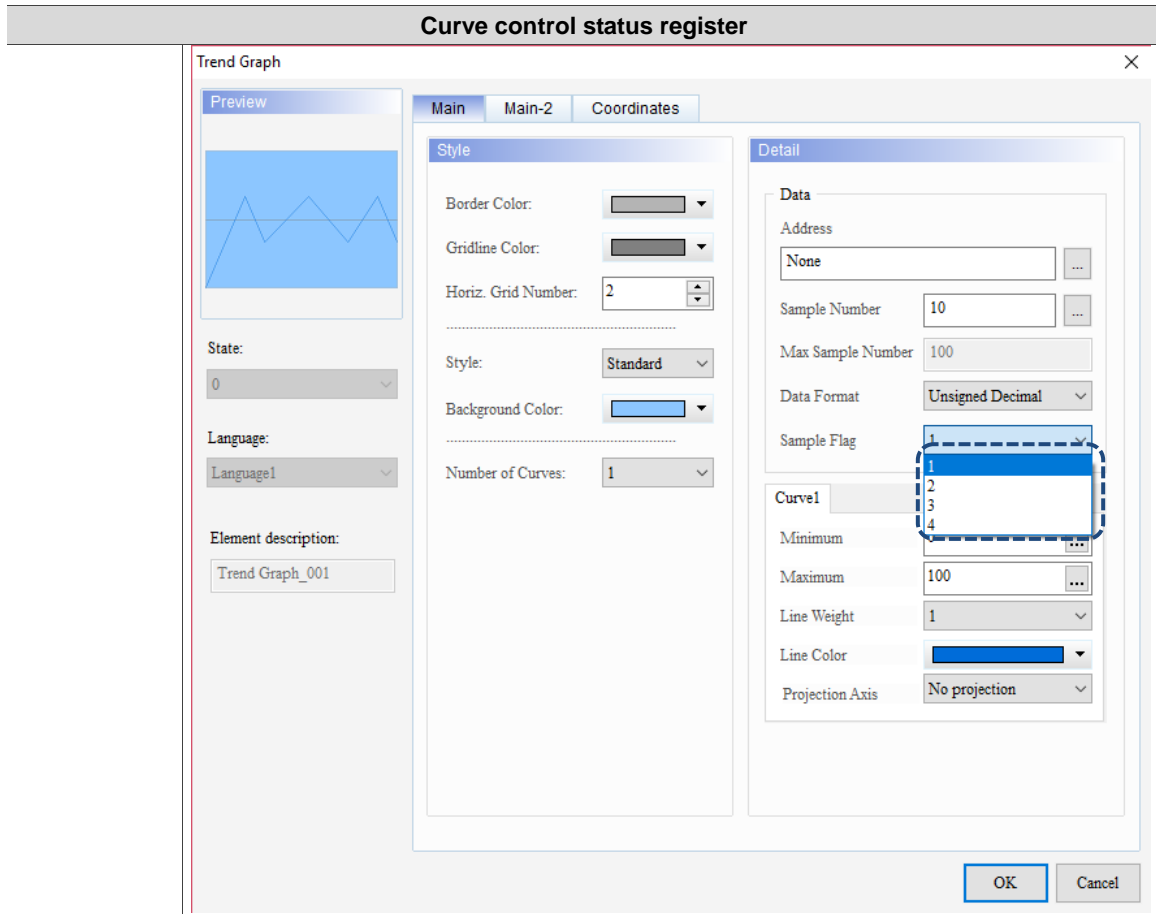
Screen number status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
b0 - b15 – Screen number status	You can check the last opened screen number with this status register.														

■ Curve control status register

Table 4.2.4 Status Block - Curve control register

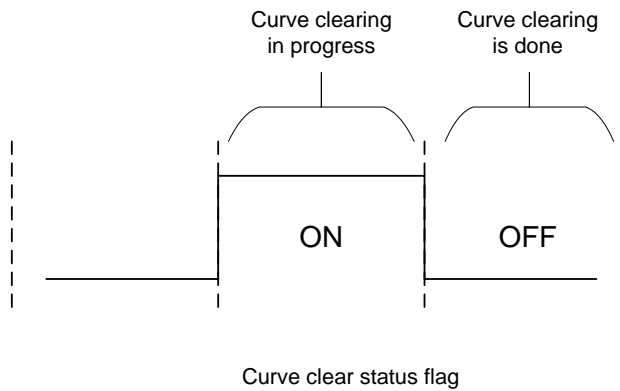
Curve control status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(4)				(3)				(2)				(1)			
<p>(1) b0 - b3 Curve sampling status flags 1 - 4 (b0 refers to flag1, and so forth)</p> <p>(2) b4 - b7 Reserved</p> <p>(3) b8 - b11 Curve clear status flags 1 - 4 (b8 refers to flag1, and so forth)</p> <p>(4) b12 - b15 Reserved</p>															

<p>b0 - b3 – Curve sampling status flags (1 - 4)</p>	<p>■ When the Trend Graph or X-Y Chart elements sample the data, the HMI turns the corresponding curve sampling status flag ON. When the sampling is completed, the curve sampling status flag is turned OFF in real time.</p> <div style="text-align: center;"> <p>Curve sampling status flag</p> </div> <p>■ The sampling flag 1 of the Trend Graph element corresponds to the curve sampling status flag 1; the sampling flag 2 of the Trend Graph element corresponds to the curve sampling status flag 2, and so forth.</p>
----------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



When the Trend Graph or X-Y Chart elements clear the data, the HMI turns the corresponding curve clear status flag ON. When the clearing is completed, the curve clear status flag is turned OFF in real time.

b8 - b11 –
Curve clear
status flags
(1 - 4)



4

Curve control status register

The clear flag 1 of the Trend Graph element corresponds to the curve clear status flag 1; the clear flag 2 of the Trend Graph element corresponds to the curve clear flag 2, and so forth.

b8 - b11 –
Curve clear
status flags
(1 - 4)

Trend Graph

Preview

Main Main-2 Coordinates

Style

Border Color: [dropdown]

Gridline Color: [dropdown]

Horiz. Grid Number: 2

Style: Standard

Background Color: [dropdown]

Number of Curves: 1

Detail

Data

Address: None

Sample Number: 10

Max Sample Number: 100

Data Format: Unsigned Decimal

Sample Flag: 1

Curve1: [dropdown]

Minimum: [dropdown]

Maximum: 100

Line Weight: 1

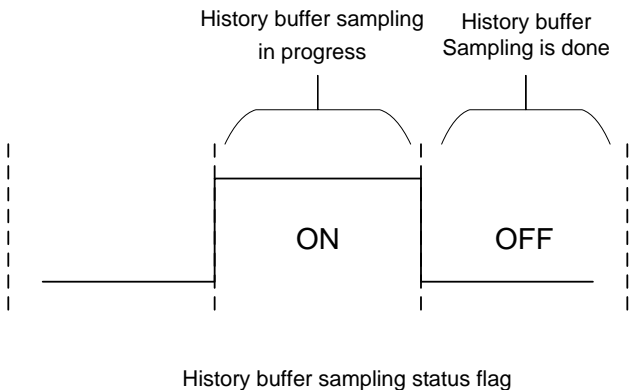
Line Color: [dropdown]

Projection Axis: No projection

OK Cancel

History buffer sampling status register

Table 4.2.5 Status Block - History buffer sampling status register

History buffer sampling status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(2)								(1)							
<p>(1) b0 - b11 History buffer sampling flags 1 - 12 (b0 refers to flag 1, and so forth)</p> <p>(2) b12 - b15 Reserved</p>															
<p>b0 - b11 – History buffer sampling status flags (1 - 12)</p>				<p>When the HMI samples the history buffer, it turns the corresponding history buffer sampling status flag ON. After the sampling is completed, the history buffer sampling status flag is turned OFF in real time.</p>  <p style="text-align: center;">History buffer sampling status flag</p>											

4

History buffer clear status register

Table 4.2.6 Status Block - History buffer clear status register

History buffer clear status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0

(2)

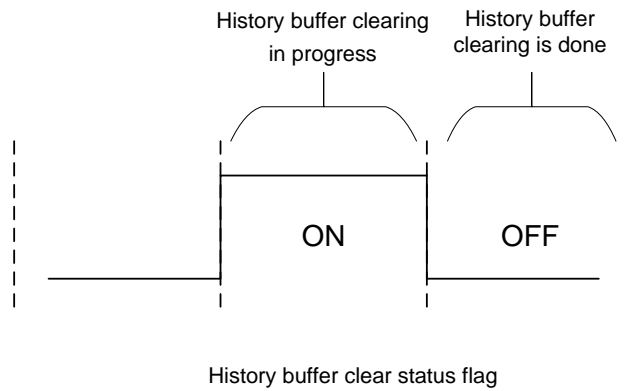
(1)

(1) b0 - b11 History buffer clear status flags 1 - 12 (b0 refers to flag 1, and so forth)

(2) b12 - b15 Reserved

When the HMI clears the history buffer, it turns the corresponding history buffer clear status flag ON. After the clearing is completed, the history buffer clear status flag is turned OFF in real time.

b0 - b11 –
History buffer
clear status
flags
(1 - 12)

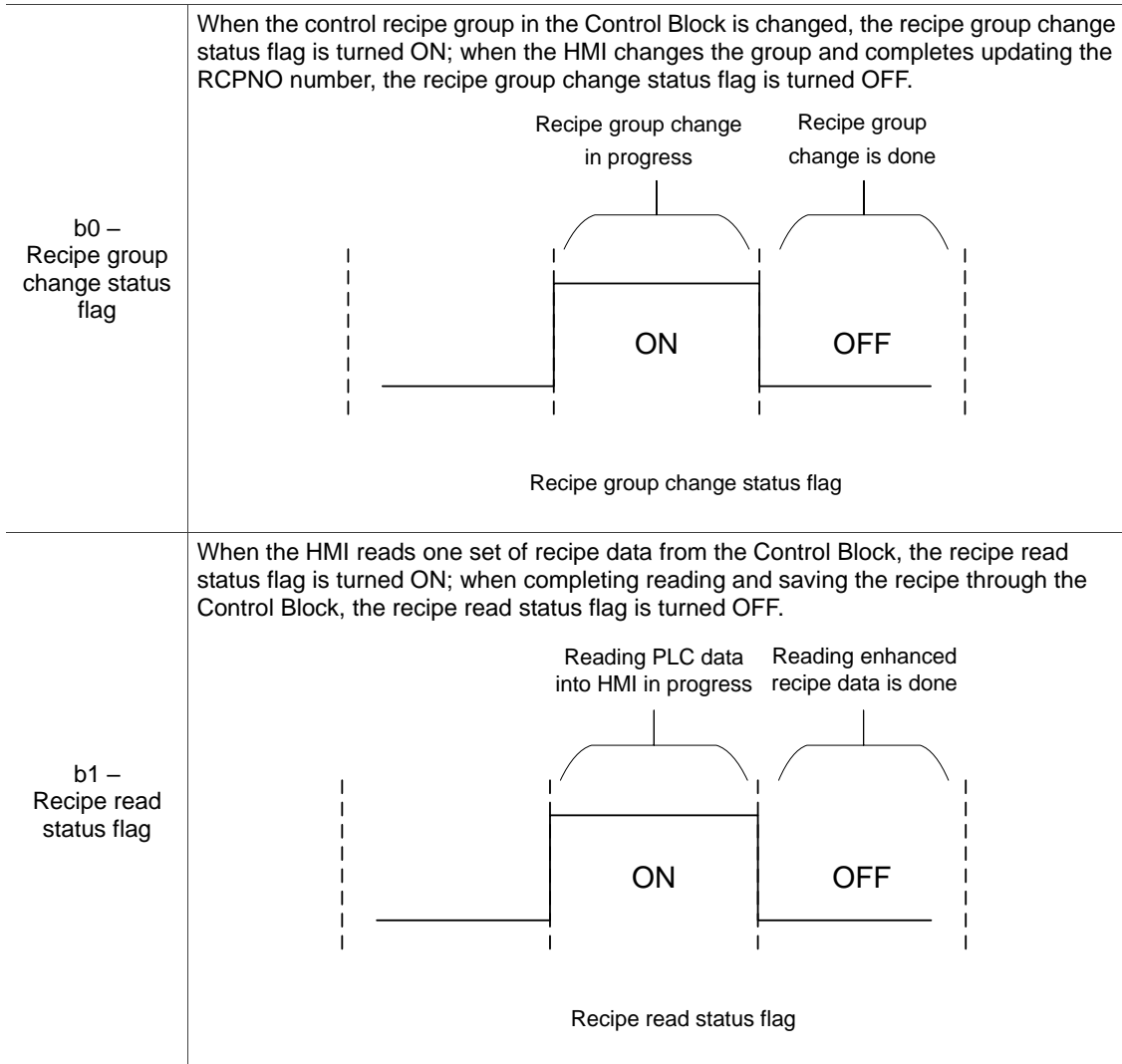


■ Recipe control status register

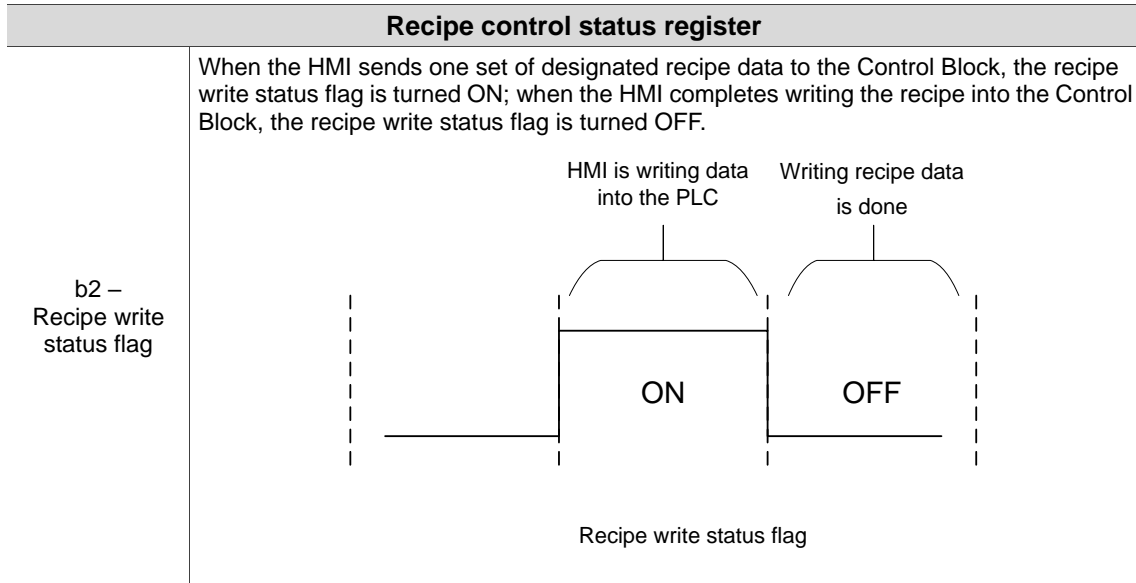
Table 4.2.7 Status Block - Recipe control register

Recipe control status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
												(3)		(2)	(1)
												(4)			

- (1) b0 Recipe group change status flag
- (2) b1 Recipe read status flag (PLC → HMI)
- (3) b2 Recipe write status flag (HMI → PLC)
- (4) b3 - b15 Reserved



4



■ Recipe group control status register

Table 4.2.8 Status Block - Recipe group control status register

Recipe group control status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 20px;"></div> </div>															
<hr style="border: 0.5px solid black;"/> <div style="display: flex; justify-content: center; align-items: center; gap: 100px;"> </div>															

■ System control status register

Table 4.2.9 Status Block - System control status register

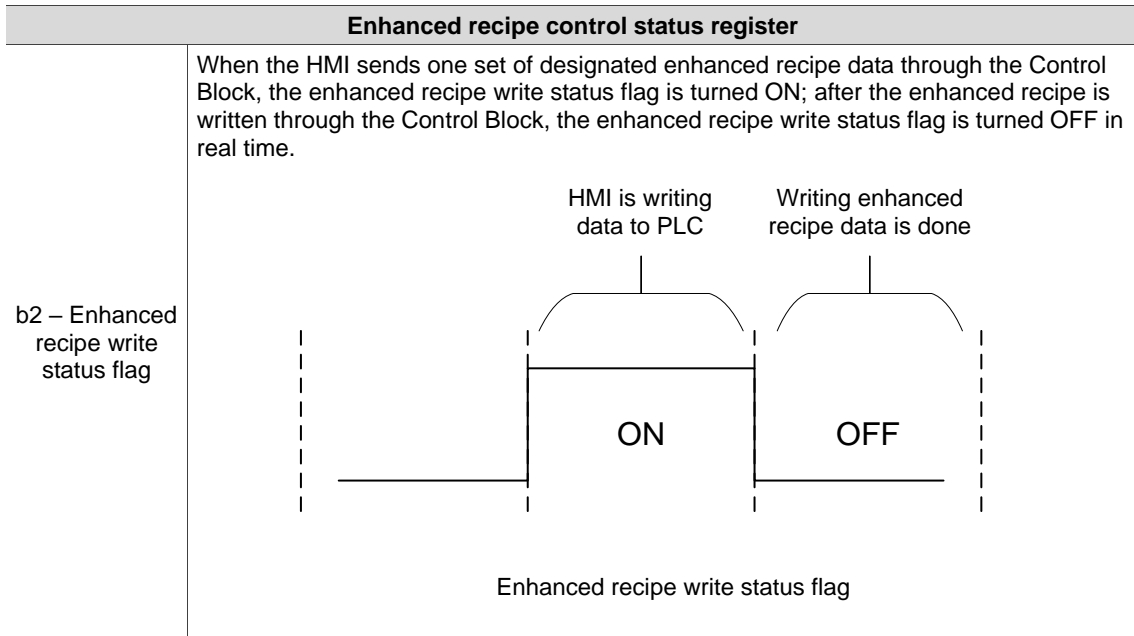
System control status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(4)				(3)		(2)		(1)							
(1)		b0 - b7 Multi-language status value													
(2)		b8 Printer flag													
(3)		b9 Printer form feed flag													
(4)		b10 - b15 Reserved													
b0 - b7 – Multi-language status value		Display the corresponding status value of the language in use.													
b8 – Printer status flag		When the printer status flag is turned ON, the printer prints the display screen or the edited screen of the HMI; when the printer status flag is turned OFF, the printer is idled.													
b9 – Printer form feed status flag		When the printer form feed status flag is turned ON, the printer retracts the paper and aligns the paper for the next run automatically; when the flag is OFF, the printer is idled.													

4

■ Enhanced recipe control status register

Table 4.2.10 Status Block - Enhanced recipe control status register

Enhanced recipe control status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(6)						(5)					(4)		(3)	(2)	(1)
<p>(1) b0 Enhanced recipe group change status flag (RCPNO)</p> <p>(2) b1 Enhanced recipe read status flag (PLC → HMI)</p> <p>(3) b2 Enhanced recipe write status flag (HMI → PLC)</p> <p>(4) b3 Enhanced recipe metagroup change status flag</p> <p>(5) b4 - b7 Reserved</p> <p>(6) b8 - b15 Designation status of the enhanced recipe metagroup number to be changed</p>															
b0 – Enhanced recipe group change status flag	<p>When the enhanced control recipe group in the Control Block is changed, the enhanced recipe group status change flag is turned ON; after the HIM changes the group and updates the RCPNO number, the enhanced recipe group change status flag is turned OFF in real time.</p> <div style="text-align: center;"> <p>Changing enhanced recipe group in progress</p> <p>Changing enhanced recipe group is done</p> <p>ON</p> <p>OFF</p> <p>Status flag of enhanced recipe group change</p> </div>														
	<p>When the HMI reads one set of recipe data though the Control Block, the enhanced recipe read status flag is turned ON; when the reading and saving of the enhanced recipe via the Control Block is completed, the enhanced recipe read status flag is turned OFF in real time.</p> <div style="text-align: center;"> <p>HMI is reading the data from PLC</p> <p>Reading the enhanced recipe data is done</p> <p>ON</p> <p>OFF</p> <p>Enhanced recipe read status flag</p> </div>														



■ Enhanced recipe number control status register

Table 4.2.11 Status Block - Enhanced recipe group control status register

Enhanced recipe group control status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
<div style="display: flex; justify-content: center; align-items: center; margin-top: 10px;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100px; height: 100px; margin-right: 10px;"></div> <div style="text-align: left;"> <p>Designation status of the enhanced recipe group</p> </div> </div>															
<p>b0 - b15 – Enhanced recipe group designation status</p>		<ul style="list-style-type: none"> ■ No matter you designate the enhanced recipe group number by using the enhanced recipe group change flag of the Control Block or by the ENRCPNO register, the enhanced recipe group status register updates its value as soon as the group number changes. ■ The enhanced recipe group designation status flag must work with the enhanced recipe group change status flag. Please refer to Table 4.2.10 Enhanced recipe control status register b0. 													

(This page is intentionally left blank.)

4

Buttons

5


























This chapter introduces the usage for the HMI Button elements.

5.1	Set to On / Set to Off / Maintained / Momentary	5-3
5.2	Multistate	5-25
5.3	Set Value	5-47
5.4	Set Constant.....	5-68
5.5	Increment / Decrement	5-89
5.6	Goto Screen	5-108
5.7	Other elements	5-133
5.7.1	System Date and Time.....	5-133
5.7.2	Password Table Setup	5-134
5.7.3	Enter Password.....	5-135
5.7.4	Contrast Brightness	5-135
5.7.5	Set Low Security	5-135
5.7.6	System Menu	5-136
5.7.7	Print Output.....	5-136
5.7.8	Report List	5-136
5.7.9	Screen Capture.....	5-137
5.7.10	Remove Storage	5-137
5.7.11	Import / Export Recipe	5-138
5.7.12	Calibration	5-138
5.7.13	Language Change	5-139
5.7.14	Import / Export FileSlot	5-140
5.7.15	Shared properties of other elements	5-141
5.8	Multiple actions	5-147

This chapter introduces the usage and setting details for the DOPSoft Button elements.

■ Button element classification

5


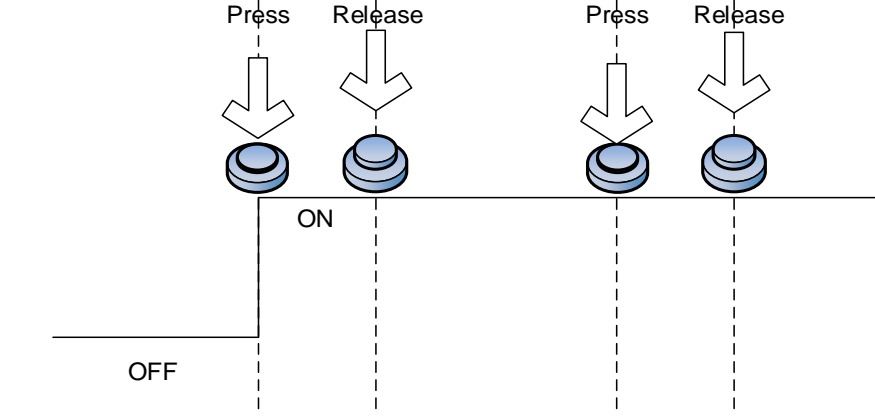

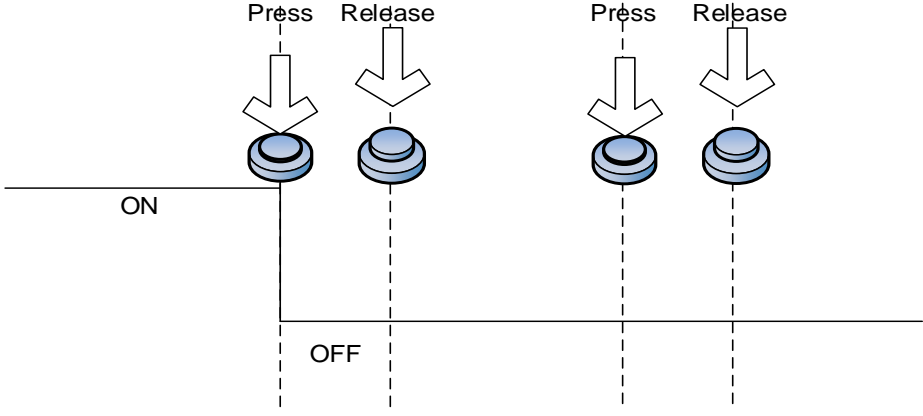
Button 		Set to On
		Set to Off
		Momentary
		Maintained
		Multistate
		Set Value
		Set Constant
		Increment
		Decrement
		Goto Screen
		System Date and Time
		Password Table Setup
		Enter Password
		Contrast Brightness
		Set Low Security
		System Menu
		Report List
		Screen Capture
		Remove Storage
		Import / Export Recipe
	Calibration	
	Language Change	
	Import / Export FileSlot	
	Multiple actions	

5.1 Set to On / Set to Off / Maintained / Momentary


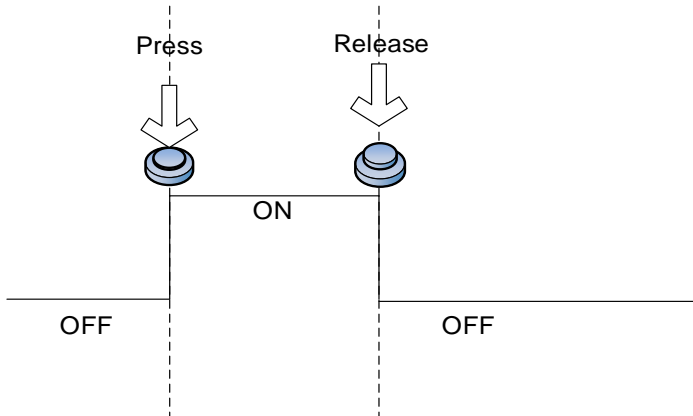

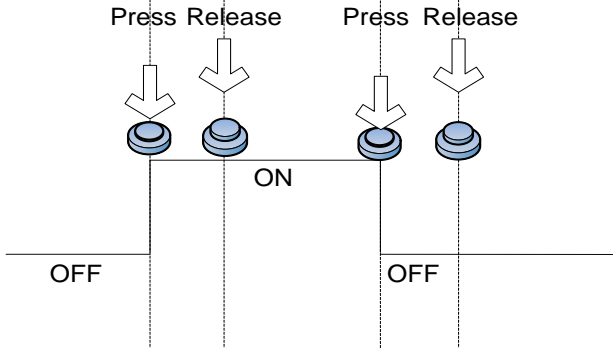
Set to On / Set to Off / Maintained / Momentary elements switch the specified communication address to ON / OFF by touching the buttons or running the macros.

You can create the Set to On and Set to Off elements by clicking **Elements > Button**; or by clicking the icons on the element toolbar; or by right-clicking the screen and select **Button** to create these elements.

Table 5.1.1 Differences among Set to On / Set to Off / Maintained / Momentary buttons

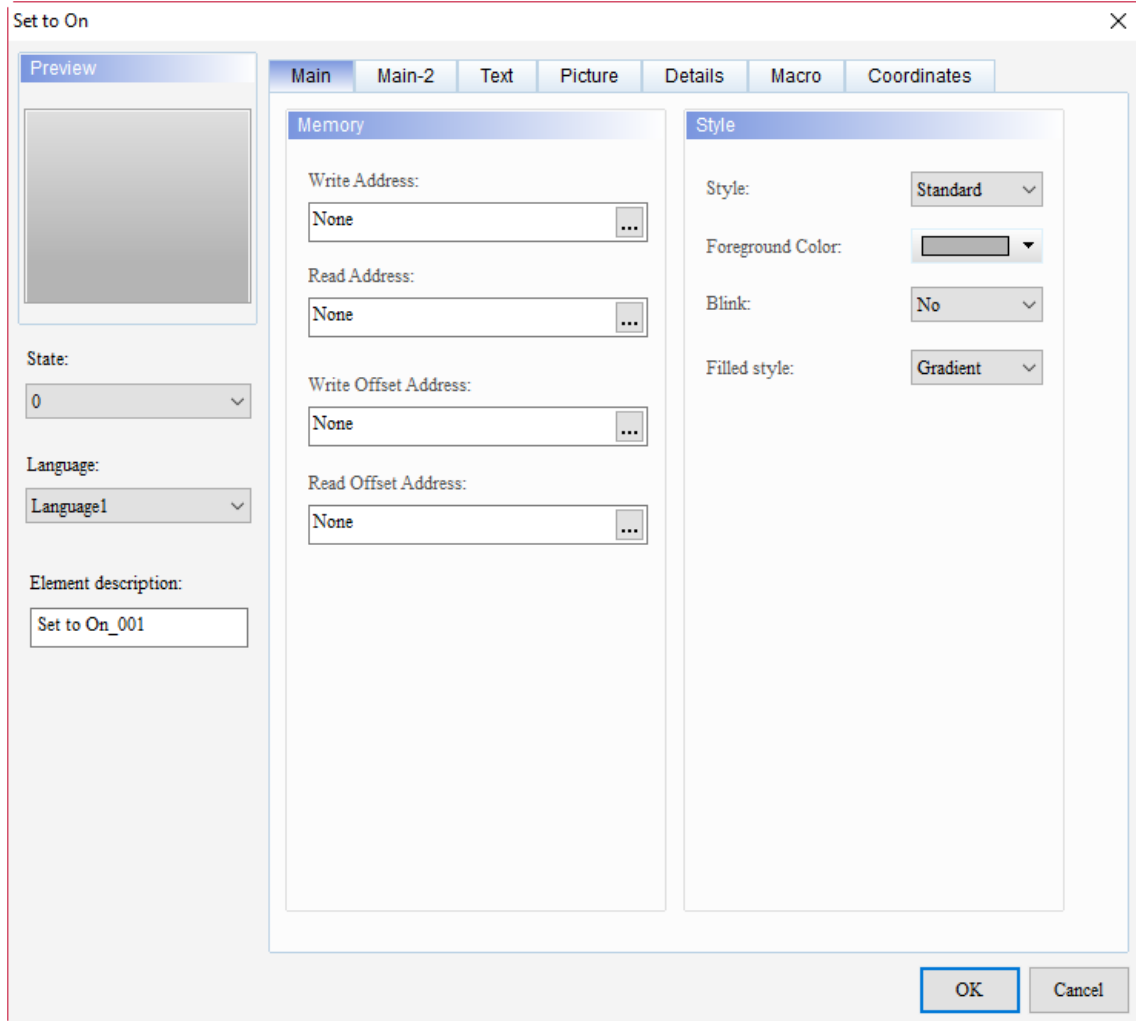
	
Set to On	The specified communication address switches to ON when you press the Set to On button. You cannot switch the state to OFF by pressing the Set to On button again.
	
Set to Off	The specified communication address switches to OFF when you press the Set to Off button. You cannot switch the state to ON by pressing the Set to Off button again.

5

	
	<p>Momentary</p> <p>The Momentary button allows you to reverse the specified communication address values. When releasing the Momentary button, the communication address recovers to its original state. To keep the communication address values reversed, you must press the button continuously.</p>
	
	<p>Maintained</p> <p>The Maintained button allows you reverse the specified communication address values. The Maintained button differs from the Momentary button in that when releasing the Maintained button, the specified communication address values stay reversed. You need to press the Maintained button again for the specified communication address to recover to its original state.</p>

The DOPSoft also provides convenient programming tools for you to double-click the elements to set their properties and thus edit the application screens more easily.

When you double-click the Set to On / Set to Off / Momentary / Maintained elements, the property page is shown as follows.



5

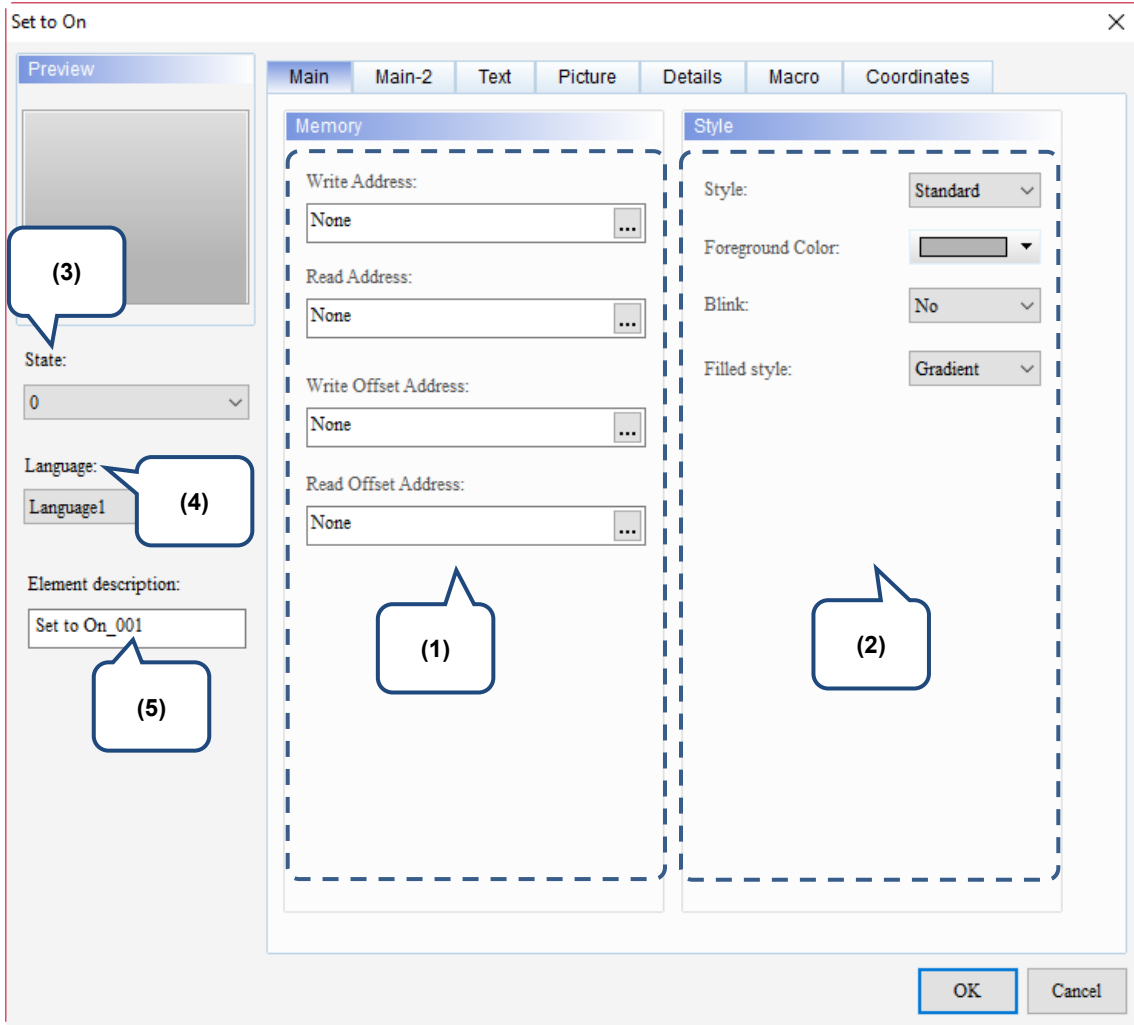
Figure 5.1.1 Properties of Set to On / Set to Off / Momentary / Maintained

Table 5.1.2 Function page of Set to On / Set to Off / Momentary / Maintained

Set to On / Set to Off / Maintained / Momentary	
Function page	Description
Preview	View State 0 or 1 and multi-language data display.
Main	Set the Write and Read Addresses, Write and Read Offset Addresses. Set the Style, Foreground Color, and Blink.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set to On / Set to Off / Maintained
	Set the Interlock Address, Interlock State, Invisible Address, User Security Level, Set Low Security, Min. Press Time, and Confirm Window.
	Momentary
	Set the Interlock Address, Interlock State, Invisible Address, User Security Level, Set Low Security, Min. Press Time, Confirm Window, and Enable OFF Tone.
Macro	Set the On Macro, Off Macro, Before Execute Macro, and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button elements.

5

■ Main

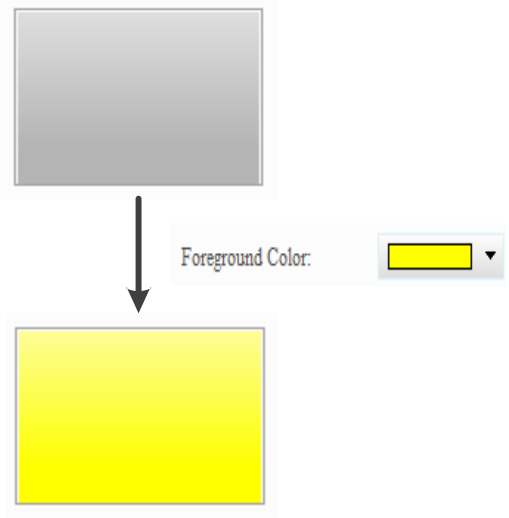
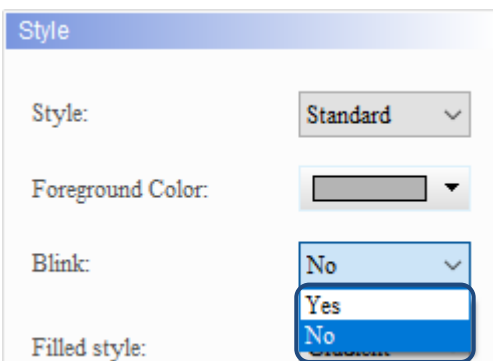


5

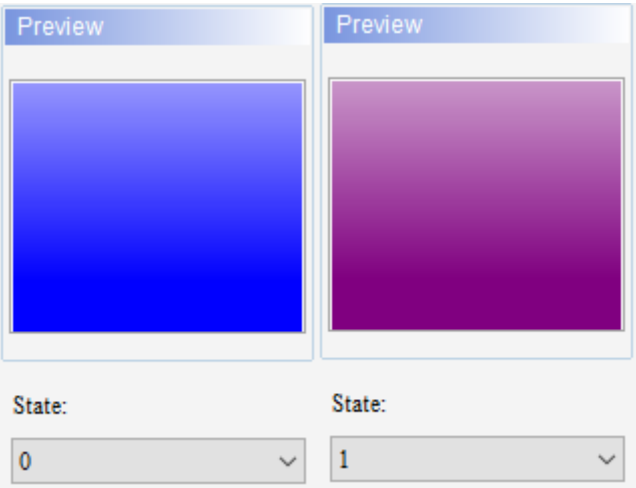
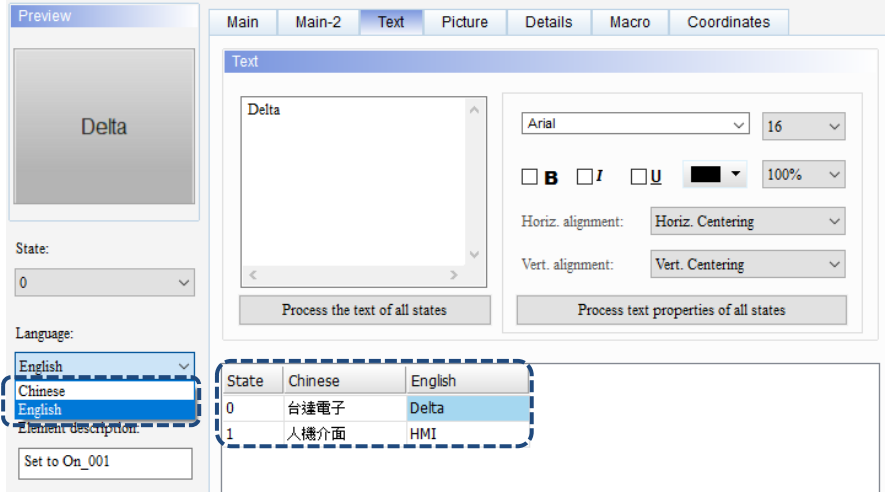
Figure 5.1.2 Main property page for the Set to On / Set to Off / Momentary / Maintained elements

5

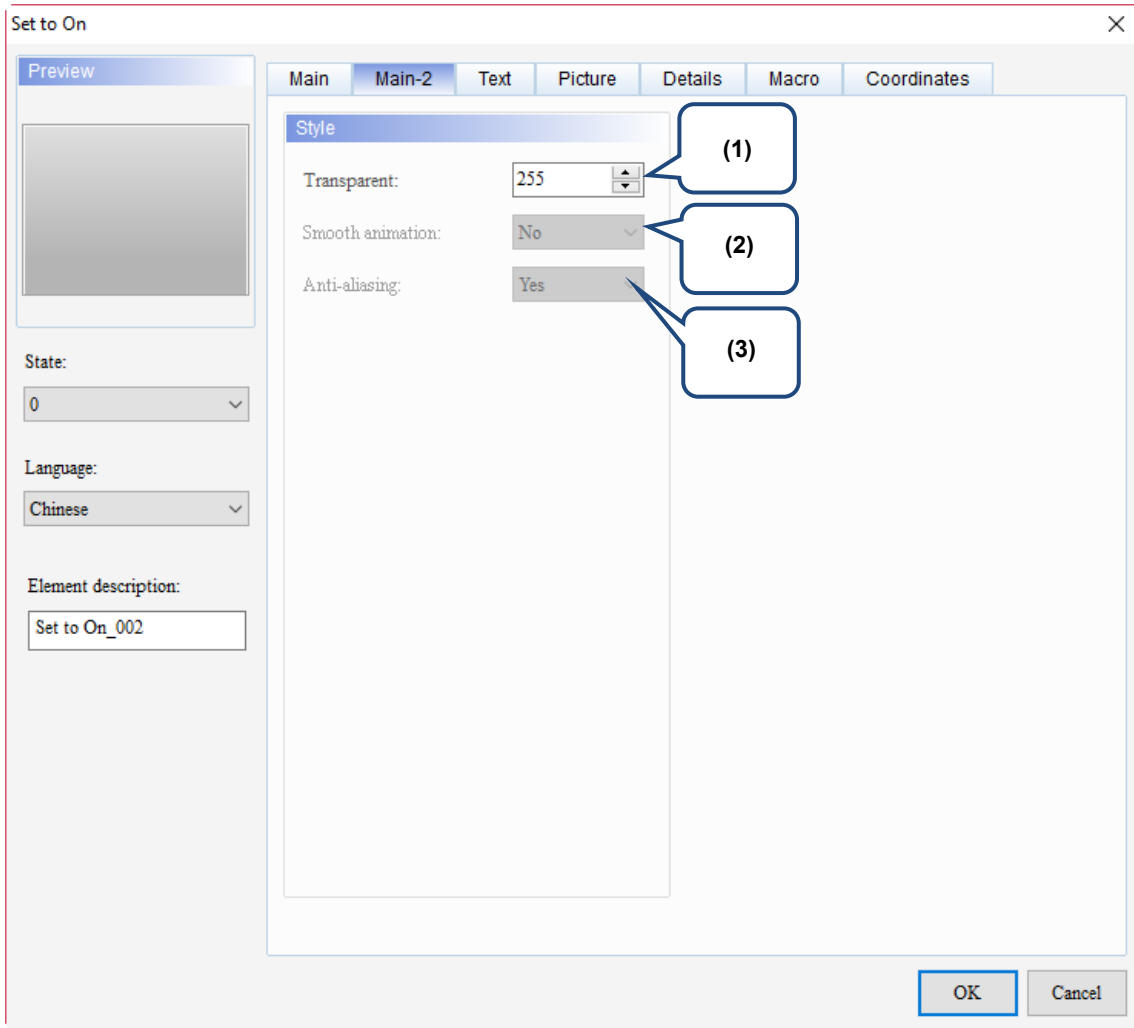
No.	Property	Function description
(1)	Memory	<ul style="list-style-type: none"> ■ Write Address: <ol style="list-style-type: none"> 1. You can select the internal memory or the controller register address. If you set the Write Address without setting the Read Address, the HMI automatically reads the Write Address data. <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> </div> 2. You can select the link for different communication devices from the Link. It displays the quantity of the set links. If you have multiple communication devices, you can select the required link from the drop-down list. As shown below, there are Link2, Link3, Internal Memory, and Internal Parameter. <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> </div> 3. Select the Link and Device Type, input correct addresses, press OK, and the selected element records the corresponding data. <ul style="list-style-type: none"> ■ Read Address: you can select the internal memory or the controller register address. Other settings are the same as that of Write Address. ■ Write Offset Address and Read Offset Address: please refer to the instructions in Appendix D Write and Read Offset Address.

No.	Property	Function description								
(2)	Style	<ul style="list-style-type: none"> ■ Style: the available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting. <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Standard</th> <th style="width: 25%;">Raised</th> <th style="width: 25%;">Round</th> <th style="width: 25%;">Invisible</th> </tr> </thead> <tbody> <tr> <td style="background-color: #cccccc; border: 1px solid #000; padding: 10px;">Standard</td> <td style="background-color: #cccccc; border: 2px solid #000; padding: 10px;">Raised</td> <td style="background-color: #cccccc; border-radius: 50%; border: 2px solid #000; padding: 10px;">Round</td> <td style="border: 2px dashed #000; padding: 10px;">Invisible</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ■ Foreground Color: <ol style="list-style-type: none"> 1. Set the foreground color of the element. 2. When you set the Style to Invisible, the Foreground Color setting is invalid. <div style="text-align: center; margin: 10px 0;">  </div> <ul style="list-style-type: none"> ■ Blink: <p>You can set the blink prompt of the element when the button changes states. The blink color is the opposite color of the foreground color.</p> <div style="text-align: center; margin: 10px 0;">  </div>	Standard	Raised	Round	Invisible	Standard	Raised	Round	Invisible
		Standard	Raised	Round	Invisible					
Standard	Raised	Round	Invisible							

5

No.	Property	Function description																																																																																										
(3)	State	<p>You can preview or change the button elements' state parameters by switching the states.</p> 																																																																																										
(4)	Language	<p>If you have set the language data, you can edit the displaying text property, etc. with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI																																																																																	
State	Chinese	English																																																																																										
0	台達電子	Delta																																																																																										
1	人機介面	HMI																																																																																										
(5)	Element description	<p>Record the button actions to be executed. The record is written into the CSV file of the Operation Log Table so that you know what actions have been done.</p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																																				
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																																				
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																																				
3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																																				
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																																				
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																																				
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																																				
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																																				
8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																																				
9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																																				

■ Main-2



5

Figure 5.1.3 Main-2 property page for the Set to On / Set to Off / Momentary / Maintained elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

5

■ Text

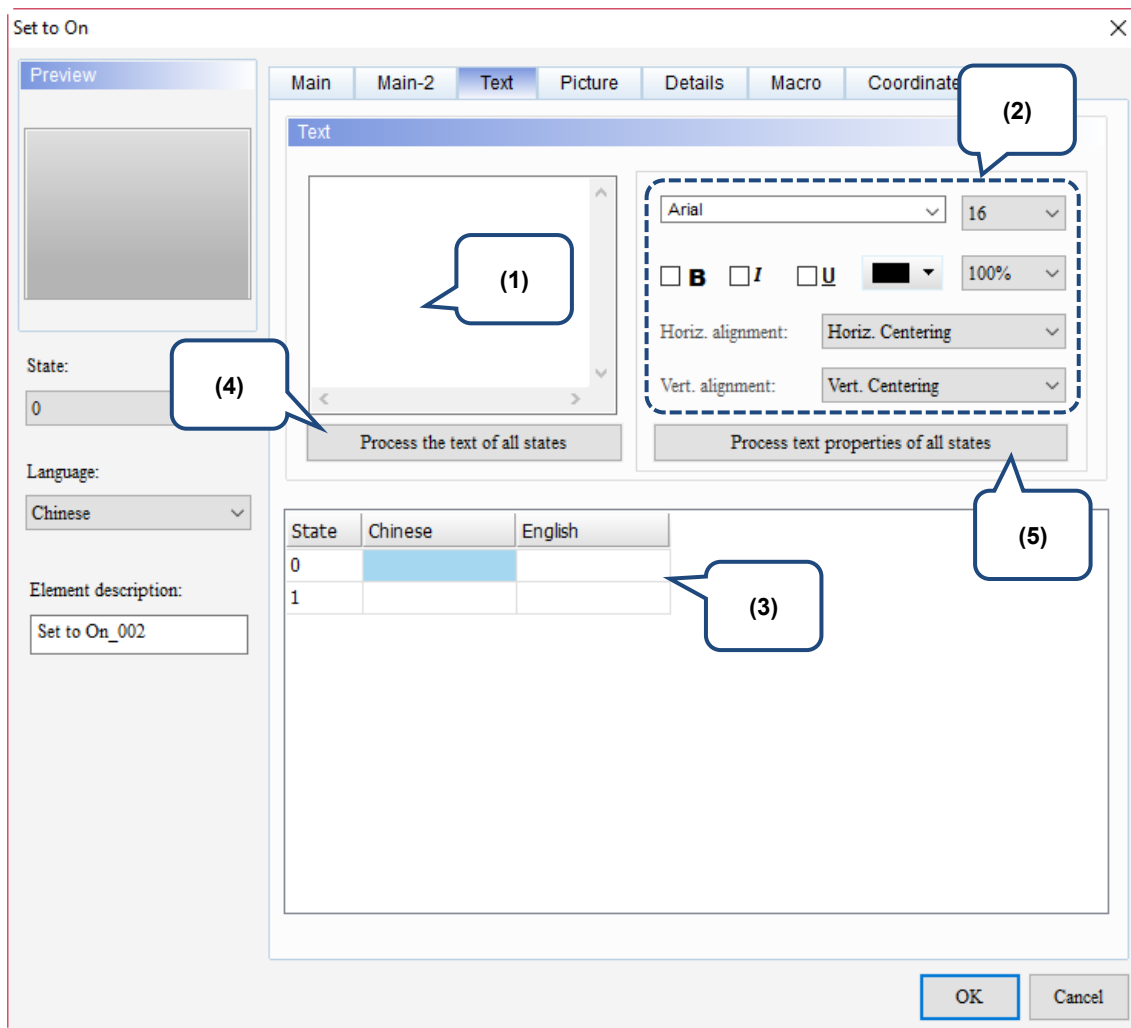
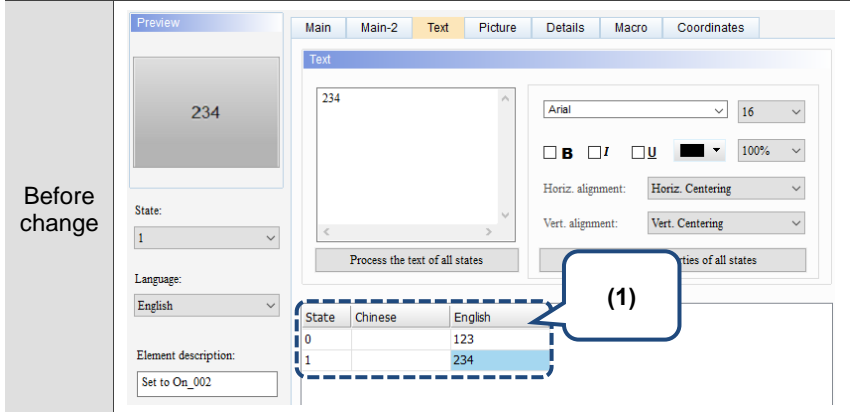
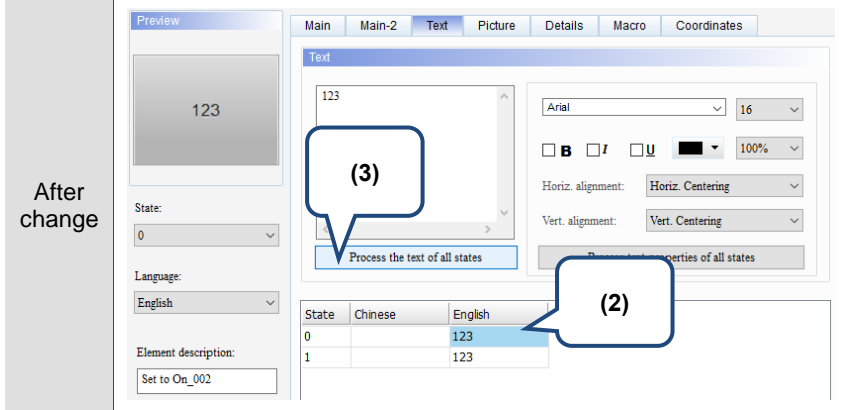
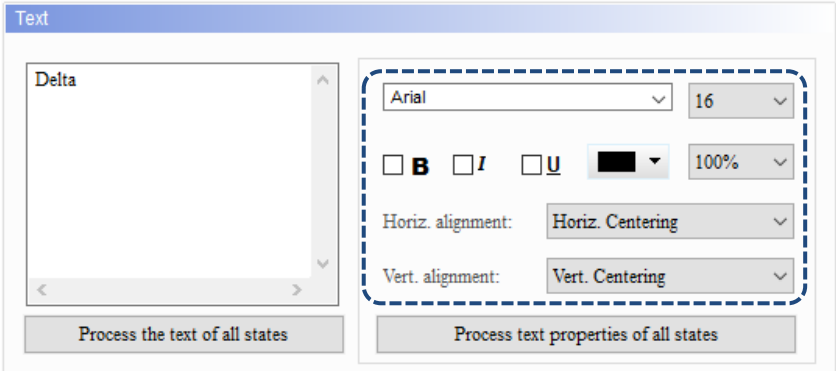
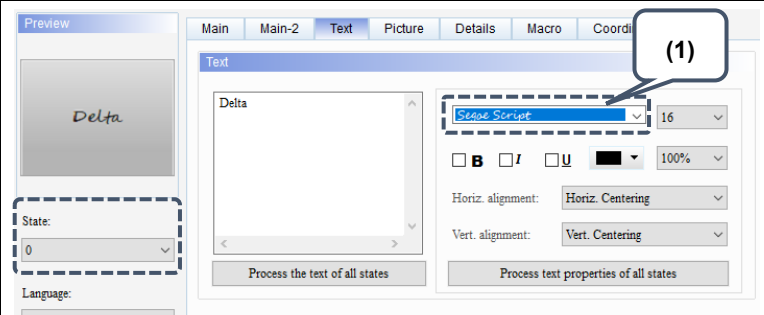
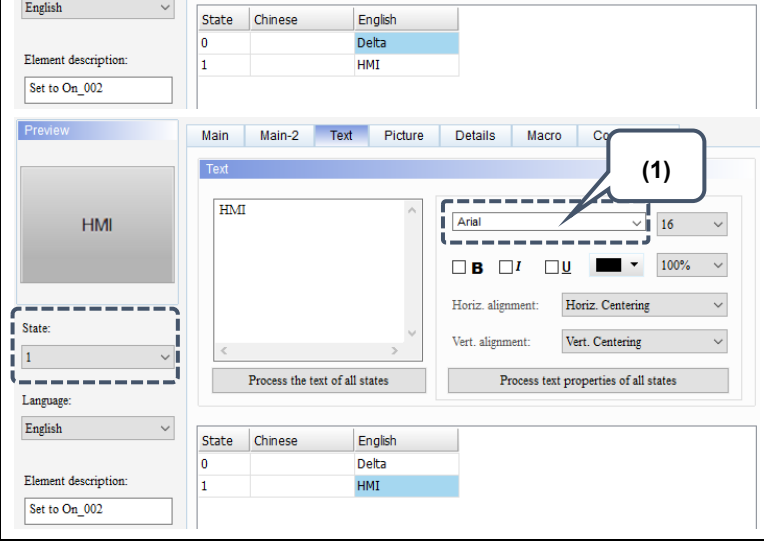
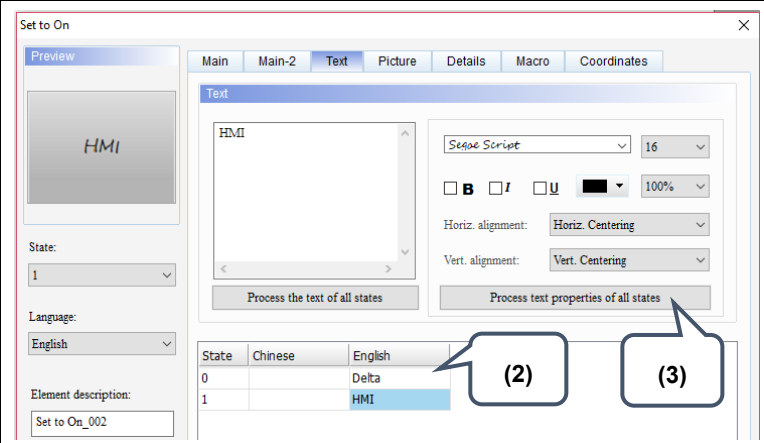


Figure 5.1.4 Text property page for the Set to On / Set to Off / Momentary / Maintained elements

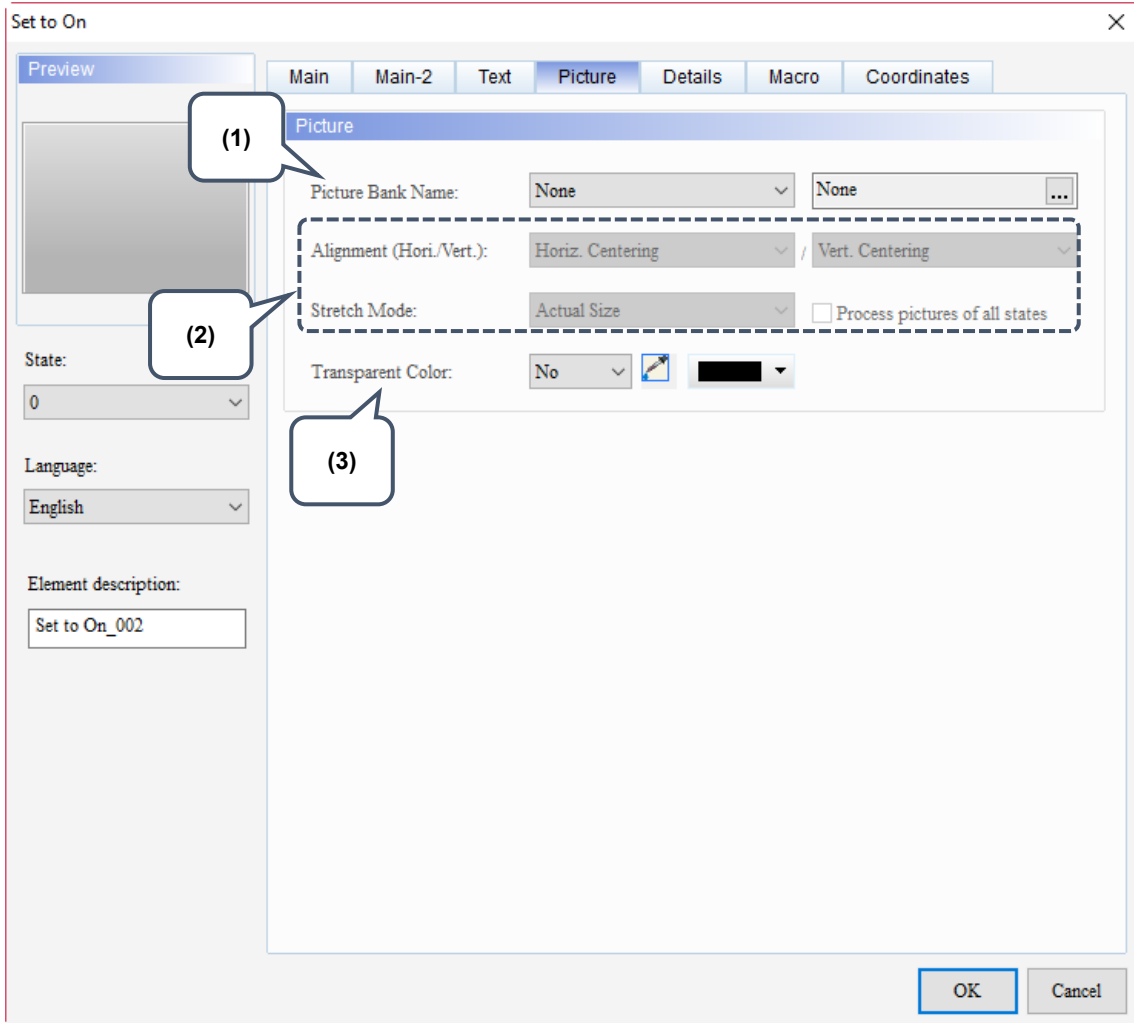
No.	Property	Function description
(1)	Text	<p>■ You can enter the text to be displayed in the text box.</p> <p>■ As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</p>

No.	Property	Function description
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text.
(3)	Edit Multi-language Text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>When this function is enabled, it batch changes the texts of the specified state. The following illustrates the steps:</p> <ol style="list-style-type: none"> Input 123 to State 0, and 234 to State 1. Click State 0. Click Process the text of all states, and the State 1 text changes to 123.  
(5)	Process text properties of all states	<p>When this function is enabled, it batch changes the text properties of the specified state. Items included in the text property are shown in the figure below.</p> 

5

No.	Property	Function description
(5)	Process text properties of all states	<p>The following illustrates the steps:</p> <ol style="list-style-type: none"> Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial. Click State 0. Click Process text properties of all states, and the State 1 font changes to Segoe Script.  <p>Before change</p>  <p>After change</p> 

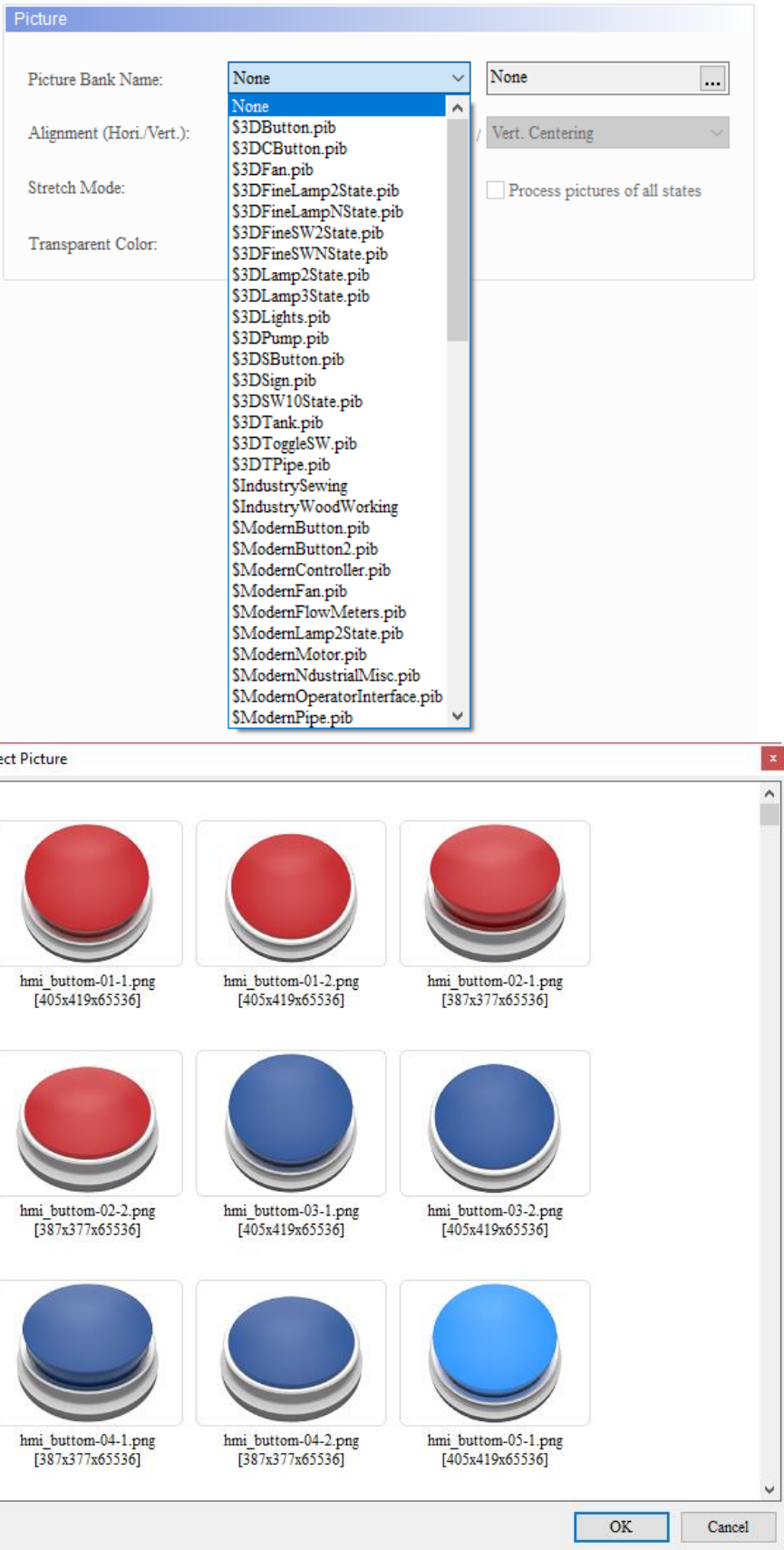
■ Picture

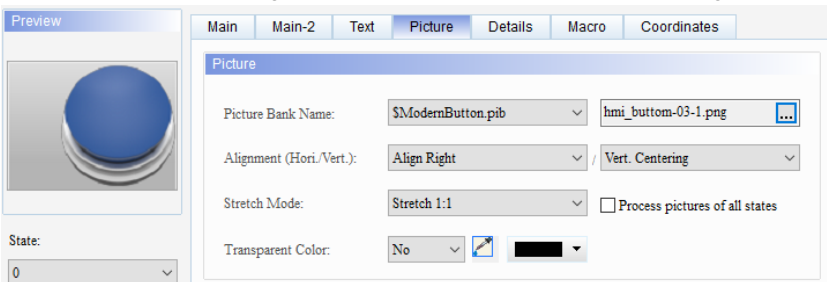






5

Figure 5.1.5 Picture property page for the Set to On / Set to Off / Momentary / Maintained elements

5

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures.</p>  <p>The 'Picture' dialog box includes the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: None (dropdown menu) Alignment (Hori./Vert.): Vert. Centering (dropdown menu) Stretch Mode: (checkbox) Transparent Color: (checkbox) <p>The dropdown menu lists the following picture banks:</p> <ul style="list-style-type: none"> None \$3DButton.pib \$3DCButton.pib \$3DFan.pib \$3DFineLamp2State.pib \$3DFineLampNState.pib \$3DFineSW2State.pib \$3DFineSWNState.pib \$3DLamp2State.pib \$3DLamp3State.pib \$3DLights.pib \$3DPump.pib \$3DSButton.pib \$3DSign.pib \$3DSW10State.pib \$3DTank.pib \$3DToggleSW.pib \$3DTPipe.pib \$IndustrySewing \$IndustryWoodWorking \$ModernButton.pib \$ModernButton2.pib \$ModernController.pib \$ModernFan.pib \$ModernFlowMeters.pib \$ModernLamp2State.pib \$ModernMotor.pib \$ModernNdustrualMisc.pib \$ModernOperatorInterface.pib \$ModernPipe.pib <p>The 'Select Picture' dialog box displays a grid of button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

No.	Property	Function description						
(2)	Alignment	<p>■ You can use the Alignment options to set how pictures are aligned.</p>  <p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.
	Stretch All	Stretch 1:1	Actual Size					
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.						
Stretch Mode	 <p>■ If you check [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p><input checked="" type="checkbox"/> Process pictures of all states</p>							
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 						

■ Details

5

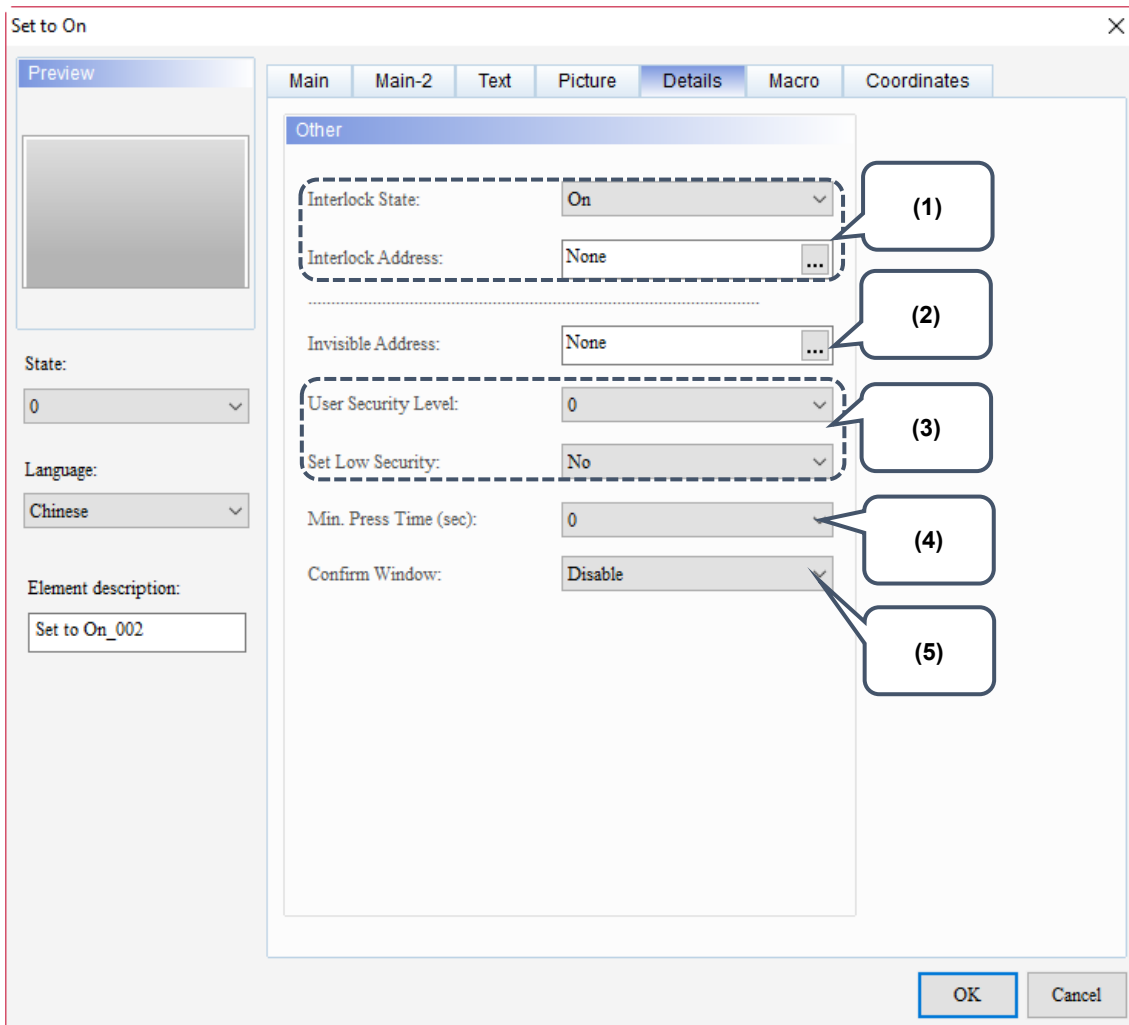
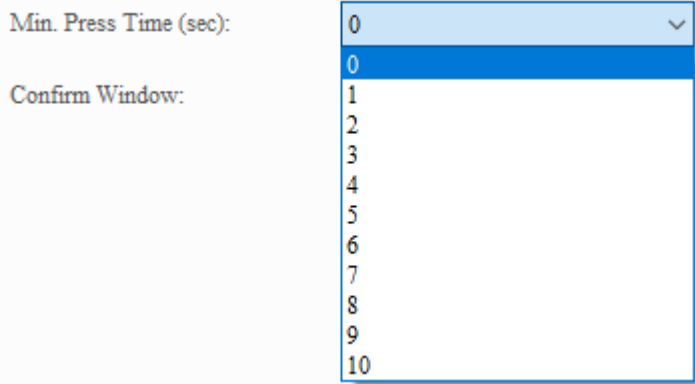
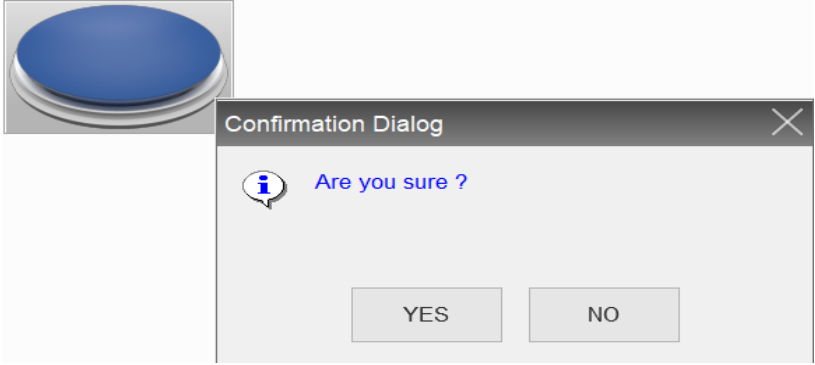


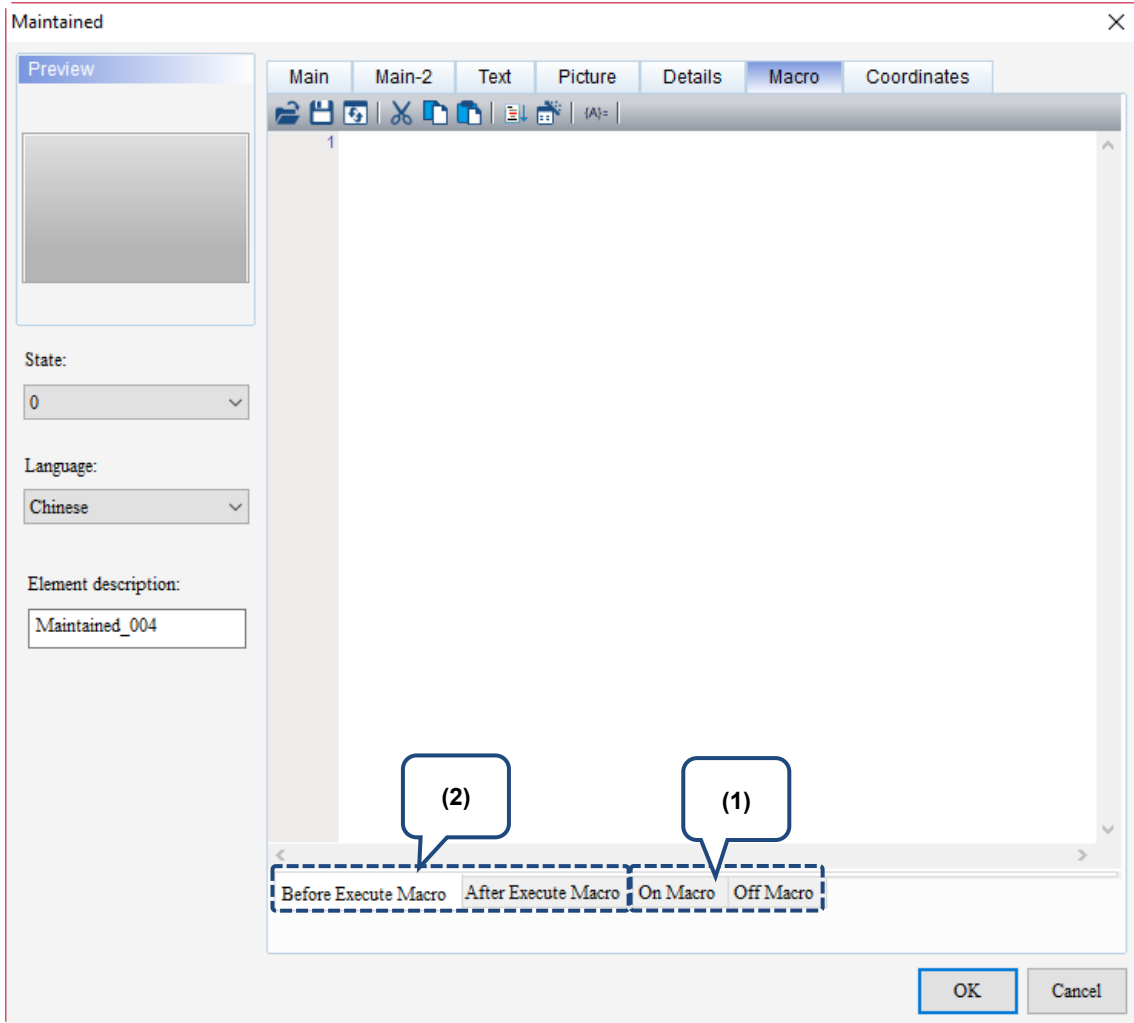
Figure 5.1.6 Details property page for the Set to On / Set to Off / Momentary / Maintained elements

No.	Property	Function description
	Interlock State	The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON.
(1)	Interlock Address	<p>The Interlock Address usage example is as follows:</p> <ol style="list-style-type: none"> 1. Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0. 2. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0. <p>1. Create a button and set its address to \$8.0.</p> <p>2. Execute the button (address \$8.0) first so you can press the other button (address \$99.0).</p>

5

No.	Property	Function description
(4)	Min. Press Time (sec)	<p>Set the time lapse from button pressing to element activation. The element activates until the pressing exceeds the set time. This function is to prevent executing wrong actions performed by the user. The setting range is 0 - 10 second(s).</p> 
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog pops up for you to confirm the pressing action after pressing the element:</p> 

■ Macro



5

Figure 5.1.7 Macro property page for the Set to On / Set to Off / Momentary / Maintained elements

5

No.	Function description	
	On Macro	Off Macro
(1)	<p>Flowchart of On Macro:</p> <pre> graph TD A[Maintained Button] -- Trigger ON --> B[Maintained Button] B --> C[Execute On Macro] C -- Trigger OFF --> D[Maintained Button] D -- Trigger at next time --> B </pre>	<p>Flowchart of Off Macro:</p> <pre> graph TD A[Maintained Button] -- Trigger ON --> B[Maintained Button] B -- Trigger OFF --> C[Maintained Button] C --> D[Execute OFF Macro] D -- Trigger at next time --> B </pre>
	<ul style="list-style-type: none"> ■ When you press the button and set the state to ON, the HMI executes the On Macro commands. When you press the button and set the state to OFF, the HMI executes the Off Macro commands. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the On / Off Macro commands. ■ Every time when you trigger the states to ON / OFF, the HMI executes the On / Off Macros once without repeating the actions. 	

No.	Function description	
(2)	Before Execute Macro	After Execute Macro
	<p>Flowchart of Before Execute Macro:</p> <p>When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>	<p>Flowchart of After Execute Macro:</p> <p>When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>

■ Coordinates

5

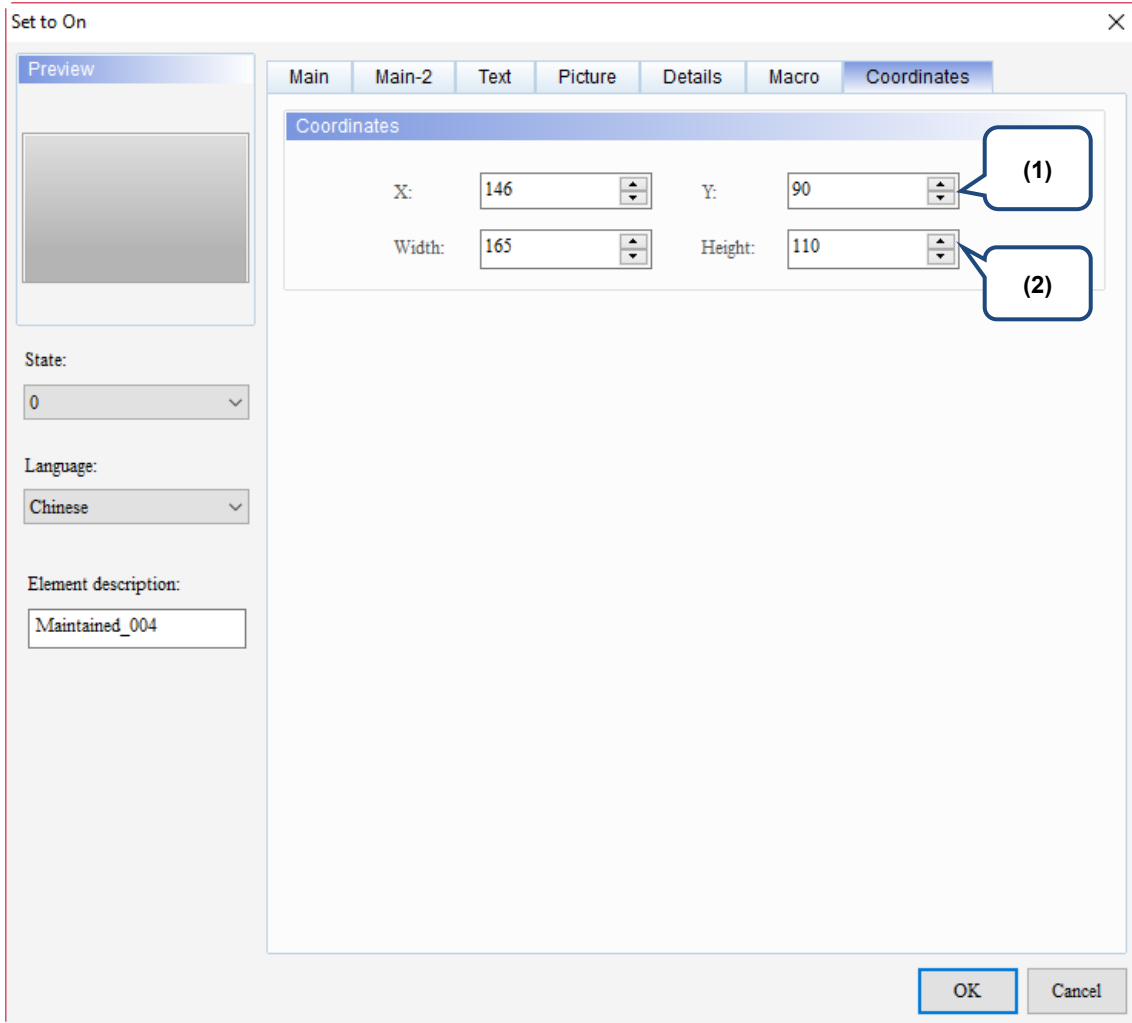


Figure 5.1.8 Coordinates property page for the Set to On / Set to Off / Momentary / Maintained elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

5.2 Multistate

The Multistate is for displaying various state pictures or state values. If you set the Multistate Memory Address to D100, Data Type to Word, and State Counts to 4, when you change the D100 value, the Multistate element changes the states according to the sequence you set. Please refer to Figure 5.2.1 Multistate example.

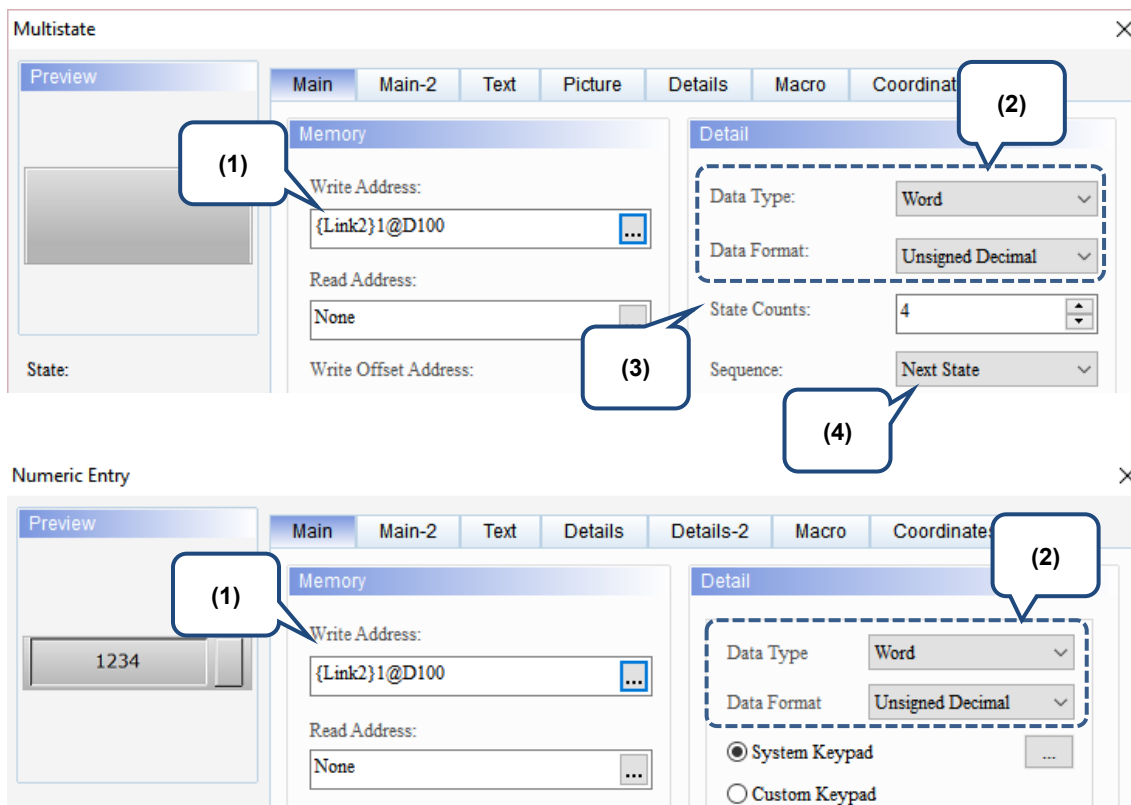


Figure 5.2.1 Multistate example - 1

5

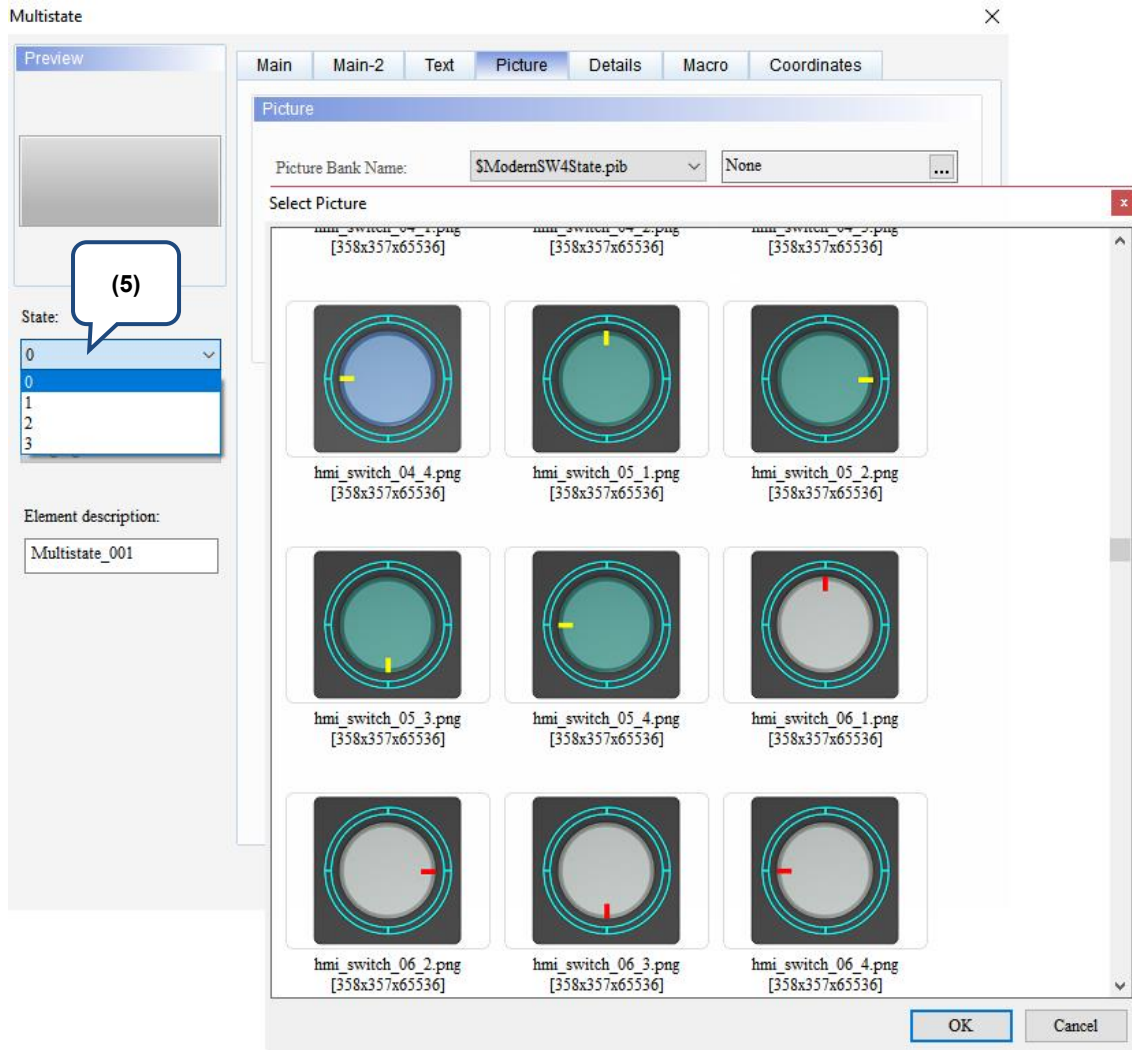


Figure 5.2.2 Multistate example - 2

No.	Item	Content
(1)	Write Address	Create a Multistate button and a Numeric Entry element and set the Write Address to D100.
(2)	Data Type / Data Format	The Multistate button and Numeric Entry element Data Type is Word, and the Data Format is Unsigned Decimal.
(3)	State Counts	Set the State Counts of the Multistate button to 4.
(4)	Sequence	Set the Sequence of the Multistate button to Next State.
(5)	Set State pictures	Set the pictures for States 0 - 3.

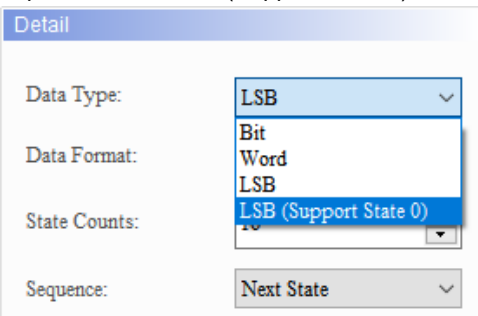

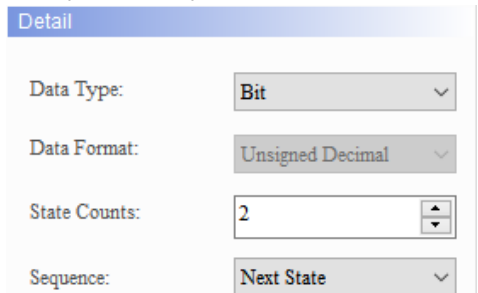
No.	Item	Content
(6)	Execution results	<p>Set D100 = 0 to D100 =3 sequentially, and the Multistate element pictures change as well.</p>

The Multistate button supports four data types. See the following table for details. If you need to add or remove state counts, you can simply add and remove the state counts from the State Counts on the property page.

Table 5.2.1 Multistate Data Type

Multistate button	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> When the Data Type is set to LSB, the register data is first converted to binary data. And then, define the current object state by using the lowest non-zero bit. If the Data Type is LSB, you can set 1 to 16 states, except for State 0.

5

Multistate button																																																													
Data Type	State Counts																																																												
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> To display State 0, please select LSB (Support State 0).  <ul style="list-style-type: none"> If you select LSB, the element displays black when State = 0.  <ul style="list-style-type: none"> If the Data Type is LSB or LSB (Support State 0), the memory address is also in Word as the unit. The examples in the following table explains how to use the lowest non-zero bit to define the state values when the data is converted from decimal to binary data. There are also examples showing how the software determines the lowest bit to define the display state value when the decimal values are 3 and 7. <table border="1"> <thead> <tr> <th>Decimal</th> <th>Binary</th> <th>State Value</th> </tr> </thead> <tbody> <tr> <td><u>0</u></td> <td><u>0000000000000000</u></td> <td><u>State = 0 when all bits are 0.</u> <u>You must select LSB (Support State 0).</u></td> </tr> <tr> <td>1</td> <td>0000000000000001</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>2</td> <td>0000000000000010</td> <td>The lowest non-zero bit is bit 1, State = 2.</td> </tr> <tr> <td><u>3</u></td> <td><u>0000000000000011</u></td> <td><u>The lowest non-zero bit is bit 0, State = 1.</u></td> </tr> <tr> <td>4</td> <td>0000000000000100</td> <td>The lowest non-zero bit is bit 2, State = 3.</td> </tr> <tr> <td><u>7</u></td> <td><u>0000000000000111</u></td> <td><u>The lowest non-zero bit is bit 0, State = 1.</u></td> </tr> <tr> <td>8</td> <td>0000000000001000</td> <td>The lowest non-zero bit is bit 3, State = 4.</td> </tr> <tr> <td>16</td> <td>0000000000010000</td> <td>The lowest non-zero bit is bit 4, State = 5.</td> </tr> <tr> <td>32</td> <td>0000000000100000</td> <td>The lowest non-zero bit is bit 5, State = 6.</td> </tr> <tr> <td>64</td> <td>0000000001000000</td> <td>The lowest non-zero bit is bit 6, State = 7.</td> </tr> <tr> <td>128</td> <td>0000000010000000</td> <td>The lowest non-zero bit is bit 7, State = 8.</td> </tr> <tr> <td>256</td> <td>0000000100000000</td> <td>The lowest non-zero bit is bit 8, State = 9.</td> </tr> <tr> <td>512</td> <td>0000001000000000</td> <td>The lowest non-zero bit is bit 9, State = 10.</td> </tr> <tr> <td>1024</td> <td>0000010000000000</td> <td>The lowest non-zero bit is bit 10, State = 11.</td> </tr> <tr> <td>2048</td> <td>0000100000000000</td> <td>The lowest non-zero bit is bit 11, State = 12.</td> </tr> <tr> <td>4096</td> <td>0001000000000000</td> <td>The lowest non-zero bit is bit 12, State = 13.</td> </tr> <tr> <td>8192</td> <td>0010000000000000</td> <td>The lowest non-zero bit is bit 13, State = 14.</td> </tr> <tr> <td>16384</td> <td>0100000000000000</td> <td>The lowest non-zero bit is bit 14, State = 15.</td> </tr> <tr> <td>32768</td> <td>1000000000000000</td> <td>The lowest non-zero bit is bit 15, State = 16.</td> </tr> </tbody> </table>	Decimal	Binary	State Value	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>You must select LSB (Support State 0).</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.	<u>7</u>	<u>0000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.	4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.
	Decimal	Binary	State Value																																																										
<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>You must select LSB (Support State 0).</u>																																																											
1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.																																																											
2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.																																																											
<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>																																																											
4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.																																																											
<u>7</u>	<u>0000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>																																																											
8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.																																																											
16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.																																																											
32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.																																																											
64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.																																																											
128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.																																																											
256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.																																																											
512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.																																																											
1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.																																																											
2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.																																																											
4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.																																																											
8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.																																																											
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.																																																											
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.																																																											
Bit	<p>If the Data Type is set to Bit, you can only set 2 state counts.</p> 																																																												

When you double-click the Multistate element, the property page is shown as follows.

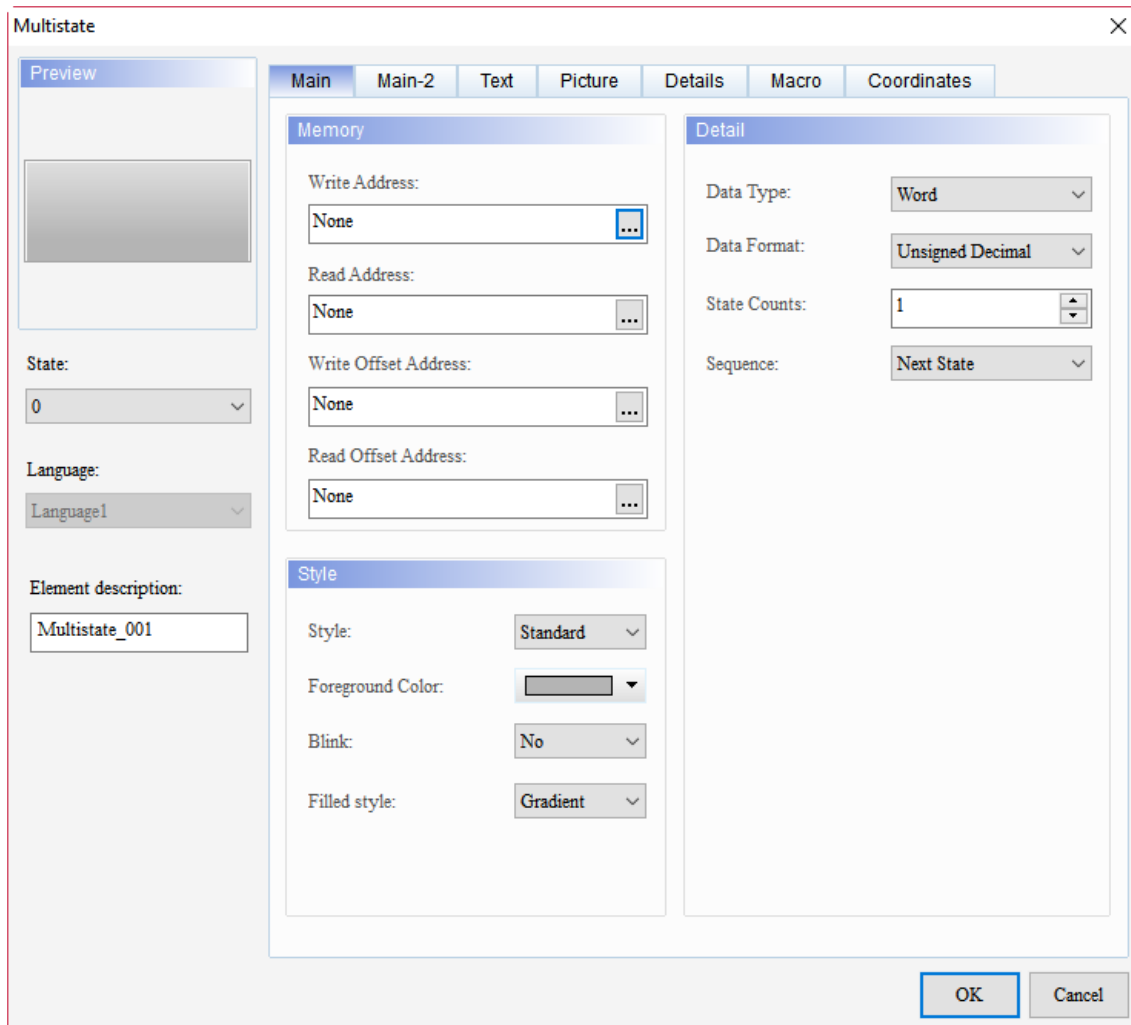


Figure 5.2.3 Properties of Multistate

Multistate	
Function page	Description
Preview	View the element multistate value and multi-language data display.
Main	Set the Write and Read Addresses, Write and Read Offset Addresses Set the Style, Foreground Color, and Blink. Set the Data Type, Data Format, State Counts, and Sequence of Multistate.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Interlock Address, Interlock State, Invisible Address, User Security Level, Low Security Level, and Confirm Window.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

5

■ Main

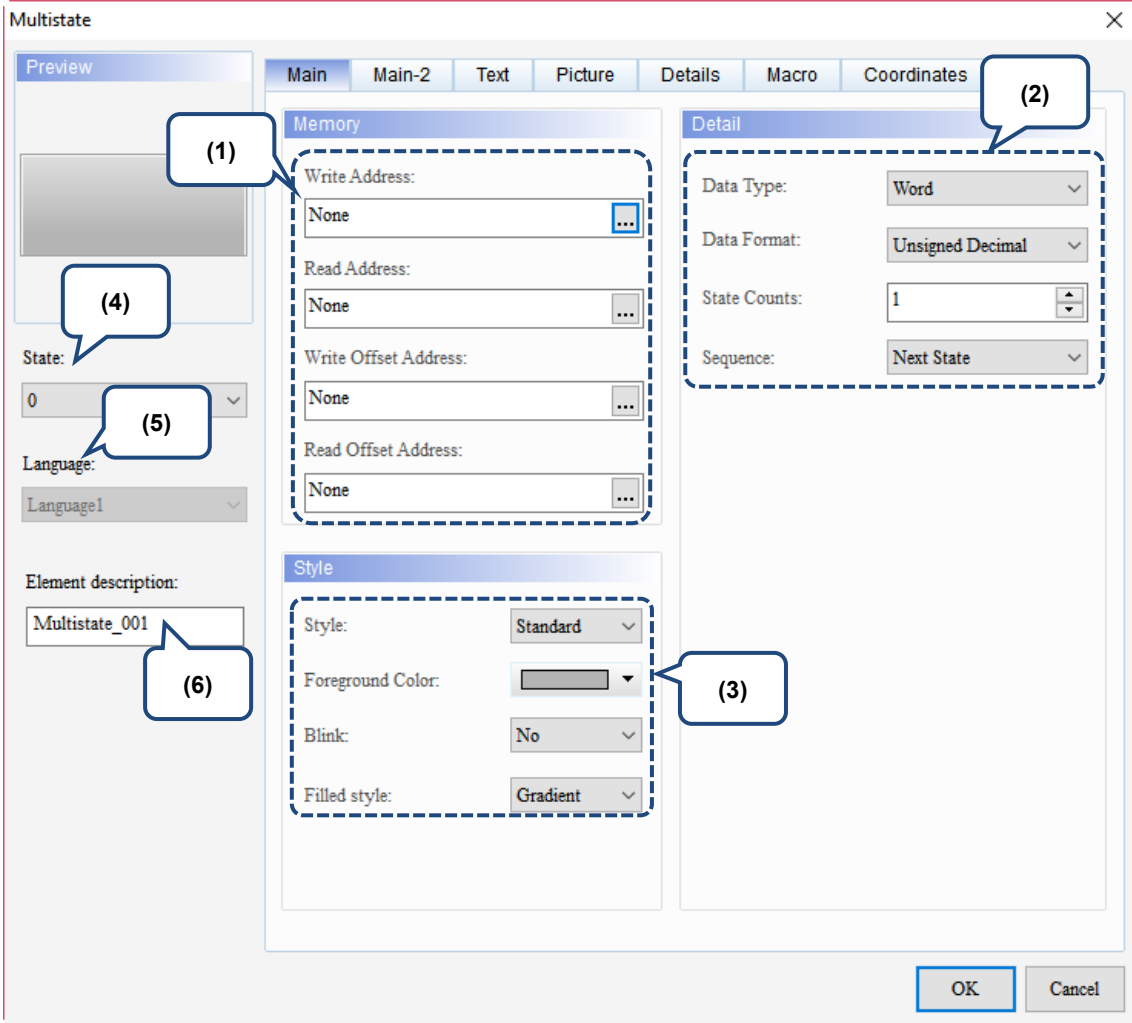
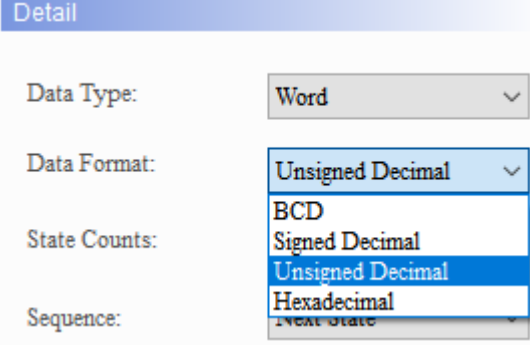
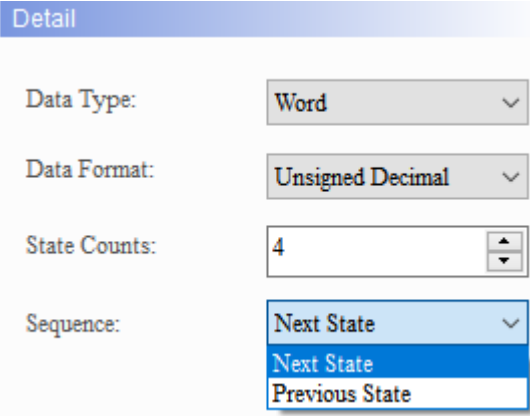
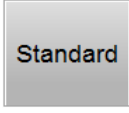
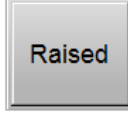

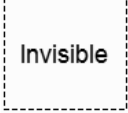
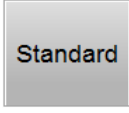
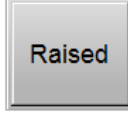

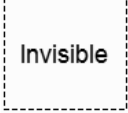
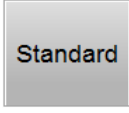
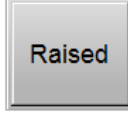

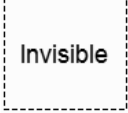
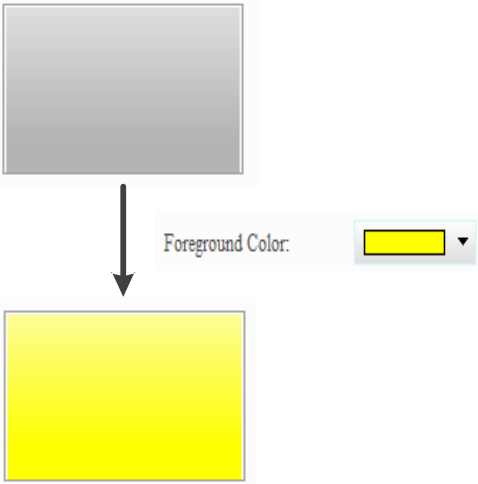
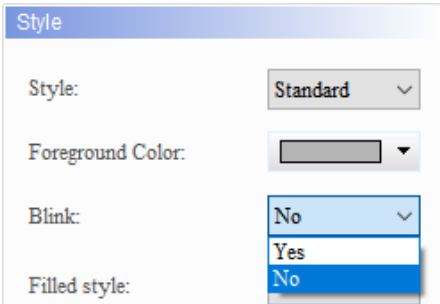


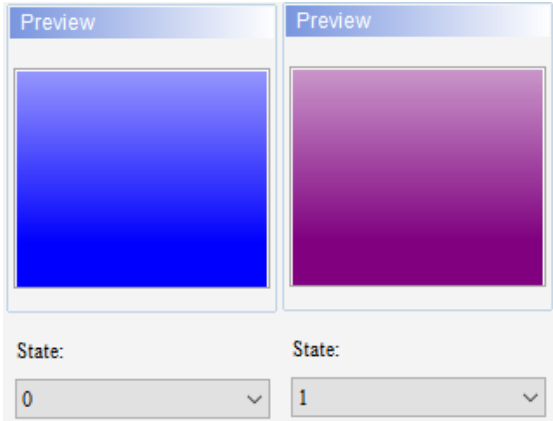
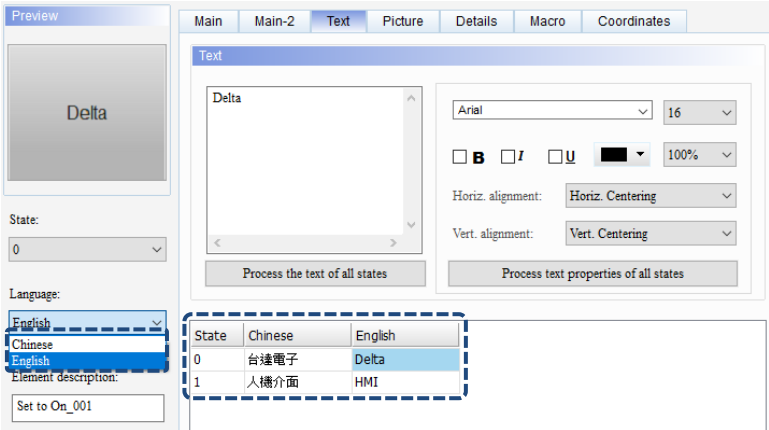
Figure 5.2.4 Main property page for the Multistate element

No.	Property		Function description
(1)	Memory	Write Address	<ul style="list-style-type: none"> You can choose the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 5.2.2. If you set the Write Address without setting the Read Address, the HMI automatically reads the Write Address values.
		Read Address	
		Write Offset Address	Please refer to the instructions in Appendix D Writing and Reading Offset Address.
		Read Offset Address	

No.	Property	Function description
(2)	Setting	Data Type There are four data types: Bit, Word, LSB, and LSB (Support State 0). See Table 5.2.2 for more details.
	Data Format	<ul style="list-style-type: none"> You can only select the Data Format when the Data Type is Word. There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal. 
	State Counts	Set the State Counts of the Multistate button. When the Data Type is Word, the State Counts range from 1 to 256; when the Data Type is LSB, 16 states are available; when the Data Type is LSB (Support State 0), 17 states are available; when the Data Type is Bit, only 2 states are available. See Table 5.2.2 for more details.
	Sequence	<ul style="list-style-type: none"> Set the Multistate button's state changing sequence, including Next State and Previous State. Next State: when changing states, the HMI changes the state in ascending order. Previous State: when changing states, the HMI changes the state in descending order. 

5

No.	Property	Function description								
	Style	<p>The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
										
(3)	Style	<ul style="list-style-type: none"> Set the foreground color of the element. When you set the Style to Invisible, the Foreground Color setting is invalid. 								
	Blink	<p>You can set the blink prompt of the element when the button changes states. The blink color is the opposite color of the foreground color.</p> 								

No.	Property	Function description																																																																																										
(4)	State	<p>The Multistate element determines its number of states according to the State Counts you have defined. Therefore, you can view the states with the State.</p> 																																																																																										
(5)	Language	<p>If you have set the language data, you can edit the displaying text properties, etc. with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI																																																																																	
State	Chinese	English																																																																																										
0	台達電子	Delta																																																																																										
1	人機介面	HMI																																																																																										
(6)	Element description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.</p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr><td>1</td><td>13:37:54</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>2</td><td>13:37:56</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>3</td><td>13:38:19</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td></td><td>Level Switch</td><td>8</td><td>4</td></tr> <tr><td>4</td><td>13:38:21</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>5</td><td>13:38:21</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>6</td><td>13:38:22</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 4 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>7</td><td>13:38:23</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 4 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>8</td><td>13:38:31</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td></td><td>Level Switch</td><td>4</td><td>8</td></tr> <tr><td>9</td><td>13:38:35</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>\$100 Value</td><td>Set Val</td><td>85</td><td>25</td></tr> </tbody> </table>		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																																				
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																																				
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																																				
3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																																				
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																																				
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																																				
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																																				
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																																				
8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																																				
9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																																				

■ Main-2

5

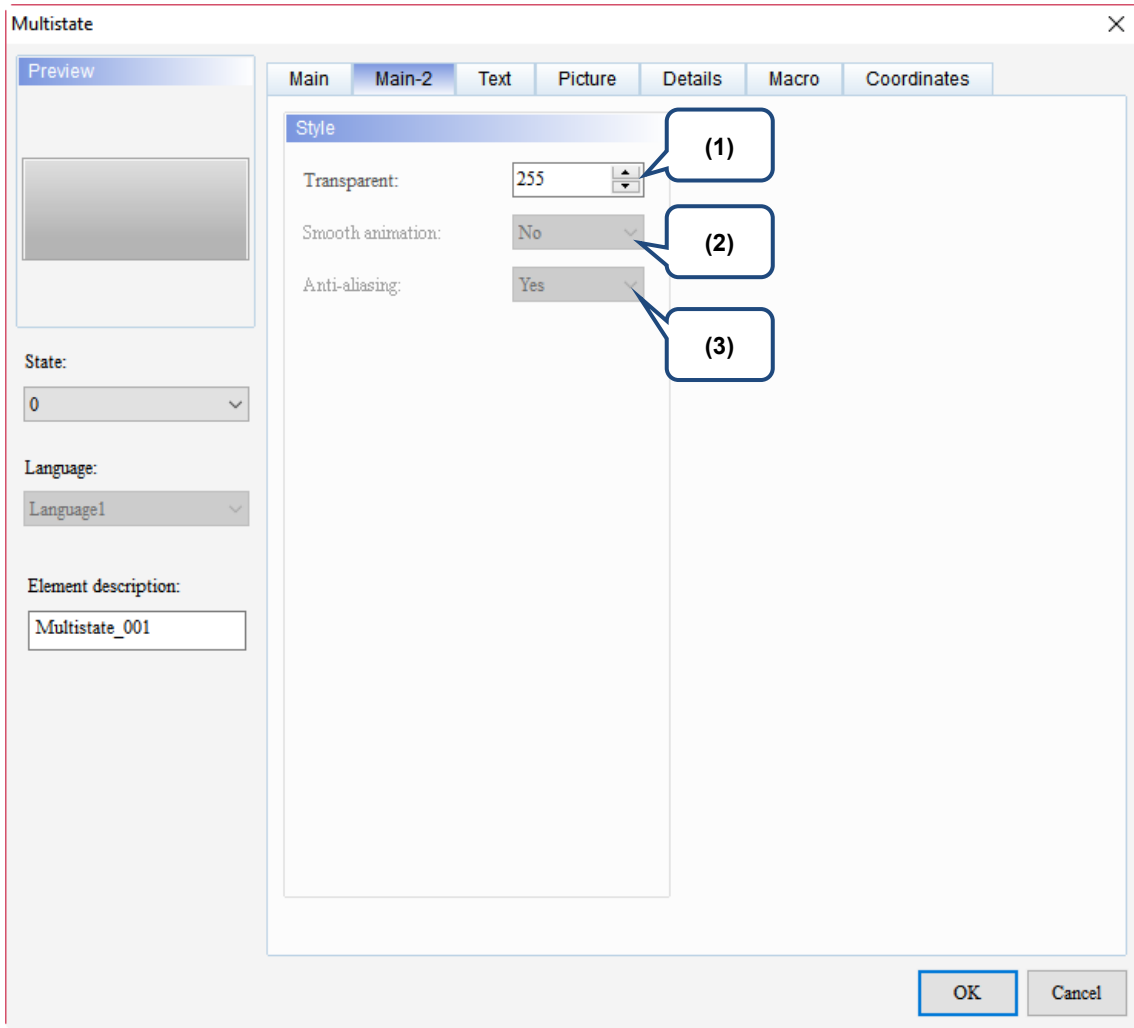


Figure 5.2.5 Main-2 property page for the Multistate element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

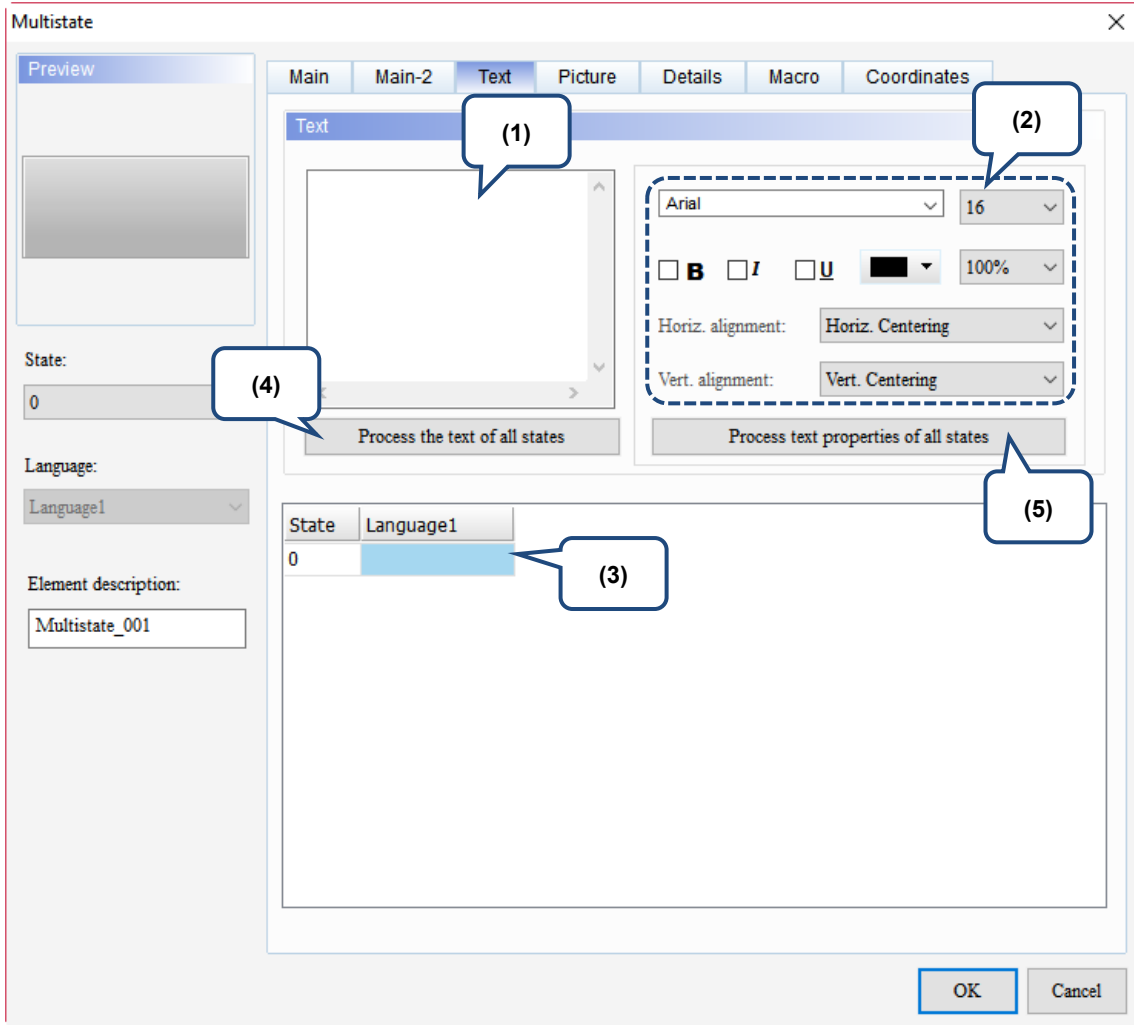
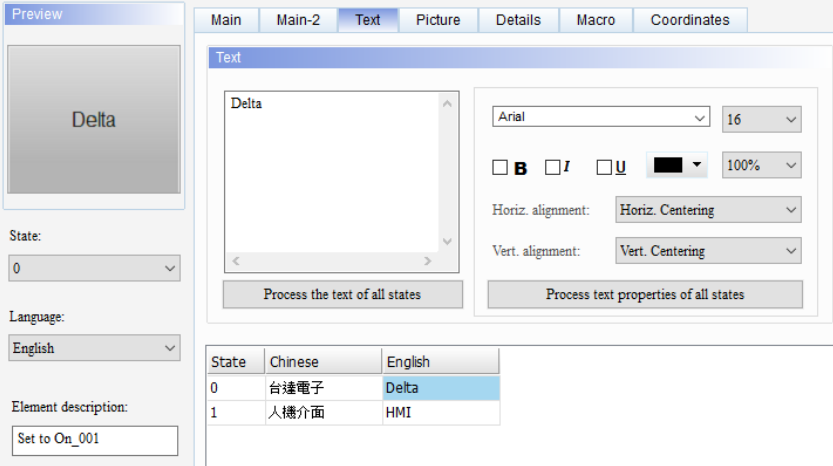
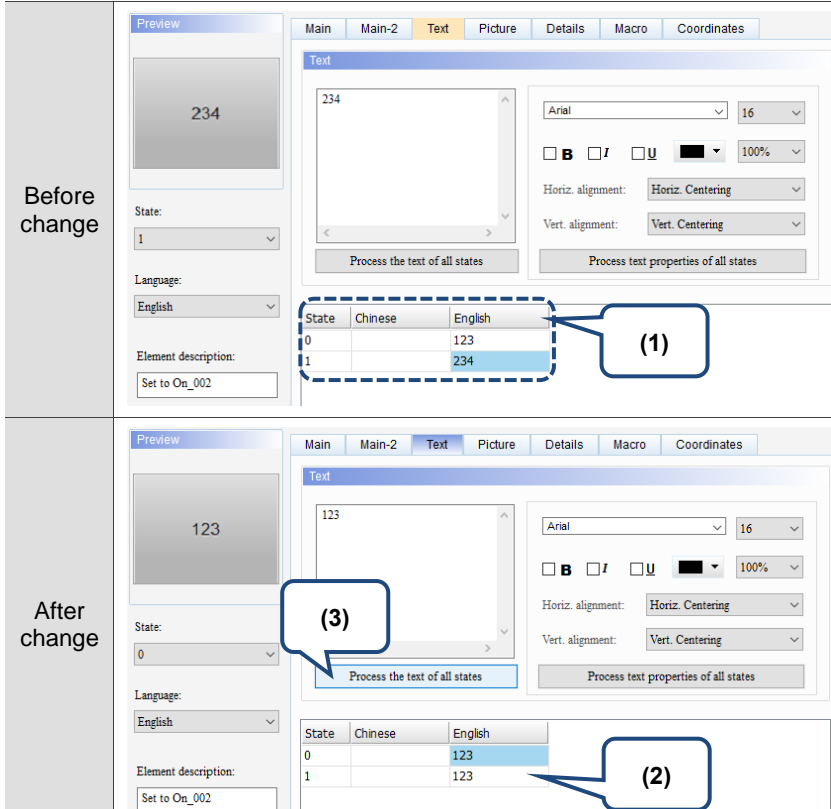
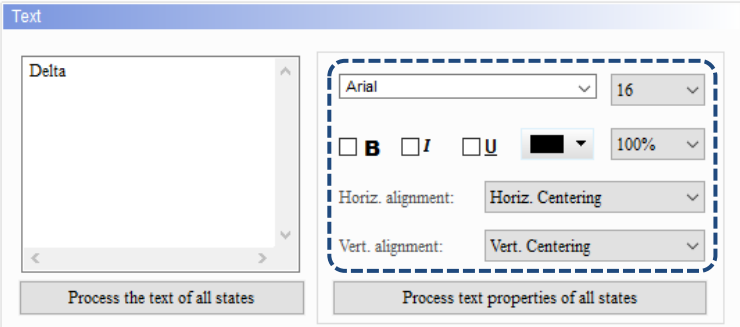
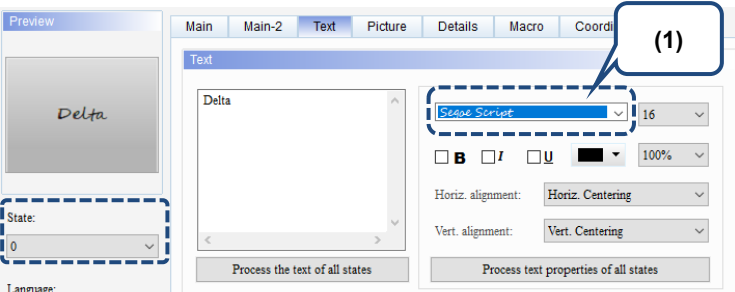
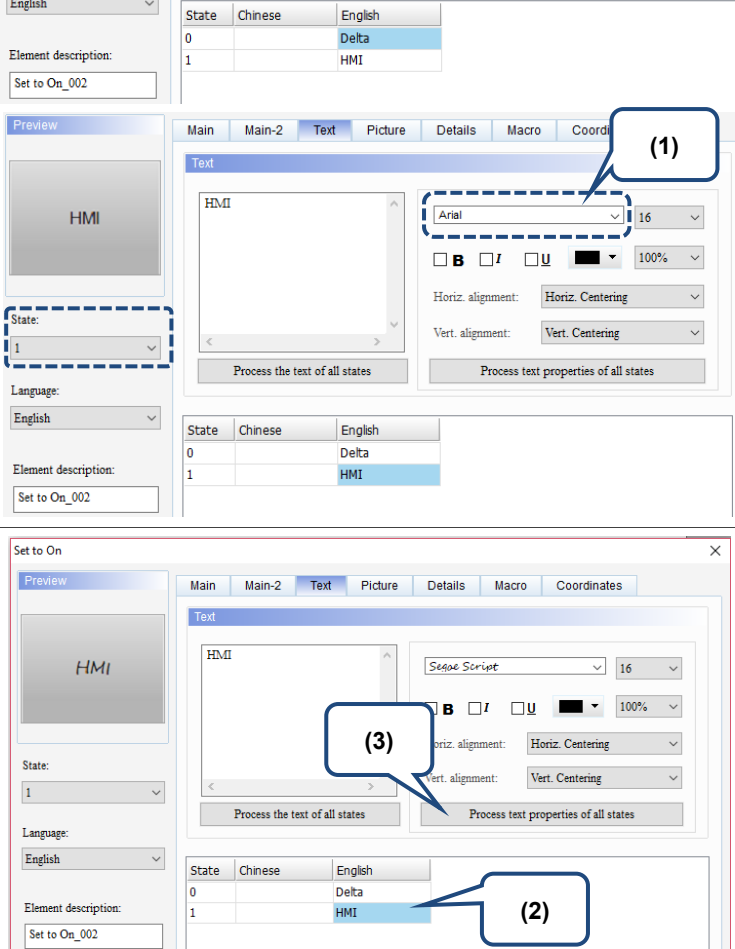


Figure 5.2.6 Text property page for the Multistate element

5

No.	Property	Function description
(1)	Text	<p>You can enter the text to be displayed in the text box.</p> 
(2)	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.</p>
(3)	Edit multi-language text	<p>If you have added multi-language text, the Text page allows you to edit multi-language data.</p>
(4)	Process the text of all states	<p>When this function is enabled, it batch changes the texts of the specified state. The following illustrates the steps:</p> <ol style="list-style-type: none"> Input 123 to State 0, and 234 to State 1. Click State 0. Click Process the text of all states, and the State 1 text changes to 123. 

No.	Property	Function description
		<p>When this function is enabled, it batch changes the text properties of the specified state. Items included in the text property are shown in the figure below.</p>  <p>The following illustrates the steps:</p> <ol style="list-style-type: none"> 1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial. 2. Click State 0. 3. Click Process text properties of all states, and the State 1 font changes to Segoe Script.
(5)	Process text properties of all states	<p>Before change</p>  <p>After change</p> 

5

■ Picture

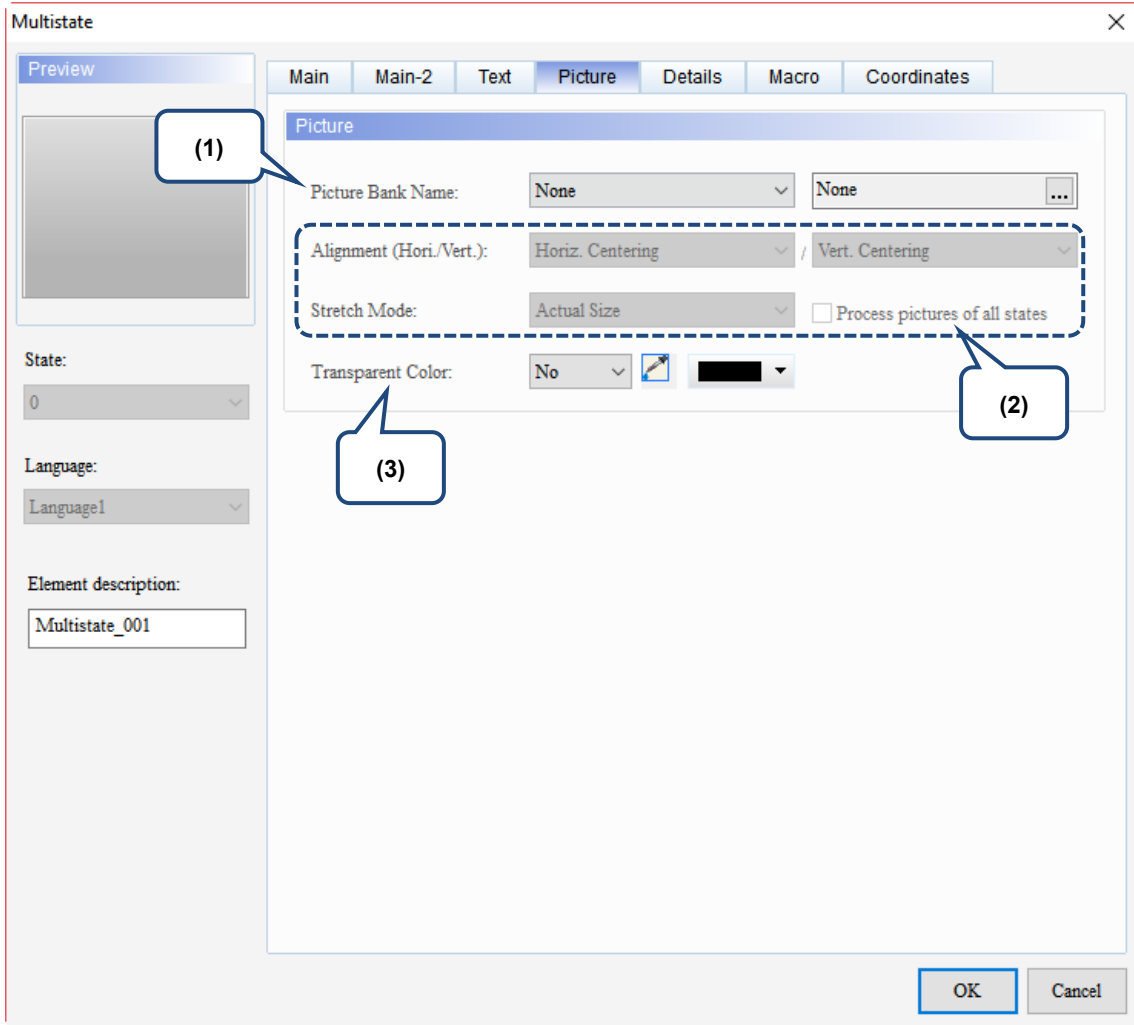
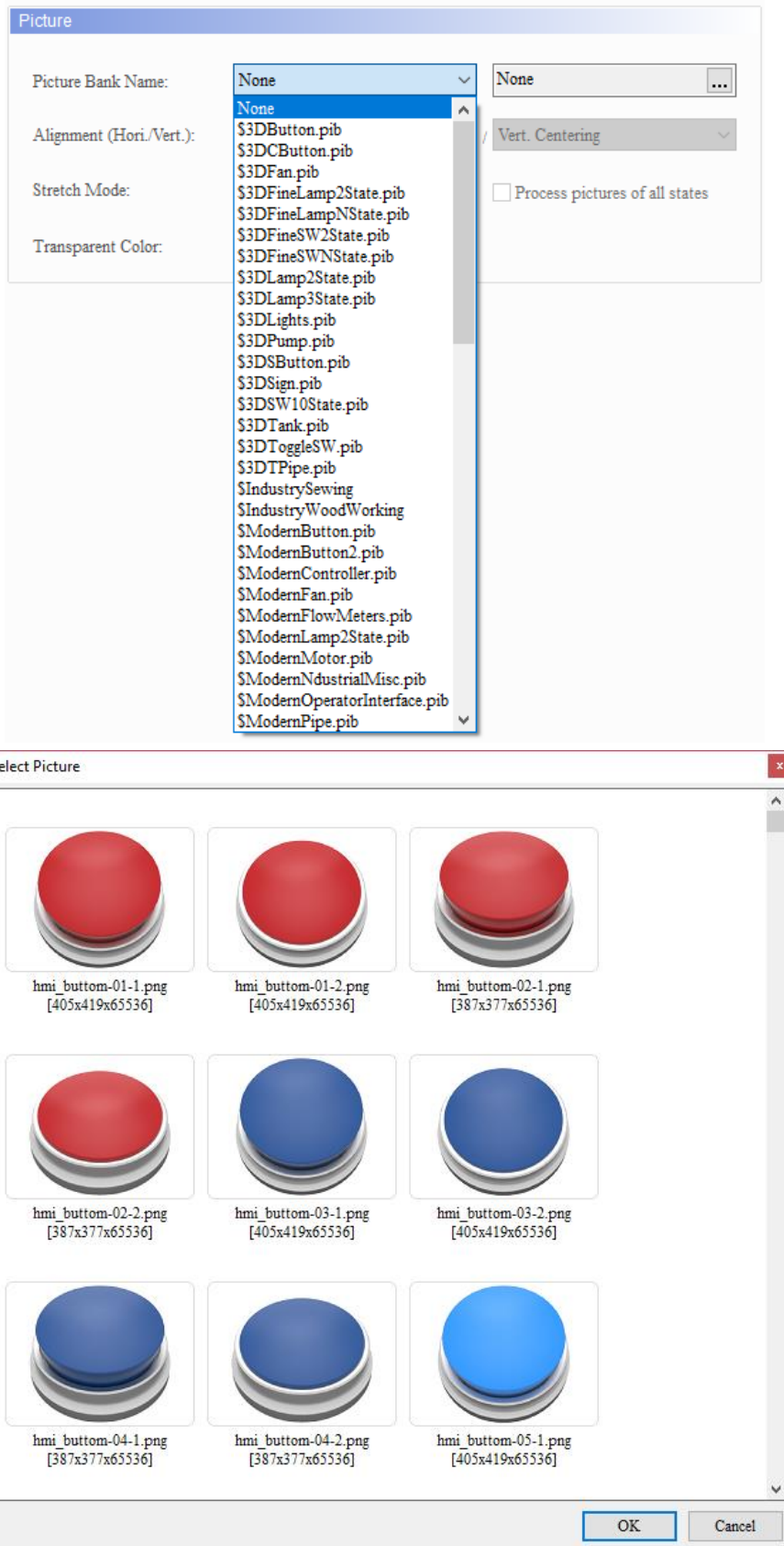
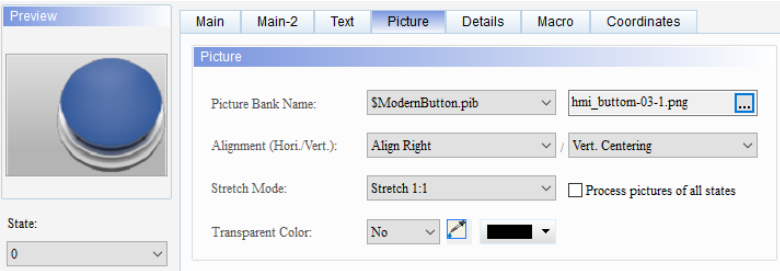


















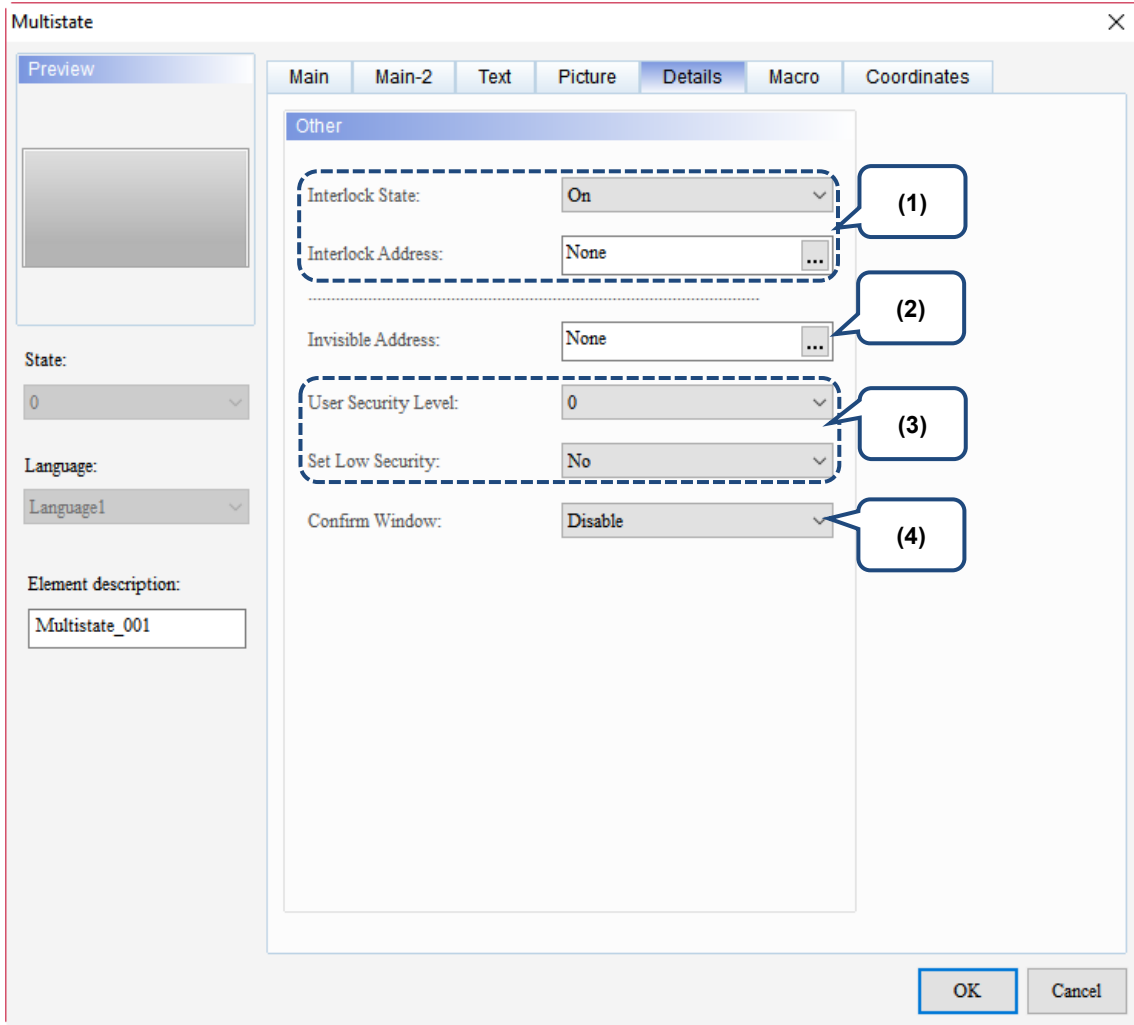
Figure 5.2.7 Picture property page for the Multistate element

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures.</p>  <p>The 'Picture' dialog box contains the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: None (with a dropdown menu listing various picture banks like \$3DButton.pib, \$3DCButton.pib, etc.) Alignment (Hori./Vert.): Vert. Centering (with a dropdown menu) Stretch Mode: (empty) Transparent Color: (empty) <input type="checkbox"/> Process pictures of all states <p>The 'Select Picture' dialog box displays a grid of button images with their respective file names and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

5

No.	Property	Function description									
(2)	Alignment	<ul style="list-style-type: none"> You can use the Alignment options to set how pictures are aligned.  <ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td> If you select Stretch All, the picture fills the full element display area. </td> <td> If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length. </td> <td> If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area. </td> </tr> <tr> <td>  </td> <td>  </td> <td>  </td> </tr> </tbody> </table>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
	Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
Stretch Mode	<ul style="list-style-type: none"> If you check [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> <table border="1"> <thead> <tr> <th>Preview</th> <th>Preview</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>	Preview	Preview							
Preview	Preview										
											

■ Details

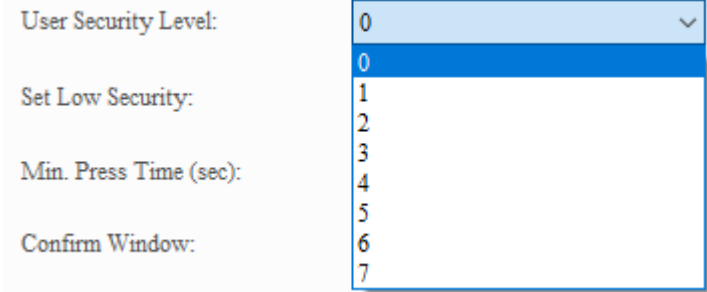
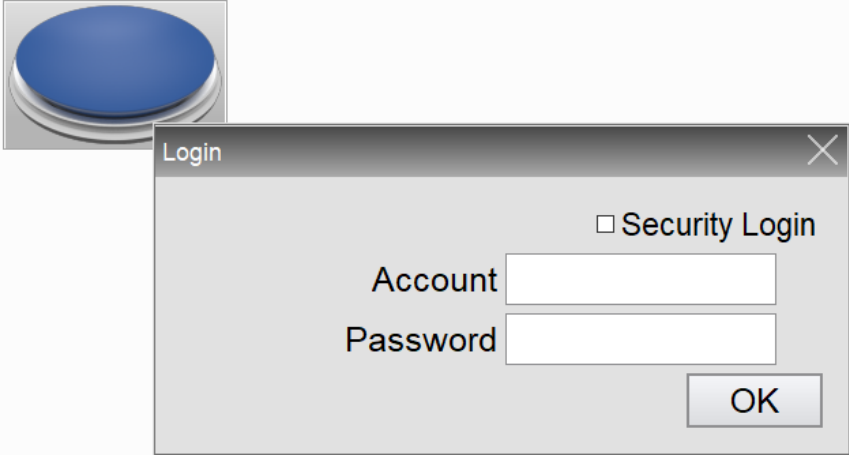
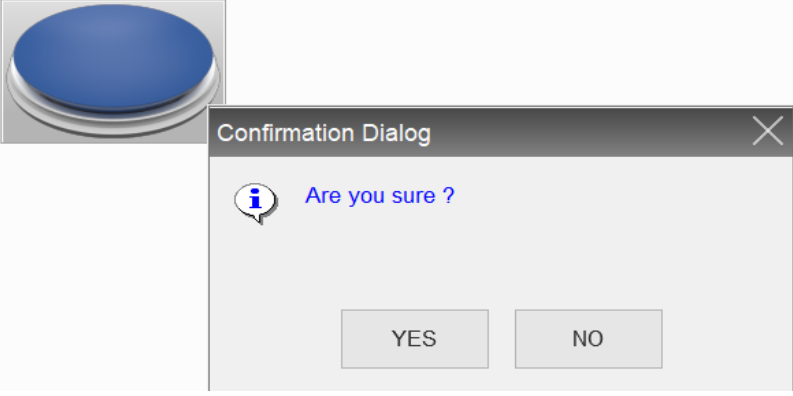


5

Figure 5.2.8 Details property page for the Multistate element

5

No.	Property	Function description						
(1)	Interlock State	<ul style="list-style-type: none"> The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON. The following describes how it works: <ol style="list-style-type: none"> Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0. 						
	Interlock Address							
(2)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td> </td> <td> </td> </tr> <tr> <td>Invisible Address is on</td> <td> </td> <td> </td> </tr> </table>	Invisible Address is off			Invisible Address is on		
	Invisible Address is off							
Invisible Address is on								

No.	Property	Function description
(3)	User Security Level	<ul style="list-style-type: none"> This function sets the security level for pressing the element; this operation is available for users with the set security level or higher. After you set the permission level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element, please refer to Section 5.7.2 Password Table Setup). 
	Set Low Security	<ul style="list-style-type: none"> If you specify Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to input the password for the corresponding security level. 
(4)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog pops up for you to confirm the pressing action after pressing the element.</p> 

■ Macro

5

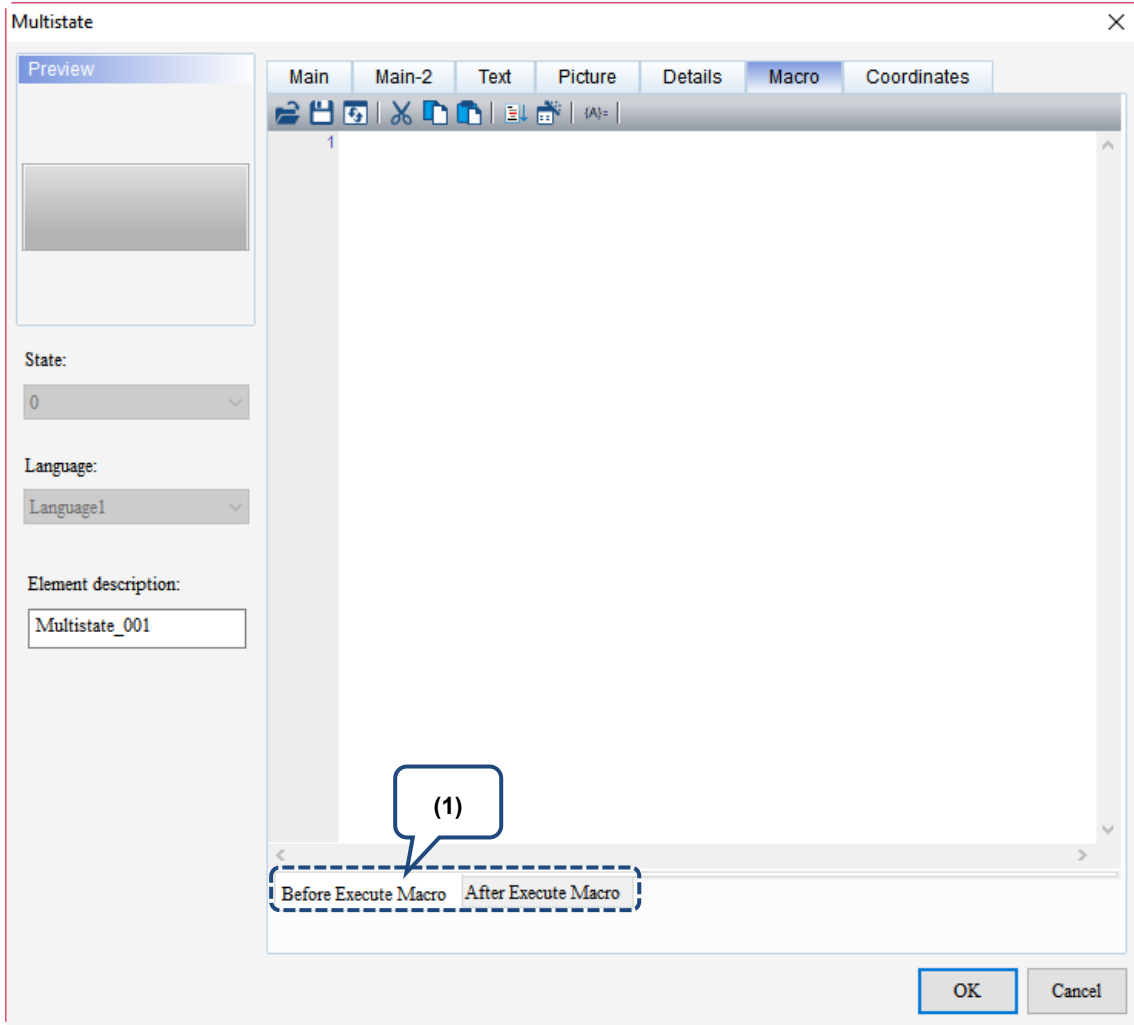


Figure 5.2.9 Macro property page for the Multistate element

No.	Function description	
(1)	<p style="text-align: center;">Before Execute Macro</p> <p>Flowchart of Before Execute Macro:</p> <p>When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>	<p style="text-align: center;">After Execute Macro</p> <p>Flowchart of After Execute Macro:</p> <p>When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>

■ Coordinates

5

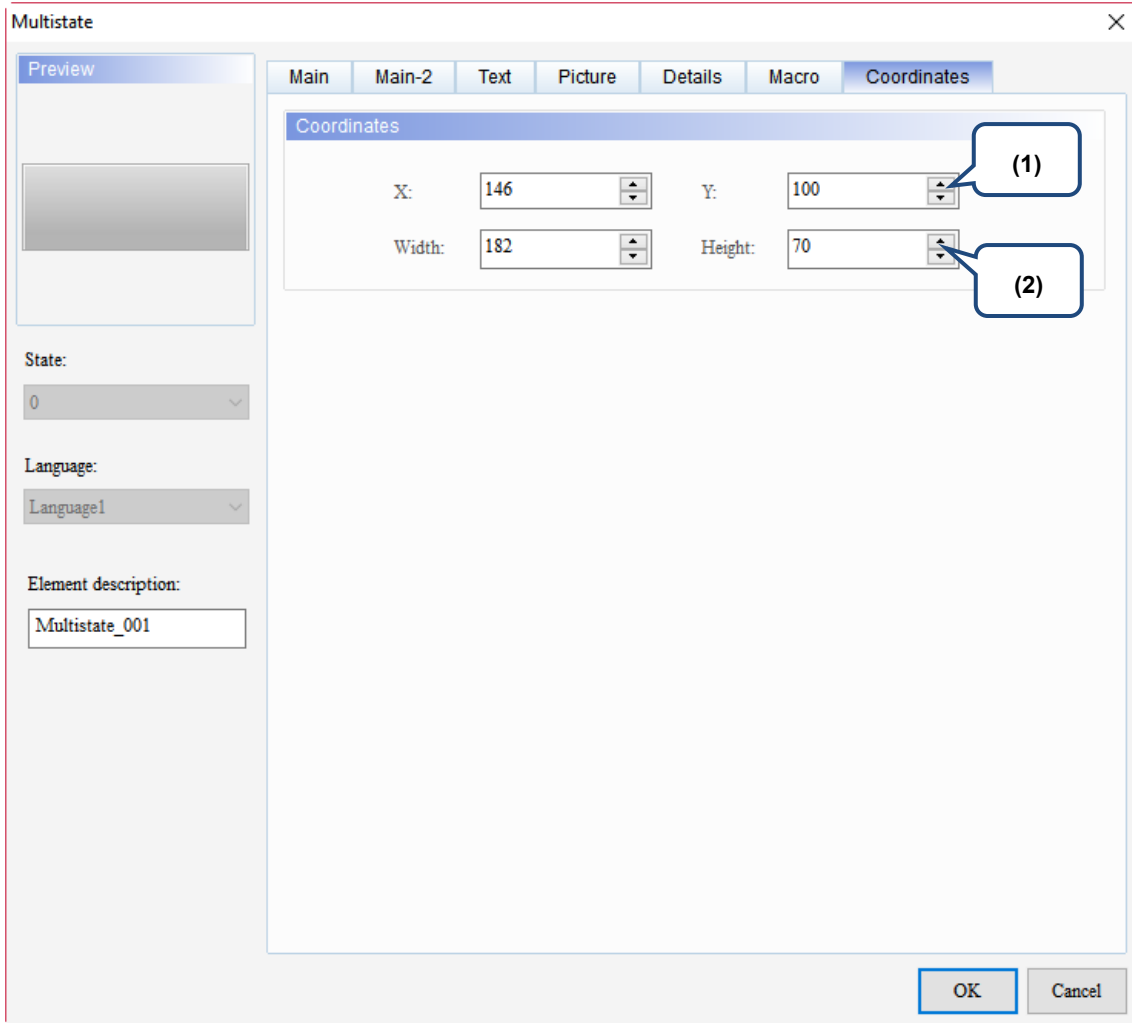


Figure 5.2.10 Coordinates property page for the Multistate element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.



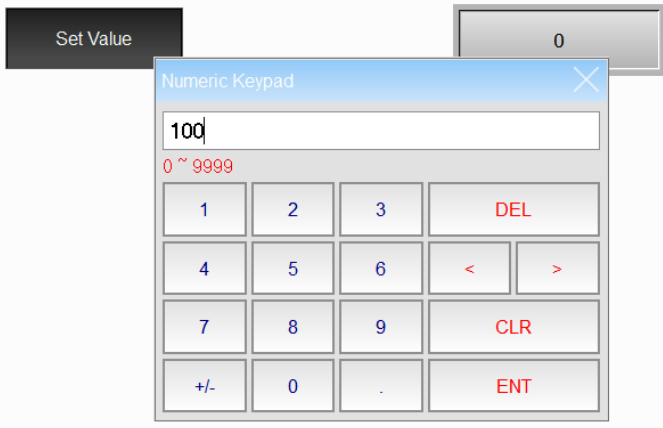

5.3 Set Value

When you touch this button on the HMI end, the built-in Numeric Keypad pops up on the screen for you to input values. After you press **ENTER**, the HMI sends the values to the corresponding register. You can set the maximum and minimum input values, and set the trigger mode, such as triggering the specified controller Bit address before or after writing.

Please refer to Table 5.3.1 for the Set Value example.

Table 5.3.1 Set Value example

5

Set Value	
Write Address	<ul style="list-style-type: none"> ■ Create a Set Value element and set the Write Address to D50. ■ Create a Numeric Display element and set the Read Address to D50. <div style="border: 1px solid #ccc; padding: 5px;"> <p>Set Value</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid #ccc; padding: 5px; width: 45%;"> <p>Preview</p>  </div> <div style="border: 1px solid #ccc; padding: 5px; width: 50%;"> <p>Main Main-2 Text Picture</p> <p>Memory</p> <p>Write Address: <input type="text" value="{Link2}1@D50"/> ...</p> <p>Write Offset Address: <input type="text" value="None"/> ...</p> </div> </div> <hr/> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid #ccc; padding: 5px; width: 45%;"> <p>Preview</p>  </div> <div style="border: 1px solid #ccc; padding: 5px; width: 50%;"> <p>Main Main-2 Text Details</p> <p>Memory</p> <p>Read Address: <input type="text" value="{Link2}1@D50"/> ...</p> <p>Read Offset Address: <input type="text" value="None"/> ...</p> </div> </div> </div>
Execution results	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="background-color: #cccccc; padding: 5px; width: 20%;">Before Set Value</div> <div style="border: 1px solid #ccc; padding: 5px; width: 60%;">  </div> <div style="background-color: #cccccc; padding: 5px; width: 20%;">0</div> </div> <hr/> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="background-color: #cccccc; padding: 5px; width: 20%;">After Set Value</div> <div style="border: 1px solid #ccc; padding: 5px; width: 60%;">  </div> <div style="background-color: #cccccc; padding: 5px; width: 20%;">100</div> </div> <p>Click Set Value, input the value of 100, and the Numeric Display element displays 100.</p>

When you double-click the Set Value element, the property page is shown as follows.

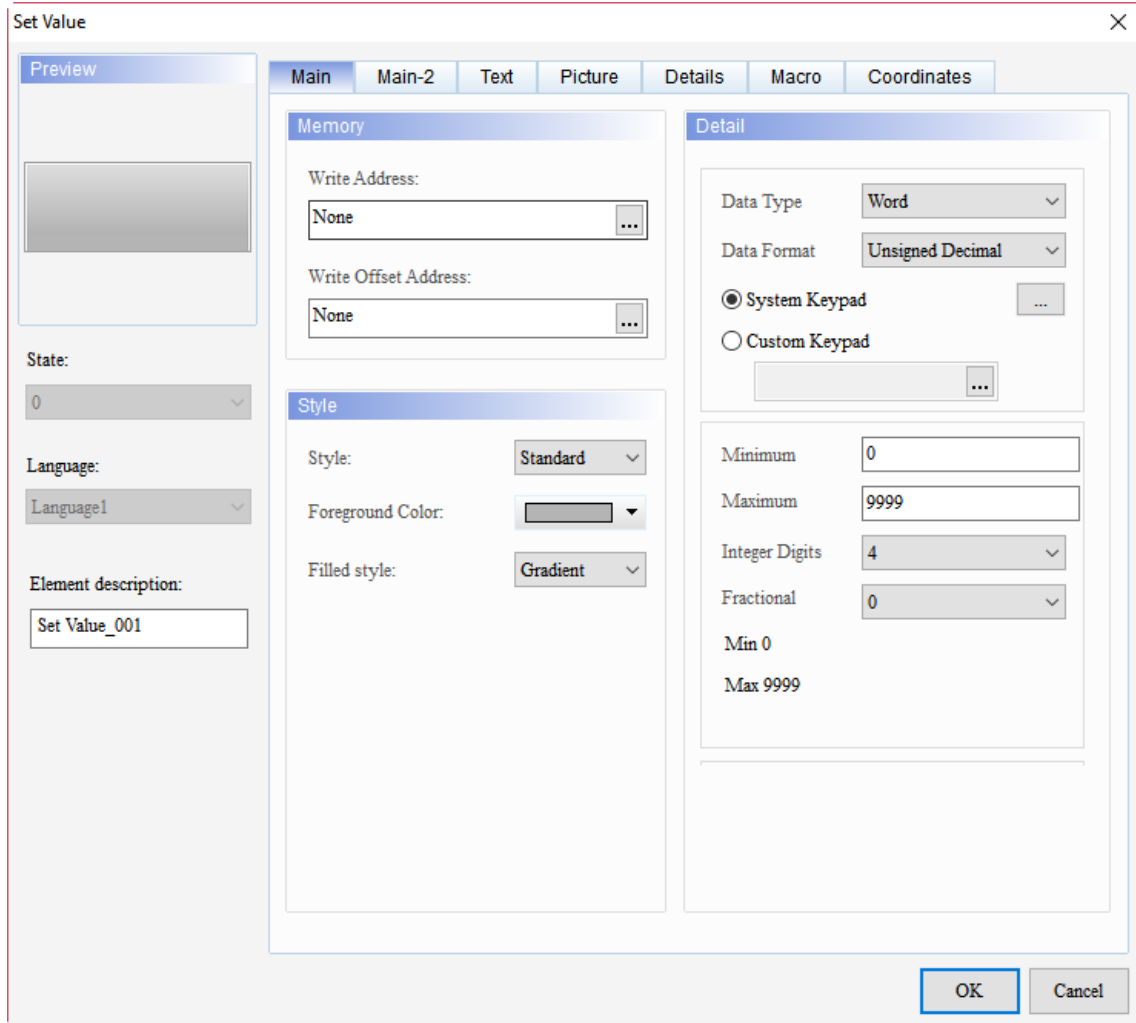


Figure 5.3.1 Properties of Set Value

Table 5.3.2 Function page of Set Value

Set Value	
Function page	Description
Preview	The Set Value element can only view multi-language data display since the multistate property is not available for this element.
Main	Set the Write Address, Write Offset Address, Style, and Foreground Color. Set the Data Type, Data Format, keypad style, Minimum / Maximum, Integer Digits, and Fractional of the Set Value element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Interlock Address, Interlock State, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Mark as Asterisk (*), Confirm Window, and Show overrange message.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

5

■ Main

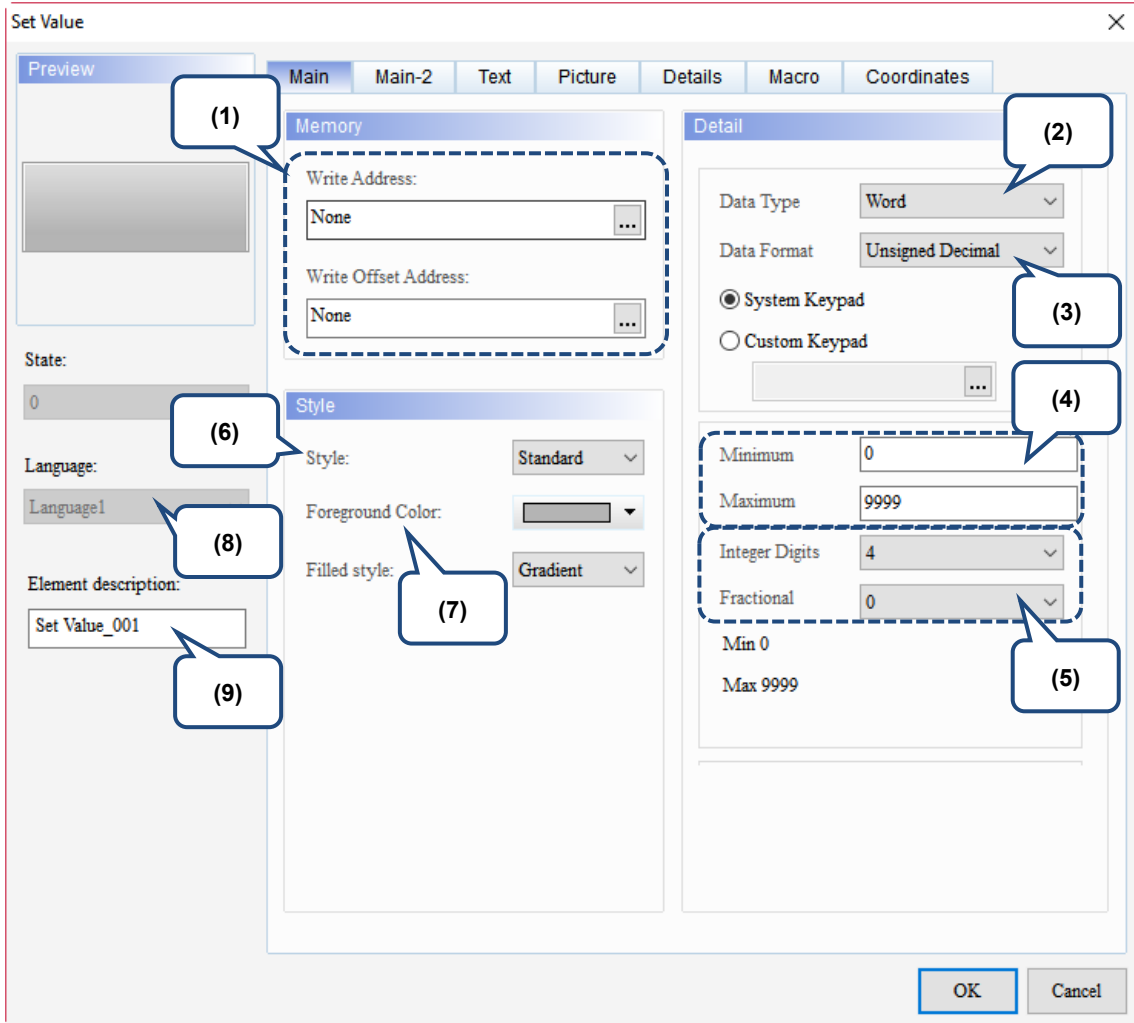
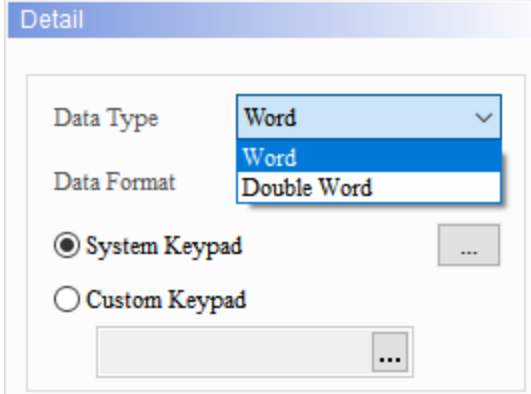
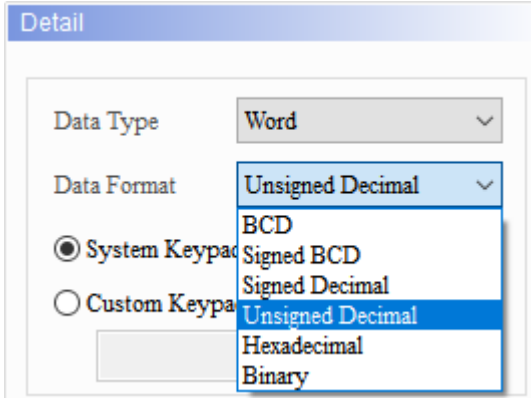
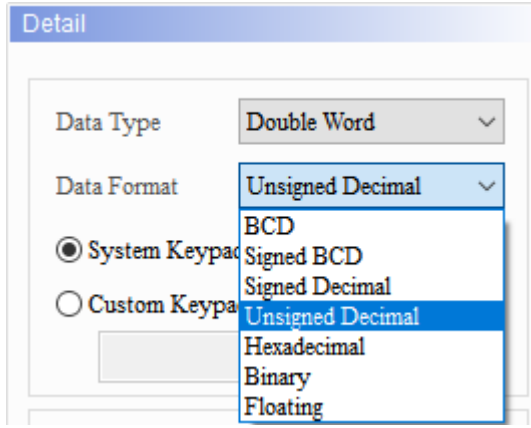
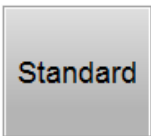
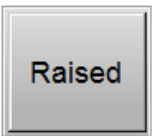

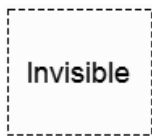
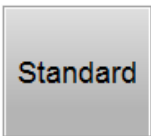
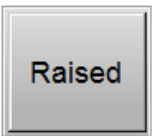
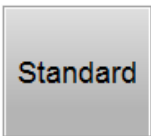
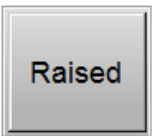

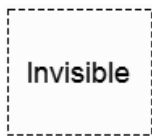
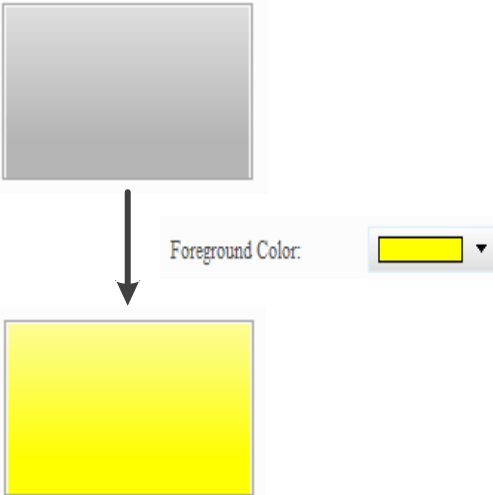


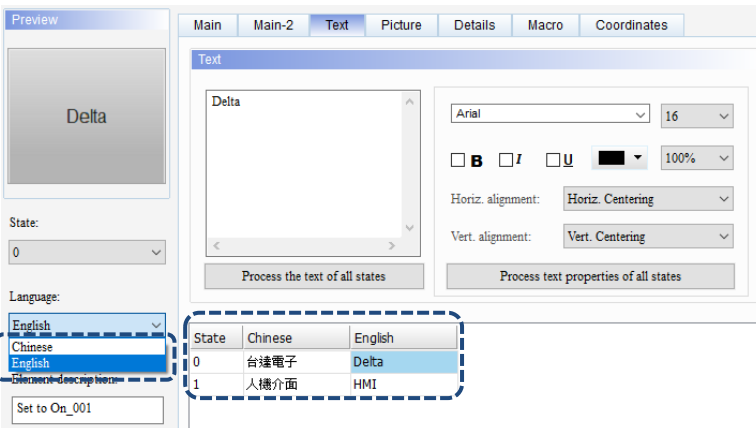
Figure 5.3.2 Main property page for the Set Value element

No.	Property	Function description
(1)	Write Address	You can choose the internal memory or the controller register address. The input memory type must be Word. For the Link and Style selection, please refer to Section 5.1.
	Write Offset Address	Please refer to the instructions in Appendix D Write and Read Offset Address.

No.	Property		Function description
(2)		Data Type	<p>There are two data types: Word and Double Word.</p> 
(3)	Setting	Data Format	<ul style="list-style-type: none"> ■ When you set the Data Type to Word, the supported data formats are as follows:  <ul style="list-style-type: none"> ■ When you set the Data Type to Double Word, the supported data formats are as follows: 

5

No.	Property		Function description					
(4)	Setting	Minimum / Maximum	The allowable ranges for the minimum and maximum values are subject to change based on the selected Data Type and Data Format.					
			Data Type	Data Format	Allowable range			
			Word	BCD	0 to 9999			
				Signed BCD	-999 to 9999			
				Signed Decimal	-32768 to 32767			
				Unsigned Decimal	0 to 65535			
				Hex	0 to 0xFFFF			
				Binary	0 to 0xFFFF			
			Double Word	BCD	0 to 99999999			
				Signed BCD	-99999999 to 99999999			
				Signed Decimal	-2147483648 to 2147483647			
				Unsigned Decimal	0 to 4294967295			
				Hex	0 to 0xFFFFFFFF			
Binary	0 to 0xFFFFFFFF							
Floating	0 to 99999999							
(5)	Integer Digits Fractional Digits	You can set the displaying number of integer digits and the number of decimal places.						
(6)	Style	The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.						
		<table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Round</th> <th>Invisible</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Round	Invisible		
Standard	Raised	Round	Invisible					
								
(7)	Foreground Color	<ul style="list-style-type: none"> ■ Set the foreground color of the element. ■ When you set the style to Invisible, the Foreground Color setting is invalid. 						

No.	Property	Function description																																																																																										
(8)	Language	<p>If you have set the language data, you can edit the displaying text property, etc. with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI																																																																																	
State	Chinese	English																																																																																										
0	台達電子	Delta																																																																																										
1	人機介面	HMI																																																																																										
(9)	Element description	<p>Record the button actions to be executed. The record is written into the CSV file of the Operation Log Table so that you know what actions have been done.</p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level Switch</td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level Switch</td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8	Screen_22	Level Switch	Level Switch	8	4	4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4	Screen_22	Level Switch	Level Switch	4	8	9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																																				
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																																				
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																																				
3	13:38:19	5/5/2016	8	Screen_22	Level Switch	Level Switch	8	4																																																																																				
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																																				
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																																				
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																																				
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																																				
8	13:38:31	5/5/2016	4	Screen_22	Level Switch	Level Switch	4	8																																																																																				
9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																																				

■ Main-2

5

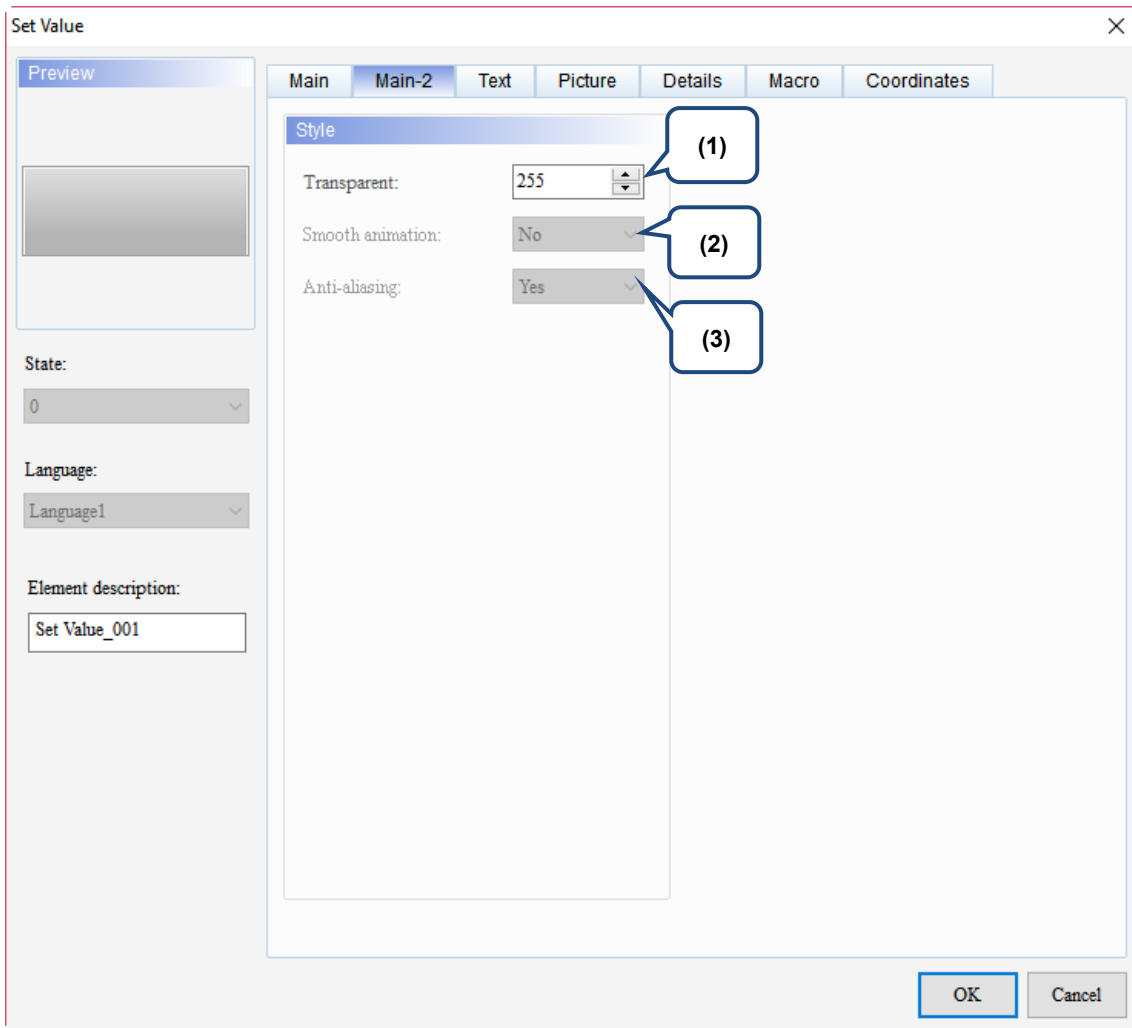


Figure 5.3.3 Main-2 property page for the Set Value element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

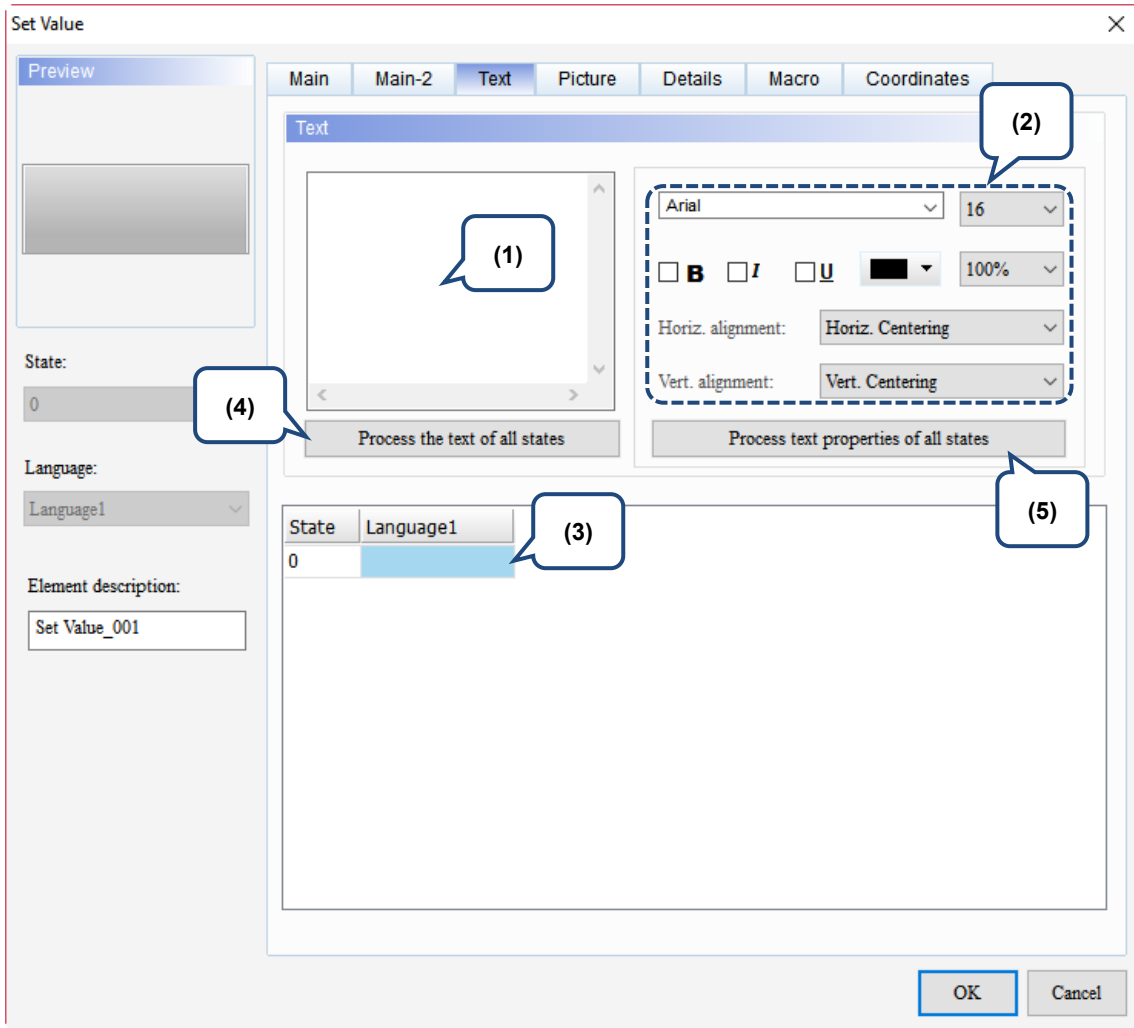
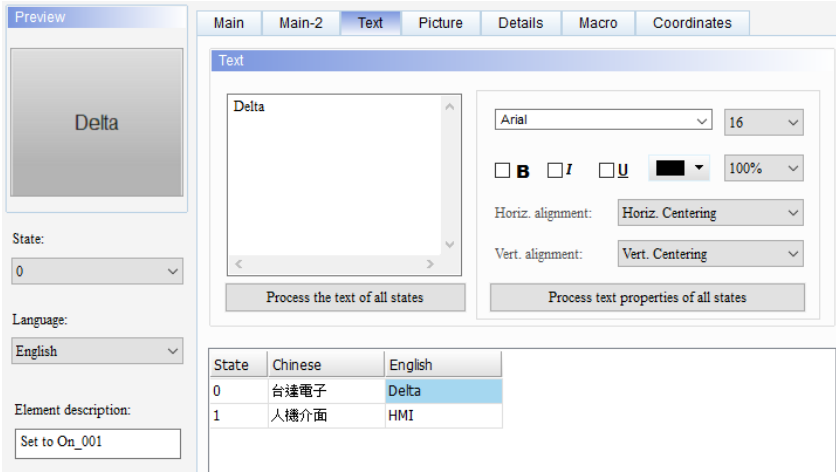
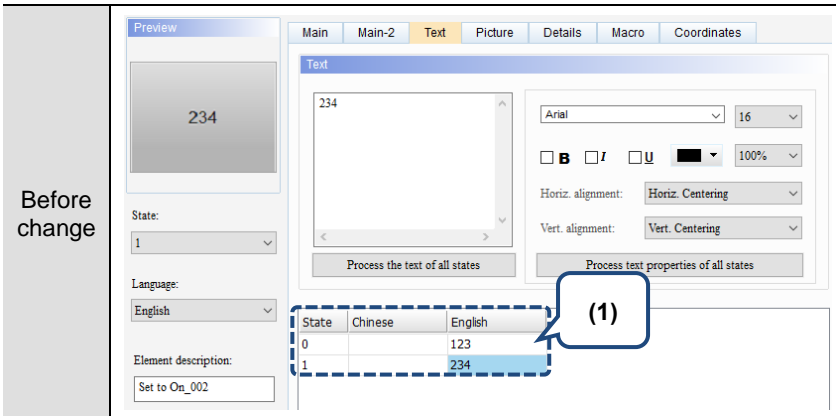
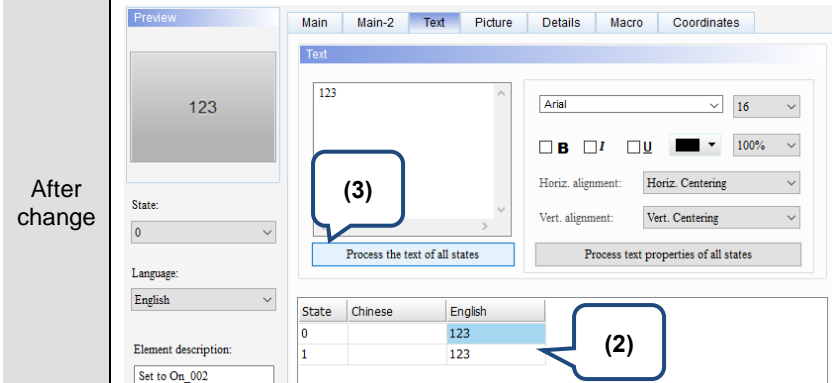
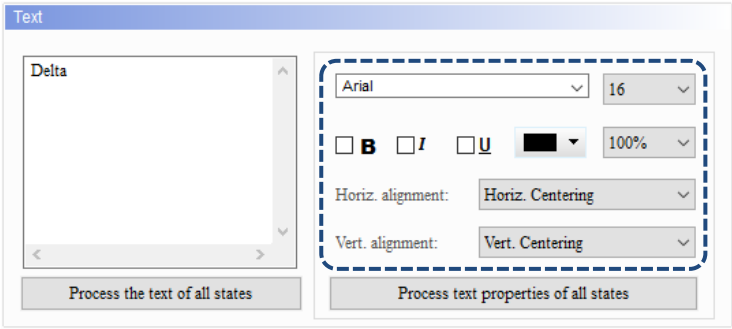
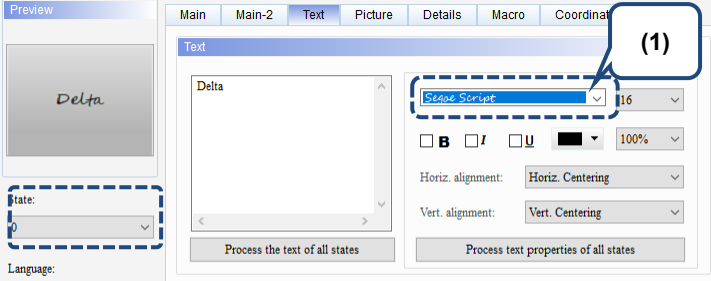
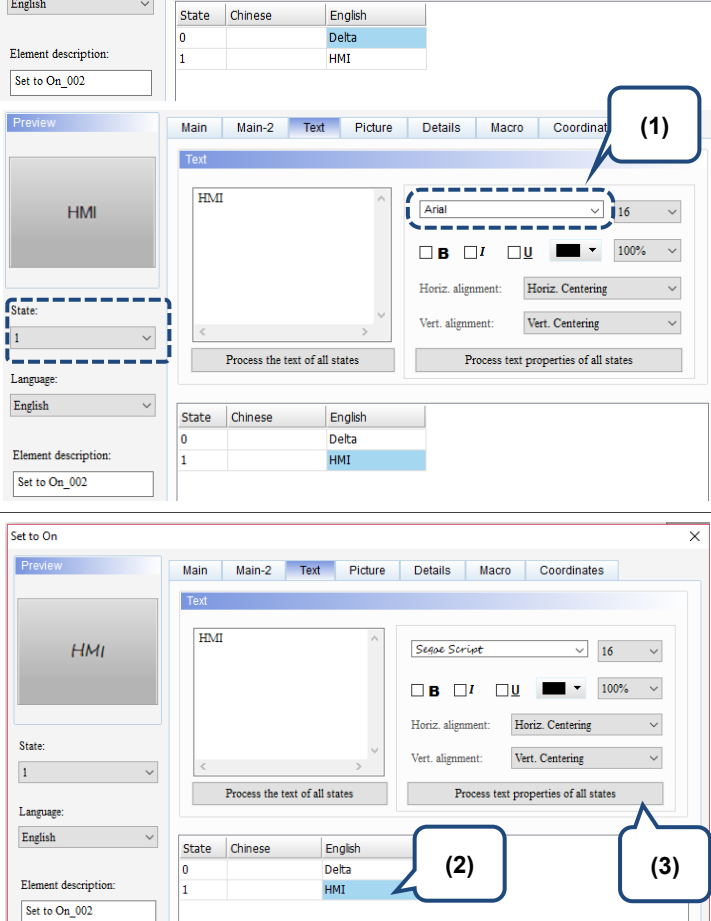


Figure 5.3.4 Text property page for the Set Value element

5

No.	Property	Function description
(1)	Text	<p>■ You can input the text to be displayed in the text box.</p>  <p>■ As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</p>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>When this function is enabled, it batch changes the texts of the specified state. The following illustrates the steps:</p> <ol style="list-style-type: none"> Input 123 to State 0, and 234 to State 1. Click State 0. Click Process the text of all states, and the State 1 text changes to 123. <div style="display: flex; flex-direction: column;"> <div style="margin-bottom: 20px;"> <p>Before change</p>  </div> <div> <p>After change</p>  </div> </div>

No.	Property	Function description
(5)	Process text properties of all states	<p>When this function is enabled, it batch changes the text properties of the specified state. Items included in the text property are shown in the figure below.</p>  <p>■ The following illustrates the steps:</p> <ol style="list-style-type: none"> 1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial. 2. Click State 0. 3. Click Process text properties of all states, and the State 1 font changes to Segoe Script.
(5)	Process text properties of all states	<div style="display: flex; flex-direction: column;"> <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); padding-right: 10px;">Before change</div> <div style="flex: 1;">  </div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); padding-right: 10px;">After change</div> <div style="flex: 1;">  </div> </div> </div>

5

■ Picture

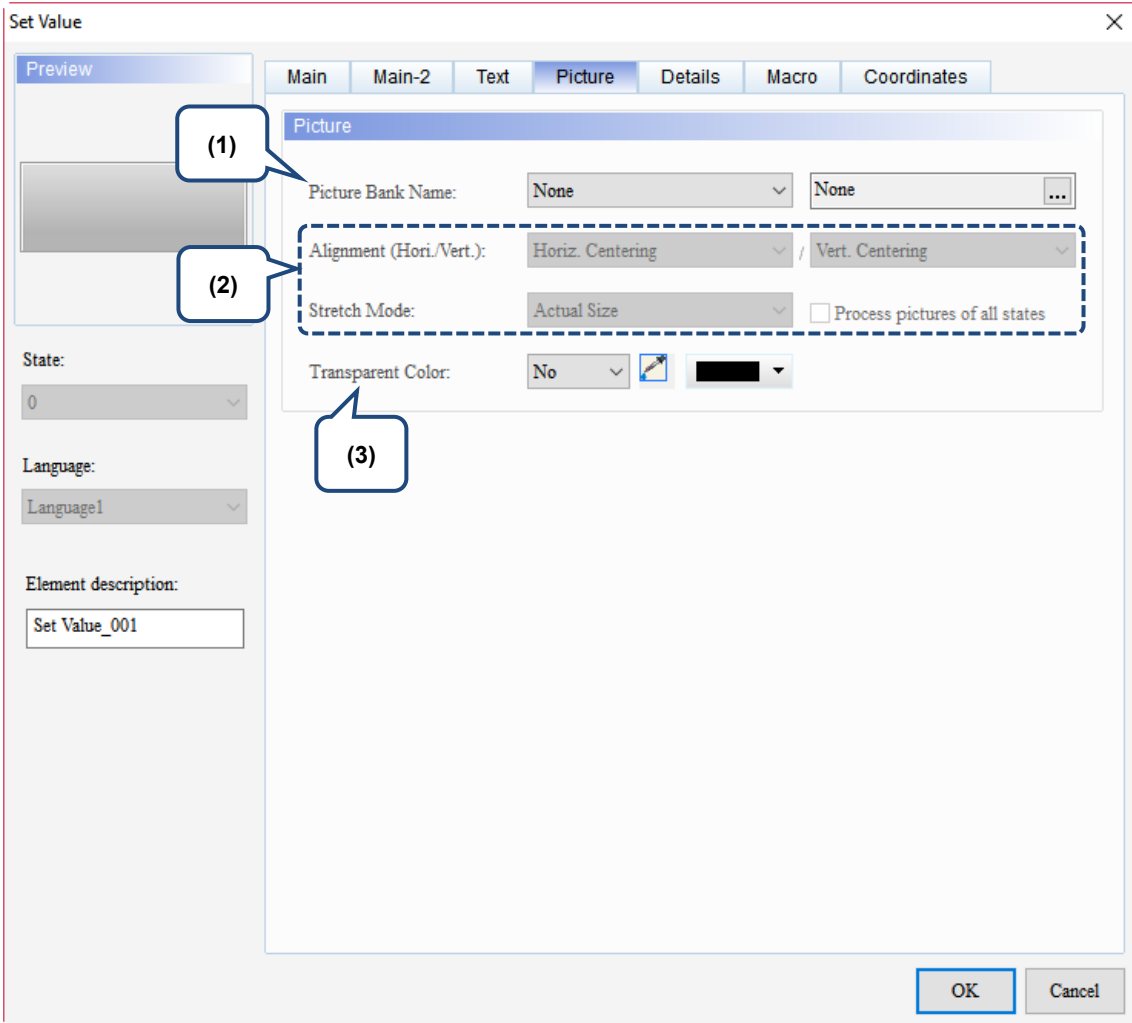
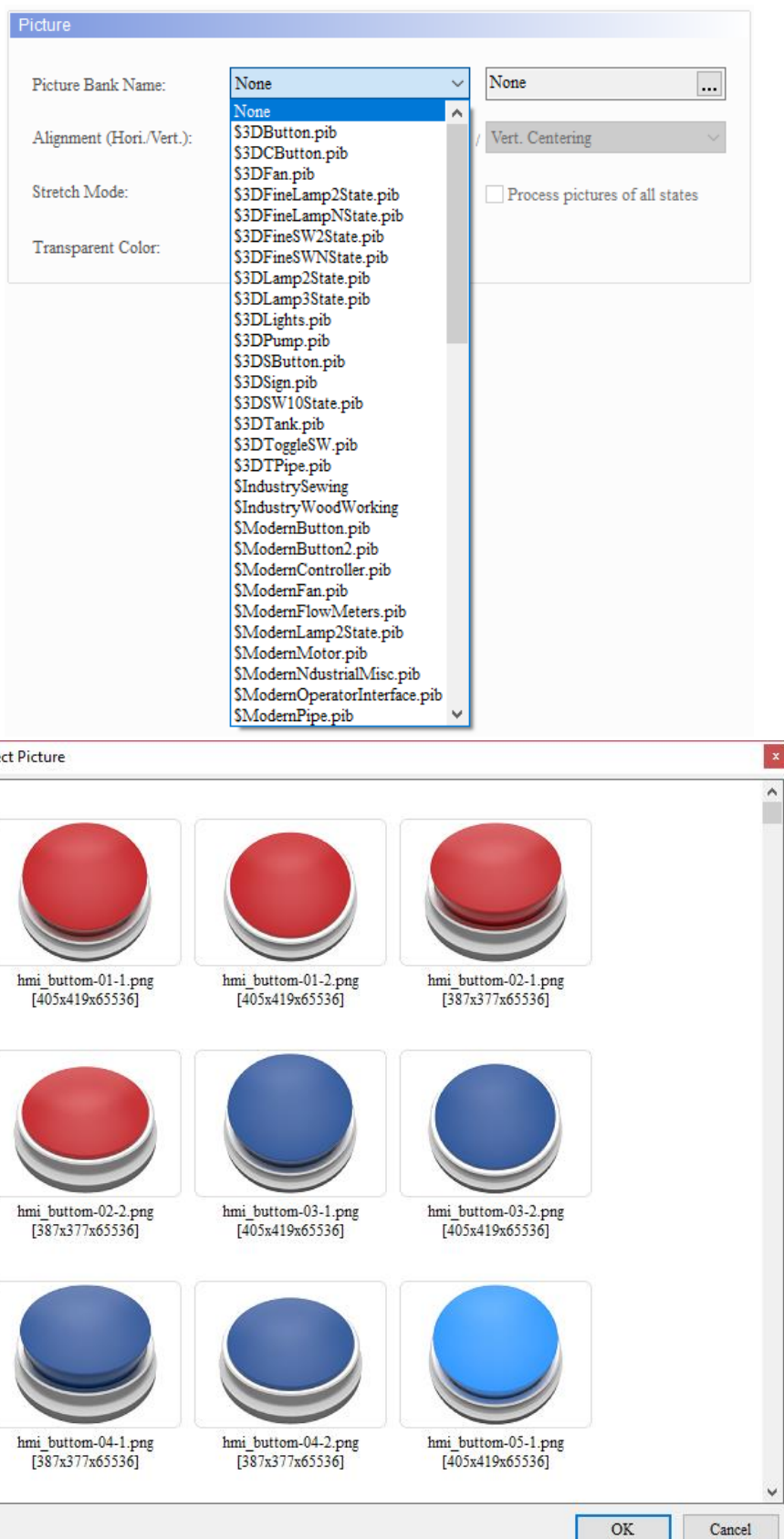
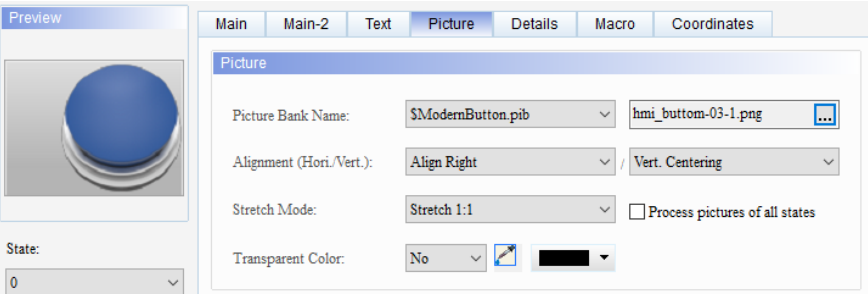













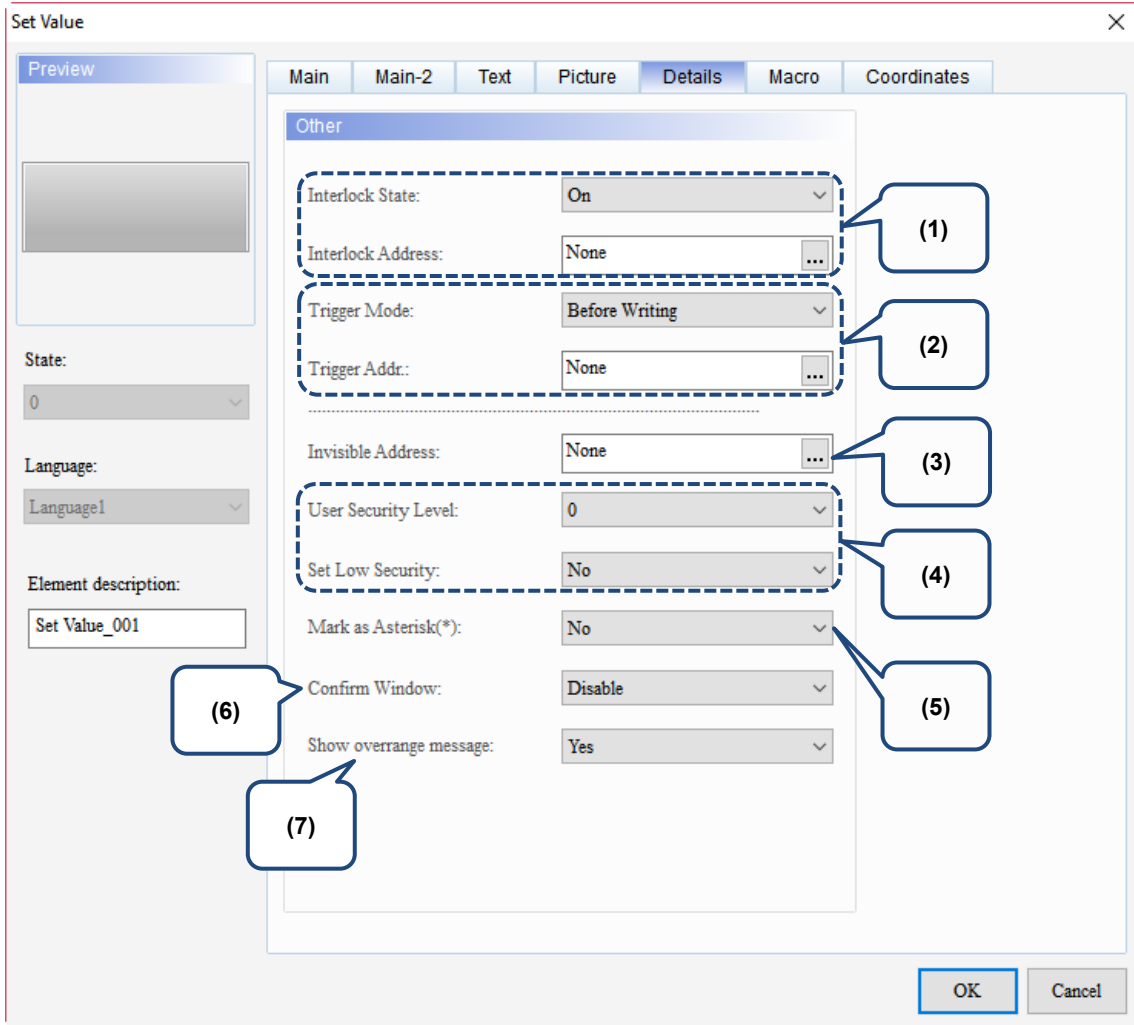
Figure 5.3.5 Picture property page for the Set Value element

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures.</p>  <p>The 'Picture' dialog box includes the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: None (with a dropdown menu listing various banks like \$3DButton.pib, \$3DCButton.pib, etc.) Alignment (Hori./Vert.): Vert. Centering Stretch Mode: (empty) Transparent Color: (empty) <p>The 'Select Picture' dialog box displays a grid of button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

5

No.	Property	Function description									
	Alignment	<p>You can use the Alignment options to set how pictures are aligned.</p> 									
(2)	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and select the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> 									

■ Details




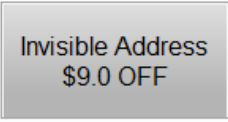
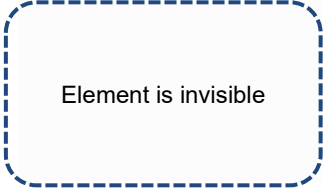
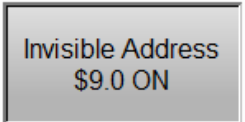
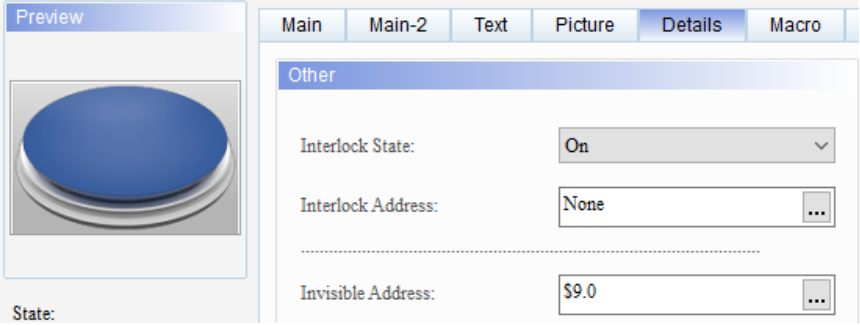

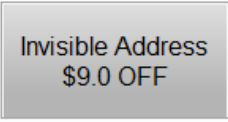
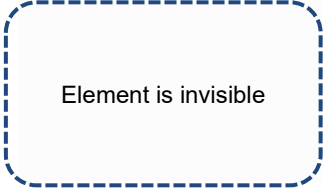
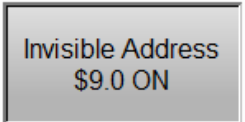

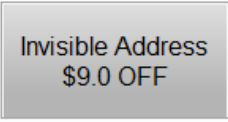
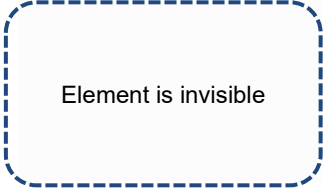
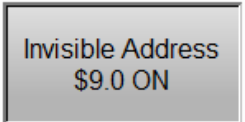
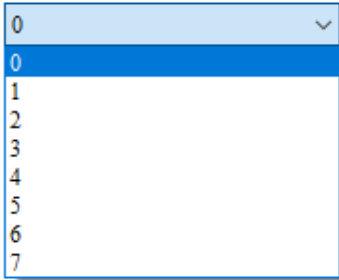
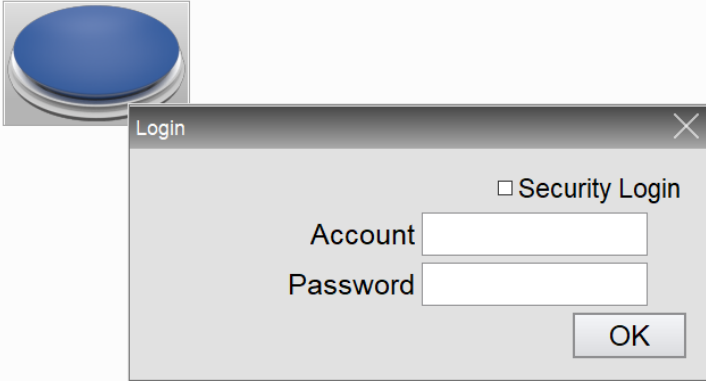
5

Figure 5.3.6 Details property page for the Set Value element

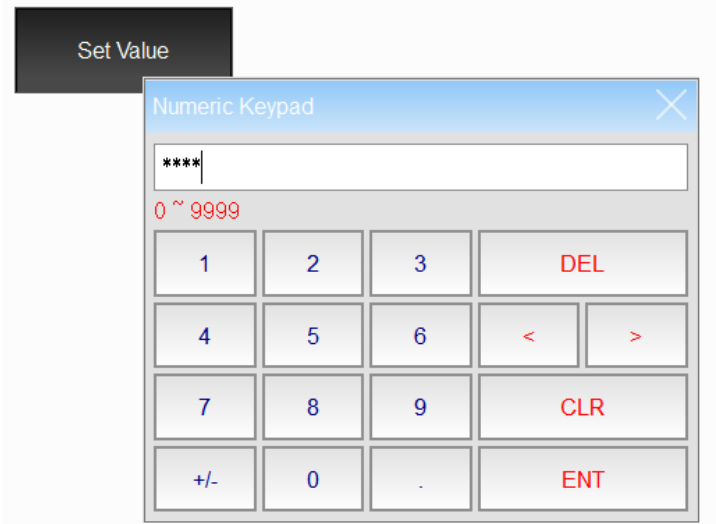
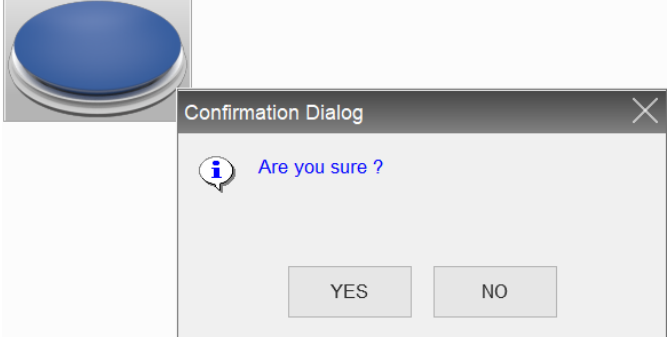
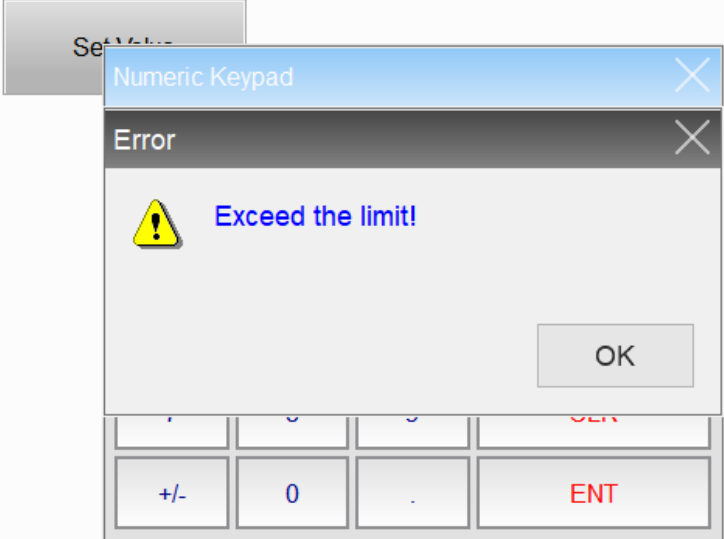
5

No.	Property	Function description
(1)	Interlock State / Interlock Address	<ul style="list-style-type: none"> The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock is ON. The following describes how it works: <ol style="list-style-type: none"> Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.

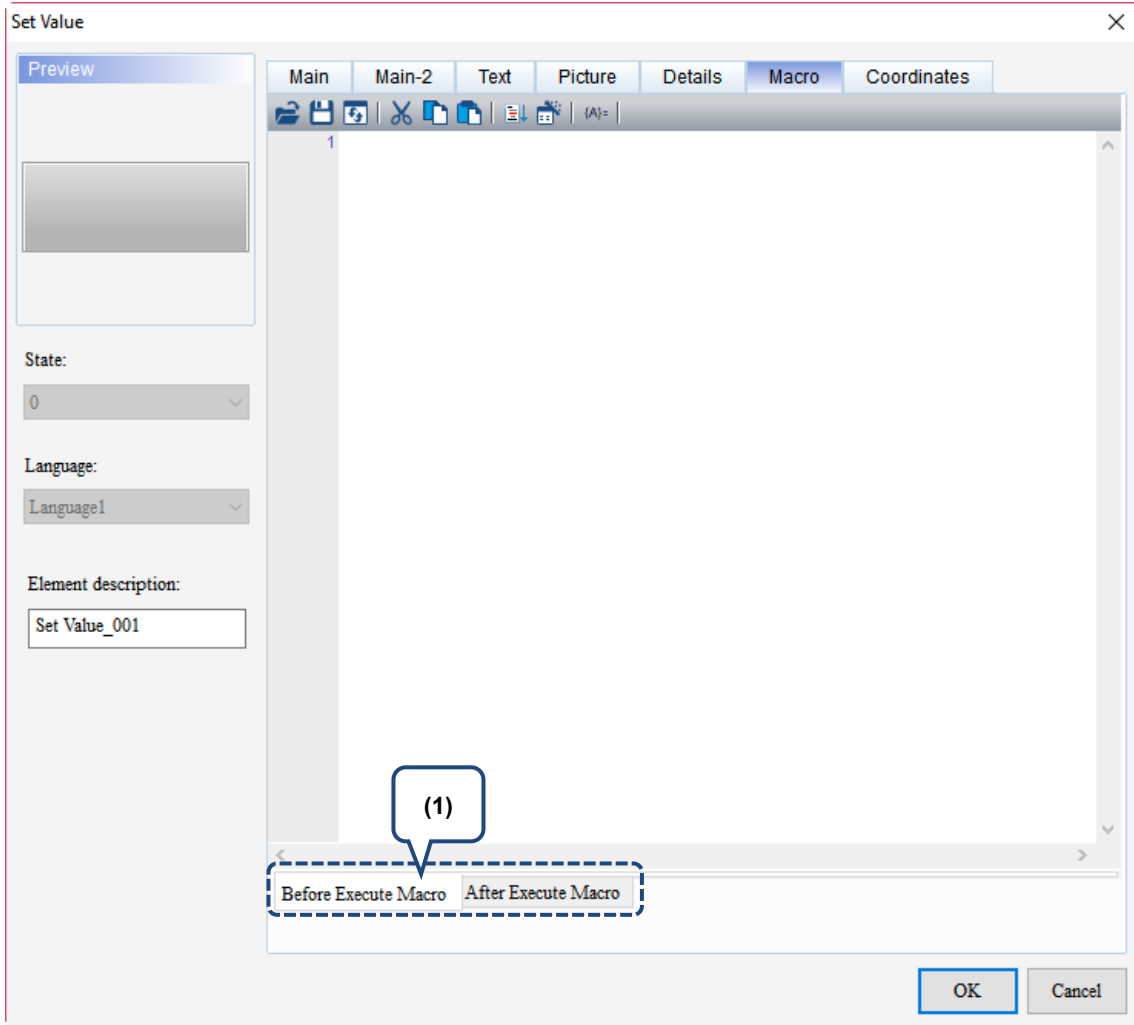
(2)	Trigger Mode / Trigger Address	<ul style="list-style-type: none"> There are two trigger modes: Before Writing and After Writing. <table border="1"> <thead> <tr> <th></th> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td>Trigger type</td> <td>Set the Trigger Address to ON before changing values.</td> <td>Change values before setting the Trigger Address to ON.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> The trigger function only specifies the set Trigger Address to ON, so you need to specify the Trigger Address to OFF if triggering again is required. <div style="display: flex; justify-content: space-around;"> <div> <p>Flowchart of Before Writing</p> </div> <div> <p>Flowchart of After Writing</p> </div> </div>		Before Writing	After Writing	Trigger type	Set the Trigger Address to ON before changing values.	Change values before setting the Trigger Address to ON.
	Before Writing	After Writing						
Trigger type	Set the Trigger Address to ON before changing values.	Change values before setting the Trigger Address to ON.						

No.	Property	Function description						
(3)	Invisible Address	<p>When the Invisible Address is set to On, the button element is invisible and you cannot enable its functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td>  </td> <td>  </td> </tr> <tr> <td>Invisible Address is on</td> <td>  </td> <td>  </td> </tr> </table> 	Invisible Address is off			Invisible Address is on		
	Invisible Address is off							
Invisible Address is on								
(4)	User Security Level	<p>User Security Level:</p> <p>Set Low Security:</p> <p>Min. Press Time (sec):</p> <p>Confirm Window:</p>  <ul style="list-style-type: none"> ■ This function sets the permission level for pressing the element; this operation is available for users with the set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element, please refer to Section 5.7.2 Password Table Setup). 						
	Set Low Security	 <ul style="list-style-type: none"> ■ If you set the Set Low Security to Yes, each time you enter the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to enter the password for the corresponding security level again. 						

5

No.	Property	Function description
(5)	Mark as Asterisk (*)	<p>If you set the item to Yes, the values displayed are marked as asterisks when you input values to the Numeric Keypad.</p> 
(6)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog pops up for you to confirm the pressing action after pressing the element.</p> 
(7)	Show overrange message	<p>If you set the Show overrange message to Yes, when the inputted value exceeds the set data range, an error message pops up to remind you as shown below:</p> 

■ Macro



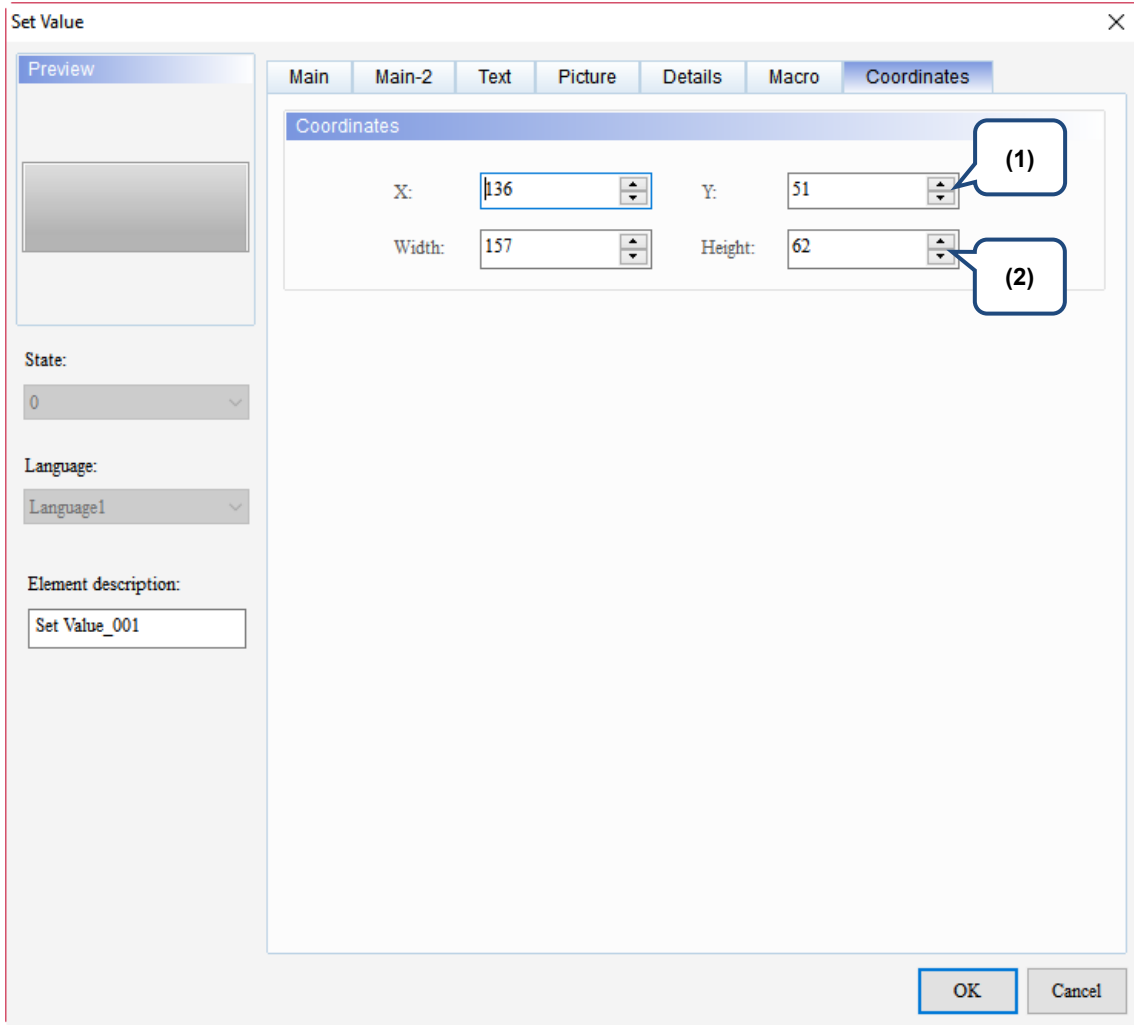
5

Figure 5.3.7 Macro property page for the Set Value element

5

No.	Property	Function description
(1)		<p>Flowcharts of Before / After Execute Macro:</p>
	<p>Before Execute Macro</p>	<p>When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>
<p>After Execute Macro</p>	<p>When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>	

■ Coordinates



5

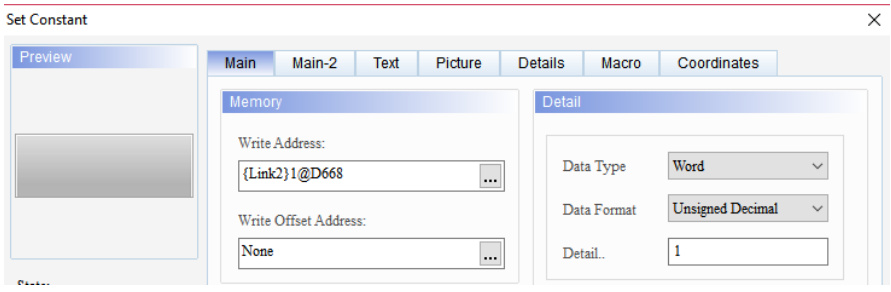
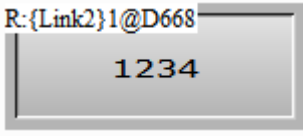

Figure 5.3.8 Coordinates property page for the Set Value element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

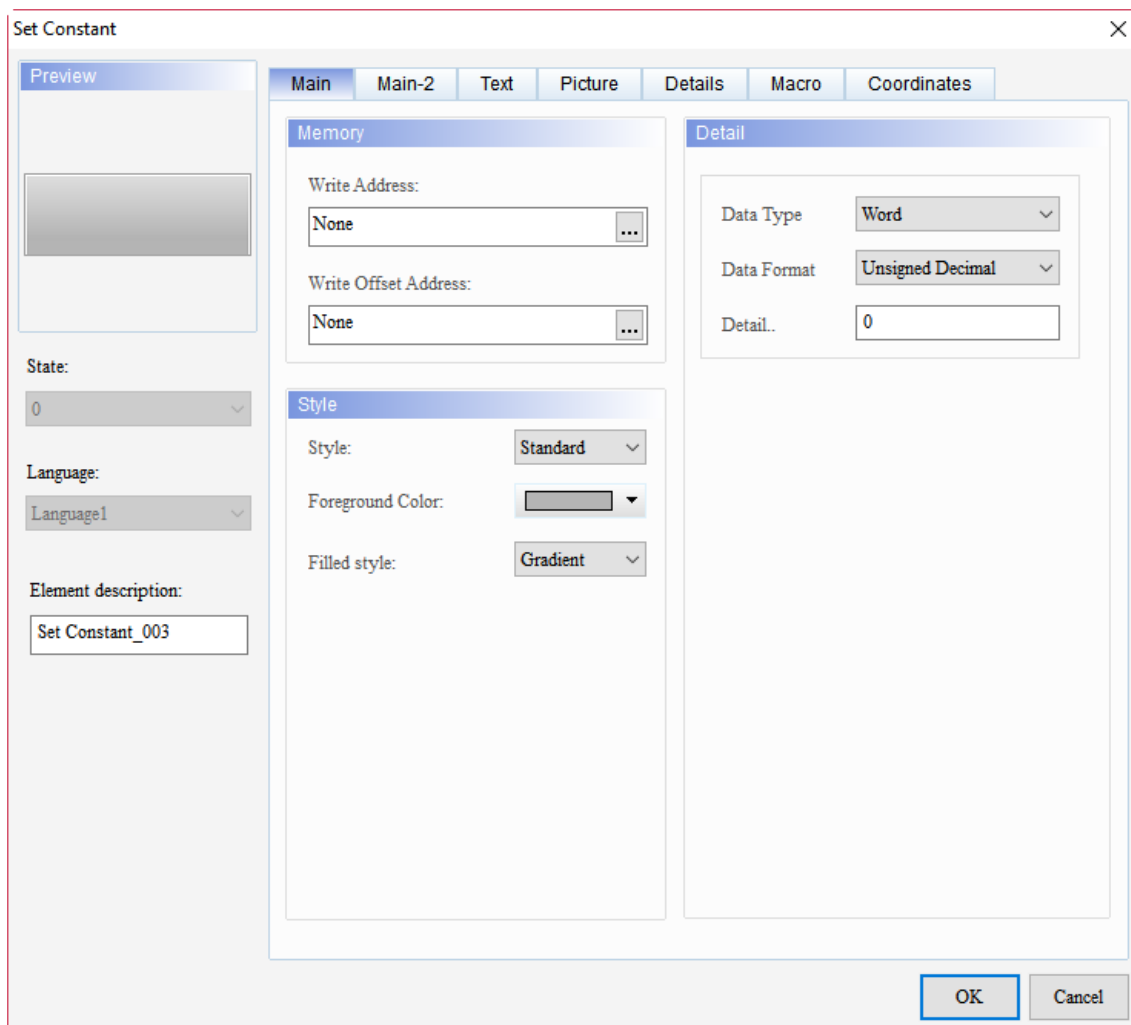
5.4 Set Constant

When you touch this button on the HMI end, the HMI changes the register data into the specified Constant. Please refer to Table 5.4.1 Set Constant example.

Table 5.4.1 Set Constant example

Set Constant	
Memory address of the Set Constant element	
Detail of the Set Constant element	
Memory address of the Numeric Display element	<p>Set the Numeric Display element address to D668.</p> 
Data Type	Word
Execution results	<p>Press Set Constant and write 1 into the Numeric Display element.</p> 

When you double-click the Set Constant element, the property page is shown as follows.



5

Figure 5.4.1 Properties of Set Constant

Table 5.4.2 Function page of Set Constant

Set Constant	
Function page	Description
Preview	The Set Constant elements can only view multi-language data display since the multistate property is not available for this element.
Main	Set the Write Address, Write Offset Address, Style, and Foreground Color. Set the Data Type, Data Format, and Detail for the Set Constant element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Interlock Address, Interlock State, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security Level, and Confirm Window.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

5

■ Main

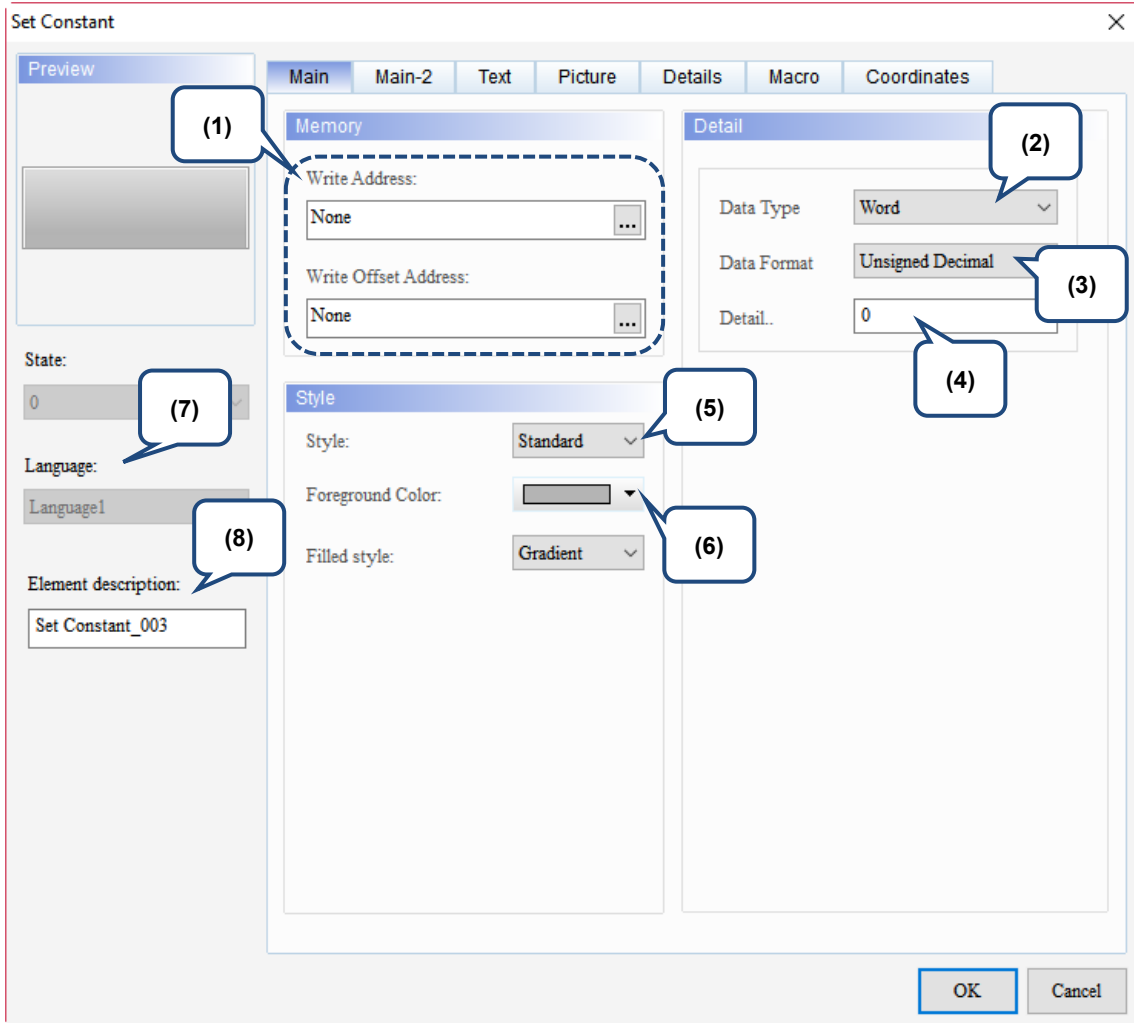
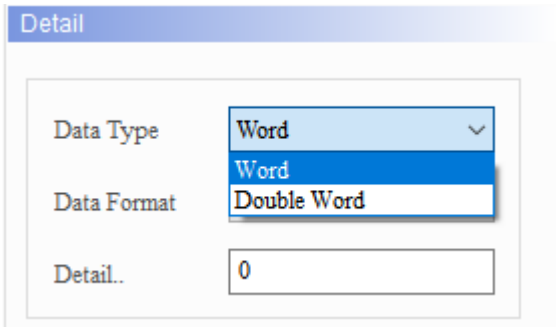
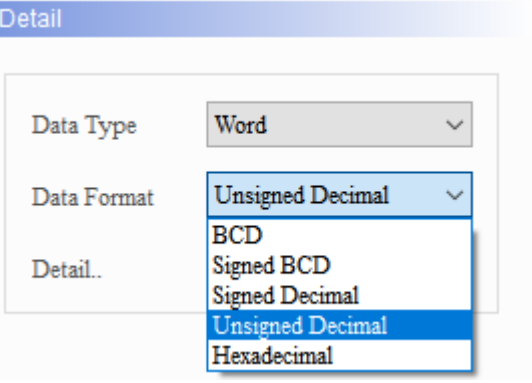
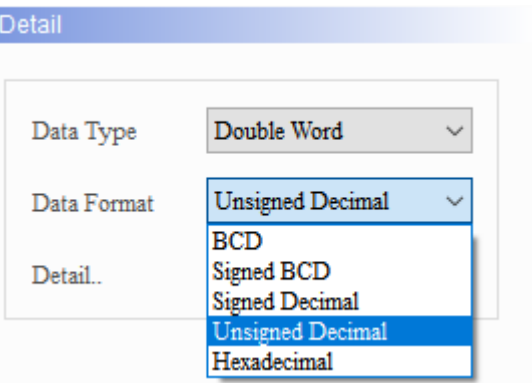
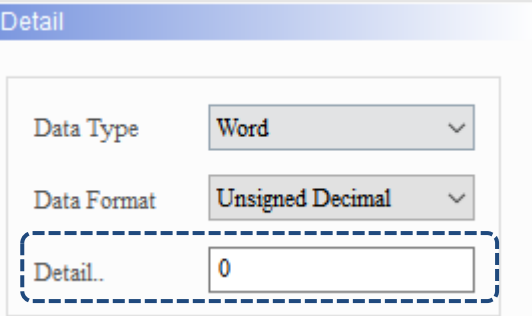
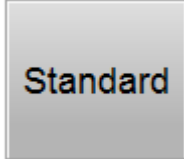
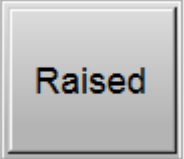

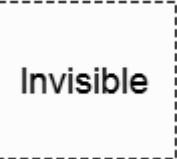
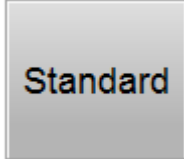
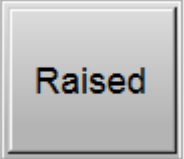

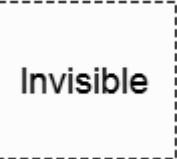
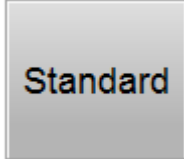
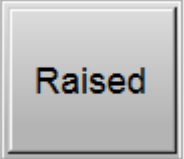

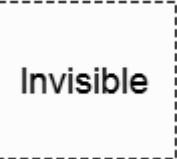
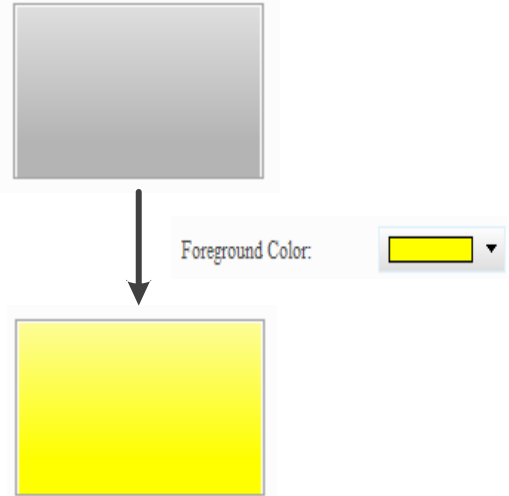
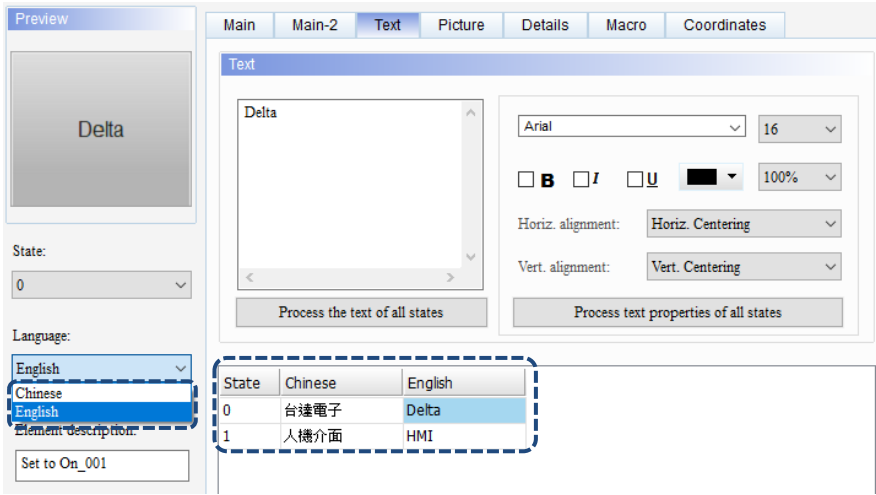


Figure 5.4.2 Main property page for the Set Constant element

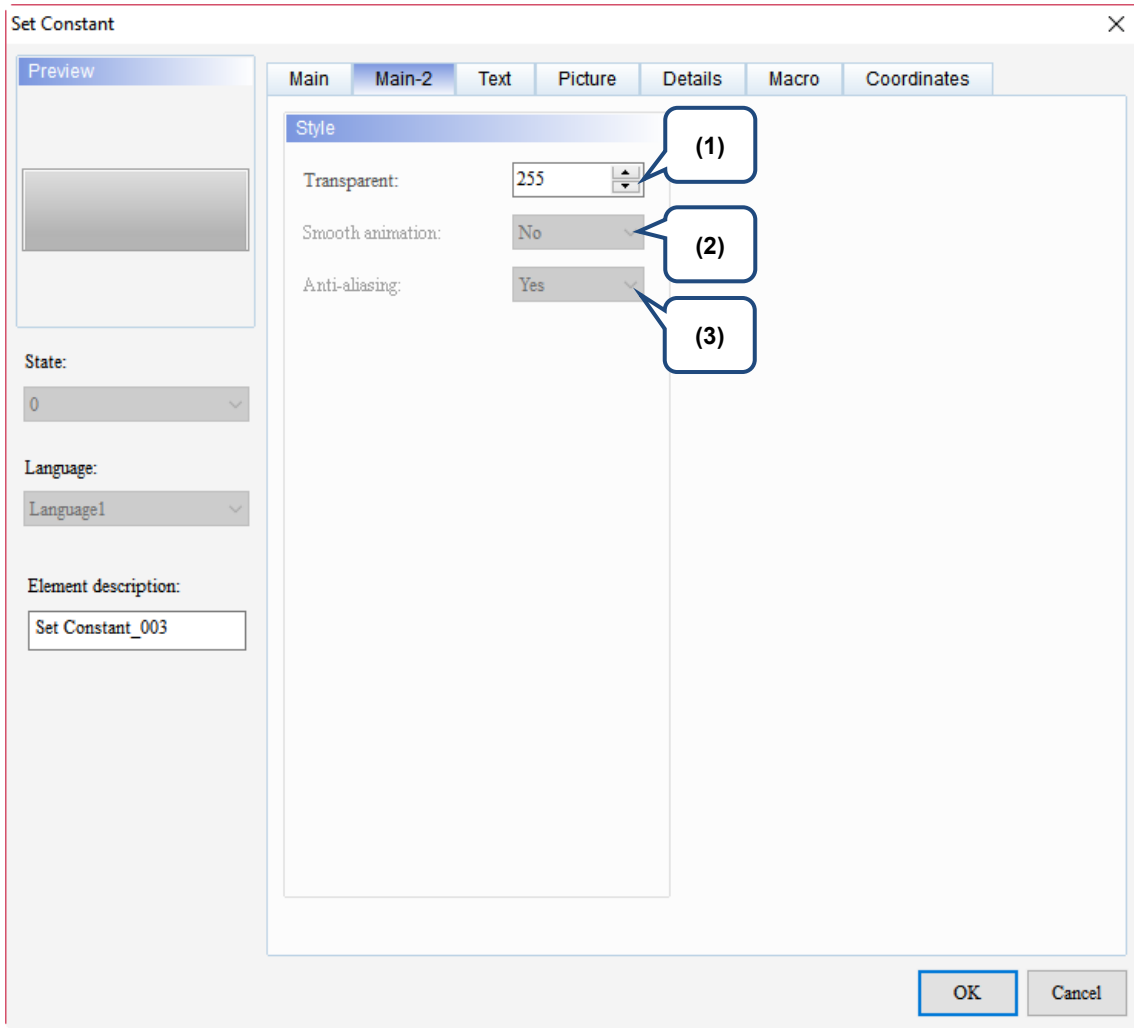
No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> You can choose the internal memory or the controller register address. The input memory type has to be Word. For the Link and Style selection, please refer to Section 5.1.
	Write Offset Address	Please refer to the instructions in Appendix D Write and Read Offset Address.
(2)	Data Type	<p>There are two data types: Word and Double Word.</p> 

No.	Property	Function description								
(3)	Data Format	<ul style="list-style-type: none"> When you set the Data Type to Word, the supported data formats are as follows:  When you set the Data Type to Double Word, the supported data formats are as follows:  								
(4)	Detail	<p>Determine the constant value to input.</p> 								
(5)	Style	<p>The available element styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Round</th> <th>Invisible</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
										

5

No.	Property	Function description																																																																																										
(6)	Foreground Color	<ul style="list-style-type: none"> ■ Set the foreground color of the element. ■ When you set the Style to Invisible, the Foreground Color setting is invalid. 																																																																																										
(7)	Language	<p>If you have set the language data, you can edit the displaying text property, etc. with the Language setting of the element.</p> 																																																																																										
(8)	Element description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.</p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																																				
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																																				
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																																				
3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																																				
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																																				
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																																				
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																																				
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																																				
8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																																				
9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																																				

■ Main-2



5

Figure 5.4.3 Main-2 property page for the Set Constant element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

5

■ Text

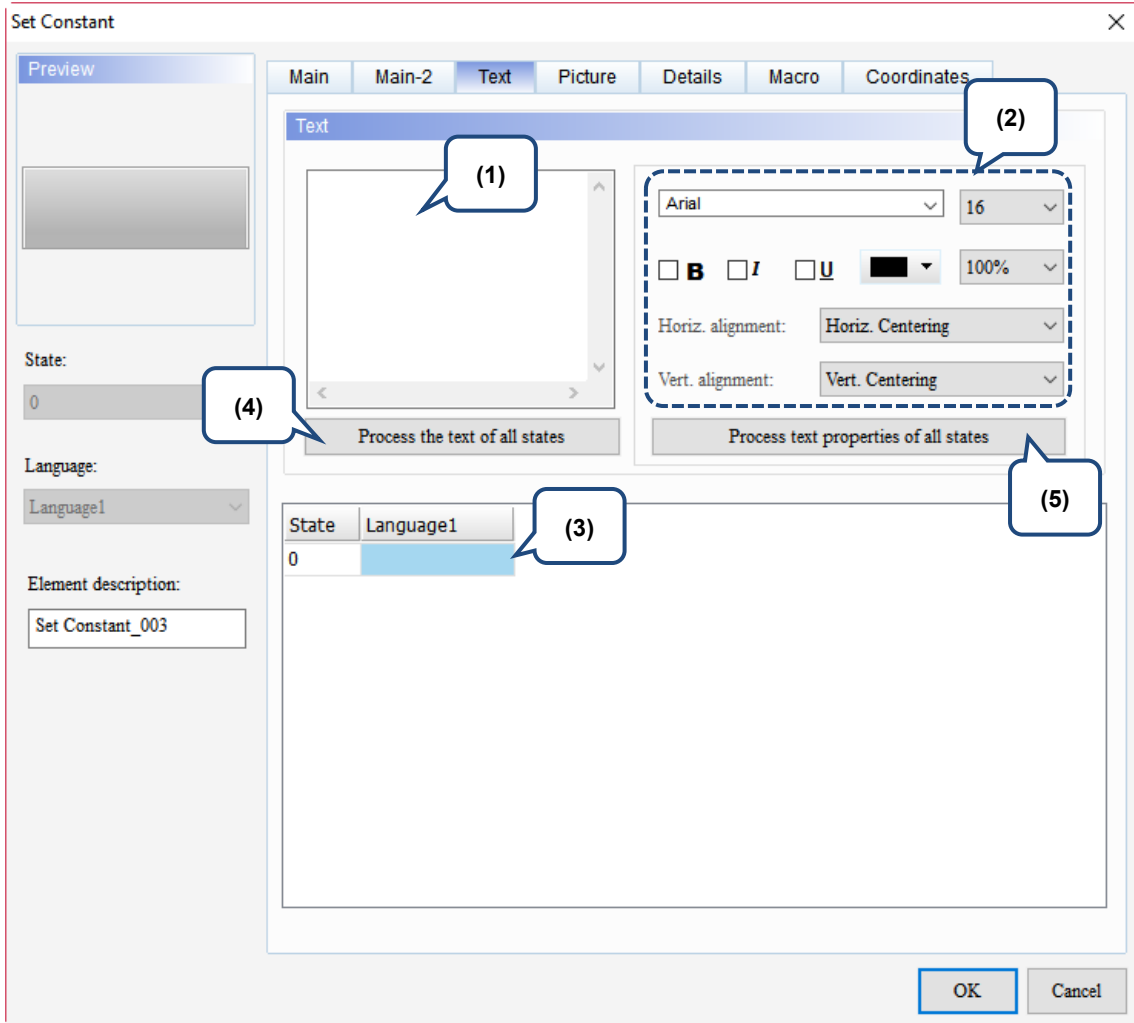
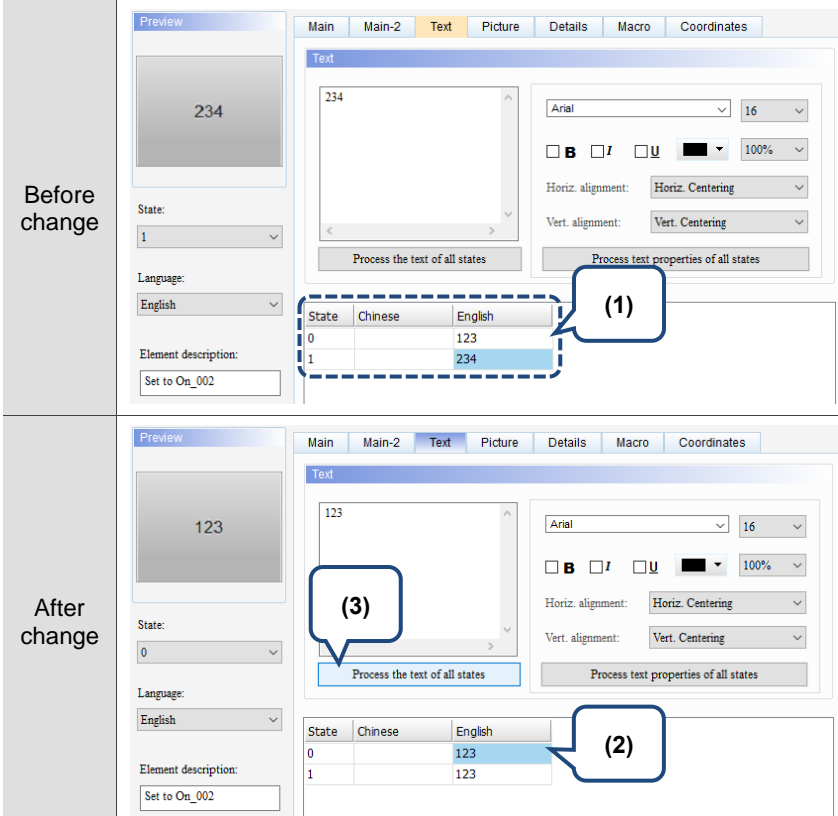


Figure 5.4.4 Text property page for the Set Constant element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can enter the text to be displayed in the text box. <ul style="list-style-type: none"> As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.

No.	Property	Function description
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>■ When this function is enabled, it batch changes the texts of the specified state. The following illustrates the steps:</p> <ol style="list-style-type: none"> 1. Input 123 to State 0, and 234 to State 1. 2. Click State 0. 3. Click Process the text of all states, and the State 1 text changes to 123. 

5

No.	Property	Function description
(5)	Process text properties of all states	<ul style="list-style-type: none"> ■ When this function is enabled, it batch changes the text properties of the specified state. Items included in the text property are shown in the figure below. <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> </div> ■ The following illustrates the steps: <ol style="list-style-type: none"> 1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial. 2. Click State 0. 3. Click Process text properties of all states, and the State 1 font changes to Segoe Script.

No.	Property	Function description	
(5)	Process text properties of all states	Before change	 <p>The screenshot shows the 'Text' property editor. On the left, a preview window displays the text 'Delta'. Below it, the 'State' dropdown is set to '0'. The 'Language' is 'English' and the 'Element description' is 'Set to On_002'. The main editor shows a preview of 'Delta' with a font dropdown set to 'Script Script' (callout 1). Other settings include font size '16', bold, italic, and underline options, and alignment settings. A table at the bottom shows state 0 with 'Delta' and state 1 with 'HMI'.</p>
		After change	 <p>The screenshot shows the 'Text' property editor after changes. The font dropdown is now set to 'Segoe Script' (callout 2). The 'State' dropdown is set to '1'. The preview window now displays 'HMI'. The table at the bottom shows state 1 with 'HMI' selected (callout 3).</p>

5

■ Picture

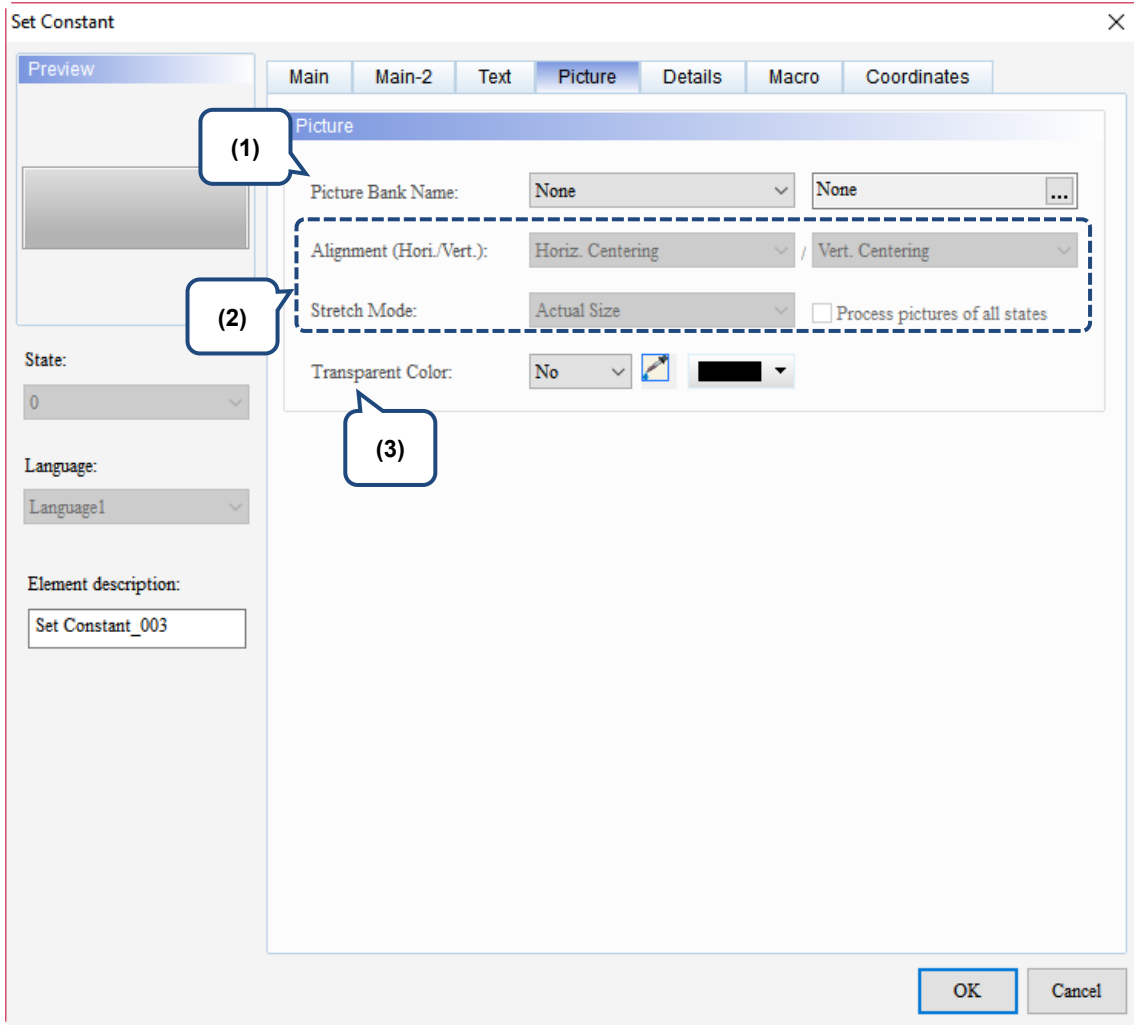
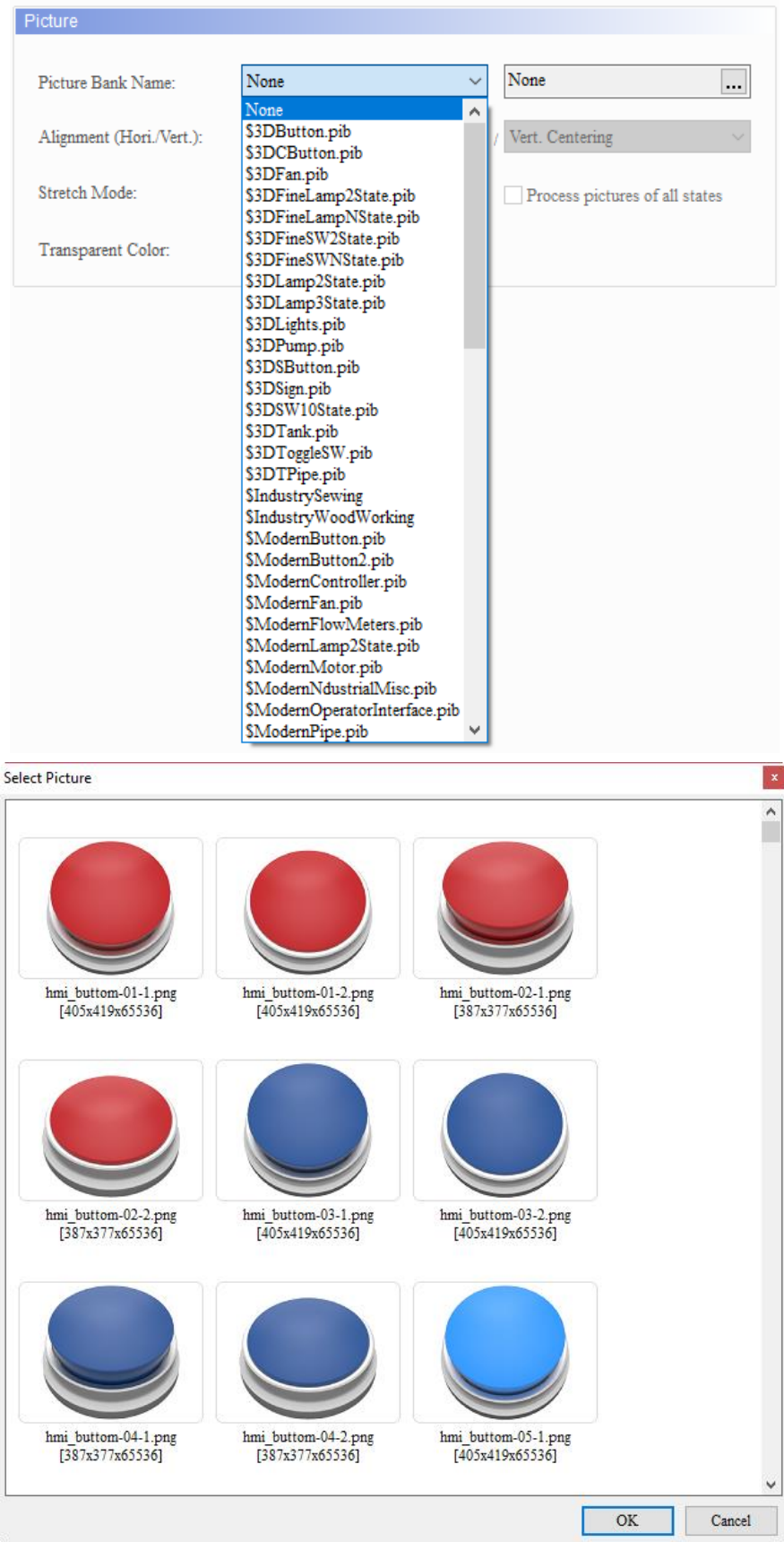
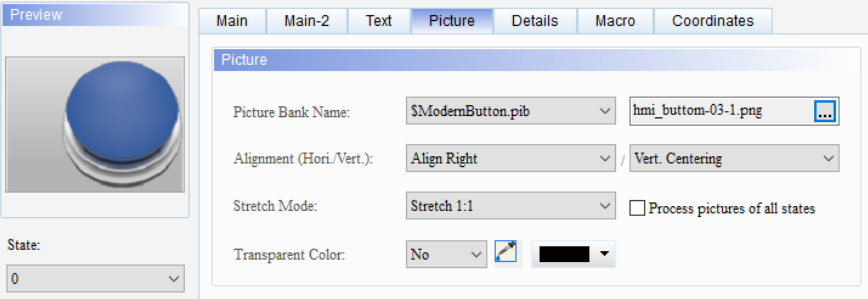














Figure 5.4.5 Picture property page for the Set Constant element

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures.</p>  <p>The 'Picture' dialog box contains the following fields and options:</p> <ul style="list-style-type: none"> Picture Bank Name: A dropdown menu currently showing 'None'. Alignment (Hori./Vert.): A dropdown menu showing 'Vert. Centering'. Stretch Mode: A dropdown menu. Transparent Color: A dropdown menu. Process pictures of all states: An unchecked checkbox. <p>The 'Select Picture' dialog box displays a grid of 9 button images with their respective file names and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

5

No.	Property	Function description									
<p>(2)</p>	<p>Alignment</p>	<ul style="list-style-type: none"> You can use the Alignment options to set the picture alignment.  <ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
	Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
<p>Stretch Mode</p>	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> 										
<p>(3)</p>	<p>Transparent Color</p>										

■ Details

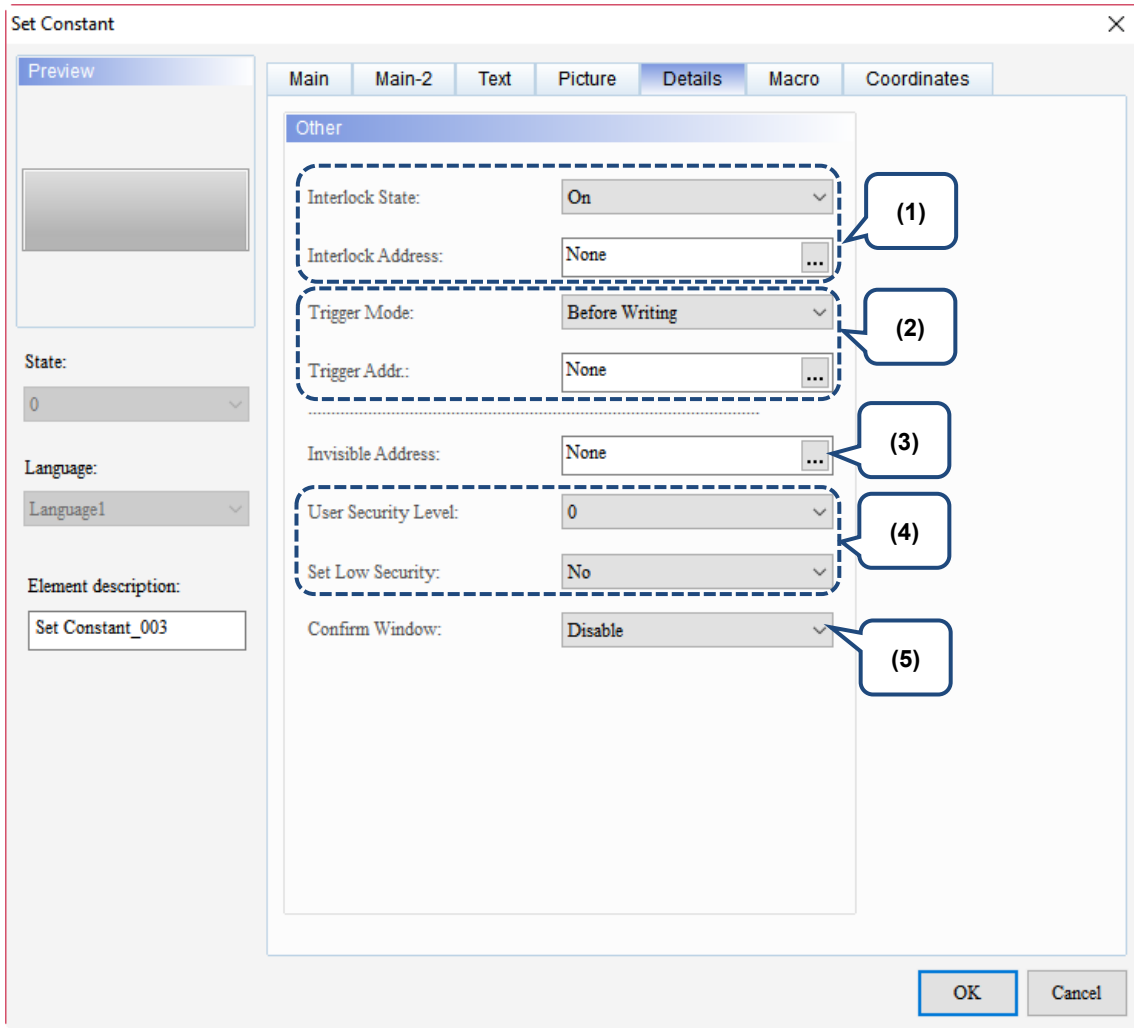
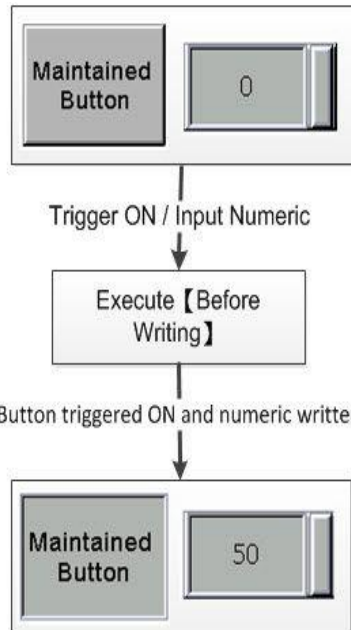
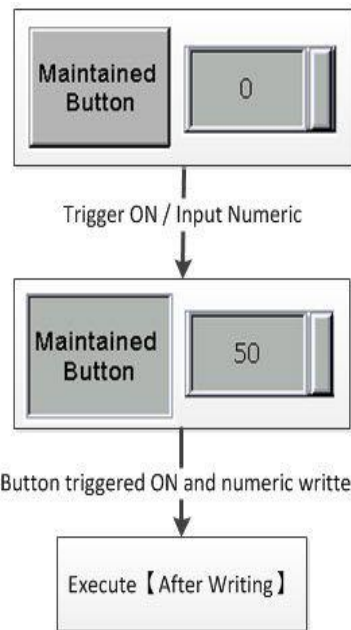
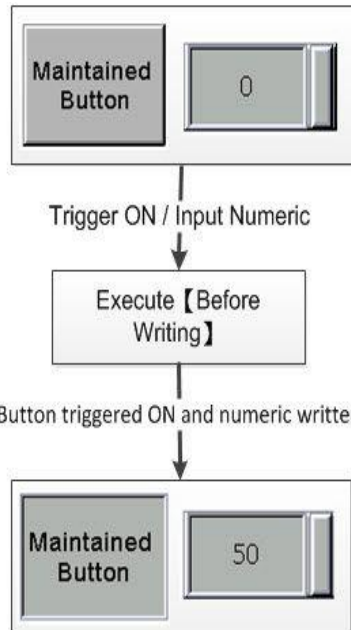
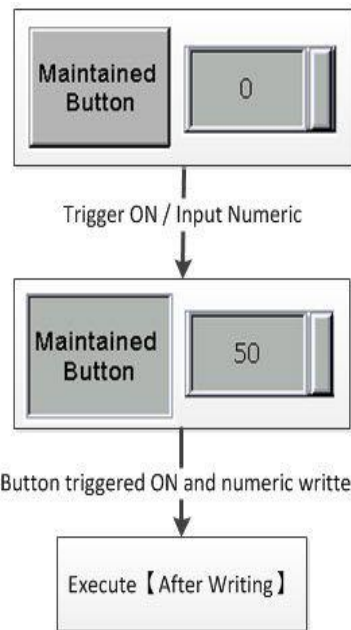
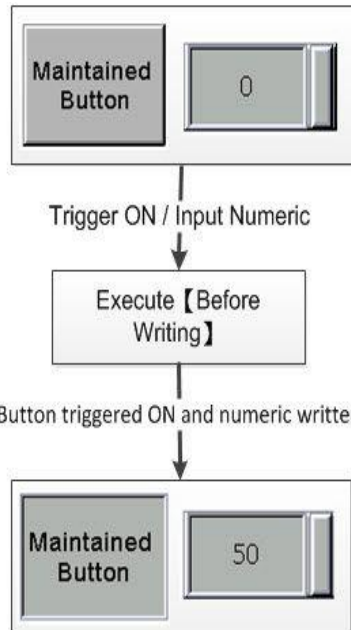
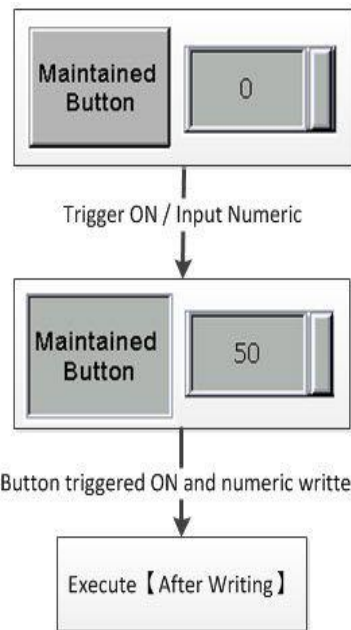

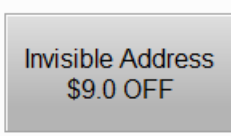
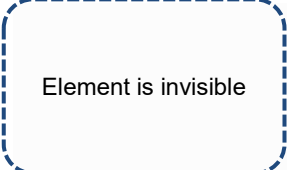
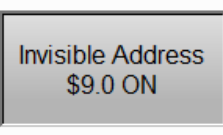

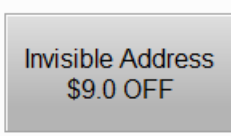
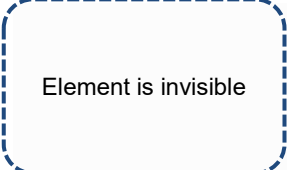
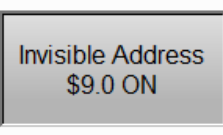

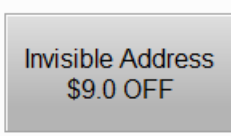
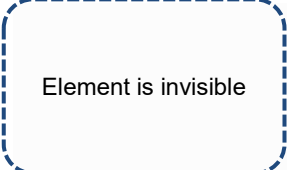
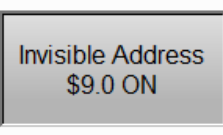


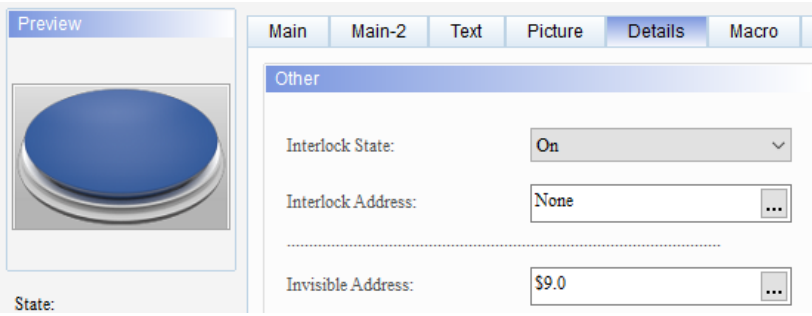
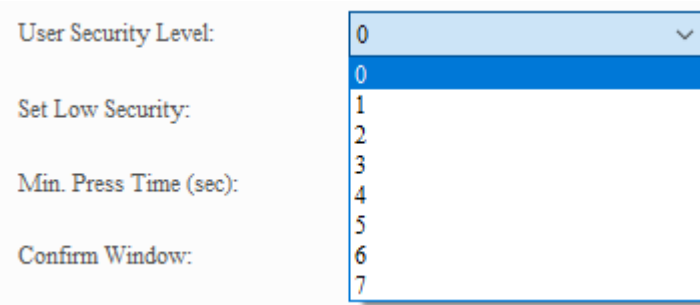
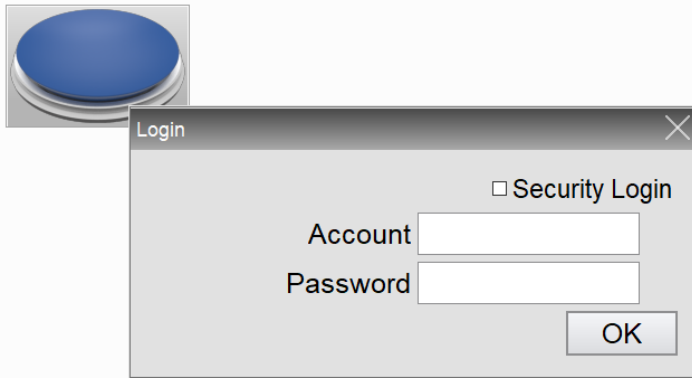
Figure 5.4.6 Details property page for the Set Constant element

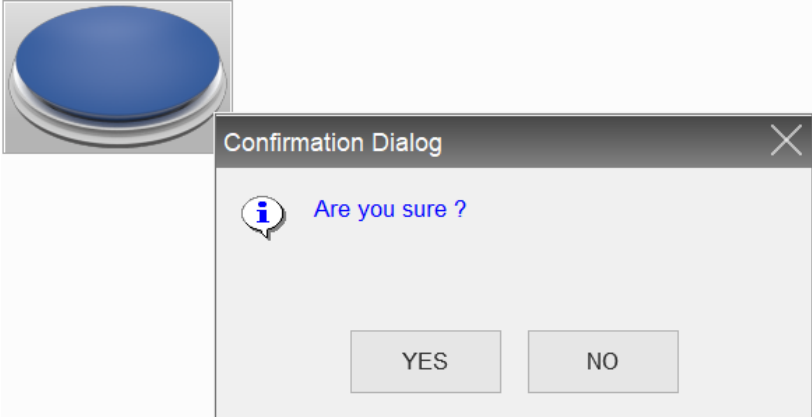
5

No.	Property	Function description
(1)	Interlock State / Interlock Address	<ul style="list-style-type: none"> ■ The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON. ■ The following describes how it works: <ol style="list-style-type: none"> 1. Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0. 2. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.

No.	Property	Function description										
(2)	Trigger Mode / Trigger Address	<ul style="list-style-type: none"> There are two trigger modes: Before Writing and After Writing. <table border="1"> <thead> <tr> <th></th> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td>Trigger type</td> <td>Set the button to ON before changing values.</td> <td>The button turns to ON after changing values.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> You can create a button element, set the address, and select Before Writing or After Writing to trigger the specified controller Bit address to ON. The trigger function only turns the controller address to ON, so you need to turn the address to OFF if triggering again is required. <table border="1"> <thead> <tr> <th>Flowchart of Before Writing</th> <th>Flowchart of After Writing</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>		Before Writing	After Writing	Trigger type	Set the button to ON before changing values.	The button turns to ON after changing values.	Flowchart of Before Writing	Flowchart of After Writing		
	Before Writing	After Writing										
Trigger type	Set the button to ON before changing values.	The button turns to ON after changing values.										
Flowchart of Before Writing	Flowchart of After Writing											
												
(3)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p> <table border="1"> <tbody> <tr> <td>Invisible Address is off</td> <td>  </td> <td>  </td> </tr> <tr> <td>Invisible Address is on</td> <td>  </td> <td>  </td> </tr> </tbody> </table>	Invisible Address is off			Invisible Address is on						
Invisible Address is off												
Invisible Address is on												

5

No.	Property	Function description
		
(4)	User Security Level	 <ul style="list-style-type: none"> ■ This function sets the permission level for pressing the element; this operation is available for users with the set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element, please refer to Section 5.7.2 Password Table Setup).
	Set Low Security	 <ul style="list-style-type: none"> ■ If you set the Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to input the password for the corresponding security level again.

No.	Property	Function description
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog pops up for you to confirm the pressing action after pressing the element.</p> 

■ Macro

5

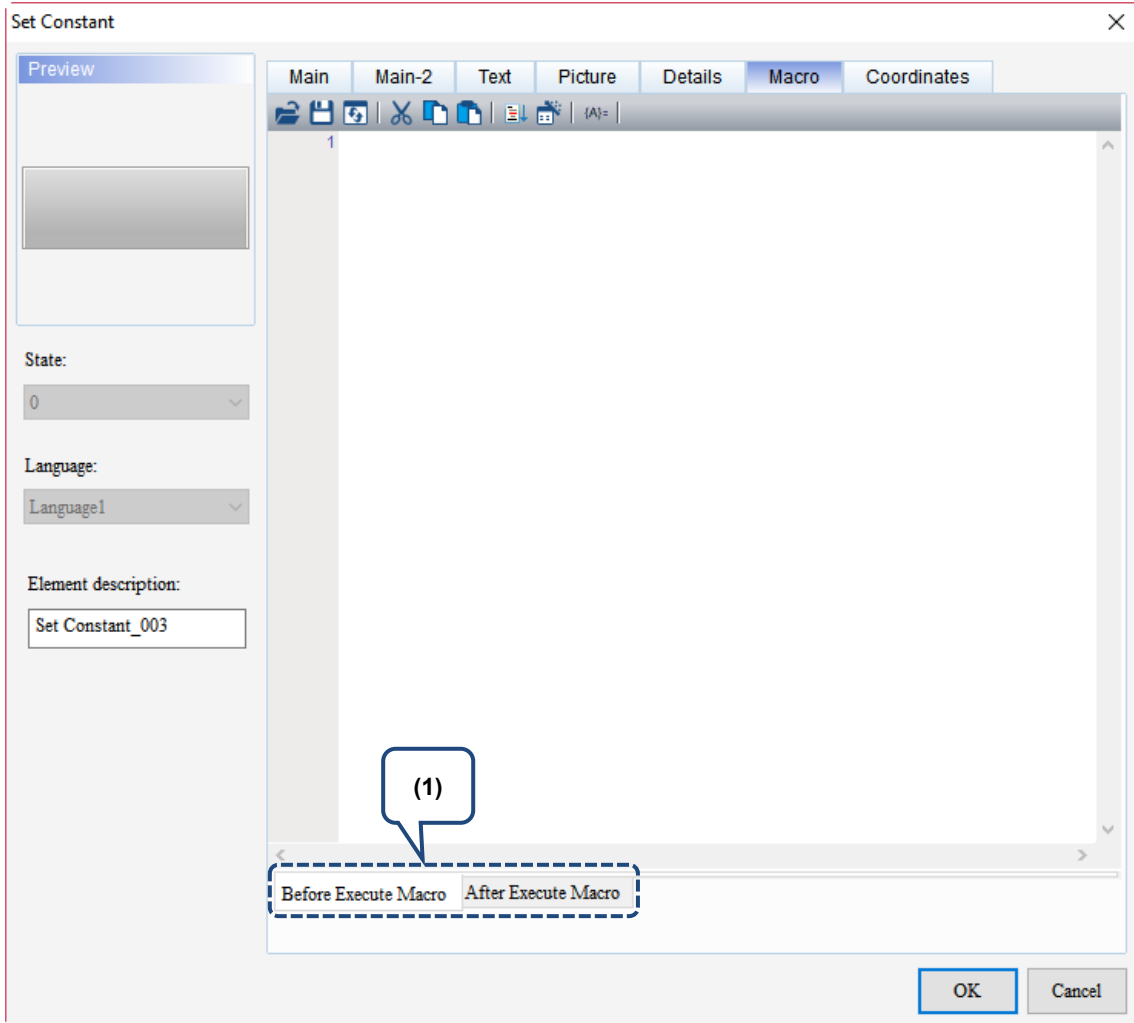


Figure 5.4.7 Macro property page for the Set Constant element

No.	Property	Function description
(1)		<p>Flowcharts of Before / After Execute Macro:</p>
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.

■ Coordinates

5

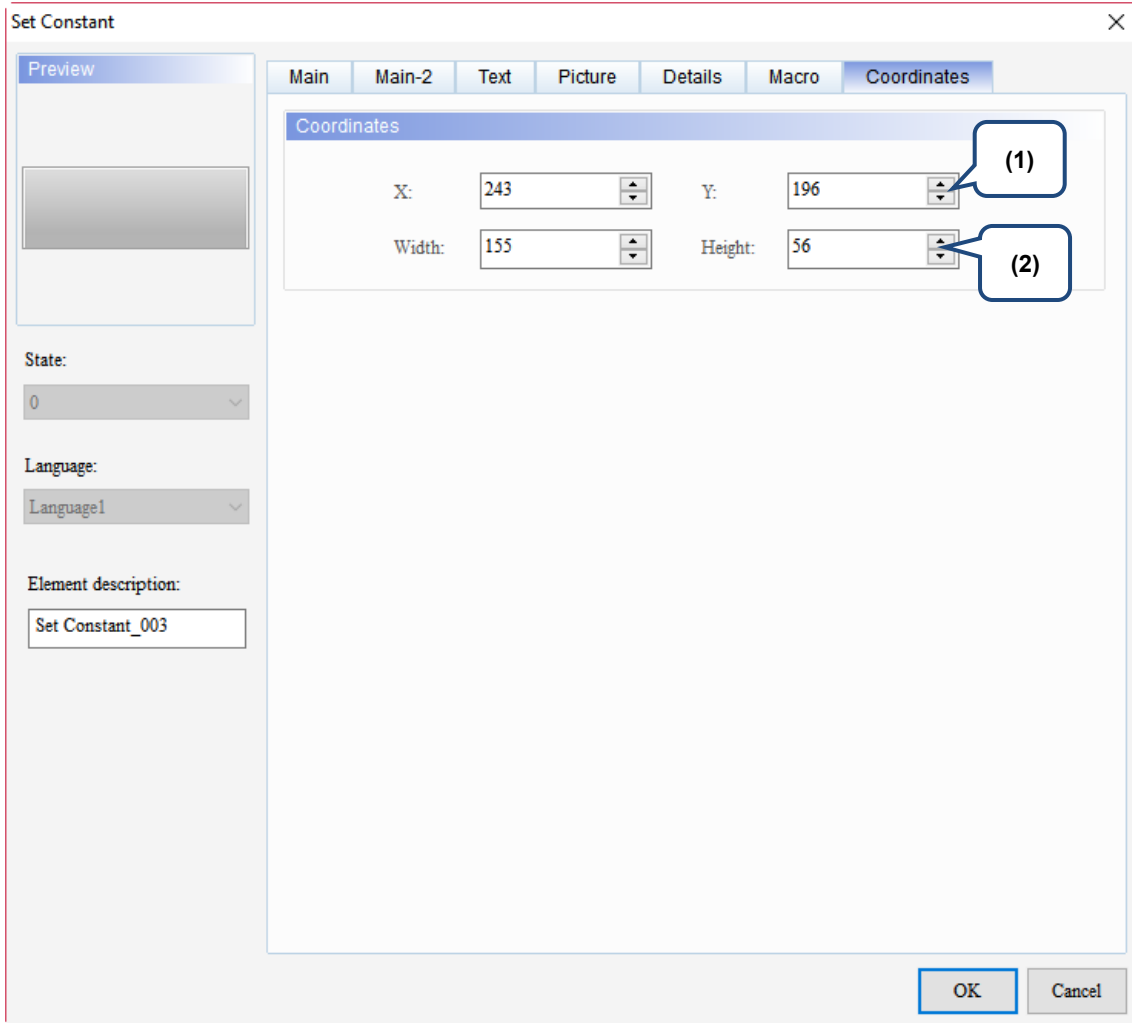


Figure 5.4.8 Coordinates property page for the Set Constant element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

5.5 Increment / Decrement

When you touch the Increment or Decrement button on the HMI end, the HMI reads the register data, adds or deducts the set increment or decrement, and then writes the results into the corresponding register. If the increased or decreased value exceeds the set upper or lower limit, the Increment / Decrement button maintains the upper / lower limit value in the corresponding register.

Note: if you press and hold the Increment / Decrement button, the value continues to increase or decrease.

Table 5.5.1 Increment / Decrement example

Increment / Decrement					
Memory address	The Increment element Write Address: \$555 The Decrement element Write Address: \$555 The Numeric Display element Read Address: \$555				
Increment/Decrement setting values	<table border="1"> <thead> <tr> <th>Increment</th> <th>Decrement</th> </tr> </thead> <tbody> <tr> <td> <div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>Increase/Decrease: <input type="text" value="5"/></p> <p>Limit: <input type="text" value="500"/></p> </div> </td> <td> <div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Signed Decimal"/></p> <p>Increase/Decrease: <input type="text" value="7"/></p> <p>Limit: <input type="text" value="-100"/></p> </div> </td> </tr> </tbody> </table>	Increment	Decrement	<div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>Increase/Decrease: <input type="text" value="5"/></p> <p>Limit: <input type="text" value="500"/></p> </div>	<div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Signed Decimal"/></p> <p>Increase/Decrease: <input type="text" value="7"/></p> <p>Limit: <input type="text" value="-100"/></p> </div>
	Increment	Decrement			
<div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>Increase/Decrease: <input type="text" value="5"/></p> <p>Limit: <input type="text" value="500"/></p> </div>	<div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Signed Decimal"/></p> <p>Increase/Decrease: <input type="text" value="7"/></p> <p>Limit: <input type="text" value="-100"/></p> </div>				
Execution results	<table border="1"> <tbody> <tr> <td style="text-align: center;">Increment</td> <td> </td> </tr> <tr> <td style="text-align: center;">Decrement</td> <td> </td> </tr> </tbody> </table>	Increment		Decrement	
Increment					
Decrement					

5

When you double-click the Increment / Decrement element, the property page is shown as follows.

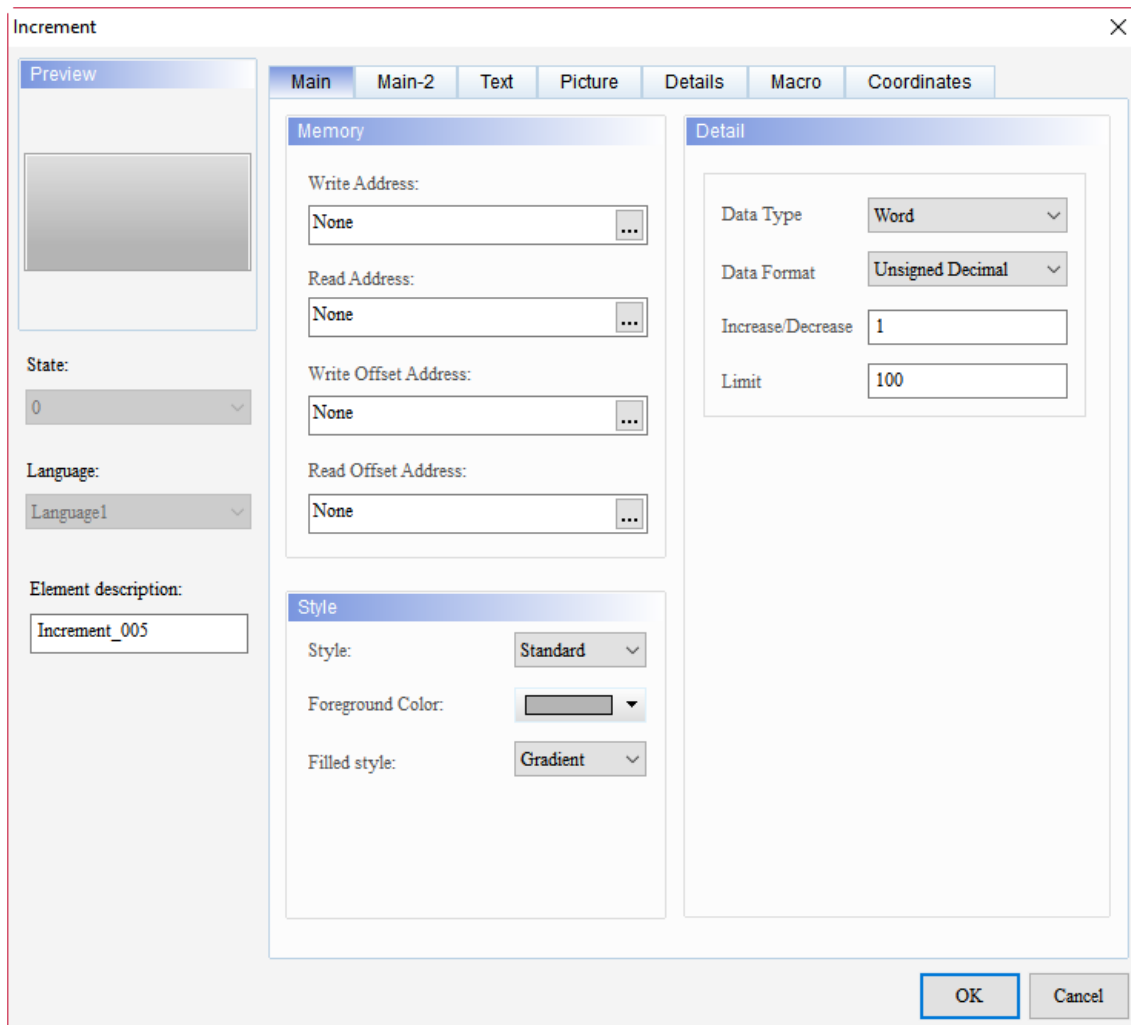
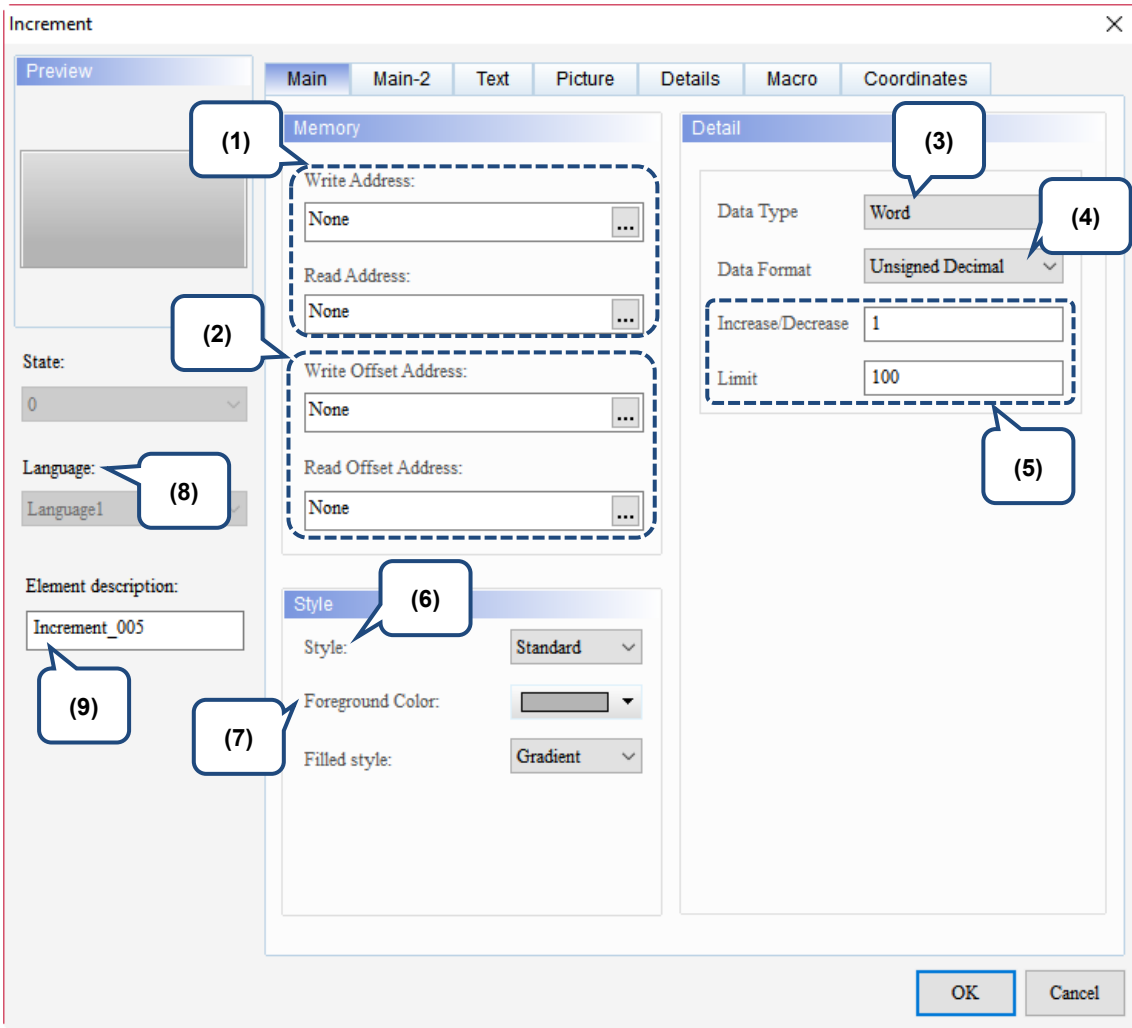


Figure 5.5.1 Properties of Increment / Decrement

Table 5.5.2 Function page of Increment / Decrement

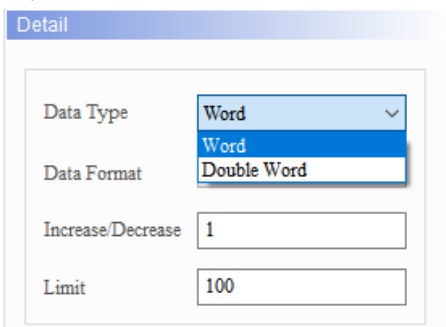
Increment / Decrement	
Function page	Description
Preview	The Increment / Decrement elements are only for viewing multi-language data display since the multistate property is not available for the element.
Main	Set Write Address, Read Address, Write Offset Address, Read Offset Address, Style, and Foreground Color. Set the Data Type, Data Format, Increase / Decrease values, and Limit for the Increment / Decrement elements.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Interlock Address, Interlock State, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security Level, and Confirm Window.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

■ Main

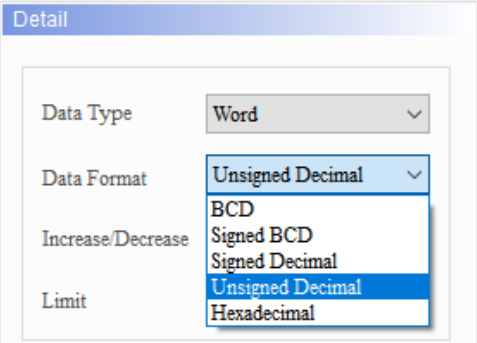
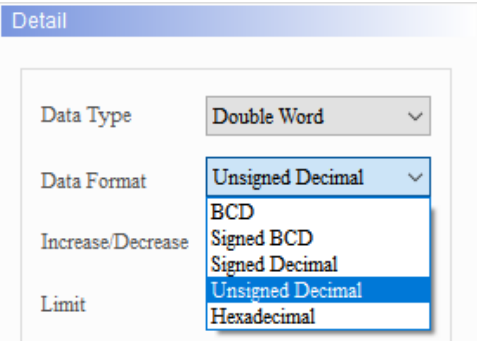
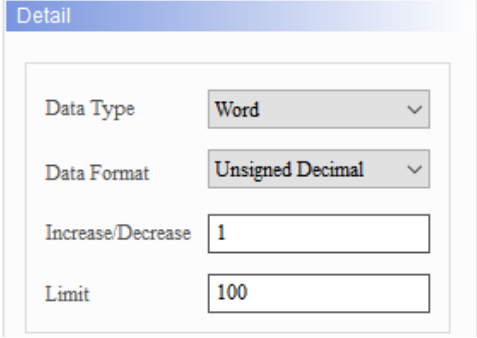
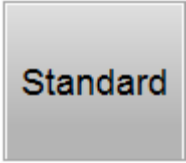
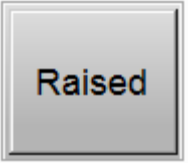


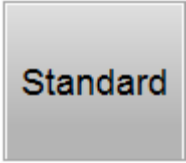
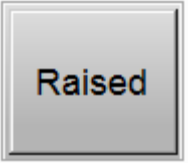


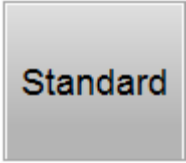
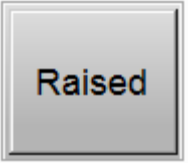




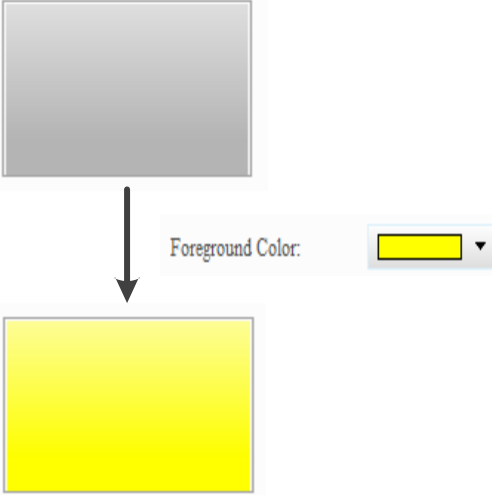
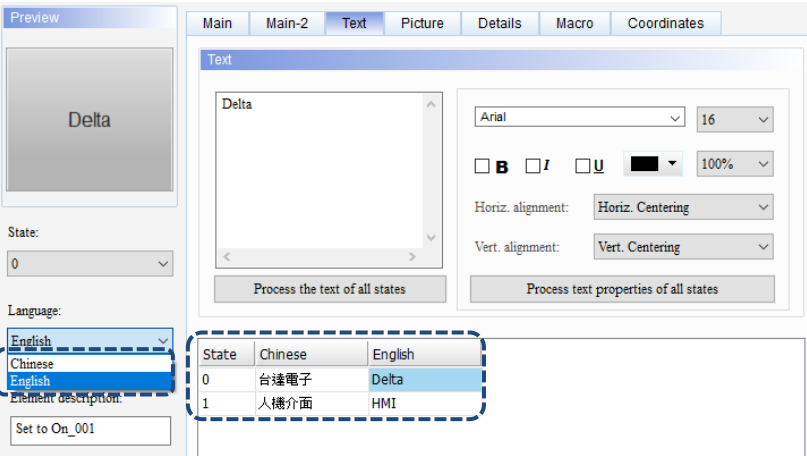
5

Figure 5.5.2 Main property page for the Increment / Decrement elements

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> You can choose the internal memory or the controller register address. The input memory type has to be Word. For the Link and Style selection, please refer to Section 5.1.
	Read Address	
(2)	Write Offset Address	Please refer to the instructions in Appendix D Write and Read Offset Address.
	Read Offset Address	
(3)	Data Type	<p>There are two data types: Word and Double Word.</p> 

5

No.	Property	Function description								
(4)	Data Format	<ul style="list-style-type: none"> When you set the Data Type to Word, the supported data formats are as follows:  When you set the Data Type to Double Word, the supported data formats are as follows:  								
	Increase/Decrease	<ul style="list-style-type: none"> The Increase/Decrease refers to the increment or decrement value when touching the Increment / Decrement buttons. Limit refers to the increasing or decreasing value range. After pressing the confirm button, the DOPSoft checks the value range of the inputted Increase / Decrease values and Limit values according to the selected Data Type and Data Format. 								
(5)	Limit									
(6)	Style	<p>The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Round</th> <th>Invisible</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
										

No.	Property	Function description																																																																																										
(7)	Foreground Color	<ul style="list-style-type: none"> Set the foreground color of the element. When you set the Style to Invisible, the Foreground Color setting is invalid. 																																																																																										
(8)	Language	<p>If you have set the language data, you can edit the displaying text property, etc. with the Language setting of the element.</p> 																																																																																										
(9)	Element description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.</p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8	Screen_22	100 Value	Set Val	85	25
	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																																				
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																																				
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																																				
3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																																				
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																																				
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																																				
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																																				
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																																				
8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																																				
9	13:38:35	5/5/2016	8	Screen_22	100 Value	Set Val	85	25																																																																																				

■ Main-2

5

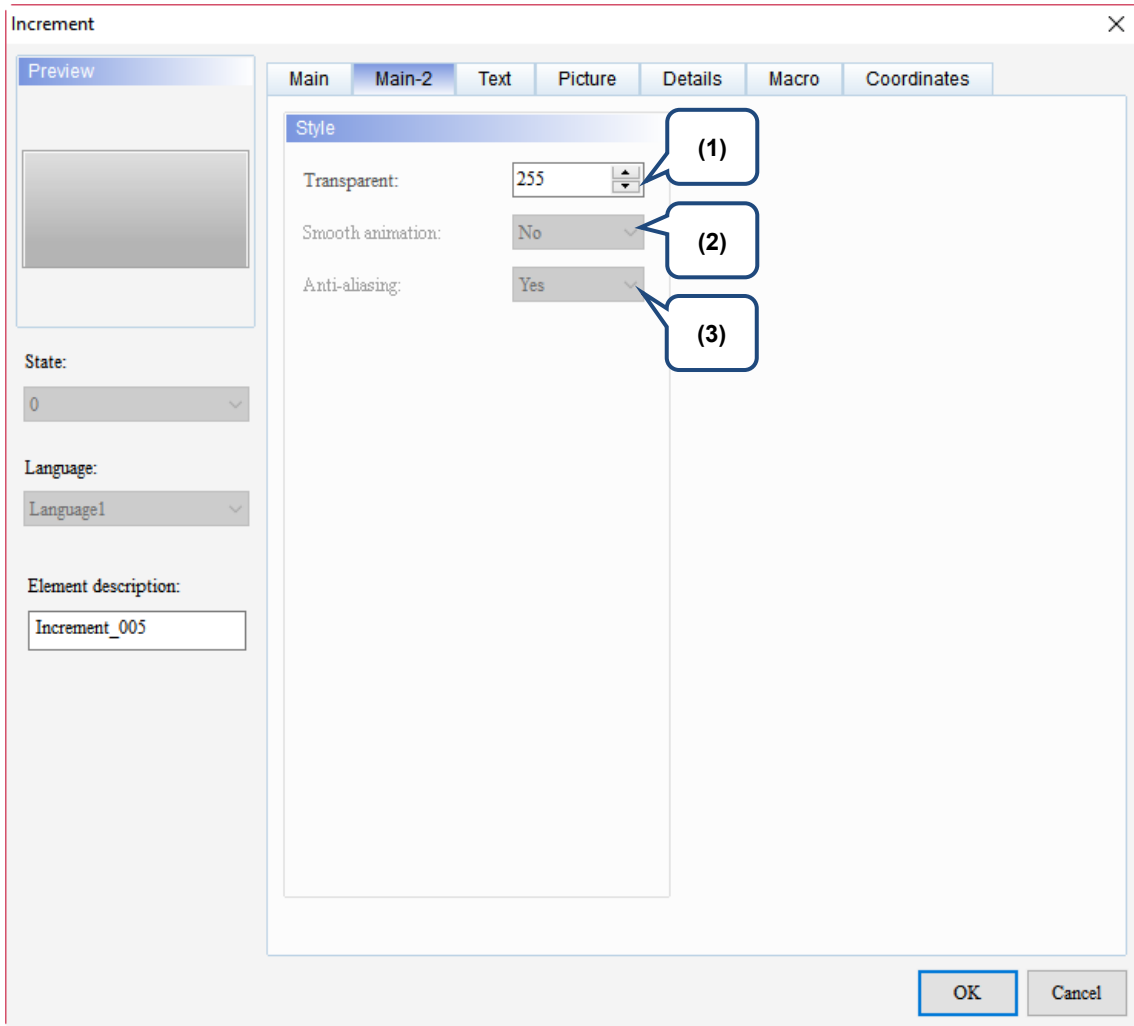


Figure 5.5.3 Main-2 property page for the Increment / Decrement elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

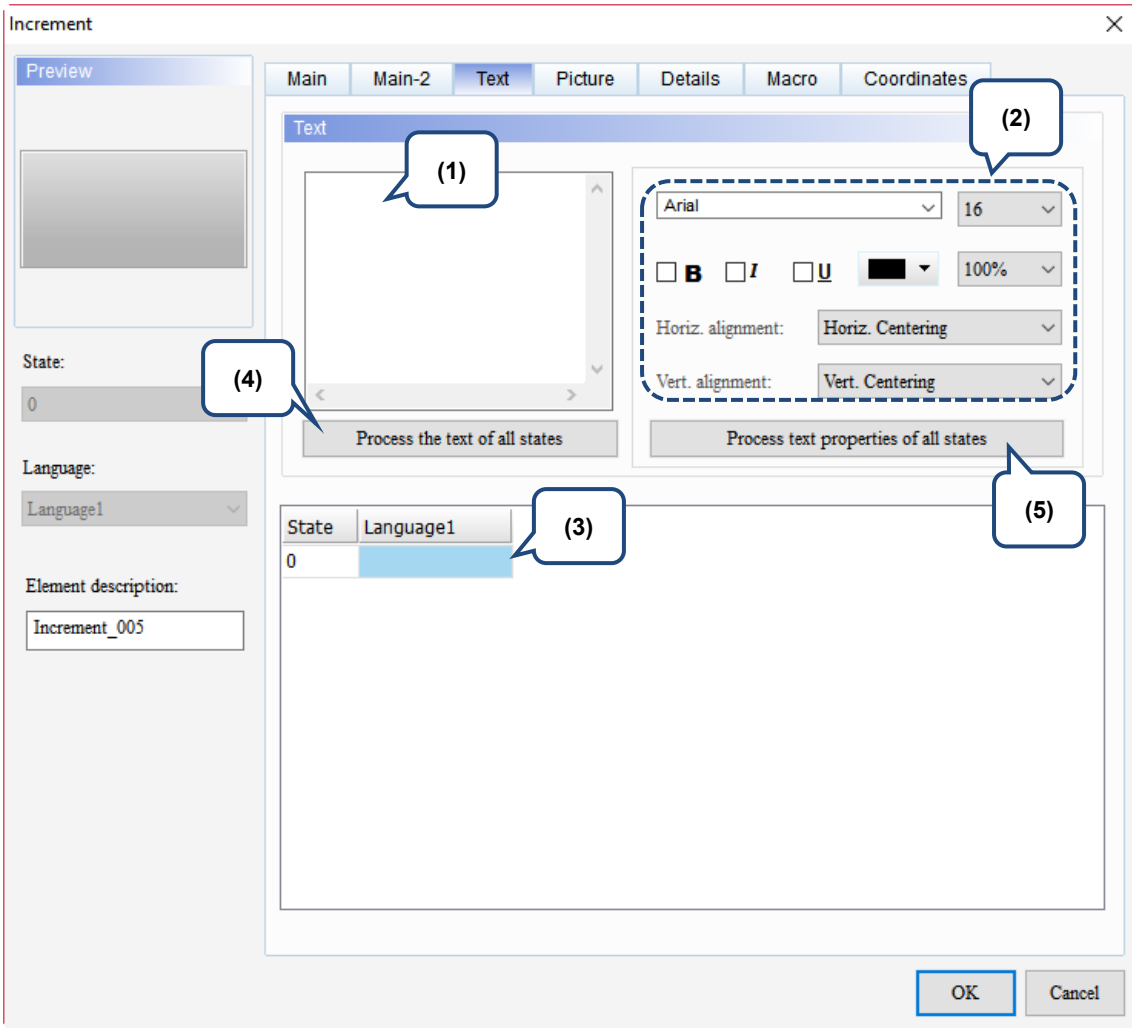
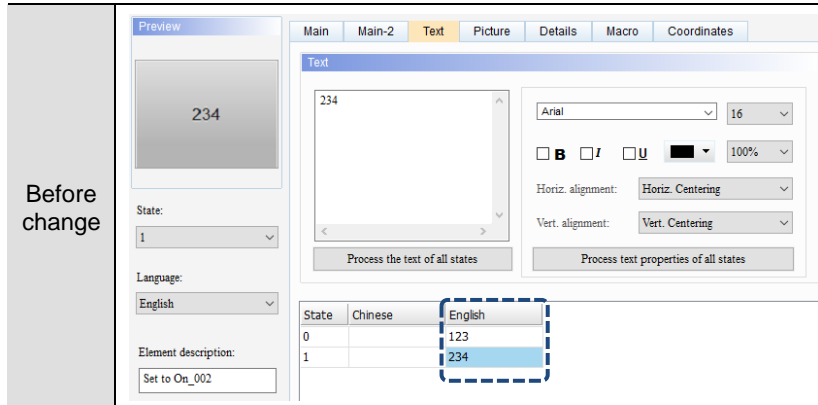
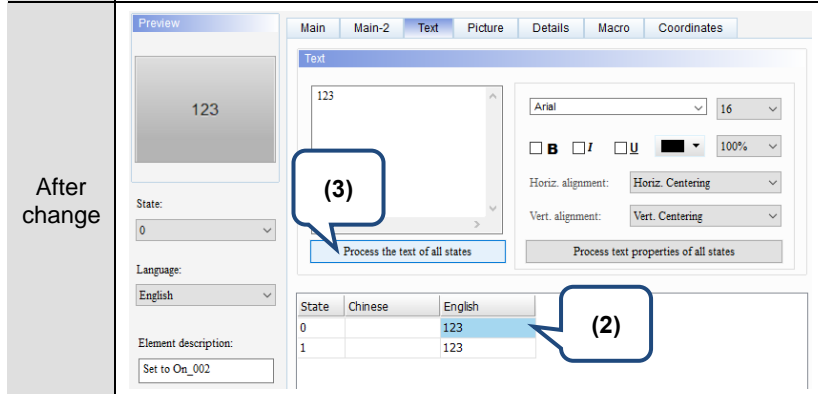
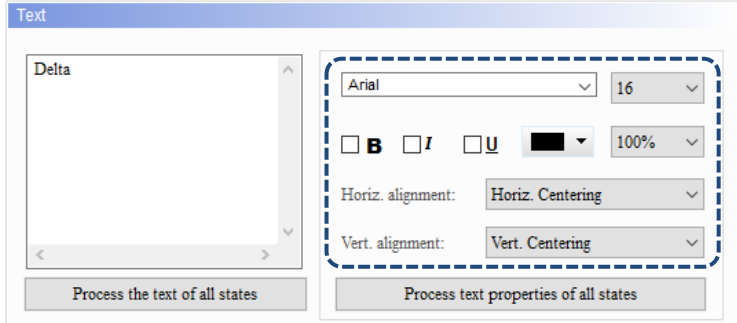


Figure 5.5.4 Text property page for the Increment / Decrement elements

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can input the text to be displayed in the text box. <ul style="list-style-type: none"> As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.

5

No.	Property	Function description
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>■ When this function is enabled, it batch changes the texts of the specified state. The following illustrates the steps:</p> <ol style="list-style-type: none"> 1. Input 123 to State 0, and 234 to State 1. 2. Click State 0. 3. Click Process the text of all states, and the State 1 text changes to 123.  
(5)	Process text properties of all states	<p>■ When this function is enabled, it batch changes the text properties of the specified state. Items included in the text property are shown in the figure below.</p>  <p>The following illustrates the steps:</p> <ol style="list-style-type: none"> 1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial. 2. Click State 0. 3. Click Process text properties of all states, and the State 1 font changes to Segoe Script.

No.	Property	Function description	
(5)	Process text properties of all states	Before change	
			After change

5

■ Picture

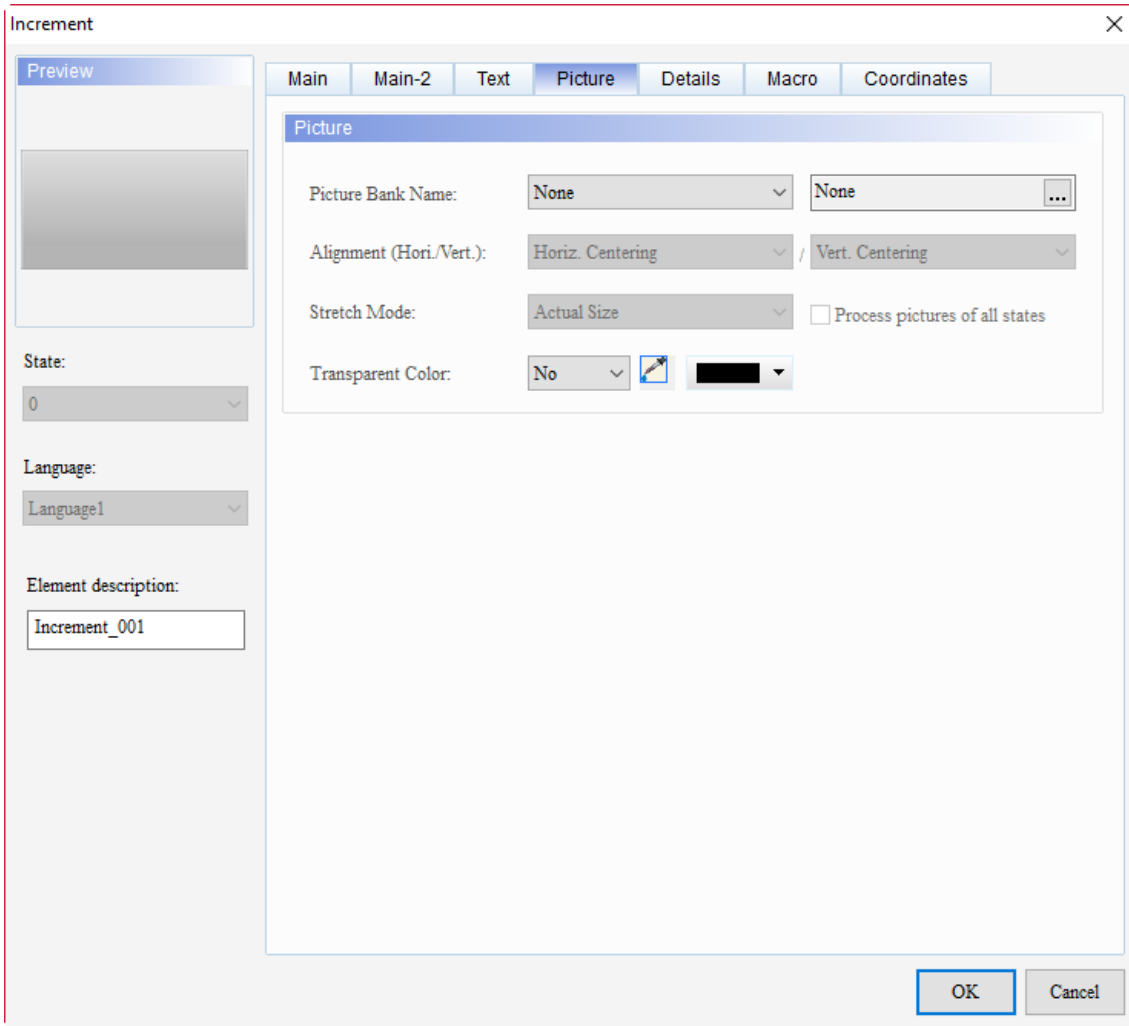
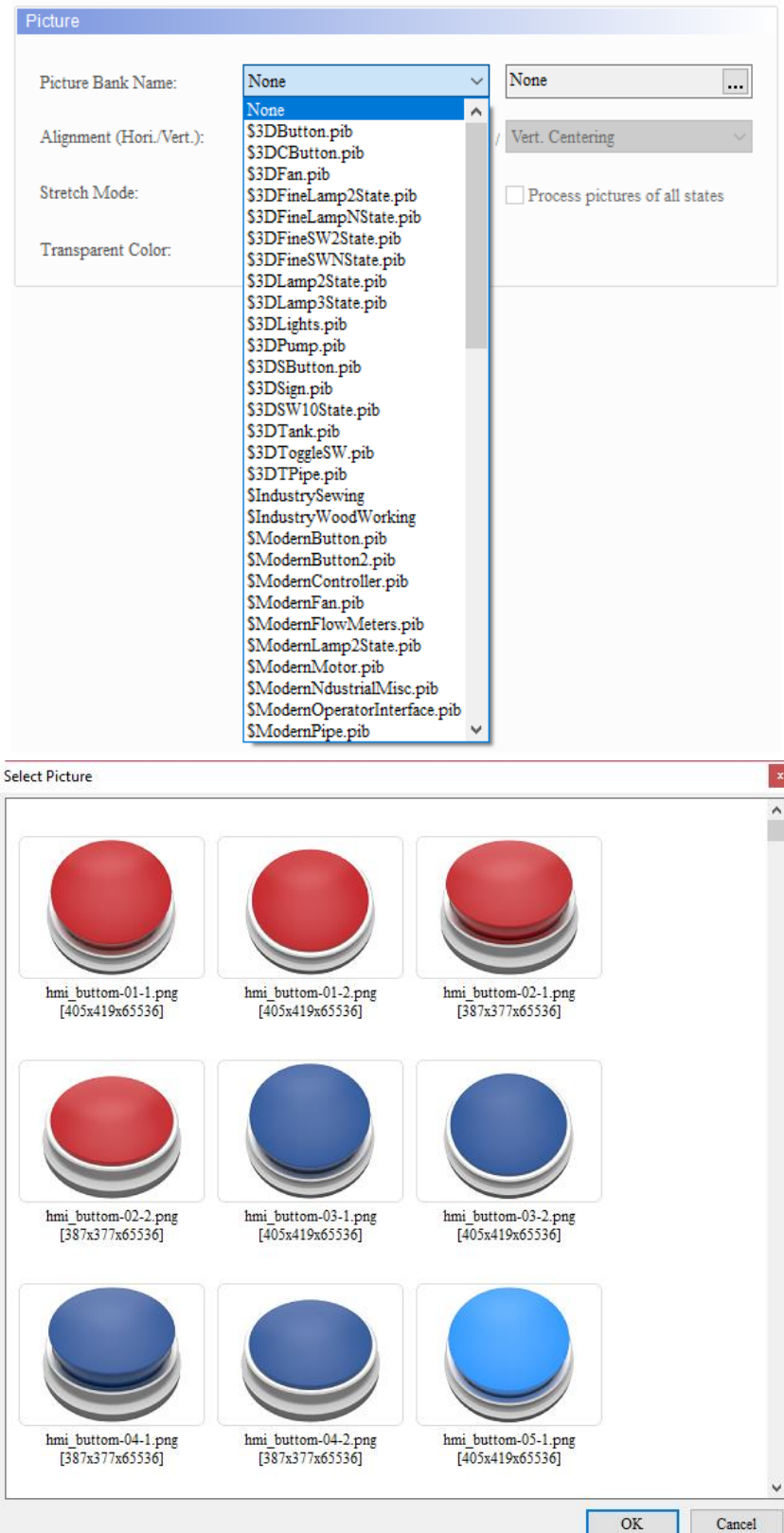
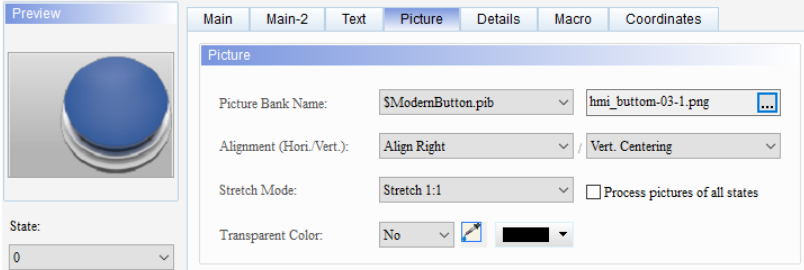













Figure 5.5.5 Picture property page for the Increment / Decrement elements

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures.</p>  <p>The 'Picture' dialog box includes the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: None (with a dropdown menu showing a list of picture banks) Alignment (Hori./Vert.): Vert. Centering Stretch Mode: (empty) Transparent Color: (empty) Process pictures of all states: <input type="checkbox"/> <p>The 'Select Picture' dialog box displays a grid of button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

5

No.	Property	Function description									
(2)	Alignment / Stretch Mode	<p>■ You can use the Alignment options to set how pictures are aligned.</p>  <p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>■ If you check [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> 									

■ Details

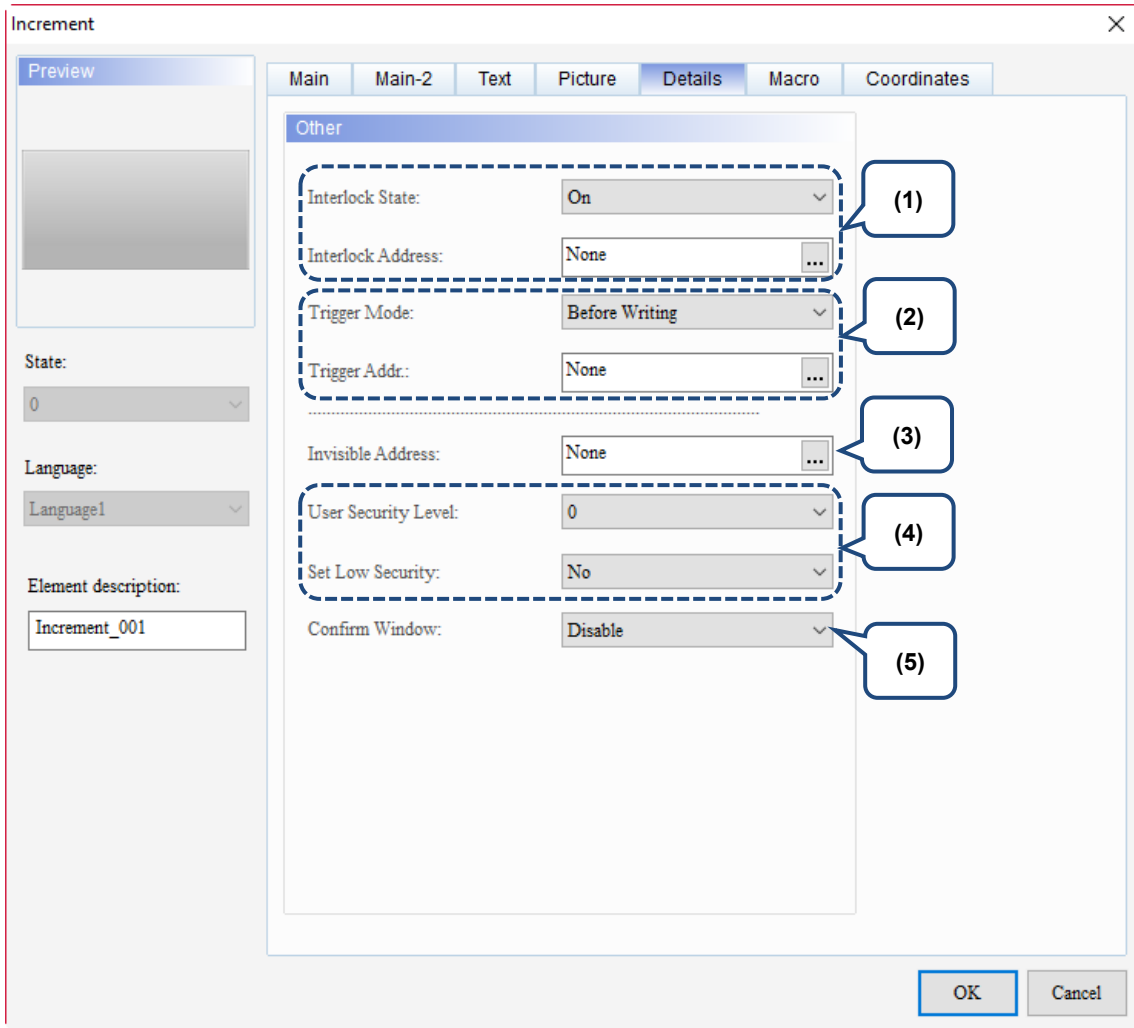
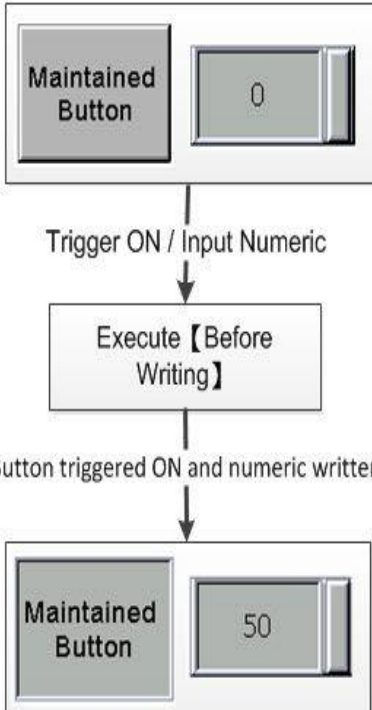
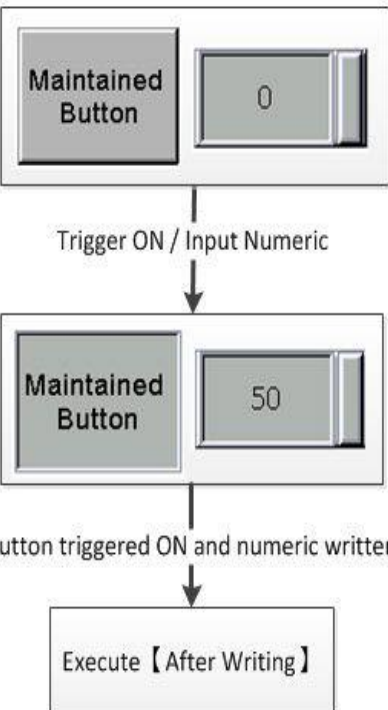

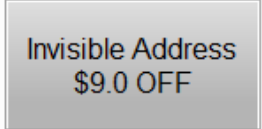
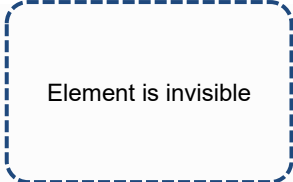
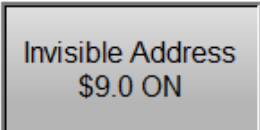
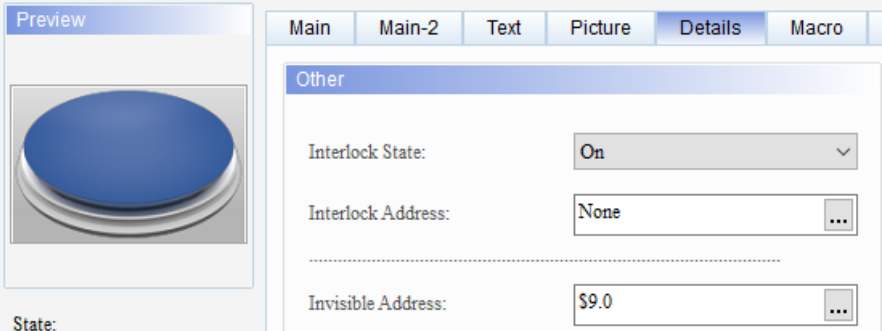

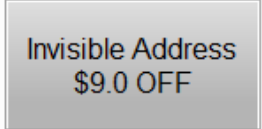
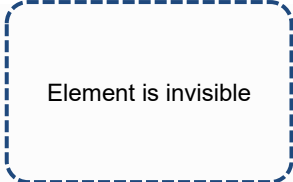
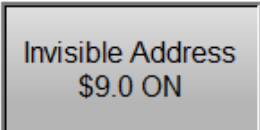

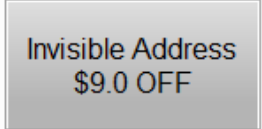
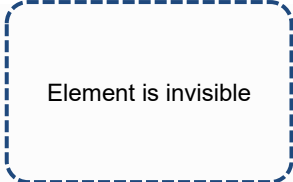
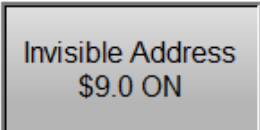
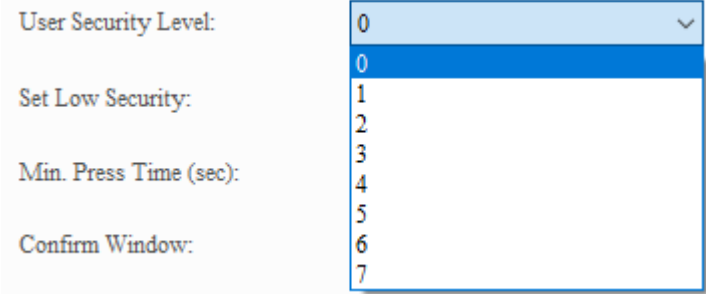
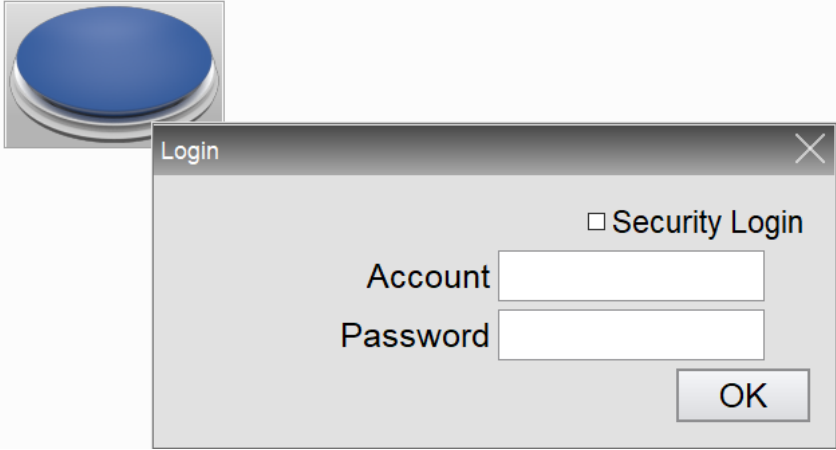
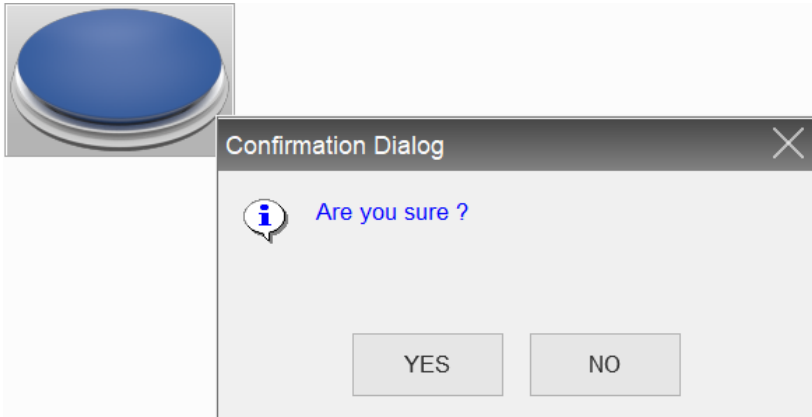


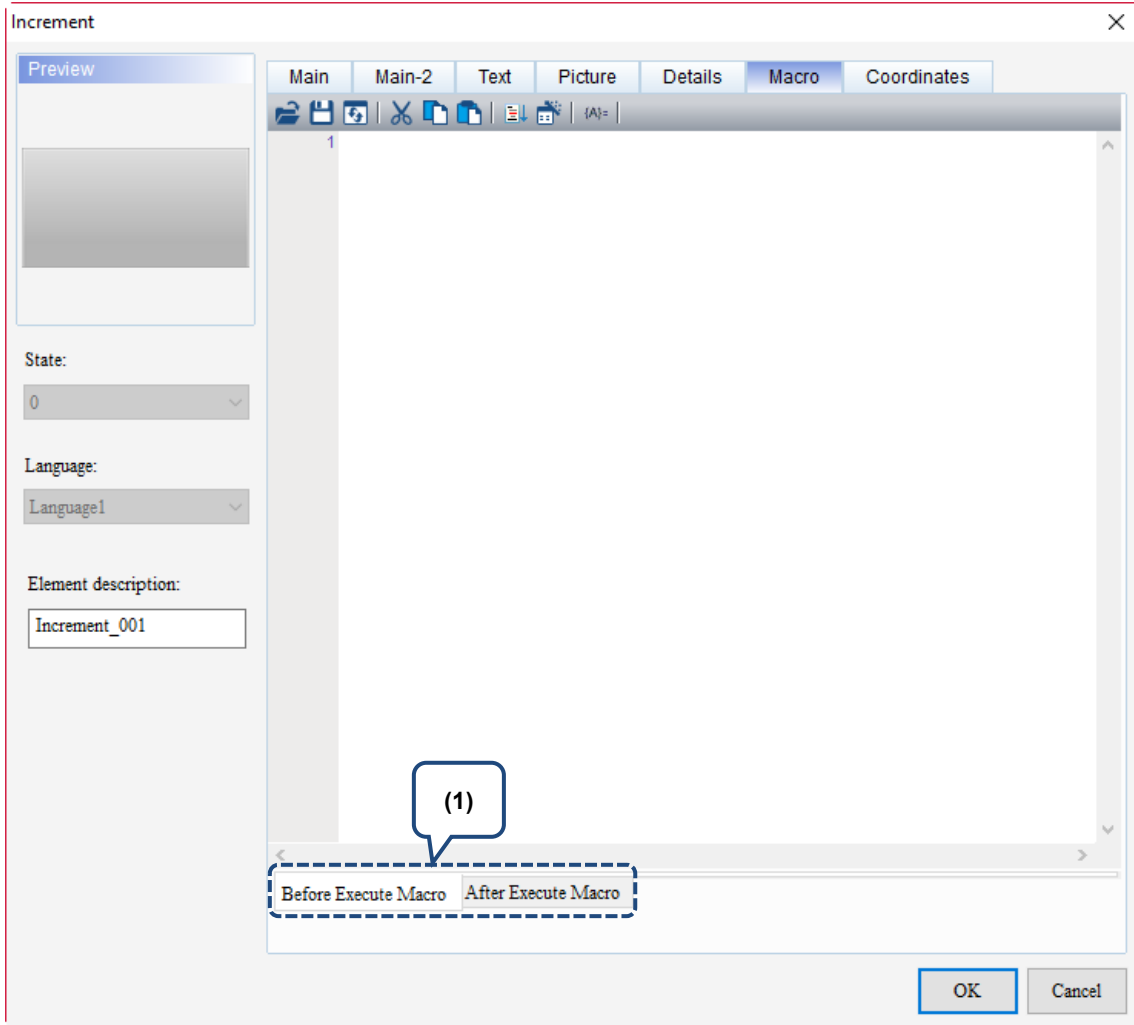
Figure 5.5.6 Details property page for the Increment / Decrement elements

No.	Property	Function description							
(2)	Trigger Mode / Trigger Address	<p style="text-align: center;">Flowchart of Before Writing</p> 	<p style="text-align: center;">Flowchart of After Writing</p> 						
(3)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Invisible Address is off</td> <td style="width: 40%; text-align: center; padding: 5px;"></td> <td style="width: 40%; text-align: center; padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Invisible Address is on</td> <td style="text-align: center; padding: 5px;"></td> <td style="text-align: center; padding: 5px;"></td> </tr> </table> 		Invisible Address is off			Invisible Address is on		
Invisible Address is off									
Invisible Address is on									

5

No.	Property	Function description
	User Security Level	 <ul style="list-style-type: none"> ■ This function sets the permission level for pressing the element; this operation is available for users with the set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element, please refer to Section 5.7.2 Password Table Setup).
(4)	Set Low Security	 <ul style="list-style-type: none"> ■ If you set the Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to enter the password for the corresponding security level again.
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog pops up for you to confirm the pressing action after pressing the element.</p> 

■ Macro



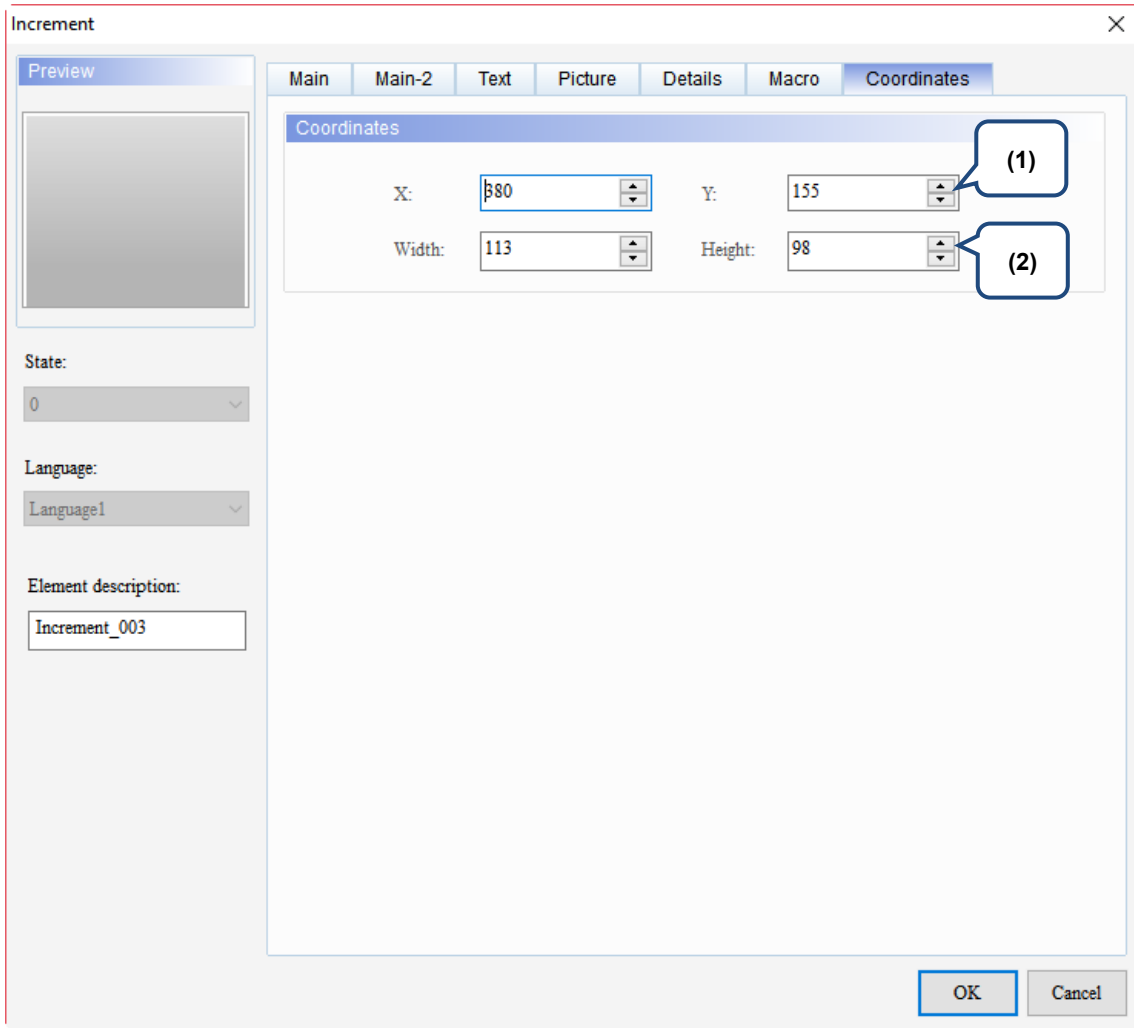
5

Figure 5.5.7 Macro property page for the Increment / Decrement elements

5

No.	Property	Function description
(1)		<p>Flowcharts of Before / After Execute Macro:</p> <pre> graph TD subgraph Before_Execute_Macro B0[Maintained Button 0] -- Trigger ON / Input Numeric --> BEM[Before Execute Macro] BEM -- Button triggered ON and numeric written --> B50[Maintained Button 50] B50 -- Trigger OFF / Input Numeric --> BEM2[Before Execute Macro] BEM2 -- Button triggered OFF and numeric written --> B90[Maintained Button 90] end subgraph After_Execute_Macro A0[Maintained Button 0] -- Trigger ON / Input Numeric --> A50[Maintained Button 50] A50 -- Button triggered ON and numeric written --> AEM[After Execute Macro] AEM -- Trigger OFF / Input Numeric --> A90[Maintained Button 90] A90 -- Button triggered OFF and numeric written --> AEM2[After Execute Macro] end B90 -- Trigger at next time --> B0 AEM2 -- Trigger at next time --> A0 </pre>
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.

■ Coordinates



5

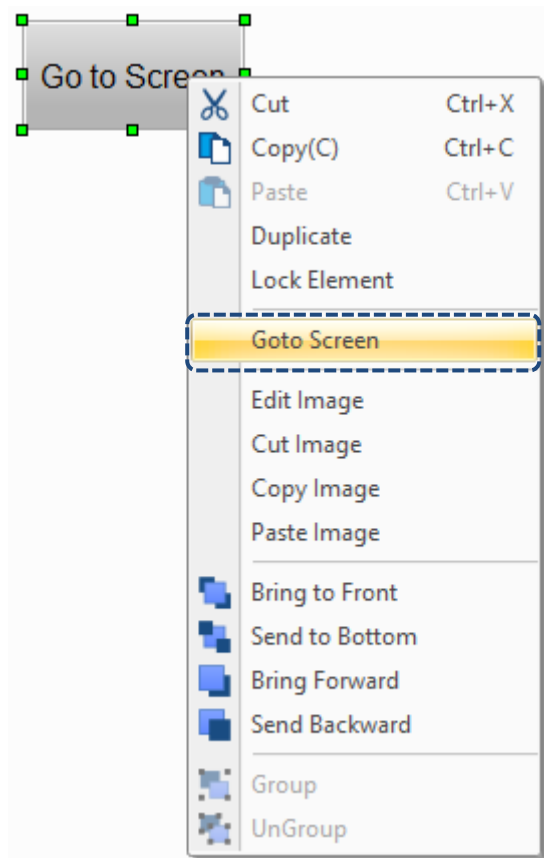
Figure 5.5.8 Coordinates property page for the Increment / Decrement elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

5.6 Goto Screen

The Goto Screen button enables you to right-click the button and select **Goto Screen** to go to the set screen number.

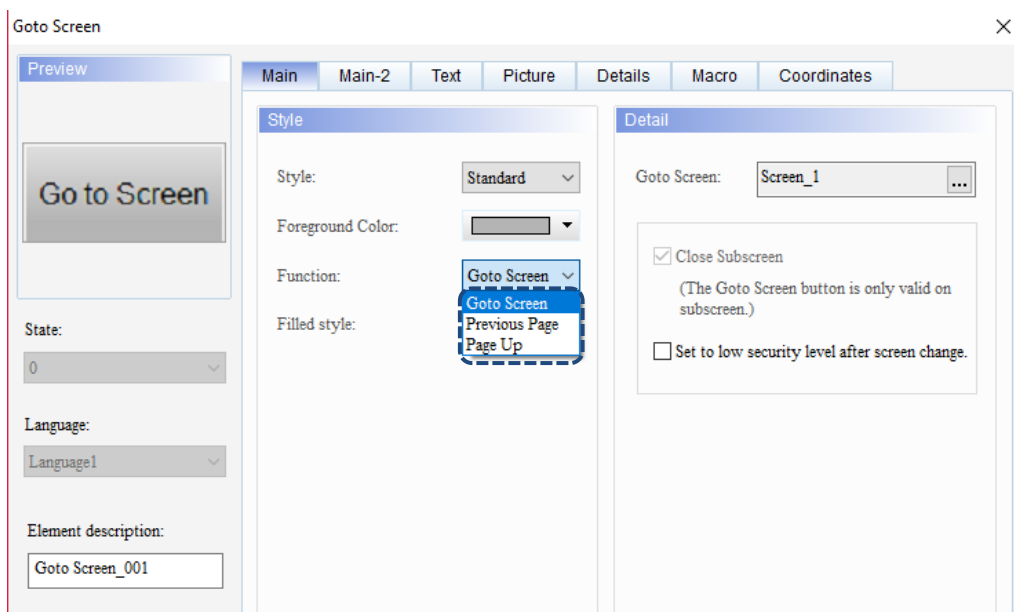
5



The DOPSoft provides three types of Goto Screen buttons:

- Goto Screen: when you touch the **Goto Screen** button on the HMI end, the HMI switches to the set screen.
- Previous Page: when you touch the **Previous Page** button on the HMI end, the HMI switches to the previously displayed screen.
- Page Up: when you touch the **Page Up** button on the HMI end, the HMI records the screen switching sequence, e.g. Screen 1 > Screen 3 > Screen 2, and then executes the **Previous Page** button function. Thus, the screen switching sequence is Screen 2 > Screen 3 > Screen 1.

You can set the functions for the three buttons with the Properties on the right-hand side or by double-clicking **Goto Screen** to enter the setting window.



5

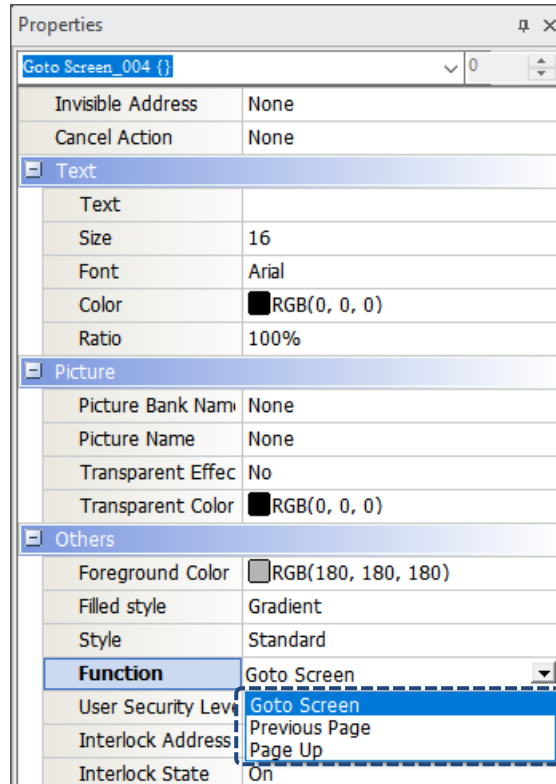
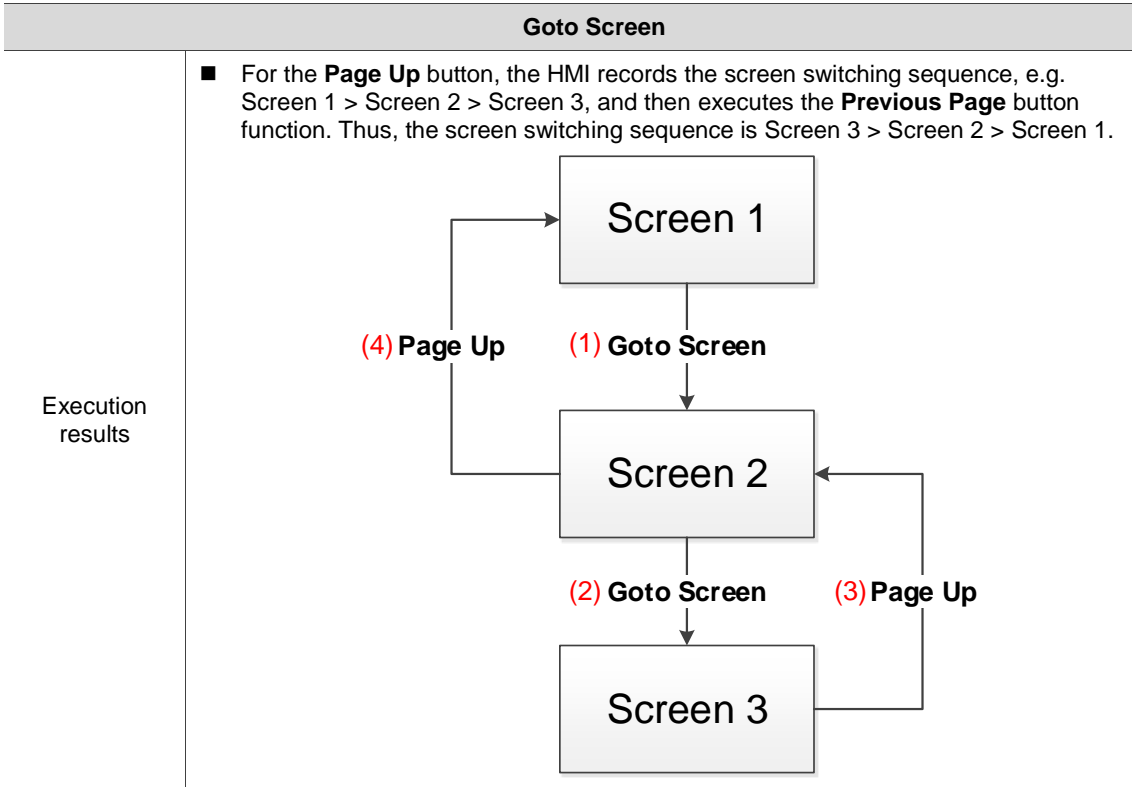


Figure 5.6.1 Properties of Goto Screen

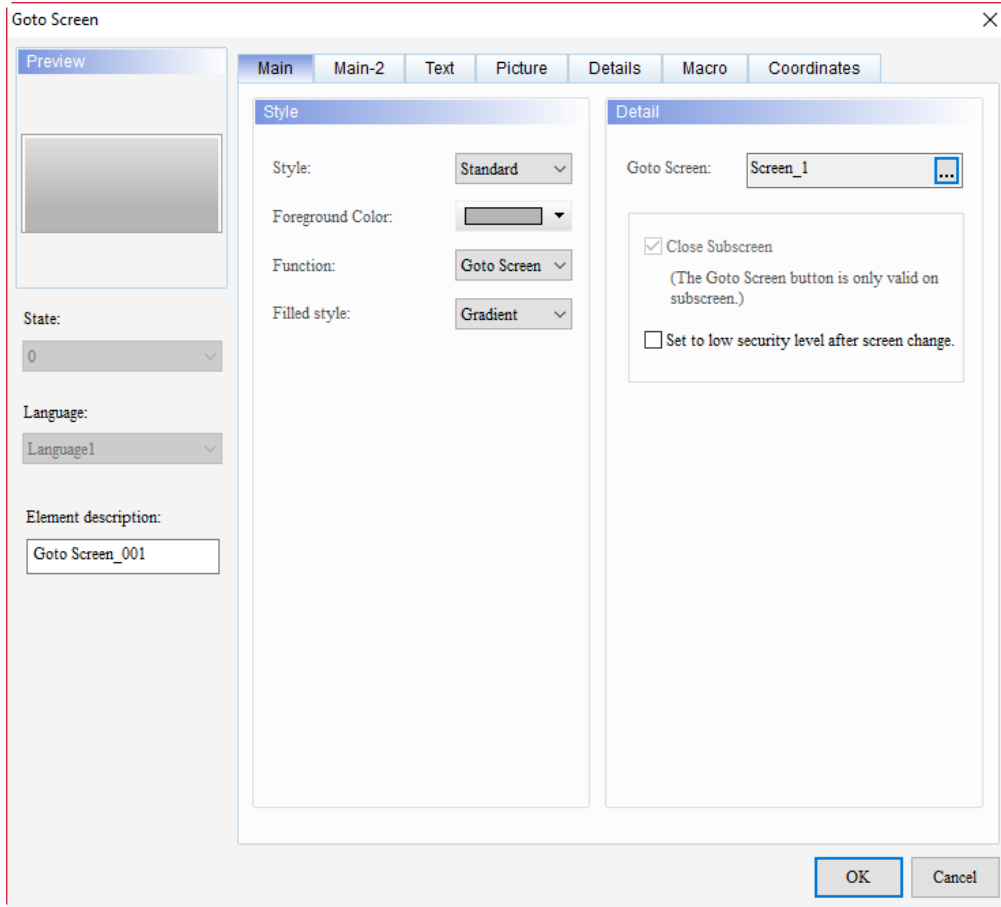
Table 5.6.1 Goto Screen example

Goto Screen	
<p>The Goto Screen item in the Goto Screen element</p>	
<p>Execution results</p>	<ul style="list-style-type: none"> When you touch Goto Screen, the HMI switches to the specified screen. <ul style="list-style-type: none"> When you touch Previous Page, the HMI switches to the previously displayed screen. <pre> graph TD S1[Screen 1] -- "(1) Goto Screen" --> S2[Screen 2] S2 -- "(2) Goto Screen" --> S3[Screen 3] S3 -- "(3) Previous Page" --> S2 S3 -- "(4) Previous Page" --> S1 </pre>

5



When you double-click the Goto Screen element, the property page is shown as follows.



5

Figure 5.6.2 Properties of Goto Screen

Table 5.6.2 Function page of Goto Screen

Goto Screen	
Function page	Description
Preview	The Goto Screen element can only view multi-language data display since the multistate property is not available for this element.
Main	Set the Style and Foreground Color of the element. Set the Goto Screen, Close Subscreen, and [Set to low security level after screen change] of the Goto Screen element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Goto Screen
	Set the Interlock Address, Interlock State, Trigger Mode, Trigger Addr., Invisible Address, Cancel Action, User Security Level, and Confirm Window.
	Previous Page
	Set the Interlock Address, Interlock State, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security Level, and Confirm Window.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

■ Main

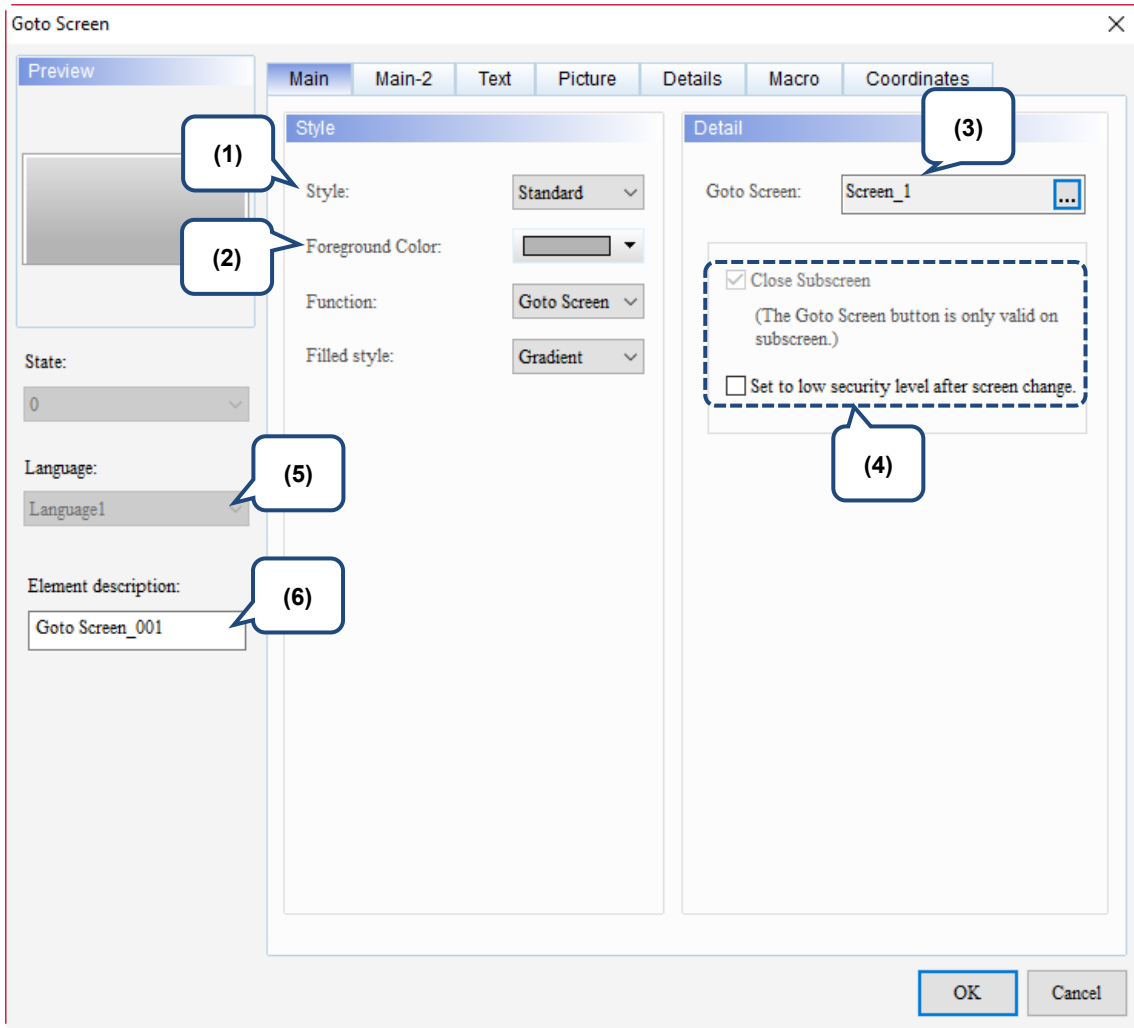
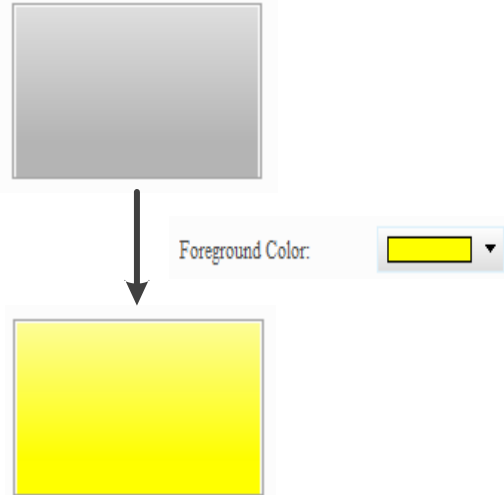
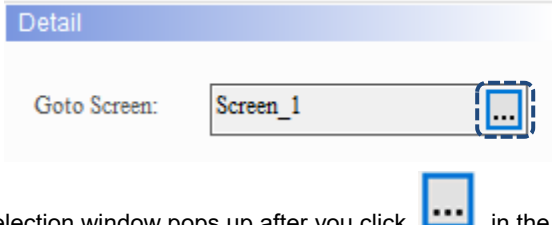

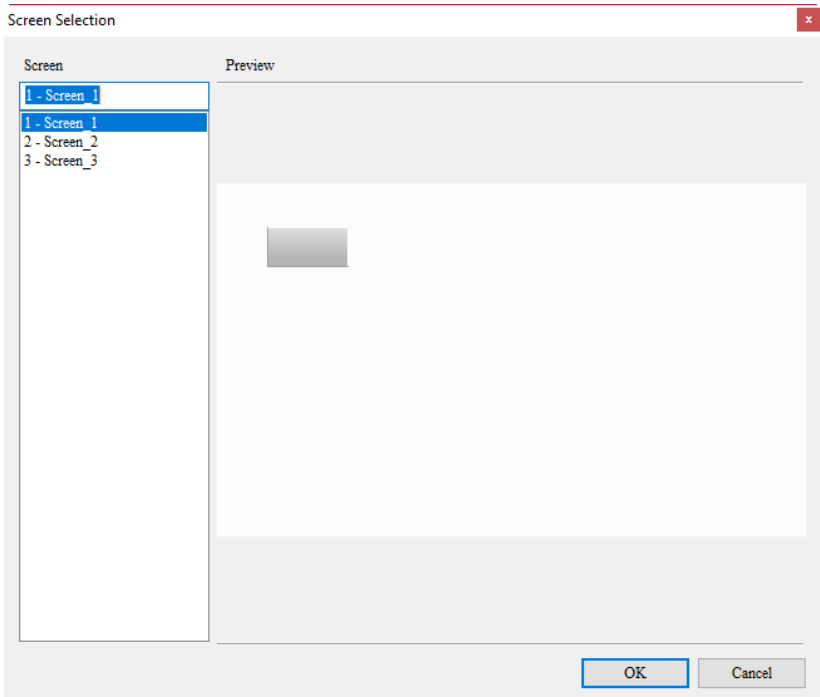
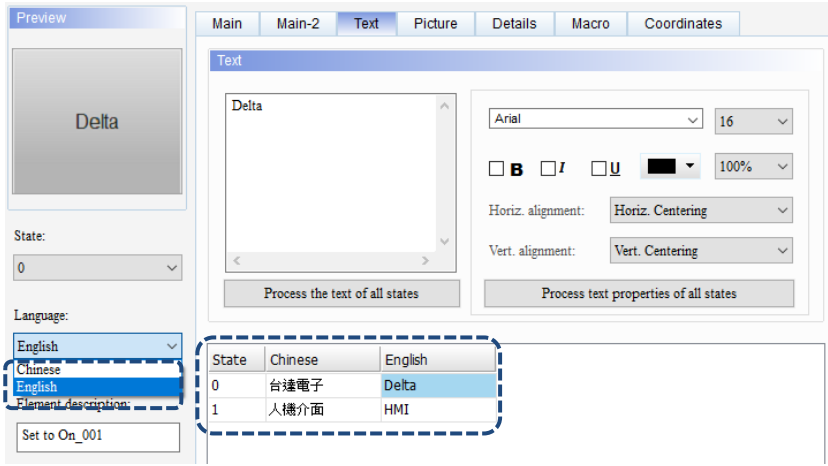


Figure 5.6.3 Main property page for the Goto Screen element

No.	Property	Function description								
(1)	Style	<p>The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Round</th> <th>Invisible</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							

5

No.	Property	Function description
(2)	Foreground Color	<ul style="list-style-type: none"> ■ Set the foreground color of the element. ■ When you set the Style to Invisible, the Foreground Color setting is invalid. 
(3)	Goto Screen	 <p>The Screen Selection window pops up after you click  in the figure above, and you can select the screen to be changed, as shown below:</p> 

No.	Property	Function description																																																																																										
(4)	Close Subscreen	<ul style="list-style-type: none"> Only when the Goto Screen button is created in the Subscreen will the Close Subscreen option be enabled. When you press Goto Screen, the current Subscreen closes at the same time. Force set the current User Security Level to the lowest after pressing the button, which can prevent the element from being accidentally operated. <div style="border: 1px solid gray; padding: 10px; margin: 10px 0;"> <input checked="" type="checkbox"/> Close Subscreen (The Goto Screen button is only valid on subscreen.) <input type="checkbox"/> Set to low security level after screen change. </div>																																																																																										
	Set to low security level after screen change.																																																																																											
(5)	Language	<p>If you have set the language data, you can edit the displaying text property, etc. with the Language setting of the element.</p> 																																																																																										
(6)	Element description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																																				
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																																				
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																																				
3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																																				
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																																				
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																																				
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																																				
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																																				
8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																																				
9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																																				

■ Main-2

5

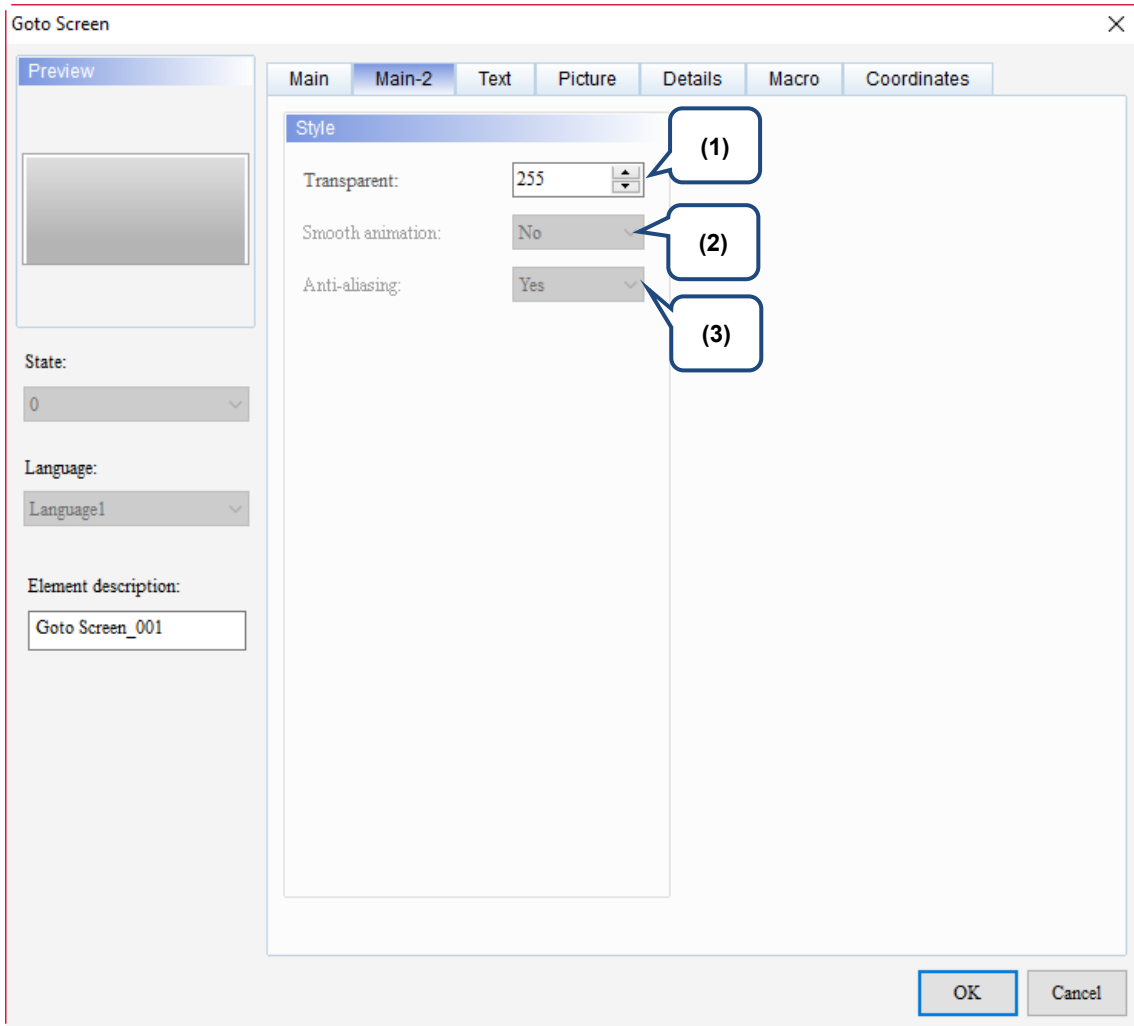


Figure 5.6.4 Main-2 property page for the Goto Screen element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

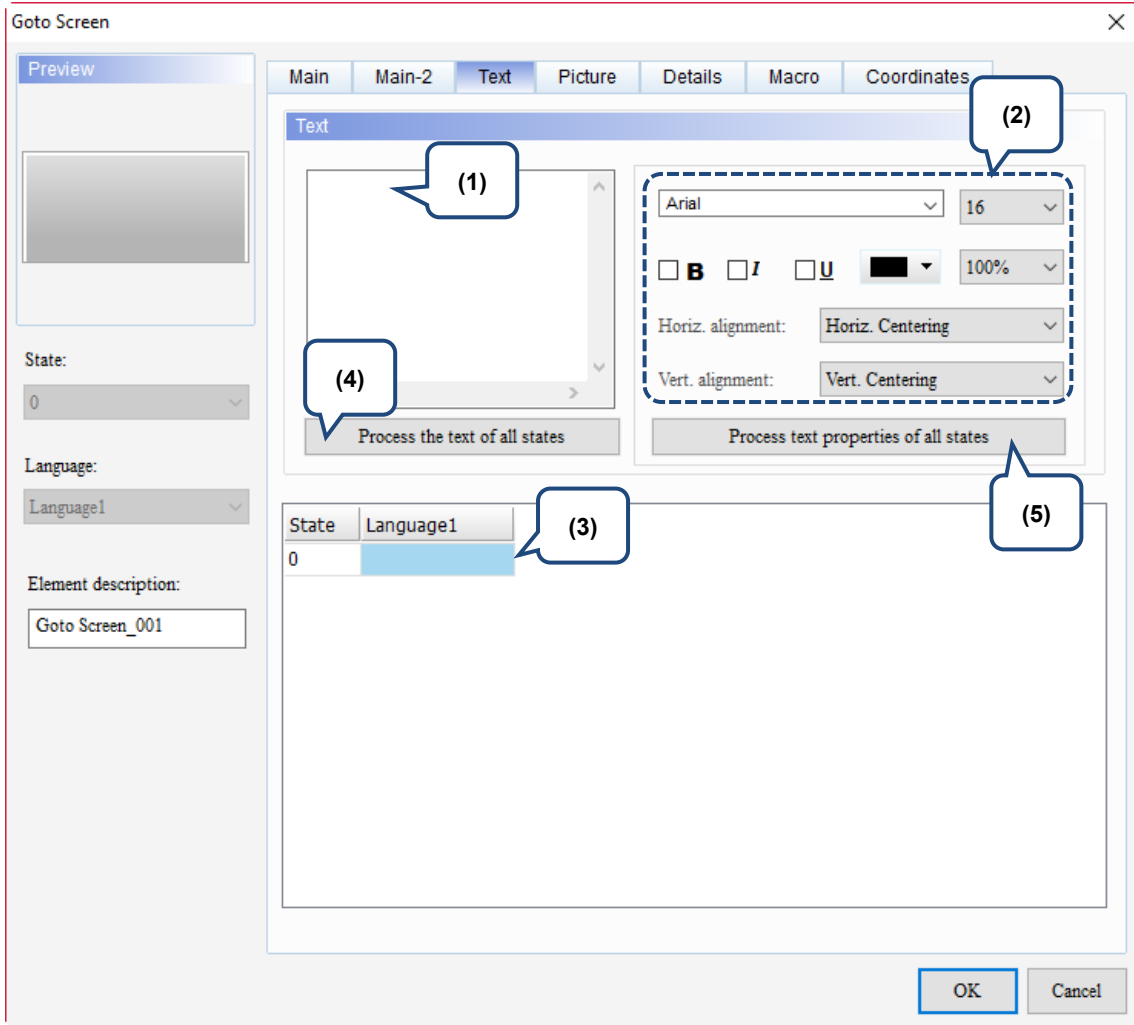
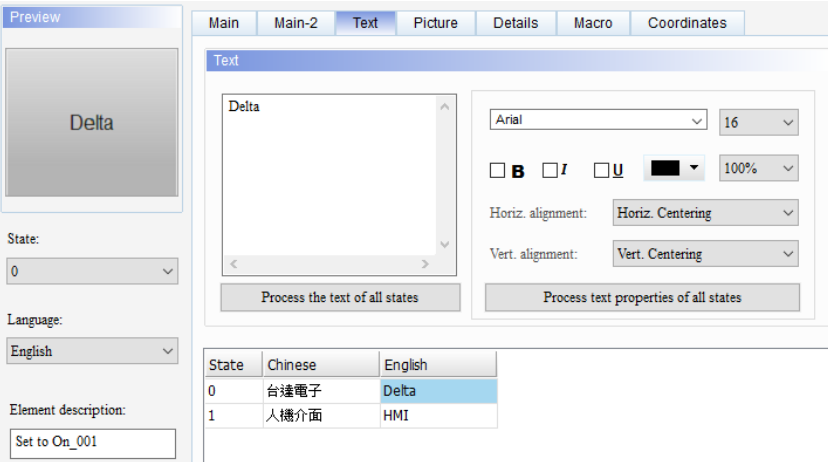
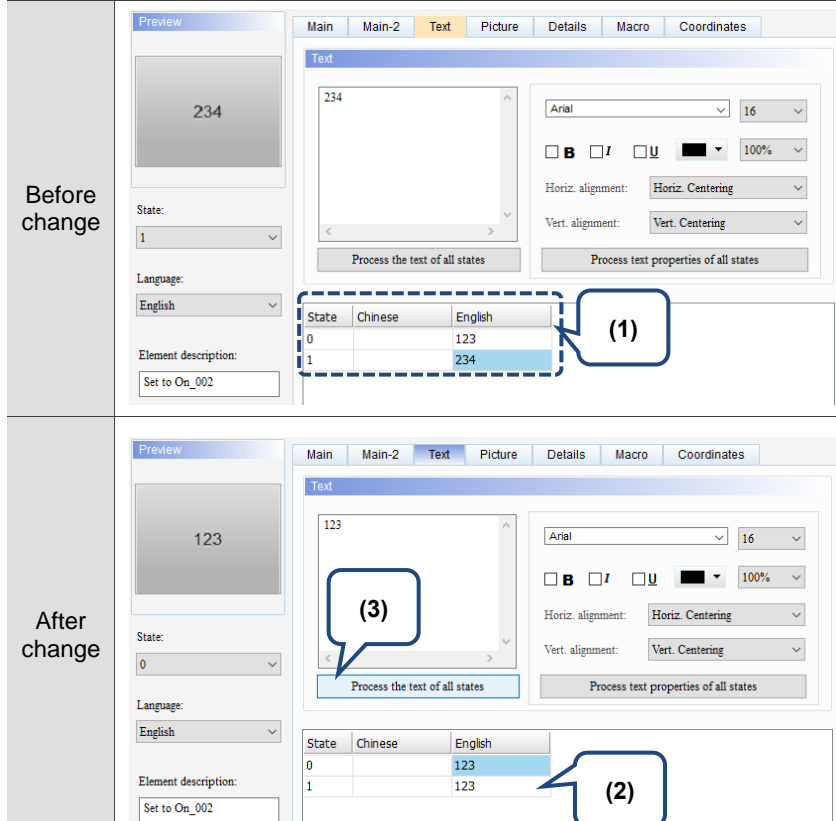
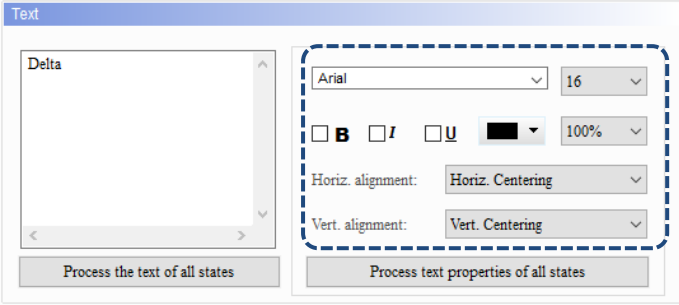
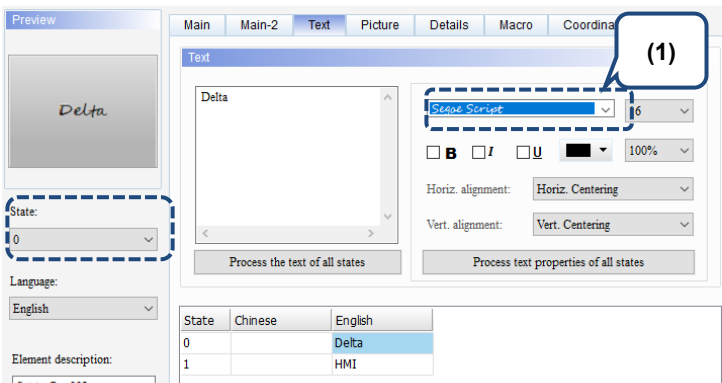
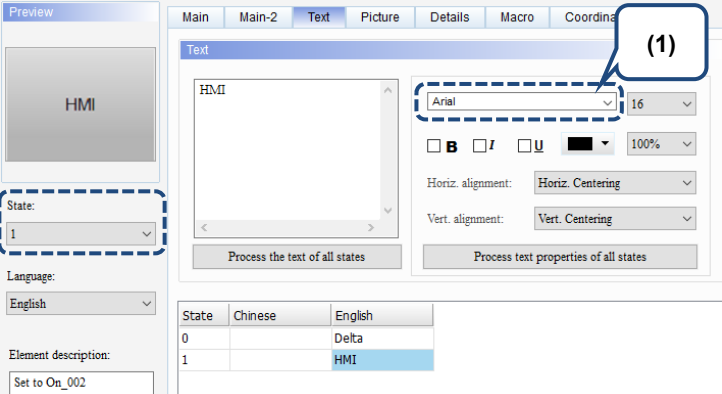
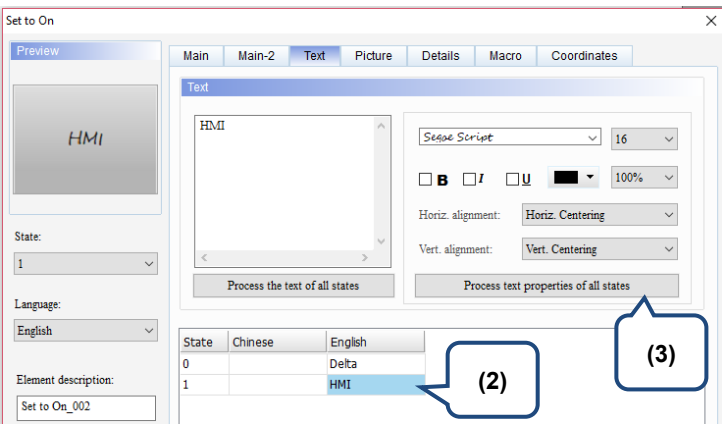


Figure 5.6.5 Text property page for the Goto Screen element

5

No.	Property	Function description
(1)	Text	<p>■ You can input the text to be displayed in the text box.</p>  <p>■ As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</p>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>When this function is enabled, it batch changes the texts of the specified state. The following illustrates the steps:</p> <ol style="list-style-type: none"> 1. Input 123 to State 0, and 234 to State 1. 2. Click State 0. 3. Click Process the text of all states, and the State 1 text changes to 123. 

No.	Property	Function description
		<p>When this function is enabled, it batch changes the text properties of the specified state. Items included in the text property are shown in the figure below.</p>  <p>The following illustrates the steps:</p> <ol style="list-style-type: none"> 1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial. 2. Click State 0. 3. Click Process text properties of all states, and the State 1 font changes to Segoe Script. <div style="display: flex; flex-direction: column;"> <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 10px;">(5)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 10px;">Process text properties of all states</div> <div style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center; margin: 0;">Before change</p>   </div> </div> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p style="text-align: center; margin: 0;">After change</p>  </div> </div>

■ Picture

5

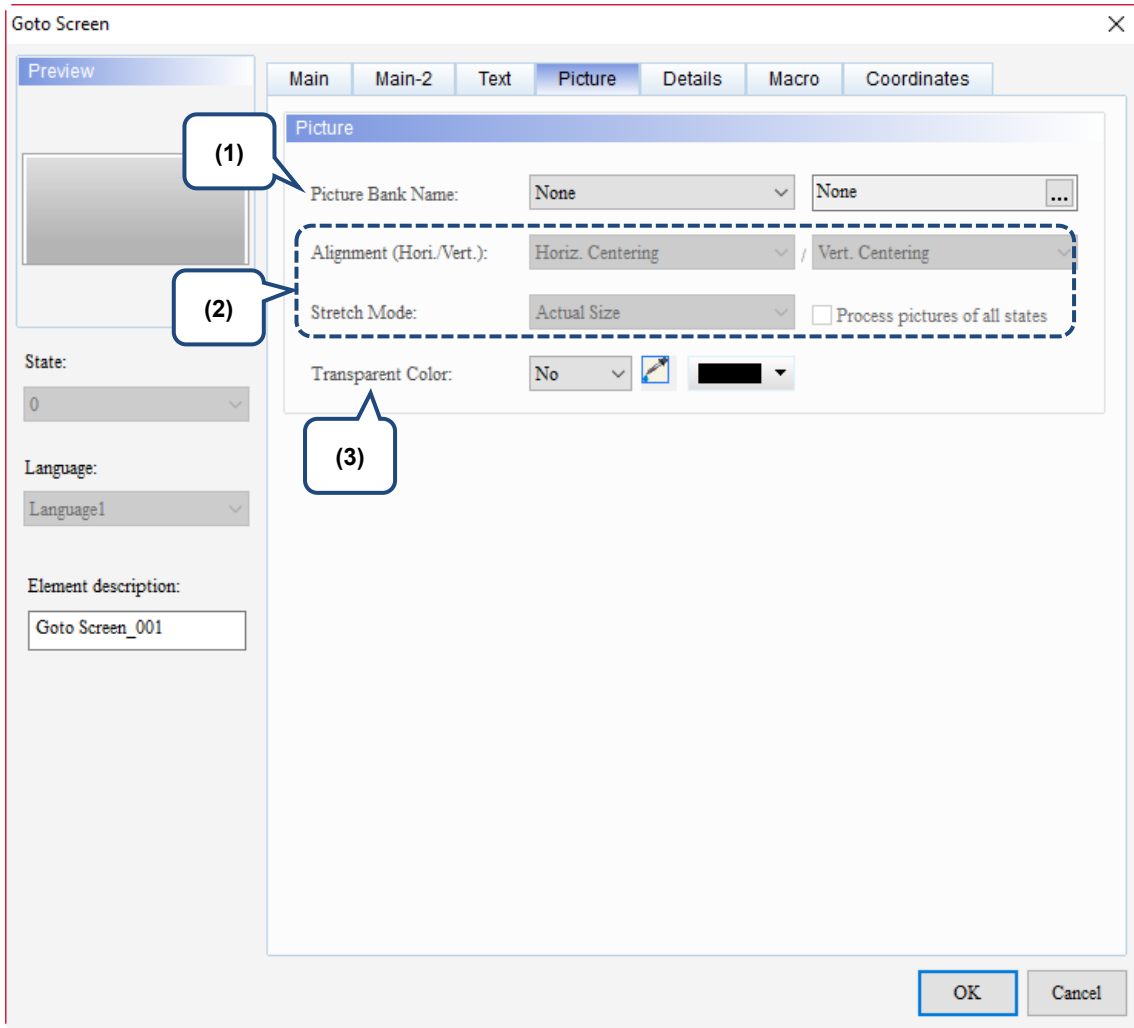
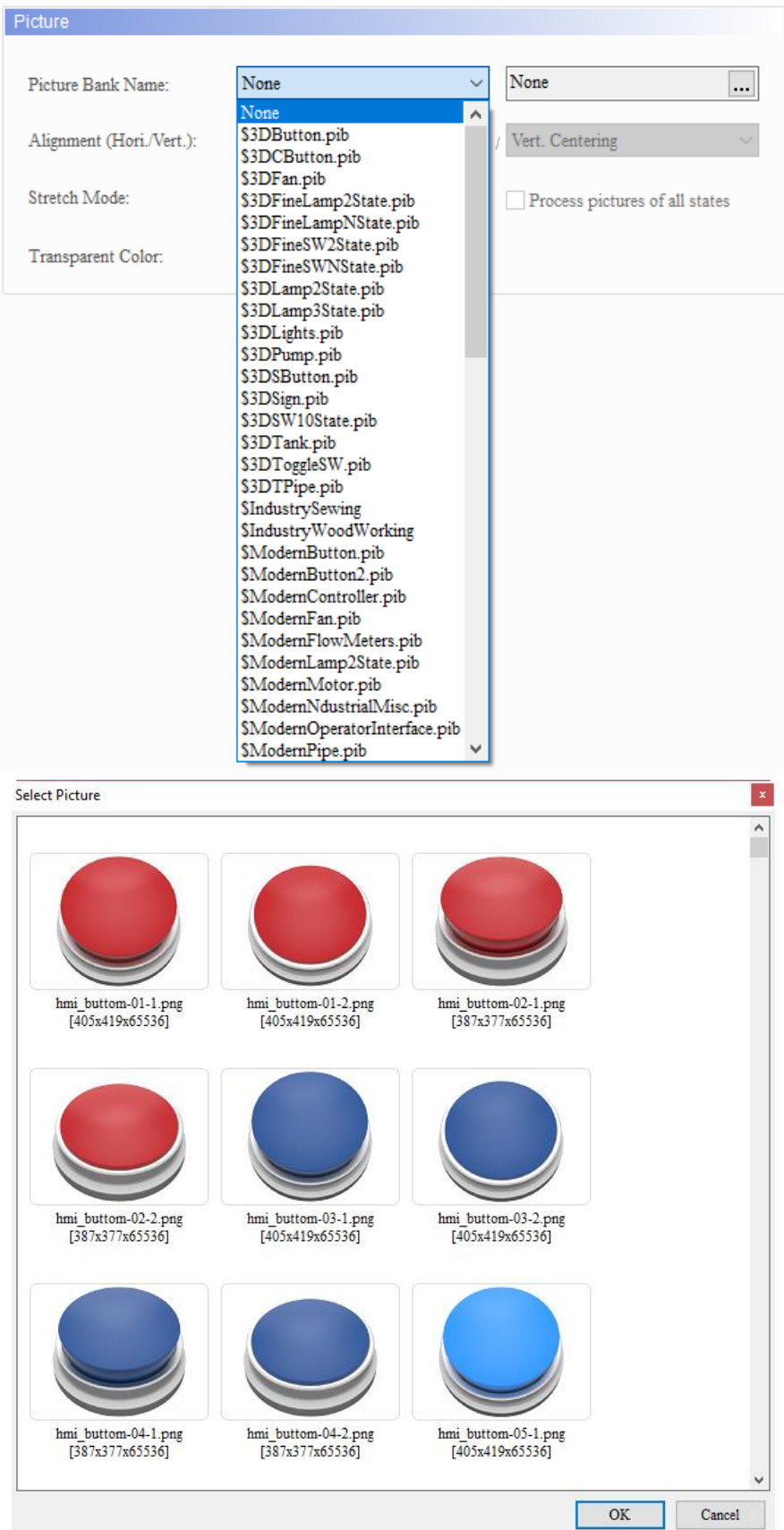
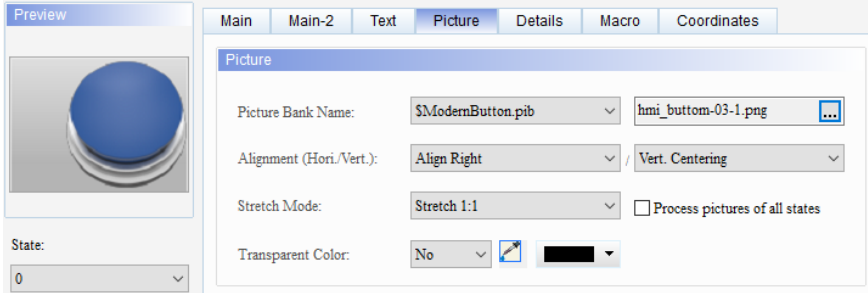












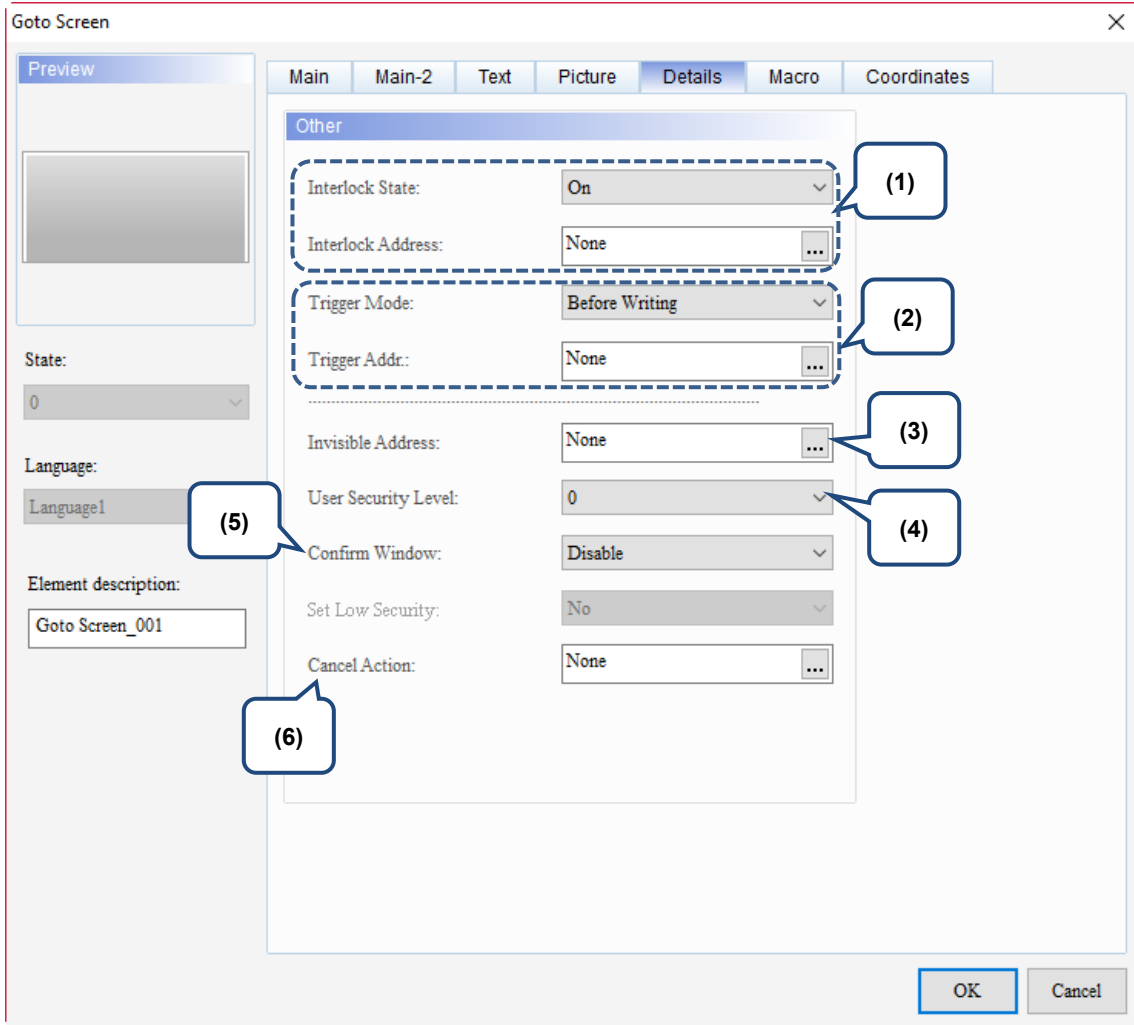
Figure 5.6.6 Picture property page for the Goto Screen element

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures.</p>  <p>The 'Picture' dialog box contains the following fields and options:</p> <ul style="list-style-type: none"> Picture Bank Name: A dropdown menu currently showing 'None' with a list of picture banks including \$3DButton.pib, \$3DCButton.pib, \$3DFan.pib, \$3DFineLamp2State.pib, \$3DFineLampNState.pib, \$3DFineSW2State.pib, \$3DFineSWNState.pib, \$3DLamp2State.pib, \$3DLamp3State.pib, \$3DLights.pib, \$3DPump.pib, \$3DSButton.pib, \$3DSign.pib, \$3DSW10State.pib, \$3DTank.pib, \$3DToggleSW.pib, \$3DTPipe.pib, \$IndustrySewing, \$IndustryWoodWorking, \$ModernButton.pib, \$ModernButton2.pib, \$ModernController.pib, \$ModernFan.pib, \$ModernFlowMeters.pib, \$ModernLamp2State.pib, \$ModernMotor.pib, \$ModernNdnustrialMisc.pib, and \$ModernOperatorInterface.pib. Alignment (Hori./Vert.): A dropdown menu showing 'Vert. Centering'. Stretch Mode: A dropdown menu. Transparent Color: A text input field. Process pictures of all states: A checkbox. <p>The 'Select Picture' dialog box displays a grid of nine button images with their respective filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

5

No.	Property	Function description								
(2)	Alignment	<ul style="list-style-type: none"> You can use the Alignment options to set how pictures are aligned. 								
	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> 								

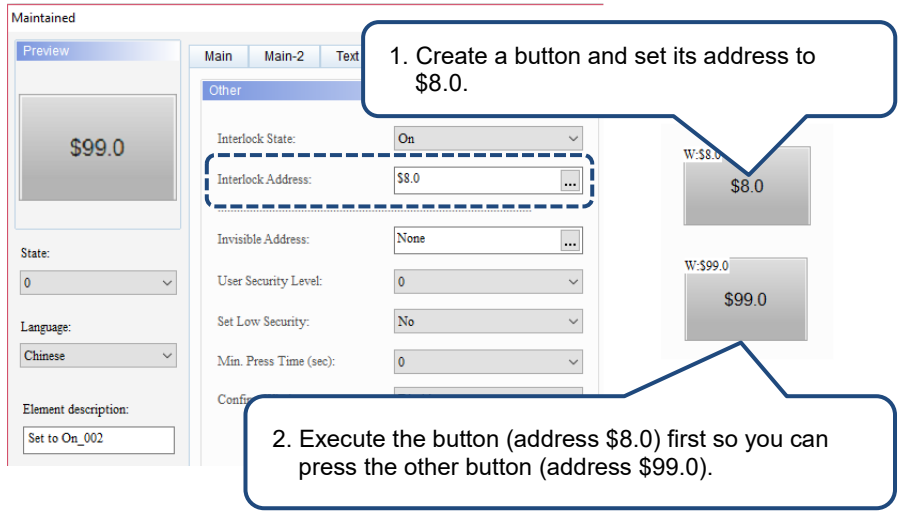
■ Details

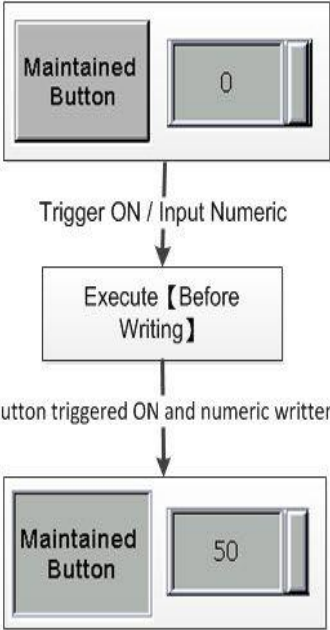
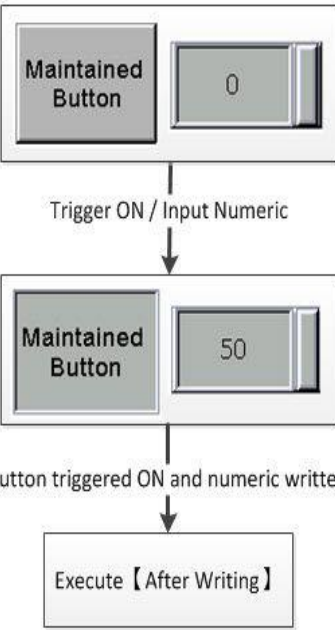
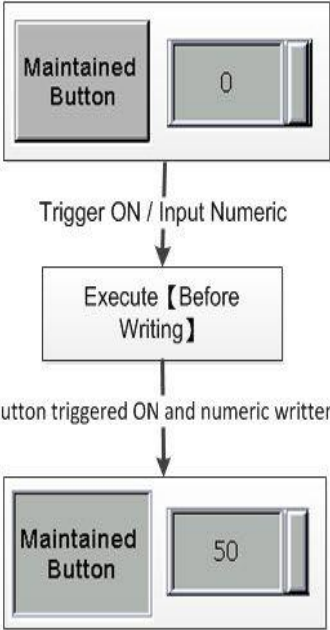
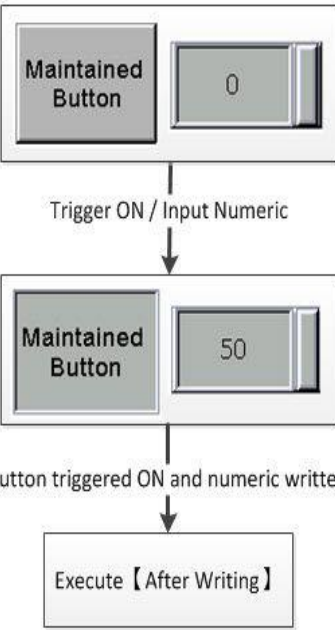
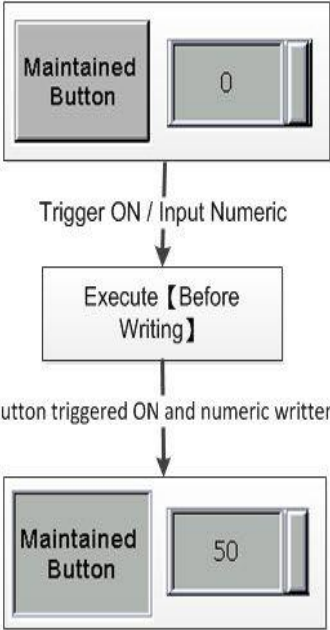
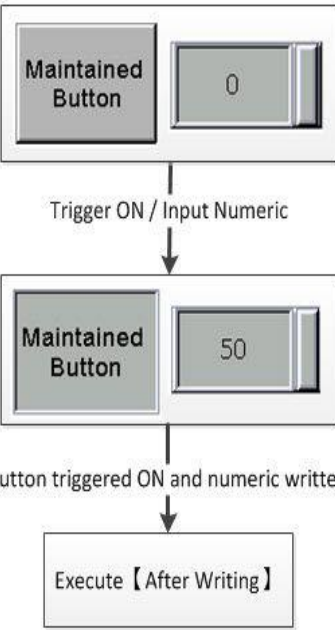

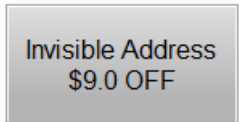
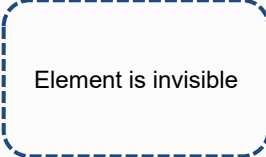
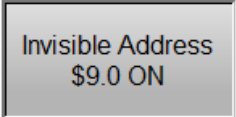


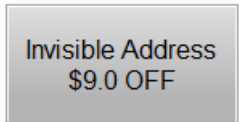
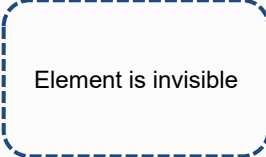
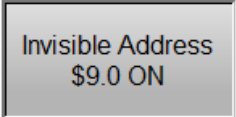


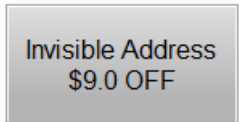
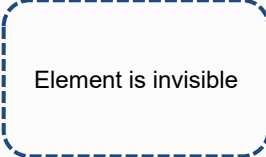
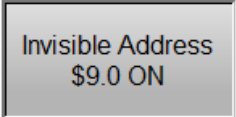



5





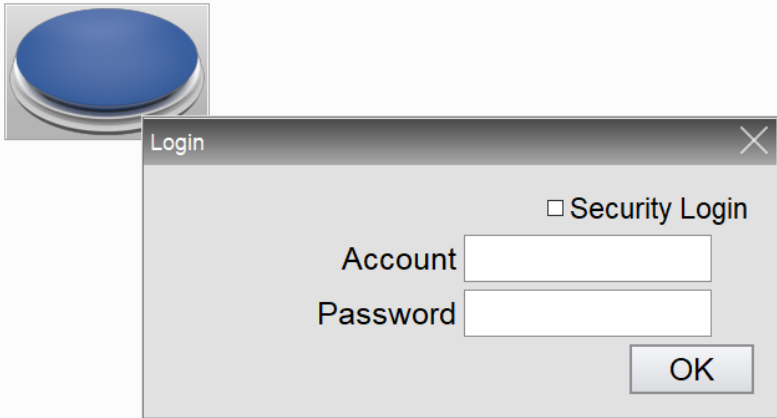
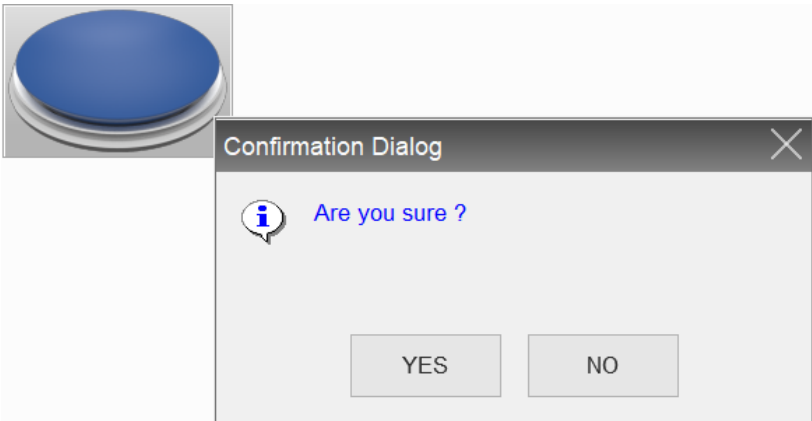
Figure 5.6.7 Details property page for the Goto Screen element

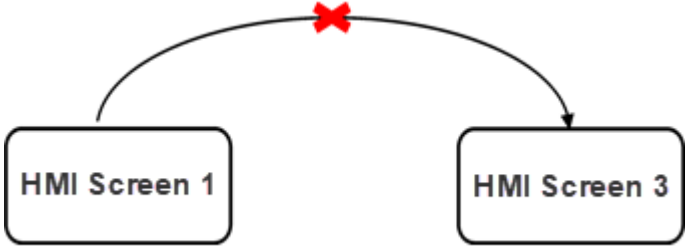
5

No.	Property	Function description
(1)	Interlock State / Interlock Address	<ul style="list-style-type: none"> ■ The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON. ■ The following describes how it works: <ol style="list-style-type: none"> 1. Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0. 2. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0. 

No.	Property	Function description										
(2)	Trigger Mode / Trigger Address	<ul style="list-style-type: none"> There are two trigger modes: Before Writing and After Writing. <table border="1"> <thead> <tr> <th>Trigger type</th> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td></td> <td>Set the button to ON before changing values.</td> <td>The button turns to ON after changing values.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> You can create a button element and set the address, and select Before Writing or After Writing to trigger the specified controller Bit address to ON . The Trigger function only turns the controller address to ON, so you need to turn the address to OFF if triggering again is required. <table border="1"> <thead> <tr> <th>Flowchart of Before Writing</th> <th>Flowchart of After Writing</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>	Trigger type	Before Writing	After Writing		Set the button to ON before changing values.	The button turns to ON after changing values.	Flowchart of Before Writing	Flowchart of After Writing		
Trigger type	Before Writing	After Writing										
	Set the button to ON before changing values.	The button turns to ON after changing values.										
Flowchart of Before Writing	Flowchart of After Writing											
												
(3)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p> <table border="1"> <tbody> <tr> <td>Invisible Address is off</td> <td></td> <td></td> </tr> <tr> <td>Invisible Address is on</td> <td></td> <td></td> </tr> </tbody> </table> <div> <table border="1"> <thead> <tr> <th>Preview</th> <th>Main Main-2 Text Picture Details Macro</th> </tr> </thead> <tbody> <tr> <td>  <p>State:</p> </td> <td> <p>Other</p> <p>Interlock State: <input type="text" value="On"/></p> <p>Interlock Address: <input type="text" value="None"/></p> <p>Invisible Address: <input type="text" value="\$9.0"/></p> </td> </tr> </tbody> </table> </div>	Invisible Address is off			Invisible Address is on			Preview	Main Main-2 Text Picture Details Macro	 <p>State:</p>	<p>Other</p> <p>Interlock State: <input type="text" value="On"/></p> <p>Interlock Address: <input type="text" value="None"/></p> <p>Invisible Address: <input type="text" value="\$9.0"/></p>
Invisible Address is off												
Invisible Address is on												
Preview	Main Main-2 Text Picture Details Macro											
 <p>State:</p>	<p>Other</p> <p>Interlock State: <input type="text" value="On"/></p> <p>Interlock Address: <input type="text" value="None"/></p> <p>Invisible Address: <input type="text" value="\$9.0"/></p>											

5

No.	Property	Function description
(4)	User Security Level	<div> <p>User Security Level: </p> <p>Set Low Security: </p> <p>Min. Press Time (sec): </p> <p>Confirm Window: </p> </div> <ul style="list-style-type: none"> ■ This function sets the permission level for pressing the element; this operation is available for users with the set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element, please refer to Section 5.7.2 Password Table Setup).
	Set Low Security	<div>  </div> <ul style="list-style-type: none"> ■ If you set the Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to input the password for the corresponding security level again.
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog pops up for you to confirm the pressing action after pressing the element.</p> <div>  </div>

No.	Property	Function description
(6)	Cancel Action	<ul style="list-style-type: none"> ■ Cancel Action enables you to pause or cancel the Goto Screen action with this element. ■ When you set Cancel Action to ON, the Goto Screen button function is invalid; on the other hand, if you set Cancel Action to OFF, the Goto Screen button is valid. <p>Note: the Goto Screen function is available after the Interlock Address is activated. Cancel Action enables you to cancel the Goto Screen action during its operation. If Cancel Action is set to ON continuously, you cannot change the screen even if the Interlock Address is set to ON.</p> 

■ Macro

5

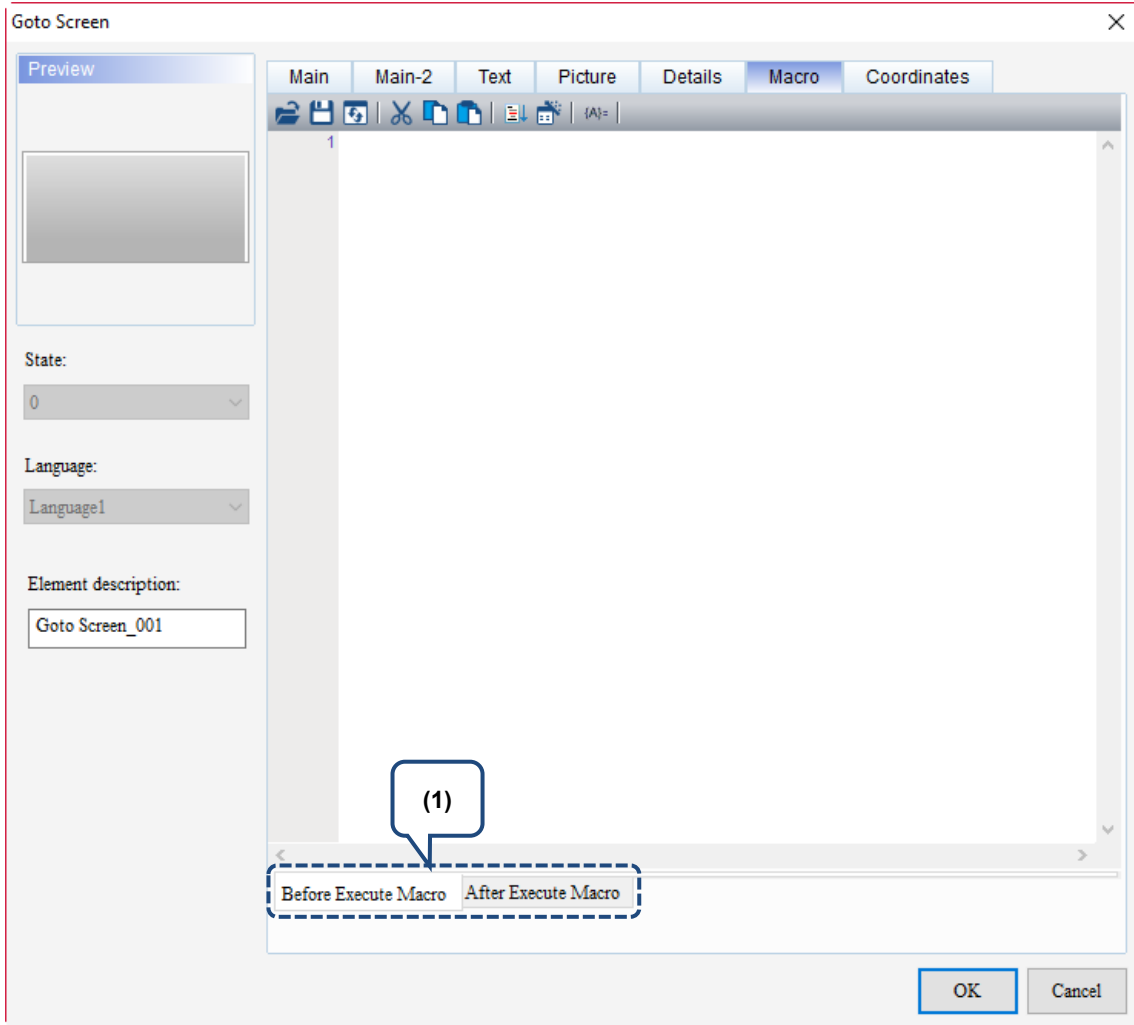


Figure 5.6.8 Macro property page for the Goto Screen element

No.	Property	Function description
(1)		<p>Flowcharts of Before / After Execute Macro:</p>
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.

■ Coordinates

5

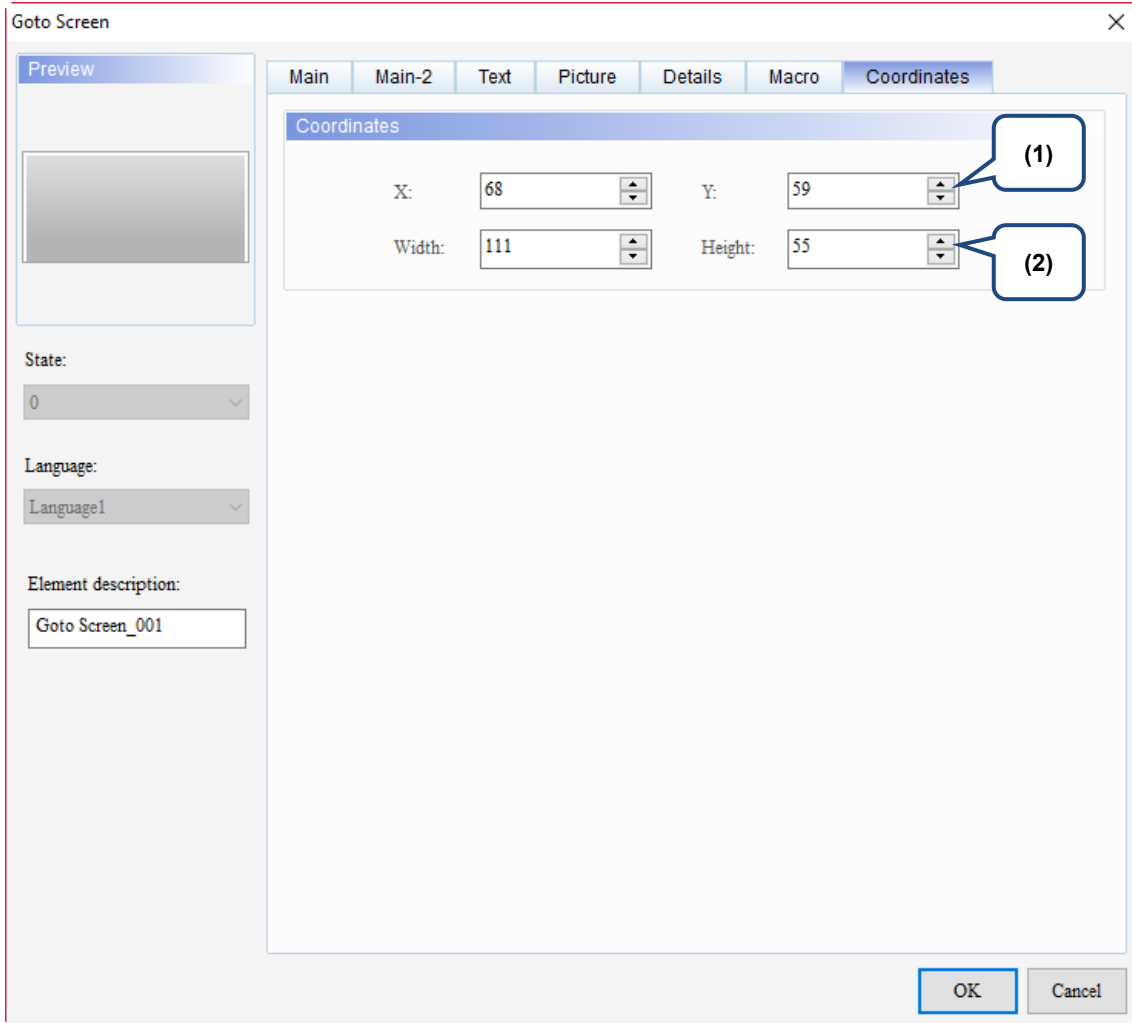


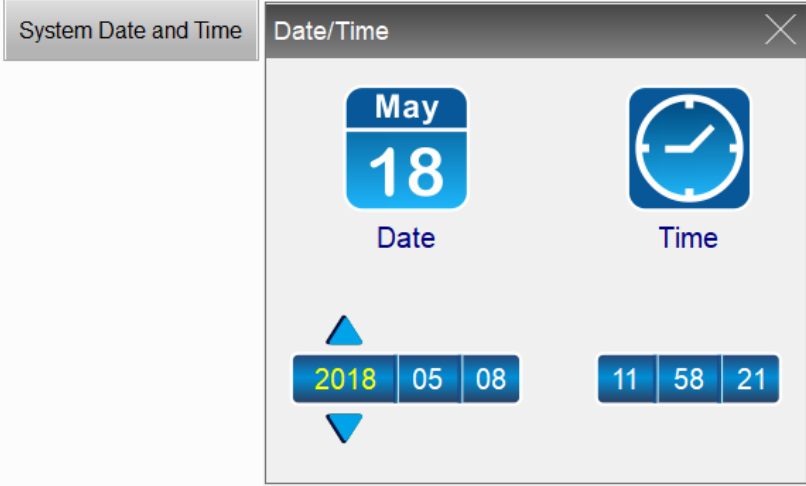
Figure 5.6.9 Coordinates property page for the Goto Screen element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

5.7 Other elements

There are 14 other button elements, including System Date and Time, Password Table Setup, Enter Password, Contrast Brightness, Set Low Security, System Menu, Print Output, Report List, Screen Capture, Remove Storage, Import/Export Recipe, Calibration, Language Change, and FileSlot Import/Export. The following describes the functions of each button element.

5.7.1 System Date and Time

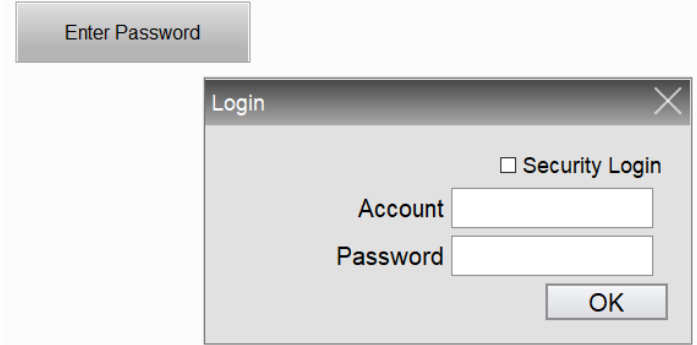
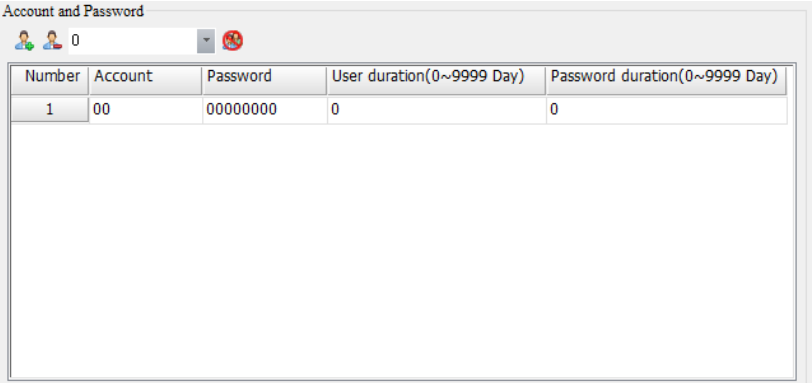
Function	Illustration
<p>You can set the system date and time on the HMI end with the System Date and Time button.</p> <p>This function is the same as that of the Date/Time on the HMI screen.</p>	

5.7.2 Password Table Setup

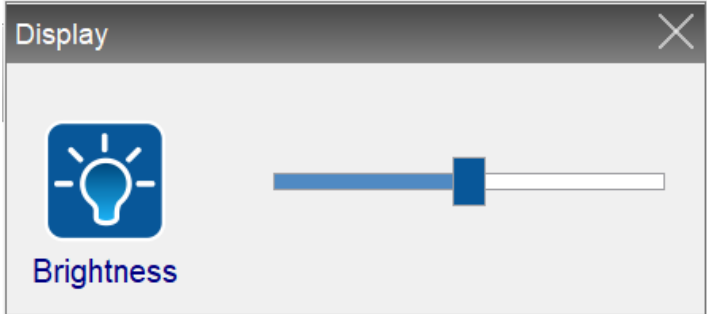
5

Function	Illustration
<ul style="list-style-type: none"> ■ You can select [Options] > [Configuration] > [Security Level and Password] from the drop-down list and find the Password Table. The table shows the password settings of each security level. After setting the passwords, download them to the HMI. ■ You can use the Password Table Setup button when you need to change the Password Table during the HMI operation. The system enables the corresponding level according to the User Security Level defined in the Password Table Setup. ■ If your User Security Level is lower than the set Security Level, you are unable to open the Password Table and the Enter Password window pops up. ■ Whether the inputted password level is higher than or equivalent to the set Security Level determines if you are able to open the Password Table Setup or not. You are only allowed to change the passwords lower than or equivalent to the current User Security Level after entering the Password Table Setup. You are not allowed to change or view the passwords higher than the current User Security Level. 	<p style="text-align: center;">Security level = 4</p>

5.7.3 Enter Password

Function	Illustration
<ul style="list-style-type: none"> ■ The Enter Password button provides the interface for inputting passwords on the HMI end. ■ You can click [Options] > [Configuration] > [Security Level and Password], and find the Password Table, then input your account and password to log in to the corresponding level. 	 

5.7.4 Contrast Brightness

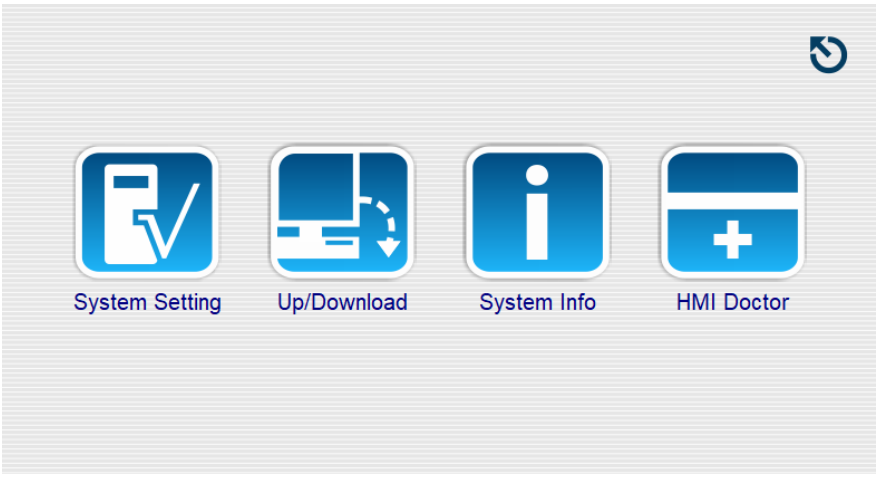
Function	Illustration
<p>Adjust the HMI contrast brightness.</p>	

5.7.5 Set Low Security

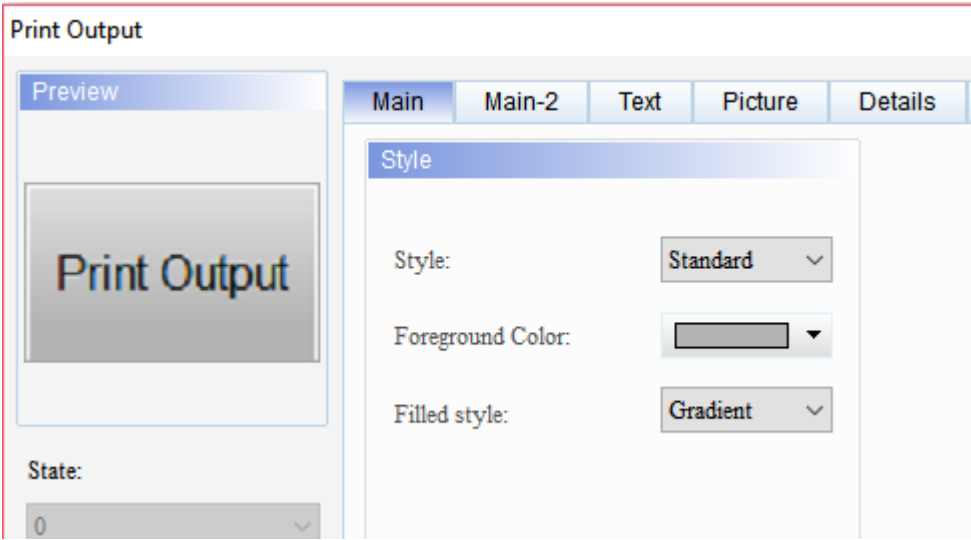
Function
<p>Set the User Security Level to the lowest. You can set the User Security Level for all the DOPSoft elements so that you can protect the system parameters from being tampered or manipulated resulting in system errors.</p>

5

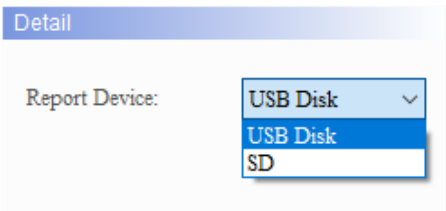
5.7.6 System Menu

Function	Illustration
<p>When you press the System Menu button, the HMI switches to the System Menu screen, as shown on the right-hand side. You can go back to the general HMI execution screen by touching the upper-right corner of the System Menu screen.</p>	

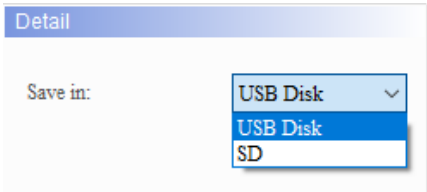
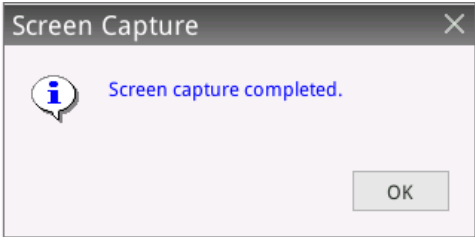


5.7.7 Print Output

Function
<p>If the HMI project has set up a printer, you can perform printing with the Print Output button.</p> 

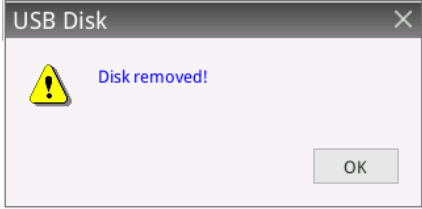
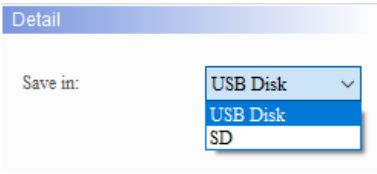
5.7.8 Report List

Function	Illustration
<ul style="list-style-type: none"> ■ There are two storage devices for the Report List button: USB Disk and SD. ■ You can select the desired device to export the Report List. Touch the Report List button, and you can output the data to the specified storage device. 	

5.7.9 Screen Capture

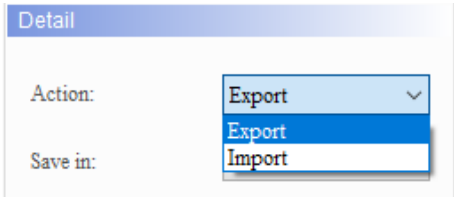
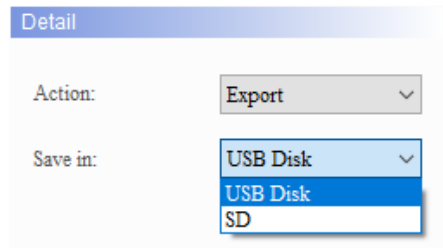
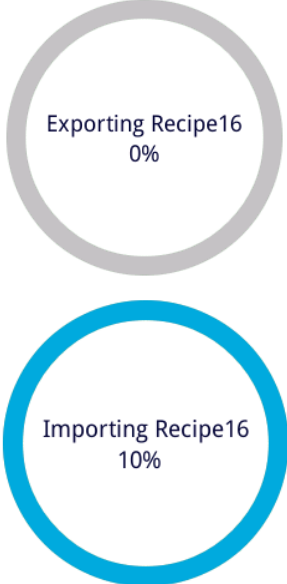
Function	Illustration
<ul style="list-style-type: none"> ■ The Screen Capture function enables you to capture the current HMI screen and store it in an external storage device, including USB Disk and SD as shown in Figure (1). ■ After you touch the Screen Capture button, the Screen Capture window pops up on the HMI to inform you that it is storing the current screen to an external storage device, as shown in Figure (2). ■ You can check the files in the external devices after the saving is completed. The HMI stores the file folders by date (yyyy / mm / dd) and the screen files by time (hh / mm / ss). ■ The output picture format is .bmp, as shown in Figure (4). 	<p>(1)</p>  <p>(2)</p>  <p>(3)</p>  <p>(4)</p> 

5.7.10 Remove Storage


Function	Illustration
<ul style="list-style-type: none"> ■ <u>Prevent data loss of the storage device connected to the HMI. You must execute Remove Storage before turning off the HMI, replacing or removing the storage device.</u> ■ The HMI informs you that the storage is removed after executing the Remove Storage button, as shown in Figure (1). ■ The HMI supports two types of storage devices: USB Disk and SD, as shown in Figure (2). 	<p>(1)</p>  <p>(2)</p> 

5


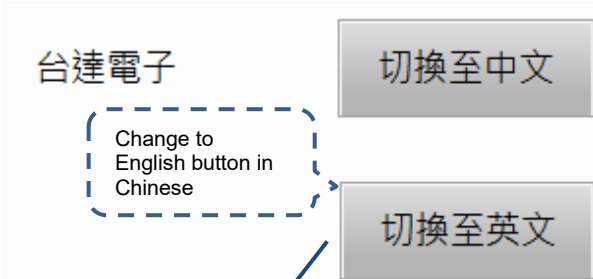
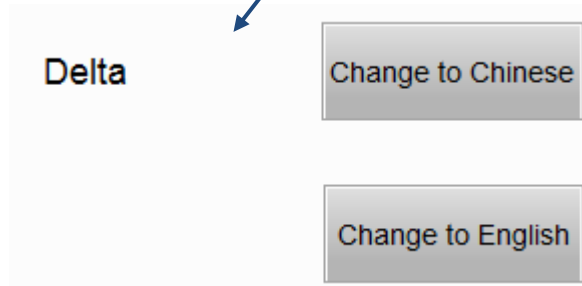
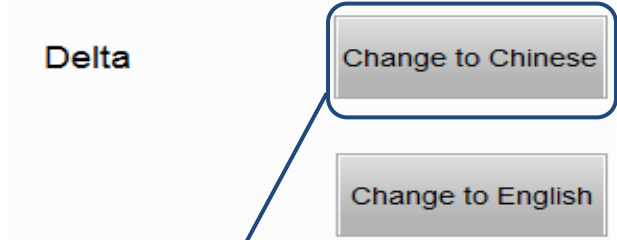
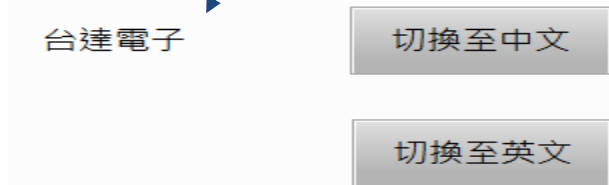
5.7.11 Import / Export Recipe

Function	Illustration
<ul style="list-style-type: none"> ■ You must edit and open the recipe first before executing the Import / Export Recipe button, or the pressing action is invalid. ■ You can set the Action of the Import / Export Recipe button to Import or Export, as shown in Figure (1). ■ You can set the Save in types, including USB Disk and SD, as shown in Figure (2). ■ The HMI informs you that the importing / exporting data is in progress after you touch the Import / Export Recipe button, as shown in Figure (3). ■ The exported file format is .CSV, and the HMI stores the files in the default folder HMI-000. 	<p>(1)</p>  <p>(2)</p>  <p>(3)</p> 

5.7.12 Calibration


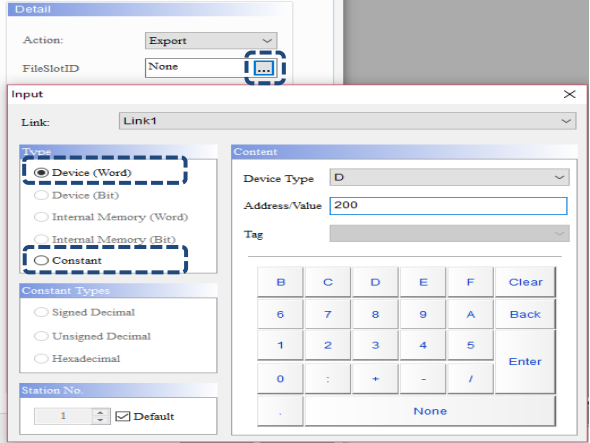
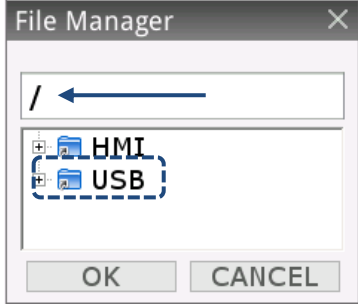
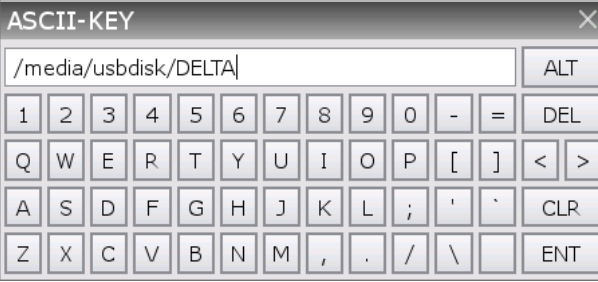
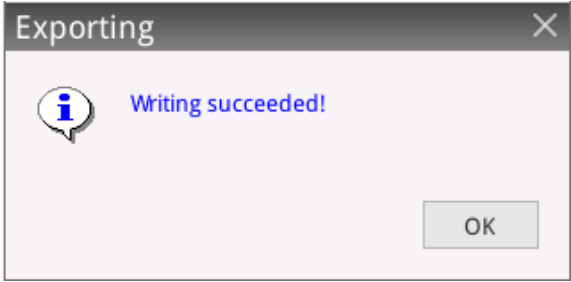
Function	Illustration
<ul style="list-style-type: none"> ■ The Calibration button enables you to perform 5-point calibration. ■ After you touch the Calibration button, the HMI immediately enters the Calibration screen, as shown in the figure on the right-hand side. 	

5.7.13 Language Change

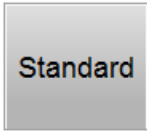


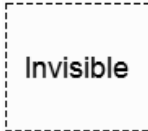
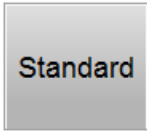


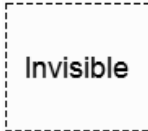
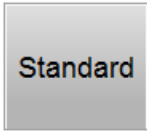


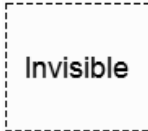
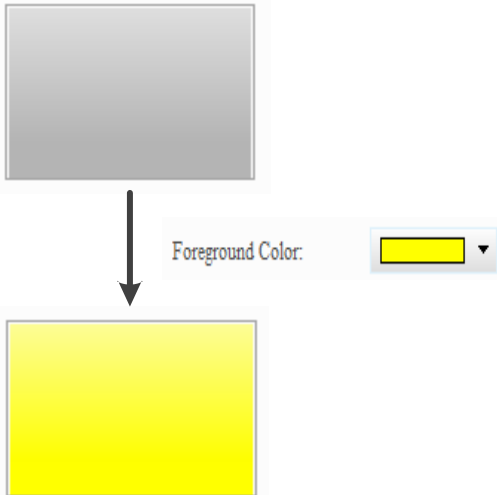
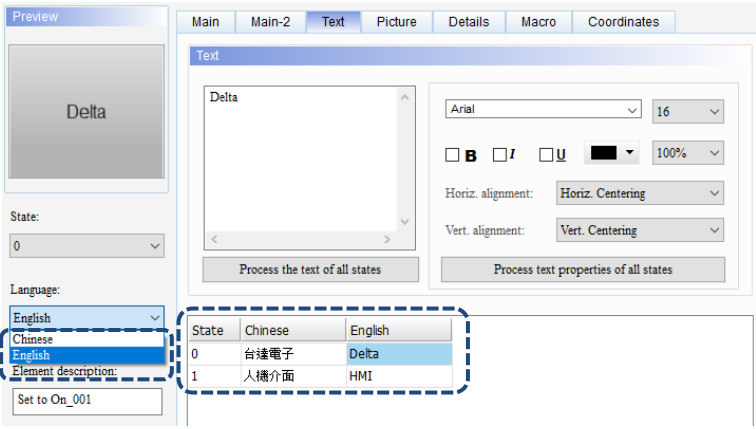
Function	Illustration
<ul style="list-style-type: none"> ■ The Language Change button enables you to quickly change the displaying language. ■ Set the displaying language to Chinese or English, as shown in Figure (1) on the right-hand side. As shown in Figure (2), when you execute the Language Change button, the HMI displays the data in English when you press 切換至英文 (Change to English); the HMI displays the data in Chinese when you press Change to Chinese, as shown in Figure (3). ■ Please activate the Multi-language function before using the Language Change button. Please refer to Chapter 25 for more details on the Multi-language function. 	<p>(1)</p>  <p>(2)</p>   <p>(3)</p>  

5

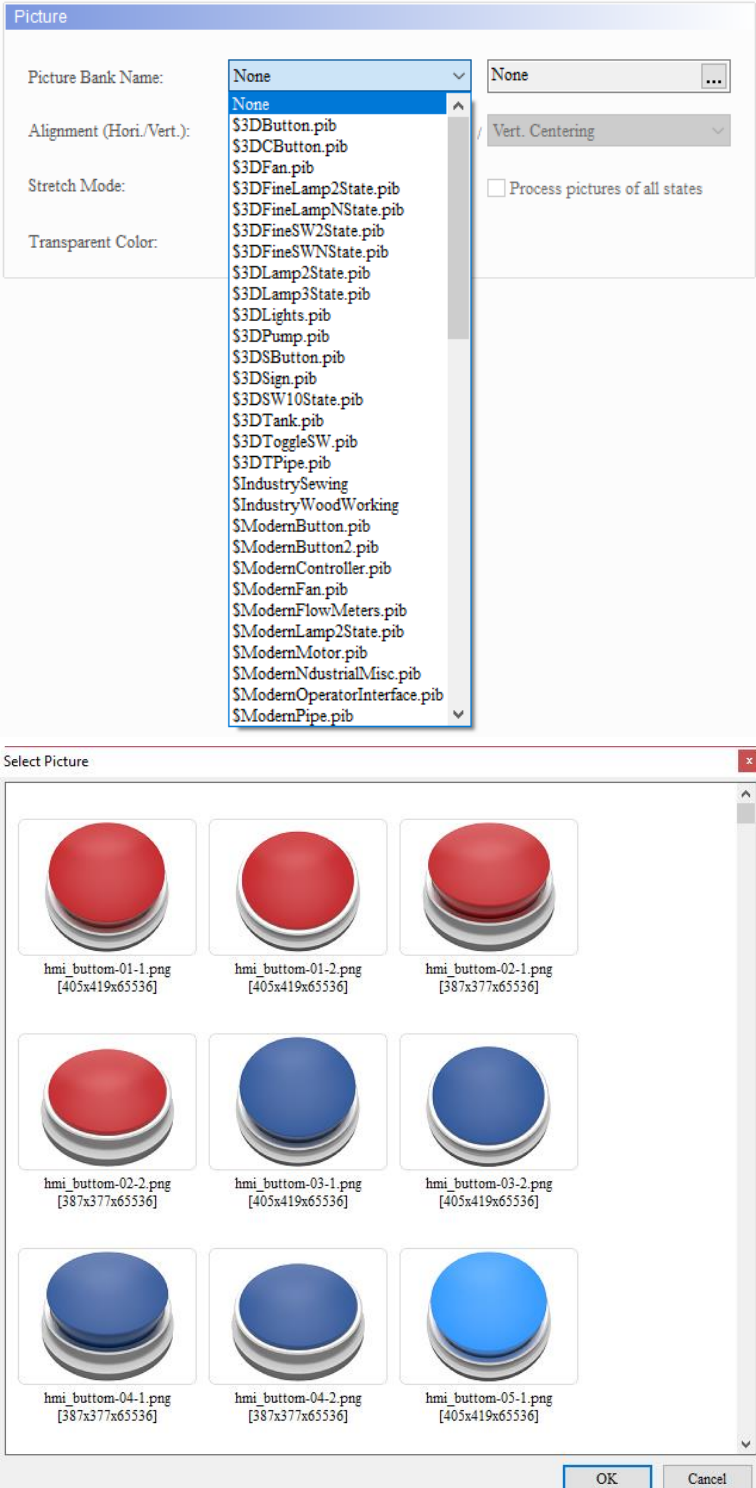
5.7.14 Import / Export FileSlot

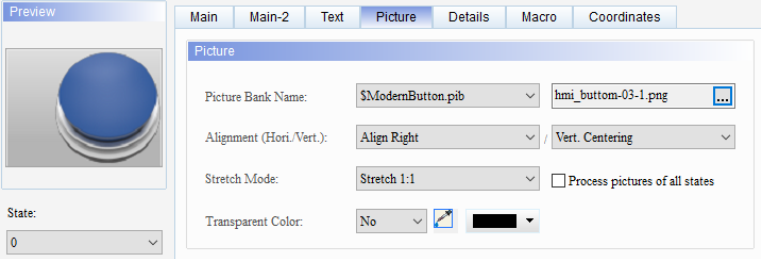










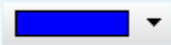

Function	Illustration												
<p>(1)</p> <ul style="list-style-type: none"> You must set the FileSlot number and size before using the Import / Export FileSlot button, or the pressing action is invalid. You can set the Action for the Import / Export FileSlot button to Import or Export, as shown in Figure (1) on the right-hand side. You need to define the FileSlot ID of the Import / Export FileSlot button, as shown in Figure (2). The FileSlot ID can be a memory address or a constant value. 	 <p>(2)</p>  <p>(3)</p>  <p>(4)</p>  <p>(5)</p> 												
<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="4">Memory usage</th> </tr> <tr> <th>Variables</th> <th>Internal memory</th> <th>PLC Register</th> <th>Constant</th> </tr> </thead> <tbody> <tr> <td>FileSlot ID</td> <td>⊙</td> <td>⊙</td> <td>⊙</td> </tr> </tbody> </table> <ul style="list-style-type: none"> After pressing the Import / Export FileSlot button, the File Manager window pops up for you to select the import / export position, as shown in Figure (3). Select the external storage device, then click where the arrow points and enter the filename. After entering the filename and clicking ENT, the exporting is completed as shown in Figure (4). You need to run the macro FileSlotRead to read the file data into the register after importing FileSlot. 	Memory usage				Variables	Internal memory	PLC Register	Constant	FileSlot ID	⊙	⊙	⊙	
Memory usage													
Variables	Internal memory	PLC Register	Constant										
FileSlot ID	⊙	⊙	⊙										

5.7.15 Shared properties of other elements

Shared properties of other elements										
Function page	Property	Function description								
Main	Style	<p>The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Round	Invisible				
	Standard	Raised	Round	Invisible						
										
Foreground Color	<ul style="list-style-type: none"> Set the foreground color of the element. When you set the Style to Invisible, the Foreground Color setting is invalid. 									
Text	Text	<p>You can enter the text to be displayed in the text box.</p> 								
	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text.								
	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.								

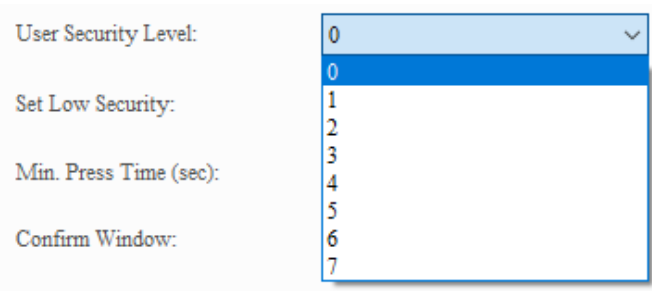
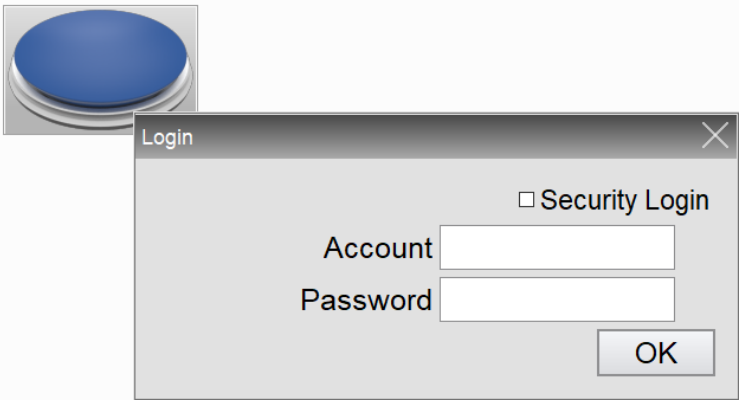
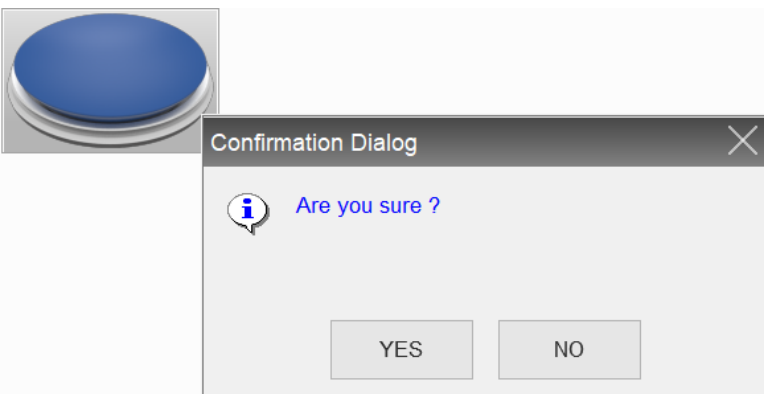
5

Shared properties of other elements		
Function page	Property	Function description
Picture	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures.</p>  <p>The 'Picture' dialog box contains the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: A drop-down menu with 'None' selected. The list includes: \$3DButton.pib, \$3DCButton.pib, \$3DFan.pib, \$3DFineLamp2State.pib, \$3DFineLampNState.pib, \$3DFineSW2State.pib, \$3DFineSWNState.pib, \$3DLamp2State.pib, \$3DLamp3State.pib, \$3DLights.pib, \$3DPump.pib, \$3DSButton.pib, \$3DSign.pib, \$3DSW10State.pib, \$3DTank.pib, \$3DToggleSW.pib, \$3DTPipe.pib, \$IndustrySewing, \$IndustryWoodWorking, \$ModernButton.pib, \$ModernButton2.pib, \$ModernController.pib, \$ModernFan.pib, \$ModernFlowMeters.pib, \$ModernLamp2State.pib, \$ModernMotor.pib, \$ModernNdustrualMisc.pib, \$ModernOperatorInterface.pib, \$ModernPipe.pib. Alignment (Hori./Vert.): A text field containing 'None'. Stretch Mode: A text field containing 'Vert. Centering'. Transparent Color: A text field. <input type="checkbox"/> Process pictures of all states <p>The 'Select Picture' dialog box displays a grid of 9 button images with their respective file names and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

Shared properties of other elements											
Function page	Property	Function description									
Picture	Alignment	<p>You can use the Alignment options to set how pictures are aligned.</p> 									
	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
	Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 										

5

Shared properties of other elements								
Function page	Property	Function description						
Details	Interlock State	<ul style="list-style-type: none"> The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON. The following describes how it works: <ol style="list-style-type: none"> Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0. 						
	Interlock Address							
	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot execute its functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td></td> <td></td> </tr> <tr> <td>Invisible Address is on</td> <td></td> <td></td> </tr> </table>	Invisible Address is off			Invisible Address is on		
	Invisible Address is off							
Invisible Address is on								

Shared properties of other elements		
Function page	Property	Function description
Details	User Security Level	<ul style="list-style-type: none"> This function sets the permission level for pressing the element; this operation is available for users with the set security level or higher.  <ul style="list-style-type: none"> After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element, please refer to Section 5.7.2 Password Table Setup). 
	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog pops up for you to confirm the pressing action after pressing the element.</p> 

5

Shared properties of other elements		
Function page	Property	Function description
Macro		<p>Flowcharts of Before / After Execute Macro:</p>
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by touching it (using external controller commands or other macros instead), the HMI does not execute the macro commands.
Coordinates	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
	Width and Height	Set the width and height of the elements.

5.8 Multiple actions

The Multiple actions button allows you to execute multiple actions in one single button. You can define the actions to execute when you press, release, or long press the button. You can use this function to replace the complicated programming process for the macro to trigger the button action.

Available button actions in the Multiple actions settings are as follows:

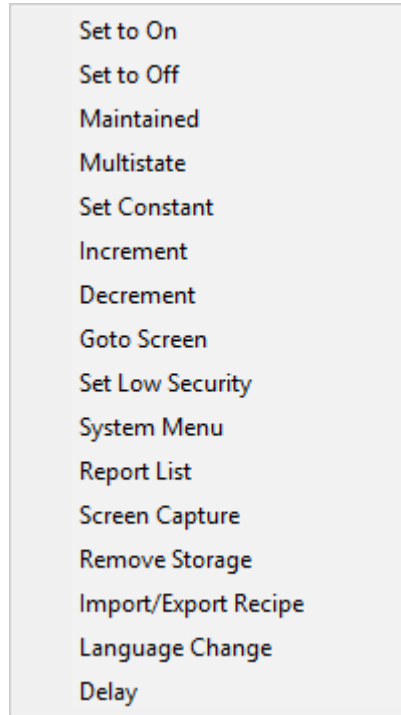


Figure 5.8.1 Button actions available for the Multiple actions button

Note:

1. You can set up to 32 actions for each press, release, and long press, so one Multiple actions button can execute up to 32*3 actions.
2. The System Menu can only be the last action, meaning you cannot add any actions following the System Menu.
3. One Multiple actions button can only have one page change action, including Goto Screen and Previous Page.
4. If the button action is set with a macro, the execution of the macro is invalid.

Example descriptions for the Multiple actions function are as follows:

Table 5.8.1 Multiple actions button example

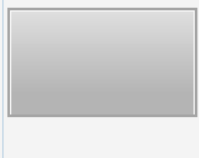
5

Multiple actions button

- Create a Multiple actions button.**

Multiple actions
×

Preview



State: 0

Main
Main-2
Text
Picture
Details
Coordinates

Style

Style: Standard

Foreground Color:

Filled style: Gradient

Action

Action when pressed: ...

Action when released: ...

Action when long pressed: ...

Long pressed time: 0

- Set the button press action with Number 1 as Increment. Then, set the Write Address to \$10, the Increase / Decrease value to 3, and the Limit to 1000.**

Action when pressed
×

Action List

Number	Action Name
1	Increment - \$10

Add

Delete

Up

Down

Copy

Paste

Detail

Write Address: \$10

Write Offset Address: None

Data Type: Word

Data Format: Unsigned Decimal

Increase/Decrease: 3

Limit: 1000

Set Multiple actions

Multiple actions button

- Set the button press action with Number 2 as Multistate and the Write Address to \$20. The other settings are shown in the figure below.

Action when pressed

Number	Action Name
1	Increment - \$10
2	Multistate - \$20

Write Address: \$20
Write Offset Address: None
Data Type: Word
Data Format: Unsigned Decimal
State Counts: 3
Sequence: Next State

- Set the button release action to Goto Screen - Screen_2.

Action when released

Number	Action Name
1	Goto Screen - Screen_2

Function: Goto Screen
Goto Screen: Screen_2
 Close Subscreen
(The button is only valid in subscreen)

Set Multiple actions

- Set the button long press action to Set Constant and the Long pressed time to 3 seconds. Set the Write Address to \$30 and the Set value to 5000.

Action when long pressed: Set Constant - \$30
Long pressed time: 3

Action when long pressed

Number	Action Name
1	Set Constant - \$30

Write Address: \$30
Write Offset Address: None
Data Type: Word
Data Format: Unsigned Decimal
Set value: 5000

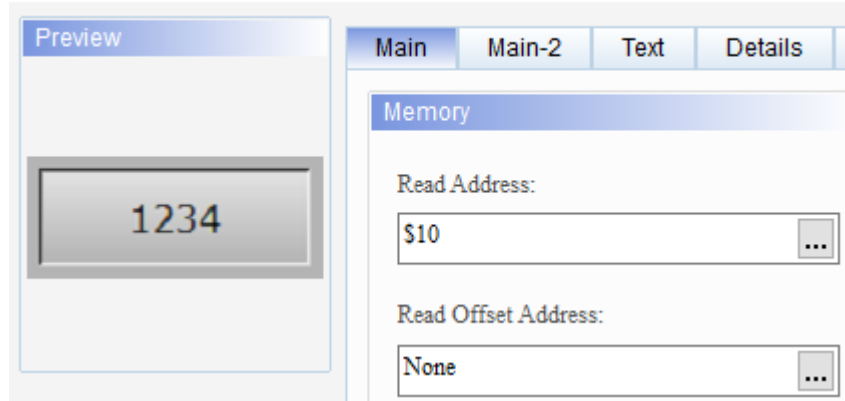
5

Multiple actions button

Set
Numeric
Display
elements

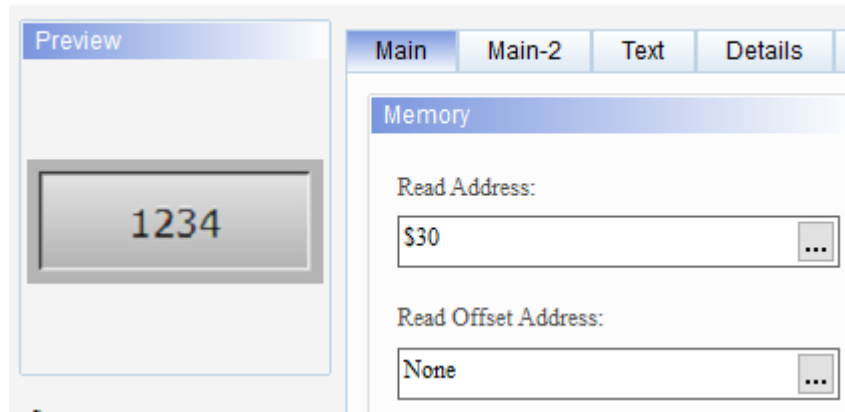
- Create a Numeric Display element which Read Address is \$10 for displaying the changed value after the increment action is executed.

Numeric Display



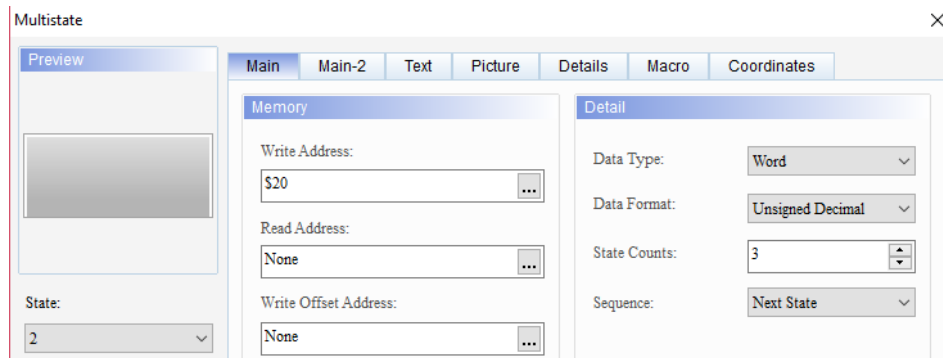
- Create a Numeric Display element which Read Address is \$30 for displaying the changed value after the Set Constant action is executed.










Numeric Display

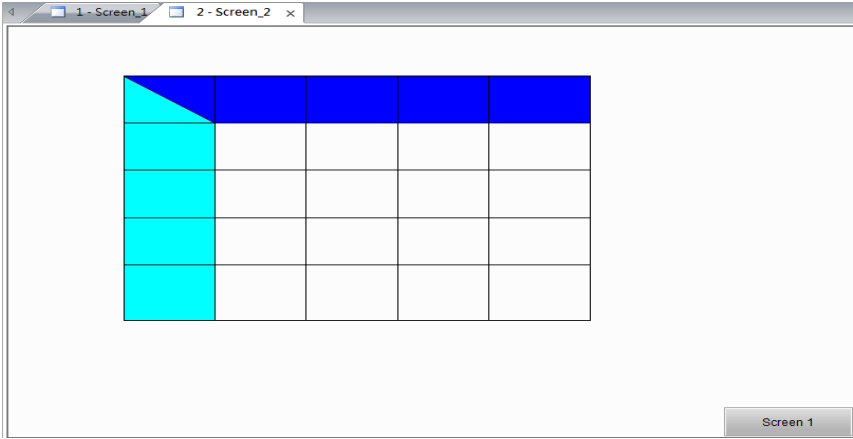


Set
Multistate

- Create a Multistate button. Set the Write Address to \$20, State Counts to 3, and the switching sequence (Sequence) to Next State.



Multiple actions button									
Set Multistate	<ul style="list-style-type: none">Set the Foreground Color for State 0, 1, and 2.								
	<table border="1"><thead><tr><th>State</th><th>Foreground Color</th></tr></thead><tbody><tr><td>0</td><td></td></tr><tr><td>1</td><td></td></tr><tr><td>2</td><td></td></tr></tbody></table>	State	Foreground Color	0		1		2	
	State	Foreground Color							
	0								
1									
2									
Add Screen_2. Create a table element and a Goto Screen button which is set to switch to Screen_1.									
New Screen									

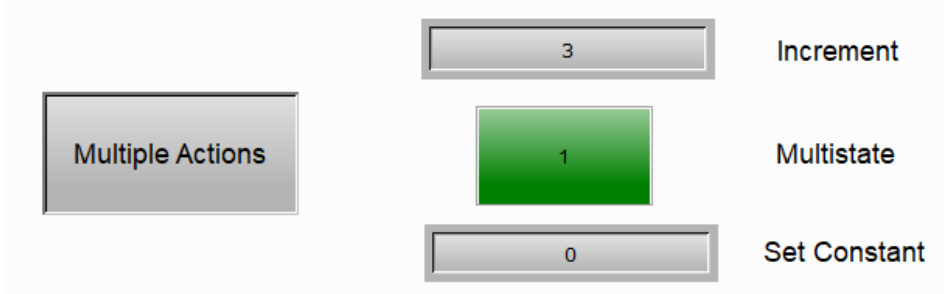


The screenshot shows a window with two tabs: '1 - Screen_1' and '2 - Screen_2'. The main area contains a table with 5 columns and 5 rows. The top row has a cyan triangle in the first cell and a blue header for the rest. The first column has cyan cells. A 'Screen 1' button is in the bottom right corner.

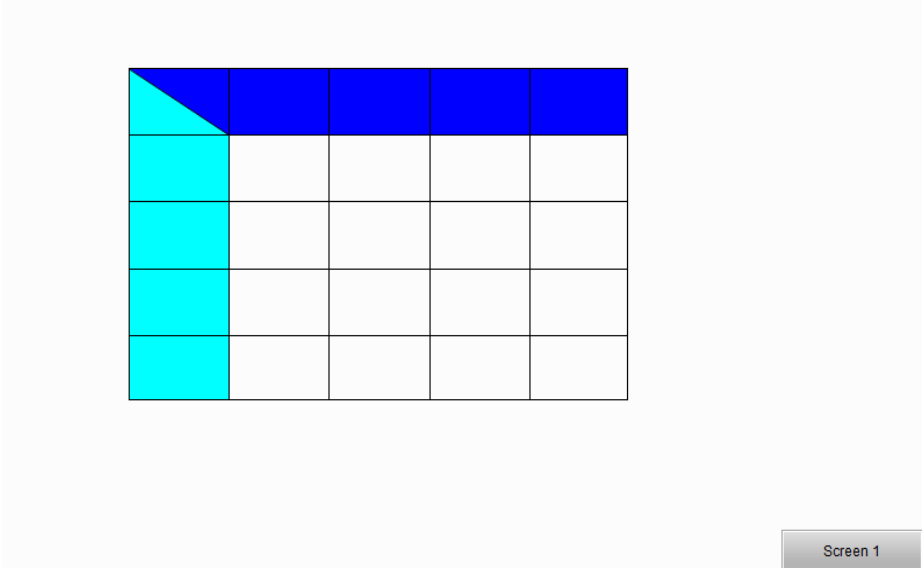
5

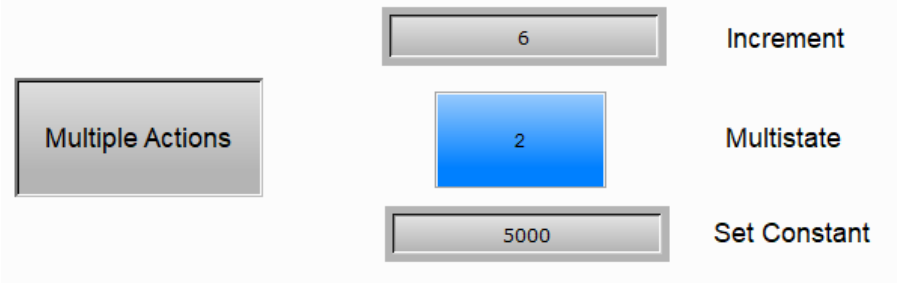
Multiple actions button

- If you press the **Multiple Actions** button, the Increment and Multistate actions are executed.


- If you release the **Multiple Actions** button, the Goto Screen action is executed and the HMI screen changes to Screen_2.

Execution results


- When you change the screen to Screen_1 and long press the **Multiple Actions** button for 3 seconds, the Set Constant action is executed. Apart from long pressing the button for 3 seconds, you also pressed the button, so the HMI executes both the Increment and Multistate actions.



When you double-click the Multiple actions button, the property page is shown as follows.

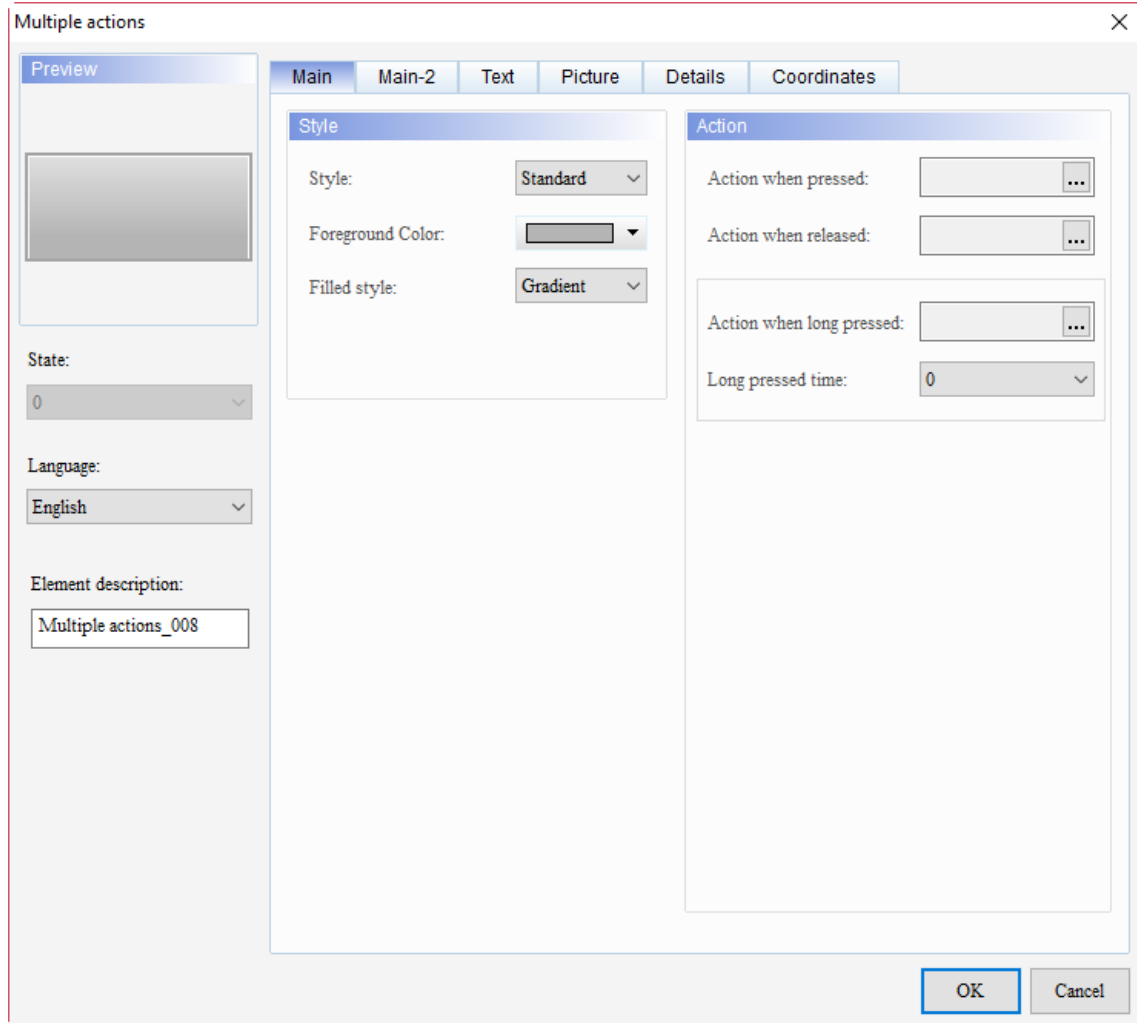


Figure 5.8.2 Properties of Multiple actions

Table 5.8.2 Function page of Multiple actions

Multiple actions button	
Function page	Description
Preview	The Multiple actions button can only view multi-language data display since the multistate property is not available for this element.
Main	Set the Style, Foreground Color, and Filled style. Set the actions when you press, release, and long press the button as well as the long press time.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Interlock State, Interlock Address, Invisible Address, User Security Level, and Set Low Security.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

5

■ Main

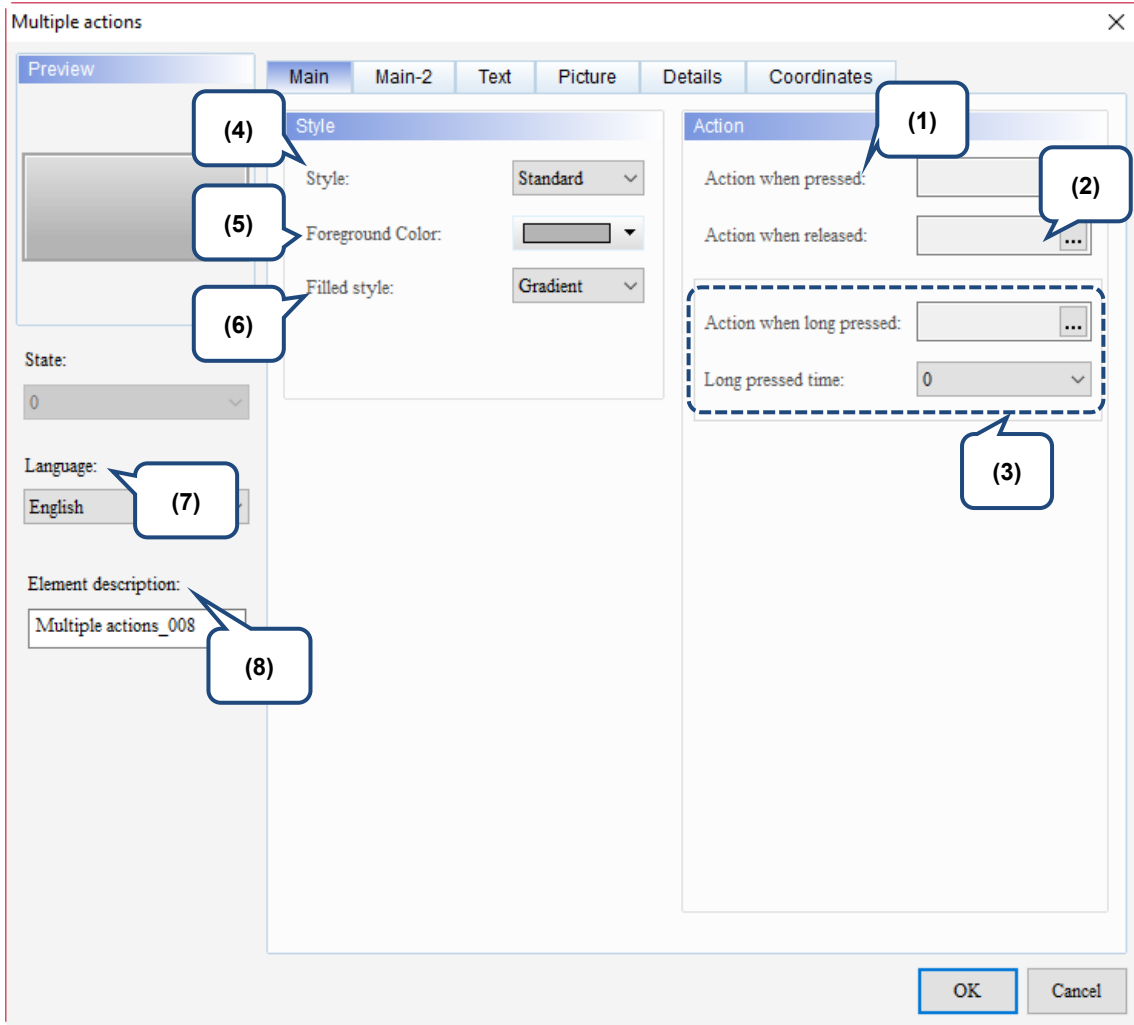
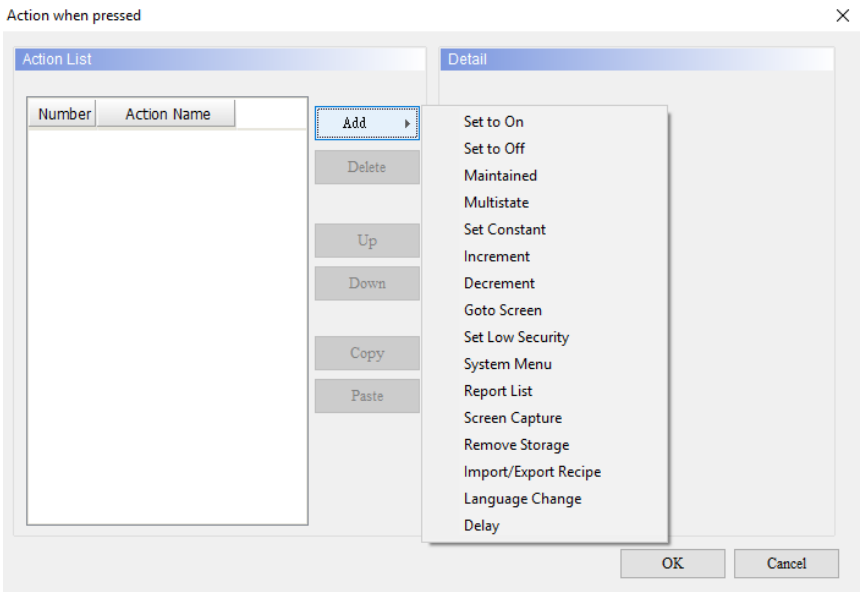
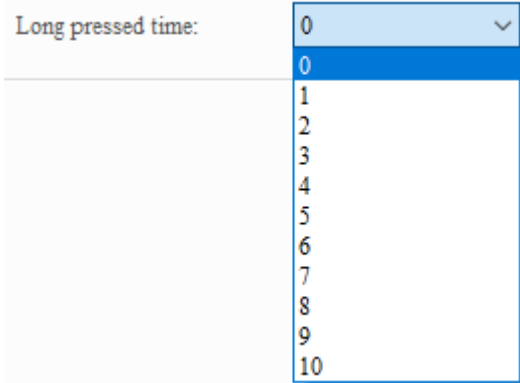
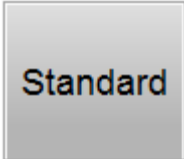
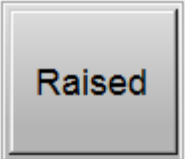

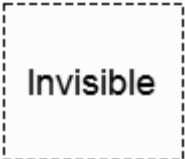
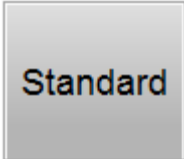
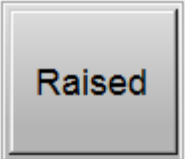

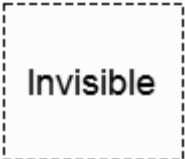
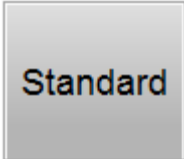
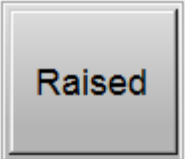

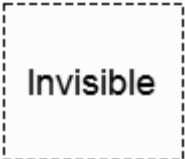
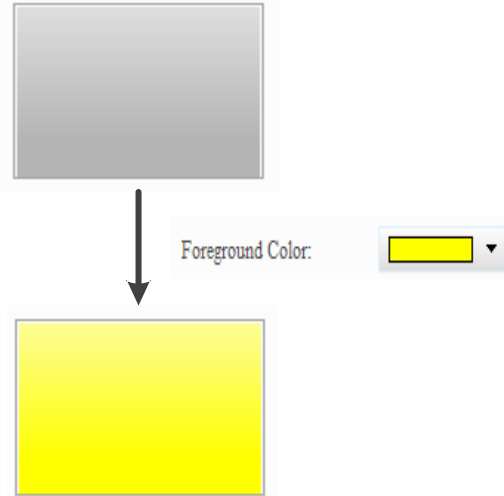

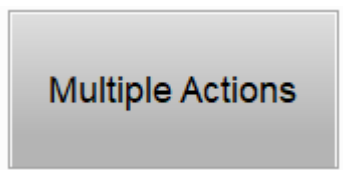
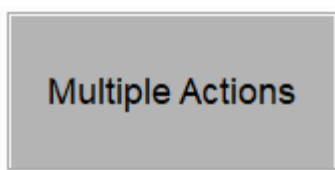
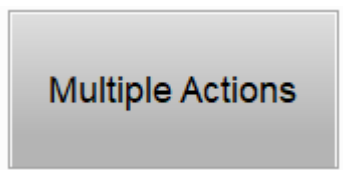
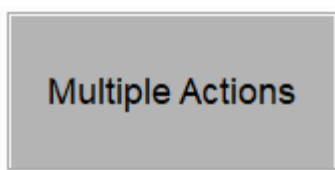
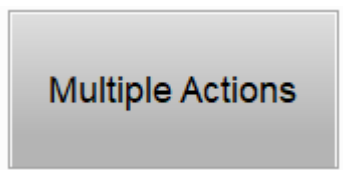
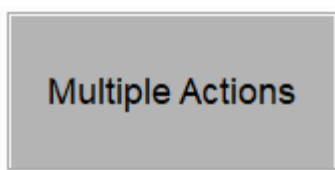
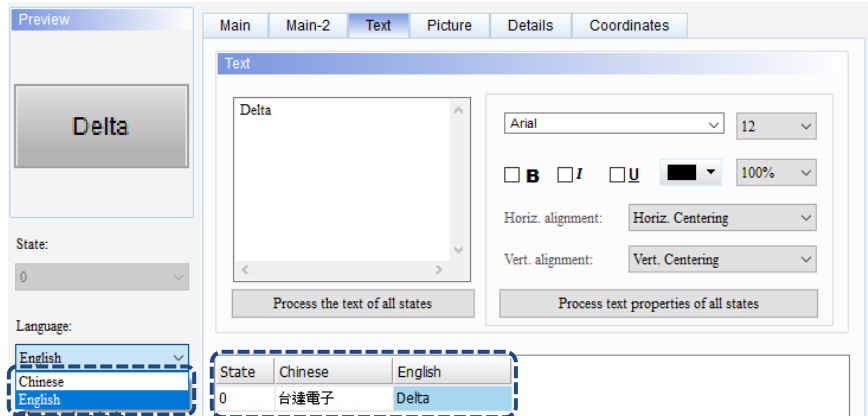


Figure 5.8.3 Main property page for the Multiple actions button element

No.	Property	Function description								
(1)	Action when pressed	<ul style="list-style-type: none"> It is the action to execute after you press the Multiple actions button. The supported button actions after pressing the button are shown as below: 								
(2)	Action when released	<ul style="list-style-type: none"> It is the action to execute after you release the Multiple actions button. The supported button actions are the same as that of Action when pressed. 								
	Action when long pressed	<ul style="list-style-type: none"> It is the action to execute after you long press the Multiple actions button. You must set the Long pressed time for the long press button action to work. The supported button actions are the same as that of Action when pressed and Action when released. 								
(3)	Long pressed time	<p>The setting range for Long pressed time is 0 - 10 second(s).</p> 								
(4)	Style	<p>The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Round</th> <th>Invisible</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> <td>  </td> <td>  </td> </tr> </tbody> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
										

5

No.	Property	Function description				
(5)	Foreground Color	<ul style="list-style-type: none"> ■ Set the foreground color of the element. ■ When you set the Style to Invisible, the Foreground Color setting is invalid. 				
(6)	Filled style	<p>You can set the Filled style to Gradient or Fixed.</p>  <table border="1"> <thead> <tr> <th>Gradient</th> <th>Fixed</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>	Gradient	Fixed		
Gradient	Fixed					
						
(7)	Language	<p>If you have set the language data, you can edit the displaying text property, etc. with the Language setting of the element.</p> 				

No.	Property	Function description										
(8)	Element description	Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.										
			Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value		
		1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0		
		2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1		
		3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4		
		4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1		
		5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0		
		6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1		
		7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0		
		8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8		
		9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25		

5

■ Main-2

5

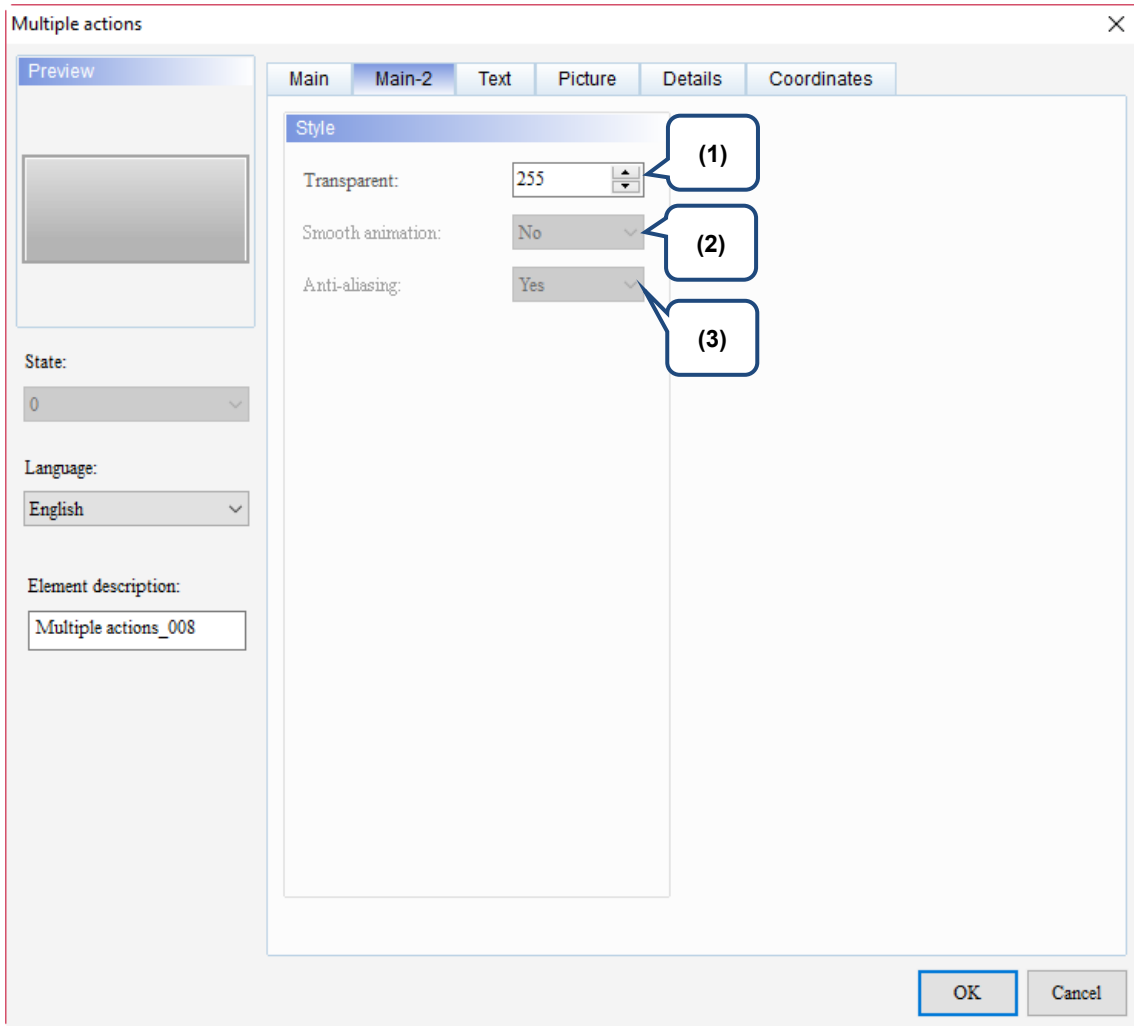
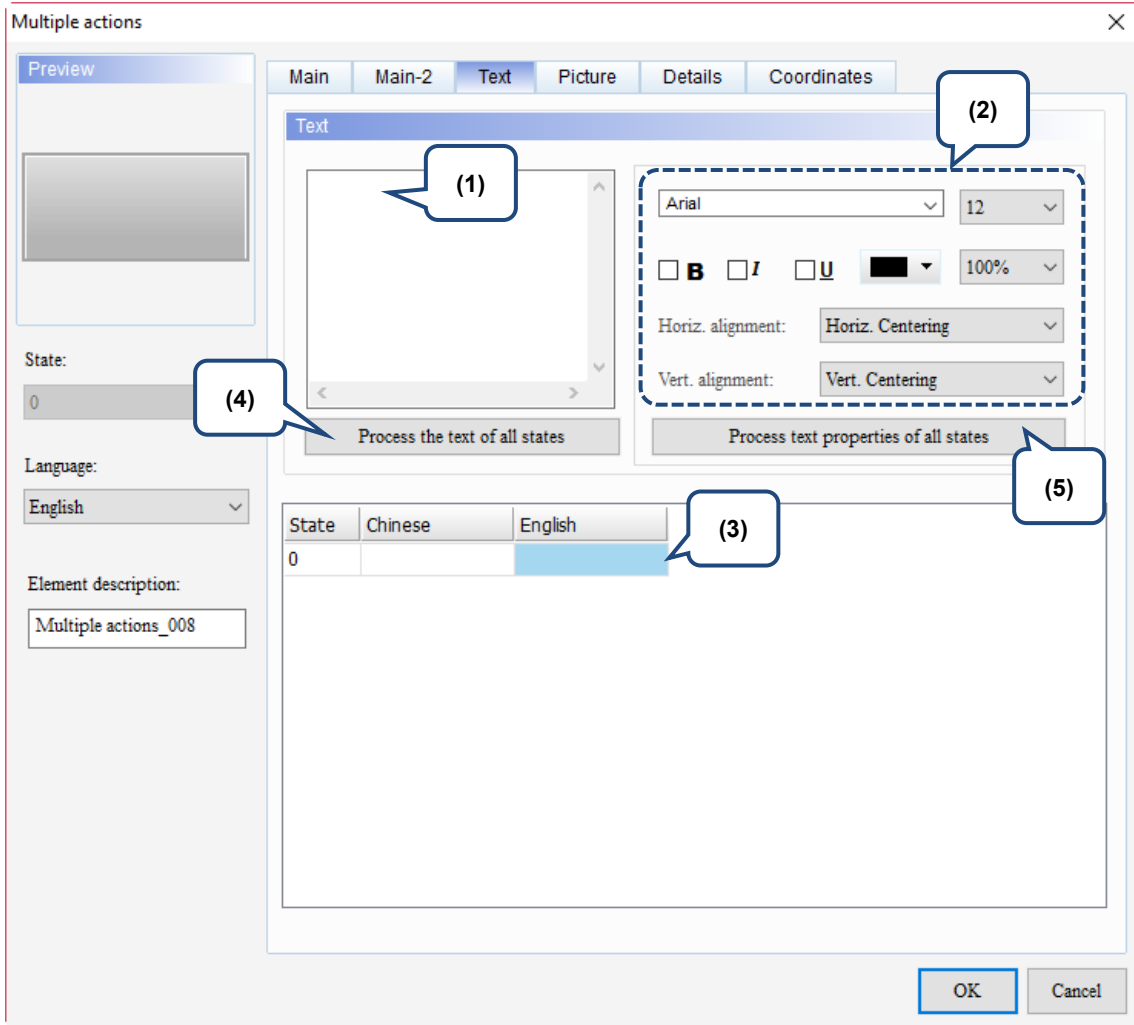


Figure 5.8.4 Main-2 property page for the Multiple actions button element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

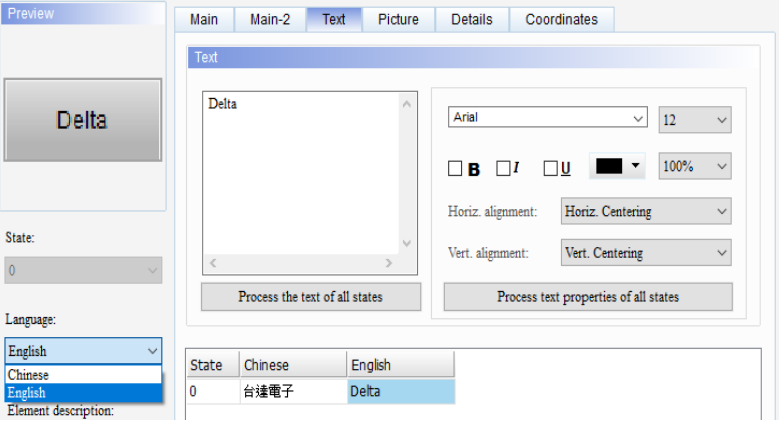
■ Text



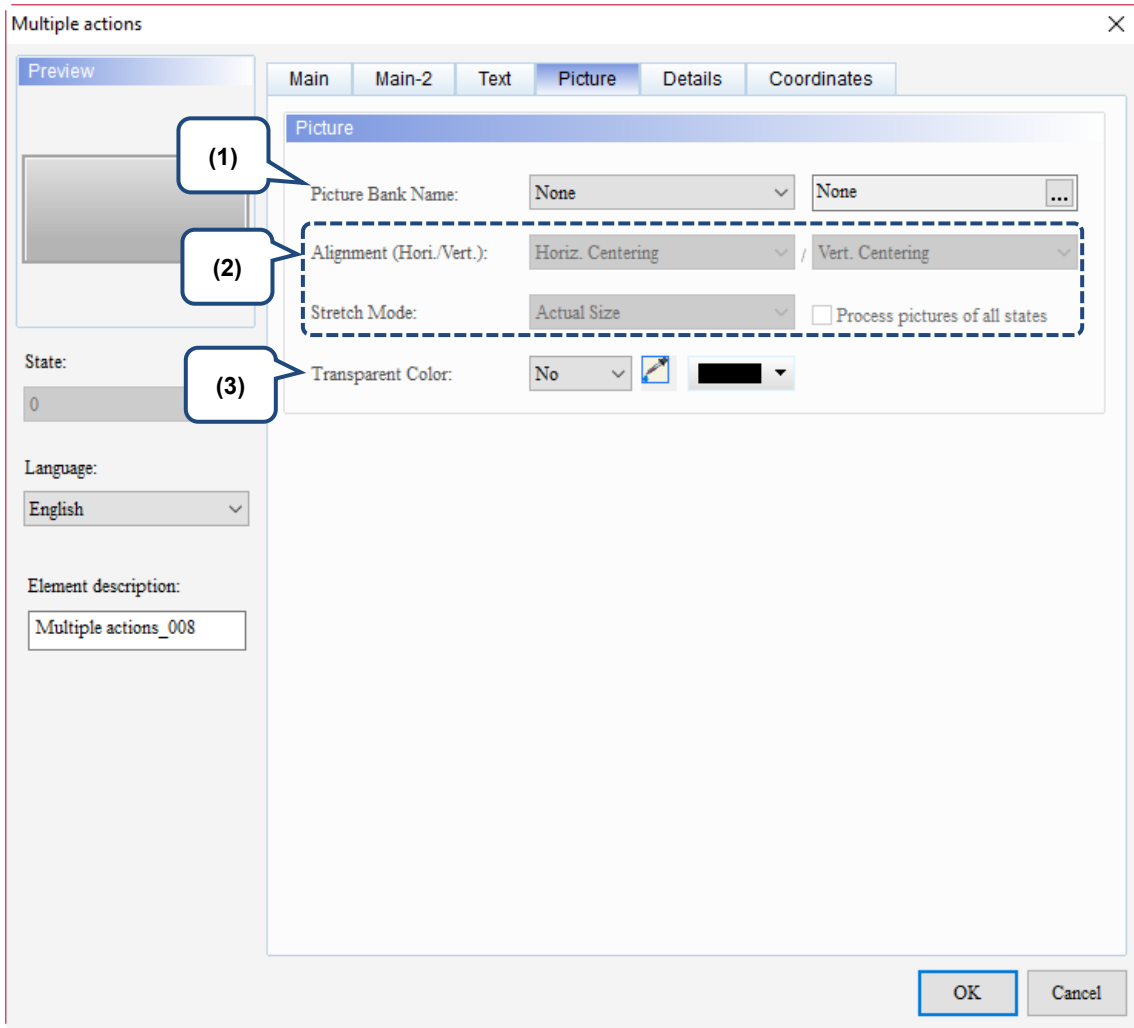
5

Figure 5.8.5 Text property page for the Multiple actions button element

5

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can enter the text to be displayed in the text box.  <ul style="list-style-type: none"> As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as this element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as this element does not have multiple states.

■ Picture

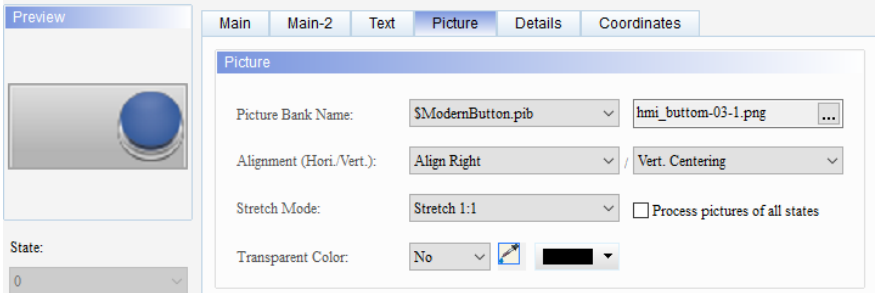













5

Figure 5.8.6 Picture property page for the Multiple actions button element

5

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures.</p> 

No.	Property	Function description									
	Alignment	<p>You can use the Alignment options to set how pictures are aligned.</p> 									
(2)	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td> <p>If you select Stretch All, the picture fills the full element display area.</p> </td> <td> <p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p> </td> <td> <p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p> </td> </tr> <tr> <td>  </td> <td>  </td> <td>  </td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	<p>If you select Stretch All, the picture fills the full element display area.</p>	<p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p>	<p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p>			
Stretch All	Stretch 1:1	Actual Size									
<p>If you select Stretch All, the picture fills the full element display area.</p>	<p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p>	<p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p>									
											
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> 									

5

■ Details

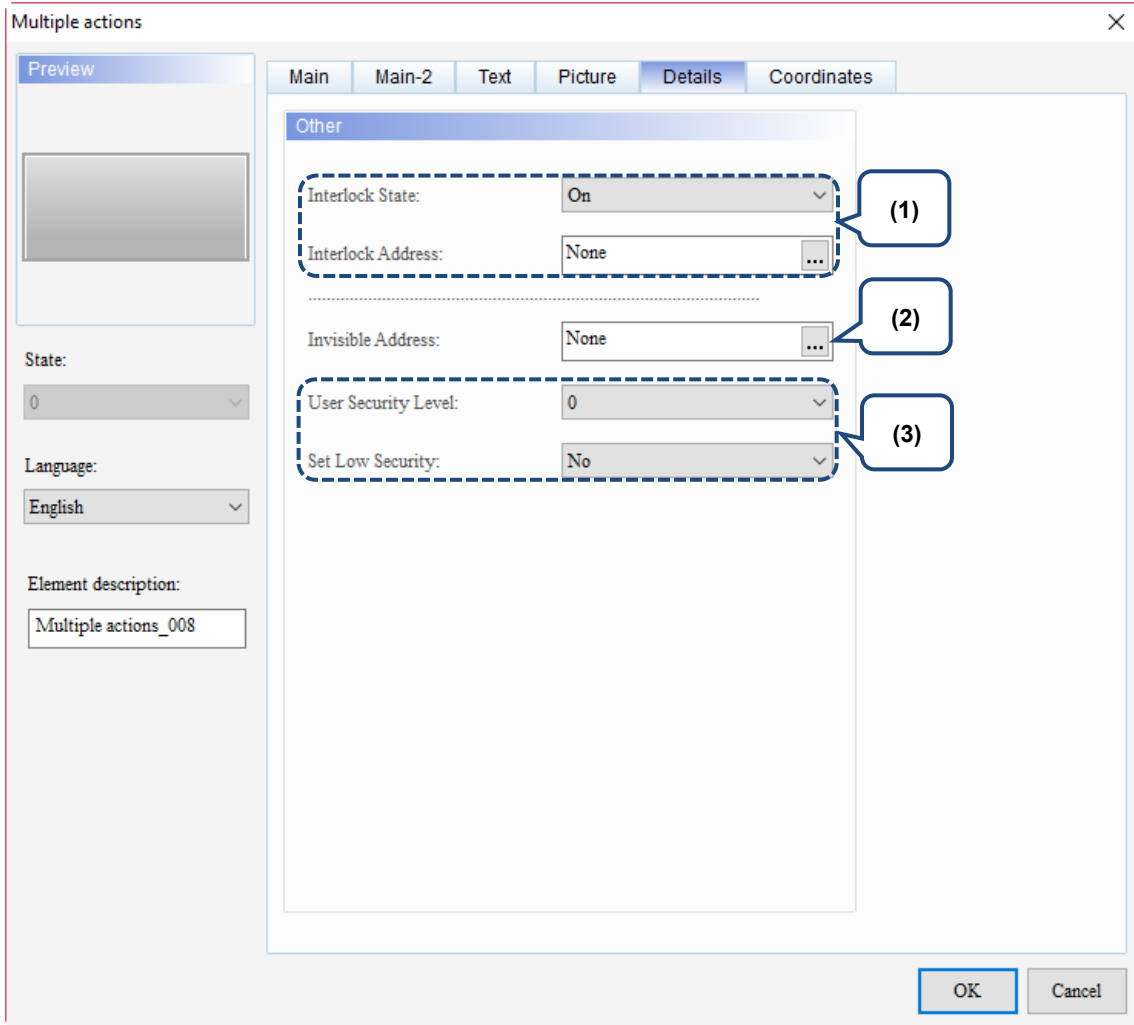
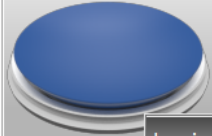


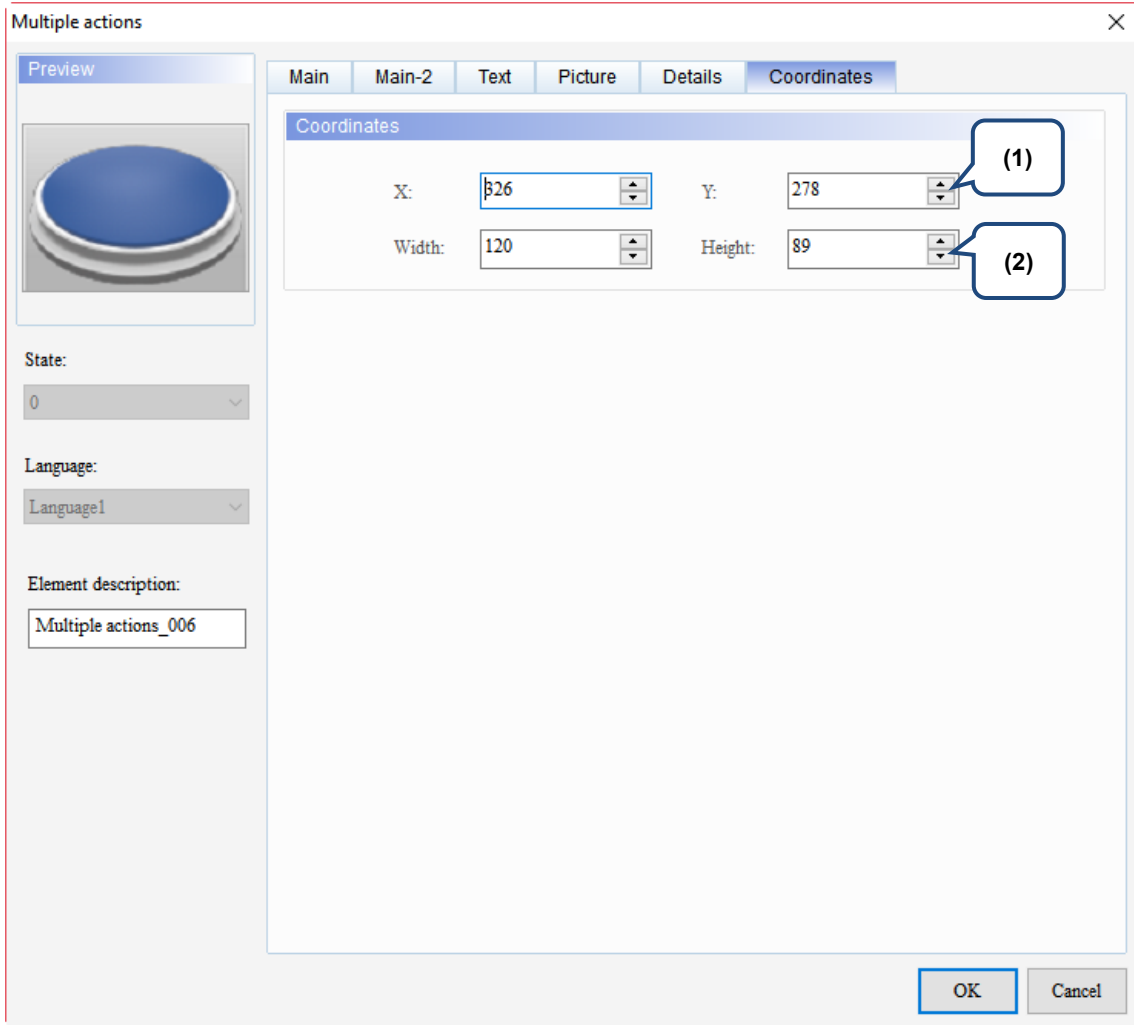
Figure 5.8.7 Details property page for the Multiple actions button element

No.	Property	Function description						
(1)	Interlock State	<ul style="list-style-type: none"> The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON. The following describes how it works: <ol style="list-style-type: none"> Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0. 						
	Interlock Address							
(2)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td> </td> <td> </td> </tr> <tr> <td>Invisible Address is on</td> <td> </td> <td> </td> </tr> </table>	Invisible Address is off			Invisible Address is on		
	Invisible Address is off							
Invisible Address is on								

5

No.	Property	Function description
	User Security Level	<ul style="list-style-type: none"> ■ This function sets the permission level for pressing the element; this operation is available for users with the set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element, please refer to Section 5.7.2 Password Table Setup). <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>User Security Level: 0</p> <p>Set Low Security: 0</p> <p>Min. Press Time (sec): 1</p> <p>Confirm Window: 2</p> </div>
(3)	Set Low Security	<p>If you set the Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to enter the password for the corresponding security level again.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;">  <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px; width: fit-content;"> <p>Login ✕</p> <p><input type="checkbox"/> Security Login</p> <p>Account <input style="width: 100px;" type="text"/></p> <p>Password <input style="width: 100px;" type="password"/></p> <p style="text-align: right;"><input type="button" value="OK"/></p> </div> </div>

■ Coordinates



5

Figure 5.8.8 Coordinates property page for the Multiple actions button element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

(This page is intentionally left blank.)

5

Meter

6

This chapter introduces the usage and setting details for the Meter elements.

6.1	Meter(1) / Meter(2) / Meter(3) / Meter(4).....	6-2
-----	------------------------------------------------	-----

6

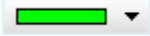



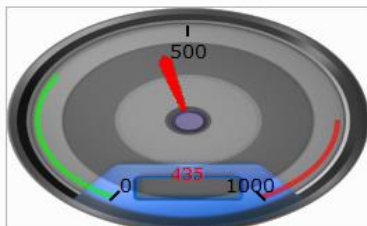
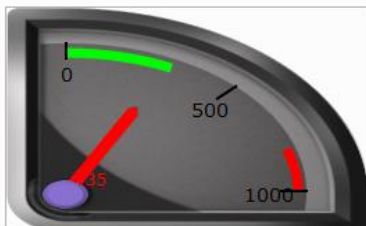
6.1 Meter(1) / Meter(2) / Meter(3) / Meter(4)

The DOPSoft provides four styles of meters for displaying the measuring values of the set addresses as well as for showing whether the value reaches the upper or lower limit and the target value. In addition, you can define the memory address for the target value and high / low limit to make the application more flexible so it meets your requirements. You can also specify the colors for the lower limit, upper limit, and target value for easier identification and viewing. Further, the Meter elements have the Smooth animation and Anti-aliasing functions that make the display smoother and more delicate.

Please refer to the example descriptions below.

Table 6.1.1 Meter example

Meter(1) / Meter(2) / Meter(3) / Meter(4)											
Read Address	Create Meter(1), Meter(2), Meter(3), and Meter(4) elements and set their read addresses to \$1000.										
Settings											
	<table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>Word</td> <td>Unsigned Decimal</td> <td>0</td> <td>1000</td> </tr> </tbody> </table>				Data Type	Data Format	Minimum	Maximum	Word	Unsigned Decimal	0
Data Type	Data Format	Minimum	Maximum								
Word	Unsigned Decimal	0	1000								
<div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/> ▼</p> <p>Data Format: <input type="text" value="Unsigned Decimal"/> ▼</p> <p>Minimum: <input type="text" value="0"/></p> <p>Maximum: <input type="text" value="1000"/></p> </div>											

Meter(1) / Meter(2) / Meter(3) / Meter(4)				
Input value for activation range	Low Limit Property		High Limit Property	
	Low Range Color	Low Range Value	High Range Color	High Range Value
		300		800
Screen Cycle Macro	<pre> [*&Clock Macro] 1 \$1000 = \$1000 + 5 2 IF \$1000 > 1000 3 \$1000 = 0 4 ENDIF </pre>			
Execution results	<p>After finishing editing the screens, download them to the HMI. Then, the HMI executes the program in the screen cycle macro and displays the results in the corresponding addresses set for the Meter elements in the accumulation process.</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;">     </div>			

Functions for Meter(1), Meter(2), Meter(3), and Meter(4) are the same except the styles; therefore, the section below will only introduce Meter(1).

When you double-click the Meter element, the property page is shown as follows.

6

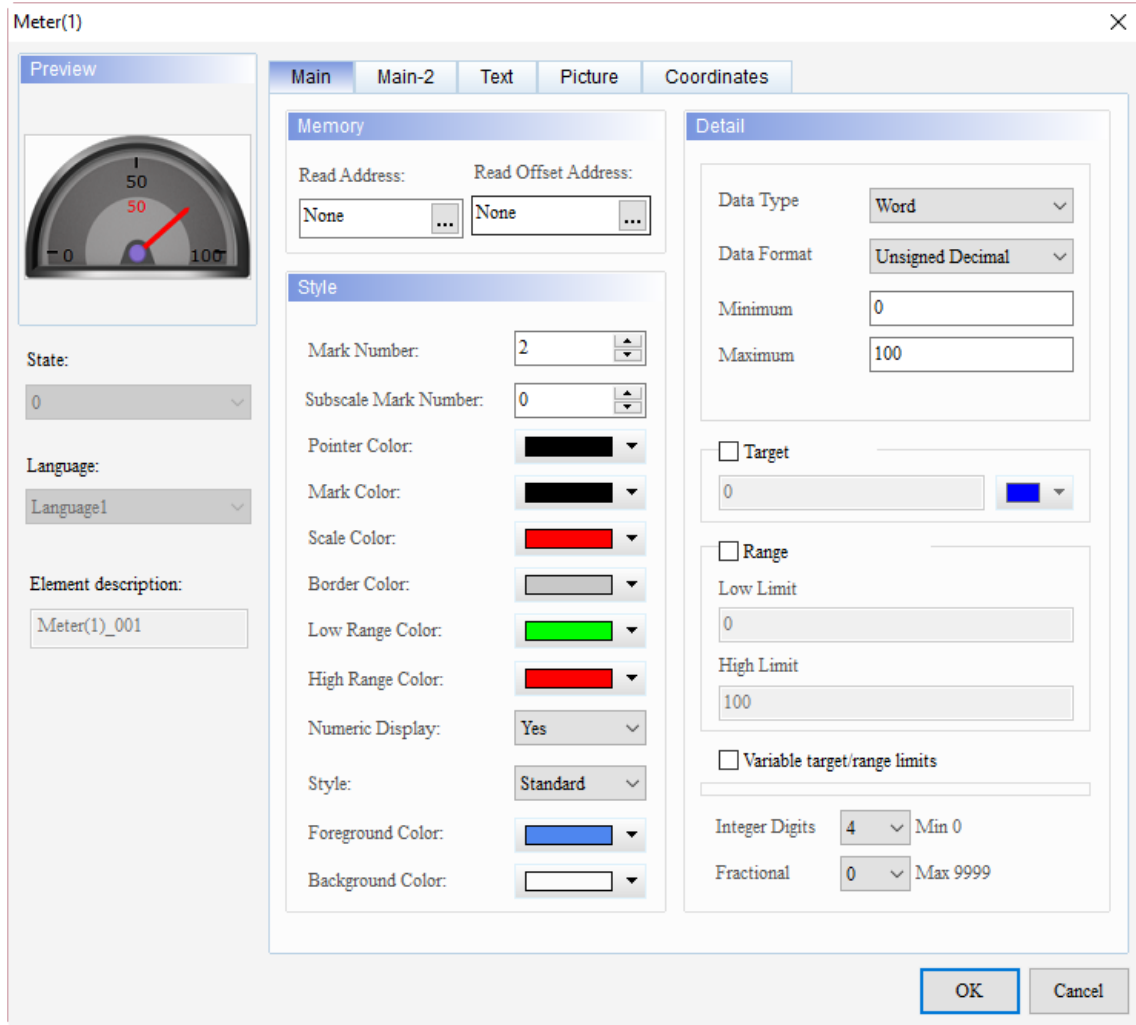


Figure 6.1.1 Properties of Meter

Table 6.1.2 Function page of Meter

Meter(1) / Meter(2) / Meter(3) / Meter(4)	
Function page	Content description
Preview	Meter elements are only for viewing multi-language data display and have no multiple states.
Main	Set the Read Address, Read Offset Address, Style, Foreground Color, and Background Color. Set the Mark Number, Subscale Mark Number, Pointer Color, Mark Color, Scale Color, Border Color, Low Range Color, High Range Color, and Numeric Display. Set the Data Type, Data Format, and Minimum / Maximum input value of the element. Set whether to display the target value and its color, the Range, Variable target/range limits, Integer Digits, and Fractional.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, Limit Ranges Transparent, Target Value Transparent, Value Color, and Minify the scale.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set to Picture Bank Mode or Template Pattern.
Coordinates	Set the X and Y coordinates, width, and height of the element.

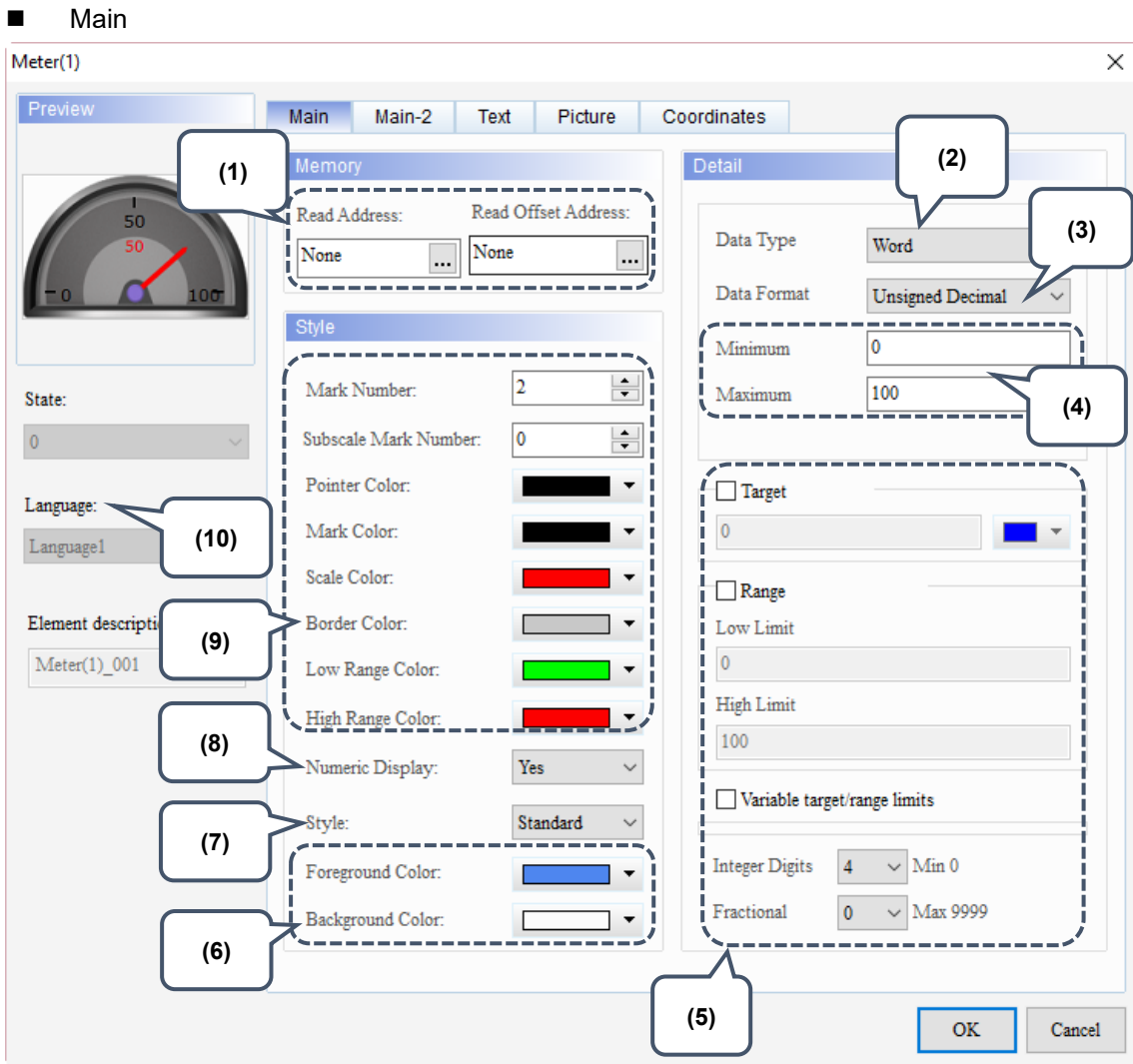
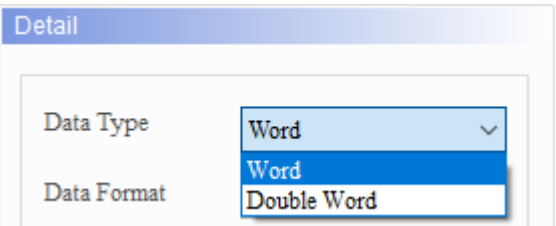
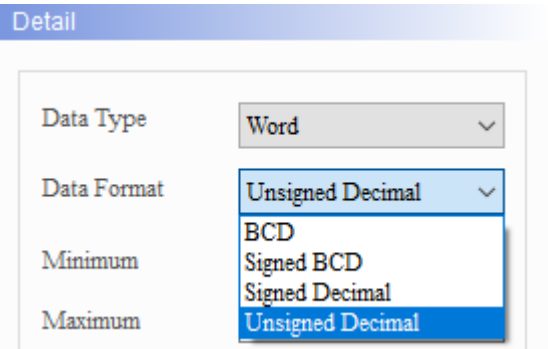
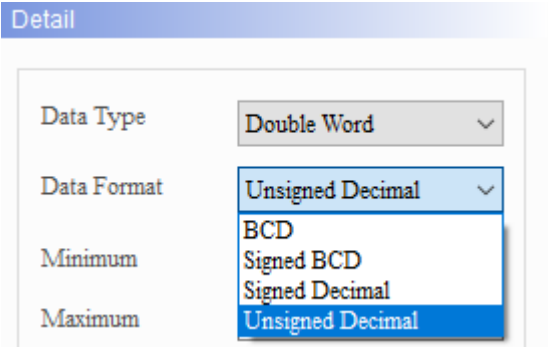
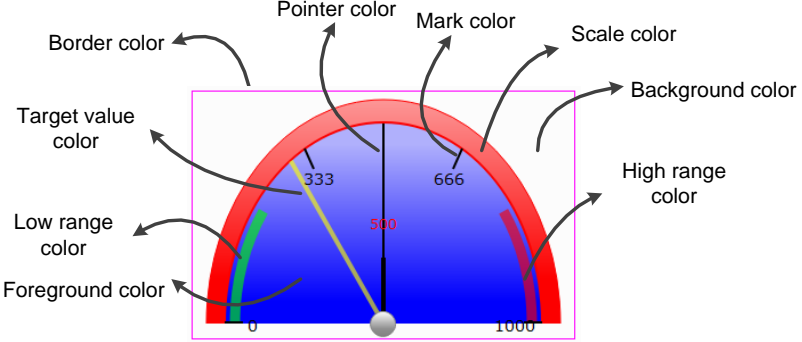
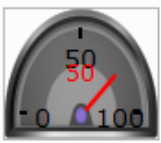
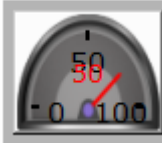
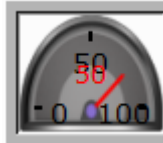
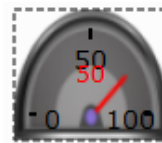
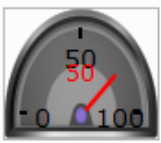
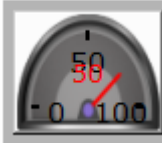
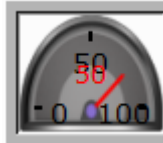
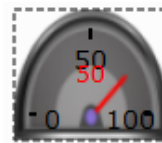
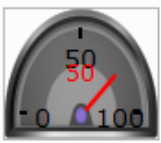
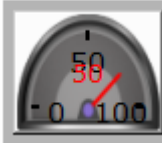
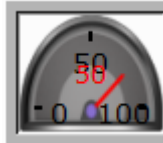
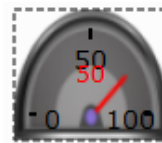


Figure 6.1.2 Main property page for the Meter elements


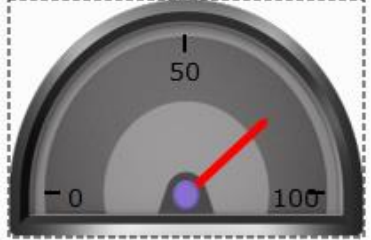
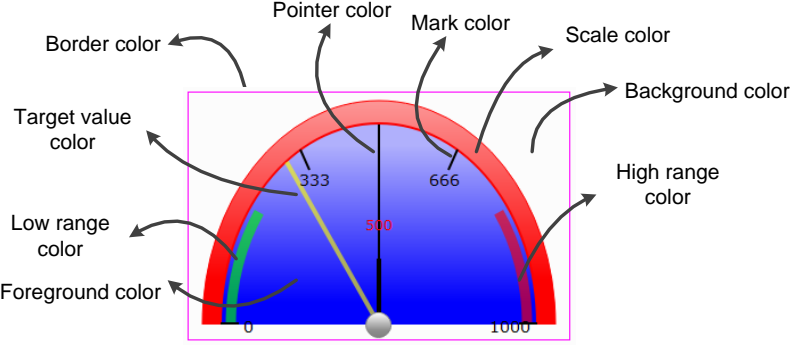
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can choose the internal memory or the controller register address. The input memory type must be Word. For the Link and Style selection, please refer to Section 5.1.
	Read Offset Address	Please refer to the instructions in Appendix D Write and Read Offset Address.
(2)	Data Type	<p>There are two data types: Word and Double Word.</p> 

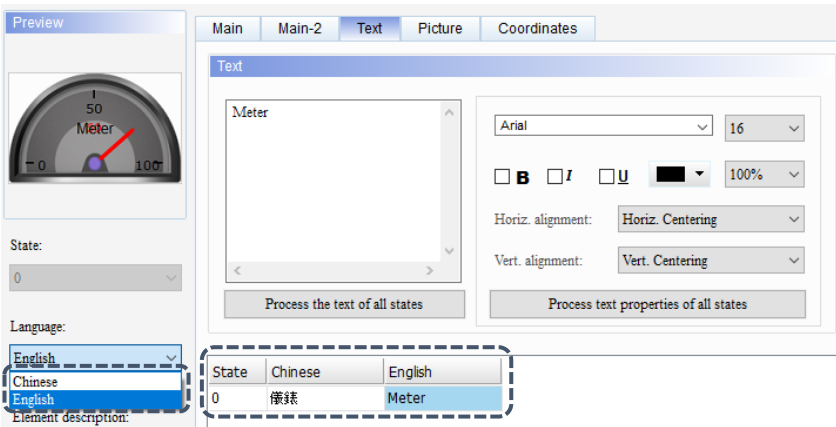
6

No.	Property	Function description																					
(3)	Data Format	<ul style="list-style-type: none"> When you set the Data Type to Word, the supported data formats are as follows:  When you set the Data Type to Double Word, the supported data formats are as follows:  																					
(4)	Minimum / maximum input value	<p>The allowable ranges for the minimum and maximum values are subject to change based on the selected data type and data format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td rowspan="4">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to 9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to 2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Double Word	BCD	0 to 99999999	Signed BCD	-9999999 to 9999999	Signed Decimal	-2147483648 to 2147483647	Unsigned Decimal	0 to 4294967295
Data Type	Data Format	Allowable range																					
Word	BCD	0 to 9999																					
	Signed BCD	-999 to 9999																					
	Signed Decimal	-32768 to 32767																					
	Unsigned Decimal	0 to 65535																					
Double Word	BCD	0 to 99999999																					
	Signed BCD	-9999999 to 9999999																					
	Signed Decimal	-2147483648 to 2147483647																					
	Unsigned Decimal	0 to 4294967295																					

No.	Property	Function description									
(5)	Display Format	Target	If the Variable target/range limits is unchecked, you can only enter a constant value to define the displayed target value on the meter. You can also specify the displayed color.								
		Range	The Range includes the lower and upper limits. It is the same as the displayed target value. If the Variable target/range limits is unchecked, you can only enter constant values to define the lower and upper limits of the meter.								
		Variable target/range limits	If it is checked, you can define the memory addresses to dynamically change the target value, lower and upper limit values displayed.								
		Integer Digits	You can set the displaying number of integer digits and the number of decimal places.								
		Fractional									
(6)	Foreground Color and Background Color	<ul style="list-style-type: none"> ■ Set the element foreground and background colors. ■ The element foreground color setting is only applicable to the Picture Bank mode of the Picture page. 									
(7)	Style	<p>The available styles are Standard, Raised, Sunken and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent								
											

6

No.	Property	Function description		
(8)	Numeric Display	Display the value currently acquired by the meter. Set the Numeric Display to Yes.		
		Set the Numeric Display to No.		
(9)	Style			
		Mark Number	The minimum mark number must be no less than 1 and the maximum is up to 10.	
		Subscale Mark Number	The minimum subscale number can be 0 and the maximum is up to 99.	
		Pointer Color	You can define the pointer color to be displayed. Pointer color setting is only applicable to the Picture Bank Mode of the Picture page.	
		Mark Color	You can define the mark color to be displayed.	
		Scale Color	You can define the scale color to be displayed. Scale color setting is only applicable to the Picture Bank Mode of the Picture page.	
		Border Color	You can define the border color to be displayed.	
		Low Range Color	You can define the low range color to be displayed.	
		High Range Color	You can define the high range color to be displayed.	

No.	Property	Function description
(10)	Language	<p>When you have set multi-language data, you can edit the displayed text properties, etc. with the Language setting of the element.</p> 

6

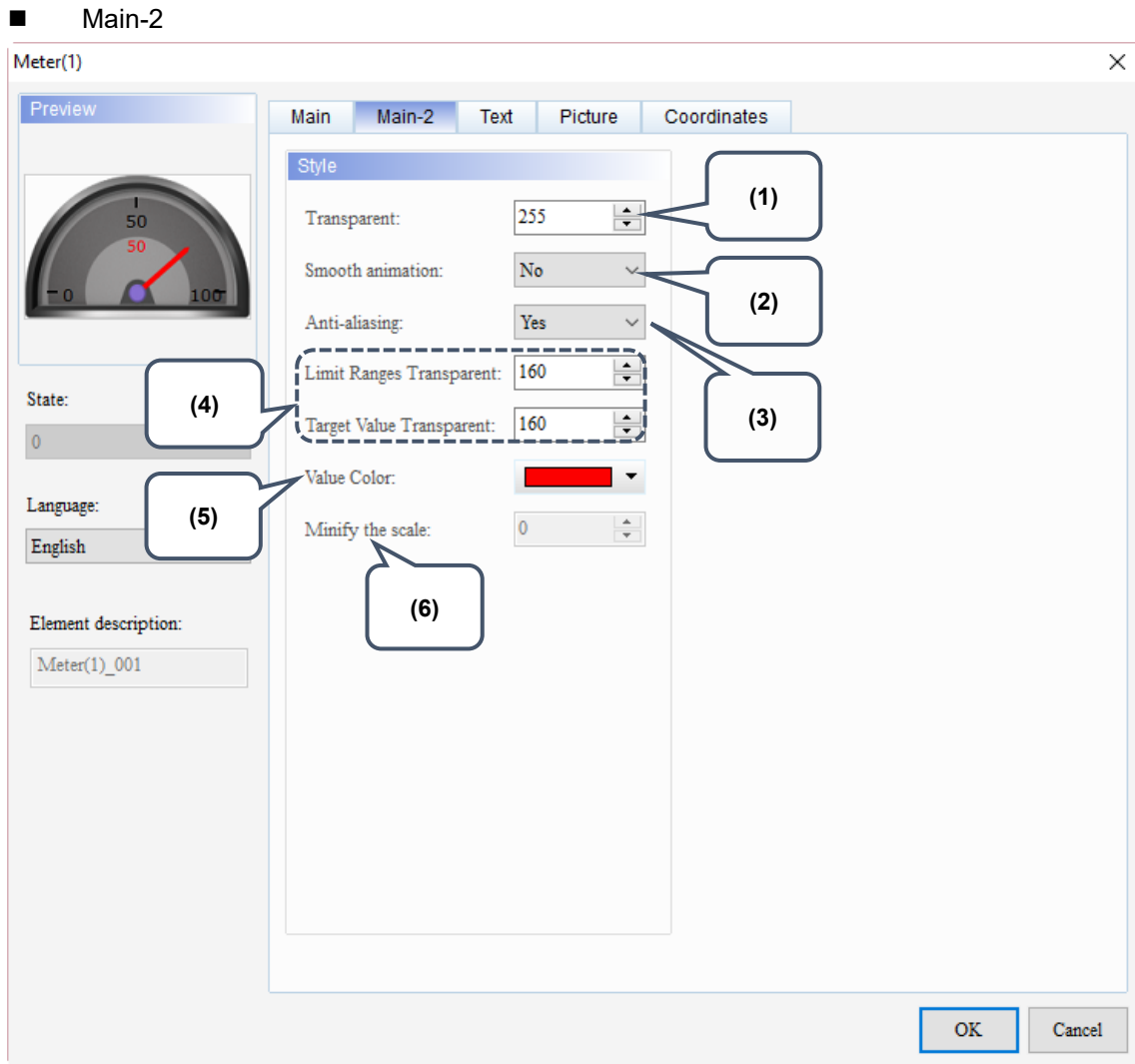
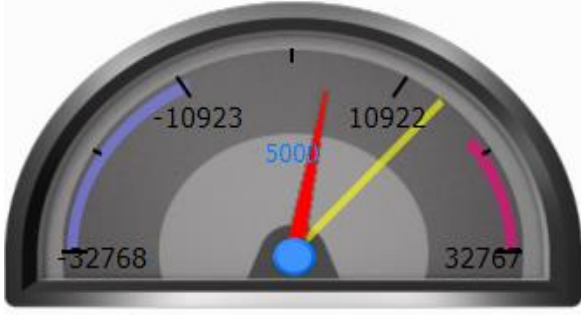
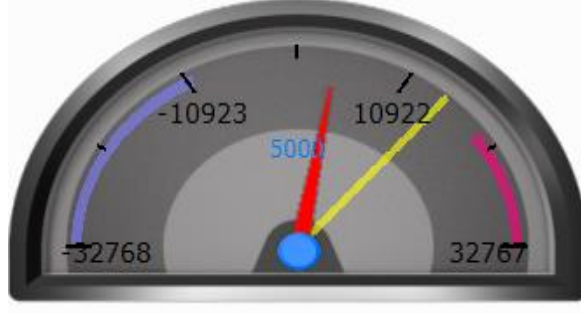
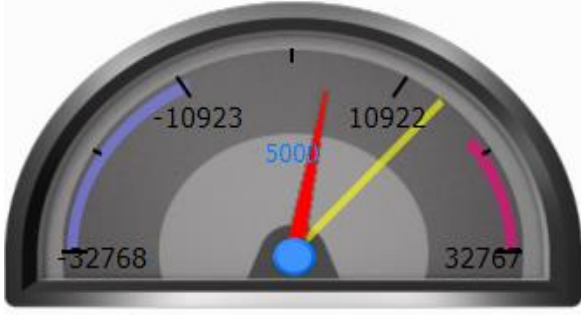
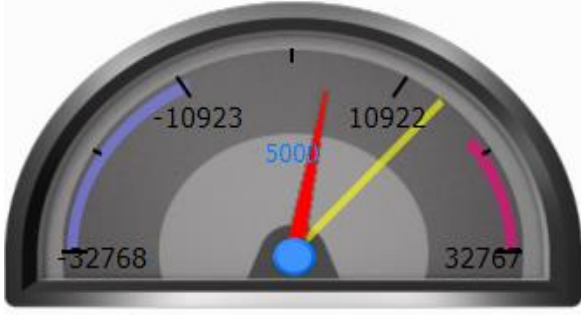
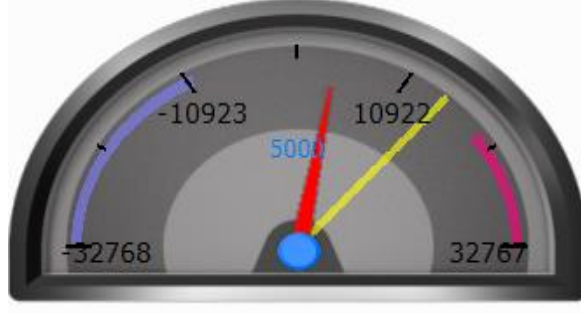

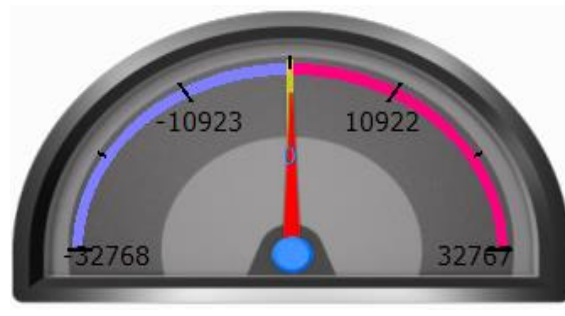


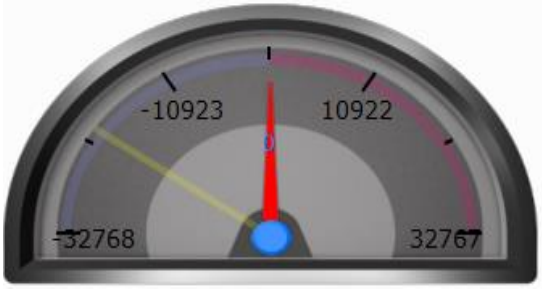















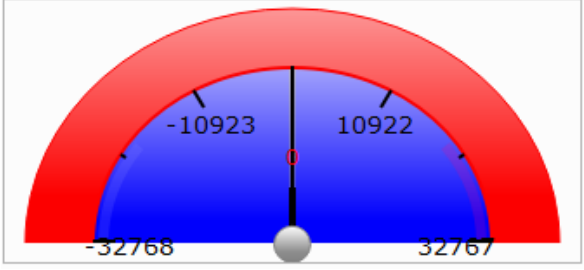
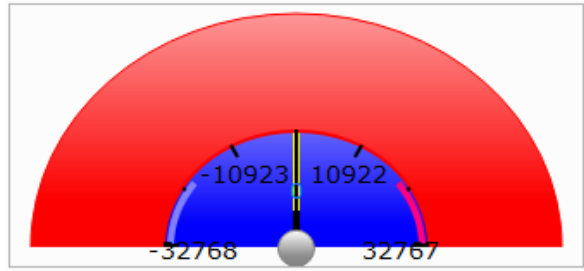
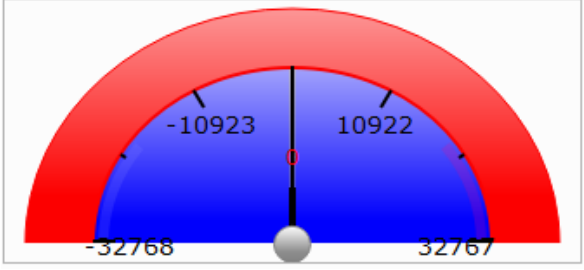
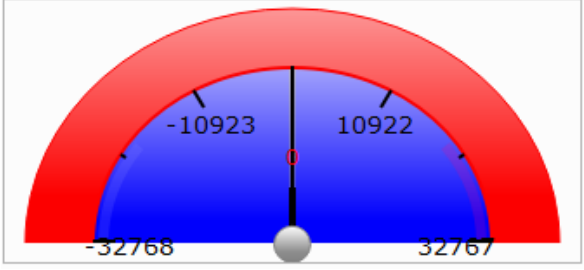
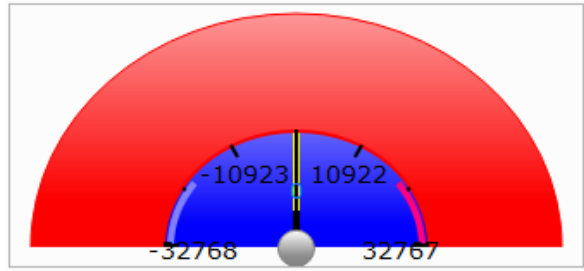
Figure 6.1.3 Main-2 property page for the Meter elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the pointer motion becomes smoother.

No.	Property	Function description		
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element. When enabled, the element display becomes more delicate without jagged edges.</p>		
		<table border="0"> <tr> <td>Set the Anti-aliasing to Yes.</td> <td>  </td> </tr> <tr> <td>Set the Anti-aliasing to No.</td> <td>  </td> </tr> </table>	Set the Anti-aliasing to Yes.	
Set the Anti-aliasing to Yes.				
Set the Anti-aliasing to No.				
(4)	Limit Ranges Transparent	<p>You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.</p> <table border="0"> <tr> <td>Limit Ranges Color</td> <td> <p>Low Range Color: <input type="color" value="#6666FF"/></p> <p>High Range Color: <input type="color" value="#FF00FF"/></p> </td> </tr> </table>	Limit Ranges Color	<p>Low Range Color: <input type="color" value="#6666FF"/></p> <p>High Range Color: <input type="color" value="#FF00FF"/></p>
		Limit Ranges Color	<p>Low Range Color: <input type="color" value="#6666FF"/></p> <p>High Range Color: <input type="color" value="#FF00FF"/></p>	
		Set the Limit Ranges Transparent to 50.		
Set the Limit Ranges Transparent to 255.				

6

No.	Property	Function description		
	Target Value Transparent	<p>You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.</p> <table border="1"> <tr> <td>Target Value Color</td> <td> <input checked="" type="checkbox"/> Target <input type="text" value="\$110"/>   </td> </tr> </table> <p>Set the Target Value Transparent to 50.</p>  <p>Set the Target Value Transparent to 255.</p> 	Target Value Color	<input checked="" type="checkbox"/> Target <input type="text" value="\$110"/>  
Target Value Color	<input checked="" type="checkbox"/> Target <input type="text" value="\$110"/>  			
(5)	Value Color	<p>Display the value currently acquired by the meter.</p> <table border="1"> <tr> <td>Value Color: </td> <td>Value Color: </td> </tr> </table>  	Value Color: 	Value Color: 
Value Color: 	Value Color: 			

No.	Property	Function description		
(6)	Minify the scale	<ul style="list-style-type: none"> ■ This function is only applicable to the Picture Bank Mode in the Picture page. ■ The Minify the scale setting range is 0 - 8. ■ The greater the value is, the longer distance the scale mark to the meter edge will be. 		
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;">Set the Minify the scale to 3.</td> <td style="text-align: center; padding: 5px;">  </td> </tr> <tr> <td style="width: 30%; padding: 5px;">Set the Minify the scale to 8.</td> <td style="text-align: center; padding: 5px;">  </td> </tr> </table>	Set the Minify the scale to 3.	
Set the Minify the scale to 3.				
Set the Minify the scale to 8.				

6

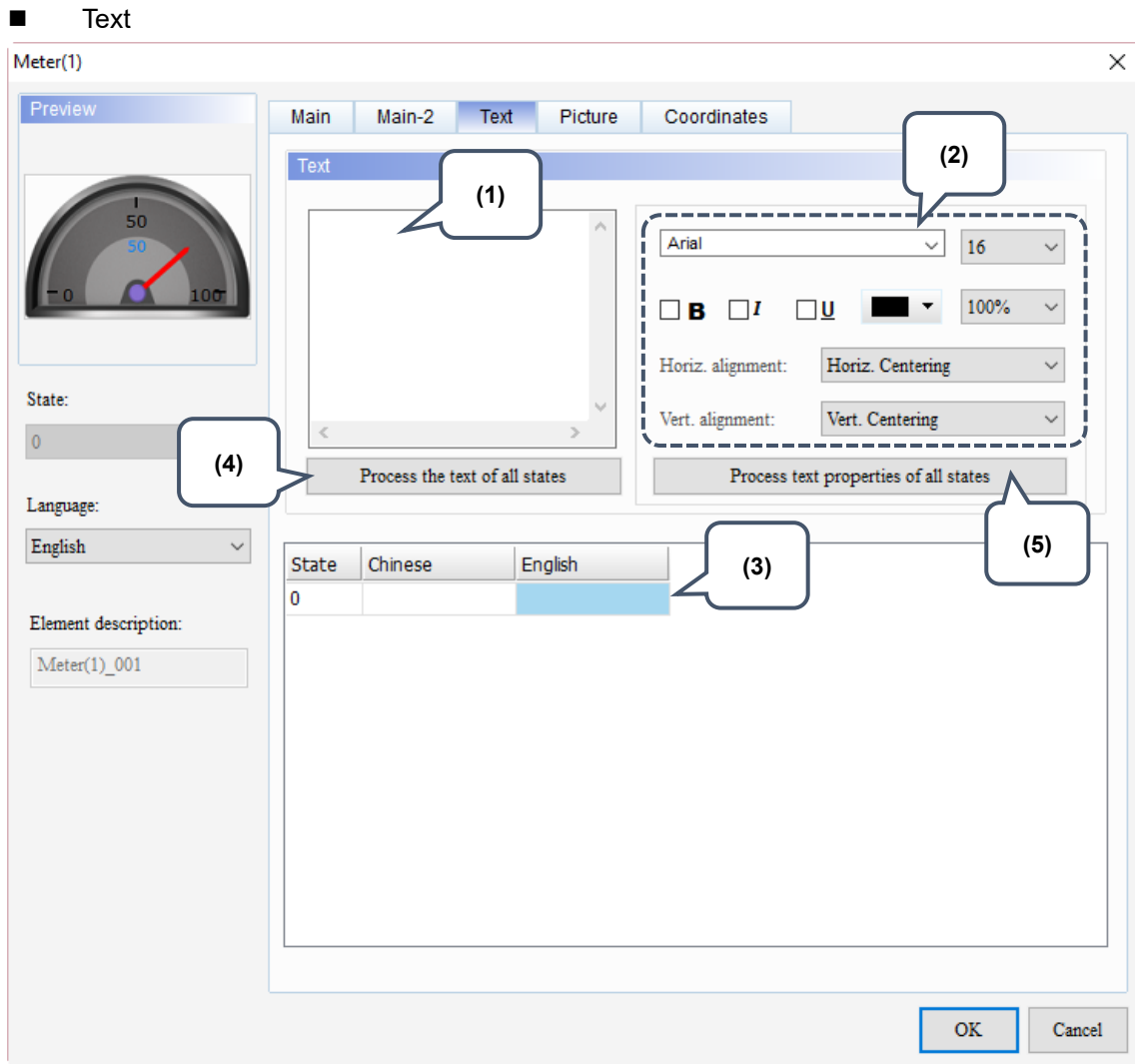
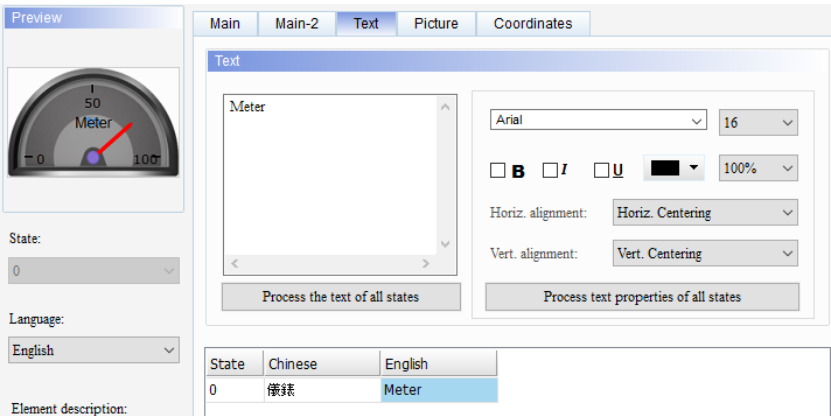
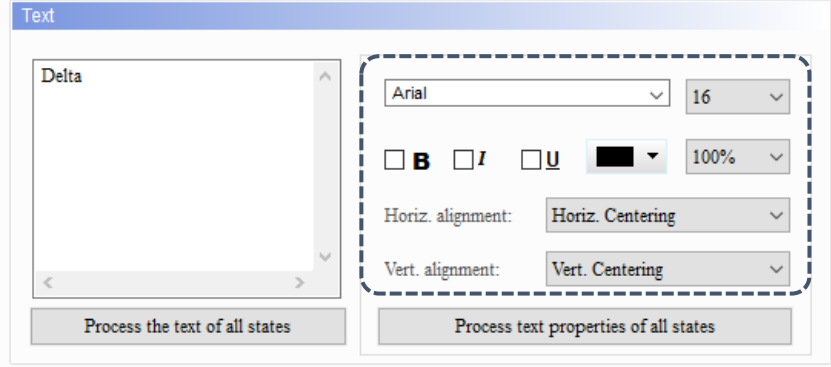
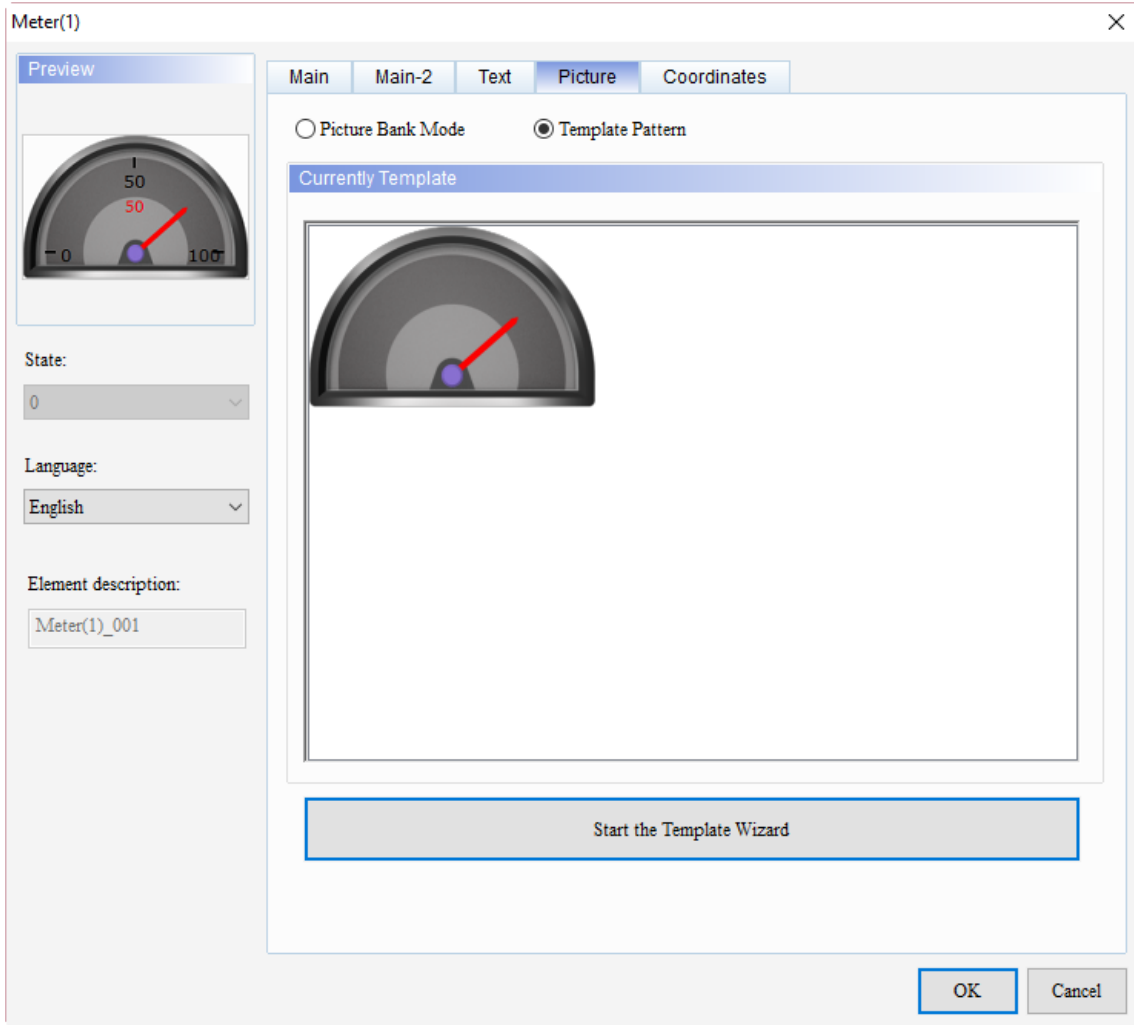


Figure 6.1.4 Text property page for the Meter elements

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can enter the text to be displayed in this text box.  <ul style="list-style-type: none"> As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to promptly start editing and inputting the text.
(2)	Text Property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<ul style="list-style-type: none"> This function batch changes the text of the currently specified state. Meter elements have only one state, so this function is not applicable.
(5)	Process text properties of all states	<ul style="list-style-type: none"> This function batch changes the text of the currently specified property. Items included in the text property are shown in the figure below.  <ul style="list-style-type: none"> Meter elements have only one state, so this function is invalid.

6

Picture



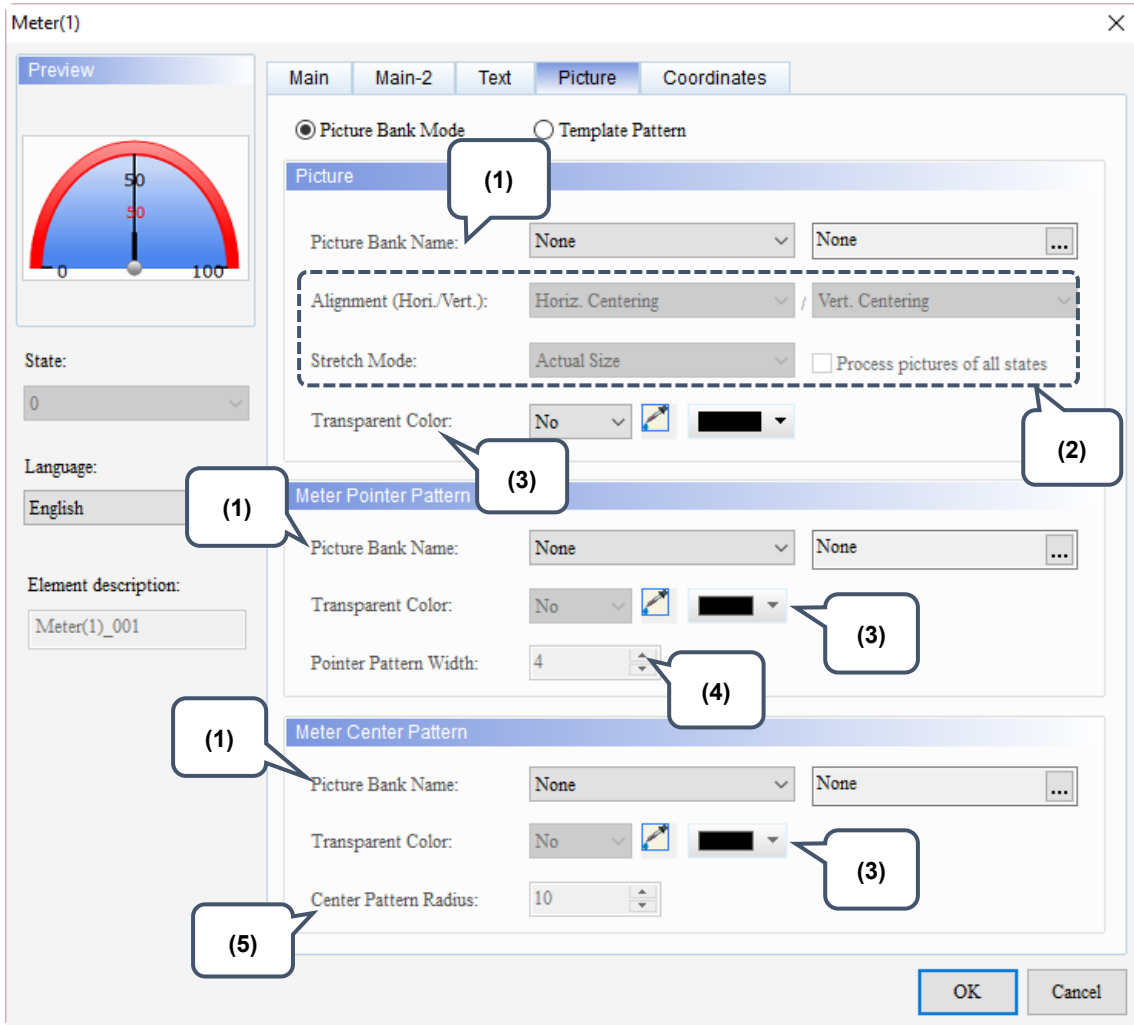


Figure 6.1.5 Picture property page for the Meter elements

The Picture page has two modes, one is Template Pattern and the other is Picture Bank Mode. When you create meter elements, the default is the Template Pattern mode, but you can select the display mode as required.

In Template Pattern mode, you can use the Template Wizard to define the meter template.

6

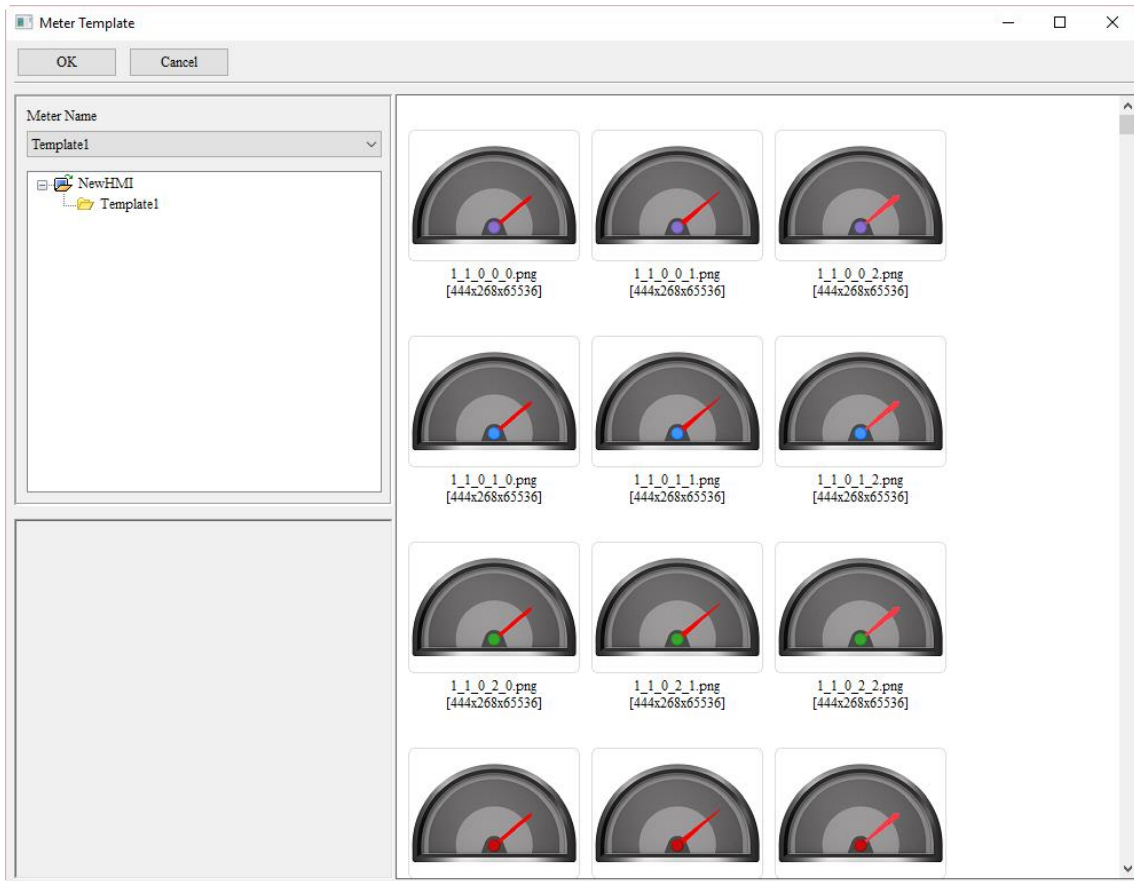
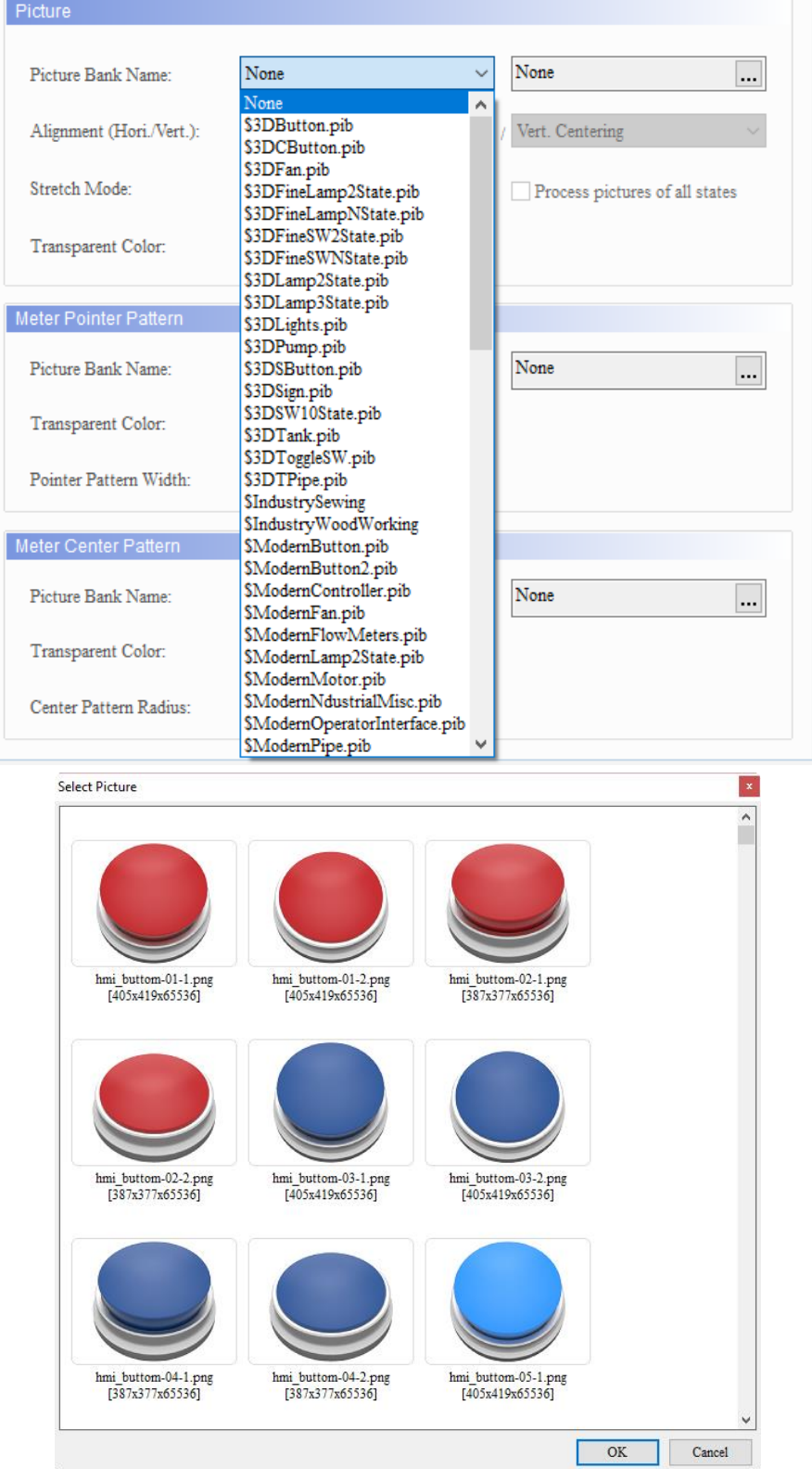
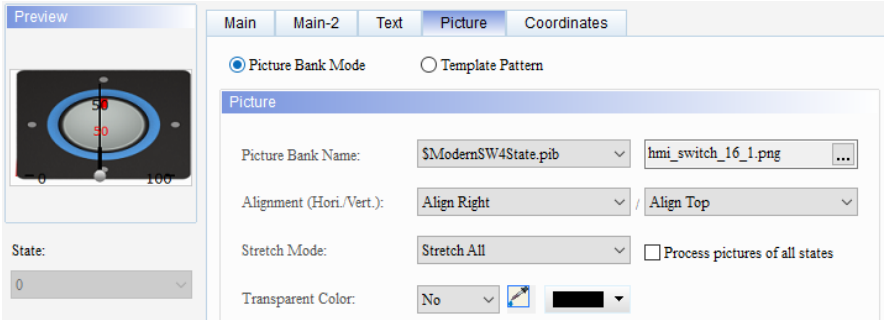

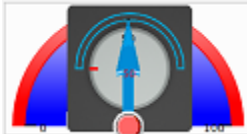


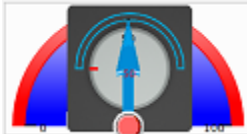


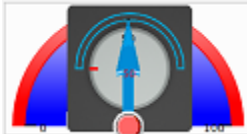






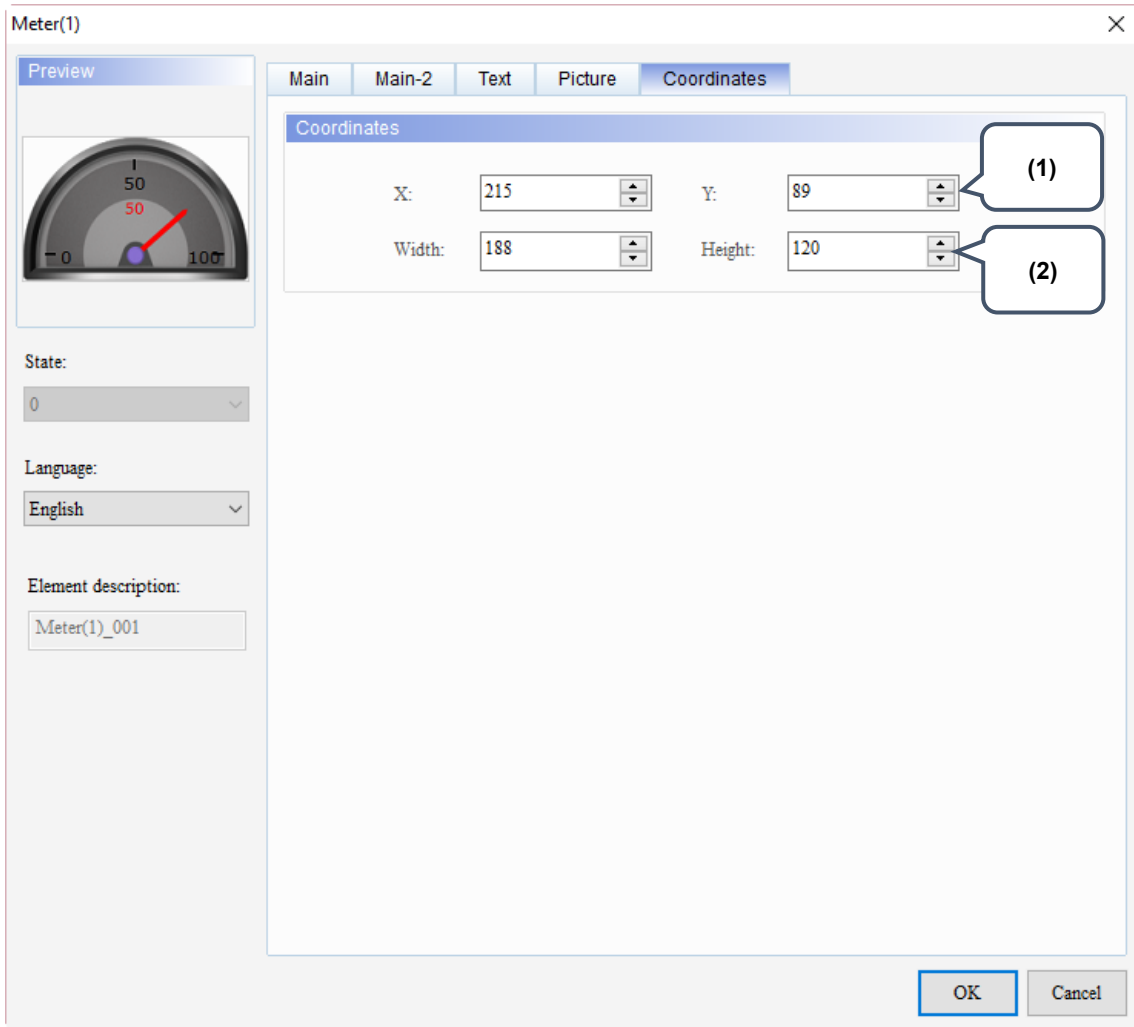
Figure 6.1.6 Meter element patterns - Template Wizard

No.	Property	Function description
(1)	Picture Bank Name	<ul style="list-style-type: none"> The default for Picture Bank Name is None. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures. The Meter provides patterns of meters, meter pointers, and meter centers, which allows you to choose from the picture bank. 

6

No.	Property	Function description									
	Alignment	<p>You can use the Alignment options to set how pictures are aligned.</p> 									
(2)	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td> <p>If you select Stretch All, the picture fills the full element display area.</p> </td> <td> <p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p> </td> <td> <p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p> </td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you select [Process pictures of all states], it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	<p>If you select Stretch All, the picture fills the full element display area.</p>	<p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p>	<p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p>			
Stretch All	Stretch 1:1	Actual Size									
<p>If you select Stretch All, the picture fills the full element display area.</p>	<p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p>	<p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p>									
											
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 									
(4)	Pointer Pattern Width	<p>The default is 4. The setting range is 1 - 21.</p>									
(5)	Center Pattern Radius	<p>The default is 10. The setting range is 1 - 53.</p>									

■ Coordinates



6

Figure 6.1.6 Coordinates property page for the Meter elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

(This page is intentionally left blank.)

6

Bar Chart

7

This chapter provides the usage and setting details for the Bar elements.



7.1 Normal bar.....	7-2
7.2 Differential bar.....	7-13

7

7.1 Normal bar

The Normal bar element reads the register values corresponding to the read addresses and displays the minimum value and the maximum value with a bar chart on the HMI screen. Like the case of Meter elements, you can define the memory addresses for the Target value, High Limit, and Low Limit of the Normal bar elements, making the application more flexible and meet user requirements. You can also set the colors for the Low Limit, High Limit, and Target value so users can easily identify them with the set colors, as shown in Table 7.1.1. Please refer to the example descriptions below.

Table 7.1.1 Normal bar element - identifying the high and low limits with colors

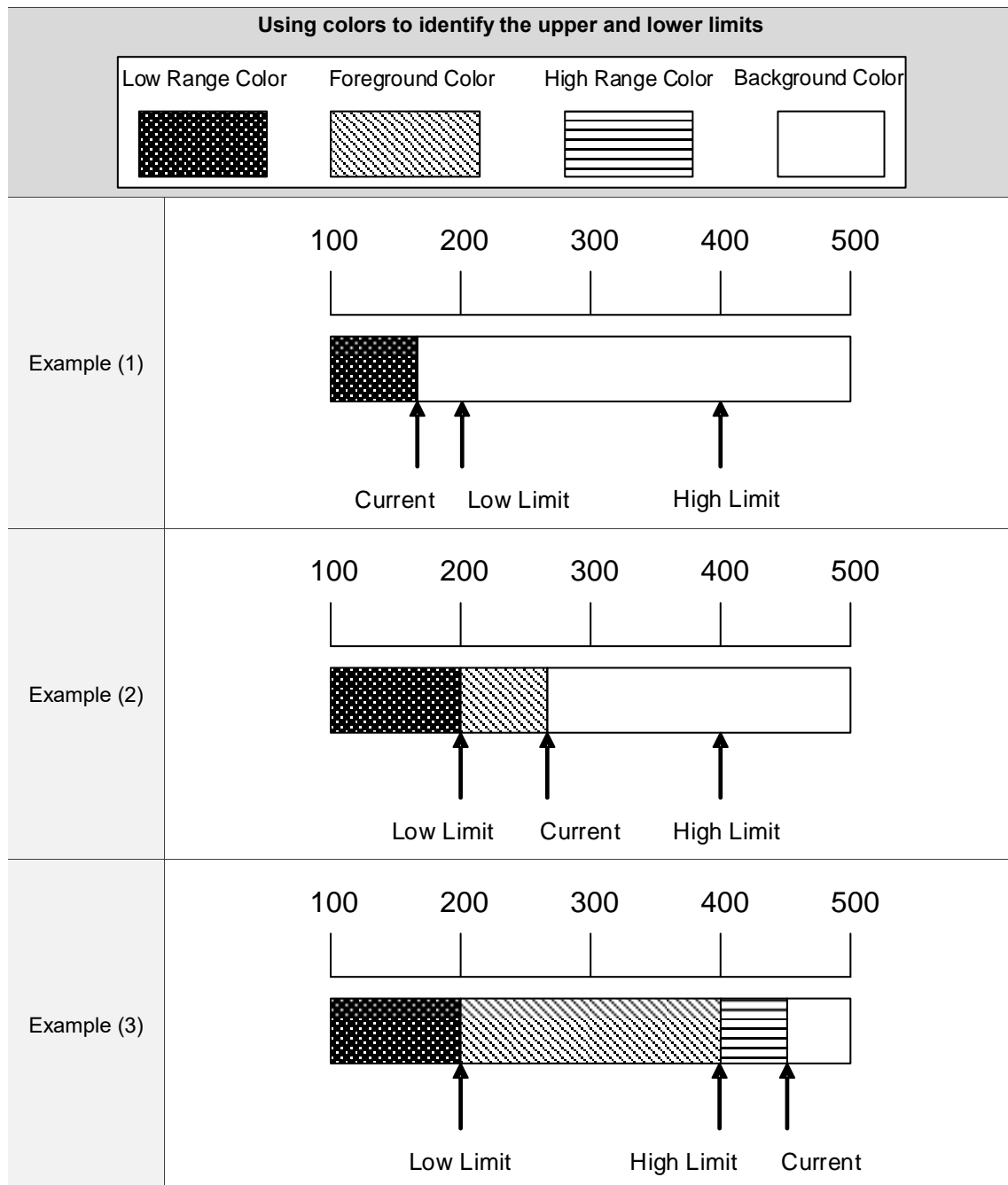


Table 7.1.2 Normal bar element example

Normal bar				
Read Address	\$1000			
Settings	Data Type	Data Format	Minimum	Maximum
	Word	Unsigned Decimal	0	1000
Target	Target color		Target value	
			500	
Range	Low Limit property		High Limit property	
	Low Range Color	Low Range value	High Range Color	High Range value
		300		800
Clock Macro	<pre> *&[Clock Macro] 1 \$1000 = \$1000 + 5 2 IF \$1000 > 1000 3 \$1000 = 0 4 ENDIF </pre>			
Example diagram of Normal bar element				
Execution results	<p>Download the edited screen to the HMI. Next, the HMI executes the program in the Clock Macro and displays the accumulation results on the Normal bar elements with the corresponding addresses.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Value < 300: displays in green</p> </div> <div style="text-align: center;"> <p>Value > 800: displays in red</p> </div> </div>			

7

When you double-click the Normal bar element, the property page is shown as follows.

7

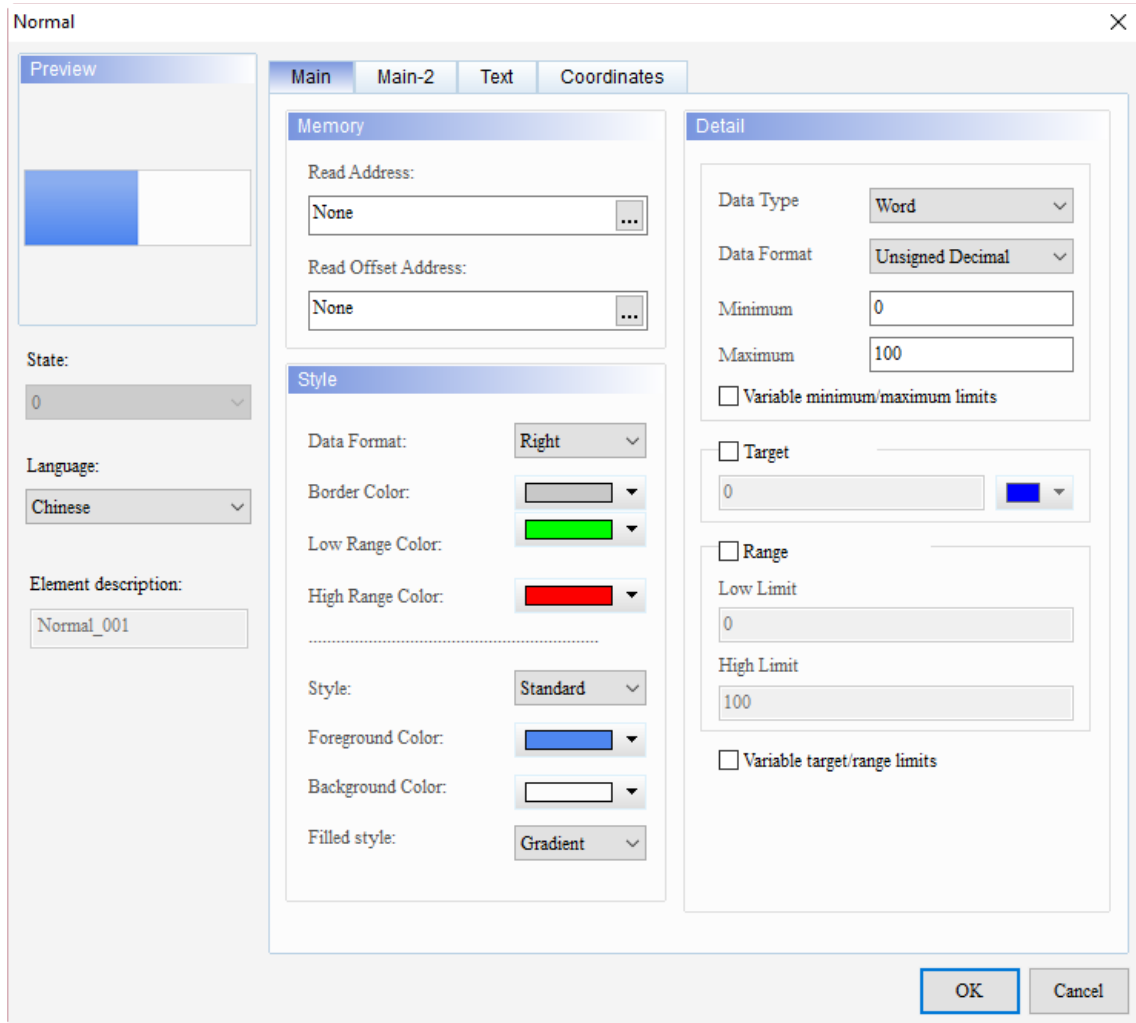
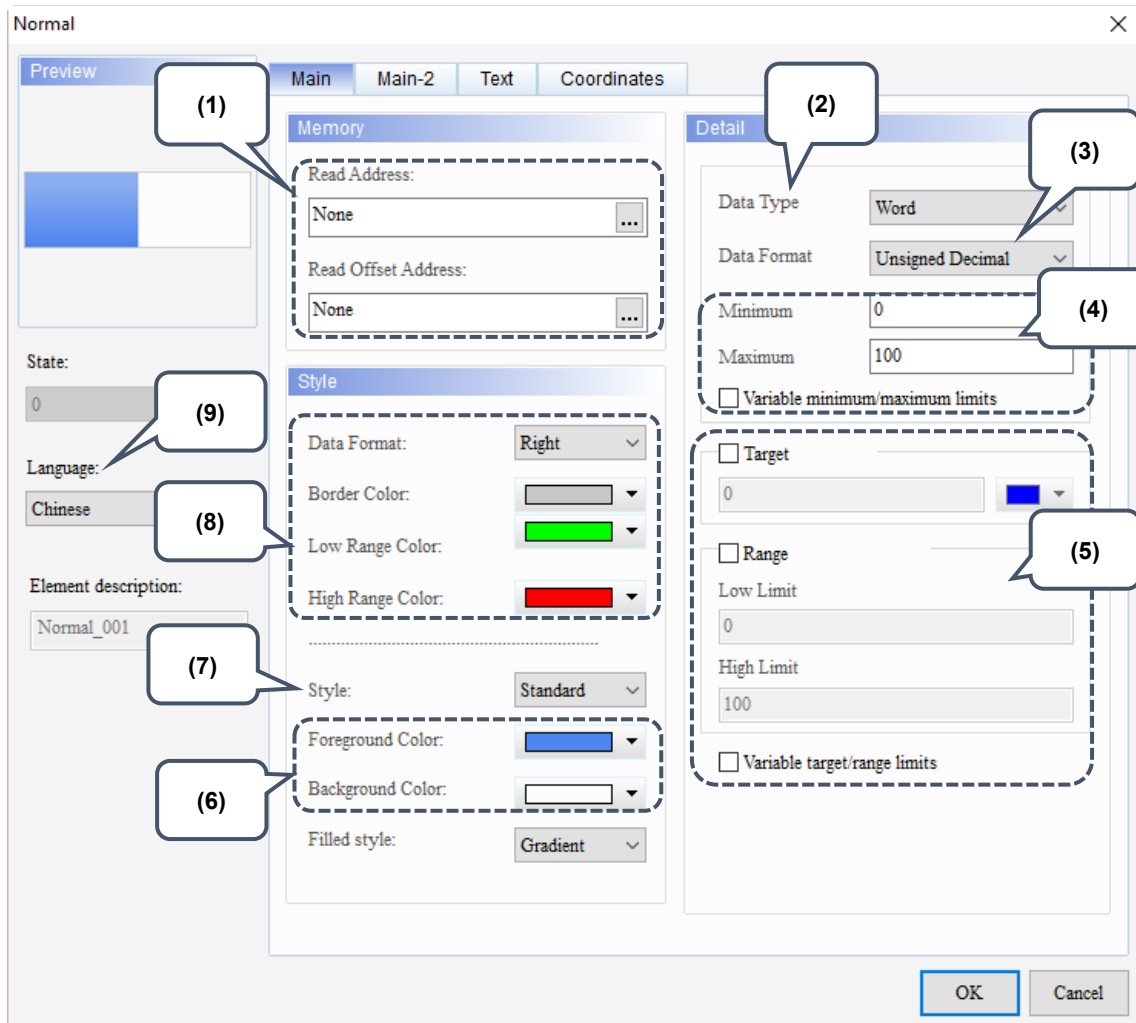


Figure 7.1.1 Properties of the Normal bar element

Table 7.1.3 Function page of Normal bar

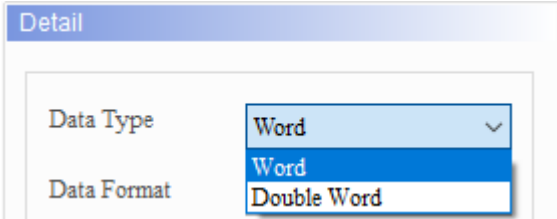
Normal bar	
Function page	Description
Preview	Normal bar elements can only view multi-language data display and have no multiple states.
Main	<ul style="list-style-type: none"> ■ Set the Read Address, Read Offset Address, Style, Foreground Color, and Background Color. ■ Set the Style, Border Color, Low Range Color, and High Range Color. ■ Set the element Data Type, Data Format, Minimum / Maximum input value, and Variable minimum/maximum limits. ■ Set whether to display the target value and its color, input values for the activation range, and enable Variable target/range limits.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Target Value Style.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Coordinates	Set the X and Y coordinates, width, and height of the element.

■ Main

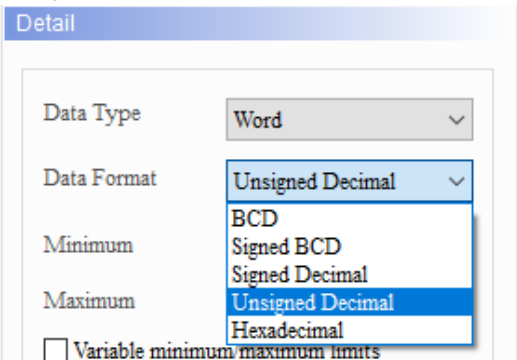
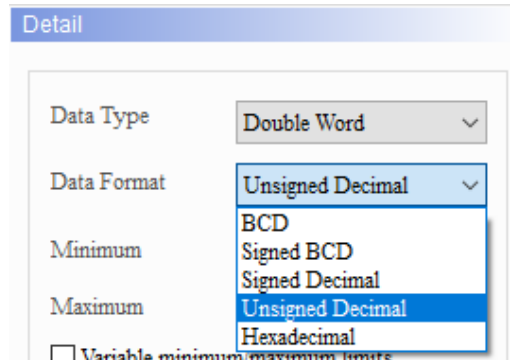
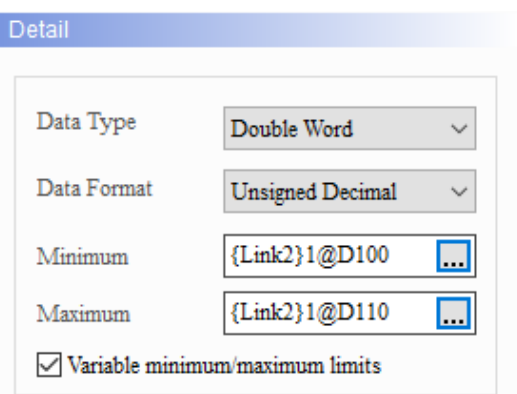


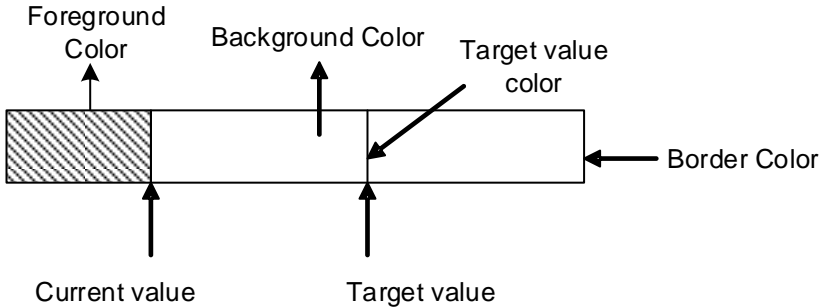









7

Figure 7.1.2 Main property page for the Normal bar element

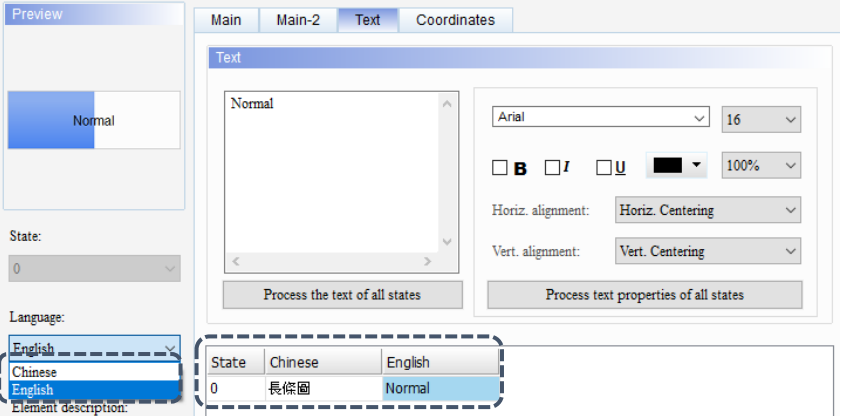
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can select the internal memory address or the controller register address. The input memory type has to be Word. Select Link Name or Element Style. Please refer to Section 5.1.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types available, Word and Double Word.</p> 

7

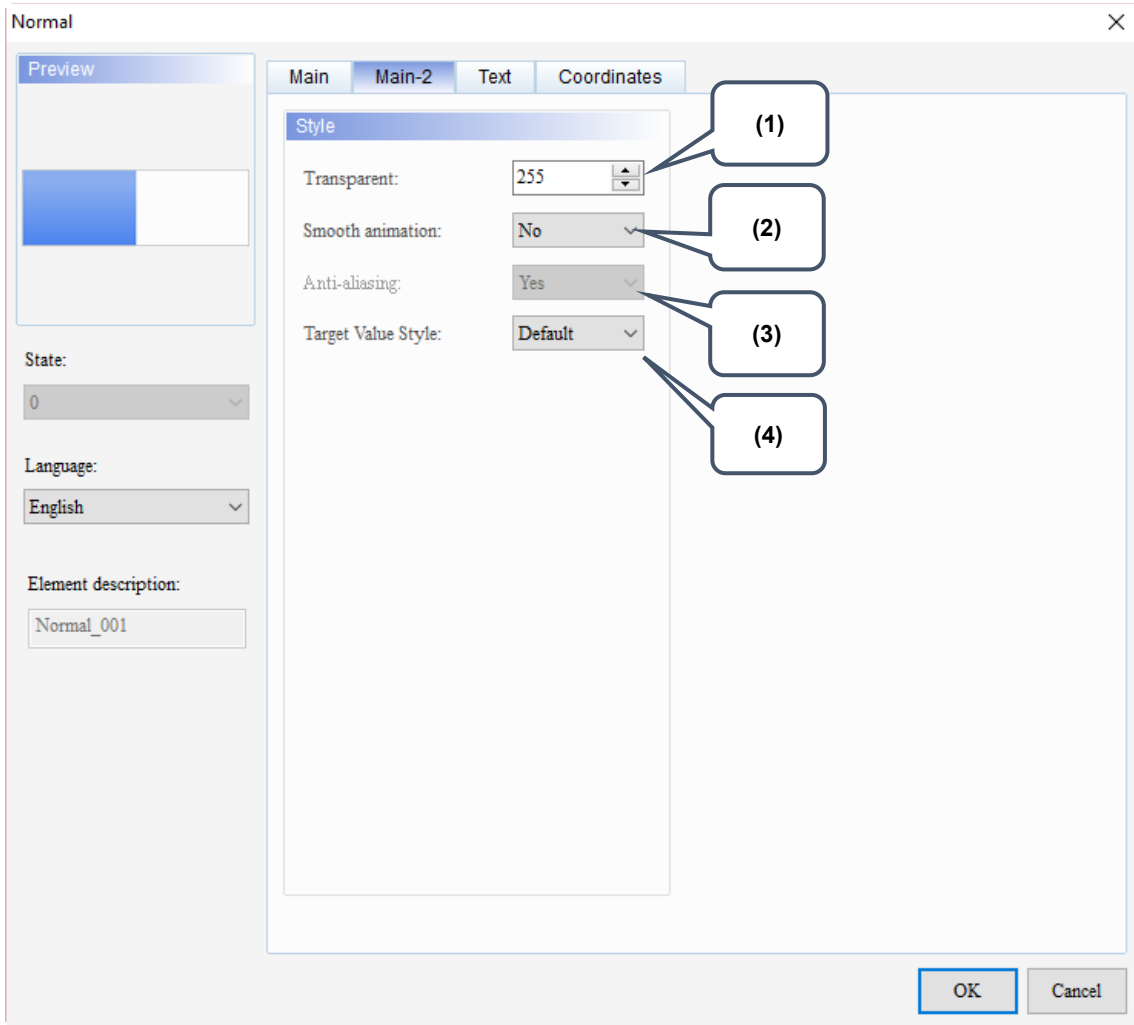
No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> When the Data Type is Word, the supported data formats are as follows:  When the Data Type is Double Word, the supported data formats are as follows:  																									
(4)	Minimum / Maximum input value	<p>The allowable ranges for the Minimum and Maximum values vary based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to 99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to 2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFFFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Hexadecimal	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-9999999 to 99999999	Signed Decimal	-2147483648 to 2147483647	Unsigned Decimal	0 to 4294967295	Hexadecimal	0 to 0xFFFFFFFF
Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																									
	Signed BCD	-999 to 9999																									
	Signed Decimal	-32768 to 32767																									
	Unsigned Decimal	0 to 65535																									
	Hexadecimal	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-9999999 to 99999999																									
	Signed Decimal	-2147483648 to 2147483647																									
	Unsigned Decimal	0 to 4294967295																									
	Hexadecimal	0 to 0xFFFFFFFF																									
	Variable minimum/maximum limits	<p>Check this box to set the memory addresses and input the Minimum and Maximum values.</p> 																									

No.	Property	Function description									
(5)	Display format	Target	If the checkbox of Variable target/range limits is unchecked, you can only enter a constant to define the displaying target value on the Normal bar chart. You can also specify the displaying color.								
		Range	Enable the input value range including the Low Limit and High Limit. Like the case of the displaying target value, if the checkbox of Variable target/range limits is unchecked, you can only enter constants to define the Low Limit and High Limit of the Normal bar.								
		Variable target/range limits	If it is checked, you can define the memory addresses to dynamically change the Target value, Low Limit and High Limit values displayed.								
		Integer Digits	You can set the displaying number of integer digits and the number of decimal places.								
		Fractional (Digits)									
(6)	Foreground Color and Background Color	<p>Set the element foreground and background colors.</p>  <p>The diagram shows a horizontal bar chart element. The left portion is shaded with diagonal lines and labeled 'Current value'. The right portion is white and labeled 'Target value'. A vertical line separates the two. Labels with arrows point to: 'Foreground Color' (the shaded area), 'Background Color' (the white area), 'Target value color' (the vertical line), and 'Border Color' (the outer border of the bar).</p>									
(7)	Style	<p>The available element styles are Standard, Raised, and Sunken. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Standard	Raised	Sunken			
Standard	Raised	Sunken									
											
(8)	Style property	Display format	Left	Right	Top	Bottom					
		Border Color	You can set the border color to be displayed.								
		Low Range Color	You can set the low range color to be displayed.								
		High Range Color	You can set the high range color to be displayed.								

7

No.	Property	Function description
(9)	Language	<p>When you have set multi-language data, you can use the language used for the element to edit the displaying text properties, etc.</p>  <p>The screenshot displays the 'Text' property editor. On the left, a 'Preview' window shows a blue bar with the text 'Normal'. Below it, the 'State' is set to '0'. The 'Language' dropdown menu is open, showing 'English' as the selected option. A dashed box highlights the 'Language' dropdown and the table below it. The table has three columns: 'State', 'Chinese', and 'English'. The first row shows '0', '長條圖', and 'Normal'. To the right of the table is the 'Text' editor, which includes a font dropdown set to 'Arial', a size dropdown set to '16', and checkboxes for bold, italic, and underline. It also has alignment options for horizontal and vertical centering. Two buttons at the bottom of the editor are labeled 'Process the text of all states' and 'Process text properties of all states'.</p>

■ Main-2



7

Figure 7.1.3 Main-2 property page for the Normal bar element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the element display becomes smoother.				
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.				
(4)	Target Value Style	<p>There are two display styles, Default and Style 1.</p> <table border="1"> <tr> <td>Default</td> <td></td> </tr> <tr> <td>Style 1</td> <td></td> </tr> </table>	Default		Style 1	
Default						
Style 1						

■ Text

7

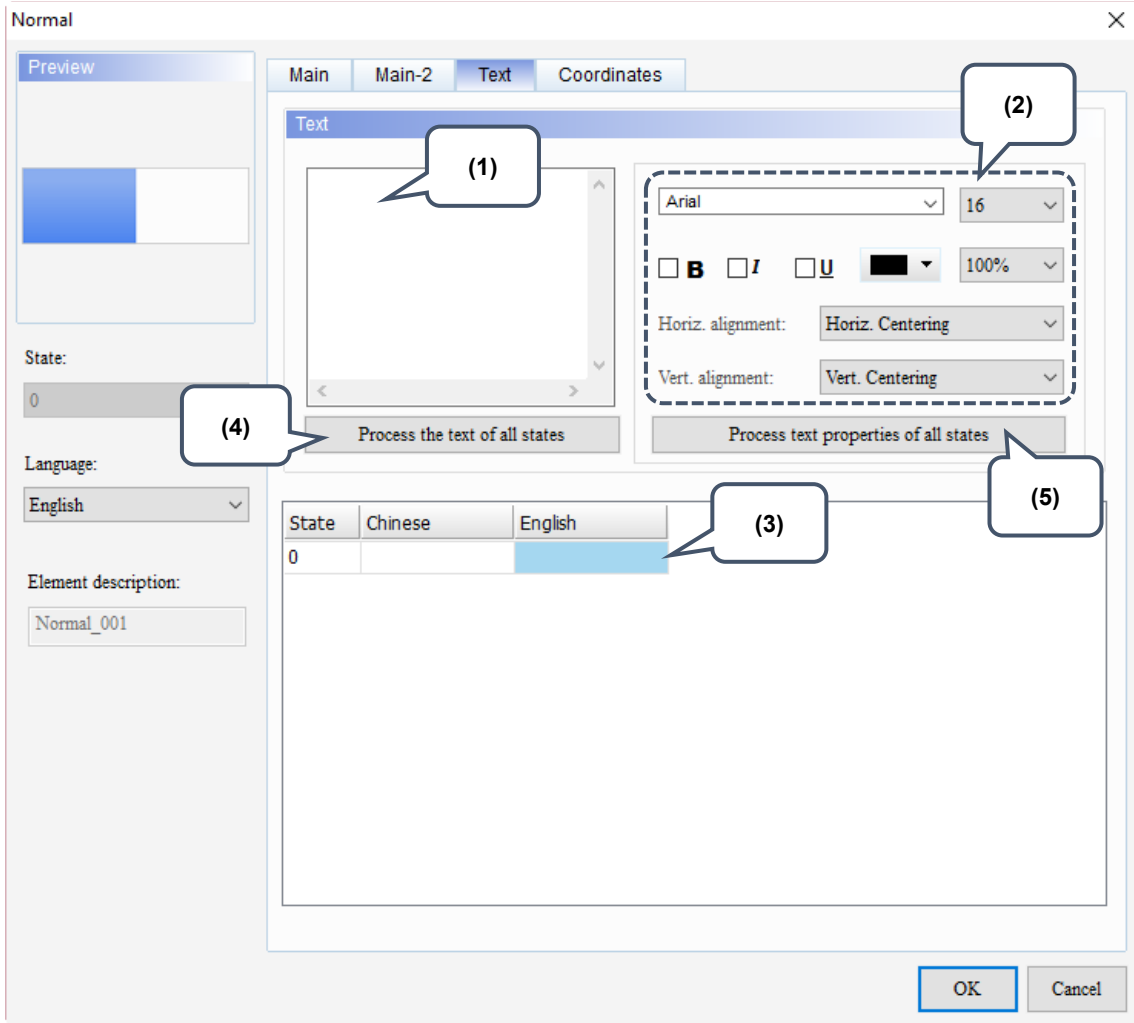
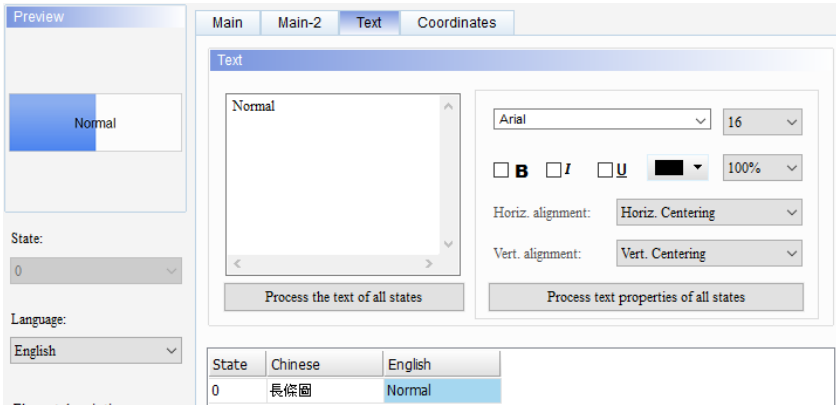
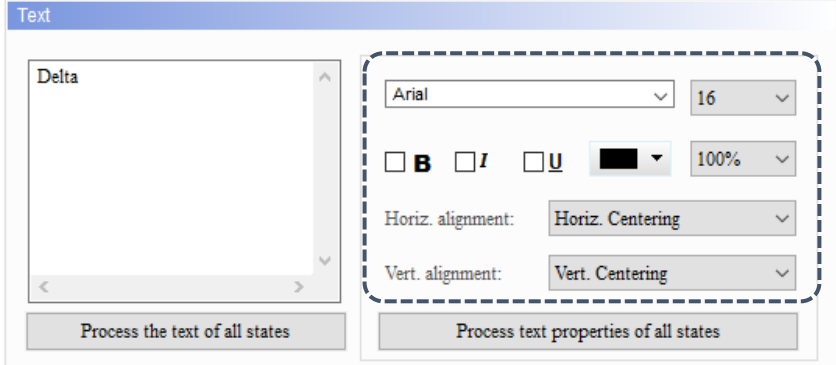


Figure 7.1.4 Text property page for the Normal bar element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can enter the text to display in this box.  <ul style="list-style-type: none"> As long as the element allows text input, you can click the element on the screen and press the space key to start editing the text.
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the Text property setting results.
(3)	Edit multi-language text	If you have added multi-language data, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<ul style="list-style-type: none"> This function batch changes the text of the specified state. Normal bar elements have only one state, so this function is not applicable.
(5)	Process text properties of all states	<ul style="list-style-type: none"> This function batch changes the text of the specified property. Items included in the text property are shown in the figure below.  <ul style="list-style-type: none"> Normal bar elements have only one state, so this function is not applicable.

■ Coordinates

7

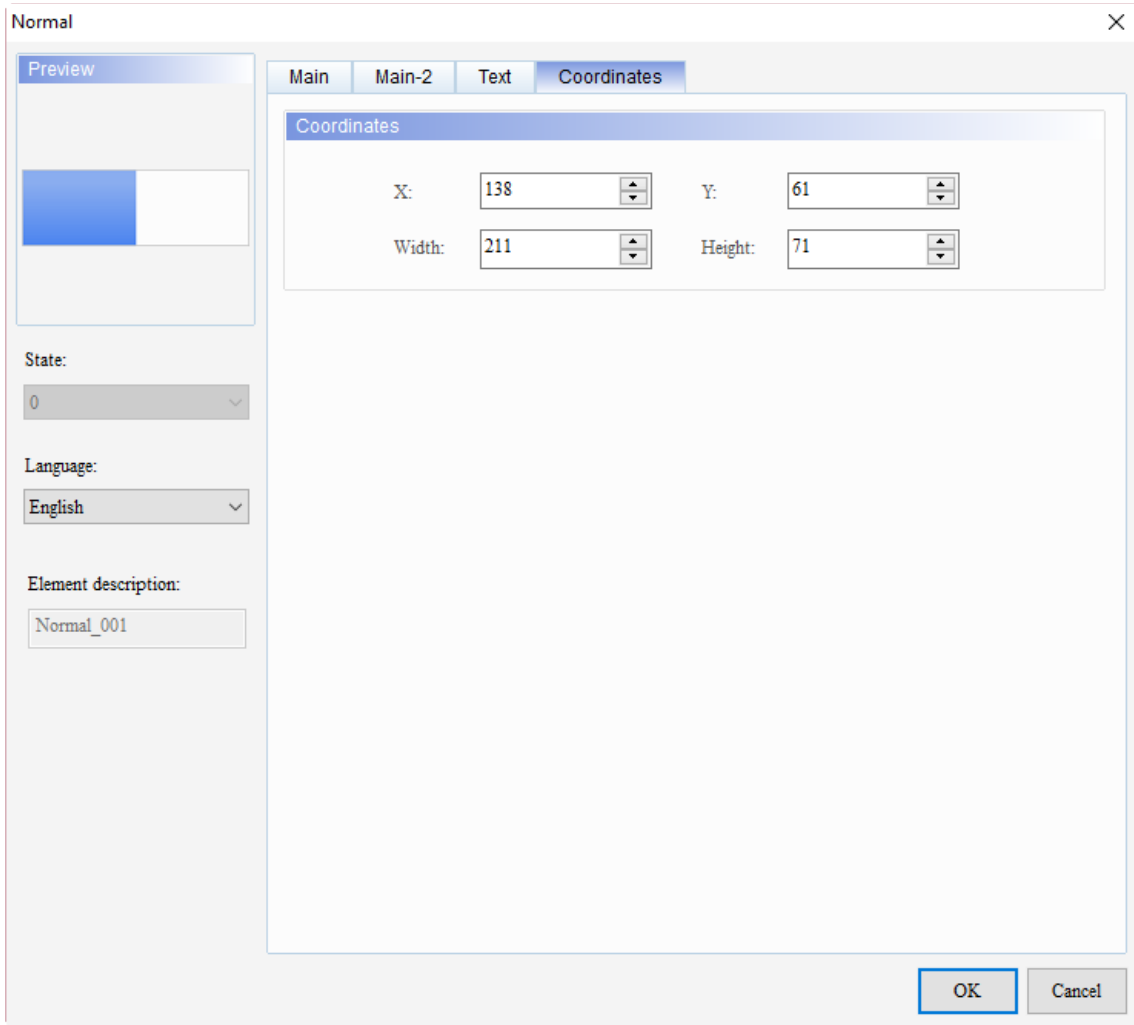


Figure 7.1.5 Coordinates property page for the Normal bar element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

7.2 Differential bar

The Differential bar displays the deviation between the value of the read address and the set target value. And the software displays this deviation with the bar chart on the HMI. Like the case of Normal bar elements, you can define the memory addresses for the Target value, High Limit, and Low Limit of the Differential bar elements, making the application more flexible and meet user requirements, as shown in Table 7.2.1.

Table 7.2.1 Differential bar element - Using colors to identify the Low Limit and High Limit

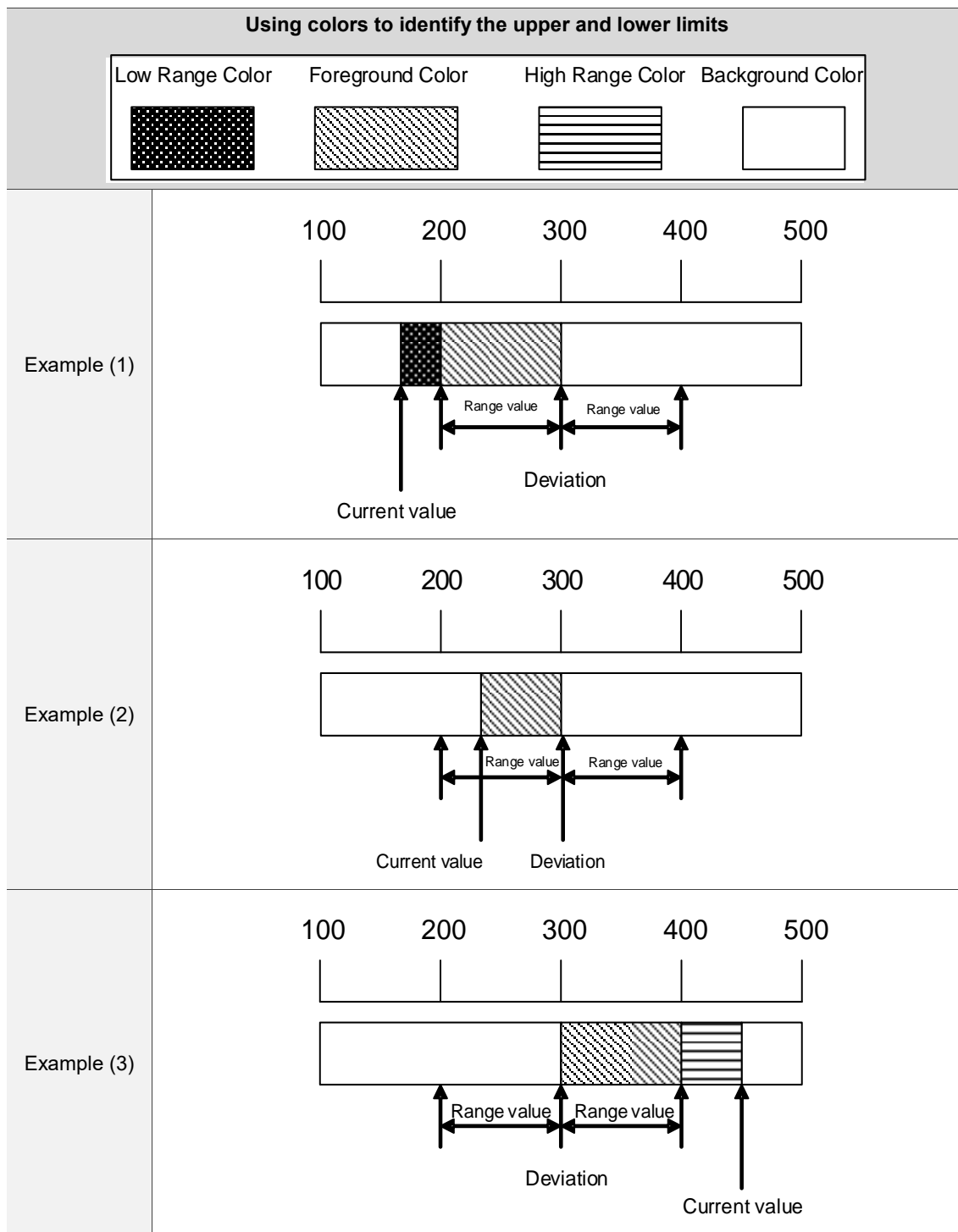



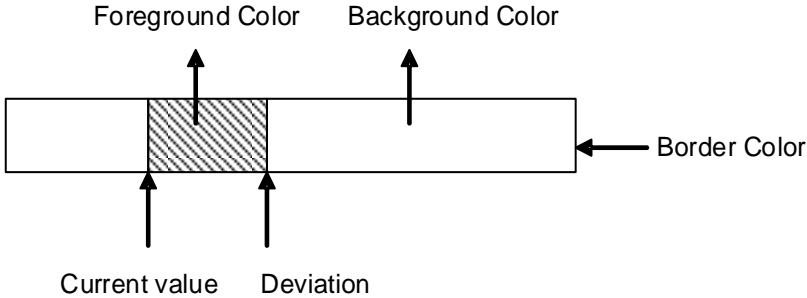




Table 7.2.2 Differential bar element example

Differential bar				
	Differential bar element		Numeric Entry element	
	Read Address	\$444	Write Address	\$444
Read Address				
Settings	Data Type	Data Format	Minimum	Maximum
	Word	Unsigned Decimal	0	100
Target display	Deviation Color	Deviation value	Target value	
		25	50	
Example diagram of Differential bar element				
Execution results	Compile and download the edited screen to the HMI. Then, execute the Numeric Entry element. Once you input the value, the deviation displays based on the input value.			
	When the value is within the range of ± 25 , it displays in deep red.			
	When the value is out of the range of ± 25 , it displays in the foreground color.			

7

When you double-click the Differential bar element, the property page is shown as follows.

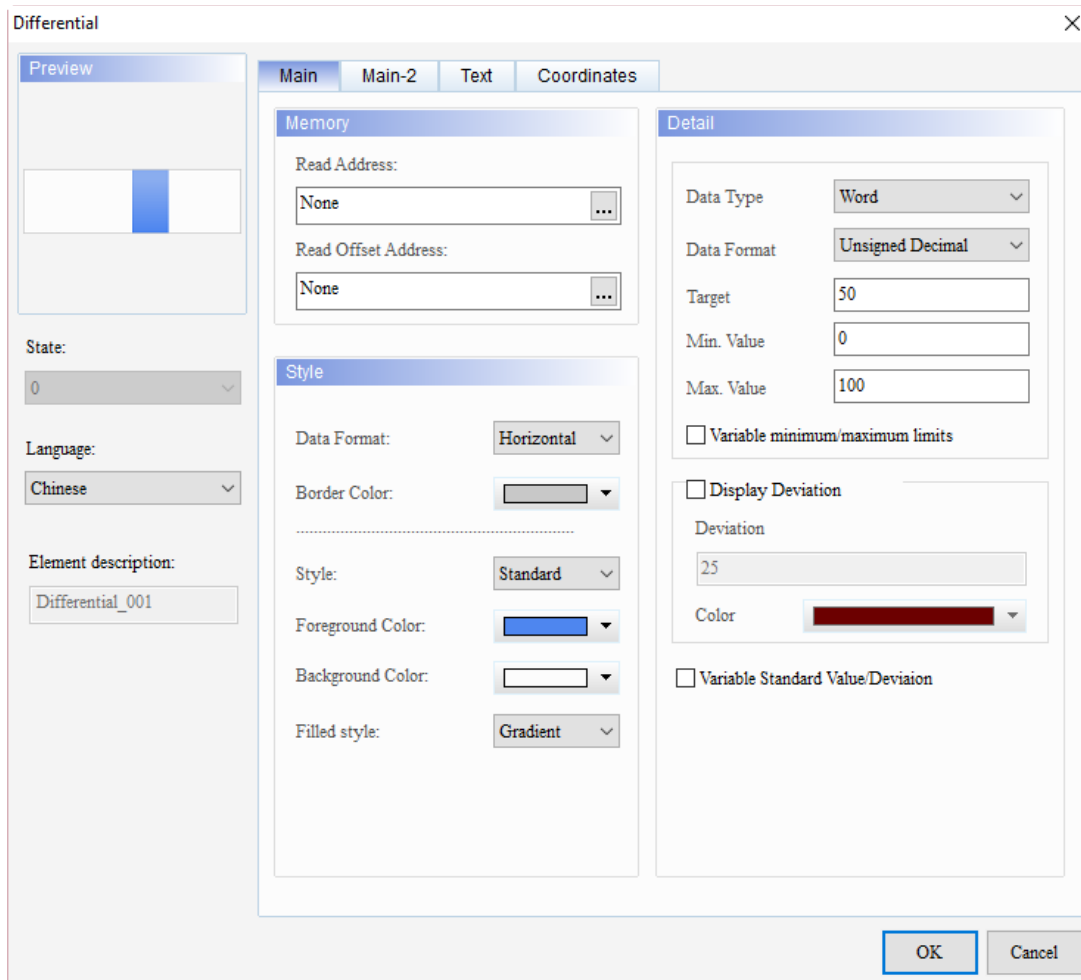


Figure 7.2.1 Properties of the Differential bar element

Table 7.2.3 Function page of Differential bar

Differential bar	
Function page	Description
Preview	Differential bar elements can only view multi-language data display and have no multiple states.
Main	<ul style="list-style-type: none"> ■ Set the Read Address, Read Offset Address, Style, Foreground Color, and Background Color. ■ Set the Style and Border Color. ■ Set the element Data Type, Data Format, Target value, Min. Value / Max. Value, and Variable minimum/maximum limits. ■ Set whether to display the deviation value and its color, and enable Variable Standard Value/Deviaion.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

7

■ Main

7

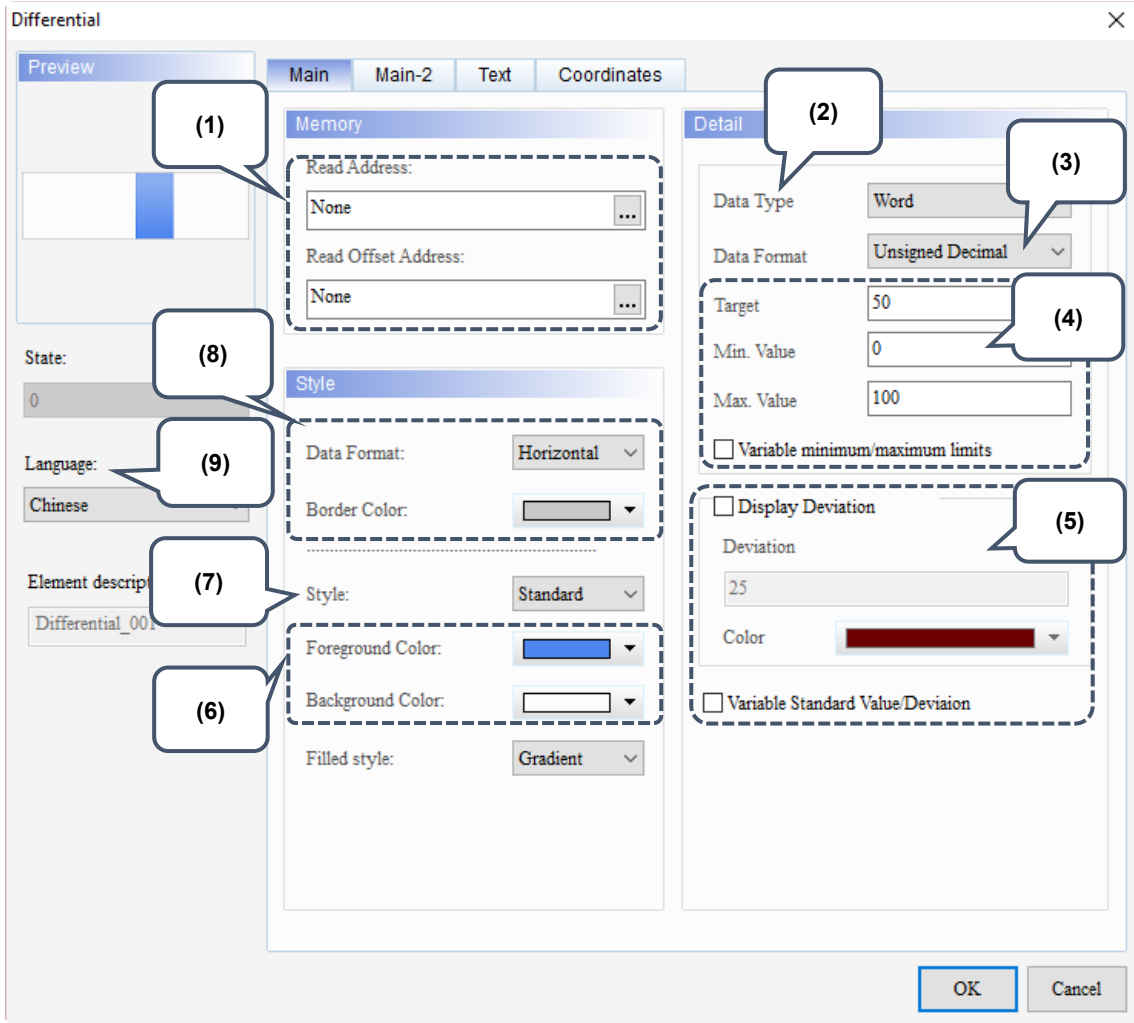
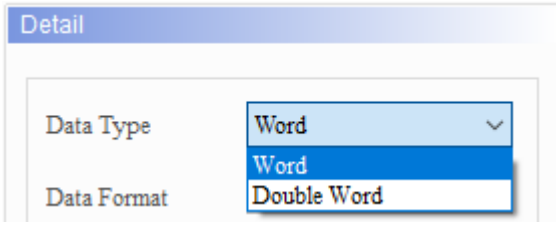
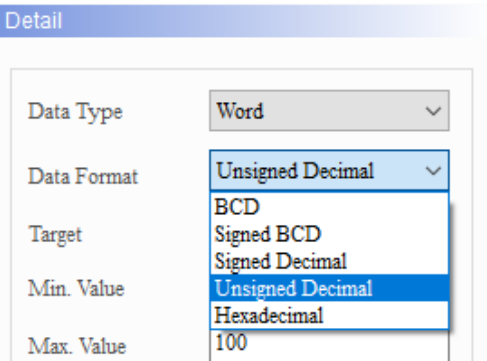
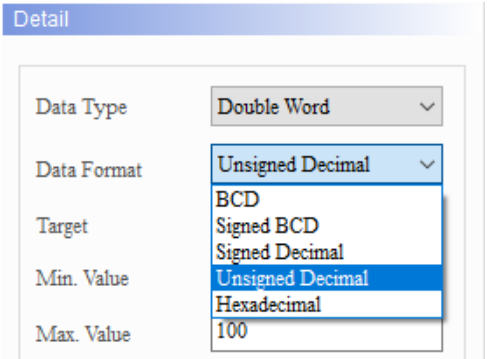
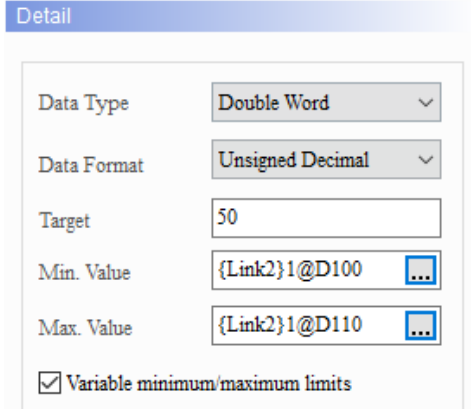
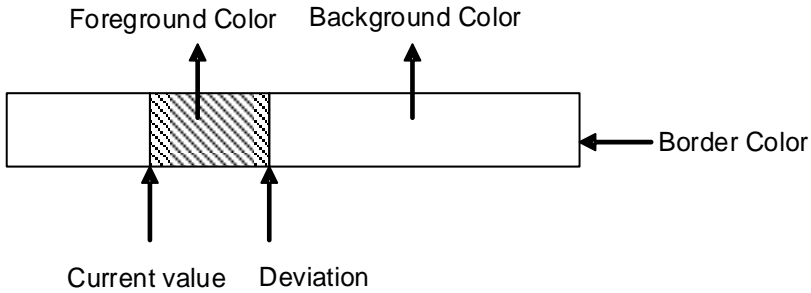















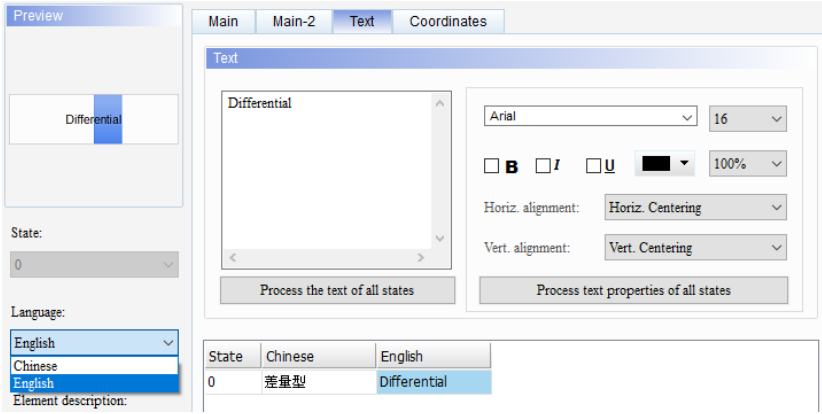


Figure 7.2.2 Main property page for the Differential bar element

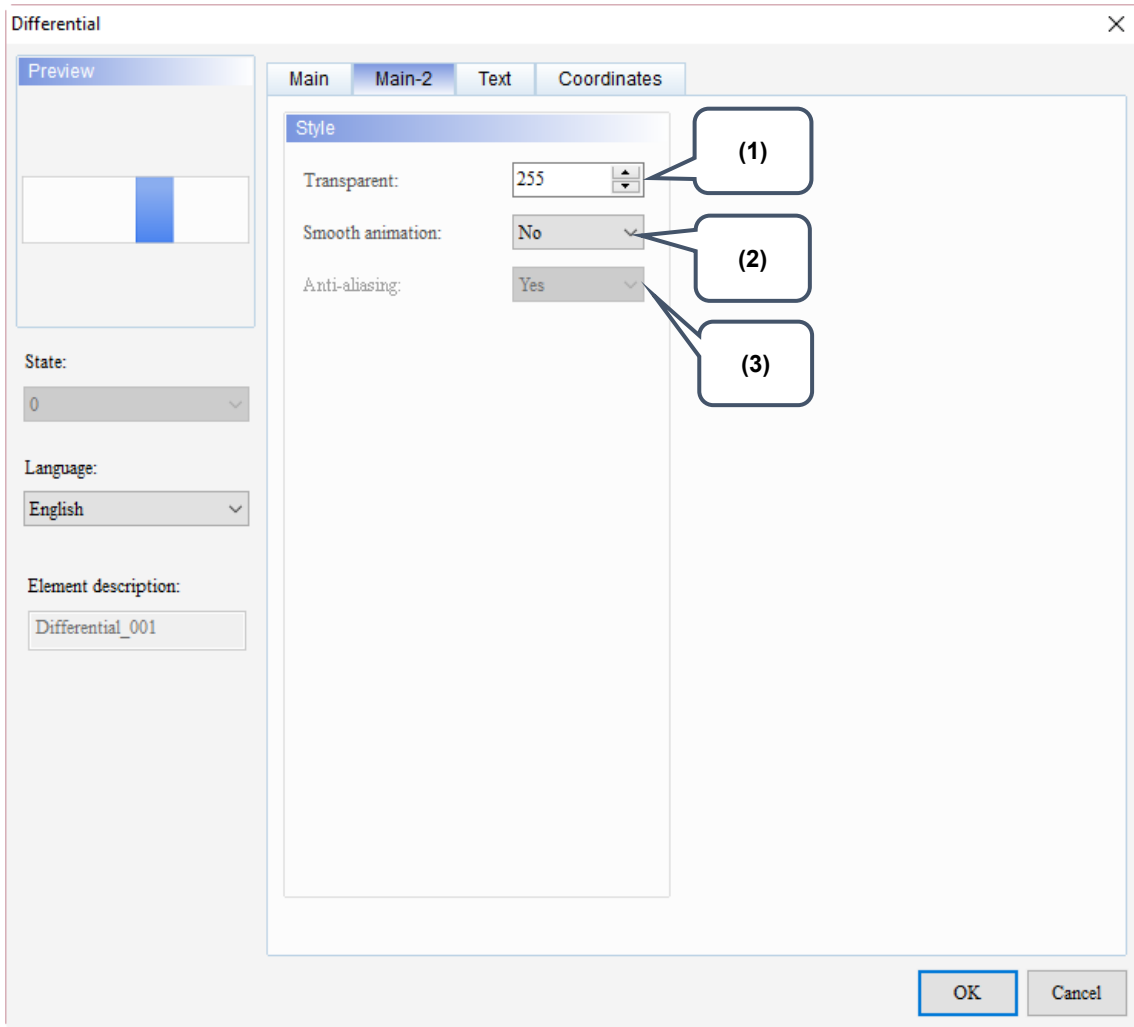
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can choose internal memory address or controller register address. The input memory type has to be Word. Select Link Name or Element Style. Please refer to Section 5.1.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types available, Word and Double Word.</p> 

No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> When the Data Type is Word, the supported data formats are as follows:  When the Data Type is Double Word, the supported data formats are as follows:  																									
(4)	Minimum / Maximum input value	<p>The allowable ranges for the Min. Value and Max. Value vary based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-3278 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-99999999 to 99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to 2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294697295</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFFFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-3278 to 32767	Unsigned Decimal	0 to 65535	Hexadecimal	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-99999999 to 99999999	Signed Decimal	-2147483648 to 2147483647	Unsigned Decimal	0 to 4294697295	Hexadecimal	0 to 0xFFFFFFFF
Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																									
	Signed BCD	-999 to 9999																									
	Signed Decimal	-3278 to 32767																									
	Unsigned Decimal	0 to 65535																									
	Hexadecimal	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-99999999 to 99999999																									
	Signed Decimal	-2147483648 to 2147483647																									
	Unsigned Decimal	0 to 4294697295																									
	Hexadecimal	0 to 0xFFFFFFFF																									
	Variable minimum/maximum limits	<p>Check this box to set the addresses for the Min. Value and Max. Value and input the minimum and maximum values.</p> 																									

7

No.	Property	Function description							
(5)	Display Deviation	Deviation	If Variable Standard Value/Deviation is unchecked, you can only input a constant to define the deviation value of the Differential bar element. You can also set the displaying color of the deviation which lies within the range.						
		Variable Standard Value/Deviation	If it is checked, you can define the memory addresses to dynamically change the Standard Value and Deviation displayed.						
(6)	Foreground Color and Background Color	<p>Set the element foreground and background colors.</p> 							
(7)	Style	<p>The available element styles are Standard, Raised, and Sunken. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Standard	Raised	Sunken			
Standard	Raised	Sunken							
									
(8)	Display Format / Border Color	Display Format	<table border="1"> <thead> <tr> <th>Horizontal</th> <th>Vertical</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Horizontal	Vertical				
		Horizontal	Vertical						
									
Border Color	You can set the border color to be displayed.								
(9)	Language	<p>When you have set multi-language data, you can use the language used for the element to edit the displayed text properties, etc.</p> 							

■ Main-2



7

Figure 7.2.3 Main-2 property page for the Differential bar element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the element display becomes smoother.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

7

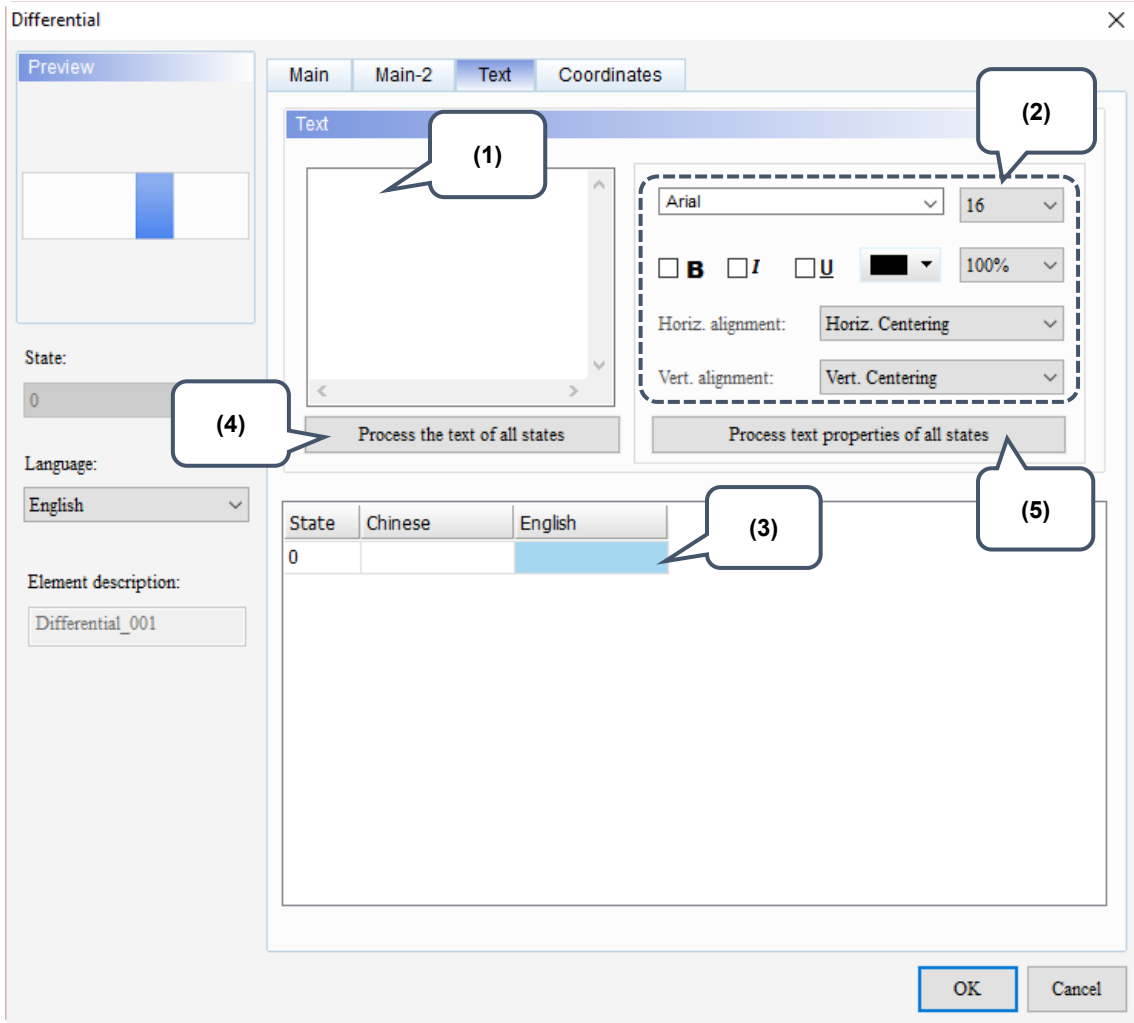
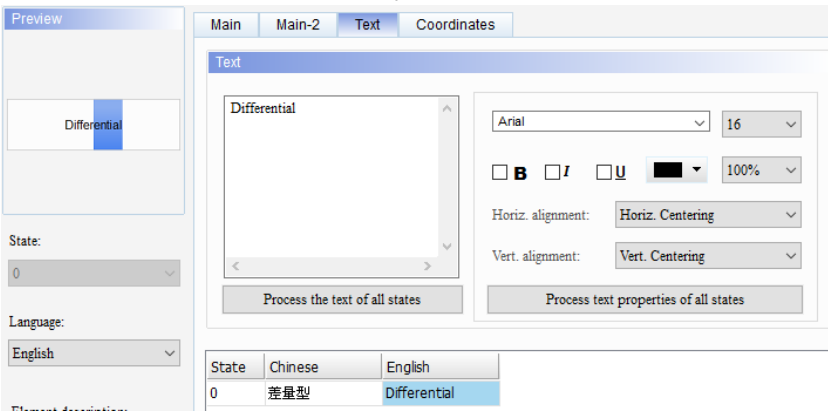
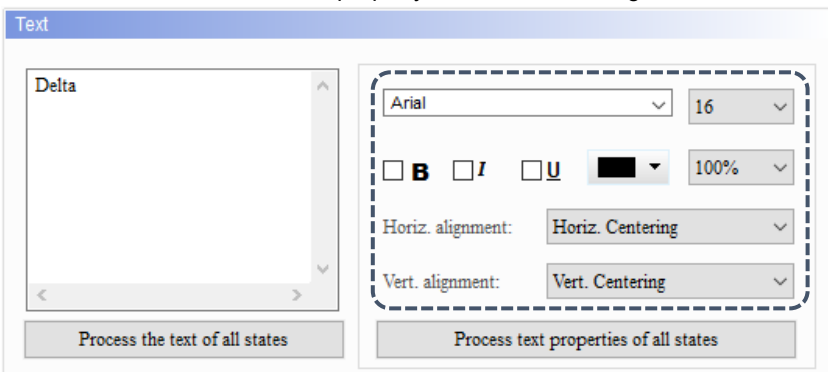


Figure 7.2.4 Text property page for the Differential bar element

No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p>  <p>■ As long as the element allows text input, you can click the element on the screen and press the space key to start editing the text.</p>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the Text property setting results.
(3)	Edit multi-language text	If you have added multi-language data, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>■ This function batch changes the text of the specified state.</p> <p>■ Differential bar elements have only one state, so this function is not applicable.</p>
(5)	Process text properties of all states	<p>■ This function batch changes the text of the specified property. Items included in the text property are shown in the figure below.</p>  <p>■ Differential bar elements have only one state, so this function is not applicable.</p>

Coordinates

7

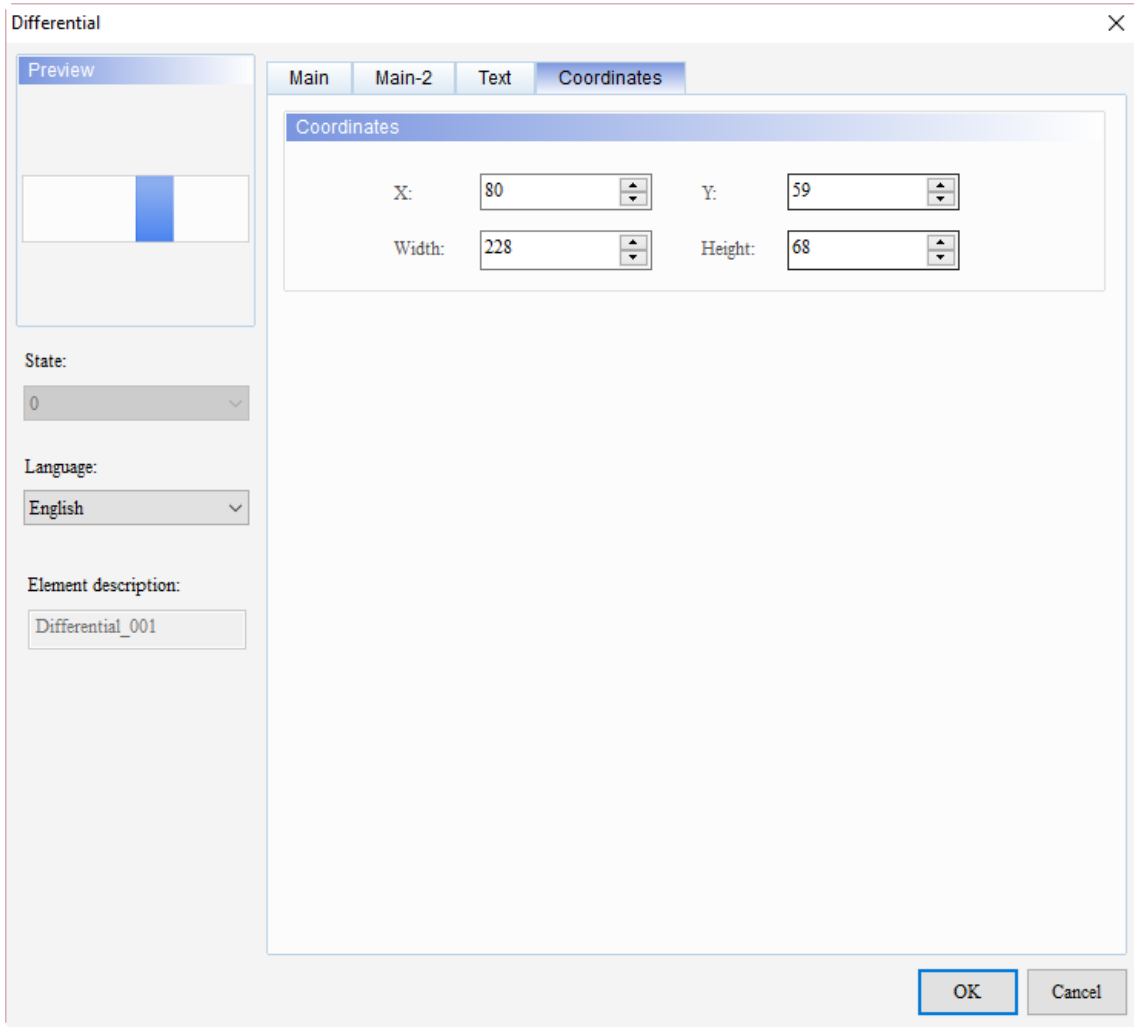


Figure 7.2.5 Coordinates property page for the Differential bar element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

Pipe Chart

This chapter provides the usage and setting details for the Pipe elements.

8.1	Pipe(1) / Pipe(2).....	8-2
8.2	Pipe(3) / Pipe(4) / Pipe(5).....	8-13
8.3	Pipe(6) / Pipe(7).....	8-18

8

8.1 Pipe(1) / Pipe(2)

Functions of Pipe(1) and Pipe(2) are the same except the shapes. The introduction of Pipe(1) is as follows. The register value corresponding to the read address of the Pipe element will have the figure displayed on the pipe chart based on the set Target value, Low Limit, and High Limit. Like the case of the Bar elements, you can define the memory addresses for the target value, lower and upper limits of the Pipe(1) element, making the application more flexible and meet user requirements, as shown in Table 8.1.1. You can set different colors for the Low Limit, High Limit, and Target value so users can easily identify them with the set colors.

Table 8.1.1 Pipe(1) / Pipe(2) elements - identifying the high and low limits with colors




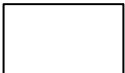
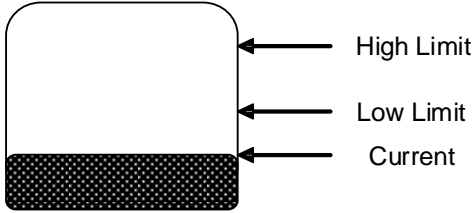
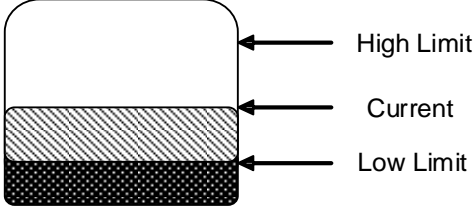
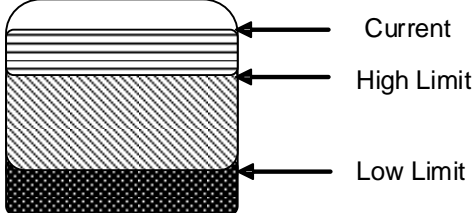



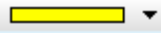
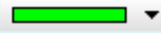

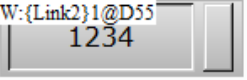


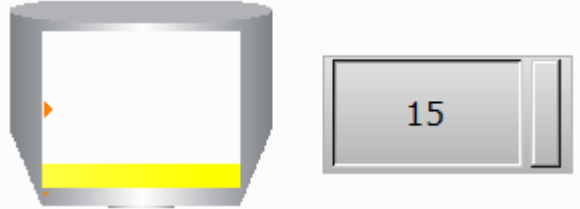
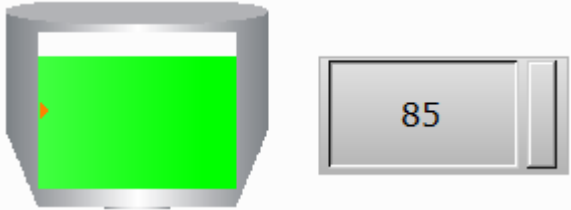
Using colors to identify the upper and lower limits			
Low Range Color	Water Level Color	High Range Color	Cylinder Color
			
Example (1)			
Example (2)			
Example (3)			

Table 8.1.2 Pipe(1) element example

Pipe(1)						
Read Address	Pipe(1) element		Numeric Entry element			
	Read Address	\$444	Write Address	\$444		
						
Setting value	Data Type	Data Format	Minimum	Maximum		
	Word	Unsigned Decimal	0	100		
Check Target, Range, and Variable target/range limits	Target color		Target value			
			{Link2}1@D50			
	Low Limit property		High Limit property			
	Low Range Color	Low Range value	High Range Color	High Range value		
		{Link2}1@D55		{Link2}1@D65		
Create Numeric Entry elements	Numeric Entry element		Numeric Entry element		Numeric Entry element	
	Write Address	{Link2}1@D50	Write Address	{Link2}1@D55	Write Address	{Link2}1@D65
	Target Value		Low Limit Value		High Limit Value	
						

8

Pipe(1)							
	<table border="1"> <thead> <tr> <th>Target Value</th> <th>Low Limit Value</th> <th>High Limit Value</th> </tr> </thead> <tbody> <tr> <td>50</td> <td>20</td> <td>80</td> </tr> </tbody> </table>	Target Value	Low Limit Value	High Limit Value	50	20	80
Target Value	Low Limit Value	High Limit Value					
50	20	80					
Execution results	<p>Target</p> <p>Enter 50 for Target value and set orange for the display color.</p> 						
	<p>Low Limit</p> <p>Enter 15 for \$444, which is smaller than the Low Limit Value of 20, so the displaying color is yellow.</p> 						
	<p>High Limit</p> <p>Enter 85 for \$444, which is greater than the High Limit Value of 80, so the displaying color is green.</p> 						

When you double-click the Pipe(1) element, the property page is shown as follows.

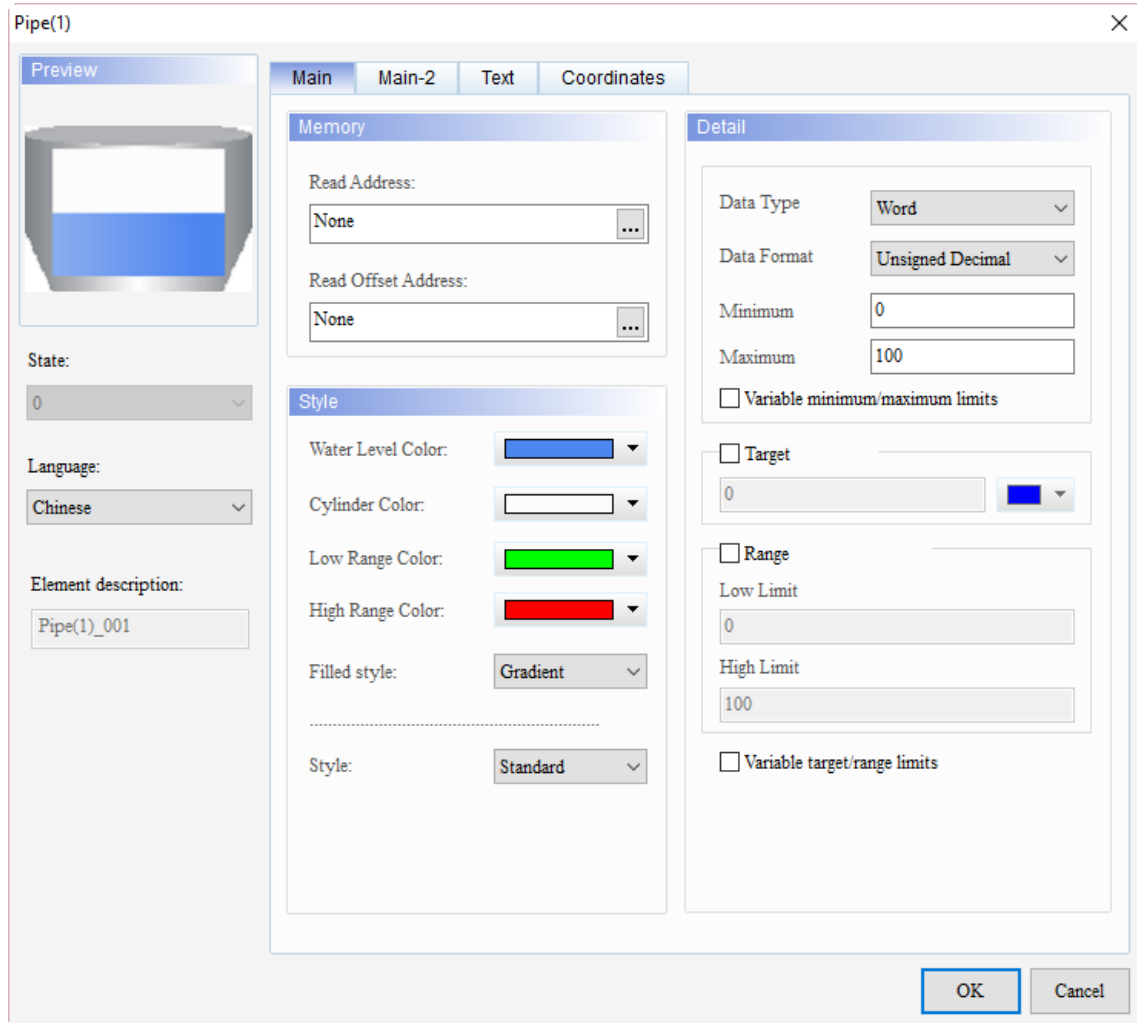


Figure 8.1.1 Properties of Pipe(1) element

Table 8.1.3 Function page of Pipe(1)

Pipe(1)	
Function page	Description
Preview	Pipe elements are only for viewing multi-language data display and have no multiple states.
Main	Set the Read Address, Read Offset Address, and Style of the element. Set the Water Level Color, Cylinder Color, Low Range Color, and High Range Color. Set the element Data Type, Data Format, Minimum / Maximum input value, and Variable minimum/maximum limits. Set whether to display the target value and its color, input values for the activation range, and enable Variable target/range limits.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

■ Main

8

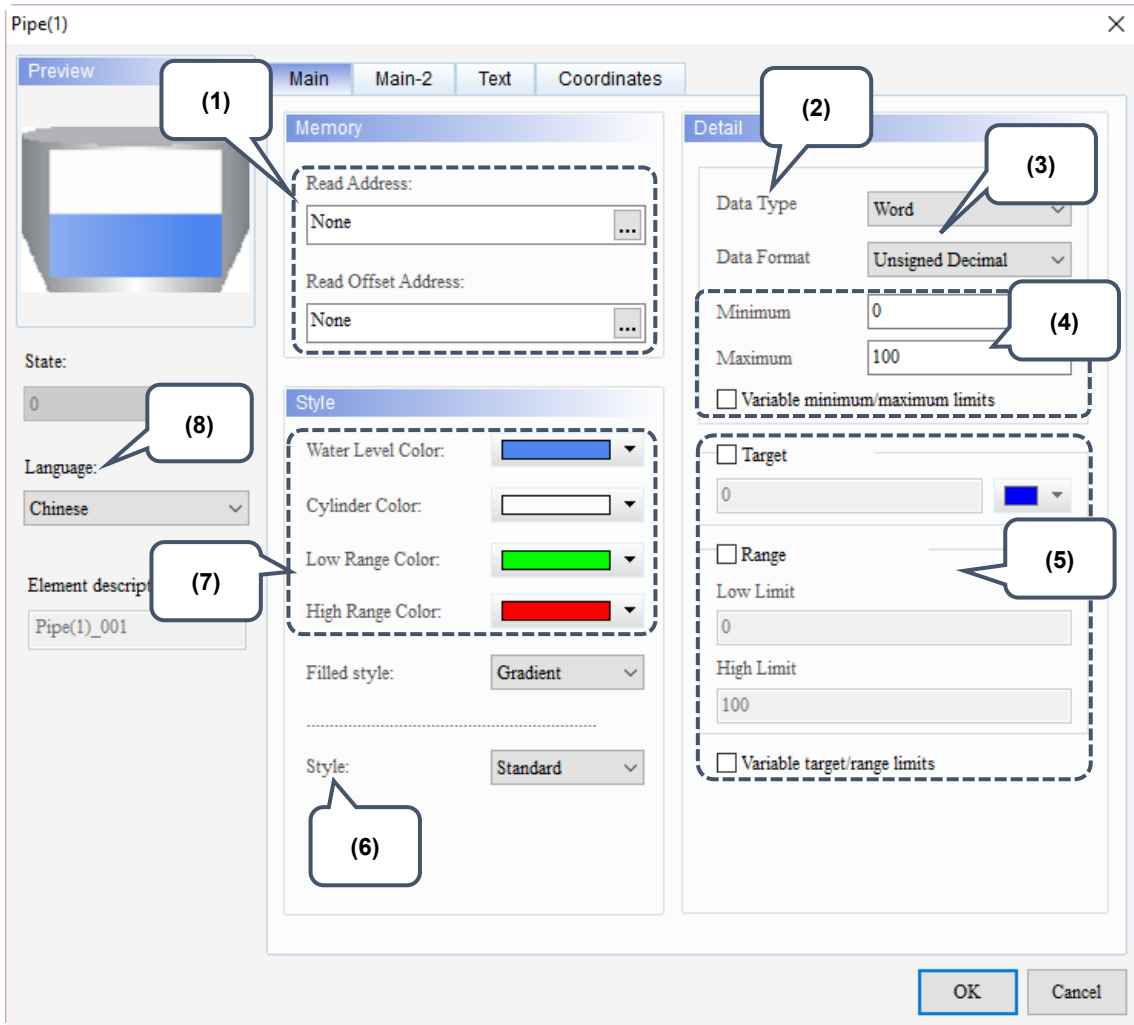
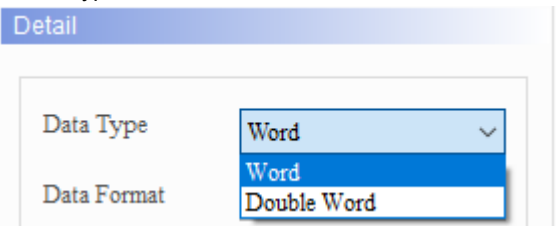
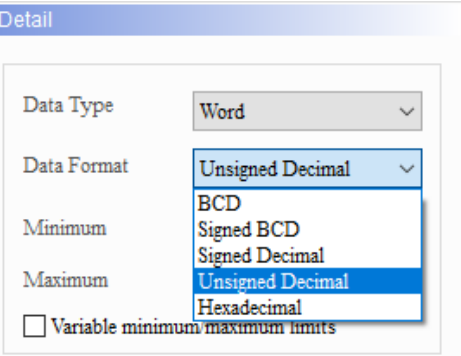
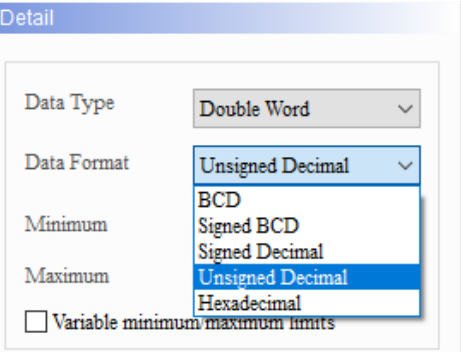
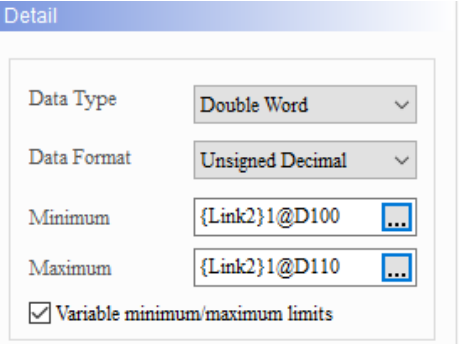





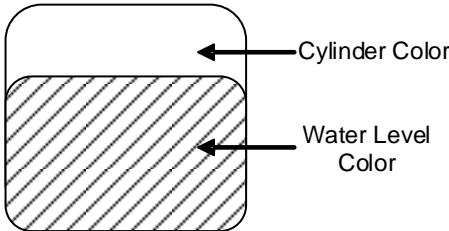
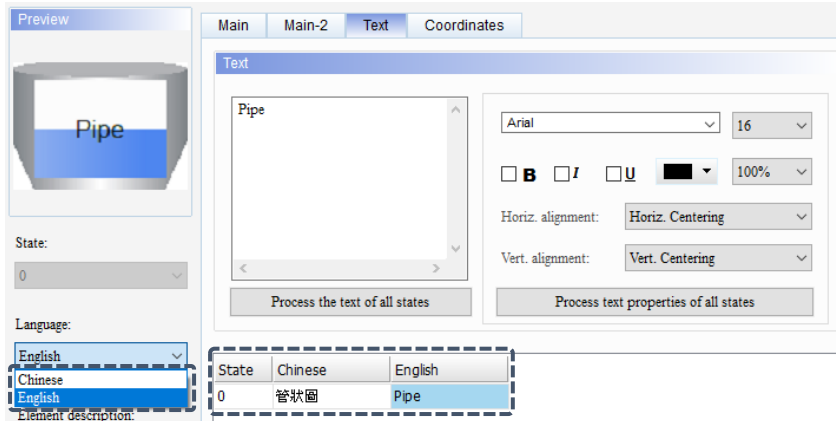


Figure 8.1.2 Main property page for the Pipe(1) element

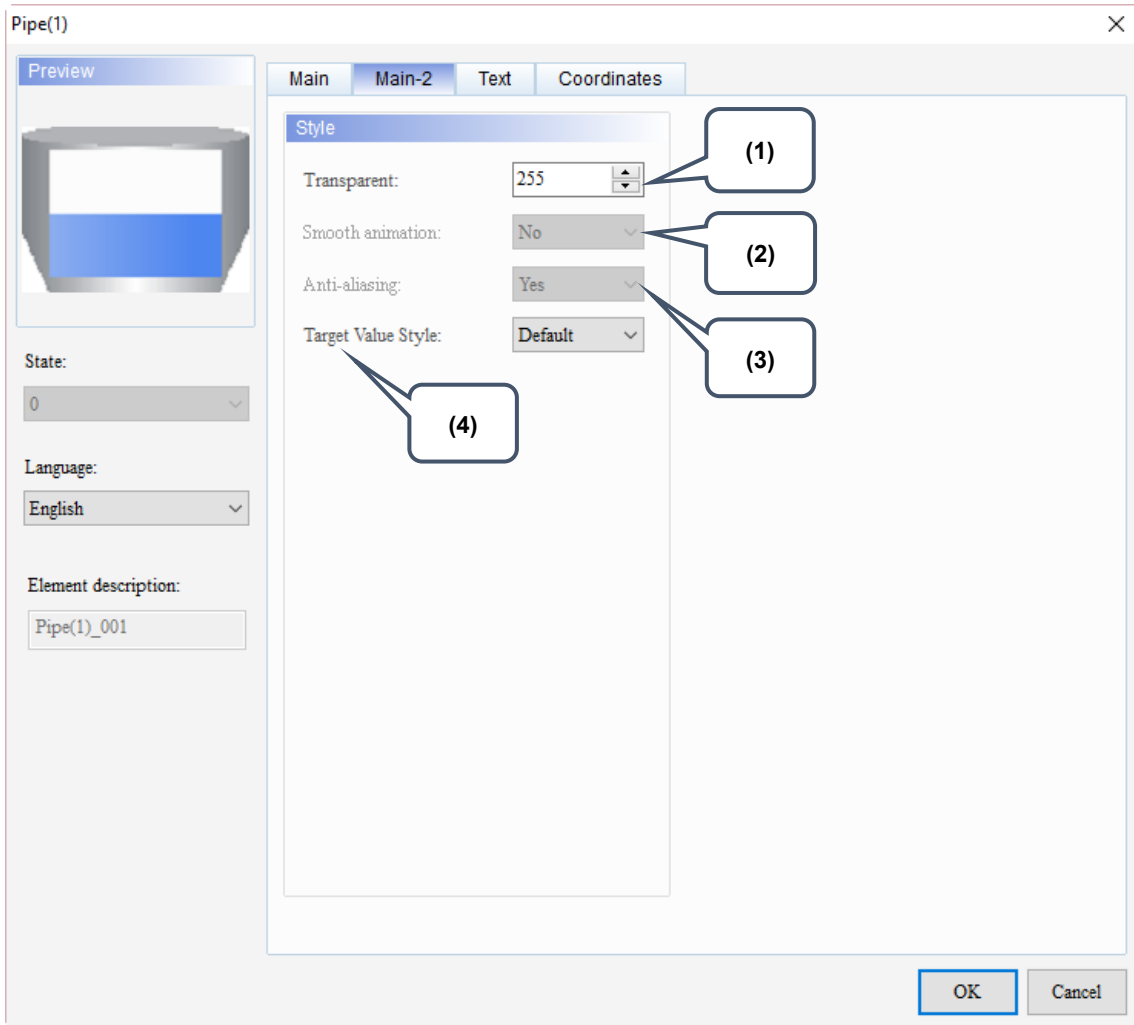
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can choose internal memory address or controller register address. The input memory type has to be Word. Select Link Name or Element Style. Please refer to Section 5.1.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types available, Word and Double Word.</p> 

No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> When the Data Type is Word, the supported Data Formats are as follows:  When the Data Type is Double Word, the supported data formats are as follows:  																									
(4)	Minimum / Maximum input value	<p>The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to 9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to 2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFFFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Hexadecimal	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-9999999 to 9999999	Signed Decimal	-2147483648 to 2147483647	Unsigned Decimal	0 to 4294967295	Hexadecimal	0 to 0xFFFFFFFF
Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																									
	Signed BCD	-999 to 9999																									
	Signed Decimal	-32768 to 32767																									
	Unsigned Decimal	0 to 65535																									
	Hexadecimal	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-9999999 to 9999999																									
	Signed Decimal	-2147483648 to 2147483647																									
	Unsigned Decimal	0 to 4294967295																									
	Hexadecimal	0 to 0xFFFFFFFF																									
	Variable minimum/maximum limits	<p>Check this box to set the addresses for the Minimum and Maximum values and input the Minimum and Maximum values.</p> 																									

8

No.	Property	Function description			
(5)	Display format	Target	If the checkbox of Variable target/range limits is unchecked, you can only enter a constant to define the displaying target value on the pipe chart. You can also specify the displaying color.		
		Range	Enable the input value range including the Low Limit and High Limit. Like the case of the Target display, if the checkbox of Variable target/range limits is unchecked, you can only enter constants to define the Low and High Limits of the pipe chart.		
		Variable target/range limits	If it is checked, you can define the memory addresses to dynamically change the Target value, Low Limit and High Limit values displayed.		
(6)	Style	The available element styles are Standard and Rotation 180. You can change the appearance of the element with this setting.			
		<table border="1"> <thead> <tr> <th>Standard</th> <th>Rotation180</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Standard	Rotation180	
Standard	Rotation180				
					
(7)	Style				
		Water Level Color	You can define the Water Level Color to be displayed.		
		Cylinder Color	You can define the border color to be displayed.		
		Low Range Color	You can define the low range color to be displayed. Please refer to Table 8.1.1.		
		High Range Color	You can define the high range color to be displayed. Please refer to Table 8.1.1.		
(8)	Language	If you have set the language data, you can use the language used for the element to edit the displaying text property, etc.			
					

■ Main-2



8

Figure 8.1.3 Main-2 property page for the Pipe(1) element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.				
(4)	Target Value Style	<p>There are two display styles, Default and Style 1.</p> <table border="1"> <tr> <td>Default</td> <td></td> </tr> <tr> <td>Style 1</td> <td></td> </tr> </table>	Default		Style 1	
Default						
Style 1						

■ Text

8

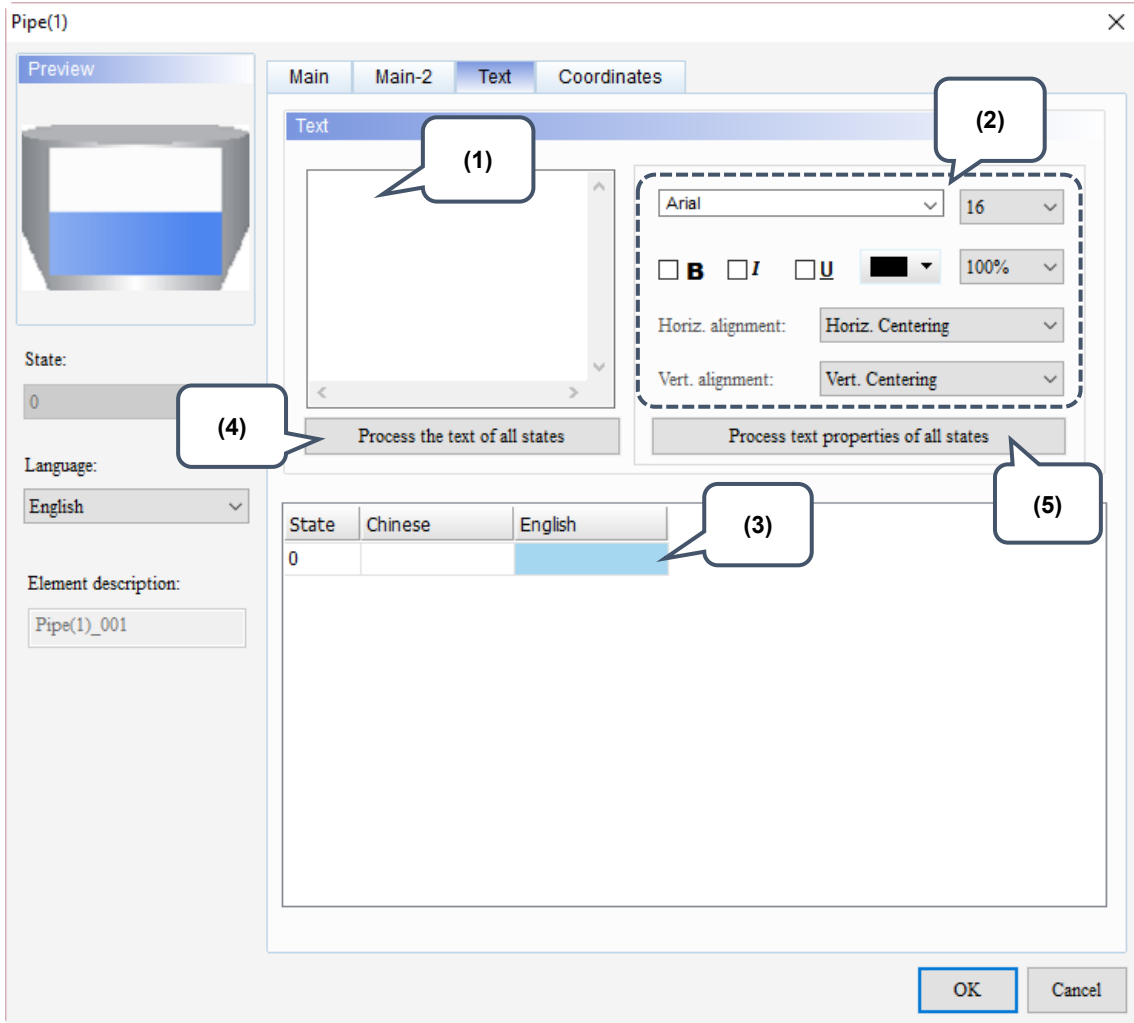
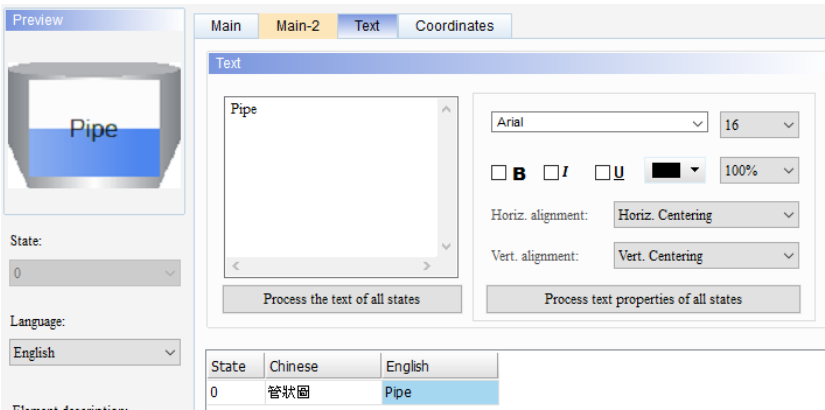
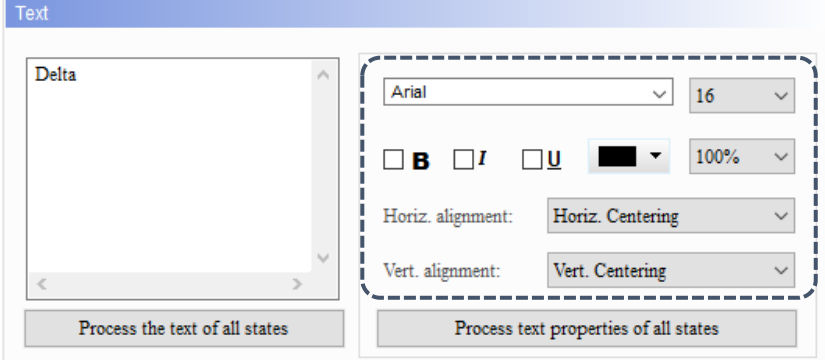


Figure 8.1.4 Text property page for the Pipe(1) element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can enter the text to display in this box.  <ul style="list-style-type: none"> As long as the element allows text input, you can click the element on the screen and press the space key to start editing the text.
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<ul style="list-style-type: none"> This function batch changes the text of the specified state. Pipe(1) / Pipe(2) elements have only one state, so this function is not applicable.
(5)	Process text properties of all states	<ul style="list-style-type: none"> This function batch changes the text of the specified property. Items included in the text property are shown in the figure below.  <ul style="list-style-type: none"> Pipe(1) and Pipe(2) elements have only one state, so this function is not applicable.

Coordinates

8

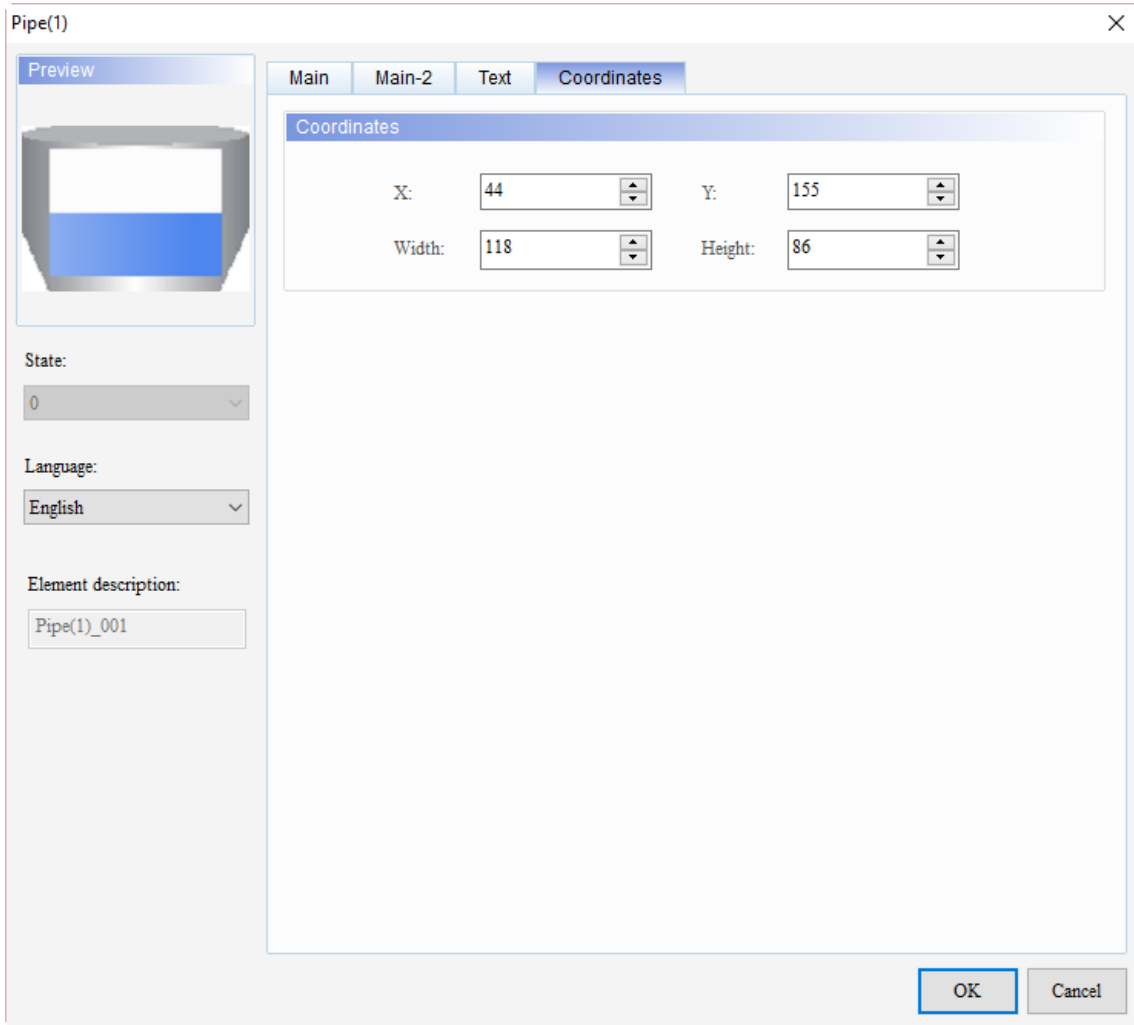


Figure 8.1.5 Coordinates property page for the Pipe(1) element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

8.2 Pipe(3) / Pipe(4) / Pipe(5)

Pipe(3) / Pipe(4) / Pipe(5) are mainly for connecting Pipe(1) / Pipe(2) / Pipe(6) / Pipe(7). Therefore, these three pipe charts have no parameters for read / write addresses or numeric value setting, etc. You can only set the displaying pipe diameter and rotation angle.

Table 8.2.1 Function page of Pipe(3) / Pipe(4) / Pipe(5)

Pipe(3) / Pipe(4) / Pipe(5)	
Function page	Description
Preview	These three elements are mainly for connecting to other pipe charts; they have only one state without multi-language text for editing.
Main	Set the Pipe Diameter and Style of the element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates of the element.

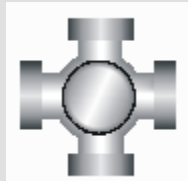
■ Main

Table 8.2.2 Display style of Pipe(3) / Pipe(4) / Pipe(5)

8

Main property page of Pipe(3) / Pipe(4) / Pipe(5)

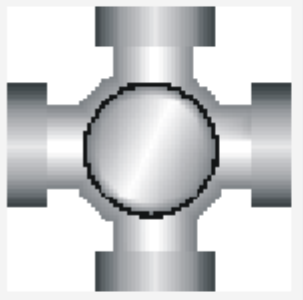
Pipe(3)



The Pipe Diameter ranges from 1 to 5.

Pipe(3)

Preview
Main Main-2 Coordinates



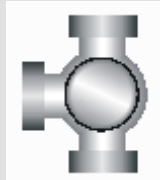
State: 0

Style



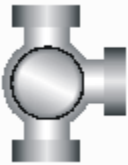

Pipe Diameter: 2

- 1
- 2
- 3
- 4
- 5

Pipe(4)

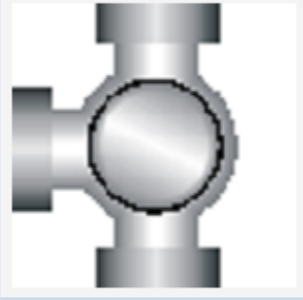


- The Pipe Diameter ranges from 1 to 5.
- The available element styles are Standard, Rotation 90, Rotation 180, and Rotation 270. You can change the appearance of the element with this setting.

Standard	Rotation 90	Rotation 180	Rotation 270
			

Pipe(4)

Preview
Main Main-2 Coordinates



State: 0

Style





Pipe Diameter: 2

Style: Standard


- Standard
- Rotation 90
- Rotation 180
- Rotation 270

Main property page of Pipe(3) / Pipe(4) / Pipe(5)

- The Pipe Diameter ranges from 1 to 5.
- The available element styles are Standard, Rotation 90, Rotation 180, and Rotation 270. You can change the appearance of the element with this setting.


Standard	Rotation 90	Rotation 180	Rotation 270
			

Pipe(5)



Pipe(5)

Preview



State:

0

Main Main-2 Coordinates

Style

Pipe Diameter: 2

Style: Standard

- Standard
- Rotation 90
- Rotation 180
- Rotation 270

■ Main-2

8

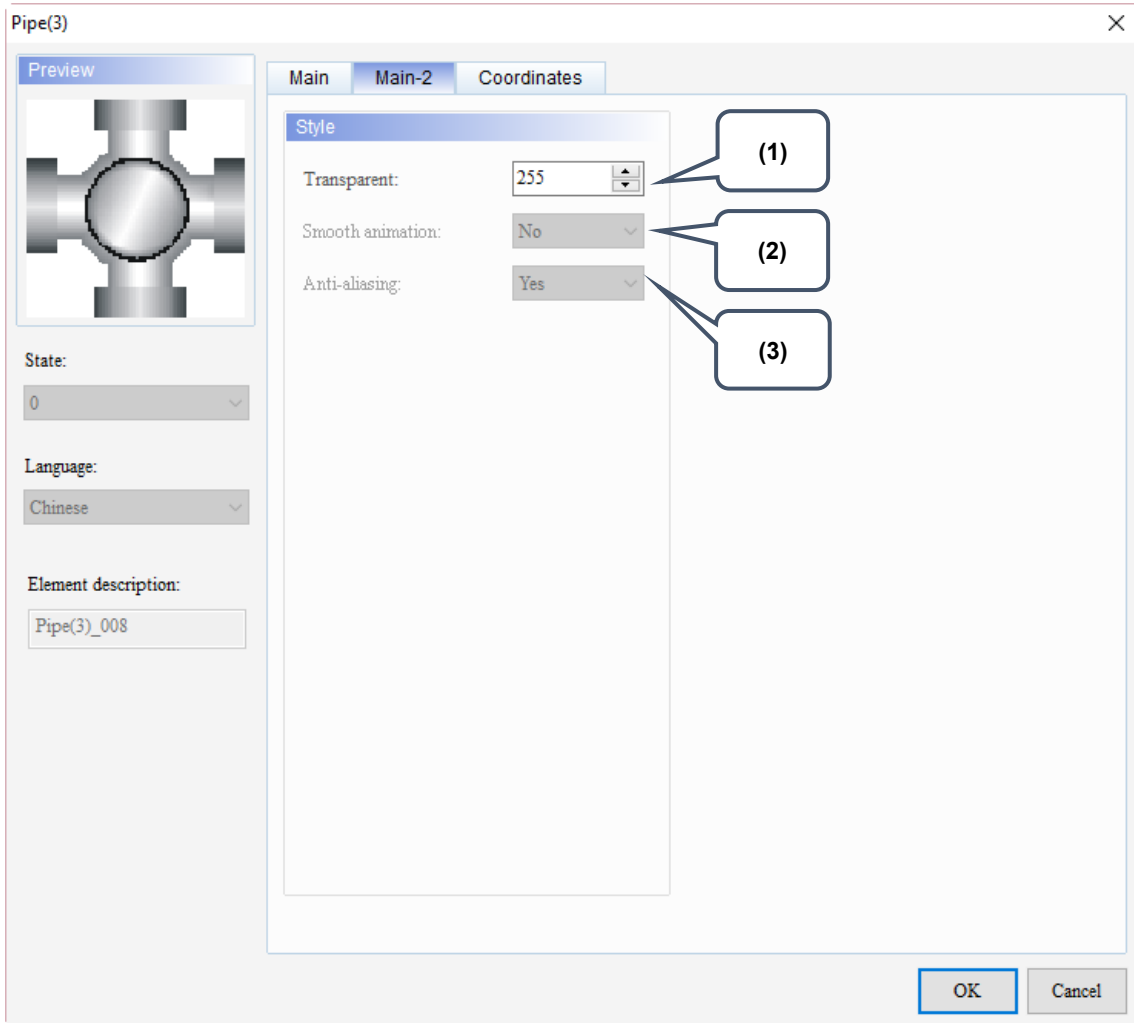


Figure 8.2.1 Main-2 property page for the Pipe(3) / Pipe(4) / Pipe(5) elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the element display becomes smoother.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Coordinates

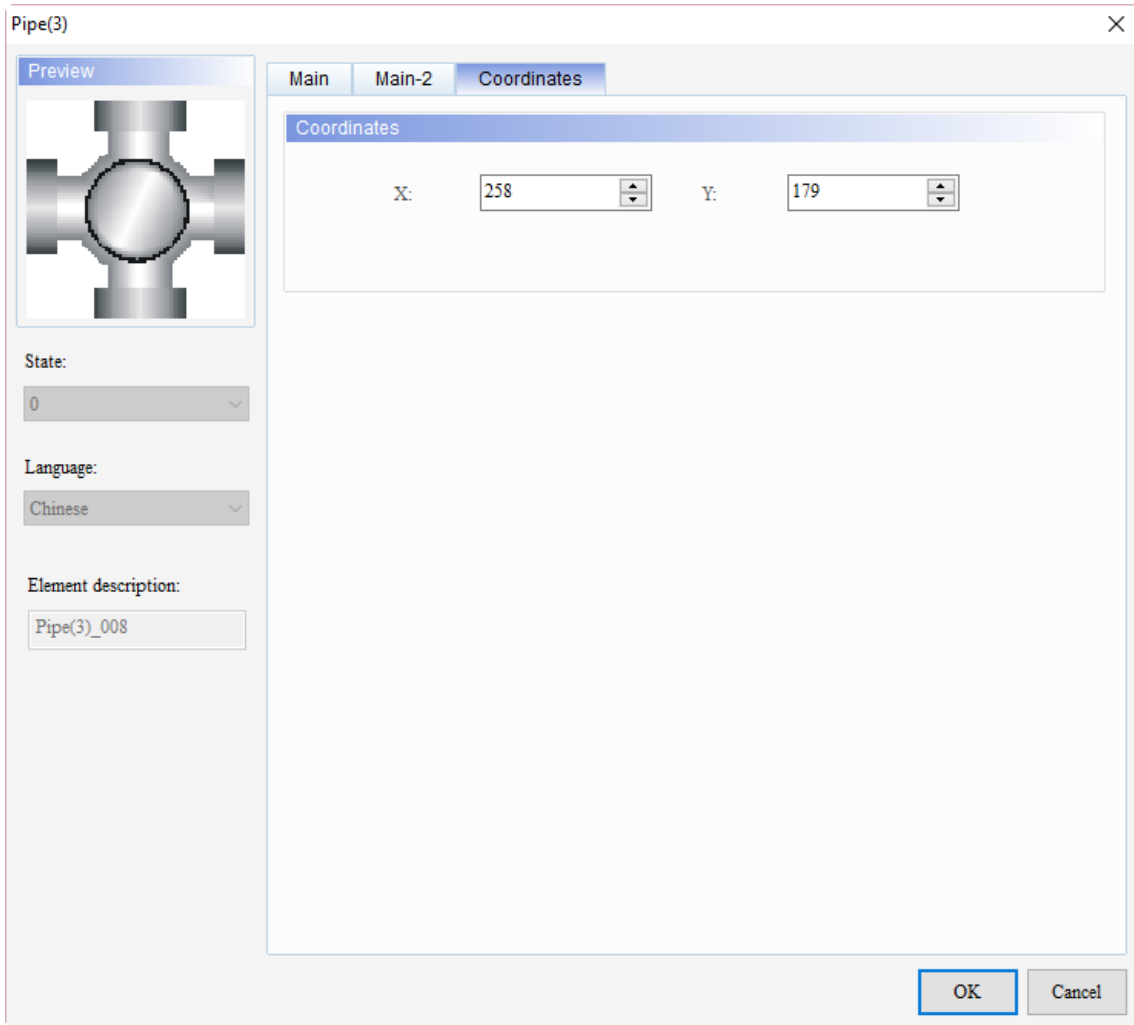


Figure 8.2.2 Coordinates property page for the Pipe(3) / Pipe(4) / Pipe(5) elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

8.3 Pipe(6) / Pipe(7)

Pipe(6) and Pipe(7) can be used for pipe charts. It can also display the water flow as well as setting the water flow direction and colors so you can set the read address for these elements.

Table 8.3.1 Function page of Pipe(6) / Pipe(7)

Pipe(6) / Pipe(7)	
Function page	Description
Preview	Pipe(6) and Pipe(7) elements are for controlling the water flow direction and have only one state without multi-language for editing.
Main	Set the Read Address, Pipe Diameter, Variable Color, and Flow Cursor Color.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Flow Cursor Type.
Coordinates	Set the X and Y coordinates of the element.

■ Main

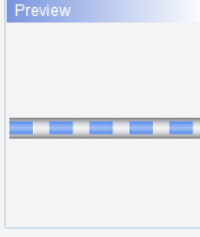
Table 8.3.2 Display style of Pipe(6) / Pipe(7)

Main property page of Pipe(6) / Pipe(7)

■ Set the Read Address; you can set the water flow direction with this address.

Pipe(6)
×

Preview



Main
Main-2
Coordinates

Memory

Read Address: ...

Read Offset Address: ...

Style

Pipe Diameter: ▾

Variable Color: ▾

Flow Cursor Color: ▾

Pipe(6)		
Water flow direction	Right → Left	Read Address = 1
	Left → Right	Read Address = 2

Pipe(7)		
Water flow direction	Top → Bottom	Read Address = 2
	Bottom → Top	Read Address = 1

■ The Pipe Diameter ranges from 1 to 5.

■ You can define the Flow Cursor color to display.

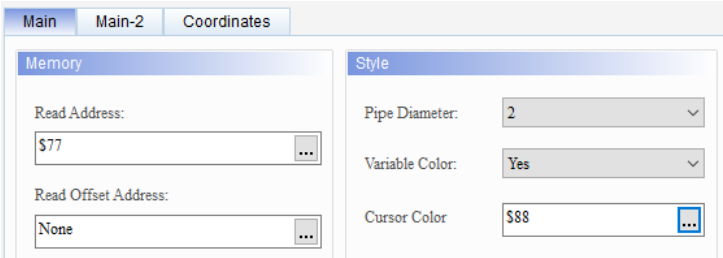
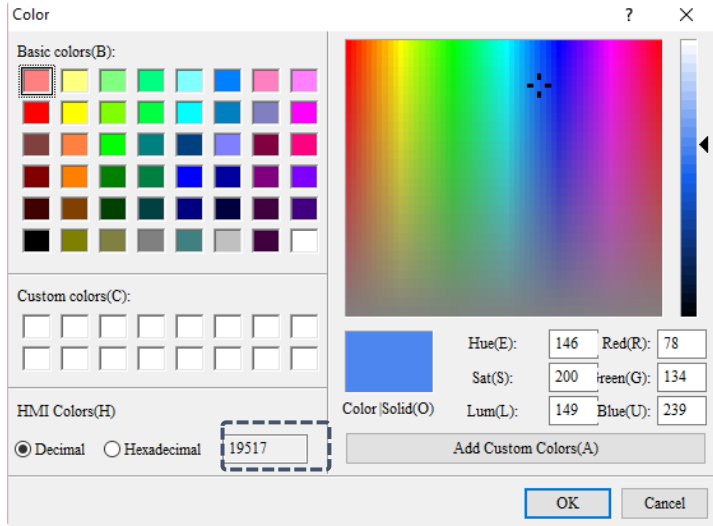
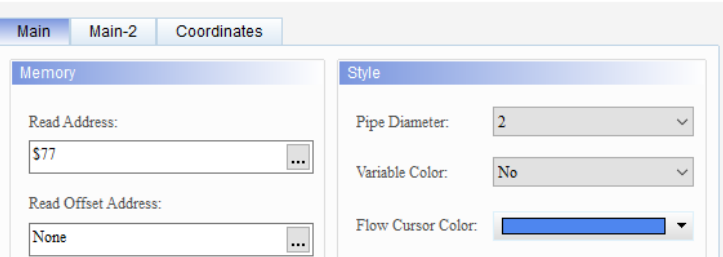
■ If Variable Color is Yes, it means you can set the Flow Cursor Color.

8

November, 2018

8-19

8

Main property page of Pipe(6) / Pipe(7)		
Pipe(6) Pipe(7)	Set Variable Color to Yes	<p>When you select Yes, it means the Cursor Color address is set to a variable, which can change dynamically.</p>  <p>The colors corresponding to the values are shown in the figure below.</p> 
	Set Variable Color to No	<p>When setting to No, it means the Cursor Color address is fixed.</p> 

■ Main-2

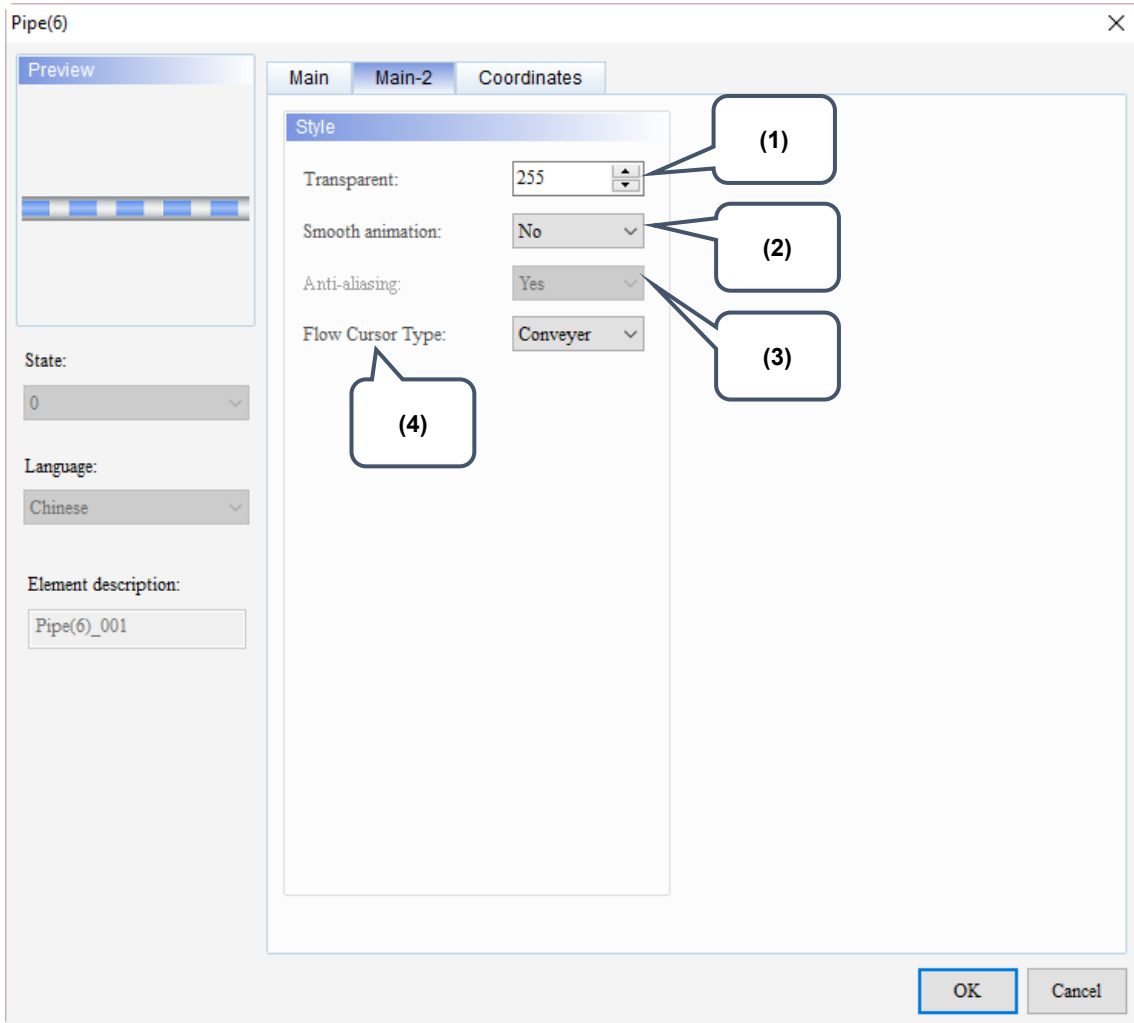







Figure 8.3.1 Main-2 property page for the Pipe(6) / Pipe(7) elements

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the element display becomes smoother. Note: the screen update speed may be slower when the Smooth animation function is enabled.		
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.		
(4)	Flow Cursor Type	Include Conveyer and Bubble.		
		<table border="1"> <tr> <td>Conveyer</td> <td></td> </tr> <tr> <td>Bubble</td> <td></td> </tr> </table>	Conveyer	
Conveyer				
Bubble				

■ Coordinates

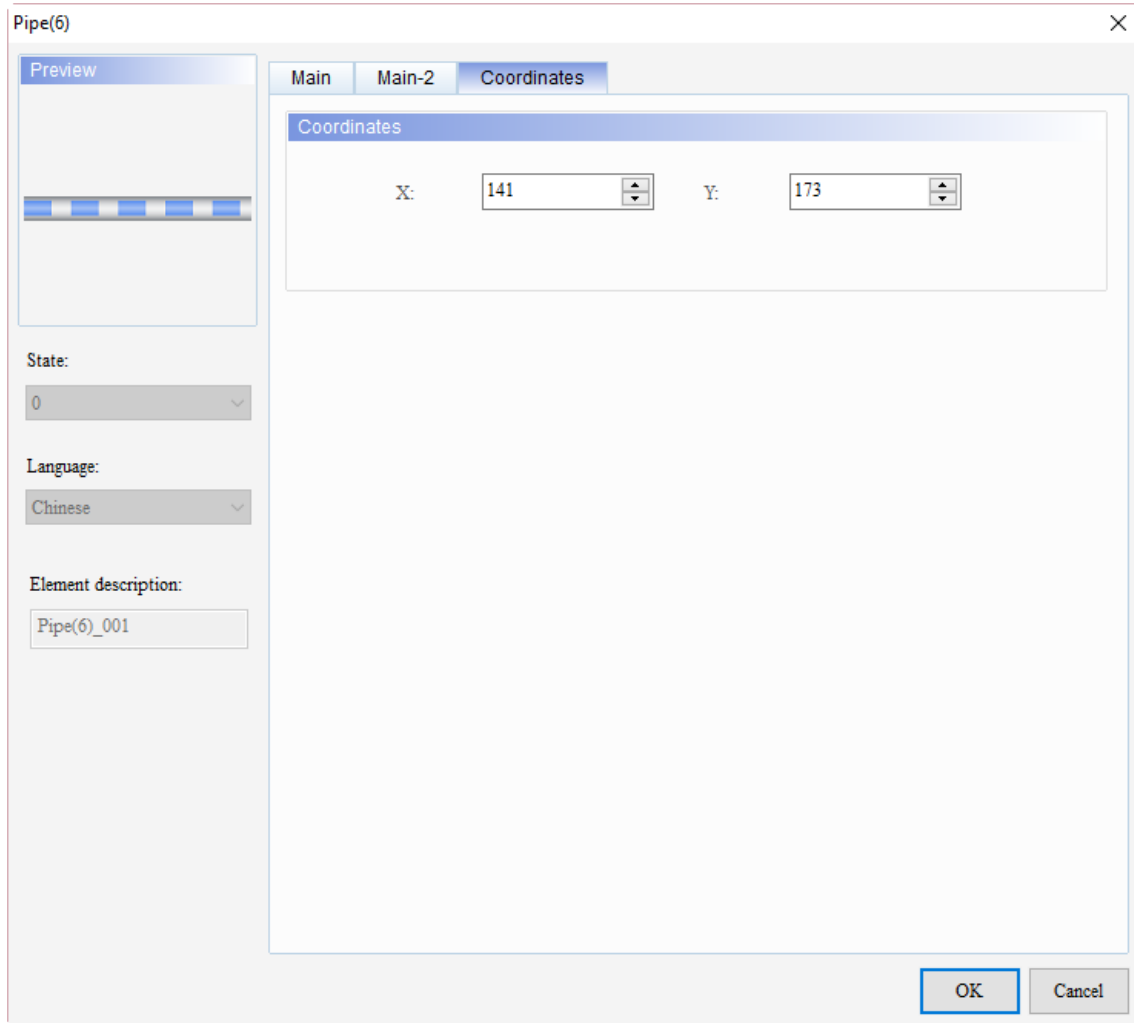


Figure 8.3.2 Coordinates property page for the Pipe(6) / Pipe(7) elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.

8

Pie Chart

9

This chapter provides the usage and setting details for the Pie elements.

9.1	Pie(1) / Pie(2) / Pie(3) / Pie(4).....	9-2
-----	----------------------------------------	-----

9

9.1 Pie(1) / Pie(2) / Pie(3) / Pie(4)

The only difference among elements Pie(1), Pie(2), Pie(3), and Pie(4) is the element shape; all other functions are the same. The introduction for Pie(1) is as follows. The values set in the register corresponding to the read addresses enable the Pie element to display the Target, Low Limit, and High Limit. Pie(1) elements are the same as the Meter elements; you can define the memory address for the target value and upper / lower limits to make the application more flexible so it meets users' requirements. You can also set the colors for the Low Limit, High Limit, and Target for easier identification and viewing.

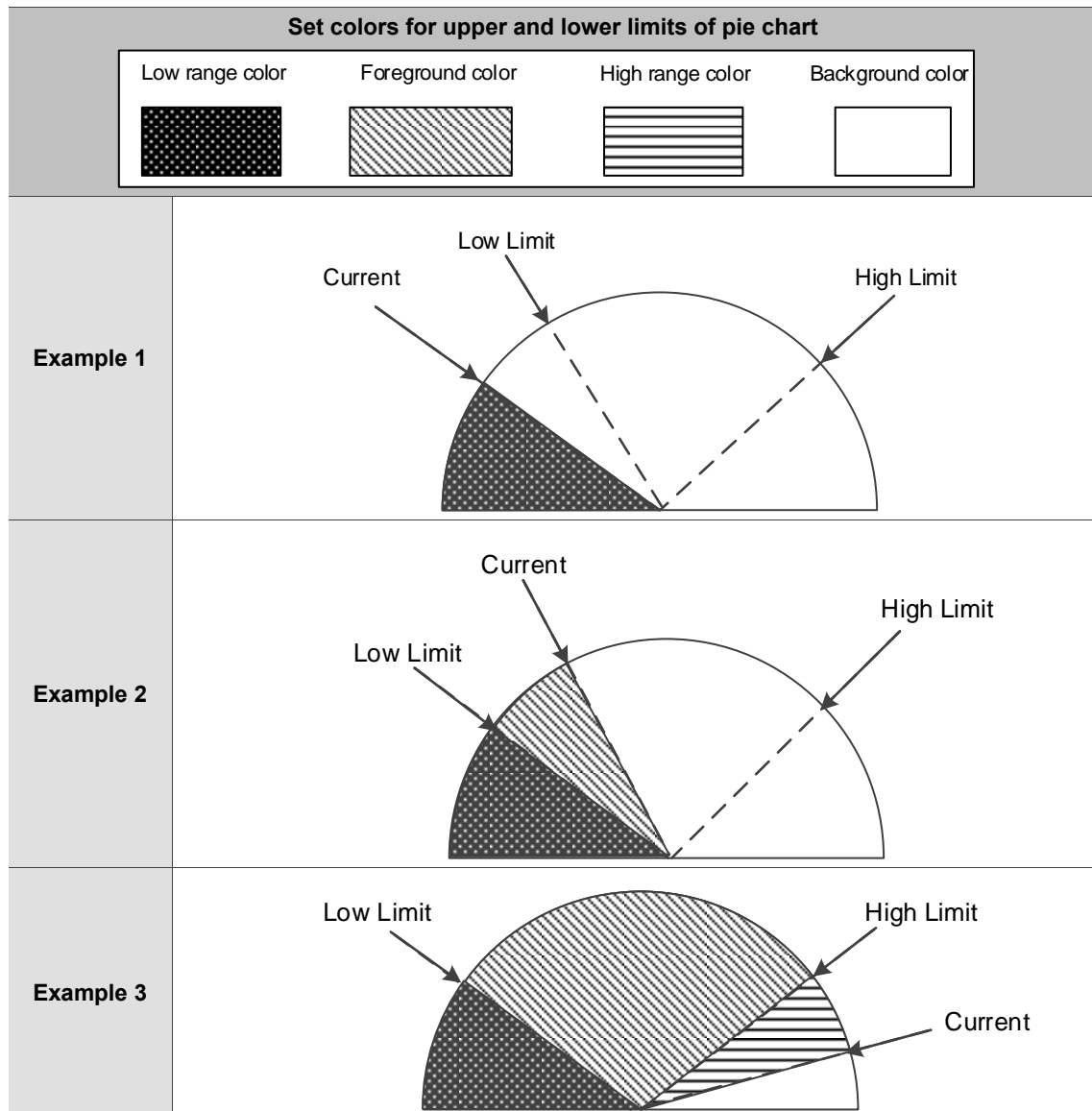




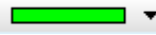


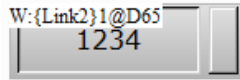
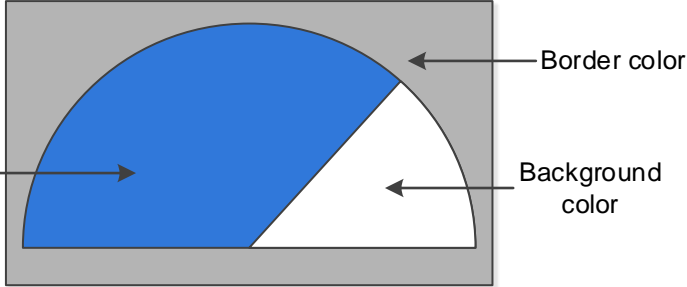



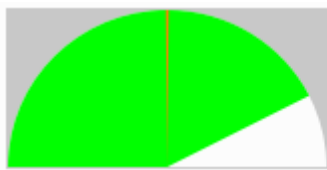
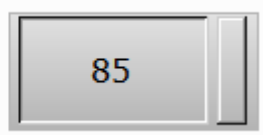


Table 9.1.1 User-defined display format for Pie(1) element

Table 9.1.2 Pie(1) element example

Pie(1)					
	Pie(1) element			Numeric Entry Element	
	Read Address	\$444		Write Address	\$444
Read Address					
Settings	Data Type	Data Format		Minimum	Maximum
	Word	Unsigned Decimal		0	100
Check Target, Range, and Variable target/range limits	Target value color			Target value	
				{Link2}1@D50	
	Low Limit property		High Limit property		
	Low Range Color	Low Range Value	High Range Color	High Range Value	
	{Link2}1@D55		{Link2}1@D65		
Create numeric entry elements	Numeric Entry element		Numeric Entry element		Numeric Entry element
	Write Address	{Link2}1@D50	Write Address	{Link2}1@D55	Write Address {Link2}1@D65
	Target Value		Low Limit Value		High Limit Value
					
Pie(1) element diagram example					

9

Pie(1)							
	<table border="1"> <tr> <td>Target Value</td> <td>Low Limit Value</td> <td>High Limit Value</td> </tr> <tr> <td>50</td> <td>20</td> <td>80</td> </tr> </table>	Target Value	Low Limit Value	High Limit Value	50	20	80
Target Value	Low Limit Value	High Limit Value					
50	20	80					
Execution results	<p>Target</p> <p>Enter 50 for Target value and set orange for the display color.</p> 						
	<p>Low Limit</p> <p>Enter 15 for \$444 and 20 for the Low Limit, and set yellow for the display color.</p>  						
	<p>High Limit</p> <p>Enter 85 for \$444 and 80 for the High Limit, and set green for the display color.</p>  						

When you double-click the Pie(1) element, the property page is shown as follows.

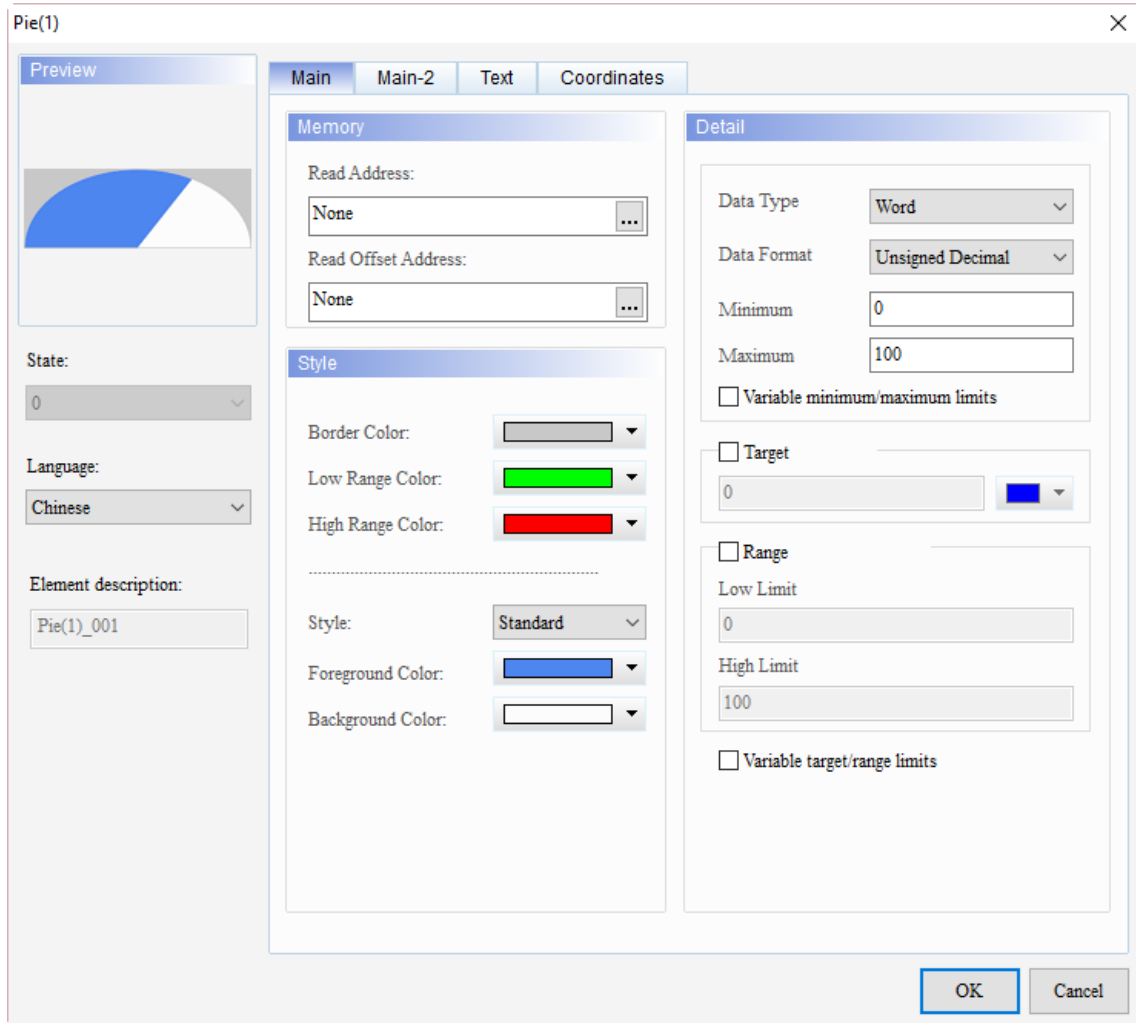


Figure 9.1.1 Pie(1) element property

Table 9.1.3 Pie(1) function page

Pie(1)	
Function Page	Description
Preview	Pie elements are only for viewing multi-language data display and have no multiple states.
Main	Set the Read Address, Read Offset Address, Style, Foreground Color, and Background Color. Set the Border Color, Low Range Color, and High Range Color. Set the element Data Type, Data Format, Minimum / Maximum input value, and Variable minimum / maximum limits. Set whether to display the target value and its color, input values for the activation range, and Variable target / range limits.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Target Value Style.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

9

■ Main

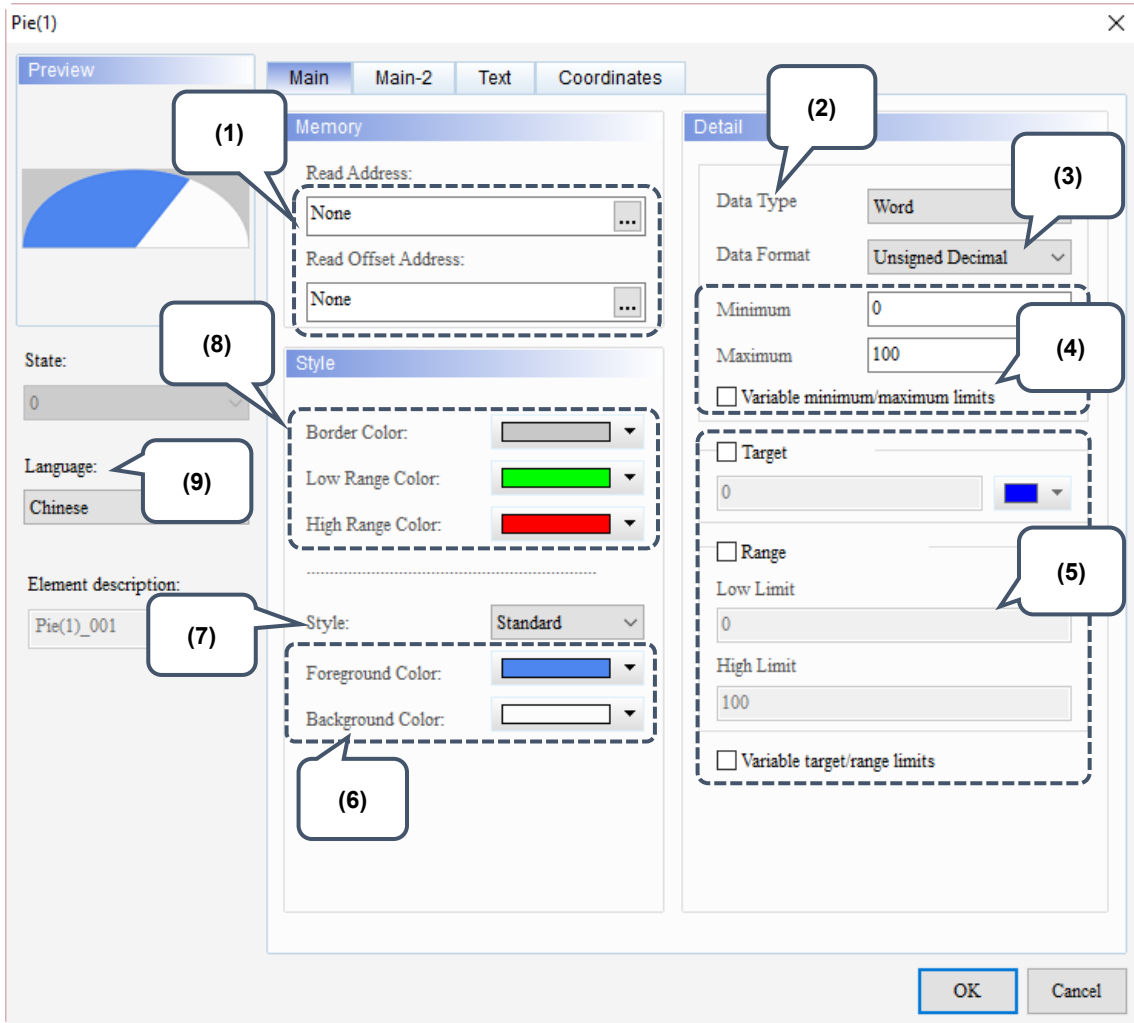
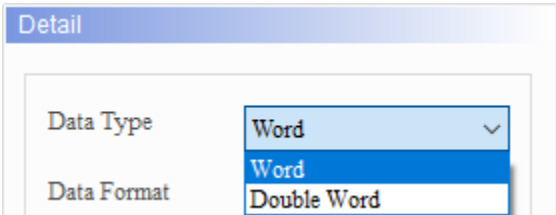
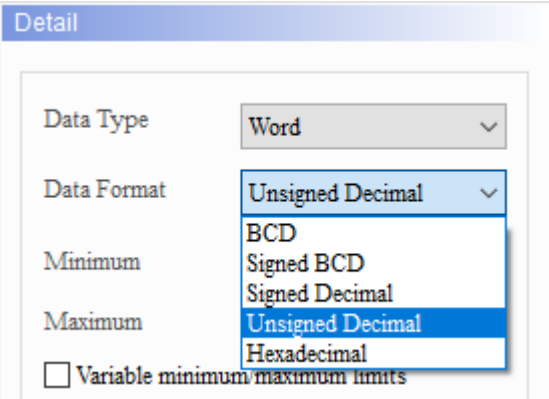
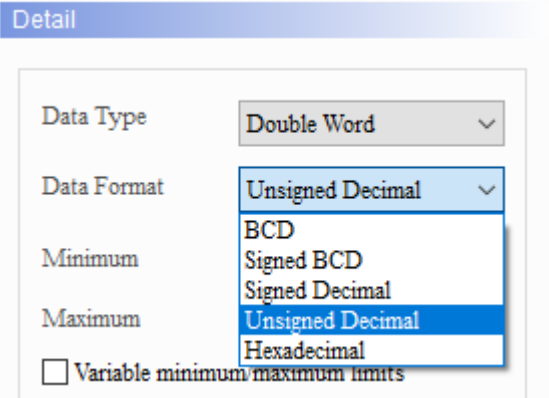
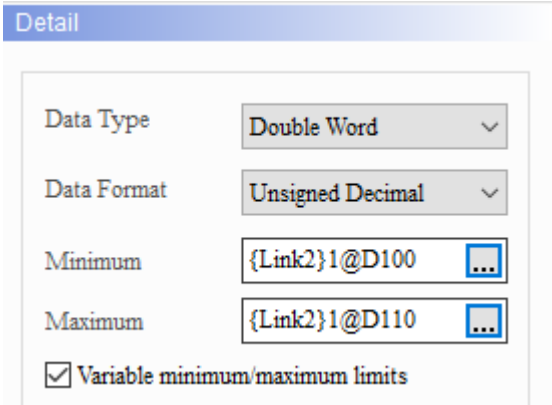
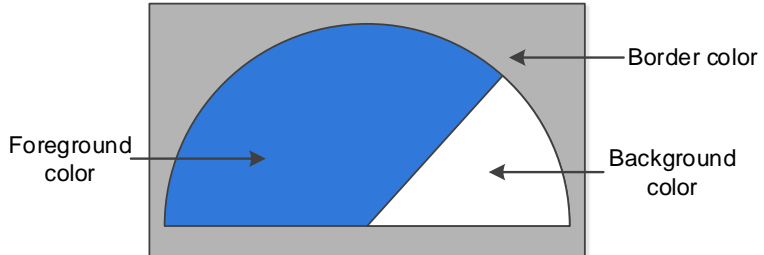














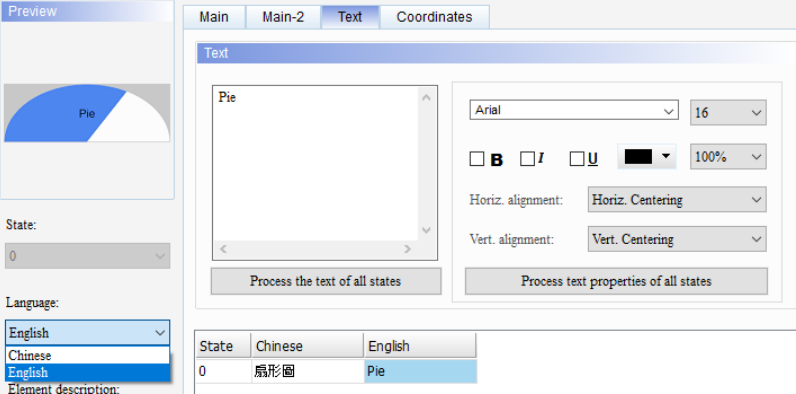
Figure 9.1.2 Main property page for the Pie(1) element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can choose internal memory address or controller register address. The input memory type has to be Word. Select Link Name or Element Style. Please refer to Section 5.1.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types available, Word and Double Word.</p> 

No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> When the Data Type is Word, the supported Data Formats are as follows:  When the Data Type is Double Word, the supported Data Formats are as follows:  																									
(4)	Minimum / Maximum (input value)	<p>The allowable ranges for the minimum and maximum values are subject to change based on the selected data type and data format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-99999999 to 99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to 2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFFFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Hexadecimal	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-99999999 to 99999999	Signed Decimal	-2147483648 to 2147483647	Unsigned Decimal	0 to 4294967295	Hexadecimal	0 to 0xFFFFFFFF
Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																									
	Signed BCD	-999 to 9999																									
	Signed Decimal	-32768 to 32767																									
	Unsigned Decimal	0 to 65535																									
	Hexadecimal	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-99999999 to 99999999																									
	Signed Decimal	-2147483648 to 2147483647																									
	Unsigned Decimal	0 to 4294967295																									
	Hexadecimal	0 to 0xFFFFFFFF																									

9

No.	Property	Function description								
(4)	Variable minimum/maximum limits	<p>Check this box to set the addresses for the minimum and maximum values and you can also specify the minimum and maximum values.</p> 								
(5)	Display Format	<table border="1"> <tr> <td>Display Limit</td> <td>If the checkbox Variable target / range limits is unchecked, you can only enter a constant to define the displayed target value on the pie chart. You can also specify the displayed color.</td> </tr> <tr> <td>Range</td> <td>Enable the input value range including the lower and upper limits. It is the same as the displayed target value. If the checkbox Variable target / range limits is unchecked, you can only enter constants to define the lower and upper limits of the pie chart.</td> </tr> <tr> <td>Variable target / range limits</td> <td>If it is checked, you can define the memory addresses to dynamically change the target value, lower and upper limit values displayed.</td> </tr> </table>	Display Limit	If the checkbox Variable target / range limits is unchecked, you can only enter a constant to define the displayed target value on the pie chart. You can also specify the displayed color.	Range	Enable the input value range including the lower and upper limits. It is the same as the displayed target value. If the checkbox Variable target / range limits is unchecked, you can only enter constants to define the lower and upper limits of the pie chart.	Variable target / range limits	If it is checked, you can define the memory addresses to dynamically change the target value, lower and upper limit values displayed.		
Display Limit	If the checkbox Variable target / range limits is unchecked, you can only enter a constant to define the displayed target value on the pie chart. You can also specify the displayed color.									
Range	Enable the input value range including the lower and upper limits. It is the same as the displayed target value. If the checkbox Variable target / range limits is unchecked, you can only enter constants to define the lower and upper limits of the pie chart.									
Variable target / range limits	If it is checked, you can define the memory addresses to dynamically change the target value, lower and upper limit values displayed.									
(6)	Foreground Color Background Color	<p>Set the element foreground and background colors.</p> 								
(7)	Style (element style)	<p>There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
										
(8)	Style	<table border="1"> <tr> <td>Border Color</td> <td>You can define the border color to display. Please refer to the foreground and background colors of the element.</td> </tr> <tr> <td>Low Range Color</td> <td>You can define the low range color to display. Please refer to Table 9.1.1.</td> </tr> <tr> <td>High Range Color</td> <td>You can define the high range color to display. Please refer to Table 9.1.1.</td> </tr> </table>	Border Color	You can define the border color to display. Please refer to the foreground and background colors of the element.	Low Range Color	You can define the low range color to display. Please refer to Table 9.1.1.	High Range Color	You can define the high range color to display. Please refer to Table 9.1.1.		
Border Color	You can define the border color to display. Please refer to the foreground and background colors of the element.									
Low Range Color	You can define the low range color to display. Please refer to Table 9.1.1.									
High Range Color	You can define the high range color to display. Please refer to Table 9.1.1.									

No.	Property	Function description						
(9)	Language	<p>If you have set the language data, you can use the language used for the element to edit the displaying text, property, etc.</p>  <p>The screenshot displays a software interface for editing a pie chart. On the left, a preview shows a pie chart with a blue slice labeled 'Pie'. Below the preview, there are controls for 'State' (set to 0) and 'Language' (set to English). The main area shows a 'Text' property editor with a text box containing 'Pie'. The editor includes options for font (Arial), size (16), bold (B), italic (I), underline (U), color (black), and percentage (100%). It also has alignment options for horizontal (Horiz. Centering) and vertical (Vert. Centering). At the bottom, a table shows the state and language settings for the element.</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>扇形圖</td> <td>Pie</td> </tr> </tbody> </table>	State	Chinese	English	0	扇形圖	Pie
State	Chinese	English						
0	扇形圖	Pie						

■ Main-2

9

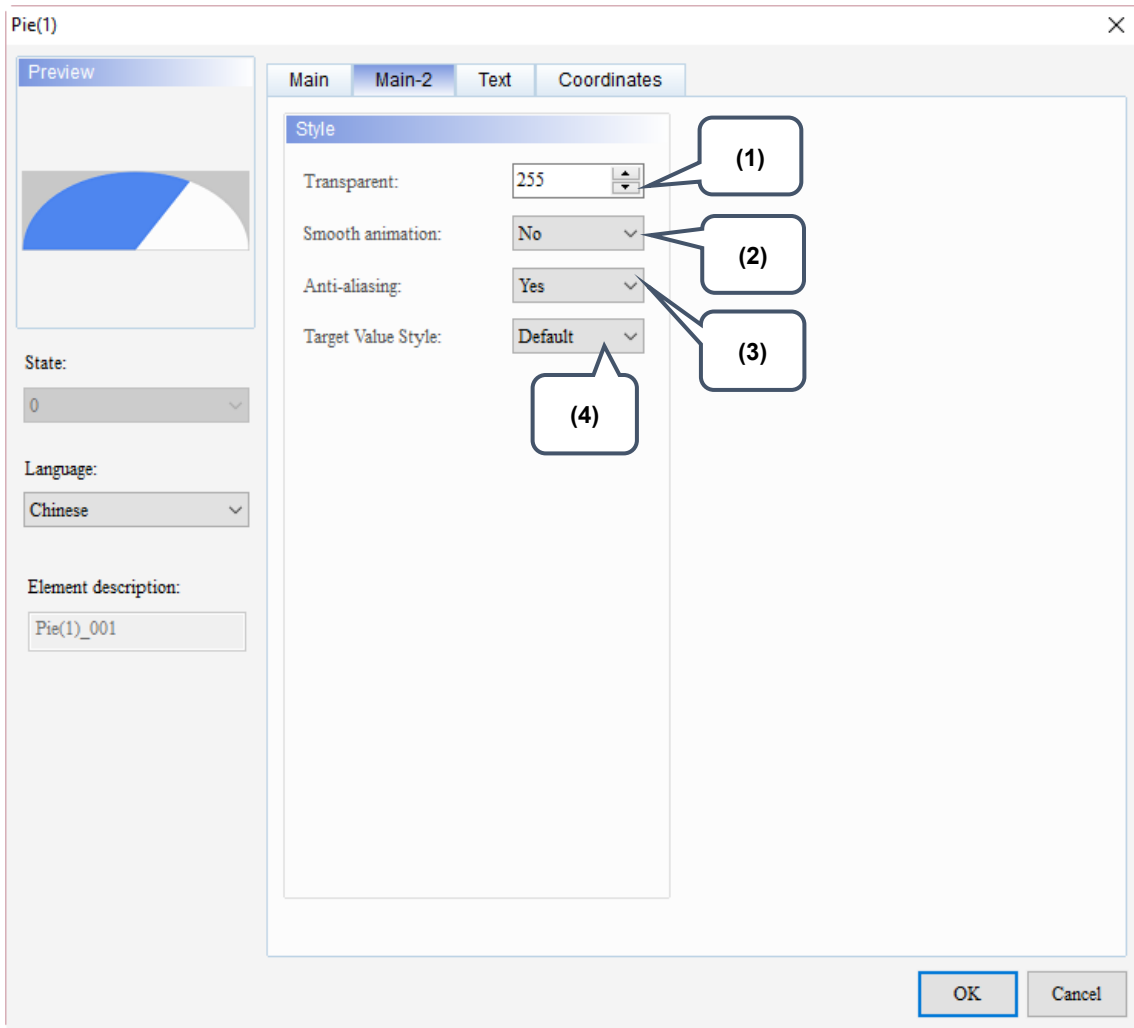







Figure 9.1.3 Main-2 property page for the Pie(1) element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the element display becomes smoother.		
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.		
(4)	Target Value Style	There are two display styles, Default and Style 1.		
		<table border="1"> <tr> <td>Default</td> <td>  </td> </tr> <tr> <td>Style 1</td> <td>  </td> </tr> </table>	Default	
Default				
Style 1				

■ Text

9

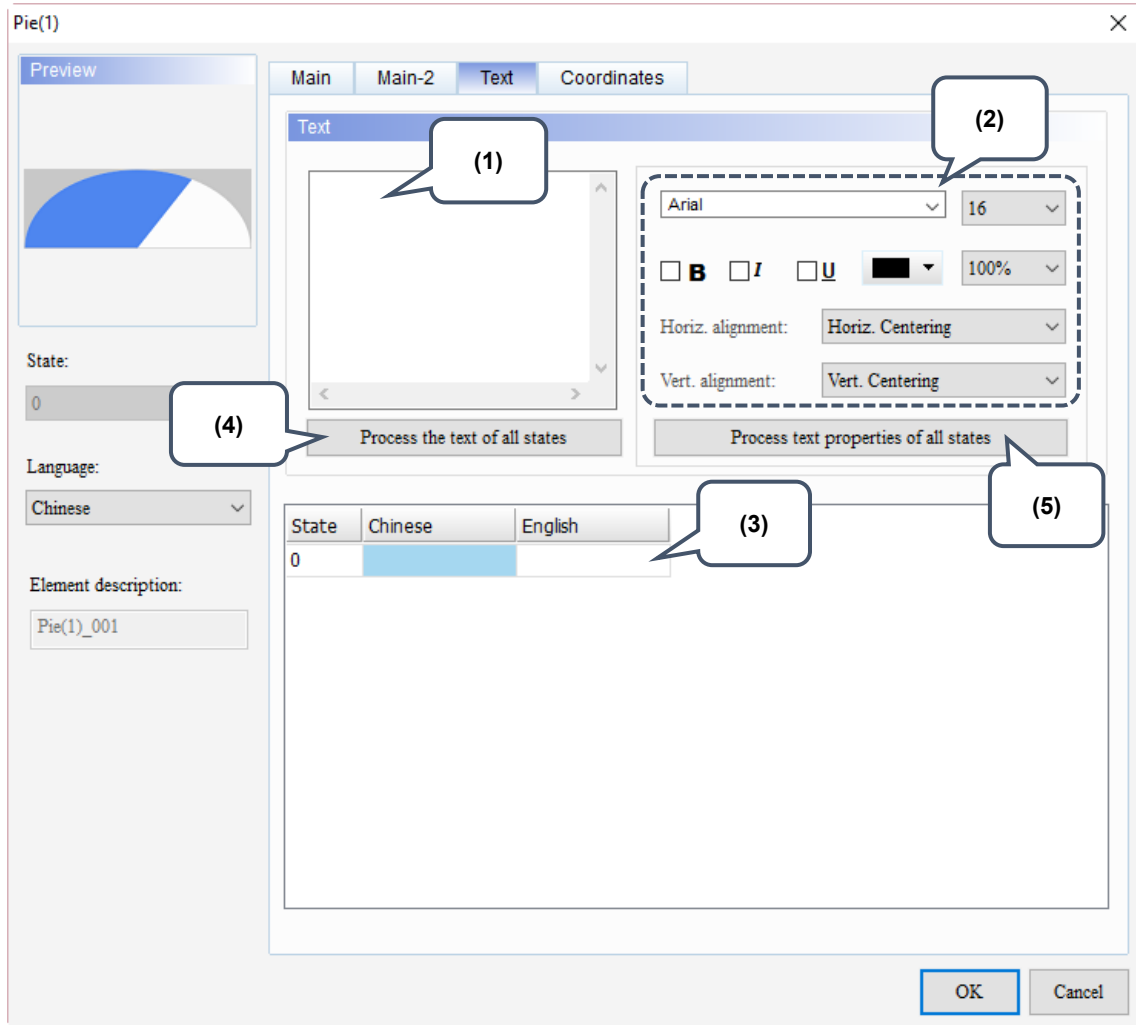
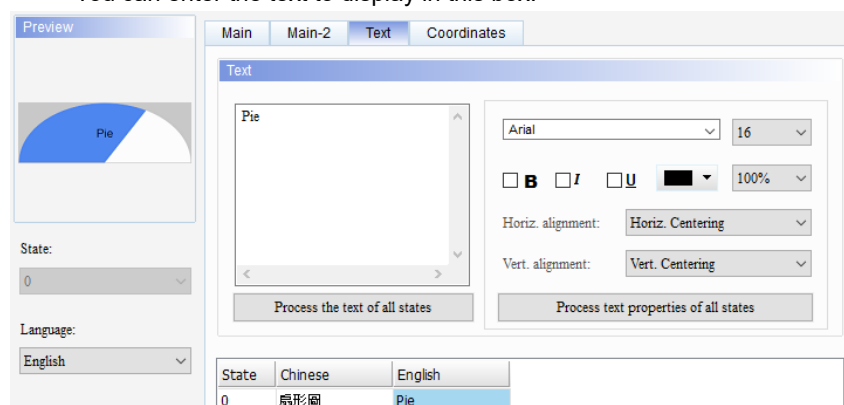


Figure 9.1.4 Text property page for the Pie(1) element

No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p>  <p>■ As long as the element allows text input, you can click the element on the screen and press the space key to start editing the text.</p>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.

No.	Property	Function description
(4)	Process the text of all states	<ul style="list-style-type: none"> ■ This function batch changes the text of the specified state. ■ Pie elements have only one state, so this function is not applicable.
(5)	Process text properties of all states	<ul style="list-style-type: none"> ■ This function batch changes the text of the specified property. Items included in the text property are shown in the figure below. <div style="border: 1px solid gray; padding: 5px;"> <p style="margin: 0;">Text</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="border: 1px solid gray; padding: 5px; width: 45%;"> <p style="margin: 0;">Delta</p> </div> <div style="border: 1px dashed gray; padding: 5px; width: 45%;"> <p style="margin: 0;">Arial 16</p> <p style="margin: 0;"><input type="checkbox"/> B <input type="checkbox"/> <i>I</i> <input type="checkbox"/> <u>U</u> 100%</p> <p style="margin: 0;">Horiz. alignment: Horiz. Centering</p> <p style="margin: 0;">Vert. alignment: Vert. Centering</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid gray; padding: 5px; width: 45%;">Process the text of all states</div> <div style="border: 1px solid gray; padding: 5px; width: 45%;">Process text properties of all states</div> </div> </div> <ul style="list-style-type: none"> ■ Pie elements have only one state, so this function is not applicable.

■ Coordinates

9

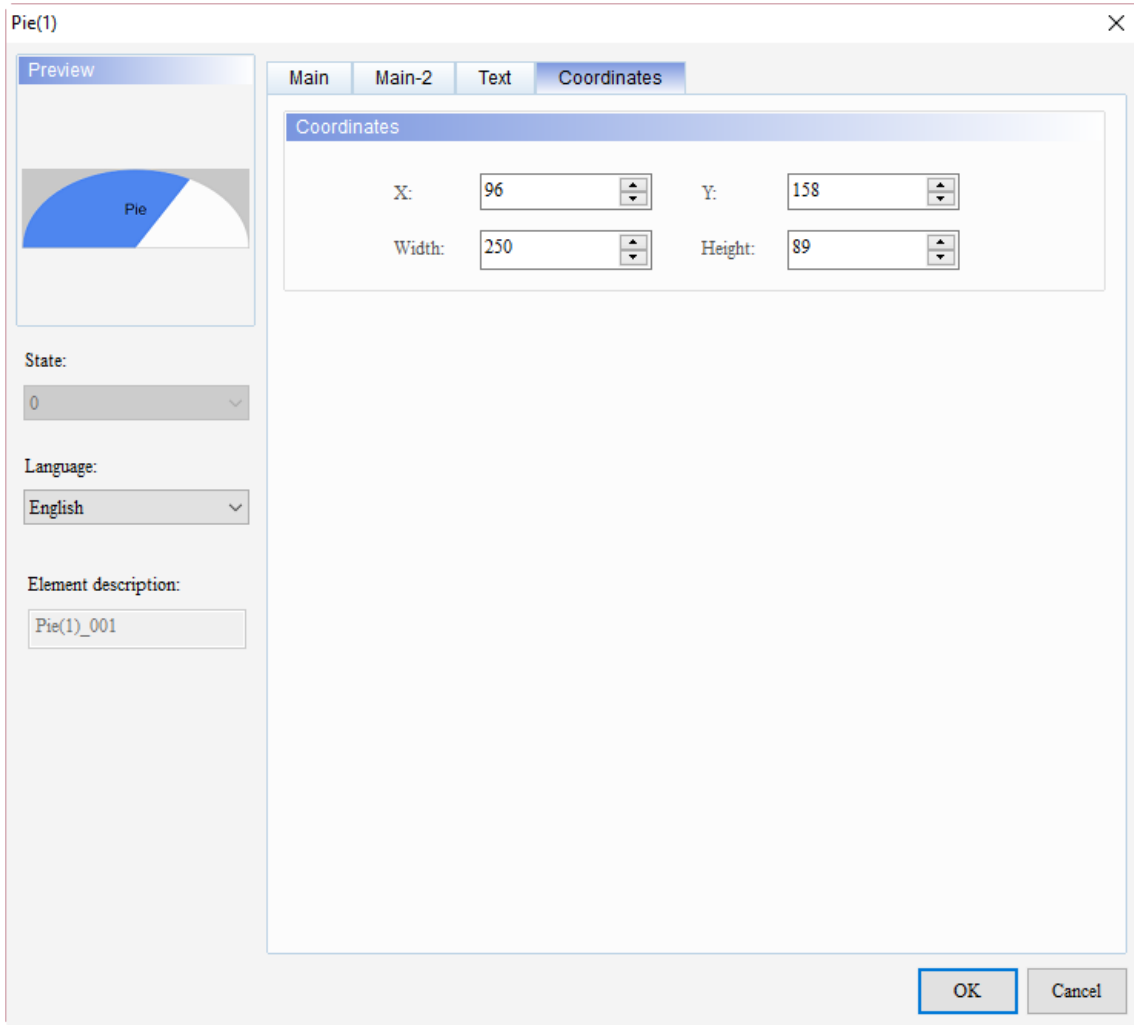



Figure 9.1.5 Coordinates property page for the Pie(1) element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

Indicator

10

This chapter provides the usage and setting details for the Indicator elements.



10.1	Multistate Indicator	10-2
10.2	Range Indicator	10-20
10.3	Simple Indicator	10-36

10

10.1 Multistate Indicator

The Multistate Indicator is for displaying the status of a given address. No matter the element uses Bit, LSB, or Word as the Data Type, once the HMI reads the element memory address, the indicator prompts a change of state. You can also use different settings to have the Multistate Indicator change its light or display the corresponding messages to notify the users about the status change. With such notifications, checking the message for each state becomes easier.

The indicator can set to display ON and OFF states:




You can also set the pictures and colors to indicate each state:



Please refer to Table 10.1.1 for the Multistate Indicator example.

Table 10.1.1 Multistate Indicator example

Multistate Indicator					
Read Address	Multistate Indicator			Numeric Entry element	
	Read Address	\$555		Write Address	\$555
					
Settings	Data Type: Word Data Format: Unsigned Decimal State Counts: 5				
Set Foreground Color	State 0	State 1	State 2	State 3	State 4
					
Multistate Indicator diagram example	<ul style="list-style-type: none"> Double-click the element to view the diagram of each state. There are five states in this example with state values 0 - 4, as shown in the red mark in the figure below. 				
					

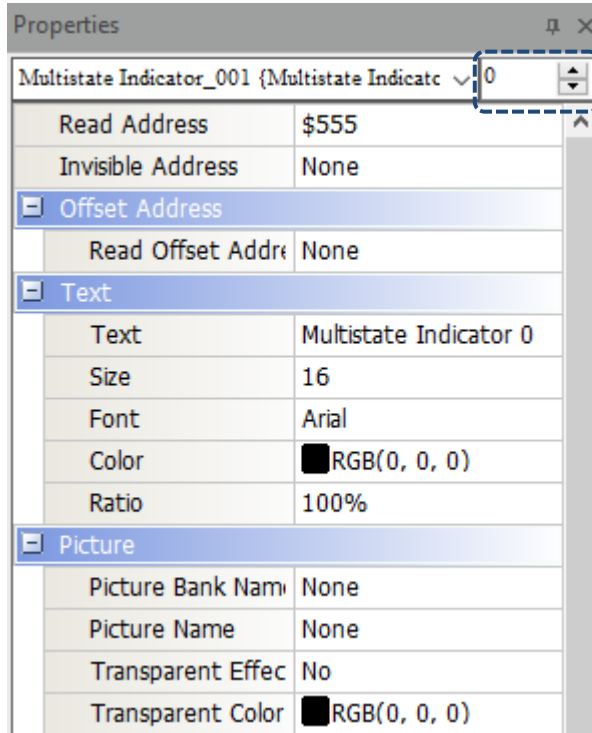
10

10

Multistate Indicator diagram example

Multistate Indicator

- You can also go to the upper right corner in the element properties window to switch the state.



Execution results

- After you download the element, the Multistate Indicator initial state is 0. Next, execute the Numeric Entry element.




- Input the values 0 - 4 in sequence and you can see the results.

Value = 0	Value = 1	Value = 2	Value = 3	Value = 4

The Multistate Indicator supports four data types, as shown in the Table 10.1.2. To add or reduce the number of states, you can simply add or reduce it from State Counts in the Properties table.

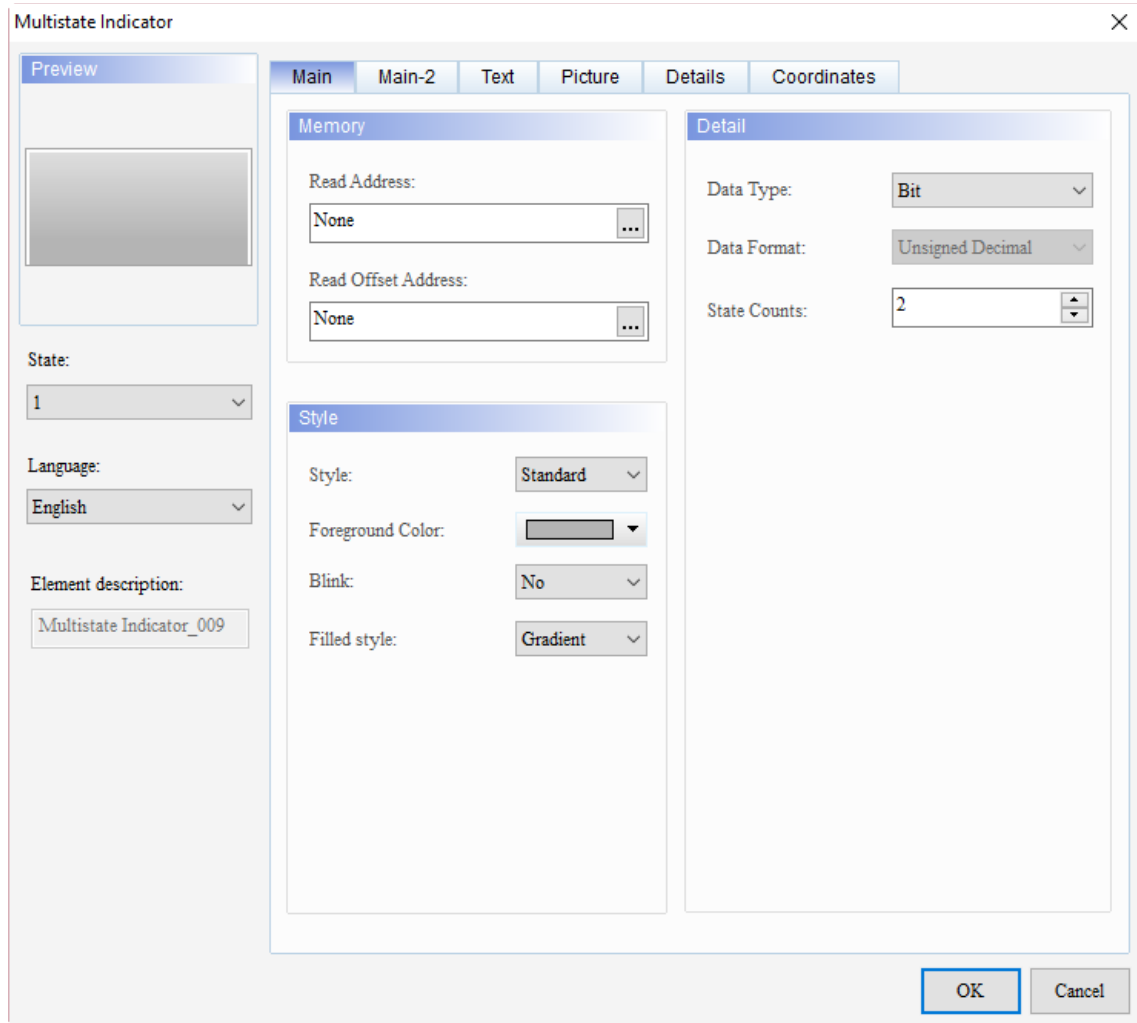
Table 10.1.2 Multistate Indicator Data Type

Multistate Indicator		
Data Type	State Counts	Memory Address
Word	<p>If the Data Type is Word, you can set 1 to 256 states.</p> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>State Counts: <input type="text" value="256"/></p>	<p>If the Data Type is Word, the memory address unit is Word.</p>
LSB / LSB (Support State 0)	<p>LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object.</p> <p>If the Data Type is LSB, you can set 1 to 16 states, except for State 0.</p> <p>Detail</p> <p>Data Type: <input type="text" value="LSB"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>State Counts: <input type="text" value="16"/></p> <p>To display State 0, please select LSB (Support State 0).</p> <p>Detail</p> <p>Data Type: <input type="text" value="LSB (Support State 0)"/></p> <p>Data Format: <input type="text" value=""/></p> <p>State Counts: <input type="text" value="10"/></p> <p>If you selected LSB, then the element is black when the state is 0.</p> 	<p>There are four data types, Bit, Word, LSB, and LSB (Support State 0). The memory address uses Word as the unit.</p>

10

Multistate Indicator																																																														
Data Type	State Counts	Memory Address																																																												
LSB / LSB (Support State 0)	<p>The examples in the following table show how the state value is determined with the lowest non-zero bit after converting from decimal value to binary value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.</p> <table border="1"> <thead> <tr> <th>Decimal</th> <th>Binary</th> <th>State Value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0000000000000000</td> <td>State = 0 when all bits are 0. [LSB (Support State 0) must be selected]</td> </tr> <tr> <td>1</td> <td>0000000000000001</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>2</td> <td>0000000000000010</td> <td>The lowest non-zero bit is bit 1, State = 2.</td> </tr> <tr> <td>3</td> <td>0000000000000011</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>4</td> <td>0000000000000100</td> <td>The lowest non-zero bit is bit 2, State = 3.</td> </tr> <tr> <td>7</td> <td>0000000000000111</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>8</td> <td>0000000000001000</td> <td>The lowest non-zero bit is bit 3, State = 4.</td> </tr> <tr> <td>16</td> <td>0000000000010000</td> <td>The lowest non-zero bit is bit 4, State = 5.</td> </tr> <tr> <td>32</td> <td>0000000000100000</td> <td>The lowest non-zero bit is bit 5, State = 6.</td> </tr> <tr> <td>64</td> <td>0000000001000000</td> <td>The lowest non-zero bit is bit 6, State = 7.</td> </tr> <tr> <td>128</td> <td>0000000010000000</td> <td>The lowest non-zero bit is bit 7, State = 8.</td> </tr> <tr> <td>256</td> <td>0000000100000000</td> <td>The lowest non-zero bit is bit 8, State = 9.</td> </tr> <tr> <td>512</td> <td>0000001000000000</td> <td>The lowest non-zero bit is bit 9, State = 10.</td> </tr> <tr> <td>1024</td> <td>0000010000000000</td> <td>The lowest non-zero bit is bit 10, State = 11.</td> </tr> <tr> <td>2048</td> <td>0000100000000000</td> <td>The lowest non-zero bit is bit 11, State = 12.</td> </tr> <tr> <td>4096</td> <td>0001000000000000</td> <td>The lowest non-zero bit is bit 12, State = 13.</td> </tr> <tr> <td>8192</td> <td>0010000000000000</td> <td>The lowest non-zero bit is bit 13, State = 14.</td> </tr> <tr> <td>16384</td> <td>0100000000000000</td> <td>The lowest non-zero bit is bit 14, State = 15.</td> </tr> <tr> <td>32768</td> <td>1000000000000000</td> <td>The lowest non-zero bit is bit 15, State = 16.</td> </tr> </tbody> </table>		Decimal	Binary	State Value	0	0000000000000000	State = 0 when all bits are 0. [LSB (Support State 0) must be selected]	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	3	0000000000000011	The lowest non-zero bit is bit 0, State = 1.	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.	7	0000000000000111	The lowest non-zero bit is bit 0, State = 1.	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.	4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.
	Decimal	Binary	State Value																																																											
	0	0000000000000000	State = 0 when all bits are 0. [LSB (Support State 0) must be selected]																																																											
	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.																																																											
	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.																																																											
	3	0000000000000011	The lowest non-zero bit is bit 0, State = 1.																																																											
	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.																																																											
	7	0000000000000111	The lowest non-zero bit is bit 0, State = 1.																																																											
	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.																																																											
	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.																																																											
	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.																																																											
	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.																																																											
	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.																																																											
	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.																																																											
	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.																																																											
	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.																																																											
2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.																																																												
4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.																																																												
8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.																																																												
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.																																																												
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.																																																												
Bit	<p>If the Data Type is Bit, only 2 states are available.</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Bit"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>State Counts: <input type="text" value="2"/></p> </div>	<p>If the Data Type is Bit, the unit for the memory address is bit.</p>																																																												

When you double-click Multistate Indicator, the property page is shown as follows.



10

Figure 10.1.1 Properties of Multistate Indicator

Table 10.1.3 Function page of Multistate Indicator

Multistate Indicator	
Function page	Description
Preview	You can view the element multistate value and multi-language display data.
Main	Set the Read Address, Read Offset Address, Style, Foreground Color, and Blink. Set the Data Type, Data Format, and State Counts.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Invisible Address
Coordinates	Set the X and Y coordinates, width, and height of the button element.

■ Main

10

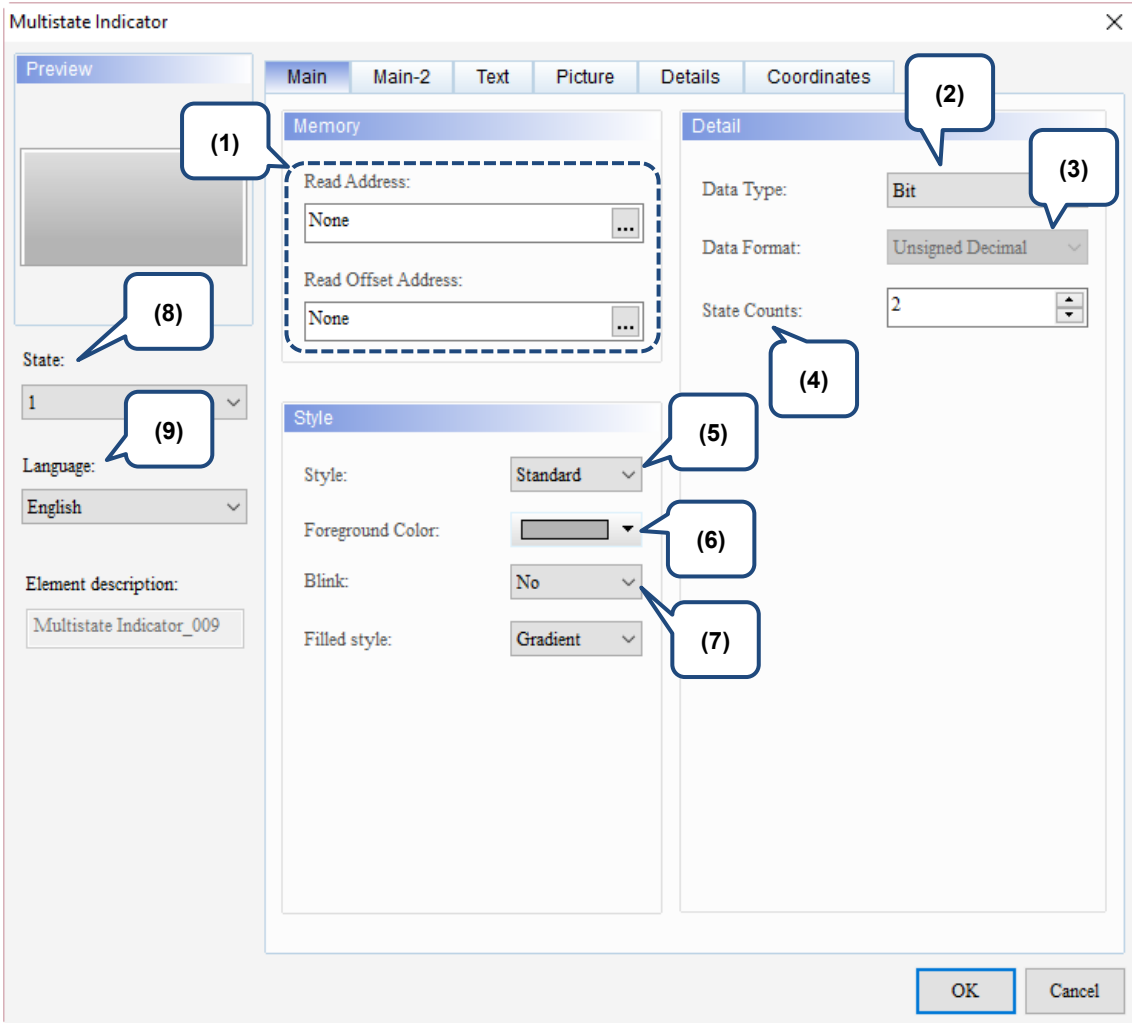
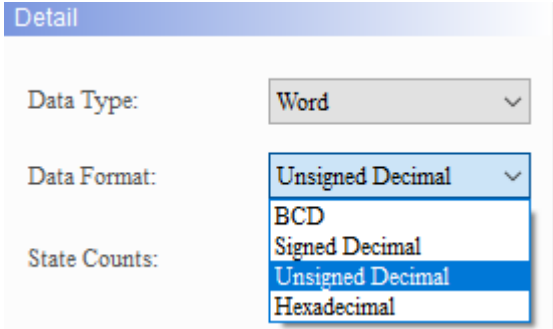
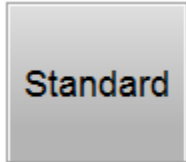
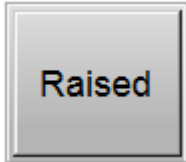


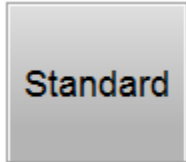
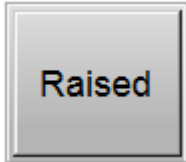


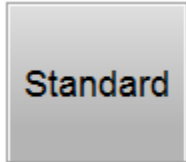
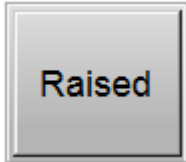


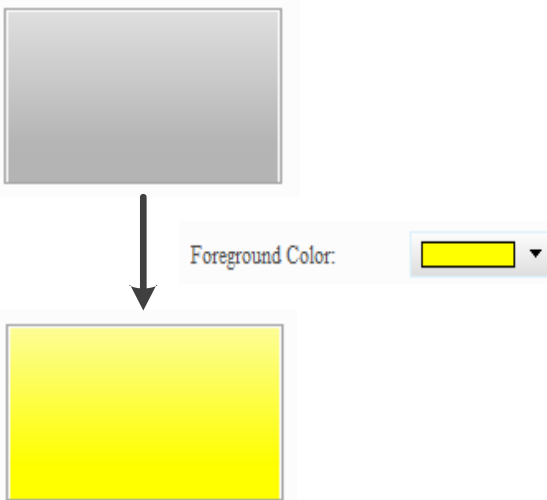
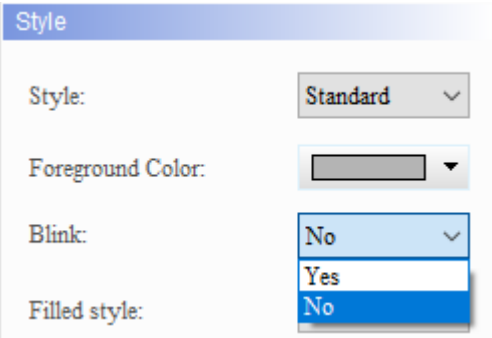
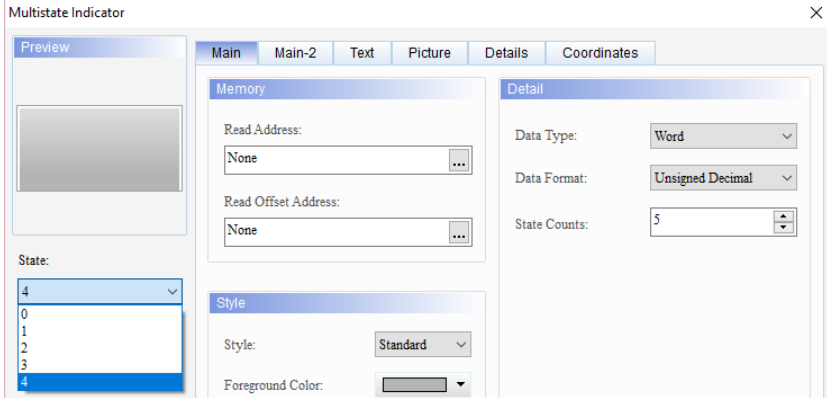
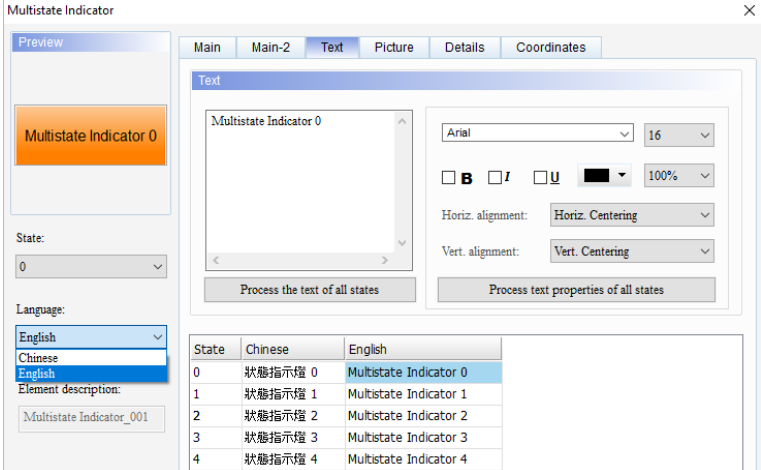


Figure 10.1.2 Main property page for the Multistate Indicator element

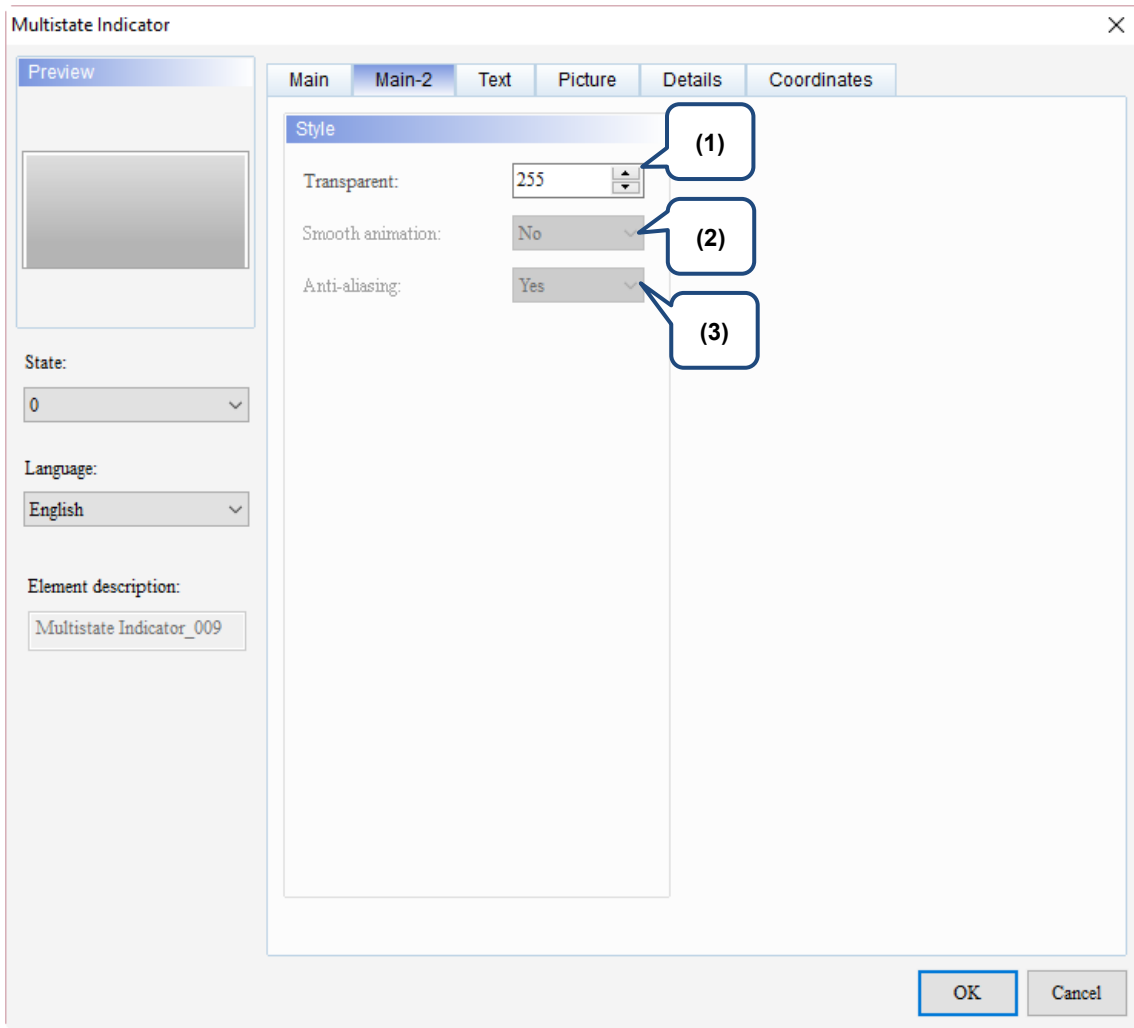
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can choose the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 10.1.2. Select Link Name or Element Style. Please refer to Section 5.1.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	There four types, Bit, Word, LSB, and LSB (Support State 0). Please refer to Table 10.1.2 for more details.

No.	Property	Function description								
(3)	Data Format	<ul style="list-style-type: none"> You can only select the Data Format when the Data Type is Word. The available formats include BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal. 								
(4)	State Counts	<p>Set the total state count of the Multistate Indicators. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), the configurable state count is 17; and if the Data Type is Bit, only 2 states are available. Please refer to Table 10.1.2 for more details.</p>								
(5)	Style	<p>The available element styles are Standard, Raised, Round, and Invisible. This setting allows you to change the element appearance.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Round</th> <th>Invisible</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
										
(6)	Foreground Color	<ul style="list-style-type: none"> Set the element foreground color. When you set the element type to Invisible, the Foreground Color setting is invalid. 								

10

No.	Property	Function description
(7)	Blink	<p>Set whether the indicator blinks when it switches between states; the blink color is the contrast color of the element.</p> 
(8)	State	<p>By switching the State, you can preview or change the settings of each button element state.</p> 
(9)	Language	<p>If you have set the language data, you can use the language used for the element to edit the displaying text property, etc.</p> 

■ Main-2



10

Figure 10.1.3 Main-2 property page for the Multistate Indicator element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

10

■ Text

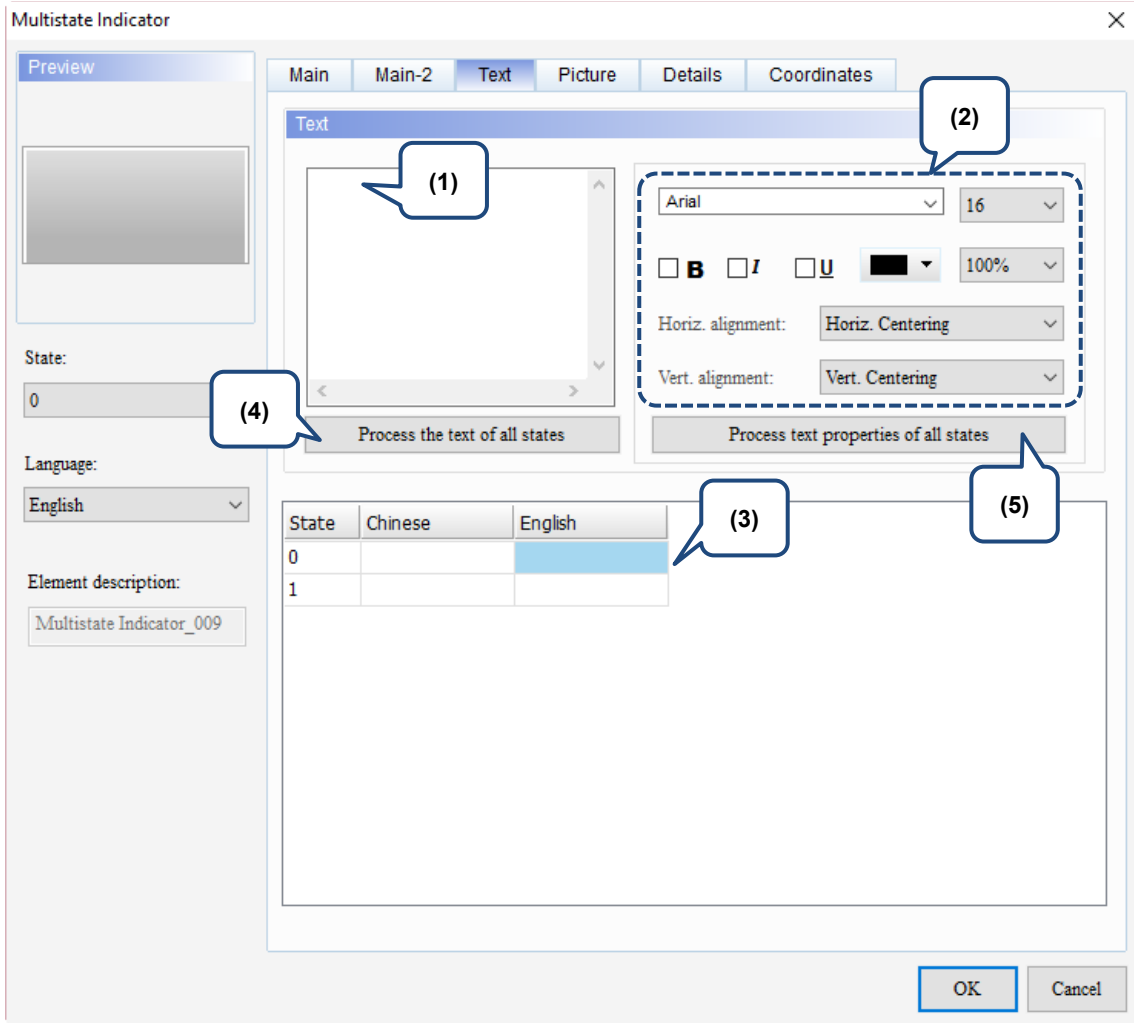
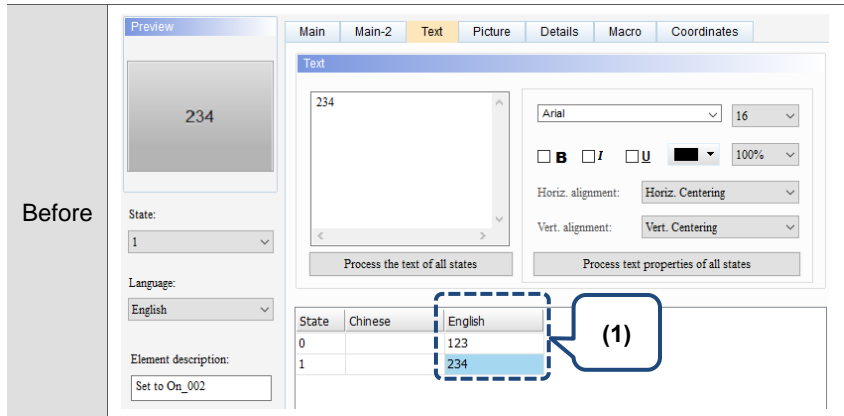
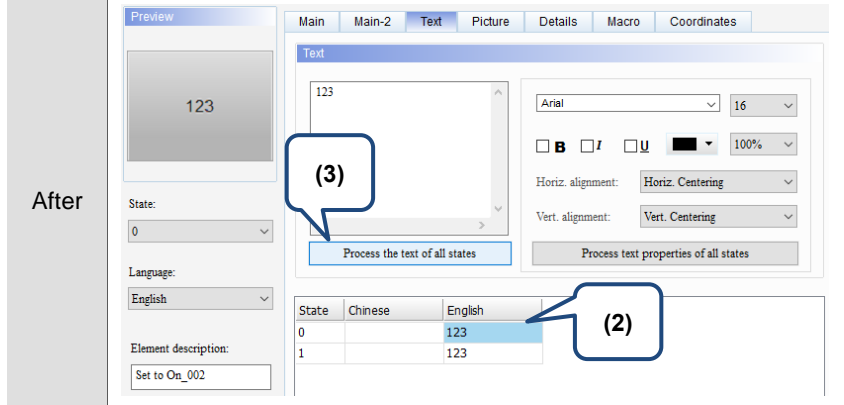
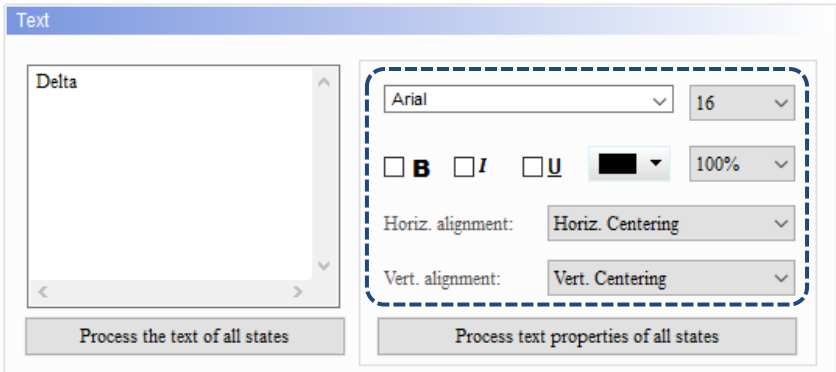


Figure 10.1.4 Text property page for the Multistate Indicator element

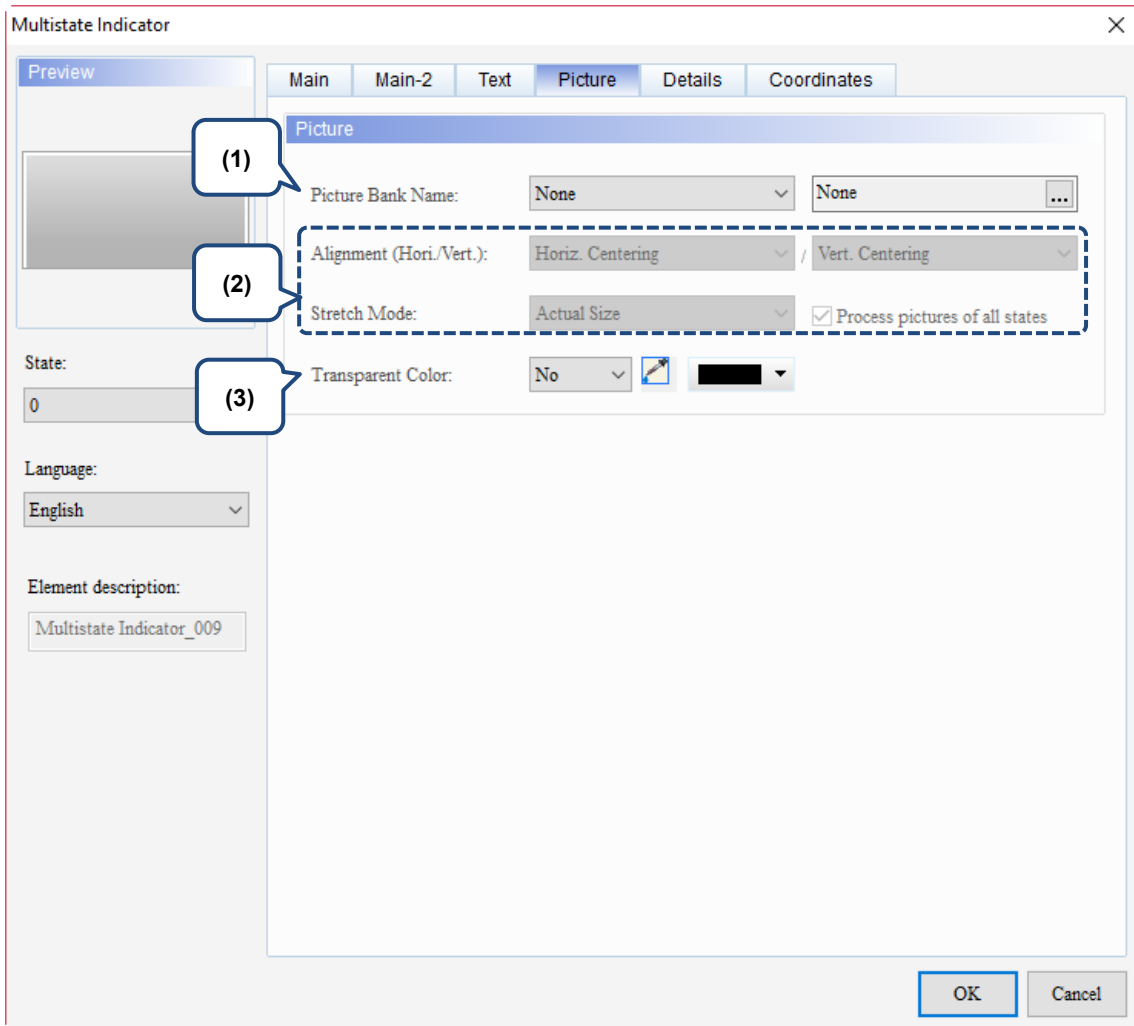
No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p> <p>■ As long as the element allows text input, you can click the element on the screen and press the space key to start editing the text.</p>
(2)	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.</p>

No.	Property	Function description
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>When this function is enabled, it batch changes the text of the specified state. The example and setting steps are as follows:</p> <ol style="list-style-type: none"> 1. Enter the text “123” for State 0 and “234” for State 1. 2. Select State 0. 3. Execute Process the text of all states and the text of State 1 is changed to “123”.  
(5)	Process text properties of all states	<p>When this function is enabled, it batch changes the text of the specified property. Items included in the text property are shown in the figure below.</p>  <p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> 1. Enter the text “Delta” for State 0 and “HMI” for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1. 2. Select State 0. 3. Execute Process text properties of all states and the text font of State 1 is changed to Segoe Script.

10

No.	Property	Function description
(5)	Process text properties of all states	<div style="display: flex; justify-content: space-between;"> <div style="width: 25%;"> <p>Before</p>  </div> <div style="width: 75%;">  </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 25%;"> <p>After</p>  </div> <div style="width: 75%;">  </div> </div>
		

■ Picture

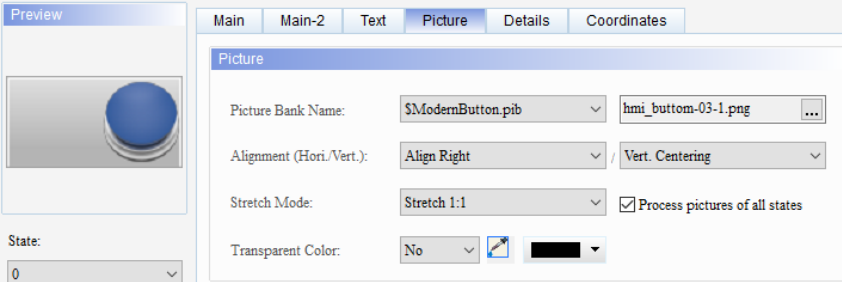














10

Figure 10.1.5 Picture property page for the Multistate Indicator element

10

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to select the desired picture from the picture bank provided by the software.</p>  <p>The 'Picture' dialog box includes the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: None (with a dropdown menu showing a list of picture bank names) Alignment (Hori./Vert.): Vert. Centering Stretch Mode: (empty) Transparent Color: (empty) <input type="checkbox"/> Process pictures of all states <p>The 'Select Picture' dialog box displays a grid of 9 button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

No.	Property	Function description								
(2)	Alignment	<ul style="list-style-type: none"> You can use the alignment options to set how pictures are aligned. 								
	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for setting the target to transparent. If you select the white part of the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> <div style="display: flex; justify-content: space-around;">   </div>								

■ Details

10

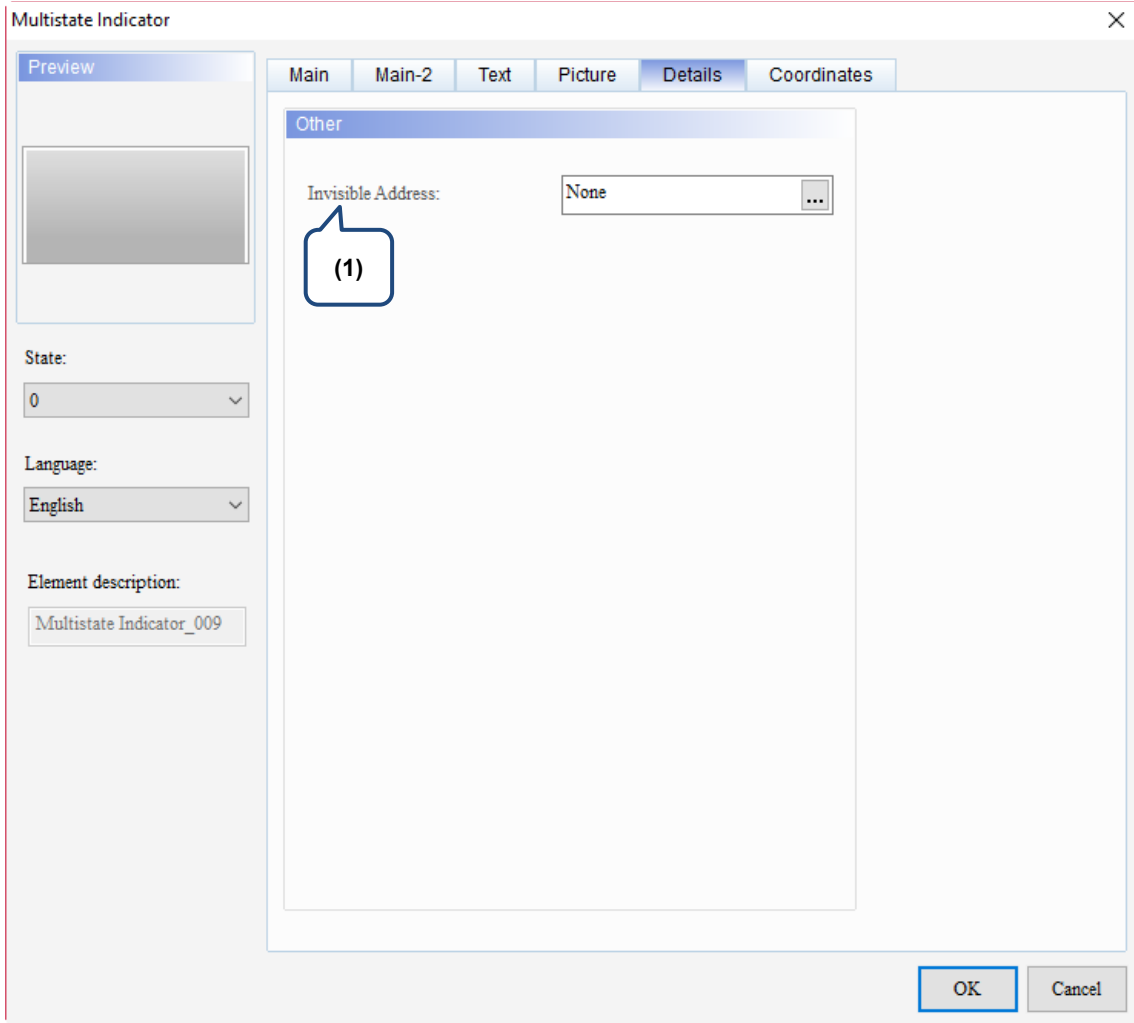

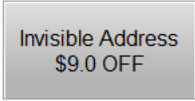
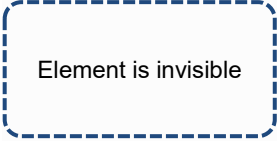
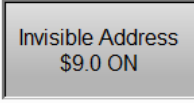
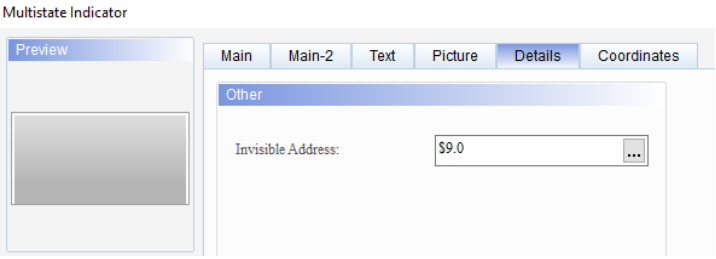

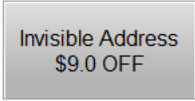
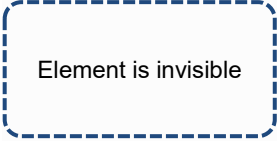
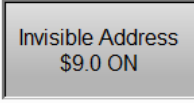

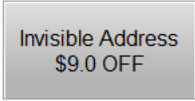
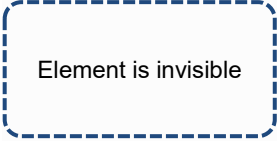
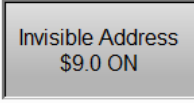
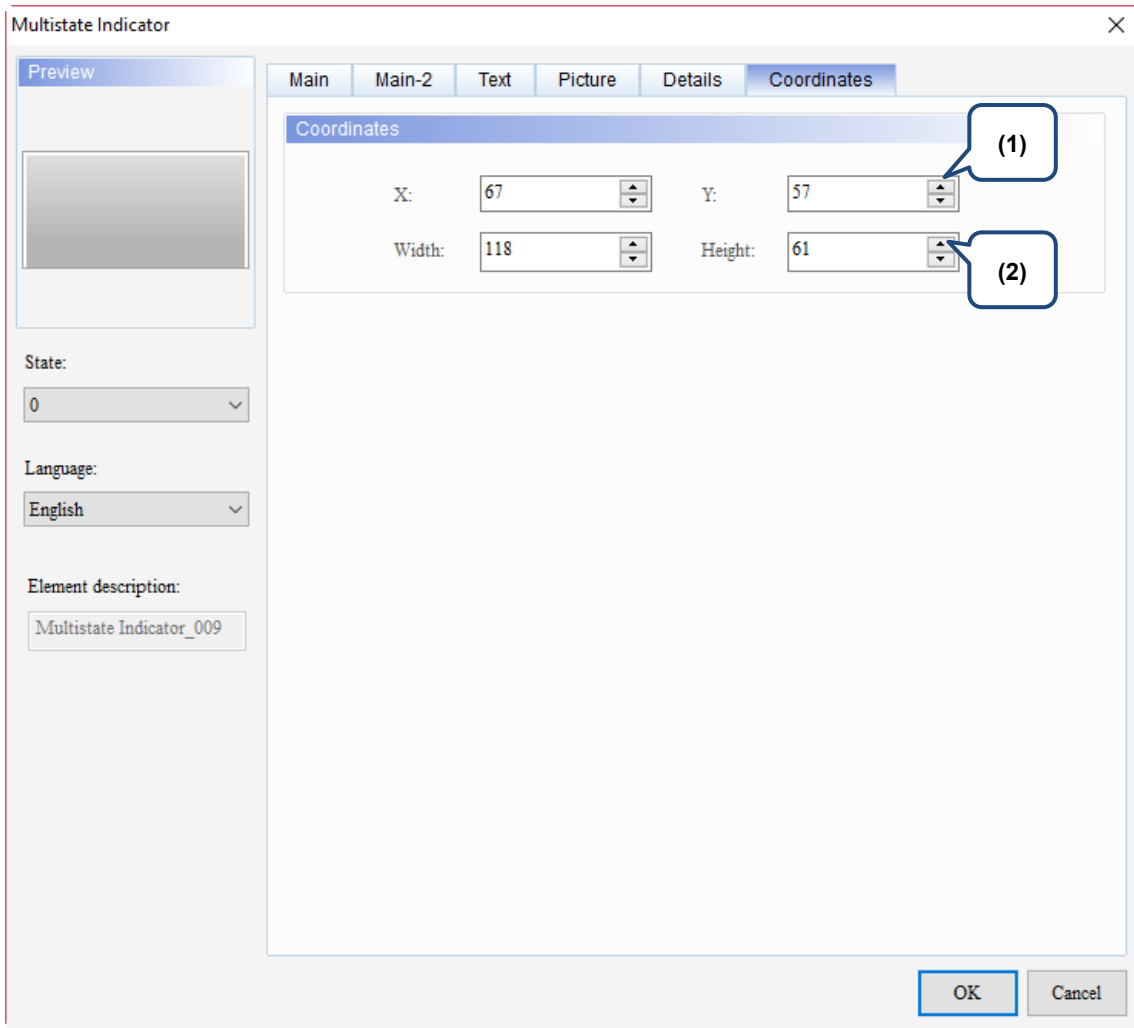


Figure 10.1.6 Details property page for the Multistate Indicator element

No.	Property	Function description						
(1)	Invisible Address	<p>When Invisible Address is set to on, the button element is invisible and you cannot execute its set functions.</p> <table border="1"> <tr> <td>Invisible Address OFF</td> <td></td> <td></td> </tr> <tr> <td>Invisible Address ON</td> <td></td> <td></td> </tr> </table> <p>Multistate Indicator</p> 	Invisible Address OFF			Invisible Address ON		
Invisible Address OFF								
Invisible Address ON								

■ Coordinates



10

Figure 10.1.7 Coordinates property page for the Multistate Indicator element

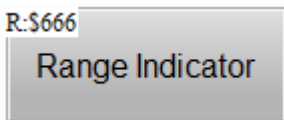
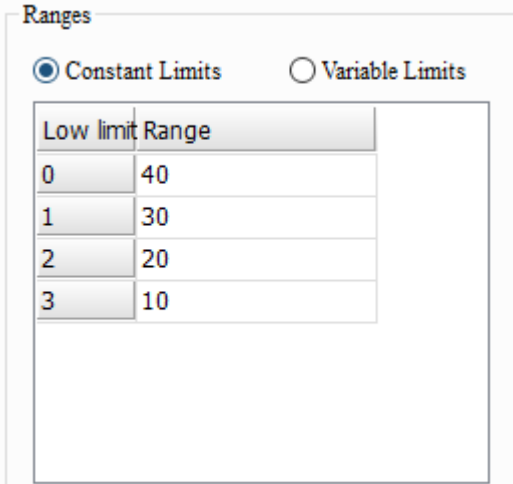
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

10

10.2 Range Indicator

The Range Indicator is the same as the Multistate Indicator. Their function is to display the status of a given address. The element displays different states according to the range values corresponding to the read address values. Please refer to Table 10.2.1 for the Range Indicator example.

Table 10.2.1 Range Indicator example

Range Indicator					
Read Address	<table border="1"> <thead> <tr> <th colspan="2">Range Indicator element</th> </tr> </thead> <tbody> <tr> <td>Read Address</td> <td>\$666</td> </tr> </tbody> </table>	Range Indicator element		Read Address	\$666
	Range Indicator element				
Read Address	\$666				
					
Settings	Data Type: Word Data Format: Unsigned Decimal State Counts: 5				
Ranges					

Range Indicator

Range Indicator

Preview

State1
1~10

State:

4

Language:

English

Element description:

Range Indicator_002

Main Main-2 **Text** Picture Coordinates

Text

State1
1~10

Arial 16

B I U 100%

Horiz. alignment: Horiz. Centering

Vert. alignment: Vert. Centering

Process the text of all states Process text properties of all states

State	Chinese	English
0	State 5	State 5
1	State 4	State 4
2	State 3	State 3
3	State 2	State 2
4	State1	State1

Set the text to display for each state.

State 0	State 1	State 2	State 3	State 4
State 5	State 4	State 3	State 2	State 1
41 - 50	31 - 40	21 - 30	11 - 20	1 - 10

Set the foreground color for each state.

State 0	State 1	State 2	State 3	State 4

Go to [Options] > [Clock Macro] to input the macro command:

*[&Clock Macro]

{A}= *[Clock Macro]

```

1 $666 = $666 + 1
2 IF $666 == 50
3 $666 = 0
4 ENDIF
                    
```

Input text in the Text property page

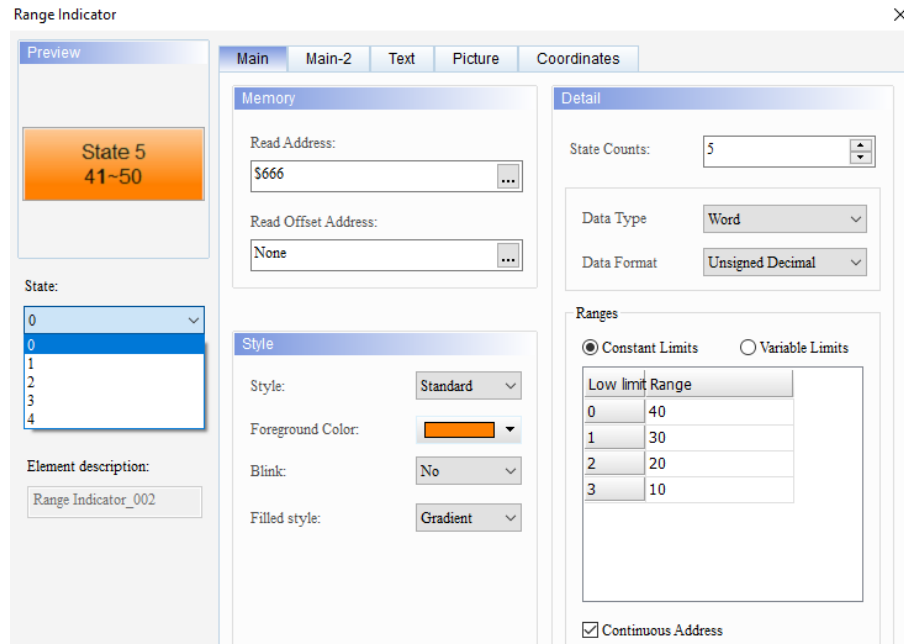
Foreground Color

Clock Macro

10

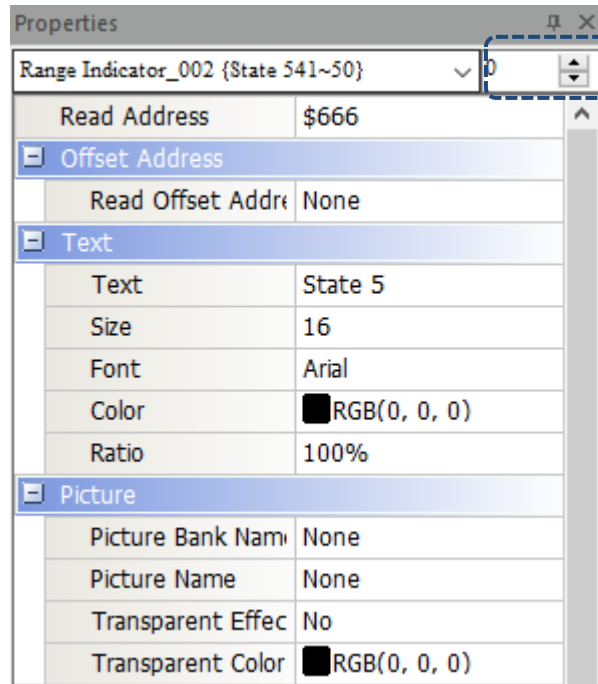
Range Indicator

- You can double-click the element to view the diagram for each state. In this example, there are 5 states with state values from 0 - 4 as shown in the red mark below.



Range Indicator diagram example

- You can also go to the upper right corner in the element Properties window to switch the state.

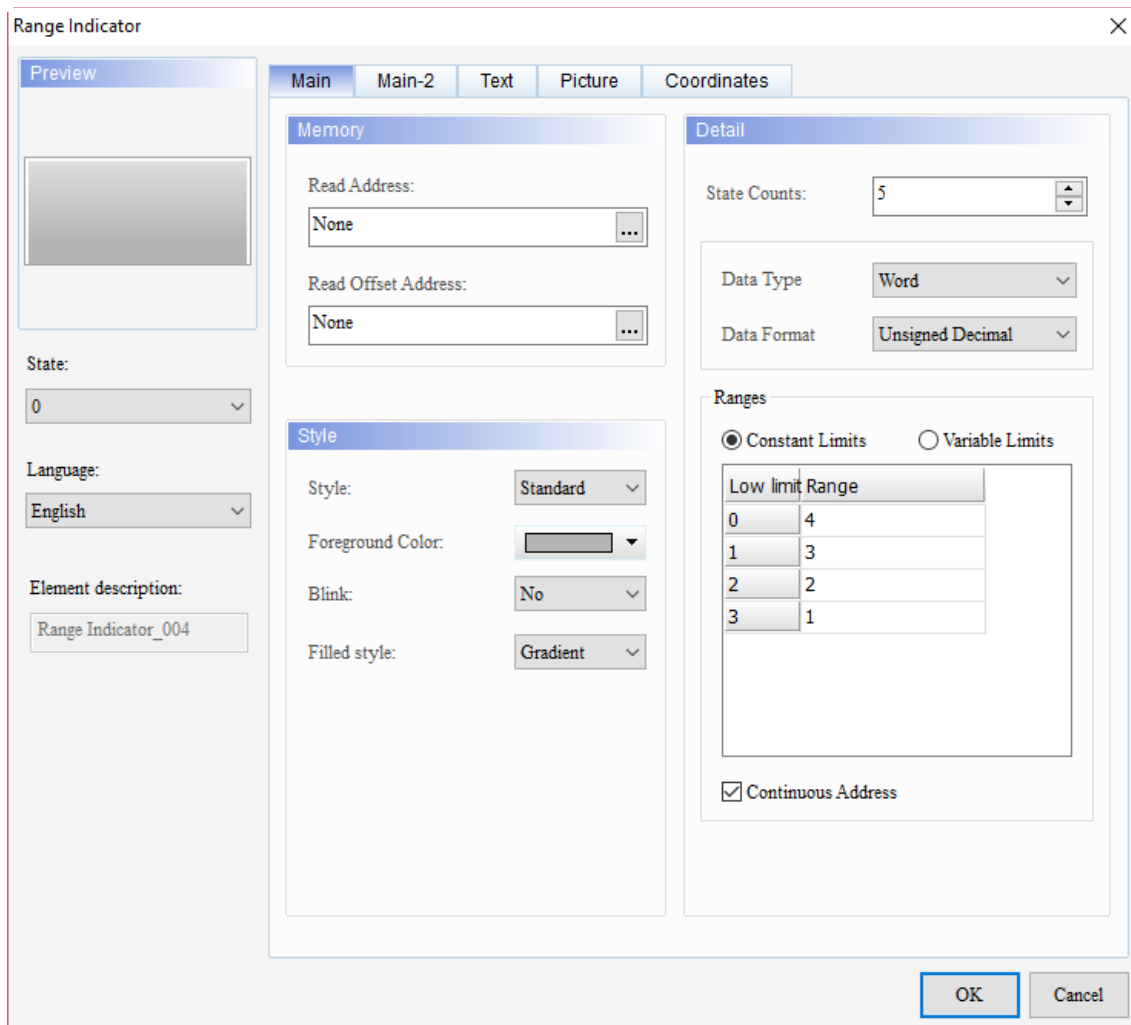


After you have the screen data compiled and downloaded to the HMI, the Range Indicator displays the value range of each state on the element based on the range value set in the read address.

Execution results

Execution result of each state				
State 0	State 1	State 2	State 3	State 4
State 5 41~50	State 4 31~40	State 3 21~30	State 2 11~20	State 1 1~10

When you double-click Range Indicator, the property page is shown as follows.



10

Figure 10.2.1 Properties of Range Indicator

Table 10.2.2 Function page of Range Indicator

Range Indicator	
Function page	Description
Preview	You can view the element multistate value and multi-language display data.
Main	Set the Read Address and Read Offset Address. Set the Style, Foreground Color, and Blink of the element. Set the Data type, Data Format, State Counts, Range (constant or variable limits), and whether to set as Continuous Address.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

10

■ Main

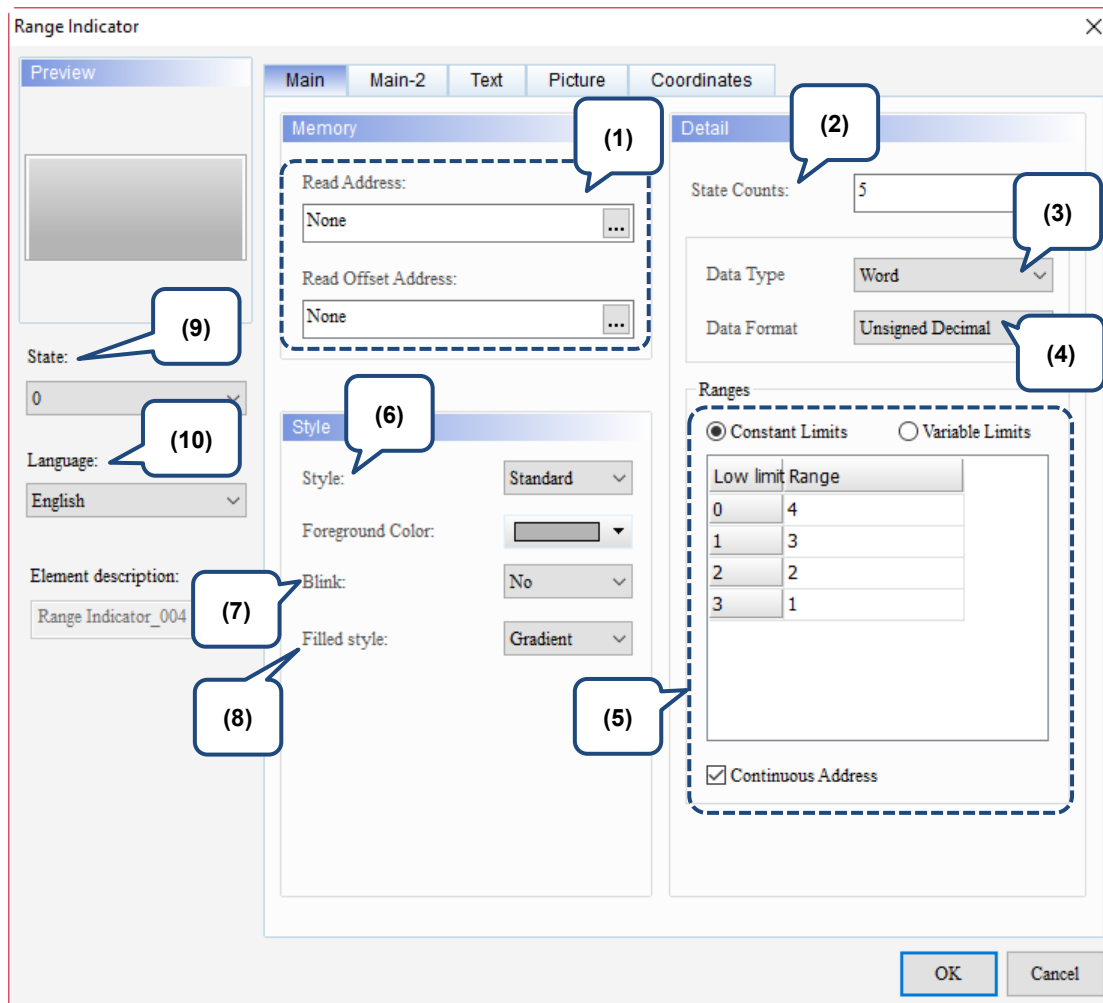
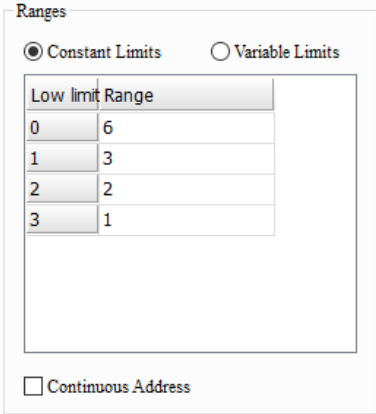
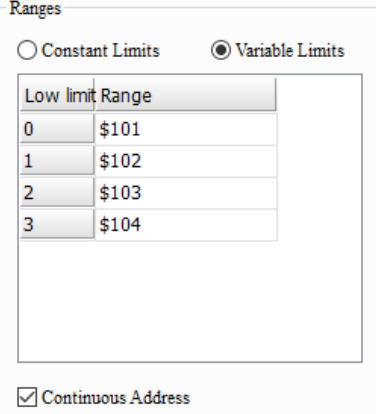
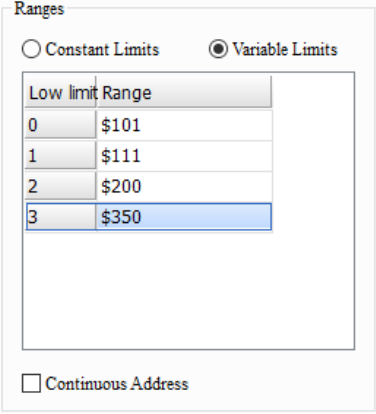
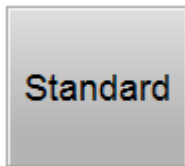


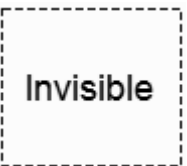
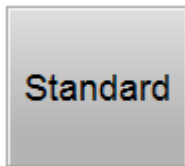


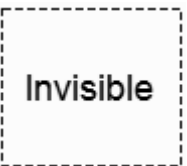
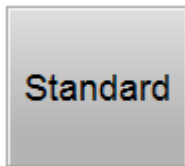


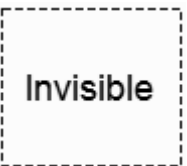
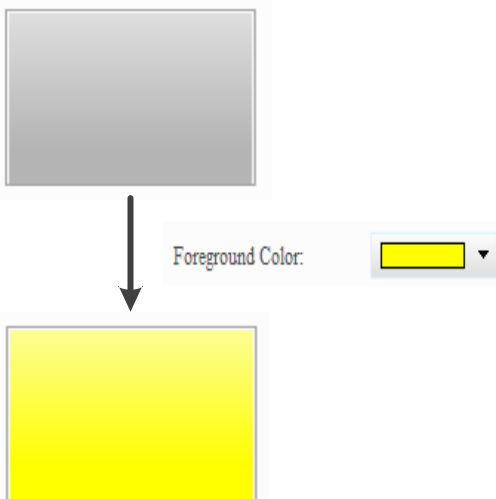



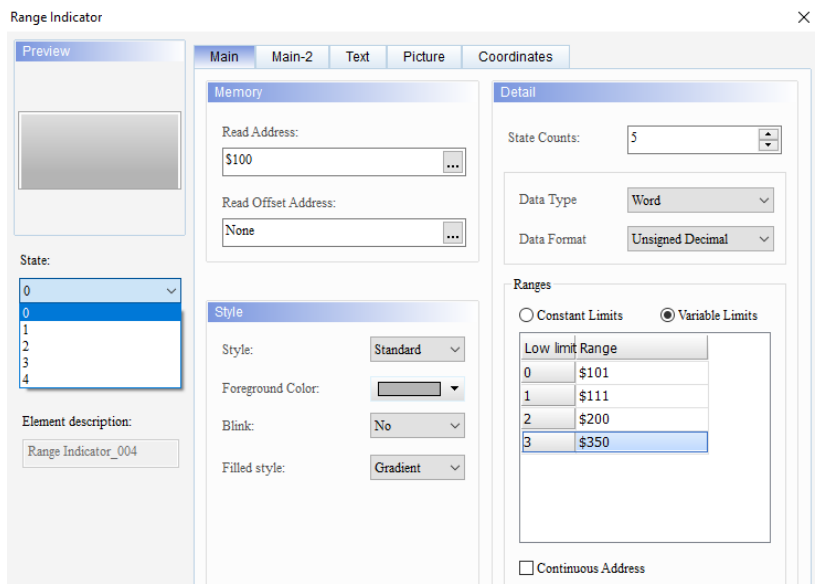
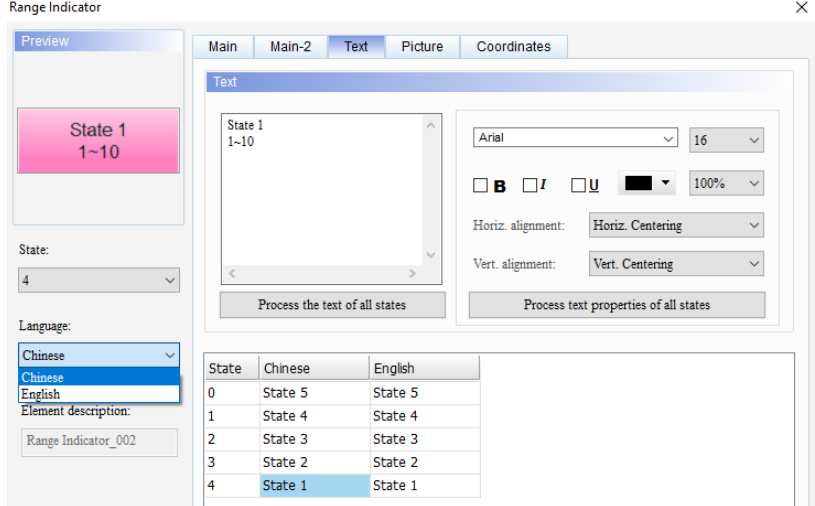
Figure 10.2.2. Main property page for the Range Indicator element

No.	Property	Function description																								
(1)	Read Address	<ul style="list-style-type: none"> You can choose the internal memory address or controller register address. The input memory type has to be Word. Select Link Name or Element Style. Please refer to Section 5.1. 																								
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.																								
(2)	State Counts	Set the state count for the Range Indicator. If the Data Type is Word or Double Word, you can configure 1 - 256 states.																								
(3)	Data Type	Data Type includes Word and Double Word. <table border="1" style="margin-left: 40px;"> <tr> <td>Data Type</td> <td>Word</td> </tr> <tr> <td>Data Format</td> <td>Word</td> </tr> <tr> <td></td> <td>Double Word</td> </tr> </table>	Data Type	Word	Data Format	Word		Double Word																		
Data Type	Word																									
Data Format	Word																									
	Double Word																									
(4)	Data Format	Both the Word and Double Word data formats include BCD, Signed BCD, Signed Decimal, and Unsigned Decimal. <table border="1" style="margin-left: 40px;"> <tr> <td>Data Type</td> <td>Word</td> <td>Data Type</td> <td>Double Word</td> </tr> <tr> <td>Data Format</td> <td>Unsigned Decimal</td> <td>Data Format</td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td>BCD</td> <td></td> <td>BCD</td> </tr> <tr> <td></td> <td>Signed BCD</td> <td></td> <td>Signed BCD</td> </tr> <tr> <td></td> <td>Signed Decimal</td> <td></td> <td>Signed Decimal</td> </tr> <tr> <td></td> <td>Unsigned Decimal</td> <td></td> <td>Unsigned Decimal</td> </tr> </table>	Data Type	Word	Data Type	Double Word	Data Format	Unsigned Decimal	Data Format	Unsigned Decimal		BCD		BCD		Signed BCD		Signed BCD		Signed Decimal		Signed Decimal		Unsigned Decimal		Unsigned Decimal
Data Type	Word	Data Type	Double Word																							
Data Format	Unsigned Decimal	Data Format	Unsigned Decimal																							
	BCD		BCD																							
	Signed BCD		Signed BCD																							
	Signed Decimal		Signed Decimal																							
	Unsigned Decimal		Unsigned Decimal																							

No.	Property	Function description
(5)	Ranges	<ul style="list-style-type: none"> ■ You can set the range value as constant or variable for the Range Indicator. ■ If you select Constant Limits, it means the input value is constant; if you select Variable Limits, you can define the memory address. ■ If you select Variable Limits, then you can set whether it should be a continuous address. Once you check the checkbox of Continuous Address, the software automatically calculates the address range based on the read address and data type set for the Range Indicator. ■ After checking Continuous Address, you cannot enter the memory address.
		<p>Constant Limits</p> <p>Input constants in descending order from top to bottom. Whether the Continuous Address is selected does not influence the input constants.</p> 
		<p>Set Continuous Address for Variable Limits</p> <p>Set \$100 for the read address. If you select Continuous Address, then the software automatically calculates the continuous address, \$100 - \$104.</p> 
<p>Set non-continuous address for Variable Limits</p> 		

10

No.	Property	Function description								
(6)	Style	<p>The available element styles are Standard, Raised, Round, and Invisible. This setting allows users to change the element appearance.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Round</th> <th>Invisible</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
										
(7)	Foreground Color	<ul style="list-style-type: none"> Set the element foreground color. When you set the element type to Invisible, the foreground color setting is invalid. 								
(8)	Blink	<p>Set whether the indicator blinks when it switches between states; the blink color is the contrast color of the element.</p> 								

No.	Property	Function description
(9)	State	<p>You can check the state value through State.</p> 
(10)	Language	<p>If you have set the language data, you can use the language used for the element to edit the displaying text property, etc.</p> 

■ Main-2

10

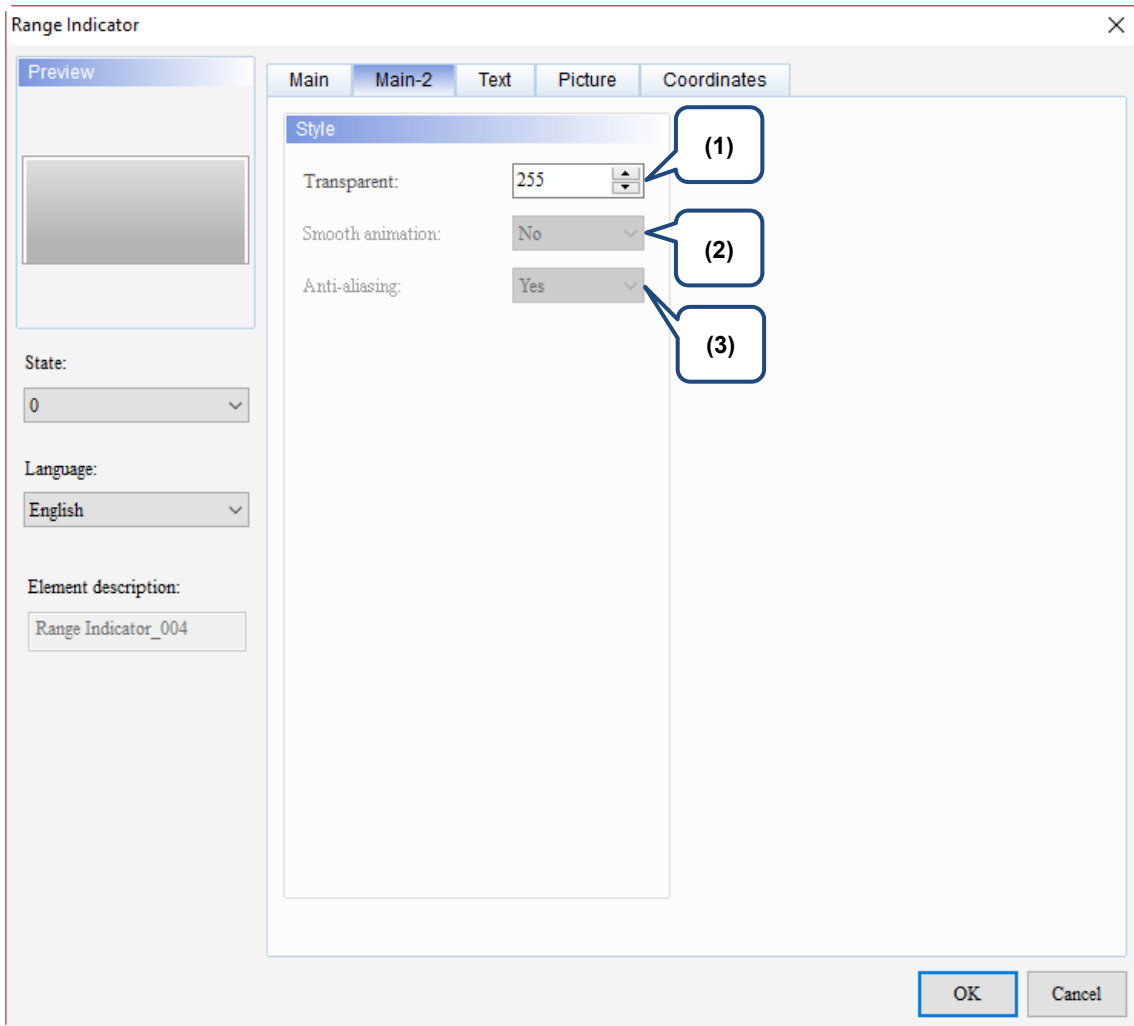
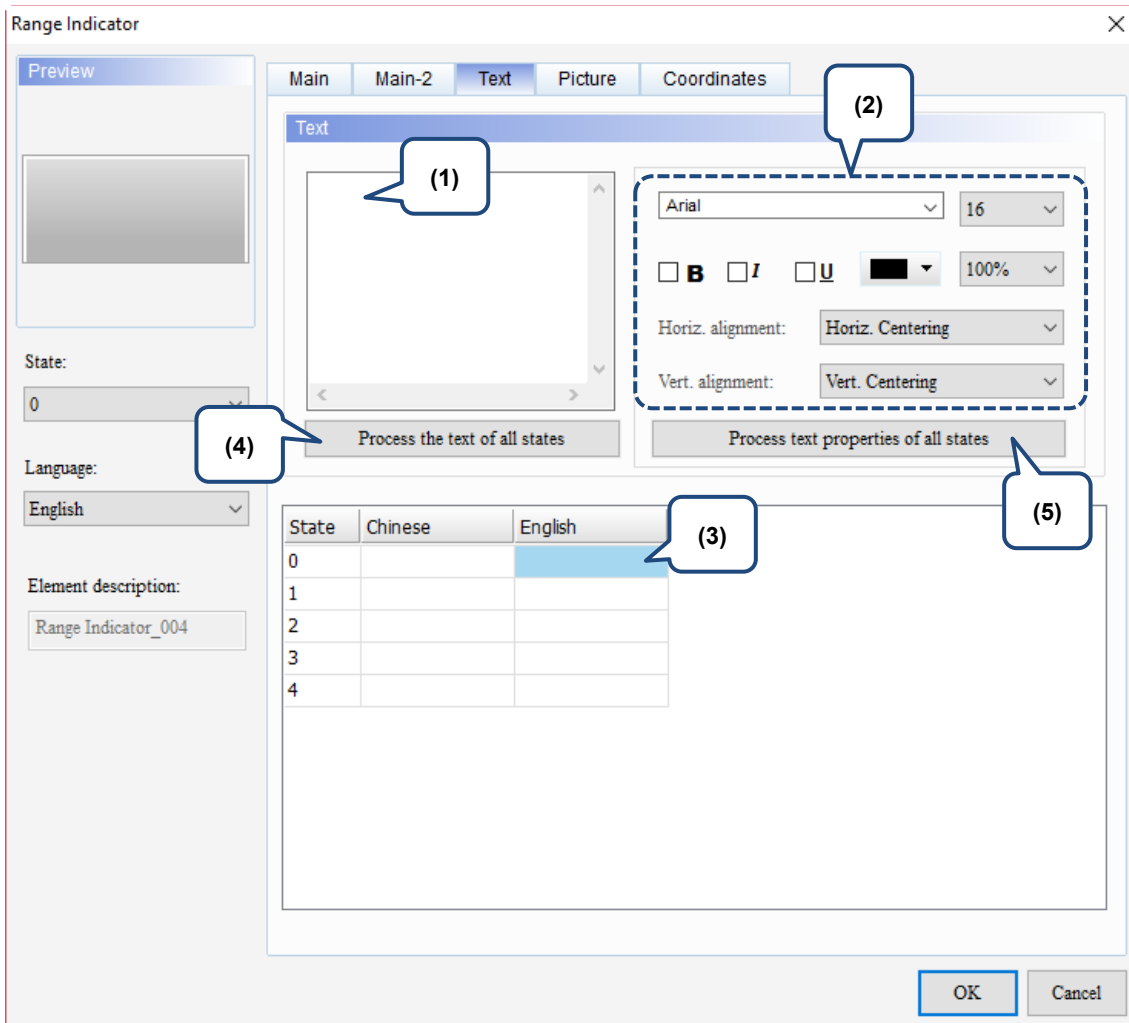


Figure 10.2.3 Main-2 property page for the Range Indicator element

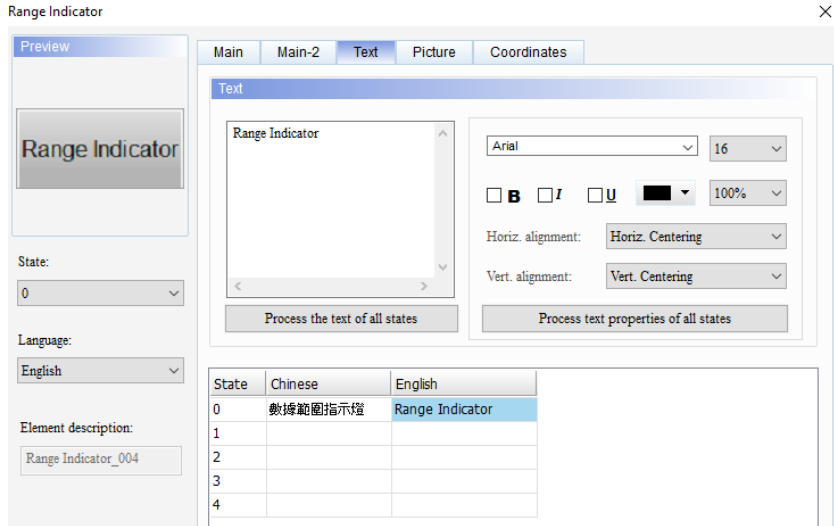
No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth Animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

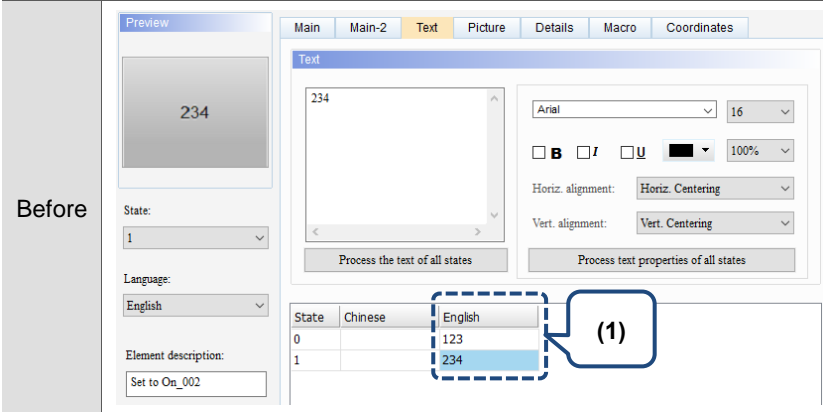
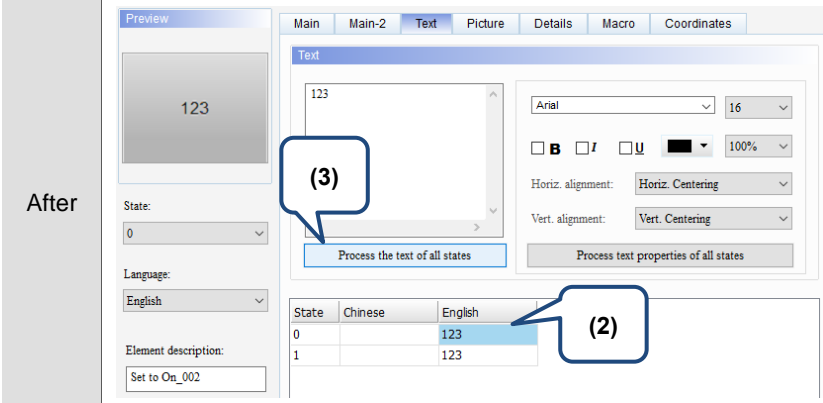


10

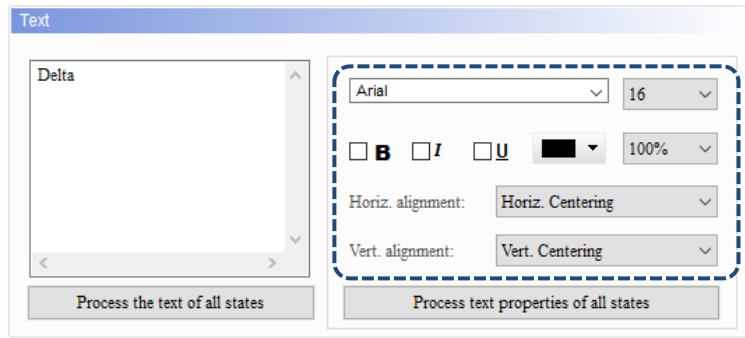
Figure 10.2.4 Text property page for the Range Indicator element

No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p>  <p>■ As long as the element allows text input, you can click the element on the screen and press the space key to start editing the text.</p>

10

No.	Property	Function description
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>When this function is enabled, it batch changes the text of the specified state. The example and setting steps are as follows:</p> <ol style="list-style-type: none"> 1. Enter "123" for State 0 and enter "234" for State 1. 2. Select State 0. 3. Execute Process the text of all states and the text of State 1 is changed to "123". <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-between; width: 100%;"> <div style="width: 25%; text-align: center;"> <p>Before</p>  </div> <div style="width: 75%;"> <p>State: 1</p> <p>Language: English</p> <p>Element description: Set to On_002</p> </div> </div> <div style="display: flex; justify-content: space-between; width: 100%; margin-top: 20px;"> <div style="width: 25%; text-align: center;"> <p>After</p>  </div> <div style="width: 75%;"> <p>State: 0</p> <p>Language: English</p> <p>Element description: Set to On_002</p> </div> </div> </div>

When this function is enabled, it batch changes the text of the specified property. Items included in the text property are shown in the figure below.



The example and setting steps are as follows:

1. Enter the text “Delta” for State 0 and “HMI” for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.
2. Select State 0.
3. Execute [Process text properties of all states] and the text font of State 1 is changed to Segoe Script.

(5) Process text properties of all states

Before

Preview

State: 0

Language: English

Element description: Set to On_002

Main Main-2 Text Picture Details Macro Coord

Text

Process the text of all states

Process text properties of all states

State	Chinese	English
0		Delta
1		HMI

After

Preview

State: 1

Language: English

Element description: Set to On_002

Main Main-2 Text Picture Details Macro Coordinates

Text

Process the text of all states

Process text properties of all states

State	Chinese	English
0		Delta
1		HMI

10

■ Picture

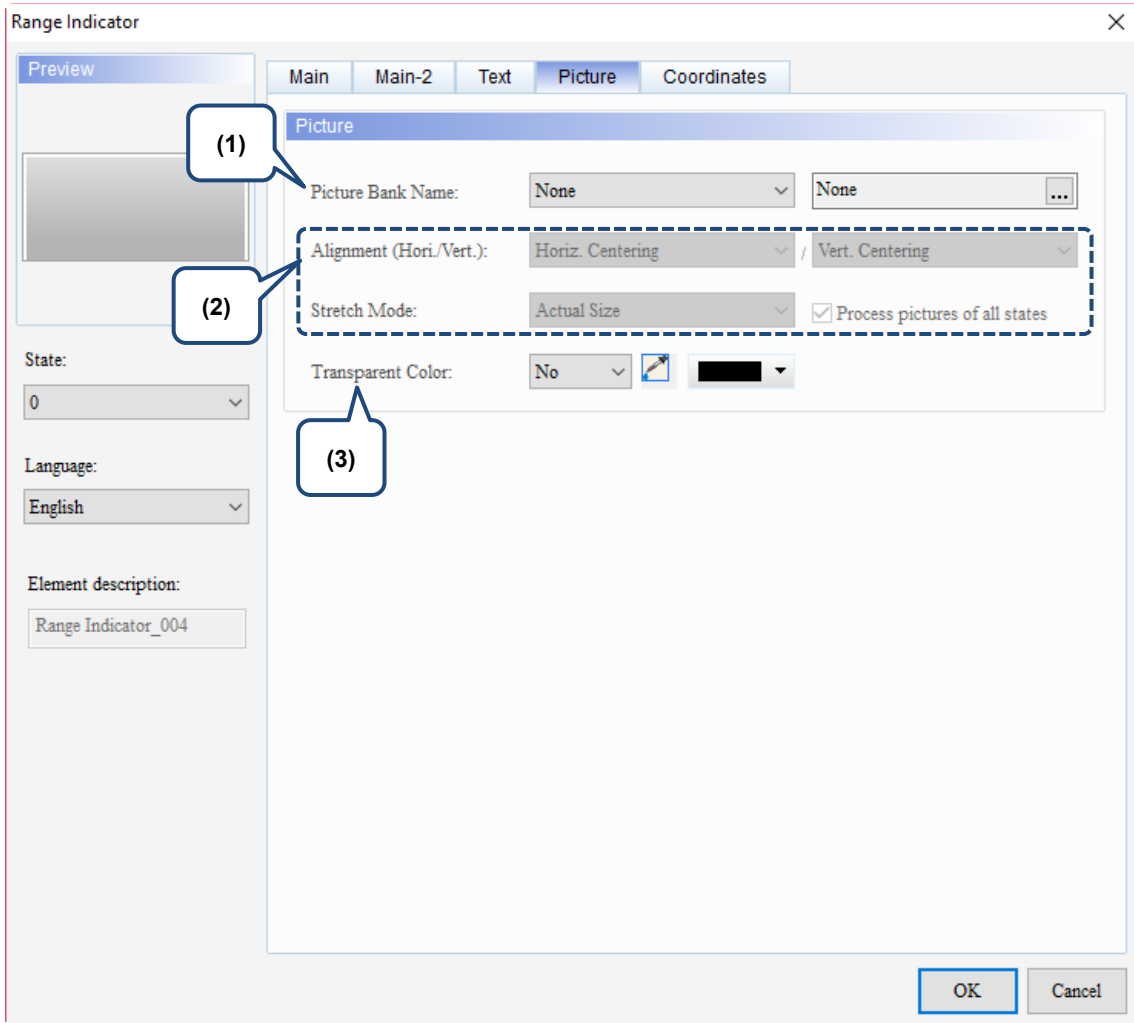
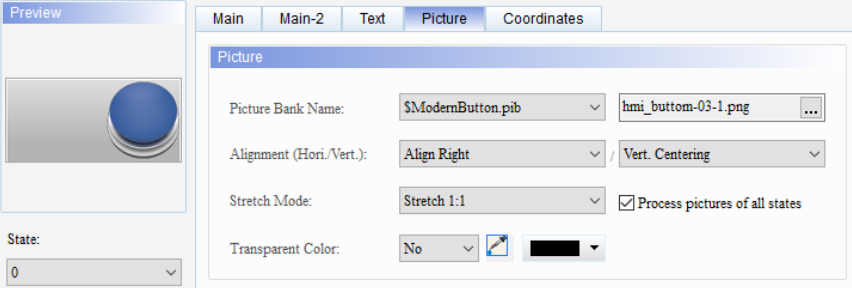






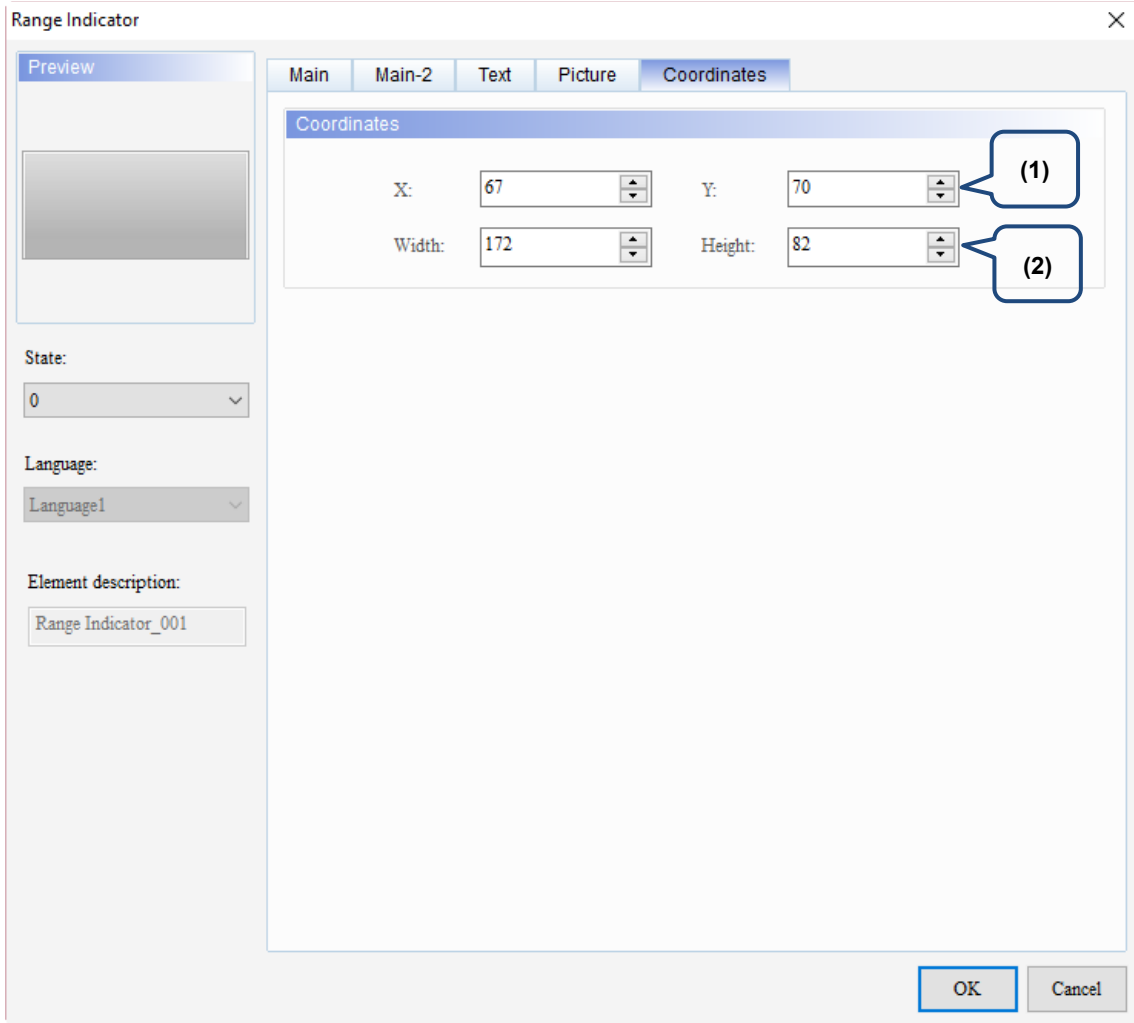
Figure 10.2.5 Picture property page for the Range Indicator element

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list to select the desired picture from the picture bank provided by the software.</p>  <p>The 'Picture' dialog box contains the following fields and options:</p> <ul style="list-style-type: none"> Picture Bank Name: A drop-down menu currently showing 'None'. The list includes: None, \$3DButton.pib, \$3DCButton.pib, \$3DFan.pib, \$3DFineLamp2State.pib, \$3DFineLampNState.pib, \$3DFineSW2State.pib, \$3DFineSWNState.pib, \$3DLamp2State.pib, \$3DLamp3State.pib, \$3DLights.pib, \$3DPump.pib, \$3DSButton.pib, \$3DSign.pib, \$3DSW10State.pib, \$3DTank.pib, \$3DToggleSW.pib, \$3DTPipe.pib, \$IndustrySewing, \$IndustryWoodWorking, \$ModernButton.pib, \$ModernButton2.pib, \$ModernController.pib, \$ModernFan.pib, \$ModernFlowMeters.pib, \$ModernLamp2State.pib, \$ModernMotor.pib, \$ModernNdustrualMisc.pib, \$ModernOperatorInterface.pib, \$ModernPipe.pib. Alignment (Hori./Vert.): A field showing 'None' with a browse button (...). Stretch Mode: A field showing 'None' with a browse button (...). Transparent Color: A field showing 'None' with a browse button (...). Vert. Centering: A dropdown menu. Process pictures of all states: An unchecked checkbox. <p>The 'Select Picture' dialog box displays a grid of 9 button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

10

No.	Property	Function description			
(2)	Alignment	<p>■ You can use the alignment options to set how pictures are aligned.</p>  <p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> </table>	Stretch All	Stretch 1:1	Actual Size
	Stretch All	Stretch 1:1	Actual Size		
Stretch Mode	<table border="1"> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table>  <p>■ If you select [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.	
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 			

Coordinates



10

Figure 10.2.6 Coordinates property page for the Range Indicator element


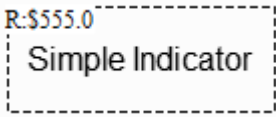
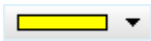
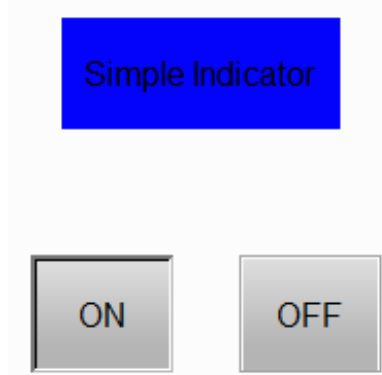
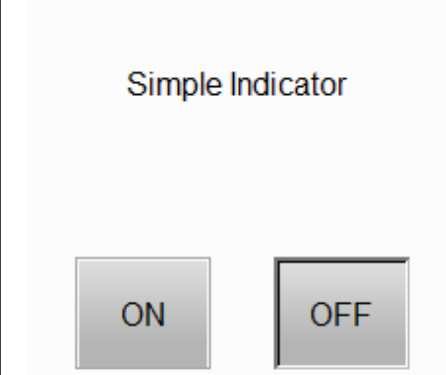
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

10

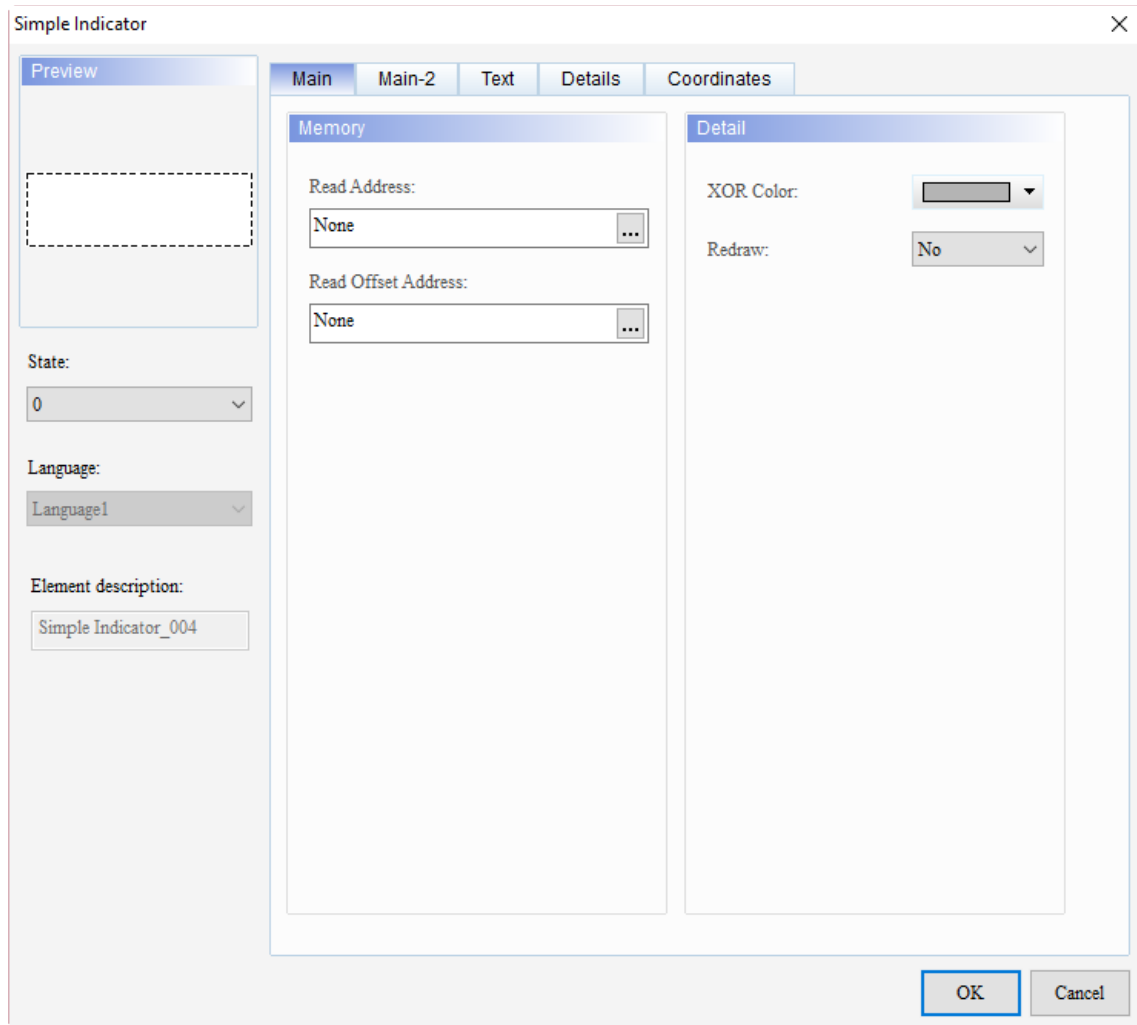
10.3 Simple Indicator

The Simple Indicator has two states, On and Off. You can change the XOR colors when the state switches. This indicator can be set with Button elements for identifying the On and Off states with different colors. Please refer to Table 10.3.1 for the Simple Indicator example

Table 10.3.1 Simple Indicator example

Simple Indicator example				
	Set On / Off elements		Simple Indicator element	
	Read Address	Write Address	\$555.0	Read Address	$555.0
				
Settings	XOR Color		Redraw	
			NO	
Execution results	After you have the screen data compiled and downloaded to the HMI, the Simple Indicator switches to On or Off state according to the read memory address. If you press ON , the Simple Indicator switches to State 1; if you press OFF , the indicator switches to State 0.			
	State 0		State 1	
				

When you double-click Simple Indicator, the property page is shown as follows.



10

Figure 10.3.1 Properties of Simple Indicator

Table 10.3.2 Function page of Simple Indicator

Simple Indicator	
Function page	Description
Preview	You can view the element multistate value and multi-language display data.
Main	Set the Read Address, Read Offset Address, XOR Color, and Redraw.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, alignment type, and state text.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

10

■ Main

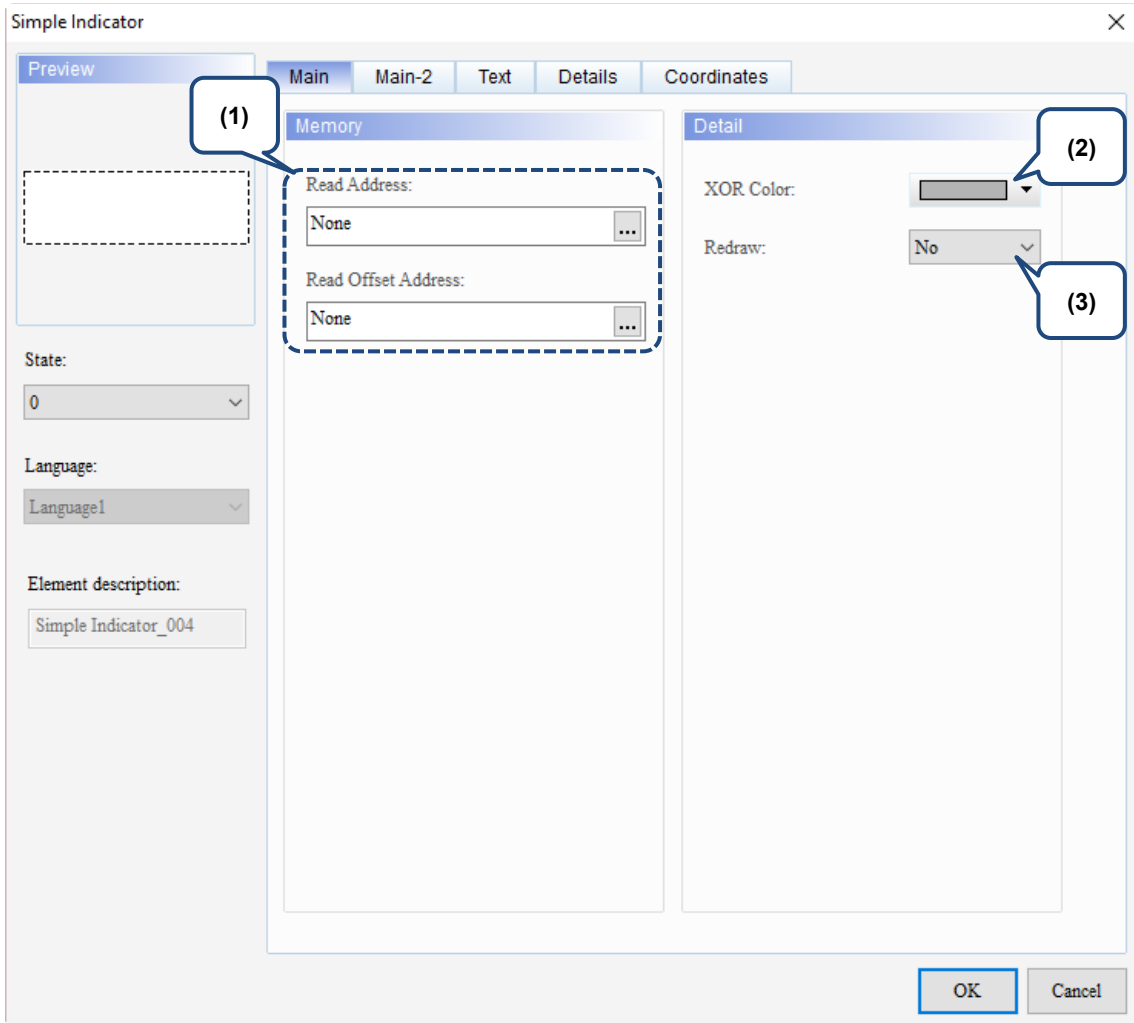




Figure 10.3.2 Main property page for the Simple Indicator element

No.	Property	Function description				
(1)	Read Address	The Simple Indicator only supports Bit data type with options of the internal memory or controller register address. Select Link Name or Element Style. Please refer to Section 5.1.				
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.				
(2)	XOR Color	Specify the background XOR color. <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <div style="display: flex; justify-content: space-between; align-items: center;"> XOR Color: <div style="border: 1px solid black; background-color: yellow; width: 40px; height: 15px; display: flex; align-items: center; justify-content: center;"> ▼ </div> </div> <table border="1" style="width: 100%; text-align: center;"> <tr> <th style="width: 50%;">Before using XOR</th> <th style="width: 50%;">After using XOR</th> </tr> <tr> <td style="background-color: #f0f0f0; padding: 10px;">Simple Indicator</td> <td style="background-color: #0000ff; color: white; padding: 10px;">Simple Indicator</td> </tr> </table> </div>	Before using XOR	After using XOR	Simple Indicator	Simple Indicator
Before using XOR	After using XOR					
Simple Indicator	Simple Indicator					

No.	Property	Function description	
(3)	Redraw	<ul style="list-style-type: none"> ■ When you select Yes and overlap the element on the dynamic element, you can successfully read the data of the dynamic element. If you select No, then the data of the dynamic element does not display. ■ As shown in the table below, both the two pictures display the background color of State 1. The displaying text of State 1 should be "State1 1~10". However, if you leave Redraw unchecked, you can find the range value is covered by the Simple Indicator which you cannot see the range value. 	
		Yes	No
			

■ Main-2

10

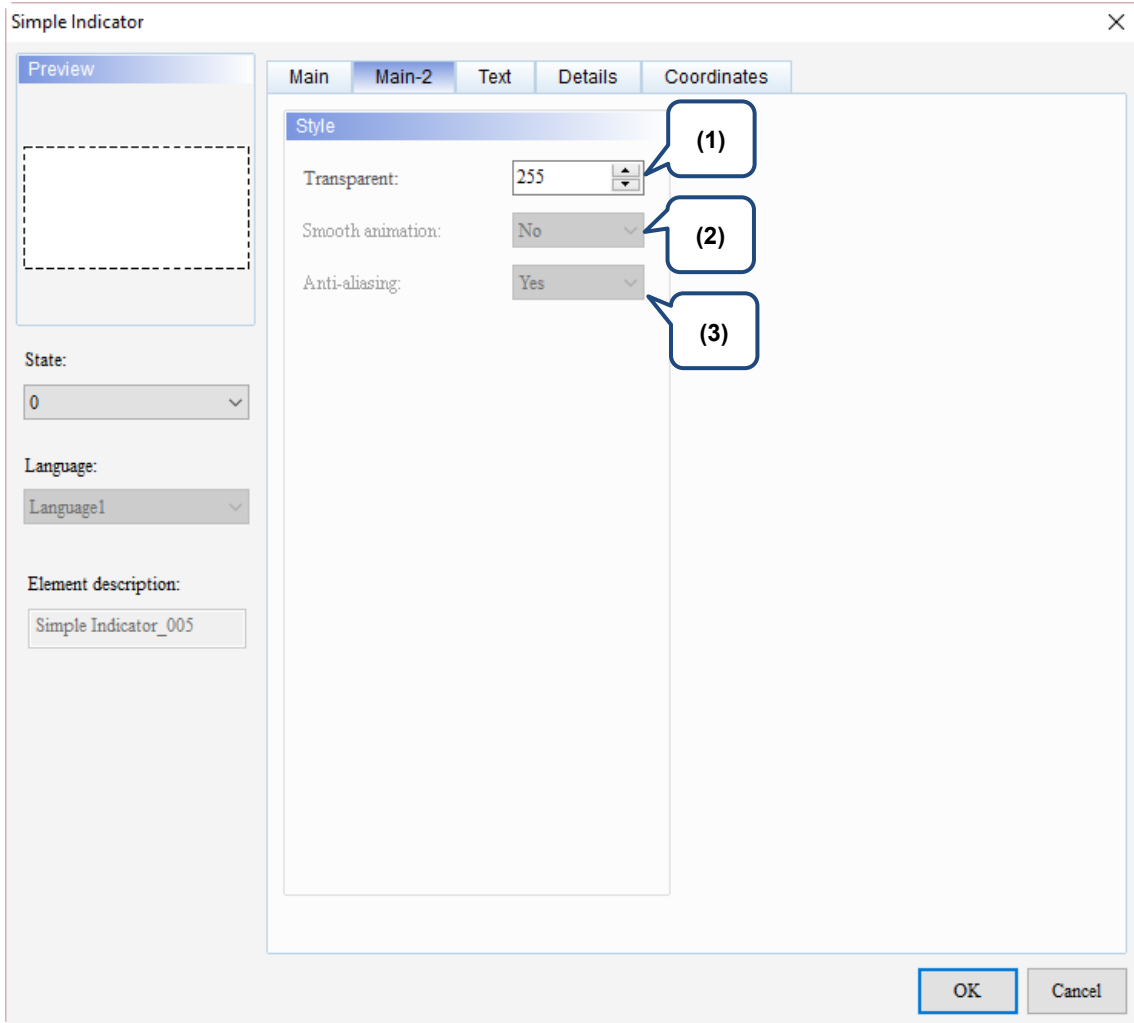


Figure 10.3.3 Main-2 property page for the Simple Indicator element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

10

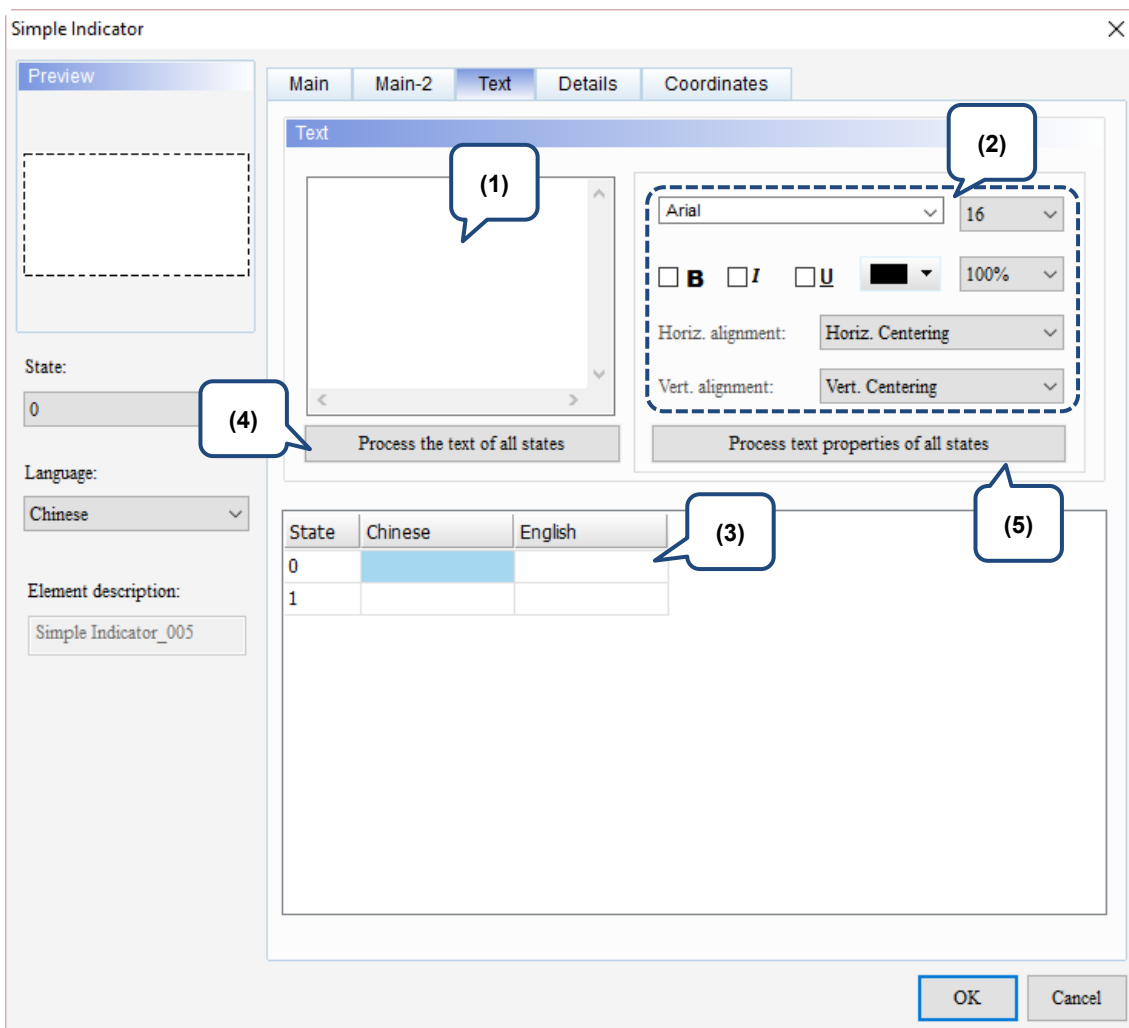
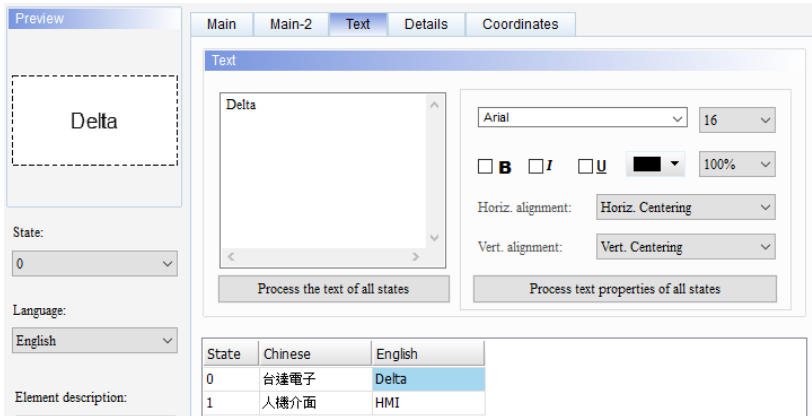
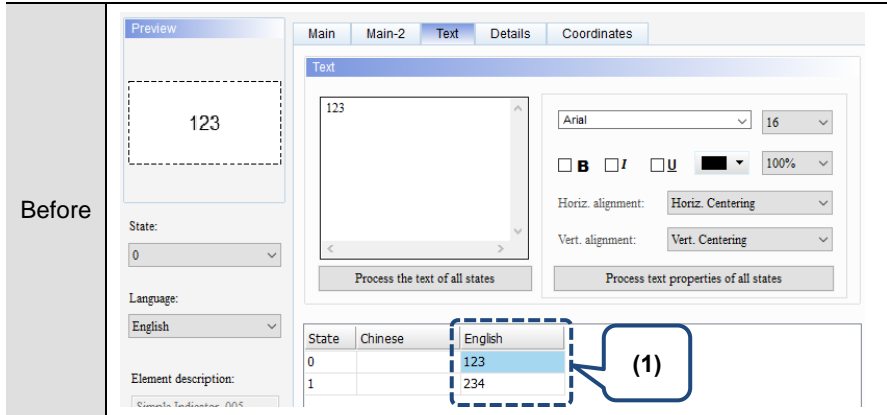
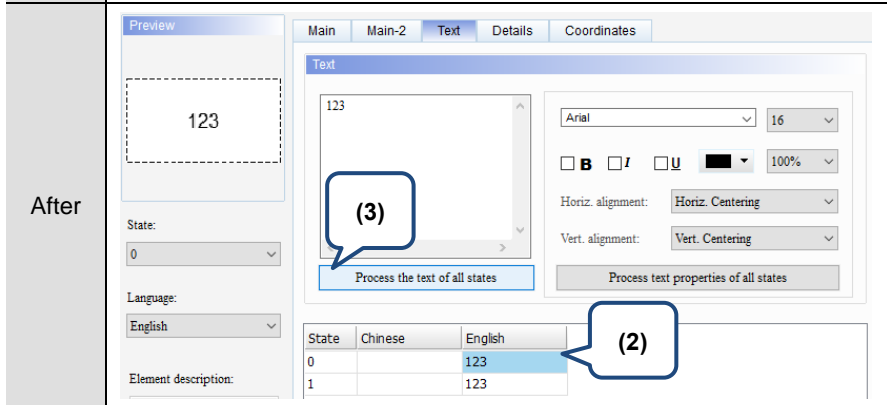
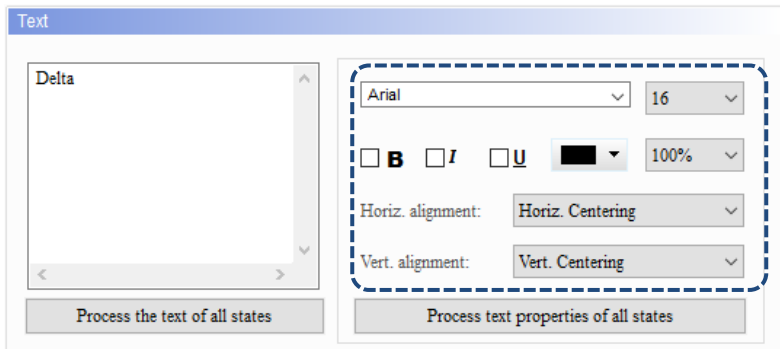
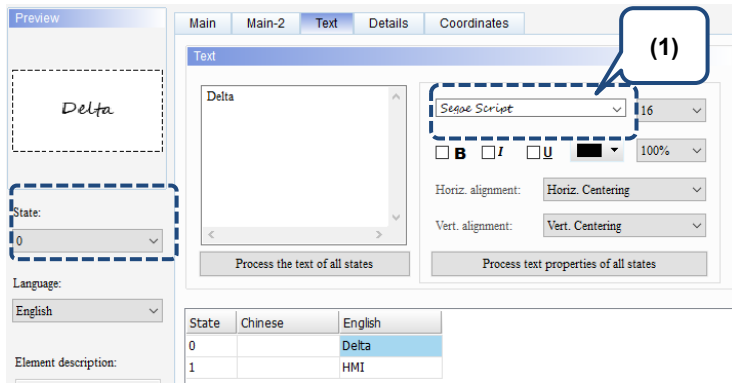
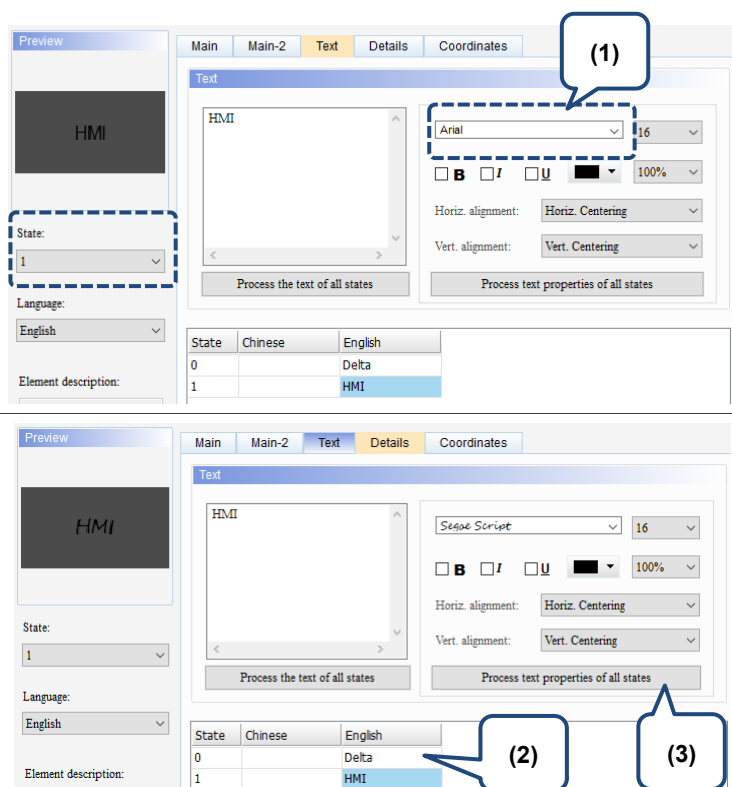


Figure 10.3.4 Text property page for the Simple Indicator element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can enter the text to display in this box.  <ul style="list-style-type: none"> As long as the element allows text input, you can click the element on the screen and press the space key to start editing the text.
(2)	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.</p>

10

No.	Property	Function description
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>When this function is enabled, it batch changes the text of the specified state. The example and setting steps are as follows:</p> <ol style="list-style-type: none"> 1. Enter "123" for State 0 and enter "234" for State 1. 2. Select State 0. 3. Execute Process the text of all states and the text of State 1 is changed to "123". <div style="display: flex; flex-direction: column;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Before</p>  </div> <div style="border: 1px solid black; padding: 5px;"> <p>After</p>  </div> </div>

No.	Property	Function description
		<p>When this function is enabled, it batch changes the text of the specified property. Items included in the text property are shown in the figure below.</p>  <p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> 1. Enter the text “Delta” for State 0 and “HMI” for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1. 2. Select State 0. 3. Execute Process text properties of all states and the text font of State 1 is changed to Segoe Script. <div style="display: flex; flex-direction: column;"> <div style="display: flex; align-items: center; margin-bottom: 10px;"> (5) Process text properties of all states </div> <div style="display: flex; flex-direction: column;"> <div style="margin-bottom: 10px;"> <p>Before</p>  </div> <div> <p>After</p>  </div> </div> </div>

10

■ Details

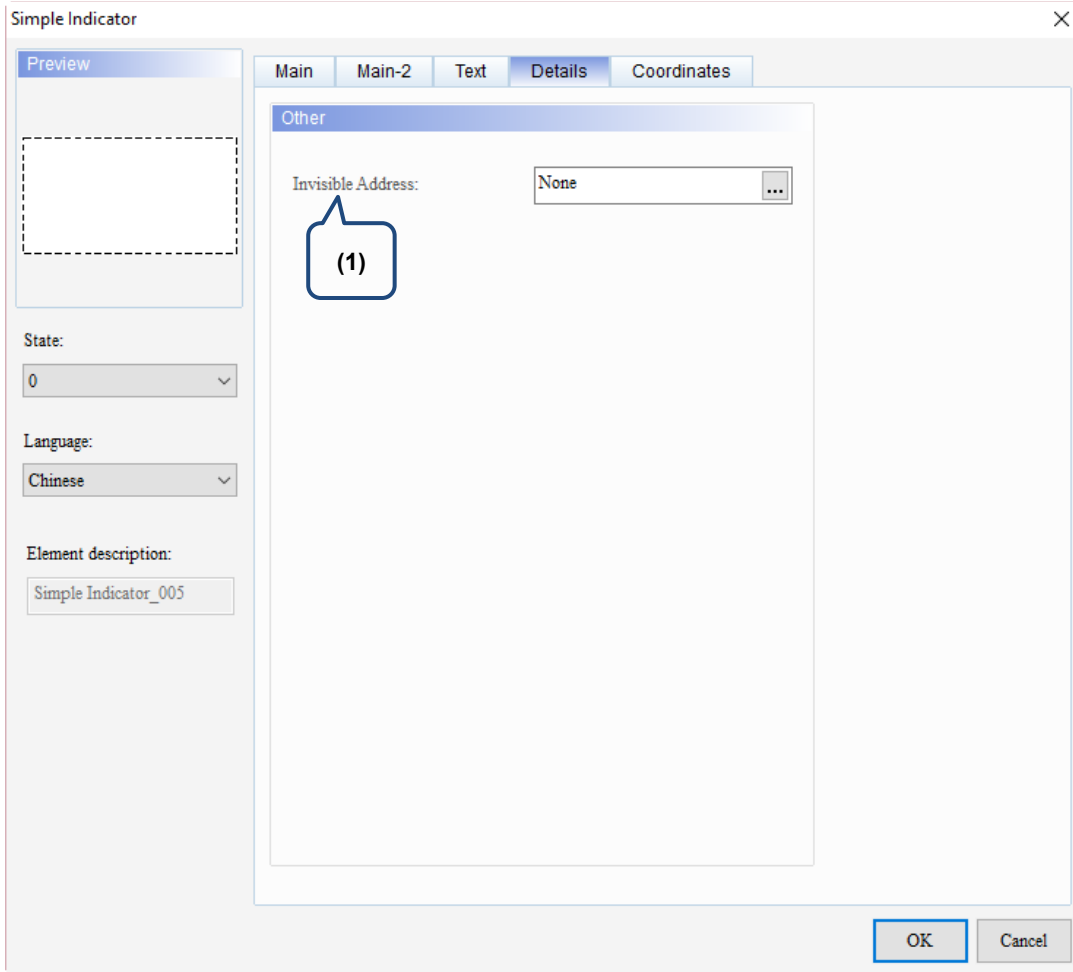
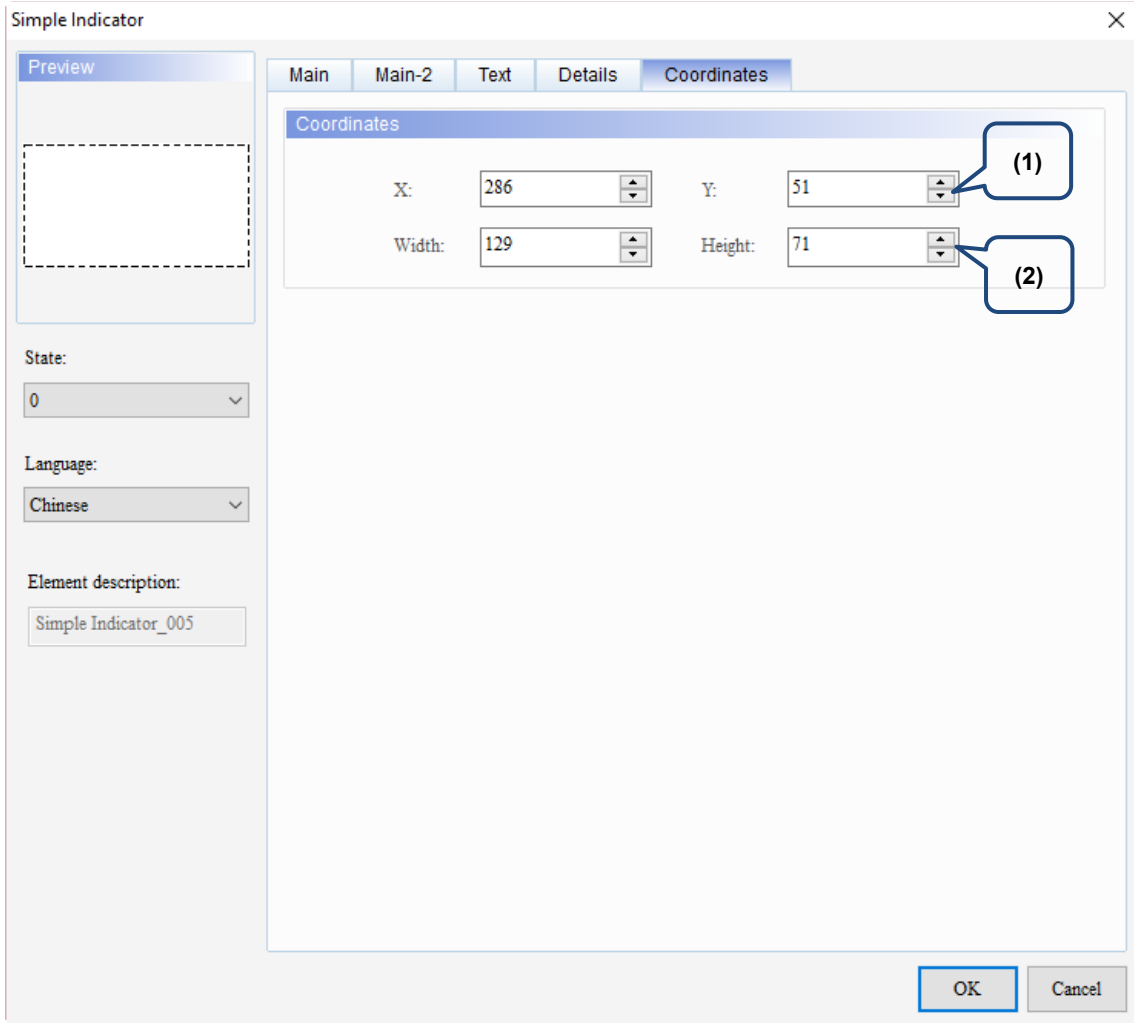


Figure 10.3.5 Details property page for the Simple Indicator element

No.	Property	Function description						
(1)	Invisible Address	<p>When the Invisible address is set to on, the button element is invisible and you cannot execute its set functions.</p> <table border="1"> <tr> <td>Invisible Address OFF</td> <td></td> <td></td> </tr> <tr> <td>Invisible Address ON</td> <td></td> <td></td> </tr> </table>	Invisible Address OFF			Invisible Address ON		
		Invisible Address OFF						
Invisible Address ON								

■ Coordinates



10

Figure 10.3.6 Coordinates property page for the Simple Indicator element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

(This page is intentionally left blank.)

10

Data Display

This chapter provides the usage and setting details for the Data Display elements.

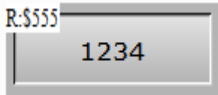
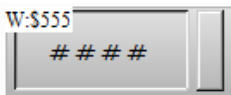

11.1	Numeric Display	11-2
11.2	Character Display	11-25
11.3	Date Display / Time Display / Week Display	11-34
11.2.1	Date Display	11-35
11.2.2	Time Display	11-41
11.2.3	Week Display	11-47
11.4	General Message Display	11-56
11.5	Moving Sign	11-69

11

11.1 Numeric Display

The main function of the Numeric Display is to read the value of the memory address and display the value on the element. The Numeric Display can also display the status return values of other elements, such as 0 or 1.

Table 11.1.1 Data Display example

Numeric Display				
Read Address	Numeric Display element		Numeric Entry element	
	Read Address	\$555	Write Address	\$555
				
Settings	Numeric Display element			
	Data Type	Data Format	Integer Digits	Fractional (Digits)
	Word	Unsigned Decimal	4	0
Execution results	After creating the elements, please compile and download the data to the HMI. Next, enter 100 with the Numeric Entry element and the Numeric Display element will display the value you input.			
	Enter 100 and write the value to the specified address (\$555). 			

Numeric Display supports two data types, Word and Double Word. The allowable ranges are shown in Table 11.1.2.

Table 11.1.2 Numeric Display allowable range

Numeric Display		
	Data Format	Allowable range
Word	BCD	0 to 9999
	Signed BCD	-999 to 9999
	Signed Decimal	-32768 to 32767
	Unsigned Decimal	0 to 65535
	Hex	0 to 0xFFFF
	Binary	0 to 0xFFFF
Double Word	Data Format	Allowable range
	BCD	0 to 99999999
	Signed BCD	-99999999 to 99999999
	Signed Decimal	-2147483648 to 2147483647
	Unsigned Decimal	0 to 4294967295
	Hex	0 to 0xFFFFFFFF
	Binary	0 to 0xFFFFFFFF
	Floating	0 to 9999999999999999

When you double-click Numeric Display, the property setting page is as follows.

11

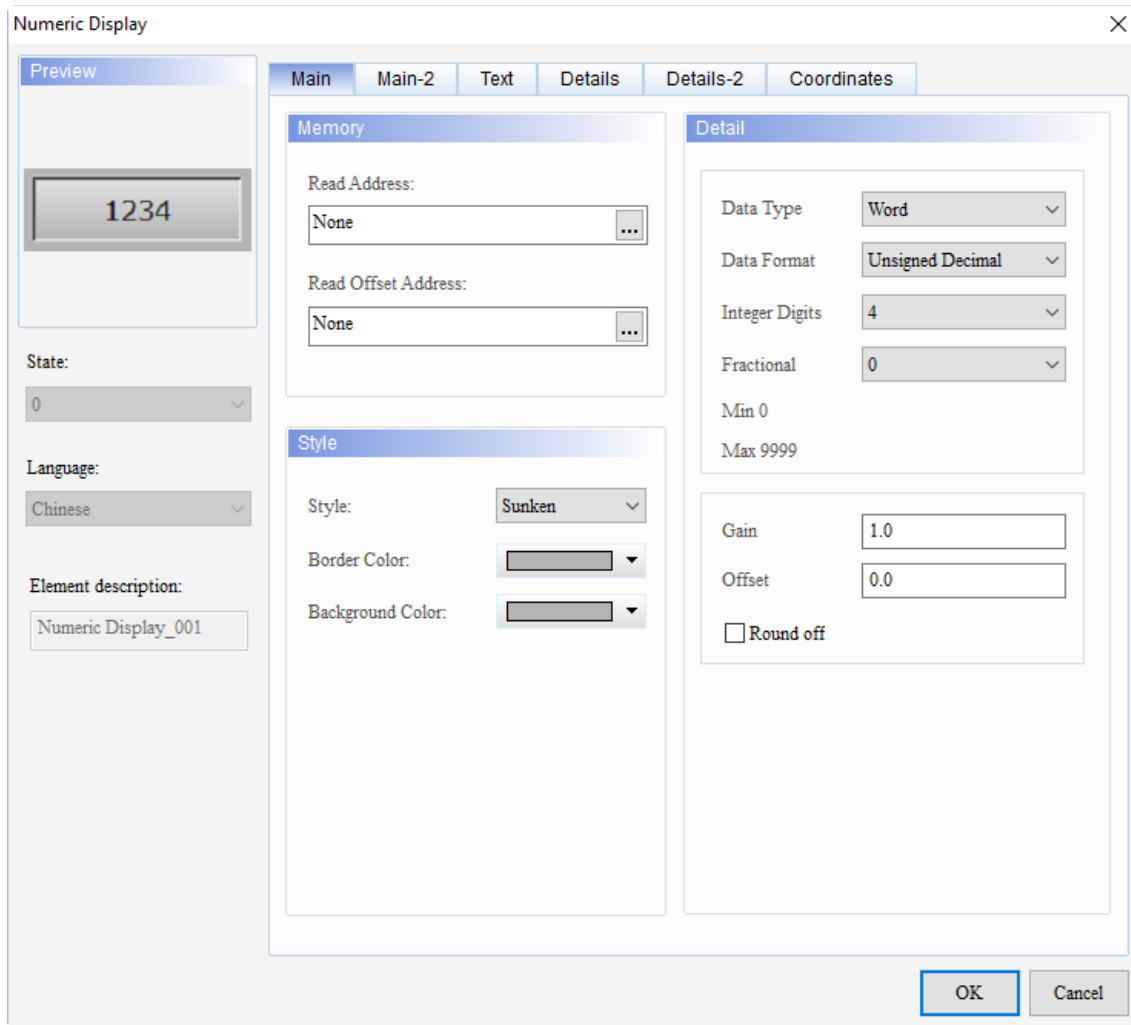
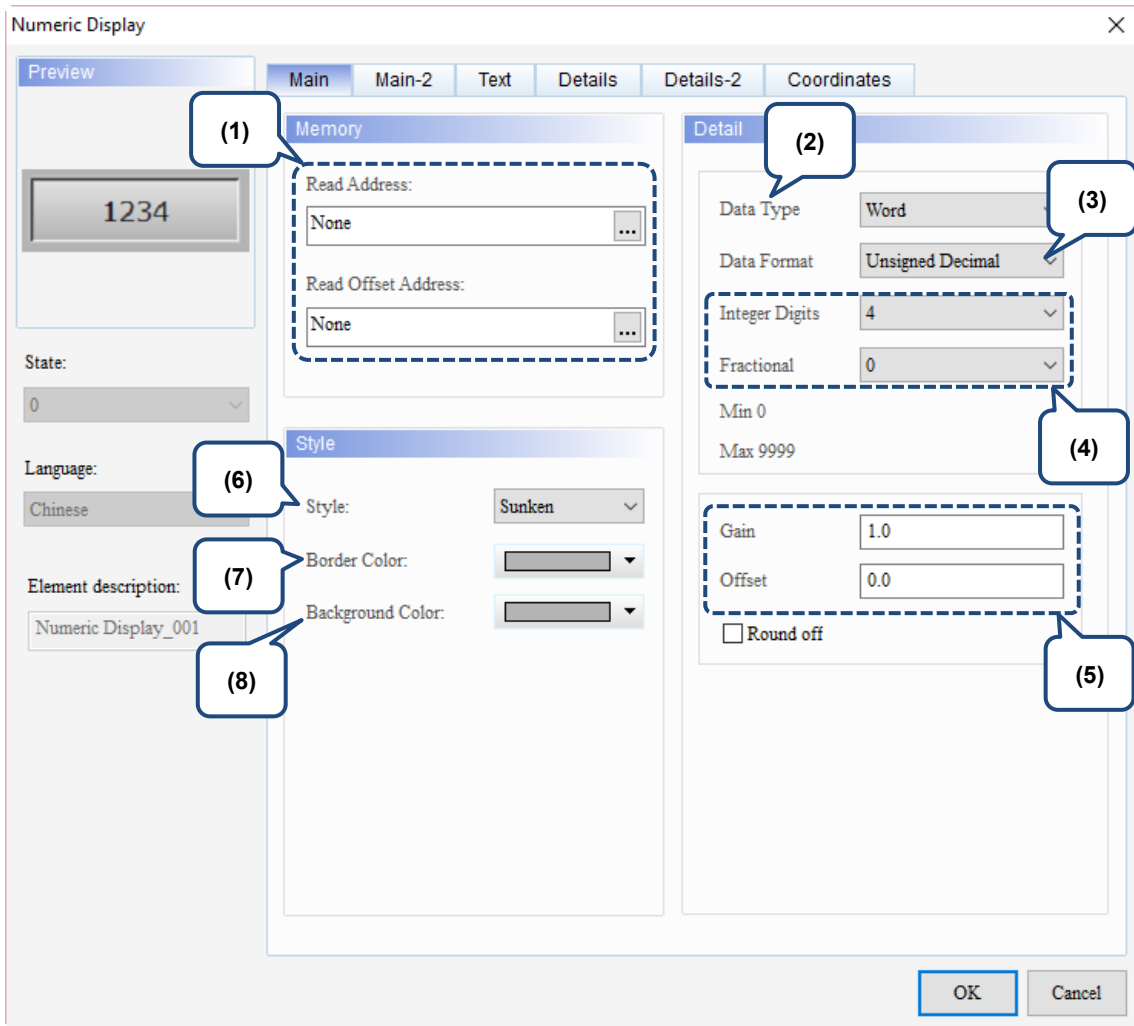


Figure 11.1.1 Properties of Numeric Display

Table 11.1.3 Function page of Numeric Display

Numeric Display	
Function page	Description
Preview	Numeric Display elements do not support multiple status values and multi-language data display.
Main	Set the Read Address, Read Offset Address, Style, Background Color, and Border Color. Set the Data Type, Data Format, number of integer digits, number of decimal places, Gain, and Offset.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the displaying text font, size, color, and alignment.
Details	Set the Prefix Zero and Invisible Address.
Details-2	Set the Type, Unit for the Source and Display, Custom formula, and Percentage.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main



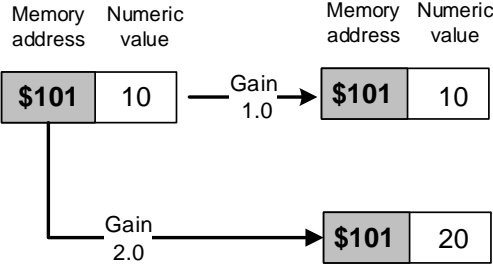
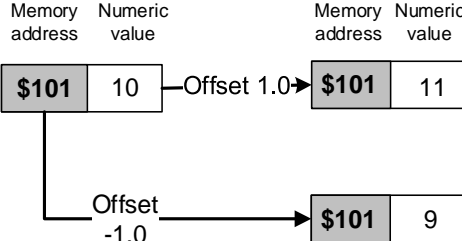
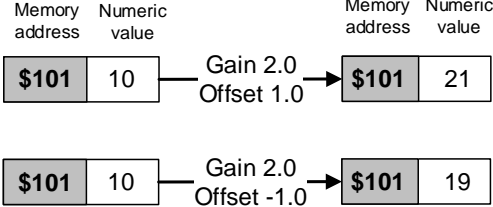
11

Figure 11.1.2. Main property page for the Numeric Display element

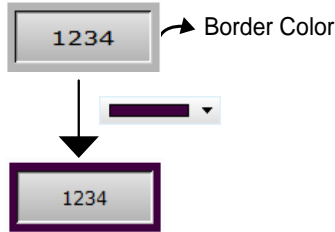
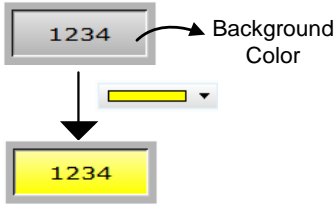
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> ■ You can select the internal memory or the controller register address. ■ Select Link Name or Element Style. Please refer to Section 5.1.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	There are two data types available: Word and Double Word. Please refer to Table 11.1.2 for details.

11

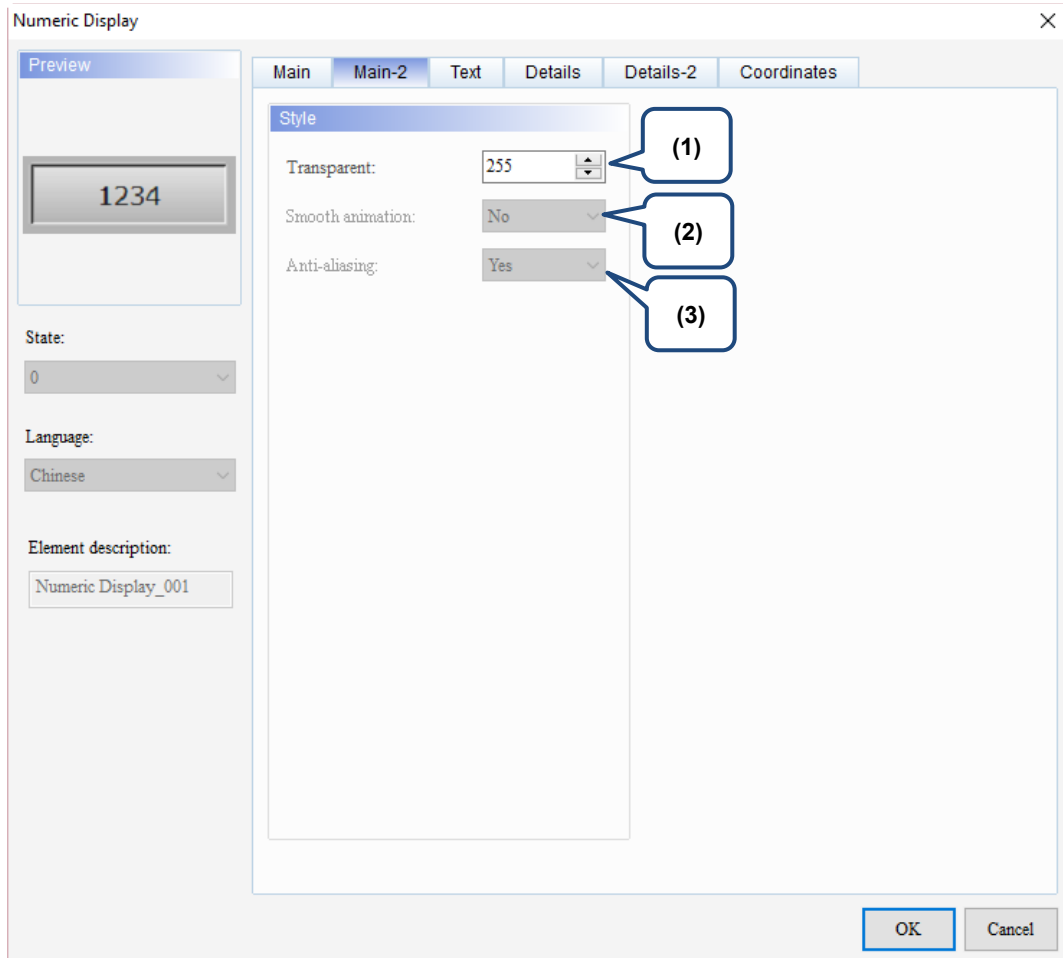
No.	Property	Function description																								
(3)	Data Format	<ul style="list-style-type: none"> ■ When the Data Type is Word, the supported data formats are as follows. <div style="border: 1px solid gray; padding: 5px; margin: 5px 0;"> <div style="background-color: #e0e0e0; padding: 2px;">Detail</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Data Type</td> <td style="padding: 5px;">Word</td> </tr> <tr> <td style="padding: 5px;">Data Format</td> <td style="padding: 5px;"> <div style="border: 1px solid gray; padding: 2px;"> Unsigned Decimal <ul style="list-style-type: none"> BCD Signed BCD Signed Decimal <li style="background-color: #0070c0; color: white;">Unsigned Decimal Hexadecimal Binary </div> </td> </tr> <tr> <td style="padding: 5px;">Integer Digits</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Fractional</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Min 0</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Max 9999</td> <td style="padding: 5px;"></td> </tr> </table> </div> ■ When the Data Type is Double Word, the supported data formats are as follows. <div style="border: 1px solid gray; padding: 5px; margin: 5px 0;"> <div style="background-color: #e0e0e0; padding: 2px;">Detail</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Data Type</td> <td style="padding: 5px;">Double Word</td> </tr> <tr> <td style="padding: 5px;">Data Format</td> <td style="padding: 5px;"> <div style="border: 1px solid gray; padding: 2px;"> Unsigned Decimal <ul style="list-style-type: none"> BCD Signed BCD Signed Decimal <li style="background-color: #0070c0; color: white;">Unsigned Decimal Hexadecimal Binary Floating </div> </td> </tr> <tr> <td style="padding: 5px;">Integer Digits</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Fractional</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Min 0</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Max 4294967295</td> <td style="padding: 5px;"></td> </tr> </table> </div> ■ When the Data Format is Floating, the integer and fractional digits support only 16 digits in total. When exceeding this limit, a warning message pops up. 	Data Type	Word	Data Format	<div style="border: 1px solid gray; padding: 2px;"> Unsigned Decimal <ul style="list-style-type: none"> BCD Signed BCD Signed Decimal <li style="background-color: #0070c0; color: white;">Unsigned Decimal Hexadecimal Binary </div>	Integer Digits		Fractional		Min 0		Max 9999		Data Type	Double Word	Data Format	<div style="border: 1px solid gray; padding: 2px;"> Unsigned Decimal <ul style="list-style-type: none"> BCD Signed BCD Signed Decimal <li style="background-color: #0070c0; color: white;">Unsigned Decimal Hexadecimal Binary Floating </div>	Integer Digits		Fractional		Min 0		Max 4294967295	
Data Type	Word																									
Data Format	<div style="border: 1px solid gray; padding: 2px;"> Unsigned Decimal <ul style="list-style-type: none"> BCD Signed BCD Signed Decimal <li style="background-color: #0070c0; color: white;">Unsigned Decimal Hexadecimal Binary </div>																									
Integer Digits																										
Fractional																										
Min 0																										
Max 9999																										
Data Type	Double Word																									
Data Format	<div style="border: 1px solid gray; padding: 2px;"> Unsigned Decimal <ul style="list-style-type: none"> BCD Signed BCD Signed Decimal <li style="background-color: #0070c0; color: white;">Unsigned Decimal Hexadecimal Binary Floating </div>																									
Integer Digits																										
Fractional																										
Min 0																										
Max 4294967295																										
(4)	Integer Digits / Fractional (Digits)	<ul style="list-style-type: none"> ■ You can set the displaying number of integer digits and the number of decimal places. ■ The number of decimal places here is not really a decimal value, but just the display format. Only when Floating is selected as the Data Format, the Fractional setting is the actual decimal. 																								

No.	Property	Function description								
(5)	Gain and Offset	<p>■ The formula of Gain and Offset: $y = (a)x + (b)$.</p> <table border="1"> <thead> <tr> <th>y</th> <th>a</th> <th>x</th> <th>b</th> </tr> </thead> <tbody> <tr> <td>Element display value</td> <td>Gain</td> <td>Actual register value</td> <td>Offset</td> </tr> </tbody> </table> <p>■ The Numeric Display element multiplies the register actual value by the set gain value, and then displays the result on the HMI screen. The default of Gain is 1.0. If you set the Gain to 2.0, when the element reads the register value 10, the actual value displayed on the element is 20.</p> <p style="text-align: center;">Numeric Display element</p>  <p>■ The Numeric Display element adds the register actual value to the set offset value, and then displays the sum on the HMI screen. The default offset is 0.0. If you set the Offset to 1.0 and the element reads the register value 10, then the actual value displayed on the element is 11. On the other hand, if you set the Offset to -1.0 and the element reads the register value 10, the actual value displayed on the element is 9.</p> <p style="text-align: center;">Numeric Display element</p>  <p>■ Below is the diagram of examples for [Gain 2.0; Offset 1.0] and [Gain 2.0; Offset -1.0].</p> <p style="text-align: center;">Numeric Display element</p>  <p>■ If you check Round off, the calculation results are rounded off before being displayed on the element.</p>	y	a	x	b	Element display value	Gain	Actual register value	Offset
y	a	x	b							
Element display value	Gain	Actual register value	Offset							
(6)	Style	<p>There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1234</td> <td style="text-align: center;">1234</td> <td style="text-align: center;">1234</td> <td style="text-align: center;">1234</td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent	1234	1234	1234	1234
Standard	Raised	Sunken	Transparent							
1234	1234	1234	1234							

11

No.	Property	Function description
(7)	Border Color	<ul style="list-style-type: none"> ■ Set the border color. ■ When you set the element style to Transparent, the Border Color setting is invalid. 
(8)	Background Color	<ul style="list-style-type: none"> ■ Set the Background Color of the element. ■ When you set the element style to Transparent, the Background Color setting is invalid. 

■ Main-2



11

Figure 11.1.3. Main-2 property page for the Numeric Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

11

■ Text

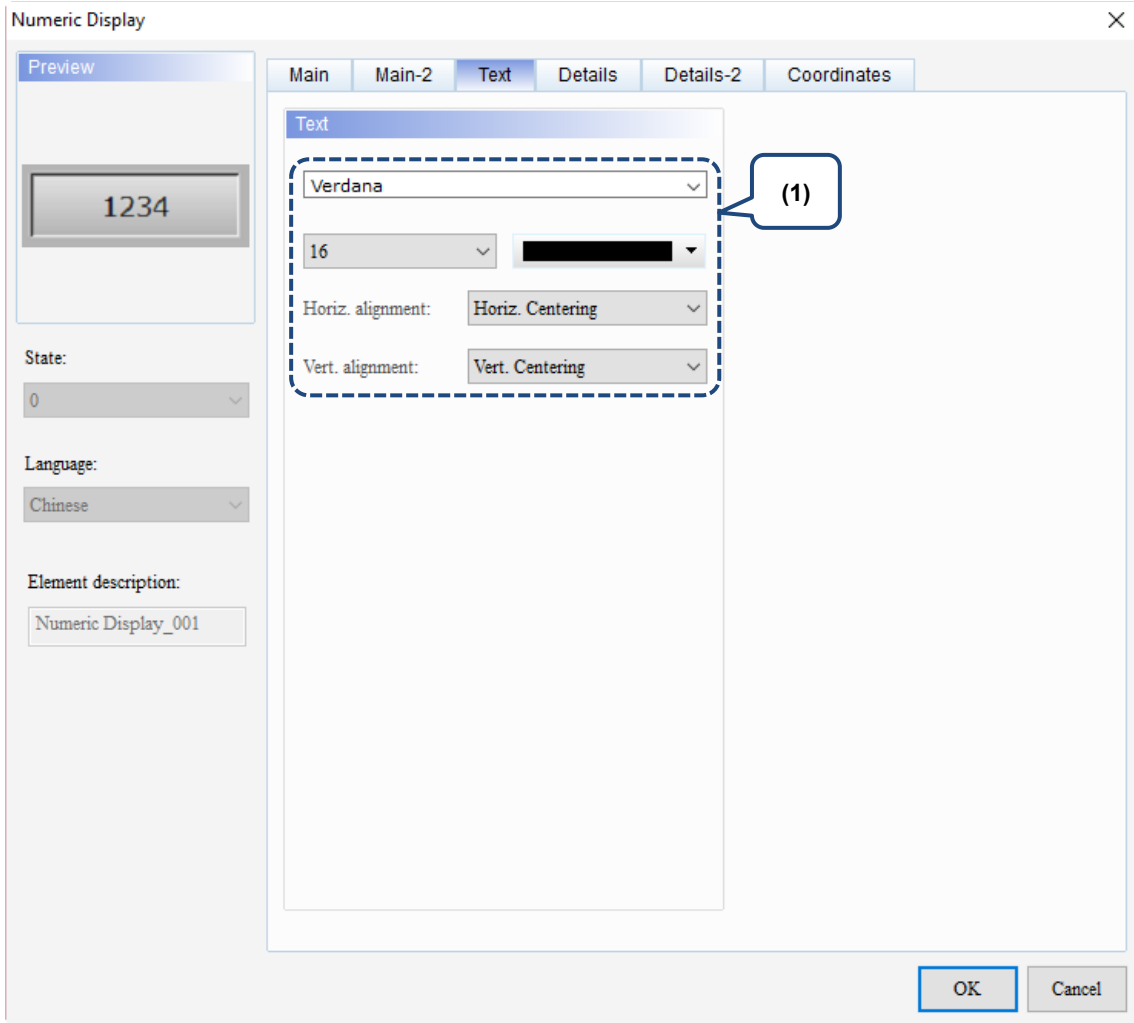
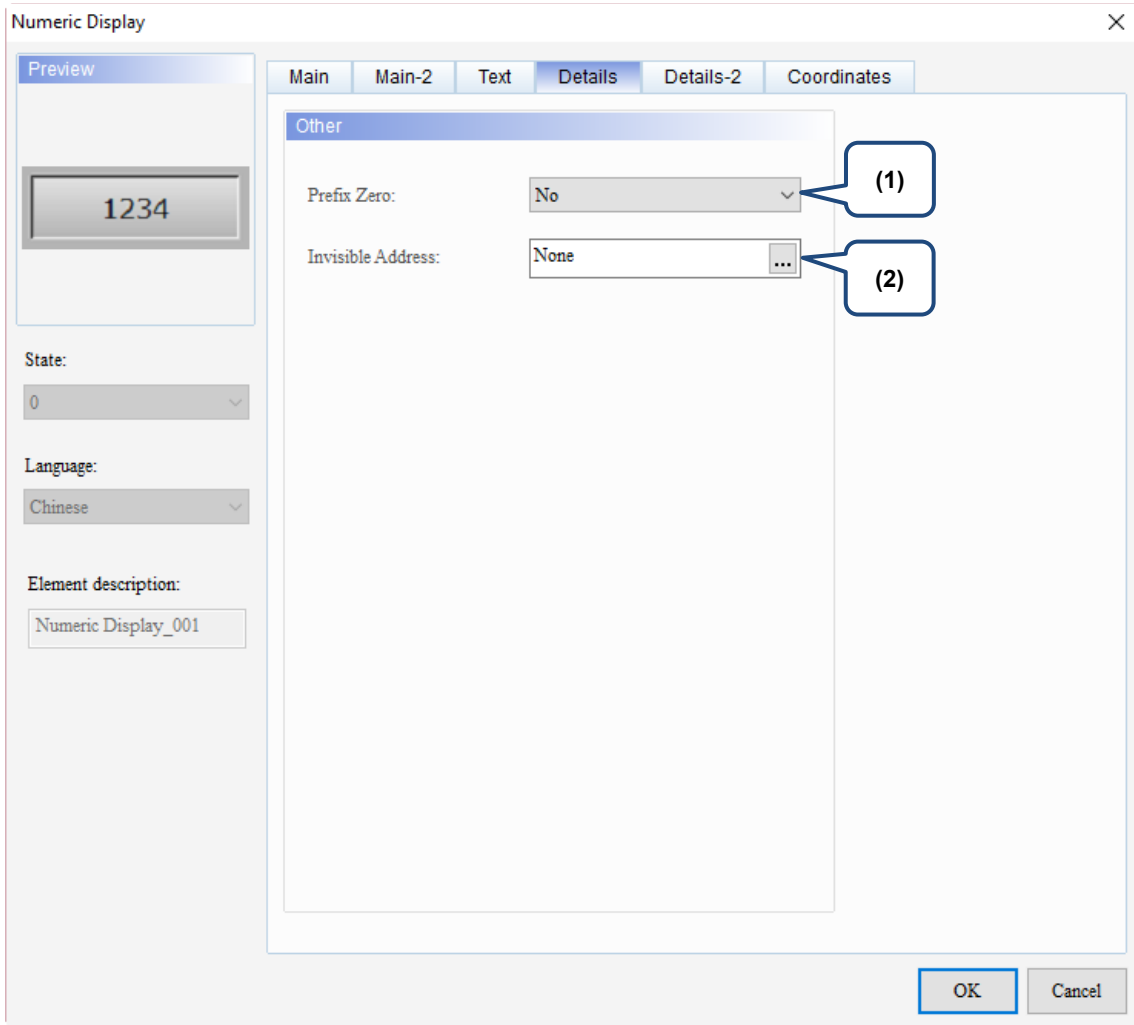


Figure 11.1.4. Text property page for the Numeric Display element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

■ Details

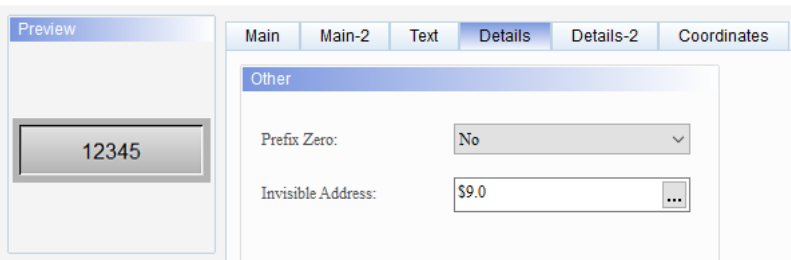


11

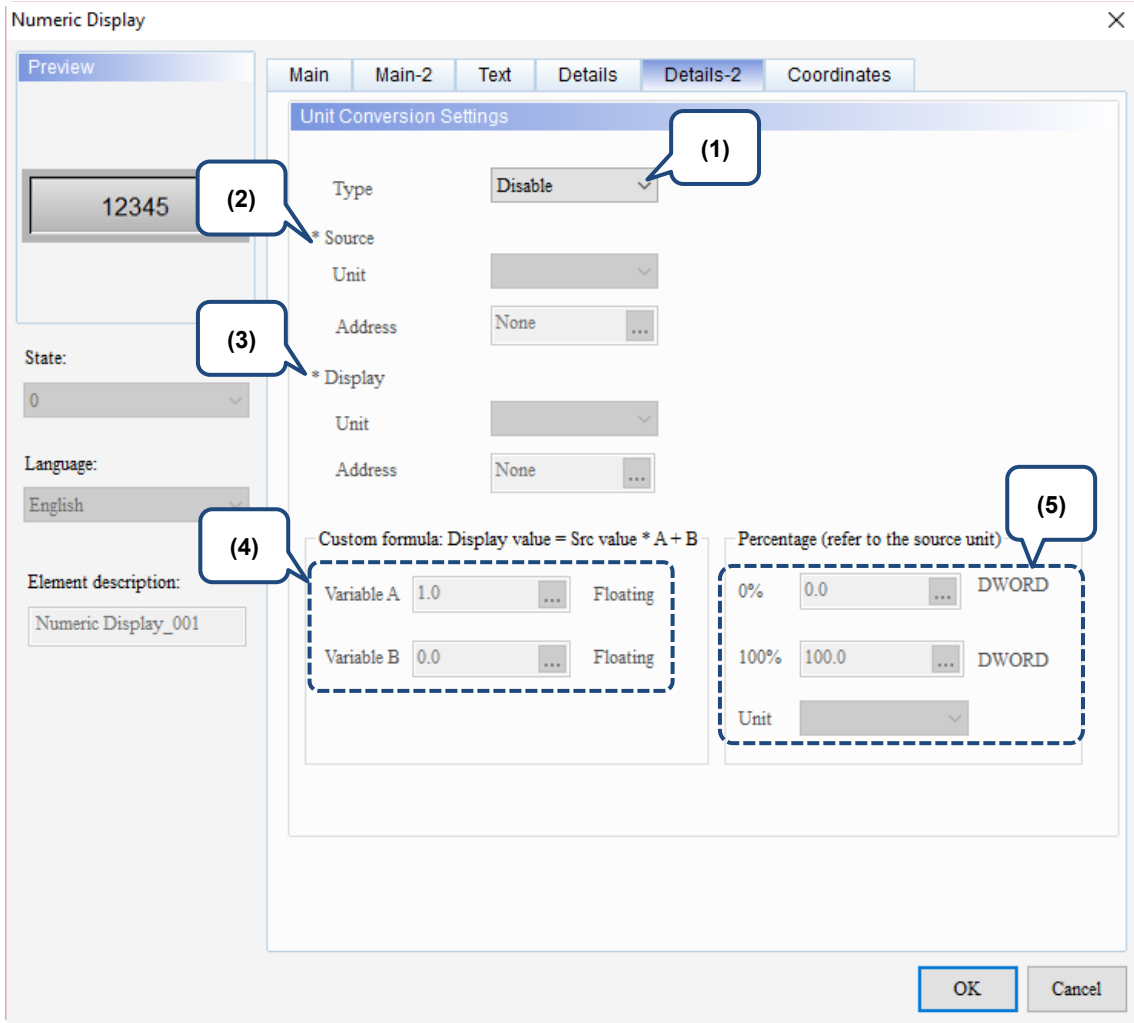
Figure 11.1.5 Details property page for the Numeric Display element

No.	Property	Function description
(1)	Prefix Zero	<p>The Prefix Zero function determines how many zeros to add according to the set number of integer digits. Please refer to the example below.</p> <p style="text-align: center;">Number of integer digits: 5</p> <p> <input checked="" type="checkbox"/> Prefix Zero <input type="checkbox"/> Prefix Zero </p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid gray; padding: 5px; text-align: center;">00050</div> <div style="border: 1px solid gray; padding: 5px; text-align: center;">50</div> </div>

11

No.	Property	Function description
(2)	Invisible Address	<p>When Invisible Address is set to On, the Numeric Display element is invisible and you cannot execute its set functions.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid gray; padding: 5px; text-align: center;">Invisible Address is off</div> <div style="border: 1px solid gray; padding: 5px; text-align: center; width: 60px;">0</div> <div style="border: 1px solid gray; padding: 5px; text-align: center;">Invisible Adrees \$9.0 OFF</div> </div>
		<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid gray; padding: 5px; text-align: center;">Invisible Address is on</div> <div style="border: 2px dashed blue; padding: 5px; text-align: center; width: 60px;">Element is invisible</div> <div style="border: 1px solid gray; padding: 5px; text-align: center;">Invisible Adrees \$9.0 ON</div> </div>
<p>Numeric Display</p> 		

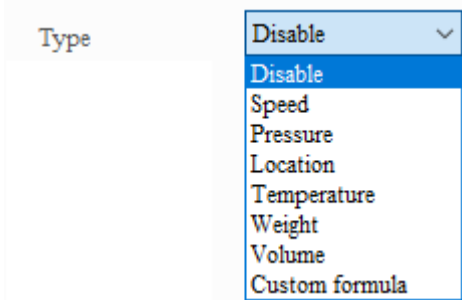
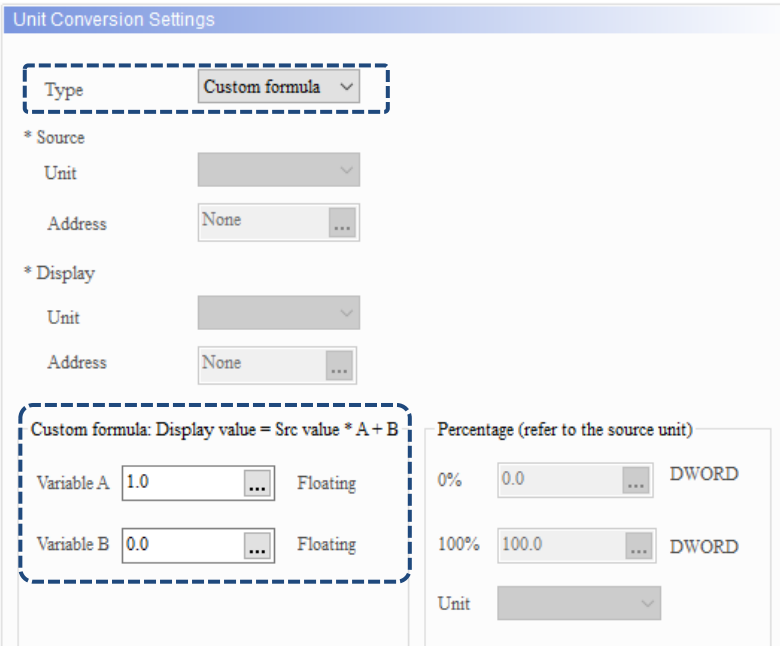
■ Details-2



11

Figure 11.1.6 Details-2 property page for the Numeric Display element

11

No.	Property	Function description
(1)	Type	<ul style="list-style-type: none"> ■ You can select the conversion type, including Speed, Pressure, Location, Temperature, Weight, Volume, and Custom formula.  <ul style="list-style-type: none"> ■ If you select Disable, it means the value does not need conversion. ■ To set the Custom formula, you have to enter values for Variable A and Variable B. When you select "Floating" for Unit, the formula is [Display value = Source value * A + B]. 

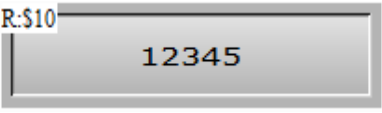

No.	Property		Function description	
(2)	Source	Unit	<ul style="list-style-type: none"> ■ The unit is subject to change based on the selected type. The table below lists the corresponding unit for each type. 	
			Type	Unit
			Speed	mm/sec
				inch/sec
				%
				Using the code
			Pressure	kg/cm
				bar
				%
				Using the code
			Location (position)	mm
				inch
				%
				Using the code
			Temperature	°F
				°C
				%
				Using the code
			Weight	ton
				kN
g				
oz				
%				
Using the code				
Volume	L			
	ml			
	kL			
	%			
	Using the code			

11

No.	Property	Function description																	
(2)	Source	<p> ■ When you select % (percentage) or Using the code as the unit for either the Source or Display, the percentage setting interface is enabled. When the percentage setting interface allows data input, you need to define values for 0% and 100% which unit setting refers to the Source. </p> <div> <p>Unit Conversion Settings</p> <p>Type: Speed</p> <p>* Source Unit: mm/sec</p> <p>Address: None</p> <p>* Display Unit: %</p> <p>Address: None</p> <p>Custom formula: Display value = Src value * A + B</p> <p>Variable A: 1.0 Floating</p> <p>Variable B: 0.0 Floating</p> <p>Percentage (refer to the source unit)</p> <p>0%: 0.0 DWORD</p> <p>100%: 100.0 DWORD</p> <p>Unit: mm/sec</p> </div> <div> <p>Unit Conversion Settings</p> <p>Type: Speed</p> <p>* Source Unit: Using the code</p> <p>Address: None</p> <p>* Display Unit: inch/sec</p> <p>Address: None</p> <p>Custom formula: Display value = Src value * A + B</p> <p>Variable A: 1.0 Floating</p> <p>Variable B: 0.0 Floating</p> <p>Percentage (refer to the source unit)</p> <p>0%: 0.0 DWORD</p> <p>100%: 100.0 DWORD</p> <p>Unit: mm/sec, mm/sec, inch/sec</p> <p>? Unit codes shown as below:</p> <p>mm/sec : 101</p> <p>inch/sec : 102</p> <p>% : 700</p> </div> <p> ■ When you select Using the code as the unit, it means you can enter variables to specify the unit codes for the Source and Display. The unit codes are as follows: </p> <table border="1"> <thead> <tr> <th>Type</th> <th>Unit</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Speed</td> <td>mm/sec</td> <td>101</td> </tr> <tr> <td>inch/sec</td> <td>102</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="3">Pressure</td> <td>kg/cm</td> <td>201</td> </tr> <tr> <td>bar</td> <td>202</td> </tr> <tr> <td>%</td> <td>700</td> </tr> </tbody> </table>	Type	Unit	Code	Speed	mm/sec	101	inch/sec	102	%	700	Pressure	kg/cm	201	bar	202	%	700
Type	Unit	Code																	
Speed	mm/sec	101																	
	inch/sec	102																	
	%	700																	
Pressure	kg/cm	201																	
	bar	202																	
	%	700																	

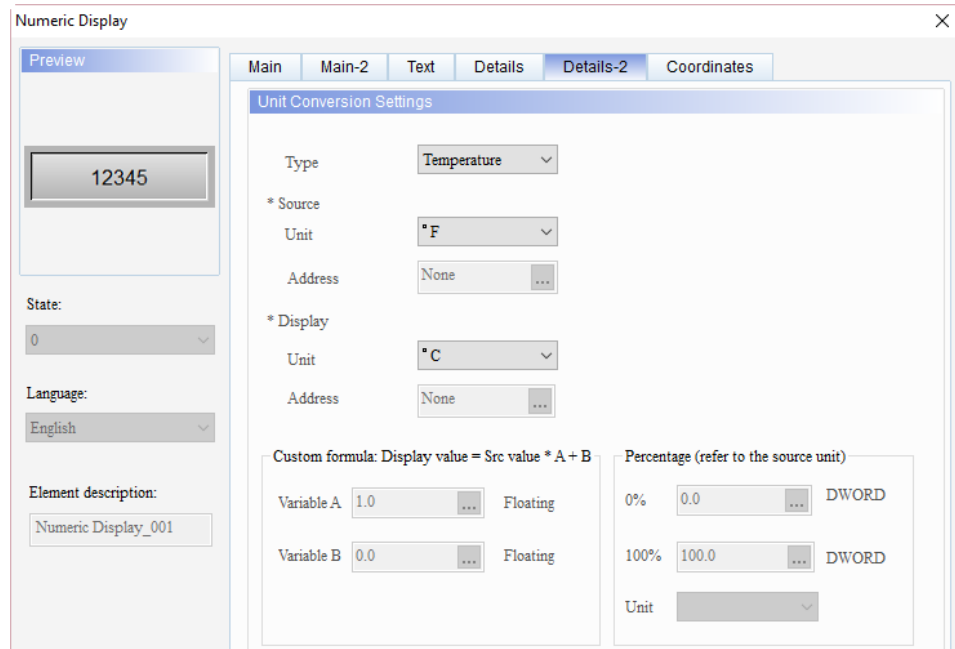
No.	Property		Function description		
			Type	Unit	Code
(2)	Source	Unit	Location (position)	mm	301
				inch	302
				%	700
			Temperature	°F	401
				°C	402
				%	700
			Weight	ton	501
				kN	502
				g	503
				oz	504
				%	700
			Volume	L	601
				ml	602
				kL	603
%	700				
	Address	<ul style="list-style-type: none"> ■ User-defined address is only available when you select Using the code for the Unit option. ■ If both the Source and Display select Using the code as the unit, do not use the same address. 			
(3)	Display	Unit	<ul style="list-style-type: none"> ■ Please refer to the description for Source. 		
		Address	<ul style="list-style-type: none"> ■ User-defined address is only available when you select Using the code for the Unit option. ■ If both the Source and Display select Using the code as the unit, do not use the same address. 		
(4)	Custom formula	Variable A	<ul style="list-style-type: none"> ■ You can input external / internal memory addresses and constants for both Variable A and Variable B. 		
		Variable B	<ul style="list-style-type: none"> ■ To set the Custom formula, you have to enter values for Variable A and Variable B. When the Data Type is Floating, the formula is [Display value = Source value * A + B]. 		
(5)	Percentage settings	0%	<ul style="list-style-type: none"> ■ You can input external / internal memory addresses and constants for both setting values of 0% and 100%. 		
		100%	<ul style="list-style-type: none"> ■ When you select % (percentage) or Using the code as the unit for either the Source or Display, the percentage setting interface is enabled. 		
		Unit	It is subject to change based on the Unit setting of Source. For the speed setting, if you select % (percentage) or Using the code as the Source unit, you can select mm/sec or inch/sec from the Unit drop-down list in the Percentage setting; if you select mm/sec for the Source unit, mm/sec is the only unit available in the Percentage setting.		

Table 11.1.3 Unit Conversion example

Unit conversion (fixed unit)				
Read Address	Numeric Display element (Display)		Numeric Entry element (Source)	
	Read Address	\$10	Write Address	\$10
				
Settings	Numeric Display / Numeric Entry element			
	Data Type	Data Format	Integer Digits	Fractional (Digits)
	Word	Unsigned Decimal	5	0

- Double-click the Numeric Display element and go to the Details-2 page. Select Temperature for Type and °F for Source unit and °C for Display unit.

Unit settings

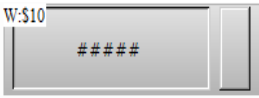




11

Unit conversion (fixed unit)	
<p>Unit settings</p>	<ul style="list-style-type: none"> Since the Numeric Entry element does not need unit conversion, please set Type to Disable.
<p>Execution results</p>	<p>After creating the elements, please compile and download the data to the HMI. Then, enter 50 (°F) with the Numeric Entry element and the Numeric Display element will convert the temperature to 10°C.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Display (°C)</p> </div> <div style="text-align: center;"> <p>Source (°F)</p> </div> </div>

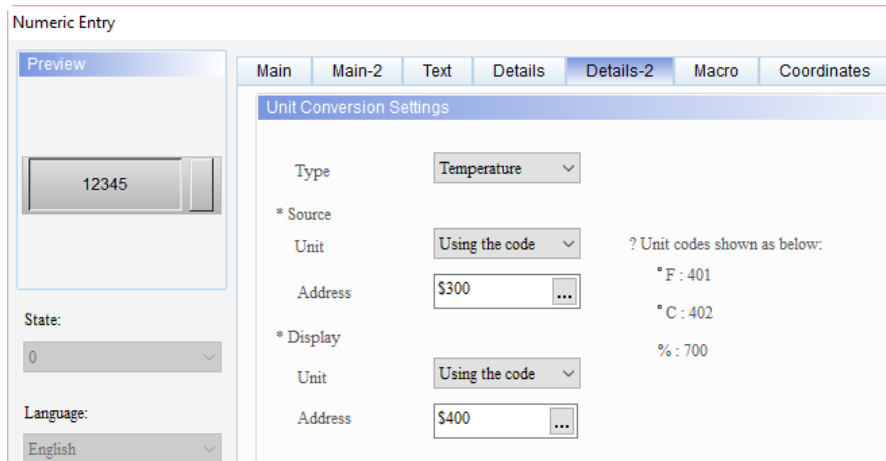
Table 11.1.4 Unit Conversion example

11

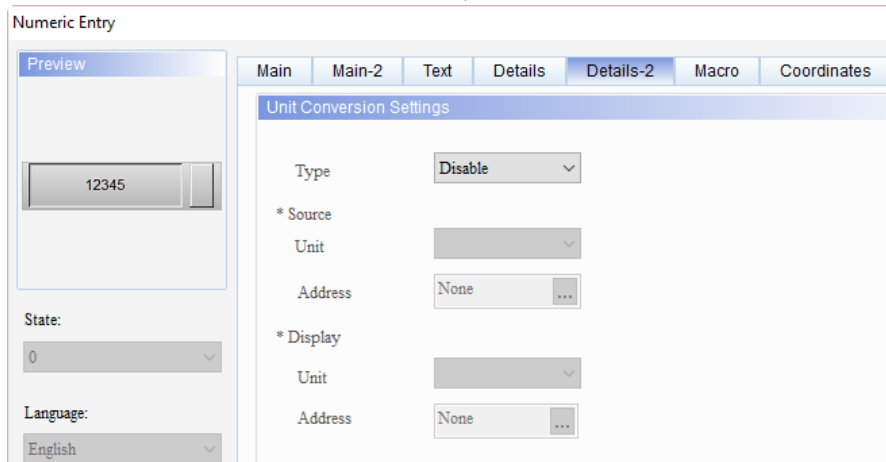
Unit conversion (Using the code)						
Read Address	Numeric Entry element		Numeric Entry element (Source)		Numeric Entry element (Display)	
	Read Address	\$10	Write Address	\$300	Write Address	\$400
						
Settings	Numeric Entry element					
	Data Type	Data Format	Integer Digits	Fractional (Digits)		
	Word	Unsigned Decimal	5	0		

- Double-click the Numeric Entry element of \$10 and go to Details-2. Select Temperature for Type. For the Source settings, select Using the code for Unit and \$300 for Address; for the Display settings, select Using the code for Unit and \$400 for Address.

Unit settings



- Since the Numeric Entry elements of \$300 and \$400 do not need unit conversion, please select Disable for Type.



Unit conversion (Using the code)

Execution results

- When you have created the elements, please compile and download the data to the HMI and then enter 50 for \$10.

\$10

50

0

0

Source \$300

Display \$400

- Enter 401 (means °F) for \$300 and enter 402 (means °C) for \$400, then \$10 converts the value to 10°C.

\$10

10

401

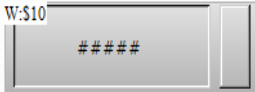

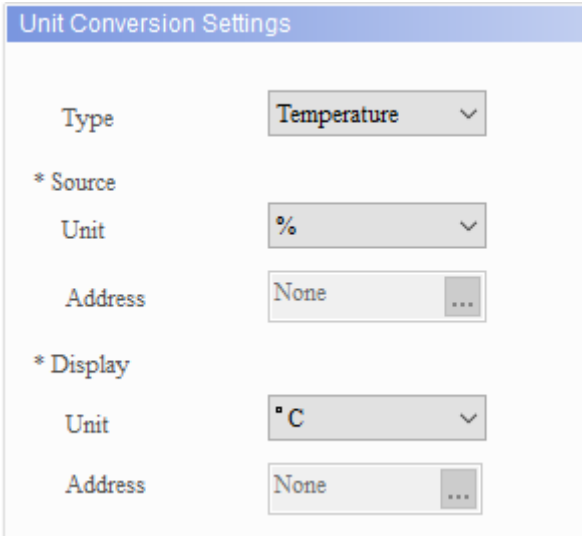
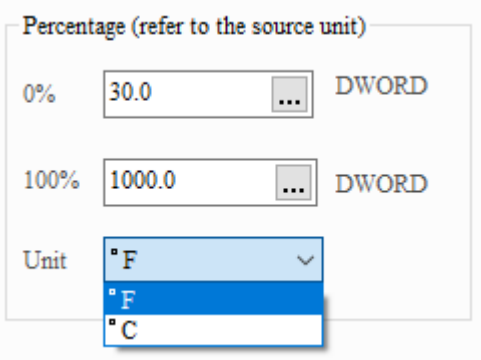
402

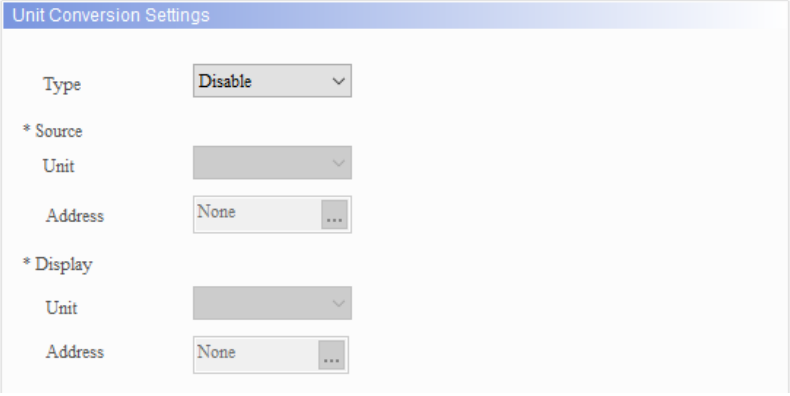


Source \$300

Display \$400

Table 11.1.5 Unit Conversion example

11

Unit conversion (percentage)				
Read Address	Numeric Display element		Numeric Entry element (Source)	
	Read Address	\$10	Write Address	\$10
				
Settings	Numeric Display / Numeric Entry element			
	Data Type	Data Format	Integer Digits	Fractional (Digits)
	Word	Unsigned Decimal	5	0
Unit settings	<ul style="list-style-type: none"> Double-click the Numeric Display element of \$10. Go to the Details-2 page, select Temperature for Type, and set the Source unit to % and the Display unit to °C. 			
	 <ul style="list-style-type: none"> Set the percentage 0% to 30.0 and 100% to 1000.0. Since the Source unit is %, the percentage setting unit can be °F or °C. In this example, °F is used as the reference unit. 			
				

Unit conversion (percentage)	
Unit settings	<p>Since the Numeric Entry element of \$10 does not need unit conversion, please select Disable for Type.</p> 
Execution results	<p>After creating the elements, please compile and download the data to the HMI. The value for the Numeric Entry element of \$10 is 0, so the Numeric Display element displays 30, meaning 0% equals value 30.</p>  <p>If you set \$10 to 100, the displayed value will be 1000, which means the value for 100% is 1000.</p> 

Coordinates

11

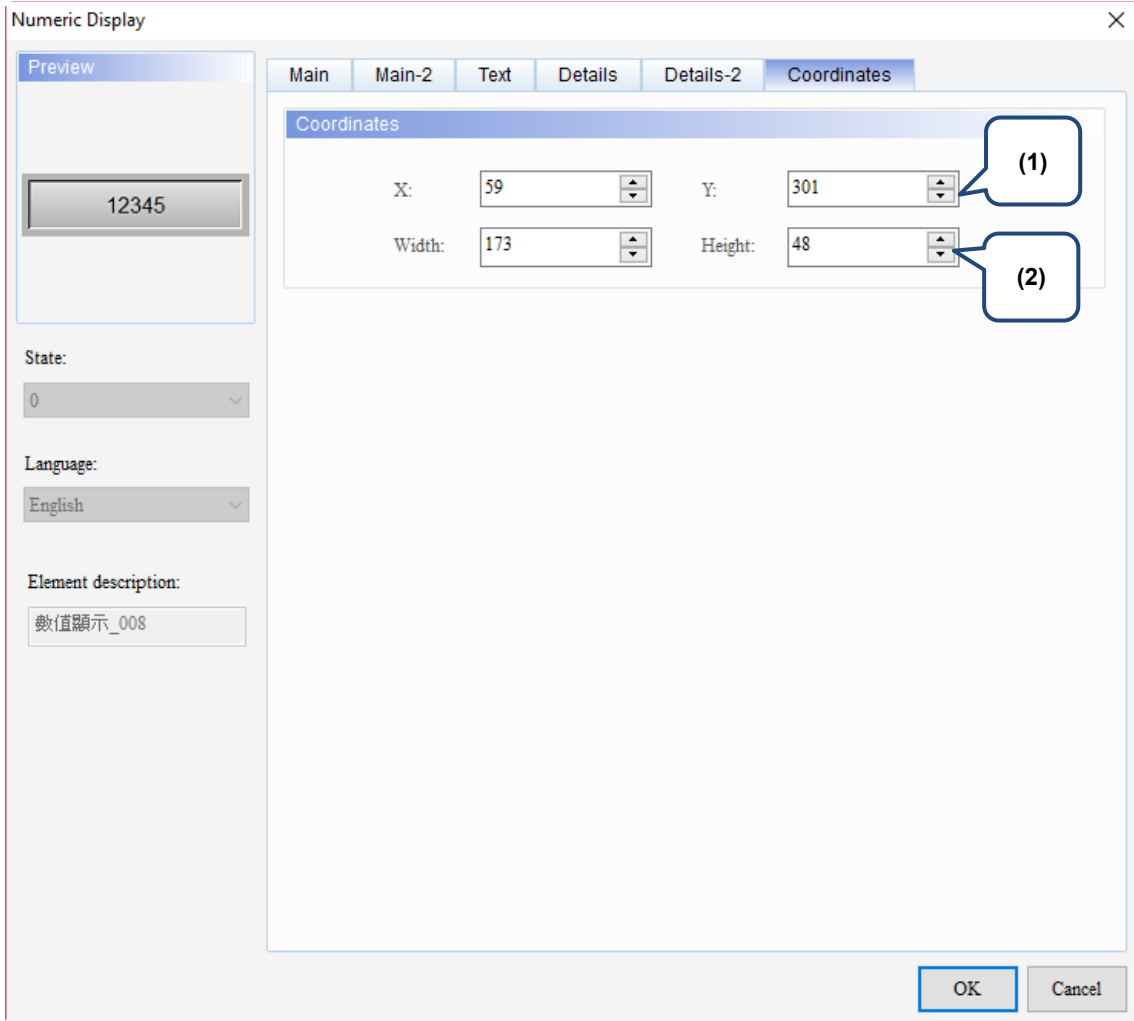
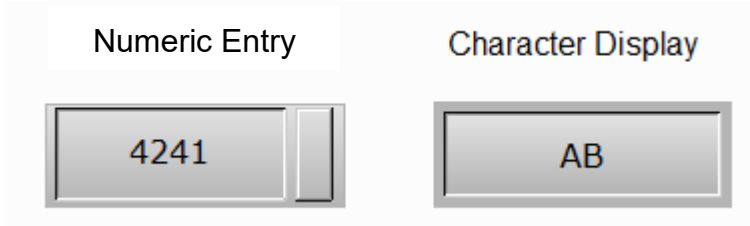


Figure 11.1.7 Coordinates property page for the Numeric Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

11.2 Character Display

The Character Display element is for displaying characters; therefore, the input values have to be readable ASCII codes. The software converts the ASCII codes into characters displaying on the Character Display element. The Character Display is an element reading byte data and the default data type of the Numeric Entry element is Word, which consists of double byte, so one word represents two bytes. Then, the high and low bytes of the value read by the Character Display element exchanges, and this result will be the actual characters displayed. For example, if \$0 is 4241 (Hex), it is displayed as “AB” after the exchange of high and low bytes.



The following conversion table shows the conversion between data formats and characters from A to G. The remaining characters can be deduced with the same pattern.

Table 11.2.1 ASCII code conversion table

Unsigned Decimal	Hexadecimal	Character
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G

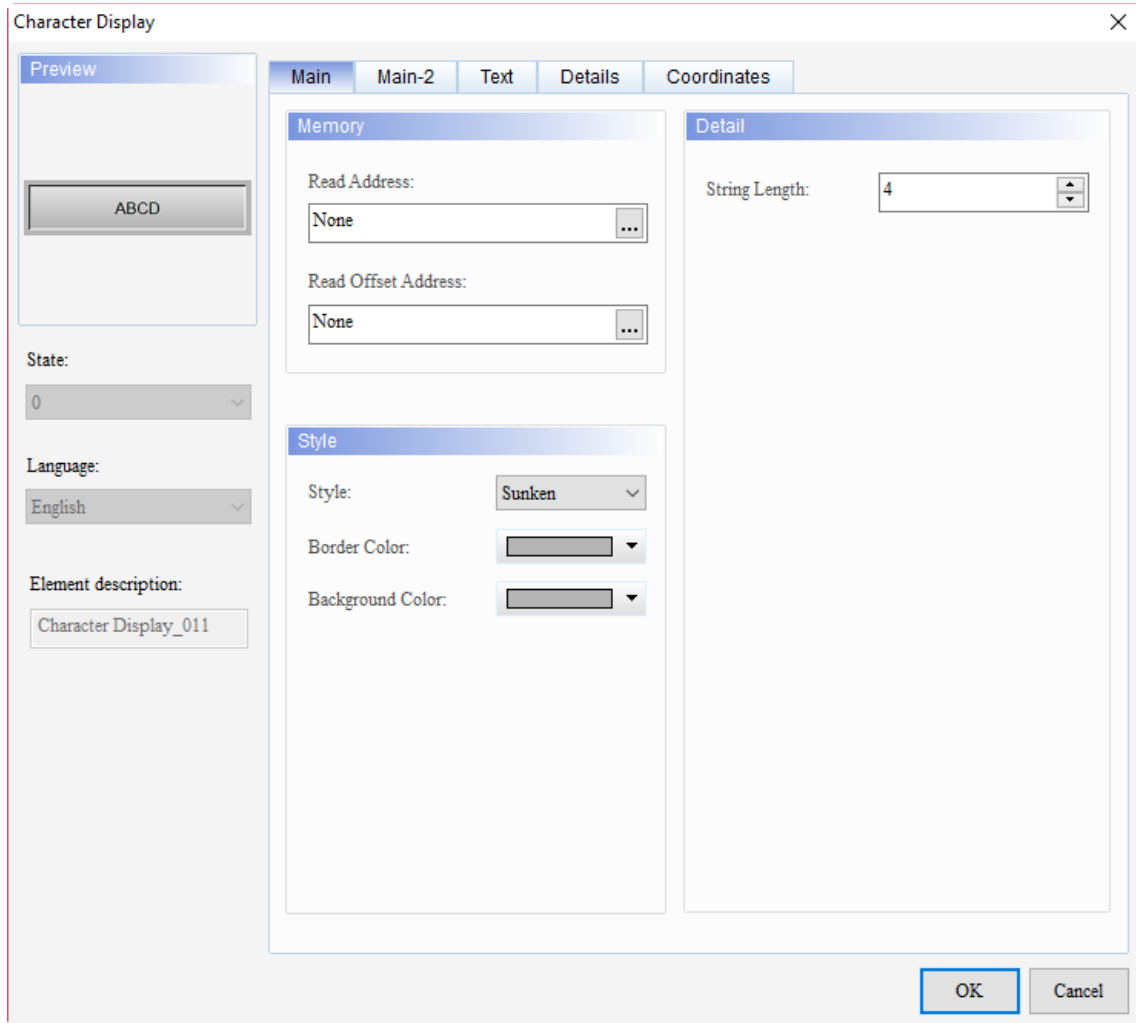
Please refer to Table 11.2.2 for the example of Character Display.

Table 11.2.2 Character Display example

11

Character Display																					
Read Address	Character Display element		Numeric Entry element																		
		Read Address	\$555	Write Address	\$555																
Settings	<ul style="list-style-type: none"> Set the String Length to 4 for the Character Display element. 																				
	<div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p>Detail</p> <p>String Length: <input style="width: 50px;" type="text" value="4"/></p> </div> <ul style="list-style-type: none"> The characters of the Character Display will display the corresponding value depending on the Data Format. Please refer to Table 11.2.1. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="3">Numeric Entry element</th> </tr> <tr> <th>Data Type</th> <th>Data Format</th> <th>Integer Digits</th> </tr> </thead> <tbody> <tr> <td>Word</td> <td>Unsigned Decimal</td> <td>4</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="3">Numeric Entry element</th> </tr> <tr> <th>Data Type</th> <th>Data Format</th> <th>Integer Digits</th> </tr> </thead> <tbody> <tr> <td>Word</td> <td>Hexadecimal</td> <td>4</td> </tr> </tbody> </table>				Numeric Entry element			Data Type	Data Format	Integer Digits	Word	Unsigned Decimal	4	Numeric Entry element			Data Type	Data Format	Integer Digits	Word	Hexadecimal
Numeric Entry element																					
Data Type	Data Format	Integer Digits																			
Word	Unsigned Decimal	4																			
Numeric Entry element																					
Data Type	Data Format	Integer Digits																			
Word	Hexadecimal	4																			
Execution results	<p>Compile and download the screen data to the HMI, then the Character Display will display the corresponding characters on the element based on the value of the Read Address and the set Data Format.</p>																				
	<div style="text-align: center;"> <p>Unsigned Decimal</p> <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid gray; padding: 5px; text-align: center;">Numeric Entry</td> <td style="border: 1px solid gray; padding: 5px; text-align: center;">Character Display</td> </tr> <tr> <td style="border: 1px solid gray; padding: 5px; text-align: center;">65</td> <td style="border: 1px solid gray; padding: 5px; text-align: center;">A</td> </tr> </table> <p>Hexadecimal</p> <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid gray; padding: 5px; text-align: center;">Numeric Entry</td> <td style="border: 1px solid gray; padding: 5px; text-align: center;">Character Display</td> </tr> <tr> <td style="border: 1px solid gray; padding: 5px; text-align: center;">41</td> <td style="border: 1px solid gray; padding: 5px; text-align: center;">A</td> </tr> </table> </div>				Numeric Entry	Character Display	65	A	Numeric Entry	Character Display	41	A									
Numeric Entry	Character Display																				
65	A																				
Numeric Entry	Character Display																				
41	A																				

When you double-click Character Display, the property setting page is as follows.



11

Figure 11.2.1 Properties of Character Display

Table 11.2.3 Function page of Character Display

Character Display	
Function page	Description
Preview	Character Display elements do not support multiple status values and multi-language data display.
Main	Set the Read Address, Read Offset Address, Style, Background Color, and Border Color. Set the String Length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the displaying text font, size, color, and alignment.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

11

■ Main

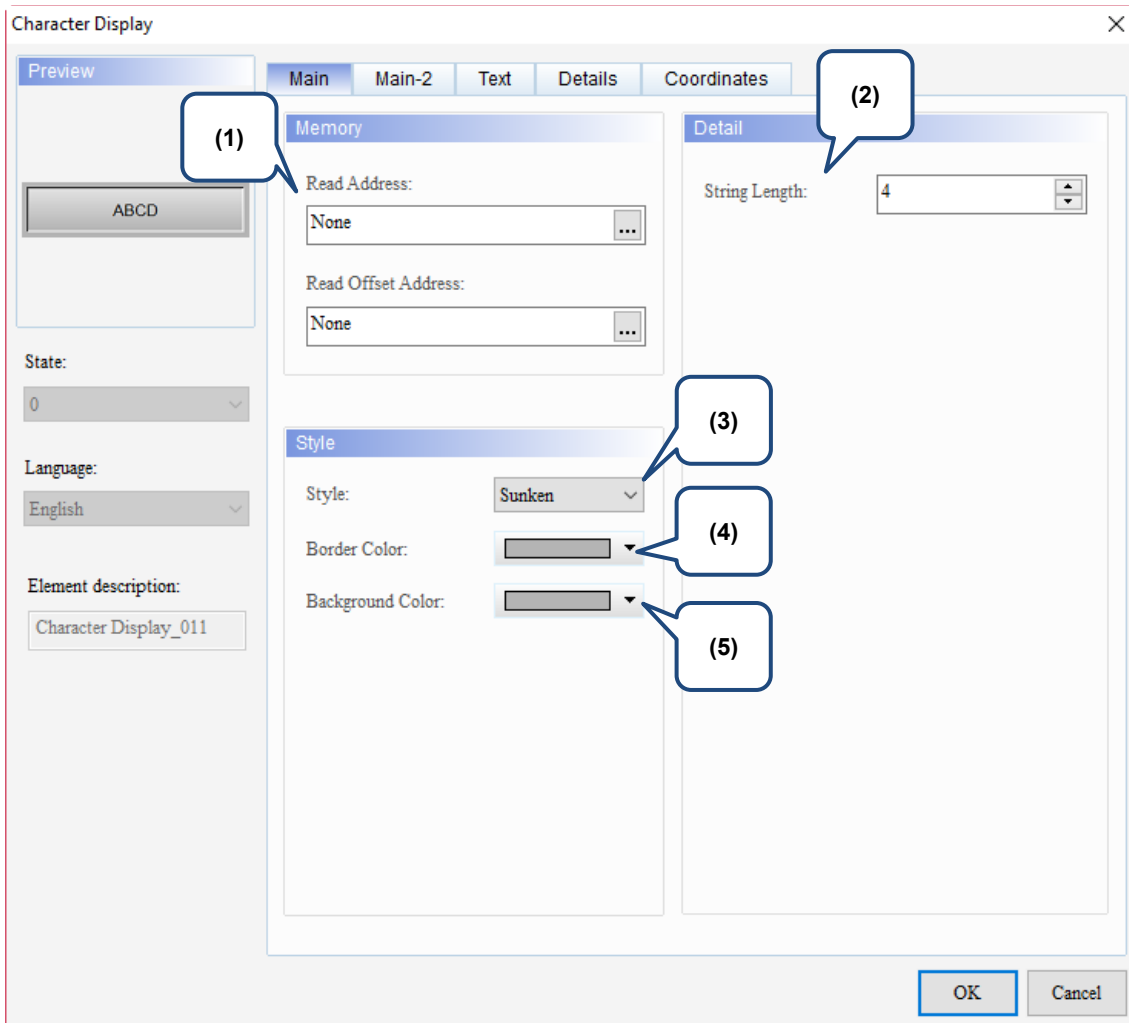










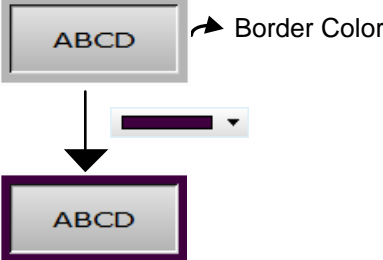
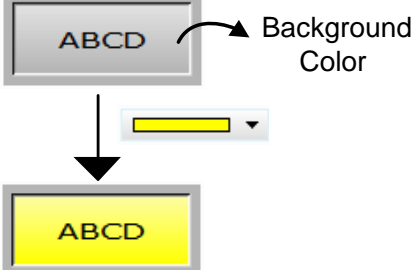


Figure 11.2.2. Main property page for the Character Display element

No.	Property	Function description						
(1)	Read Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Section 5.1. 						
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.						
(2)	String Length	The range of the String Length is 1 - 256.						
(3)	Style	There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.						
		<table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent		
Standard	Raised	Sunken	Transparent					
								

No.	Property	Function description
(4)	Border Color	<ul style="list-style-type: none"> ■ Set the border color. ■ When you set the element style to Transparent, the Border Color setting is invalid. 
(5)	Background Color	<ul style="list-style-type: none"> ■ Set the Background Color of the element. ■ When you set the element type to Transparent, the Background Color setting is invalid. 

11

■ Main-2

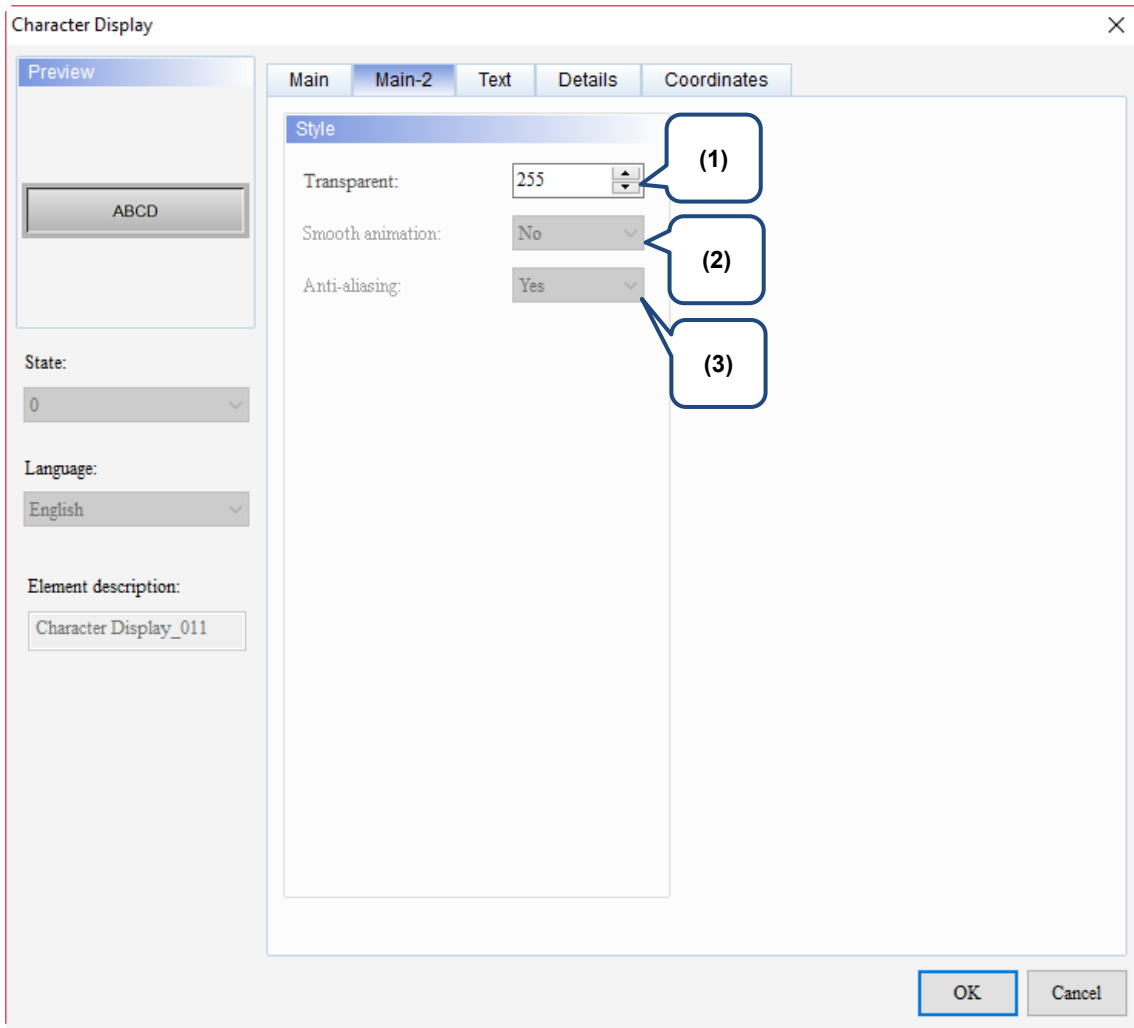
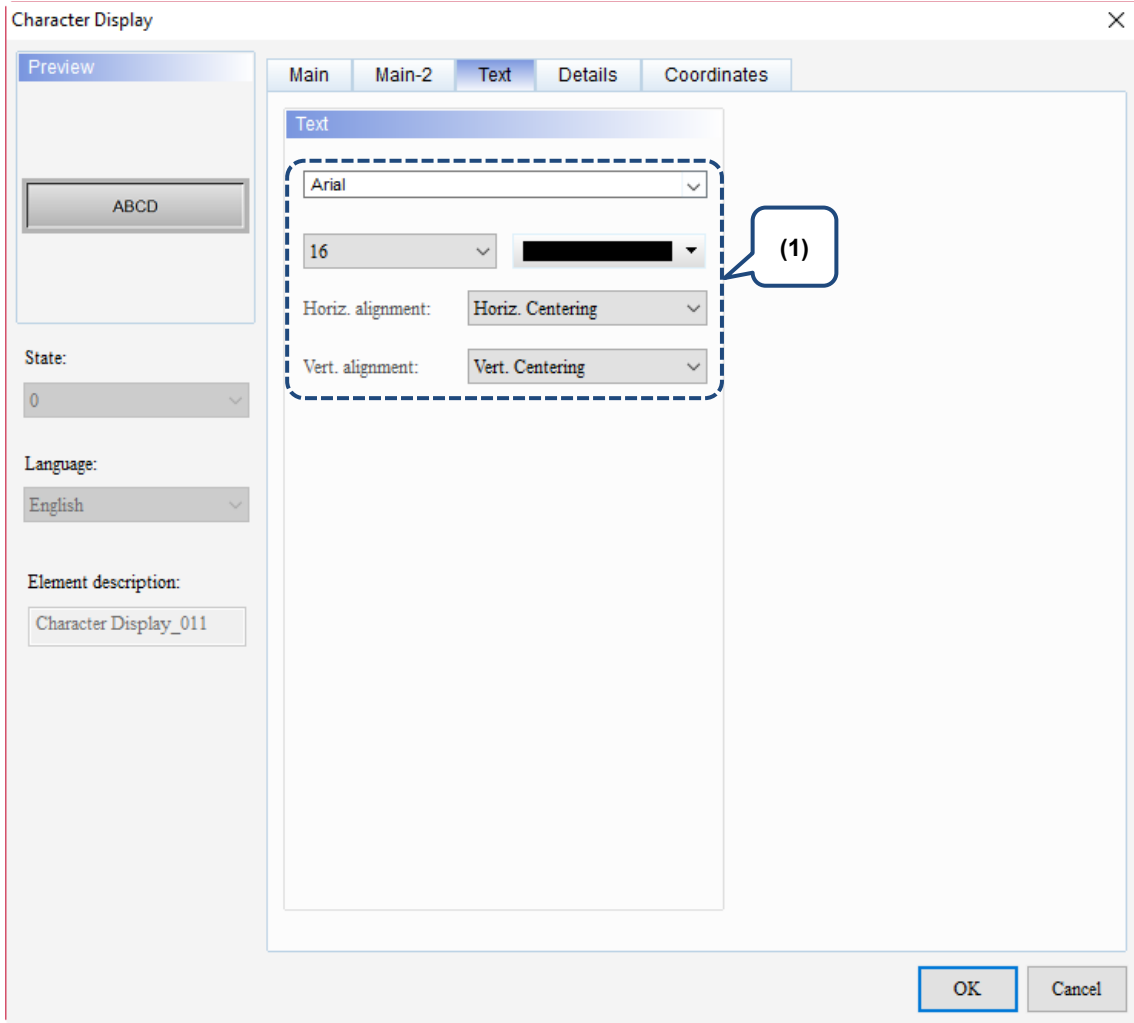


Figure 11.2.3. Main-2 property page for the Character Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text



11

Figure 11.2.4. Text property page for the Character Display element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

■ Details

11

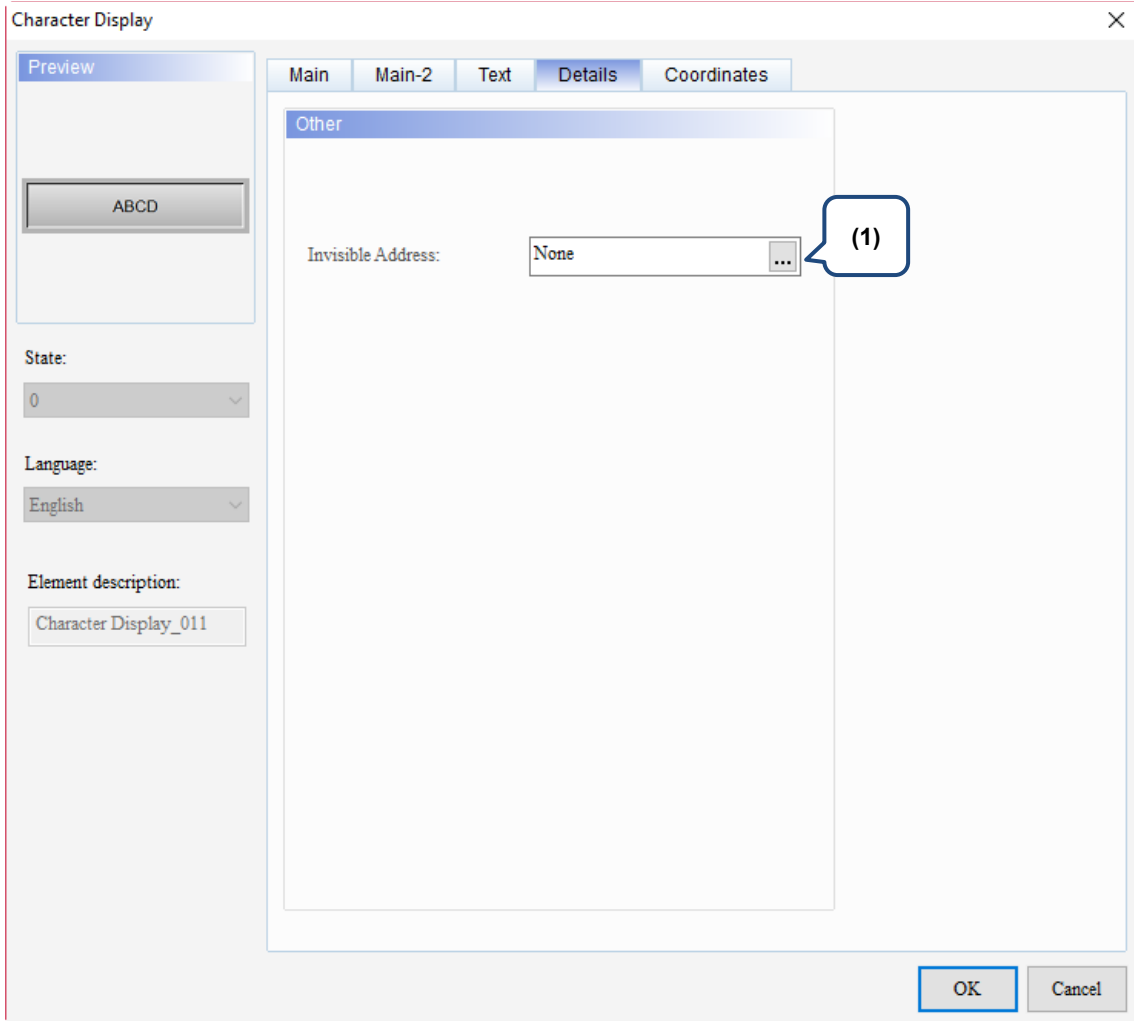
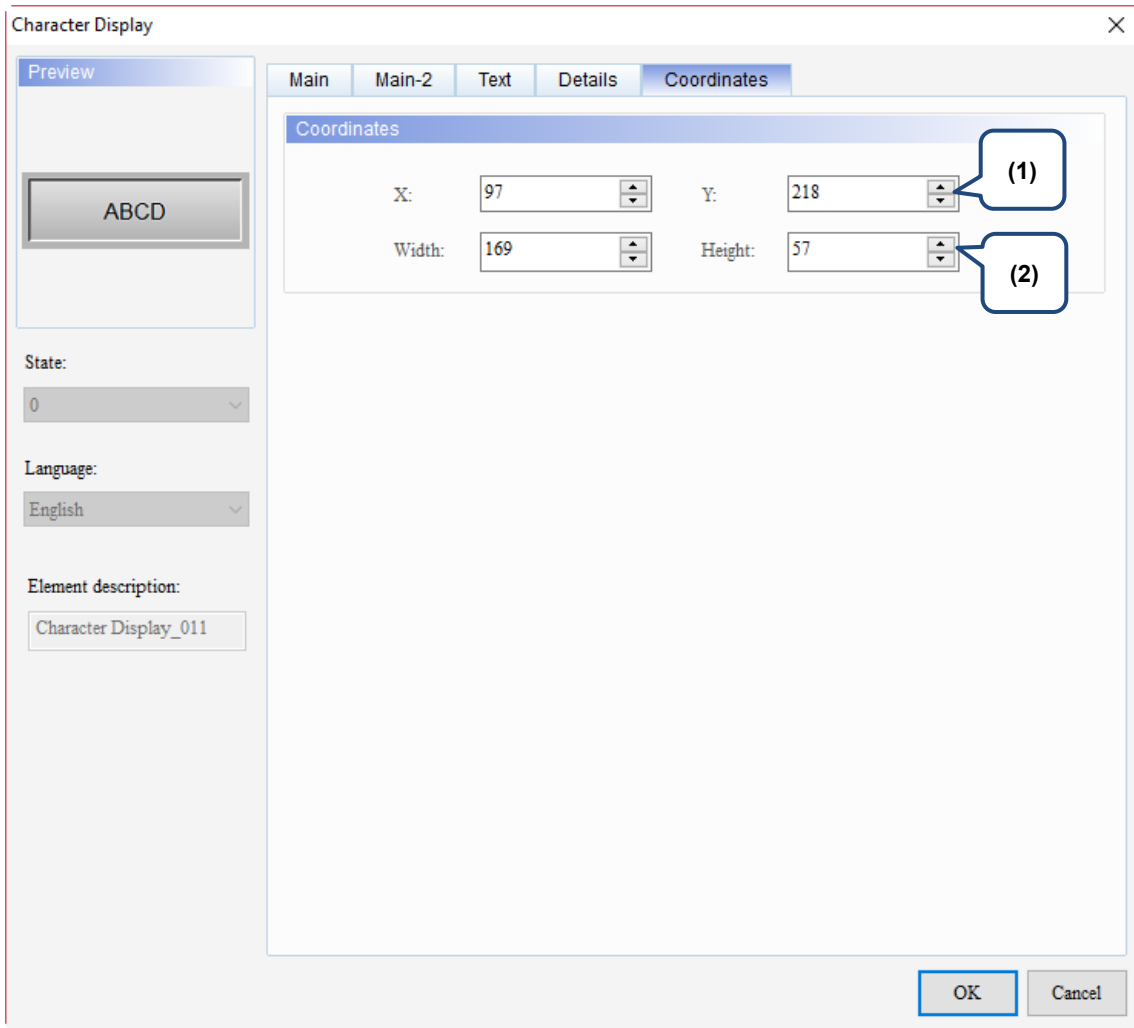


Figure 11.2.5 Details property page for the Character Display element

No.	Property	Function description
(1)	Invisible Address	<p>When Invisible Address is set to On, the Character Display element is invisible and you cannot execute its set functions.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid gray; padding: 5px; width: 150px; text-align: center;">Invisible Address is off</div> <div style="border: 1px solid gray; padding: 5px; width: 150px; text-align: center;">Invisible Address \$9.0 OFF</div> </div> <hr/> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid gray; padding: 5px; width: 150px; text-align: center;">Invisible Address is on</div> <div style="border: 2px dashed blue; padding: 5px; width: 150px; text-align: center;">Element is invisible</div> <div style="border: 1px solid gray; padding: 5px; width: 150px; text-align: center;">Invisible Address \$9.0 ON</div> </div>

■ Coordinates



11

Figure 11.2.6 Coordinates property page for the Character Display element

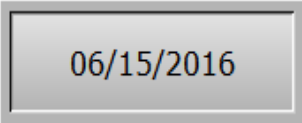
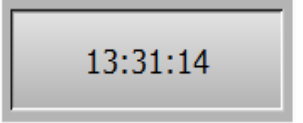

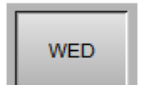
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

11

11.3 Date Display / Time Display / Week Display

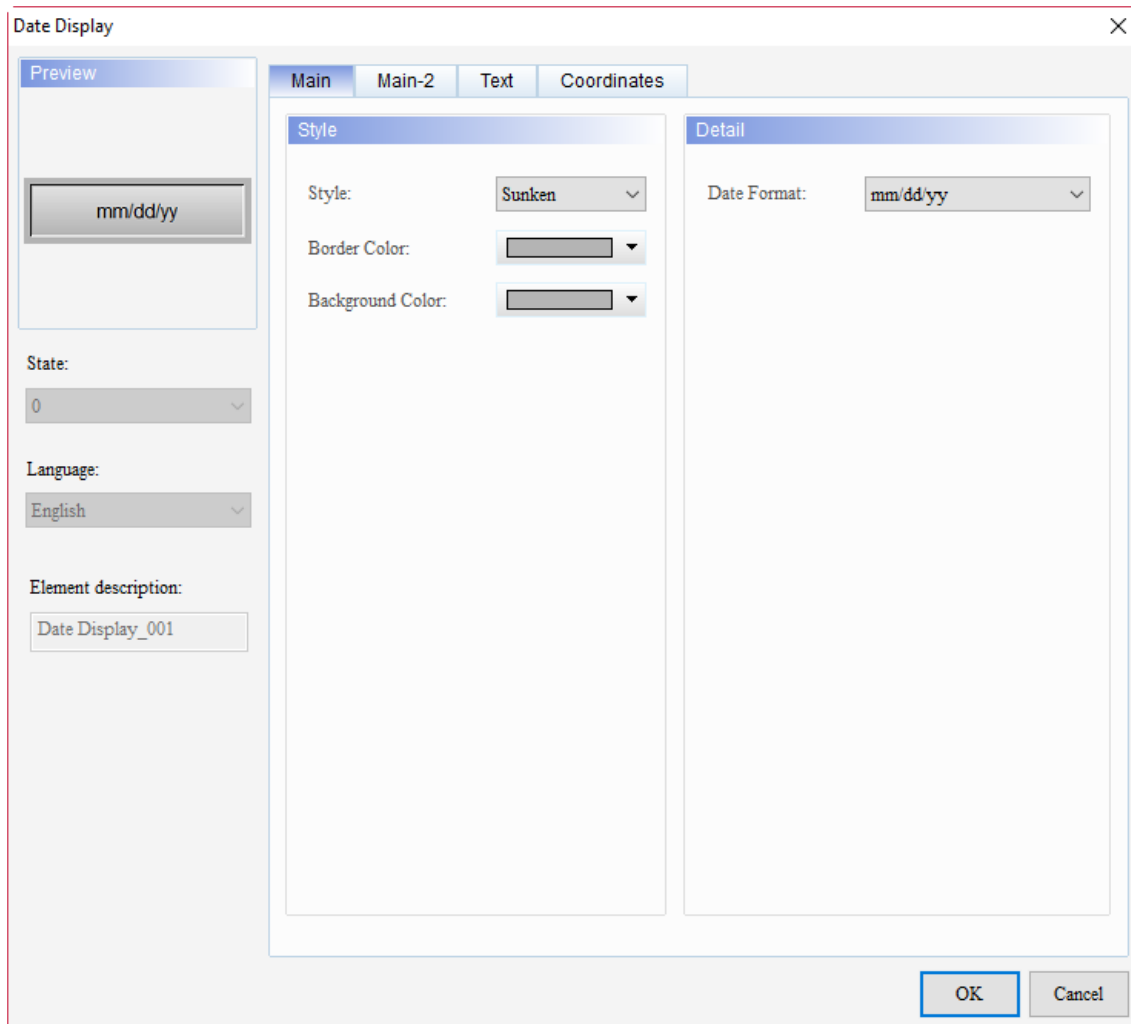
The Date Display, Time Display, and Week Display are mainly for displaying the date, time, and week of the HMI system. You can set the format of both the Date Display and Time Display and use the multi-language editing for the Week Display. Please refer to Table 11.3.1 Date Display / Time Display / Week Display example.

Table 11.3.1 Date Display / Time Display / Week Display example

Date Display / Time Display / Week Display																										
Date Display	Date Display element		Date Format																							
	Setting format	mm/dd/yy	mm/dd/yy dd/mm/yy dd.mm.yy yy.mm.dd yy/mm/dd mm.dd mm/dd																							
Time Display	Time Display element		Time Format																							
	Setting format	HH:MM:SS	HH:MM:SS HH:MM																							
Week Display	If you have set the multi-language data, then you can edit the element to display in multi-language.																									
	<table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>日</td> <td>SUN</td> </tr> <tr> <td>1</td> <td>一</td> <td>MON</td> </tr> <tr> <td>2</td> <td>二</td> <td>TUE</td> </tr> <tr> <td>3</td> <td>三</td> <td>WED</td> </tr> <tr> <td>4</td> <td>四</td> <td>THR</td> </tr> <tr> <td>5</td> <td>五</td> <td>FRI</td> </tr> <tr> <td>6</td> <td>六</td> <td>SAT</td> </tr> </tbody> </table>			State	Chinese	English	0	日	SUN	1	一	MON	2	二	TUE	3	三	WED	4	四	THR	5	五	FRI	6	六
State	Chinese	English																								
0	日	SUN																								
1	一	MON																								
2	二	TUE																								
3	三	WED																								
4	四	THR																								
5	五	FRI																								
6	六	SAT																								
Execution results	Compile and download the screen to the HMI, and the HMI screen displays as follows.																									
	Date Display	Time Display	Week Display																							
			Chinese 	English 																						

11.3.1 Date Display

When you double-click Date Display, the property setting page is shown as follows.



11

Figure 11.3.1.1 Properties of the Date Display

Table 11.3.1.1 Function page of Date Display

Date Display	
Function page	Description
Preview	The Date Display is for displaying the HMI system date. This element does not support multiple status values and multi-language display.
Main	Set the Style, Border Color, and Background Color of the element. Set the Date Format.
Text	Set the displaying text content, font, size, color, and alignment.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

11

■ Main

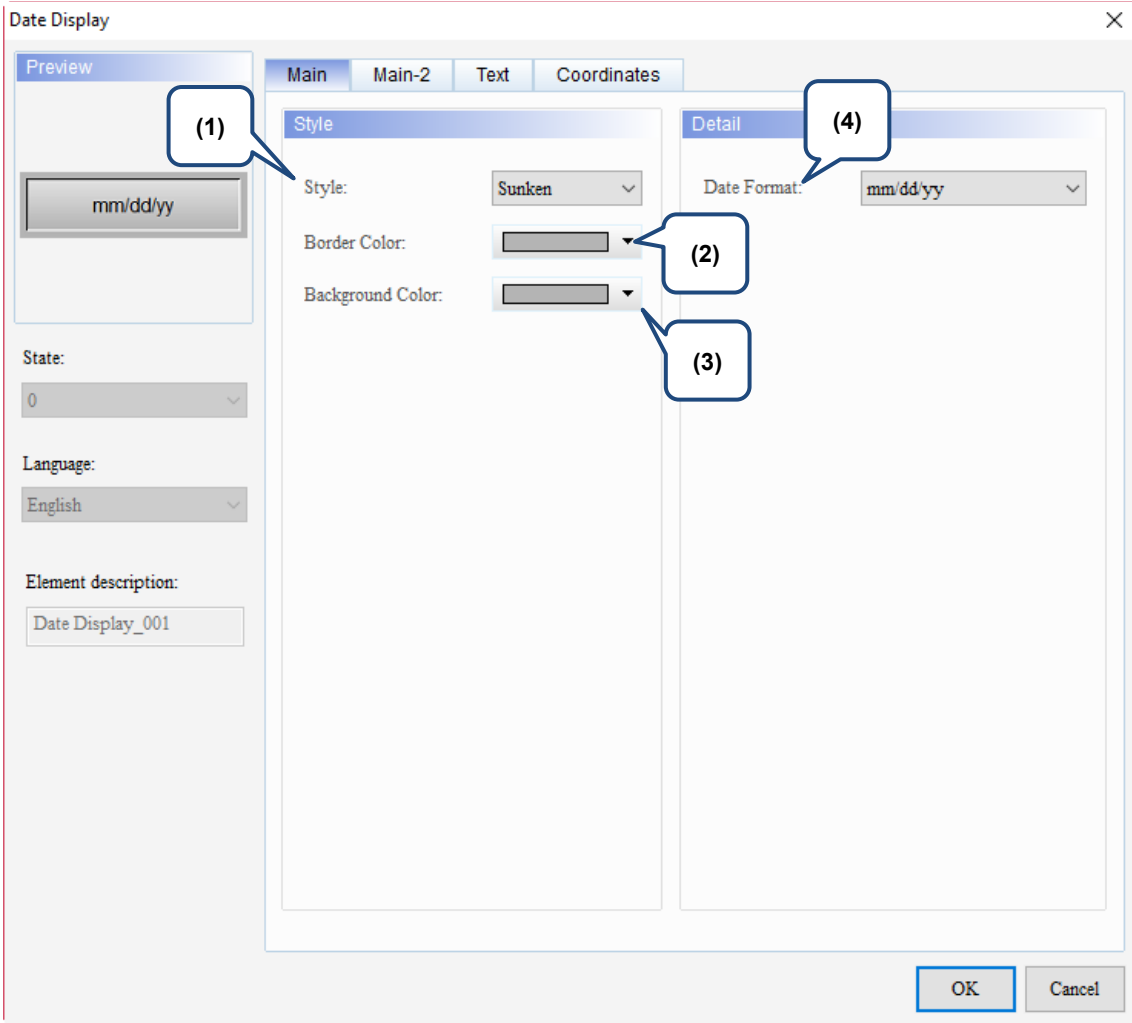
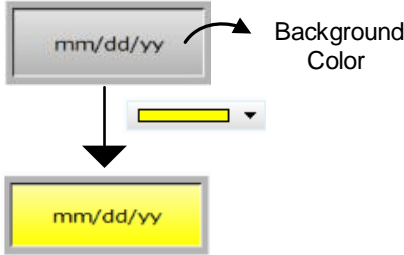
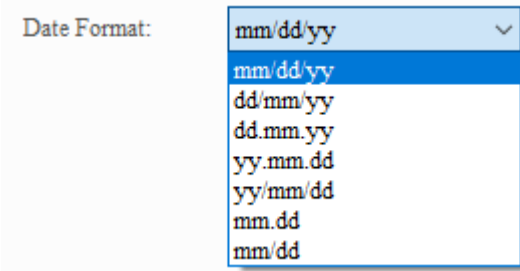


Figure 11.3.1.2 Main property page for the Date Display element

No.	Property	Function description								
(1)	Style	<p>There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
(2)	Border Color	<ul style="list-style-type: none"> Set the border color. When you set the element style to Transparent, the Border Color setting is invalid. 								

No.	Property	Function description
(3)	Background Color	<ul style="list-style-type: none"> ■ Set the Background Color of the element. ■ When you set the element style to Transparent, the Background Color setting is invalid. 
(4)	Date Format	<p>The software provides 7 date formats and you can select the format to display.</p> 

■ Main-2

11

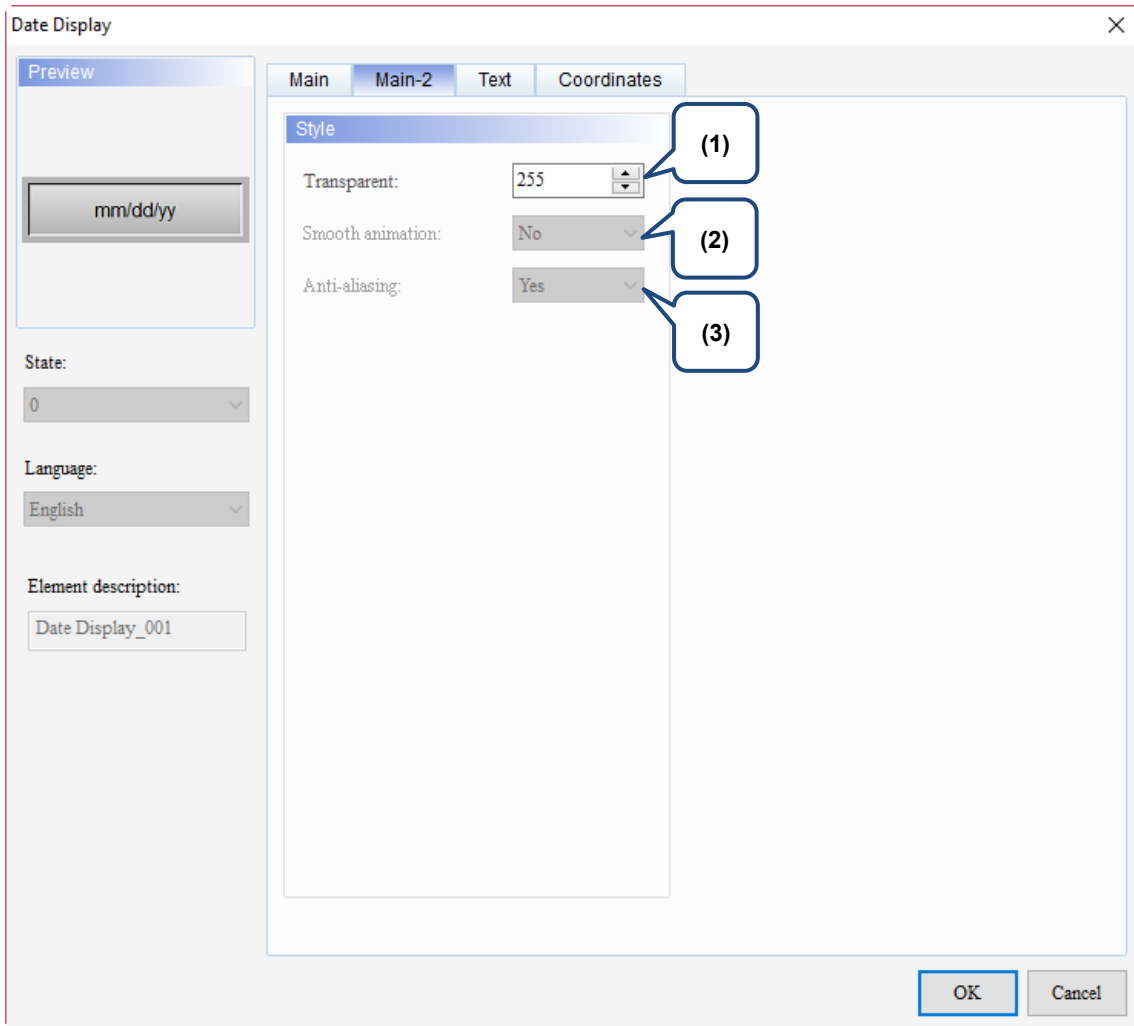
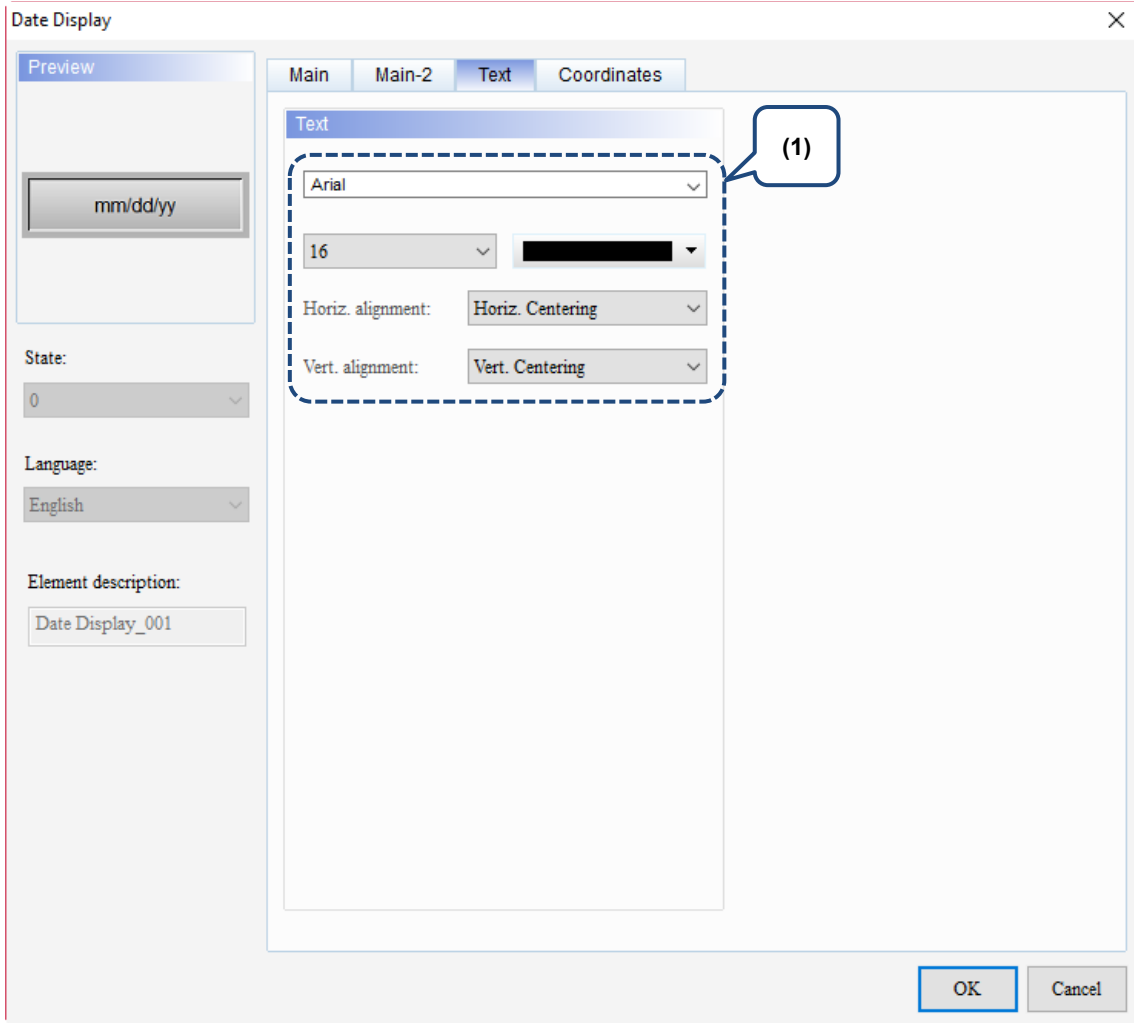


Figure 11.3.1.3 Main-2 property page for the Date Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text



11

Figure 11.3.1.4 Text property page for the Date Display element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

Coordinates

11

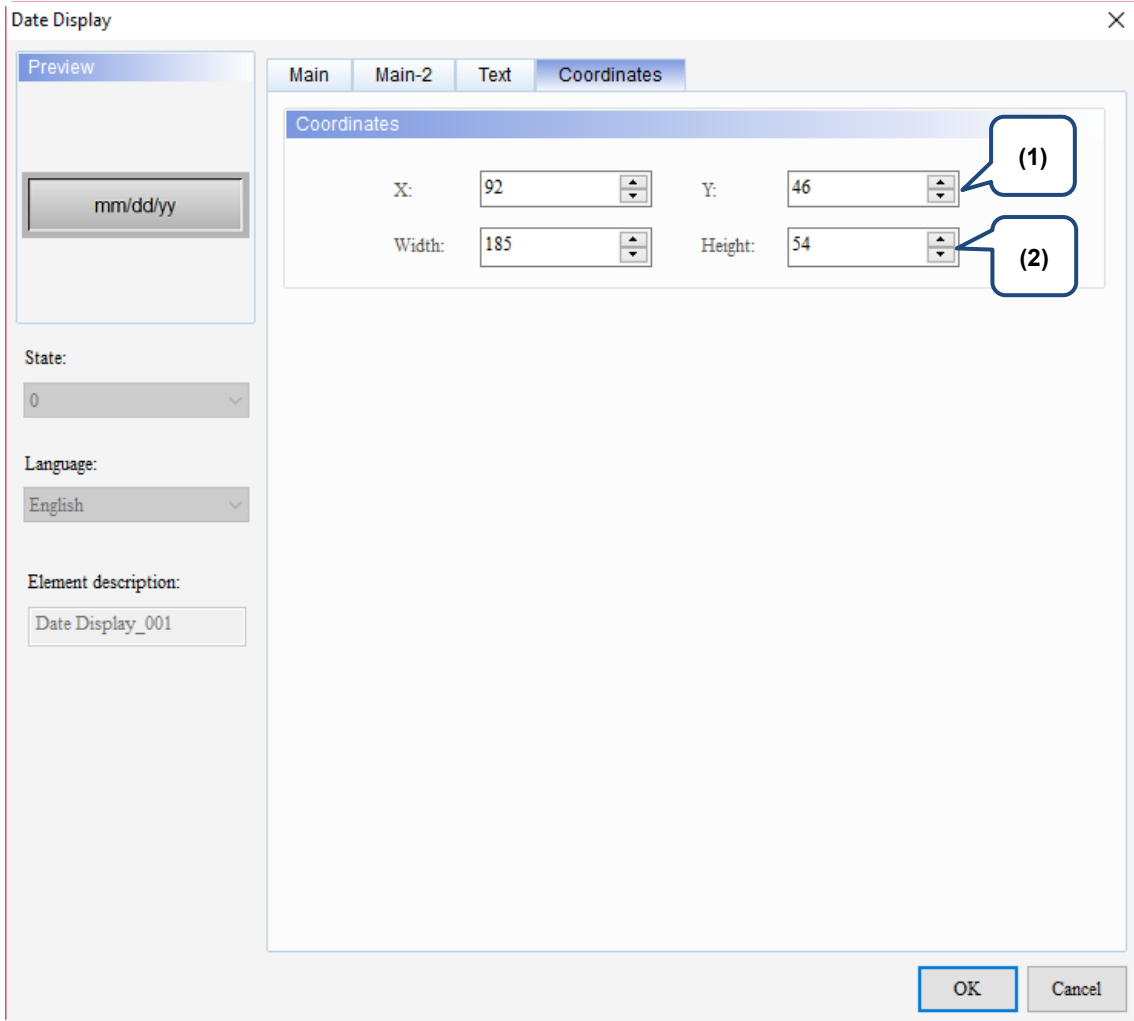
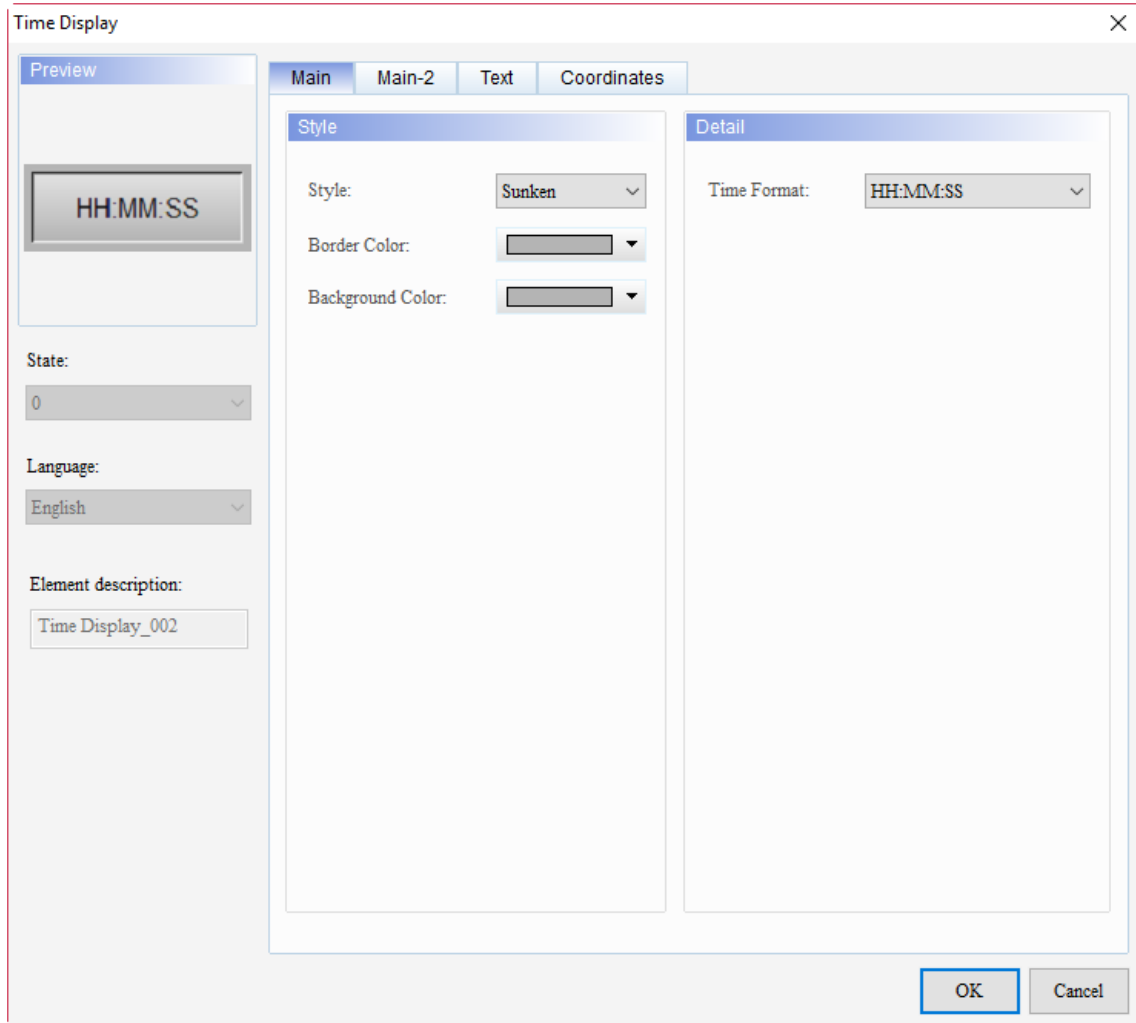


Figure 11.3.1.5 Coordinates property page for the Date Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

11.3.2 Time Display

When you double-click Time Display, the property setting page is shown as follows.



11

Figure 11.3.2.1 Properties of Time Display

Table 11.3.2.1 Function page of Time Display

Time Display	
Function page	Description
Preview	The Time Display is for displaying the HMI system time. This element does not support multiple status values and multi-language display.
Main	Set the Style, Border Color, and Background Color of the element. Set the Time Format.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the displayed text content, font, size, color, and alignment.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

11

■ Main

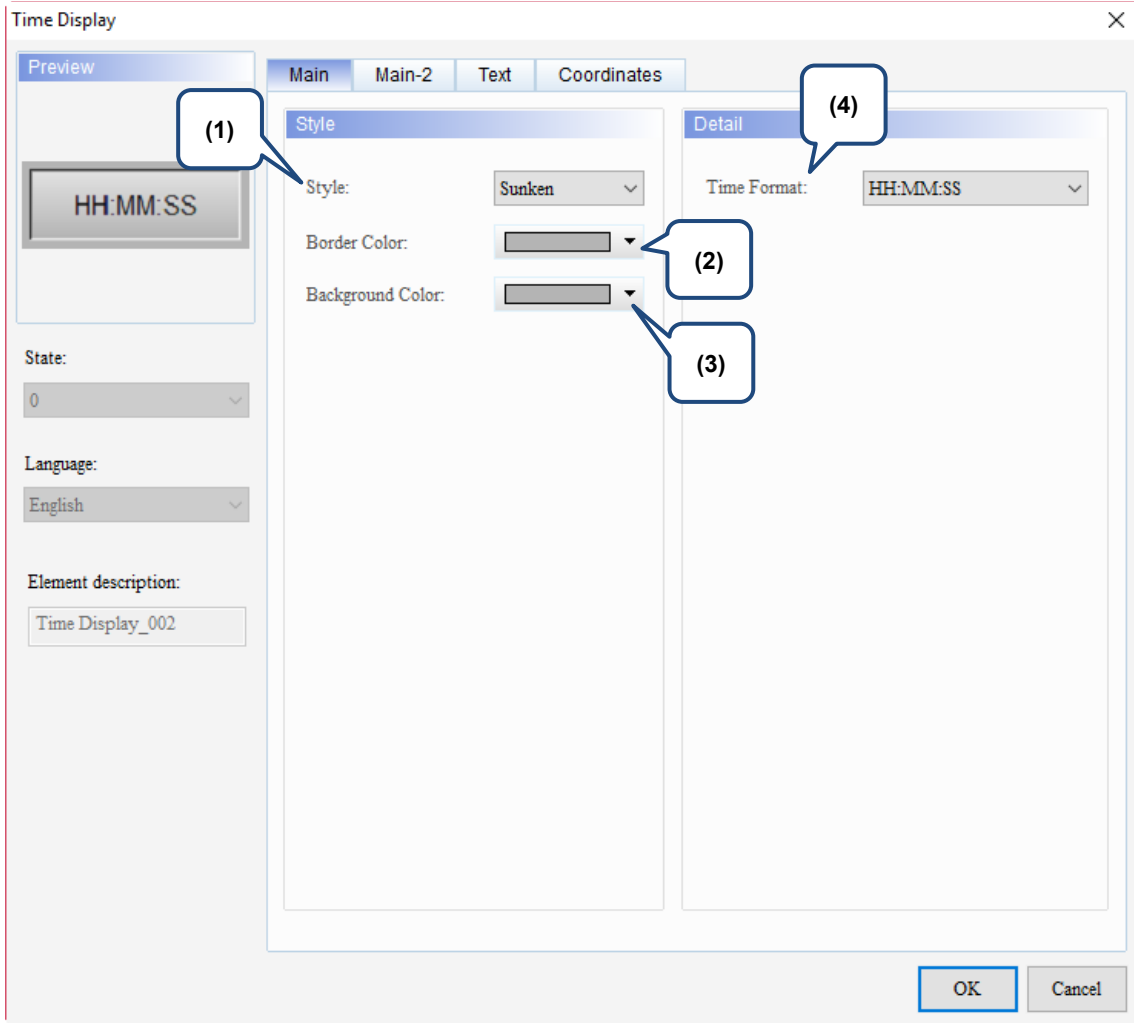
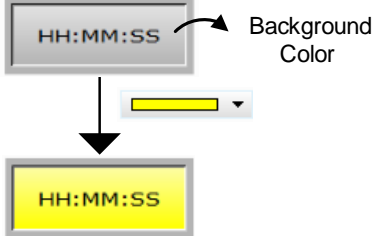
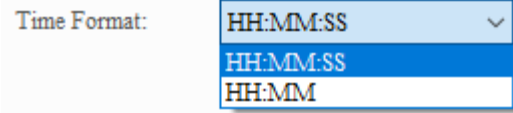


Figure 11.3.2.2 Main property page for the Time Display element

No.	Property	Function description								
(1)	Style	<p>There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
(2)	Border Color	<ul style="list-style-type: none"> Set the border color. When you set the element style to Transparent, the Border Color setting is invalid. 								

No.	Property	Function description
(3)	Background Color	<ul style="list-style-type: none"> ■ Set the Background Color of the element. ■ When you set the element style to Transparent, the Background Color setting is invalid. 
(4)	Time Format	<p>The software provides 2 time formats and you can choose the format to display.</p> 

■ Main-2

11

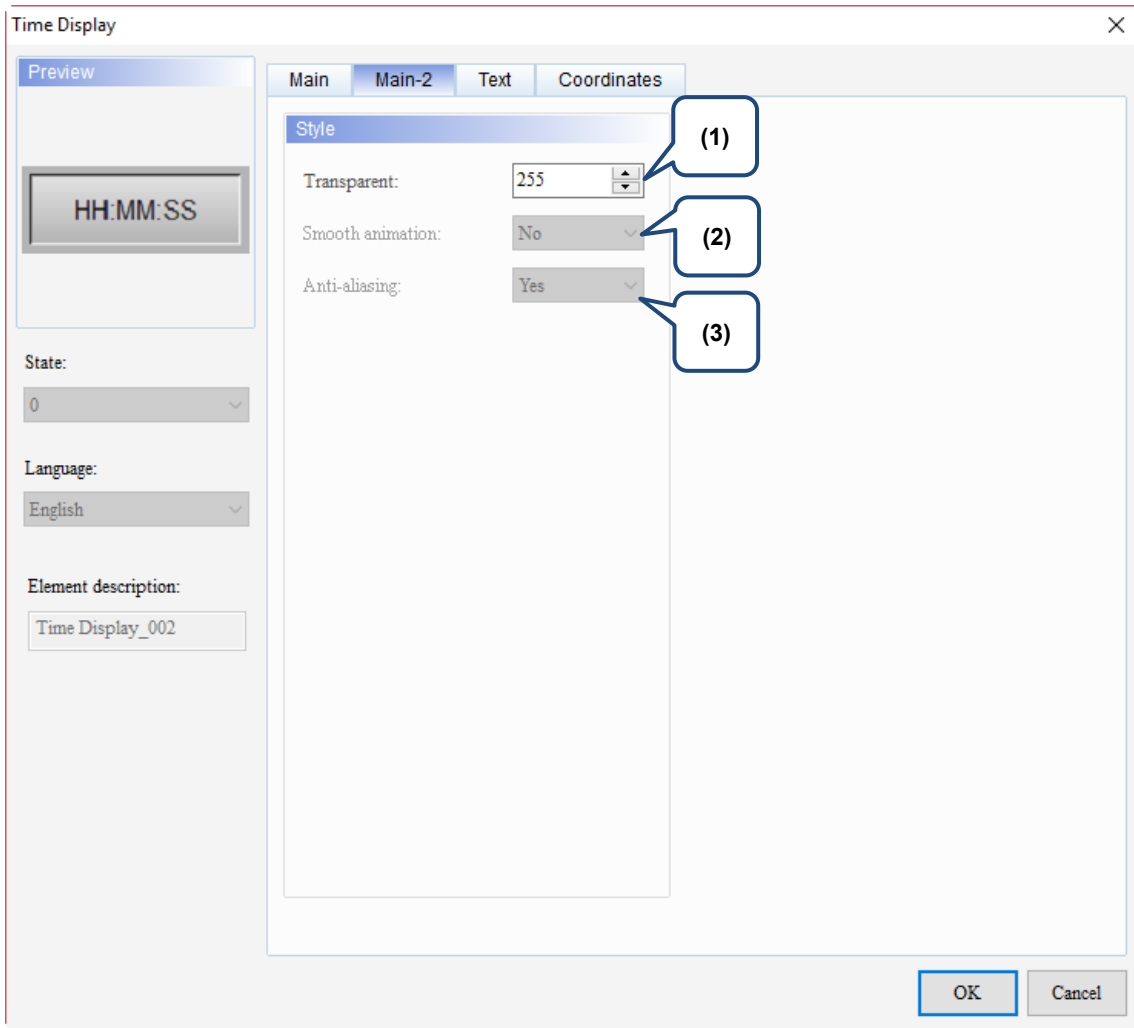
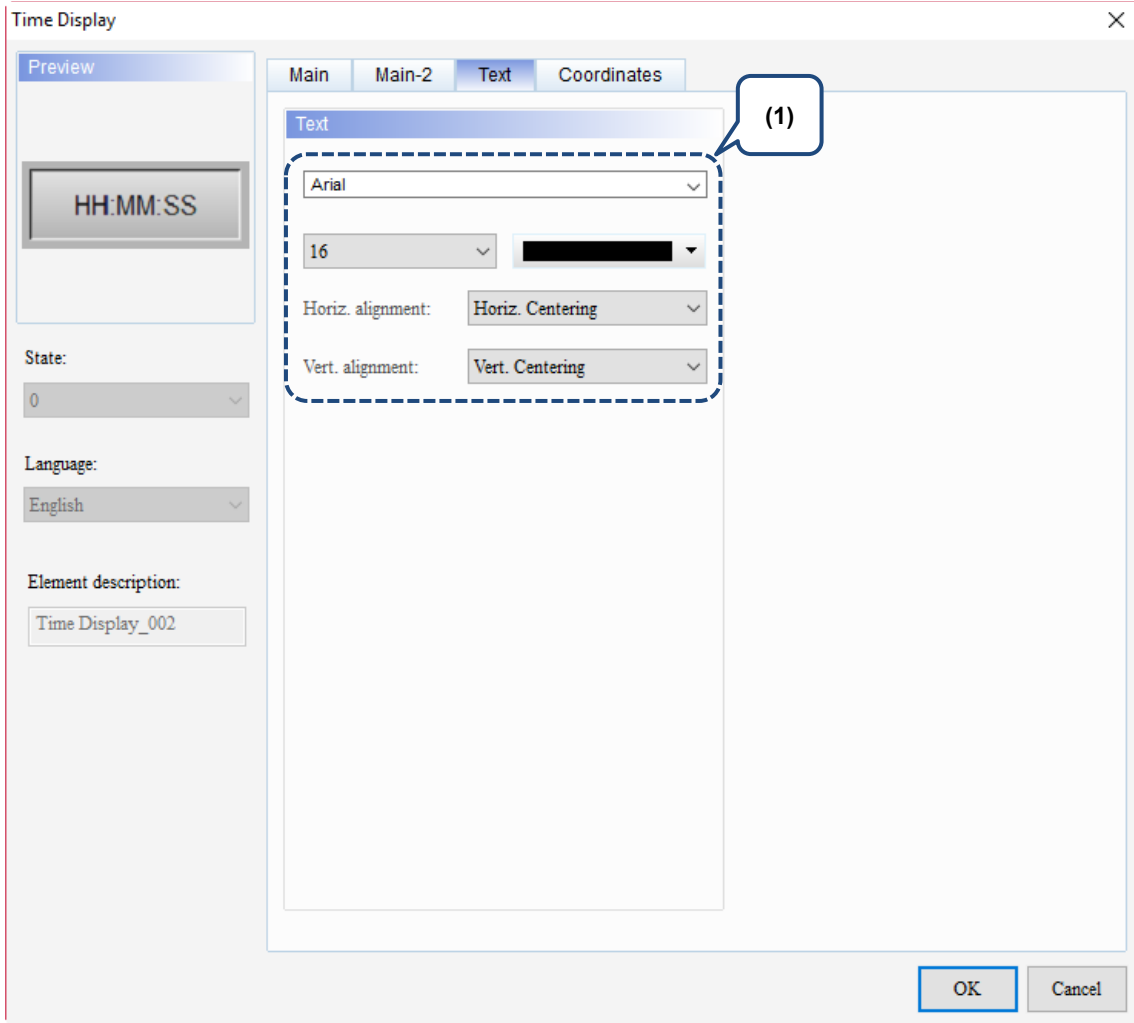


Figure 11.3.2.3 Main-2 property page for the Time Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text



11

Figure 11.3.2.4 Text property page for the Time Display element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

Coordinates

11

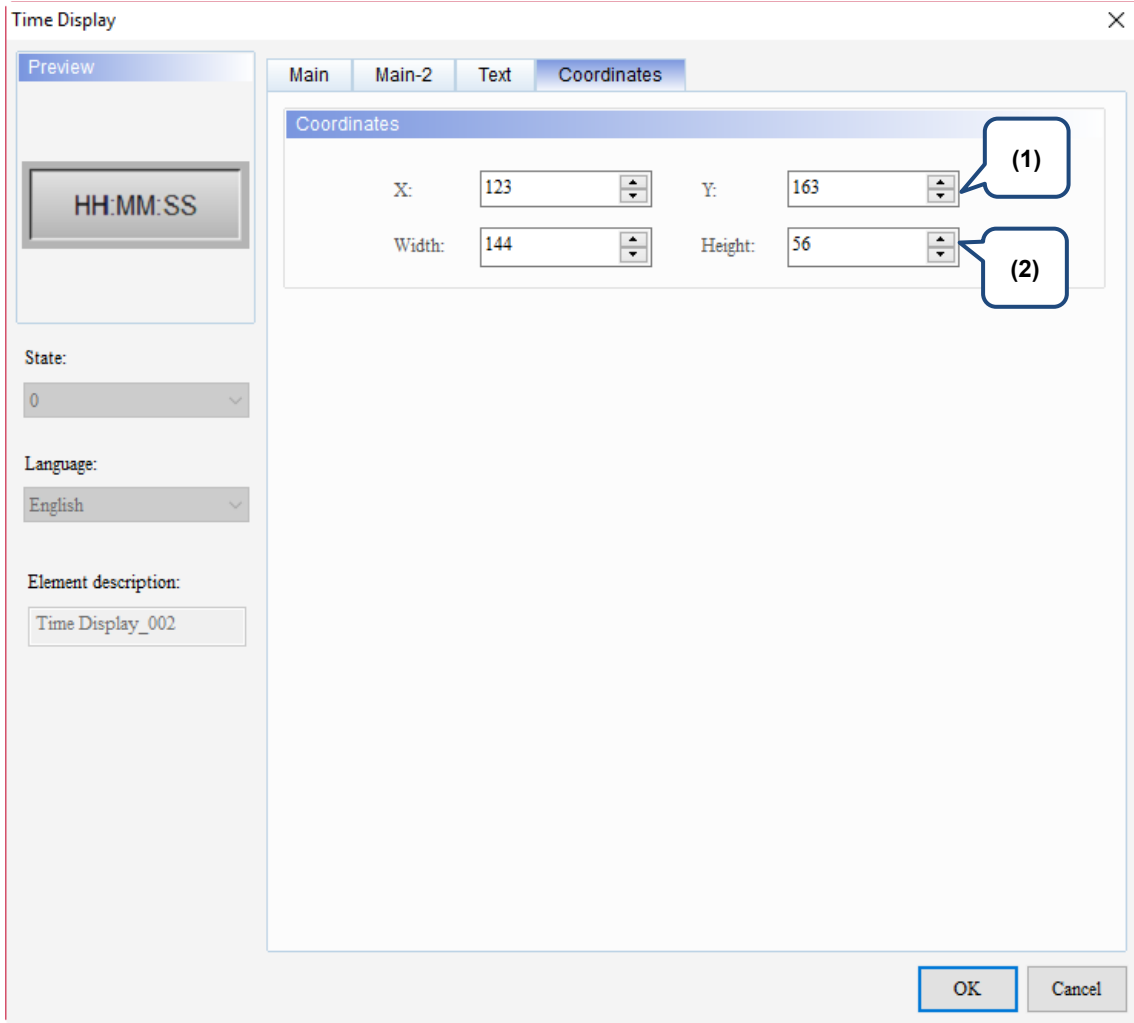
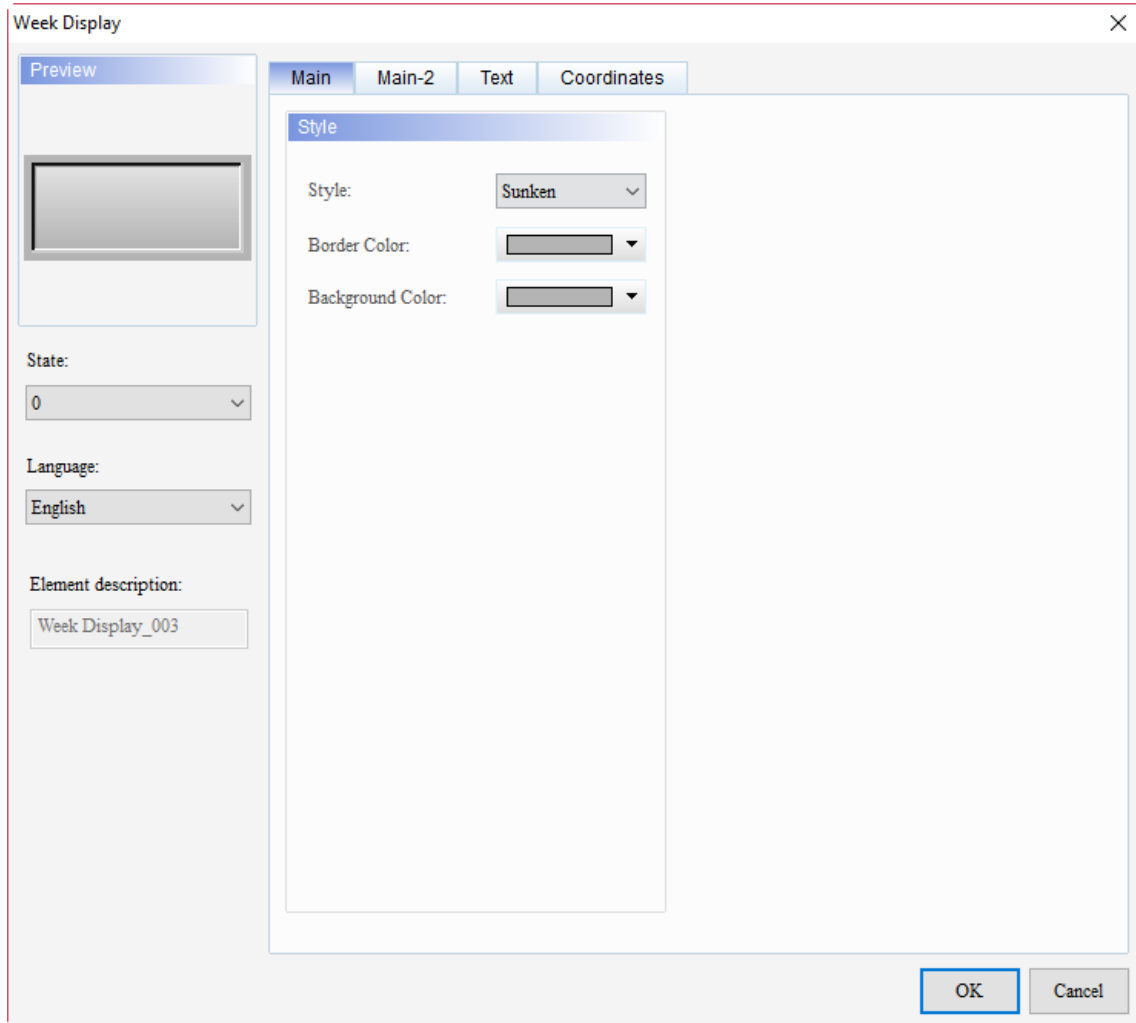


Figure 11.3.2.5 Coordinates property page for the Time Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

11.3.3 Week Display

When you double-click Week Display, the property setting page is shown as follows.



11

Figure 11.3.3.1 Properties of Week Display

Table 11.3.3.1 Function page of Week Display

Week Display	
Function page	Description
Preview	In addition to displaying the HMI system week, the Week Display supports multiple status values and multi-language display.
Main	Set the Style, Border Color, and Background Color of the element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment. Edit the text for the Week Display. If you have set multi-language data, you can edit data in other languages.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

11

■ Main

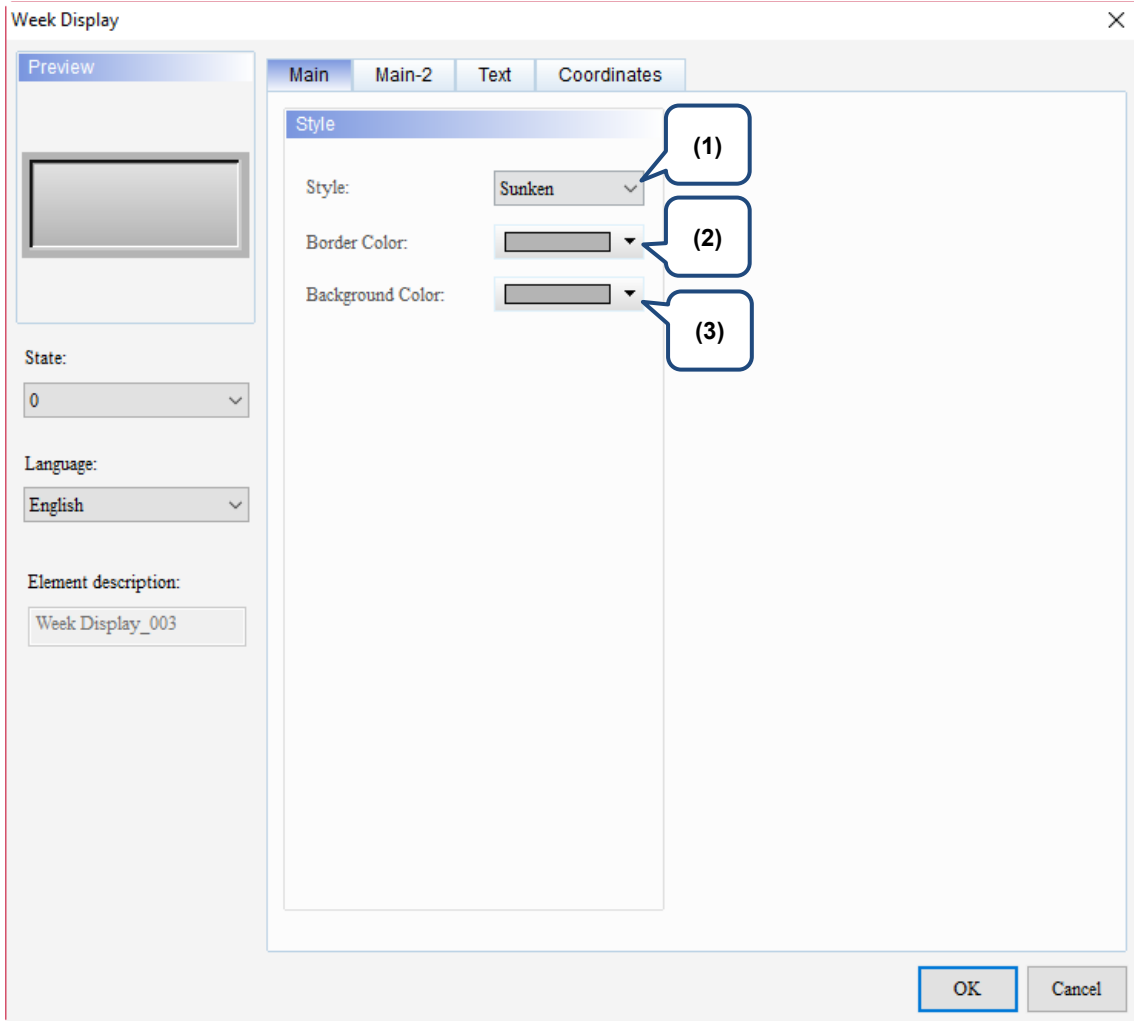
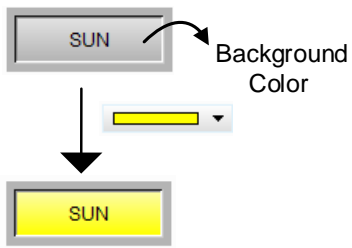


Figure 11.3.3.2 Main property page for the Week Display element

No.	Property	Function description								
(1)	Style	<p>There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
(2)	Border Color	<ul style="list-style-type: none"> Set the border color. When you set the element style to Transparent, the Border Color setting is invalid. 								

No.	Property	Function description
(3)	Background Color	<ul style="list-style-type: none">■ Set the Background Color of the element.■ When you set the element style to Transparent, the Background Color setting is invalid.  <p>The diagram illustrates the process of setting the background color of an element. It shows a sequence of three states: 1. A grey rectangular box with the text 'SUN' inside. An arrow points from the text to the label 'Background Color'. 2. A color selection dropdown menu with a yellow color selected. 3. A yellow rectangular box with the text 'SUN' inside. A downward arrow connects the first state to the second, and another downward arrow connects the second state to the third.</p>

■ Main-2

11

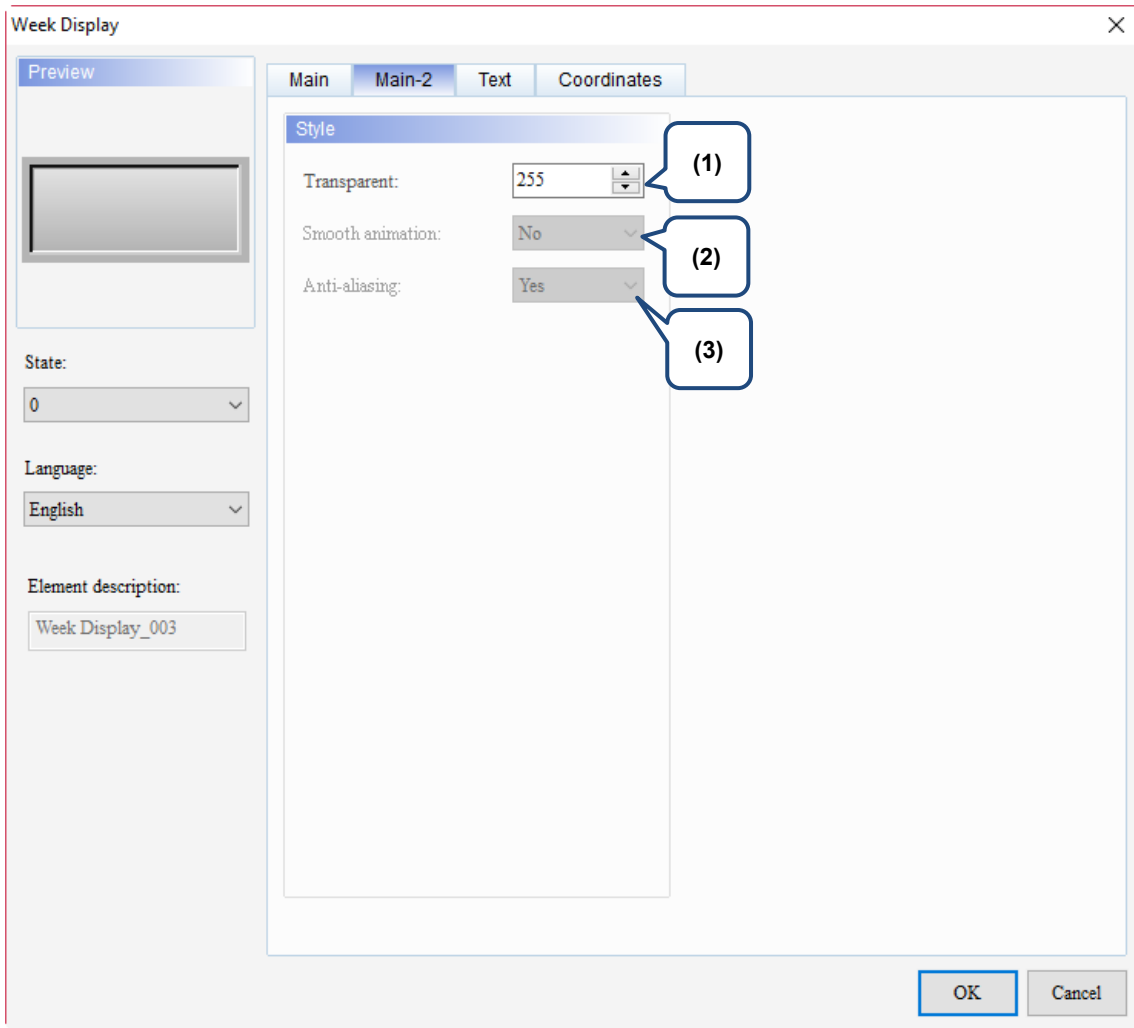
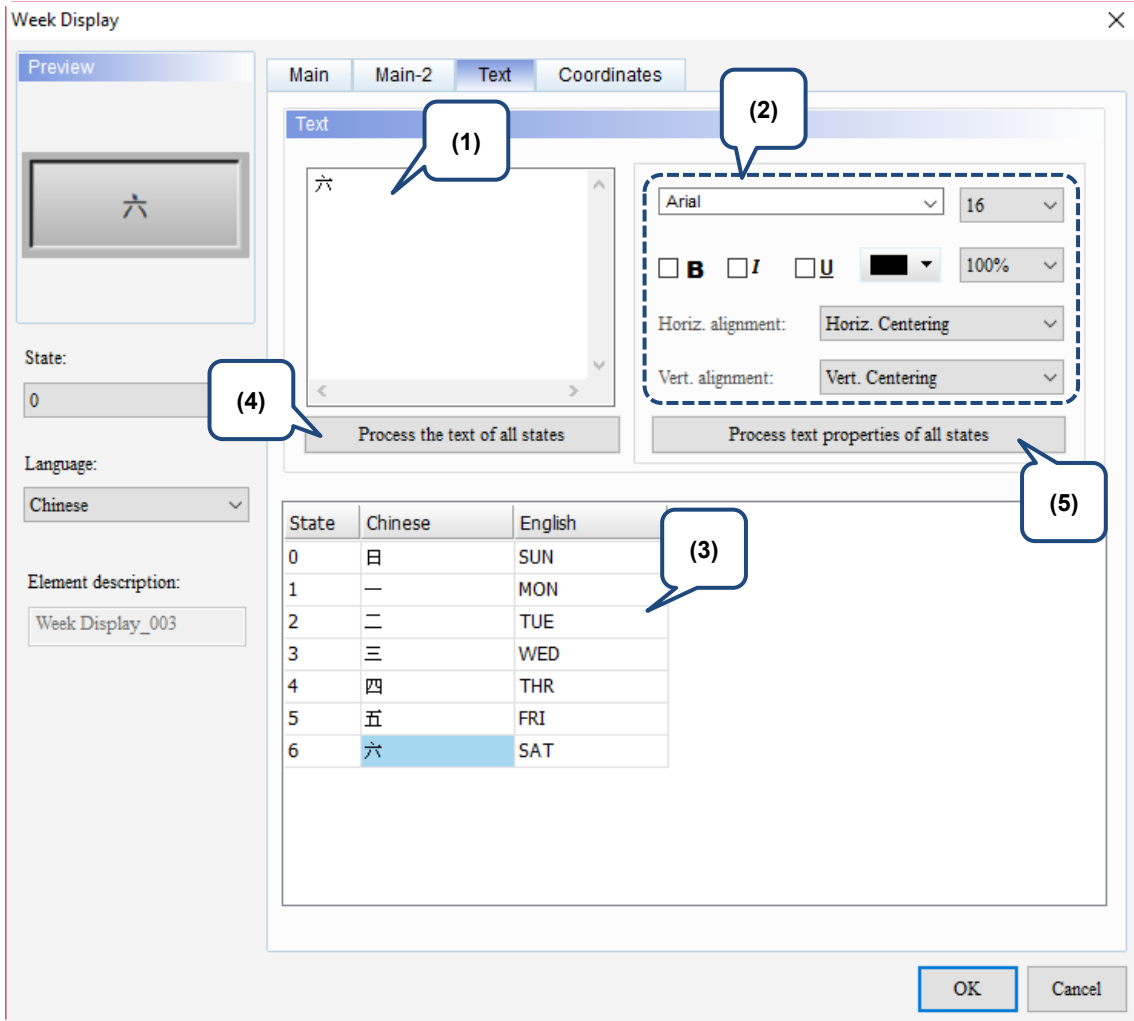


Figure 11.3.3.3 Main-2 property page for the Week Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

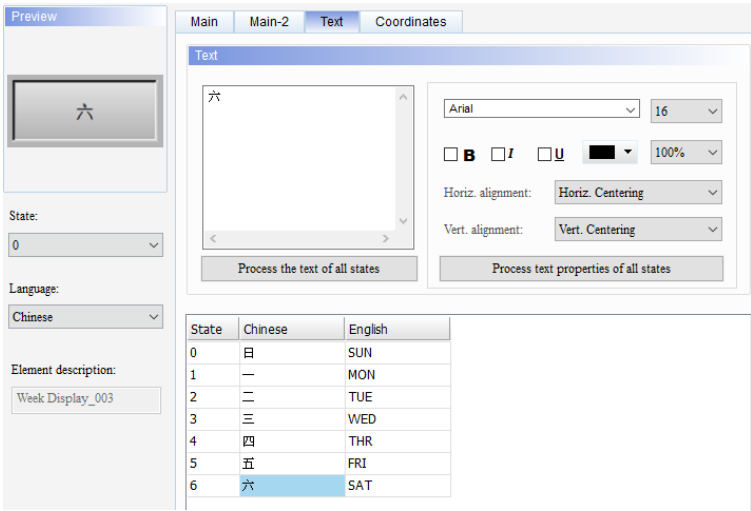
■ Text

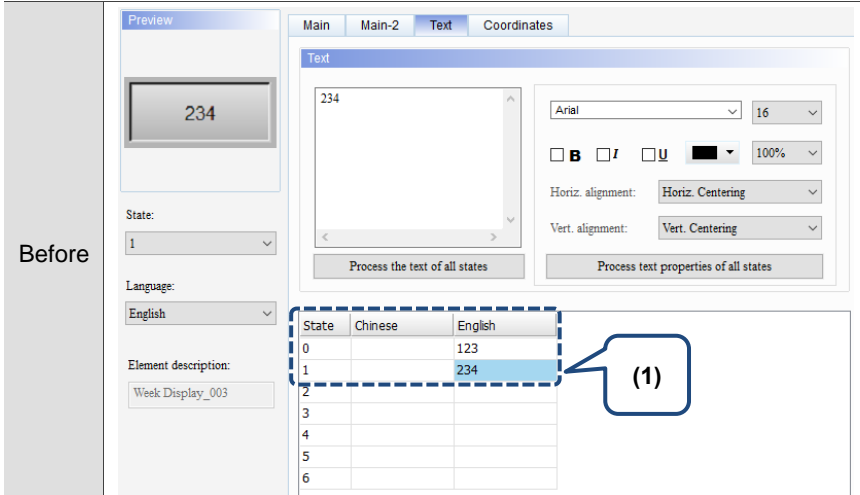
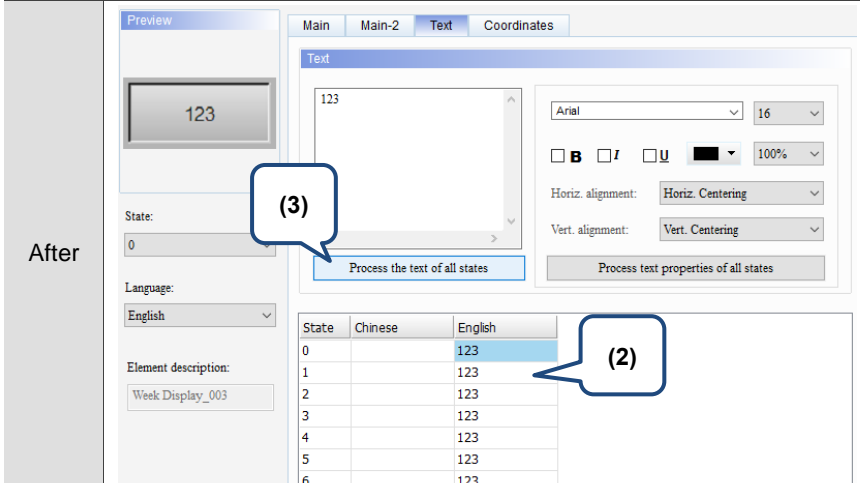


11

Figure 11.3.3.4 Text property page for the Week Display element

11

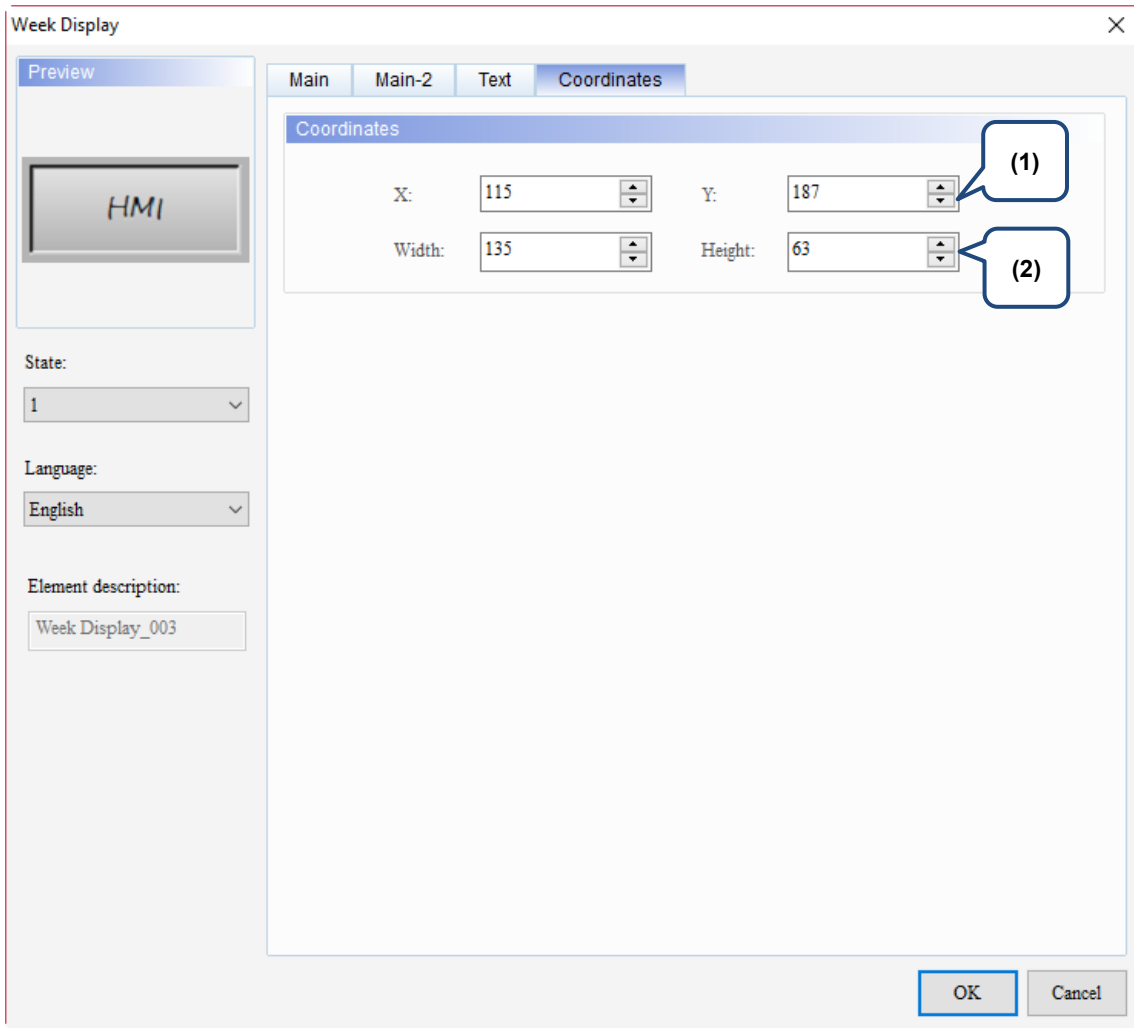
No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p>  <p>■ As long as the element allows text input, you can click the element and press the space key to start editing the text.</p>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.

No.	Property	Function description
<p>(4)</p>	<p>Process the text of all states</p>	<p>This function batch changes the text of the specified state. The example and setting steps are as follows.</p> <ol style="list-style-type: none"> 1. Enter the text “123” for State 0 and “234” for State 1. 2. Select State 0. 3. Execute Process the text of all states and the text of State 1 is changed to “123”. <div style="display: flex; flex-direction: column;"> <div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p>Before</p>  </div> <div style="border: 1px solid gray; padding: 5px;"> <p>After</p>  </div> </div>
		<p>(5)</p>

11

No.	Property	Function description																								
		<p style="text-align: center;">Before</p>  <p>State: 0</p> <p>Language: English</p> <p>Element description: Week Display_003</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr><td>0</td><td></td><td>Delta</td></tr> <tr><td>1</td><td></td><td>HMI</td></tr> <tr><td>2</td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td></tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI	2			3			4			5			6		
State	Chinese	English																								
0		Delta																								
1		HMI																								
2																										
3																										
4																										
5																										
6																										
		<p style="text-align: center;">After</p>  <p>State: 1</p> <p>Language: English</p> <p>Element description: Week Display_003</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr><td>0</td><td></td><td>Delta</td></tr> <tr><td>1</td><td></td><td>HMI</td></tr> <tr><td>2</td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td></tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI	2			3			4			5			6		
State	Chinese	English																								
0		Delta																								
1		HMI																								
2																										
3																										
4																										
5																										
6																										

■ Coordinates



11

Figure 11.3.3.5 Coordinates property page for the Week Display element


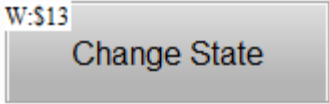
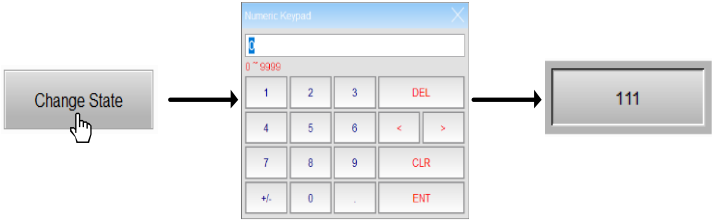
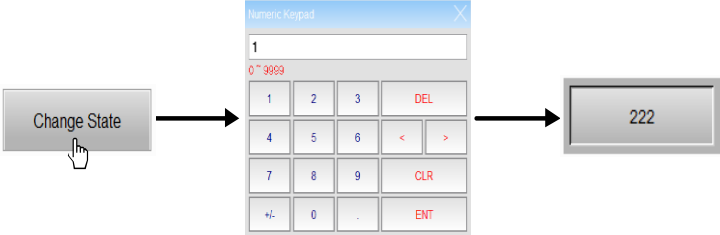
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

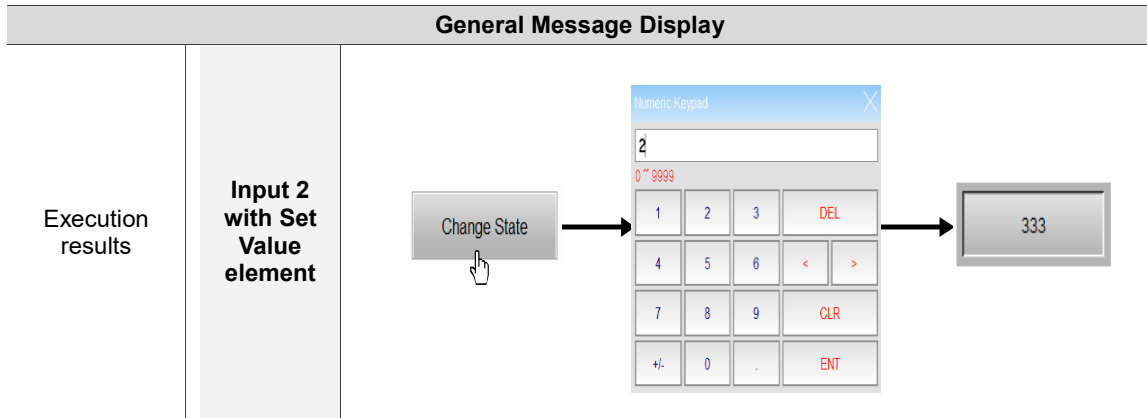
11

11.4 General Message Display

You can use the General Message Display to display the state text message to switch, and this element can read the corresponding state text based on the memory address. Please refer to Table 11.4.1 for the example of General Message Display.

Table 11.4.1 General Message Display example

General Message Display															
Read Address	General Message Display element		Set Value element												
	Read Address	\$13	Write Address	\$13											
															
Settings	General Message Display element														
	Data Type	Data Format	State Counts												
	Word	Unsigned Decimal	3												
State displaying text	Double-click General Message Display to go to the Text page and edit the text to display.														
	<table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>111</td> </tr> <tr> <td>1</td> <td></td> <td>222</td> </tr> <tr> <td>2</td> <td></td> <td>333</td> </tr> </tbody> </table>				State	Chinese	English	0		111	1		222	2	
State	Chinese	English													
0		111													
1		222													
2		333													
Execution results	After creating the elements, please compile and download the data to the HMI. Then, enter 0, 1, and 2 with the Set Value element in sequence and the General Message Display element will display the corresponding values.														
	Input 0 with Set Value element														
	Input 1 with Set Value element														



11

The General Message Display supports four data types, as shown in Table 11.4.2. To add or reduce the number of states, you can simply add or reduce it from State Counts in the property page.

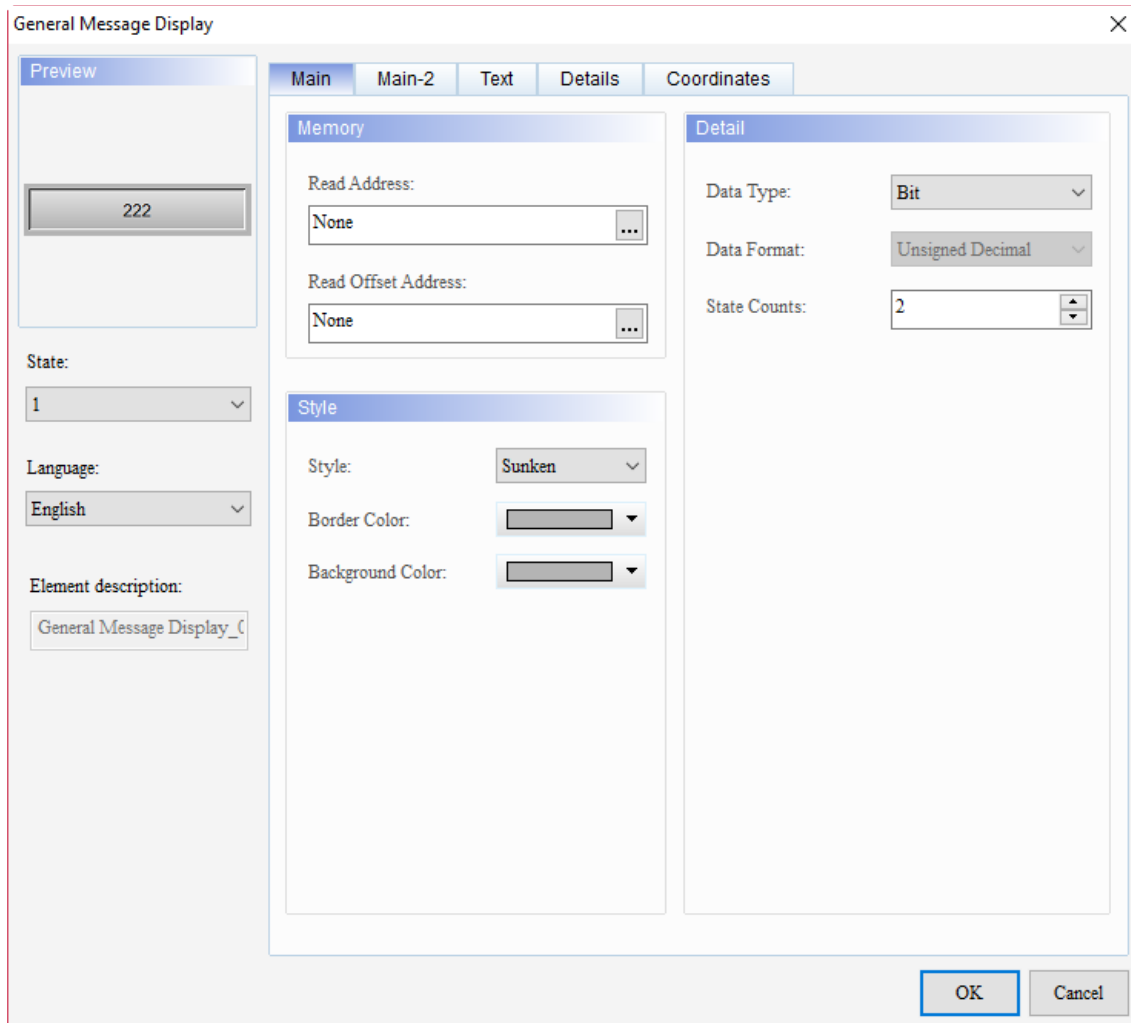
Table 11.4.2 Data Type of General Message Display

General Message Display	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states.</p>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> ■ LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object. ■ If the Data Type is LSB, you can set 1 to 16 states, except for State 0. <ul style="list-style-type: none"> ■ To display State 0, please select LSB (Support State 0). <ul style="list-style-type: none"> ■ If you selected LSB, then the element is black when the state is 0.

11

General Message Display			
Data Type	State Counts		
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> The data types include LSB and LSB (Support State 0). The memory address uses Word as the unit. The examples in the following table show how the state value is determined with the lowest non-zero bit after converting from decimal value to binary value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7. 		
	Decimal	Binary	State Value
	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>[LSB (Support State 0) must be selected]</u>
	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.
	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.
	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.
	<u>7</u>	<u>0000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.
	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.
	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.
	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.
	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.
	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.
	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.
	4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.
8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.	
Bit	If the Data Type is Bit, only 2 states are available.		

When you double-click General Message Display, the property setting page is shown as follows.



11

Figure 11.4.1 Properties of General Message Display

Table 11.4.3 Function page of General Message Display

General Message Display	
Function page	Description
Preview	General Message Display elements can view multiple status values and multi-language data display.
Main	Set the Read Address, Read Offset Address, Style, Background Color, and Border Color. Set the Data Type, Data Format, and State Counts.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text font, size, color, format, zoom, and alignment.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

11

■ Main

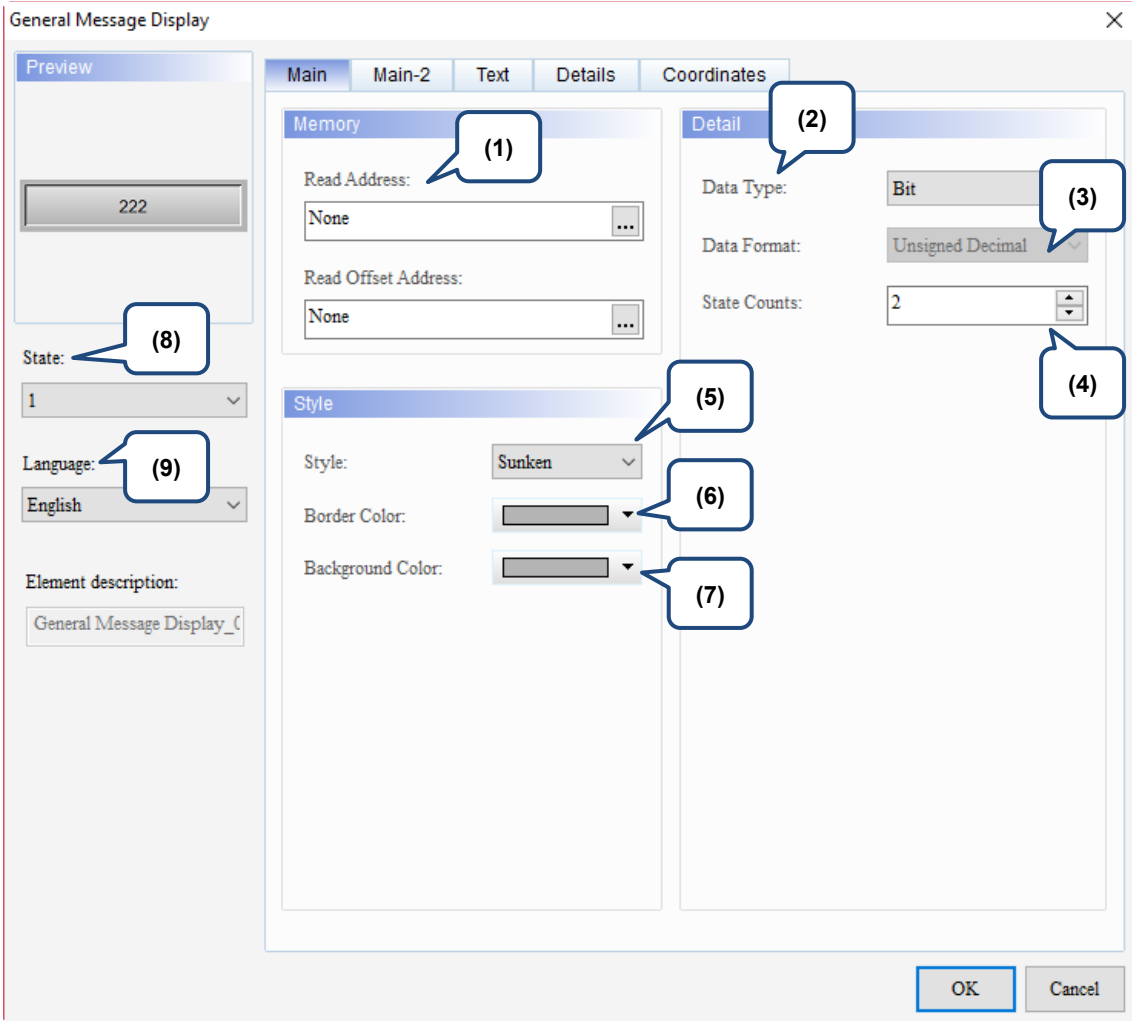
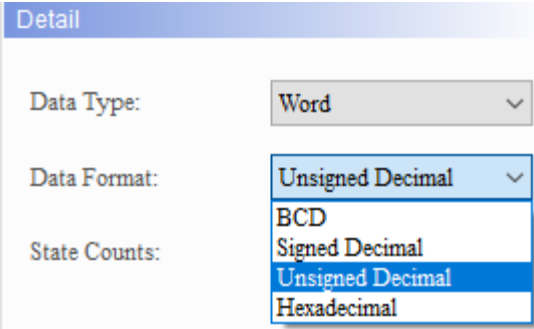












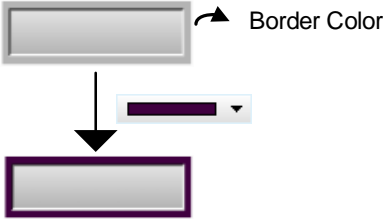
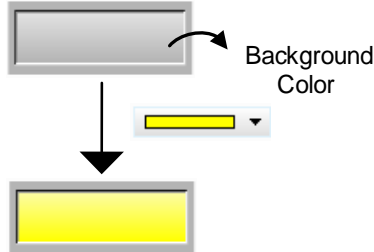
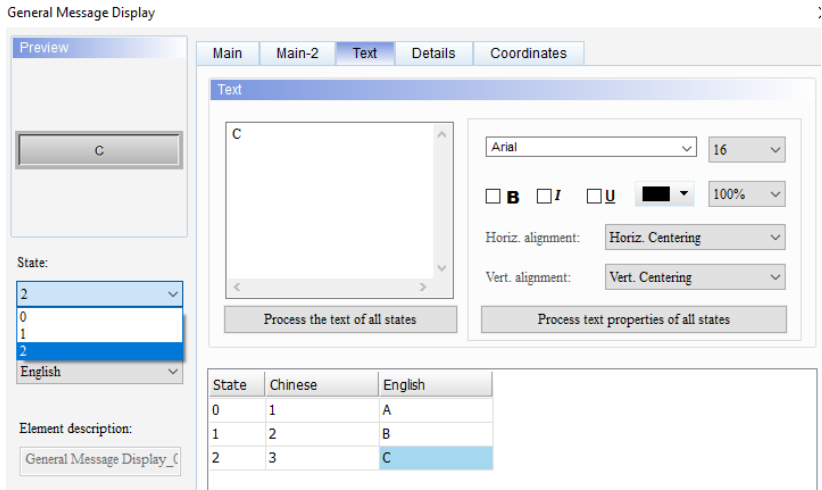
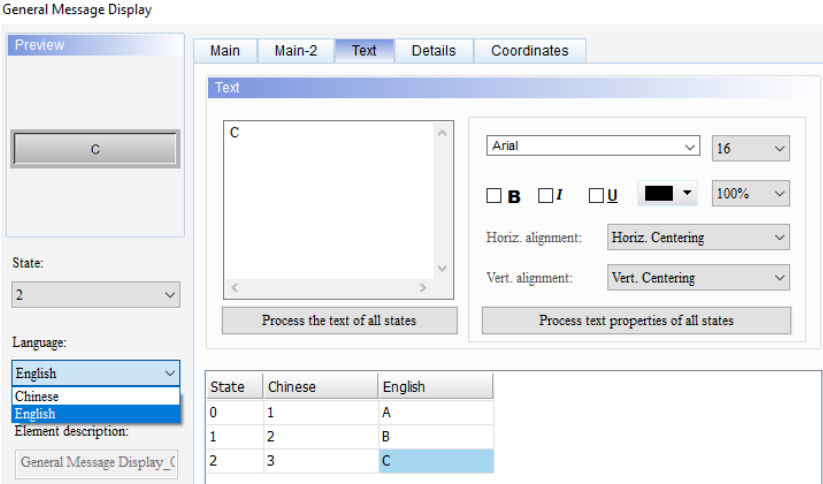


Figure 11.4.2 Main property page for the General Message Display element

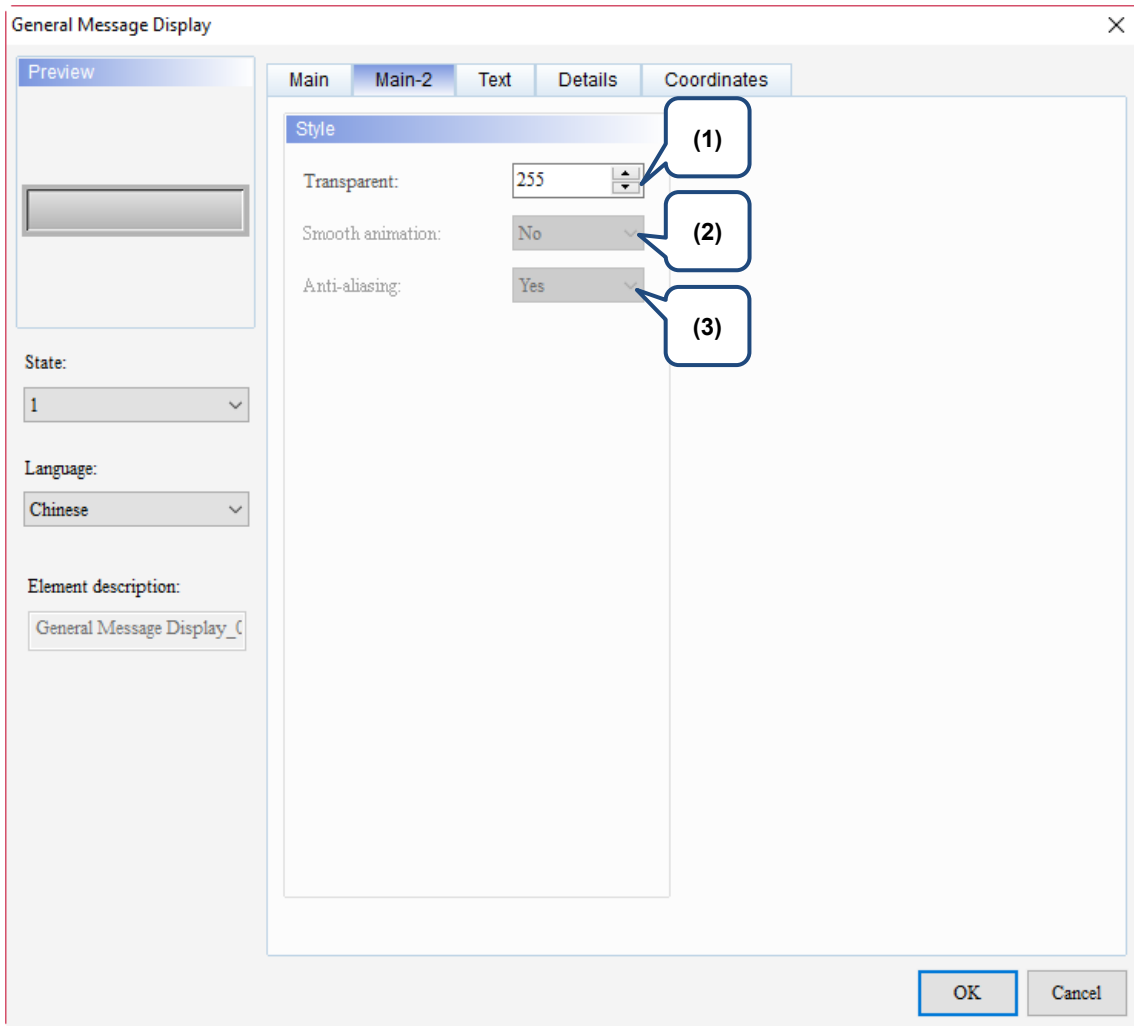
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can choose the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 11.4.2. Select Link Name or Element Style. Please refer to Section 5.1.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	There four types, Bit, Word, LSB, and LSB (Support State 0). Please refer to Table 11.4.2 for more details.
(3)	Data Format	<ul style="list-style-type: none"> You can only select the Data Format when the Data Type is Word. The available formats include BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal. 

No.	Property	Function description												
(4)	State Counts	Set the State Counts of the General Message Display element. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, only 2 states are available. Please refer to Table 11.4.2 for more details.												
(5)	Style	<p>There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent								
Standard	Raised	Sunken	Transparent											
														
(6)	Border Color	<ul style="list-style-type: none"> Set the border color. When you set the element style to Transparent, the Border Color setting is invalid. 												
(7)	Background Color	<ul style="list-style-type: none"> Set the Background Color of the element. When you set the element style to Transparent, the Background Color setting is invalid. 												
(8)	State	<p>By switching the State, you can preview or change the settings of each button element state.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>2</td> <td>B</td> </tr> <tr> <td>2</td> <td>3</td> <td>C</td> </tr> </tbody> </table>	State	Chinese	English	0	1	A	1	2	B	2	3	C
State	Chinese	English												
0	1	A												
1	2	B												
2	3	C												

11

No.	Property	Function description												
(9)	Language	<p>If you have set the language data, you can use the language used for the element to edit the displaying text property, etc.</p>  <p>General Message Display</p> <p>Preview: C</p> <p>State: 2</p> <p>Language: English</p> <p>Element description: General Message Display_C</p> <p>Text Tab: Main, Main-2, Text, Details, Coordinates</p> <p>Text: C</p> <p>Font: Arial, 16</p> <p>Buttons: <input type="checkbox"/> B, <input type="checkbox"/> I, <input type="checkbox"/> U, 100%</p> <p>Horiz. alignment: Horiz. Centering</p> <p>Vert. alignment: Vert. Centering</p> <p>Buttons: Process the text of all states, Process text properties of all states</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>2</td> <td>B</td> </tr> <tr> <td>2</td> <td>3</td> <td>C</td> </tr> </tbody> </table>	State	Chinese	English	0	1	A	1	2	B	2	3	C
State	Chinese	English												
0	1	A												
1	2	B												
2	3	C												

■ Main-2



11

Figure 11.4.3 Main-2 property page for the General Message Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

11

■ Text

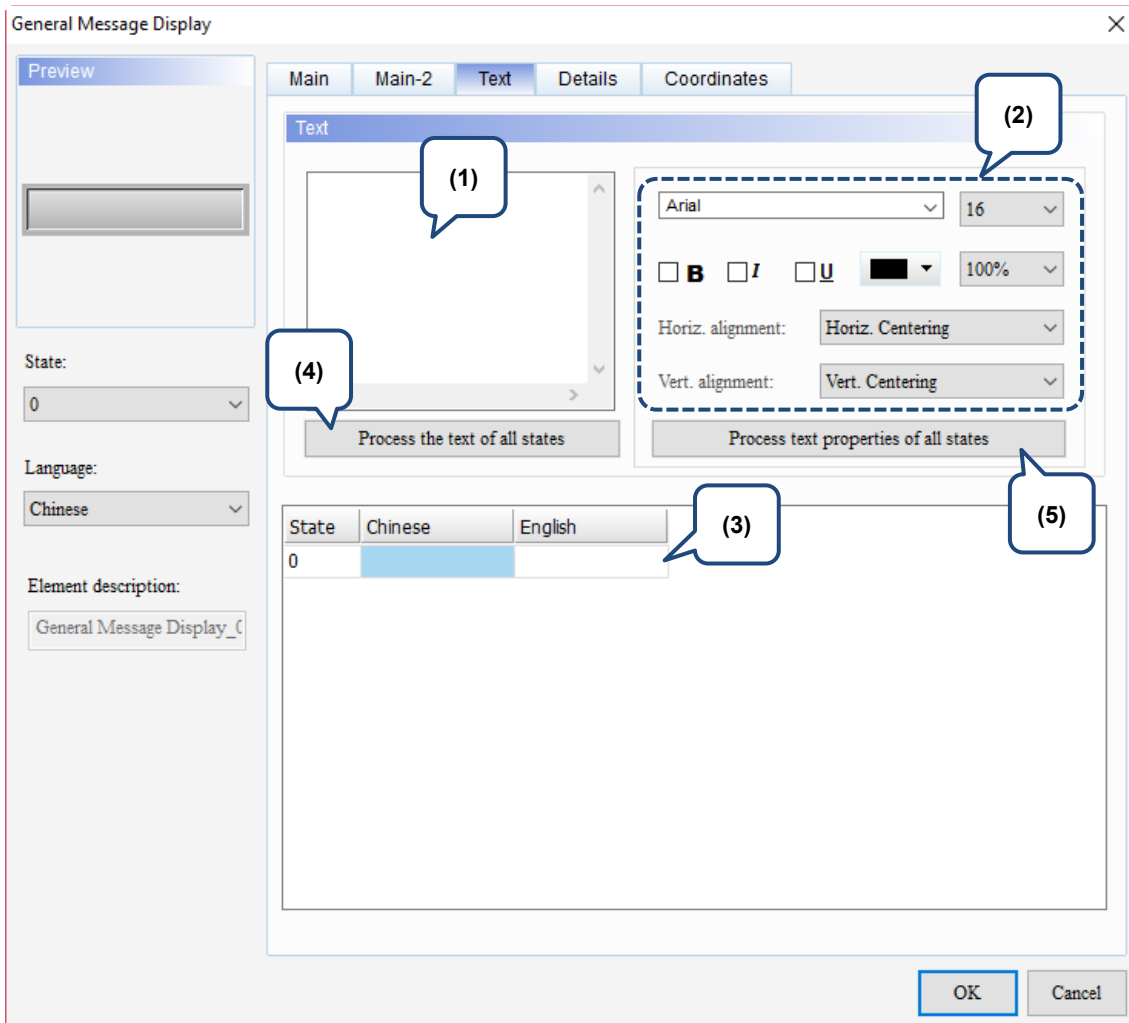
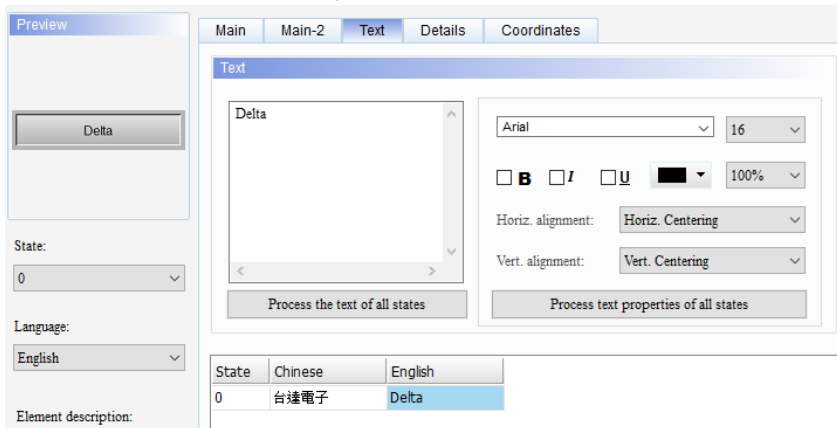
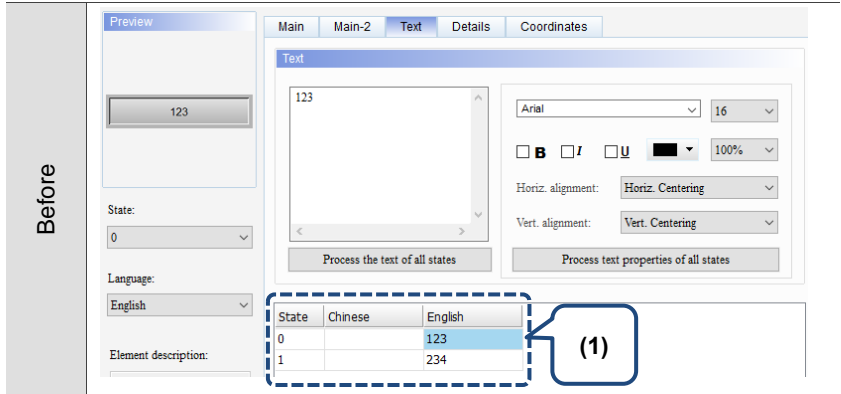
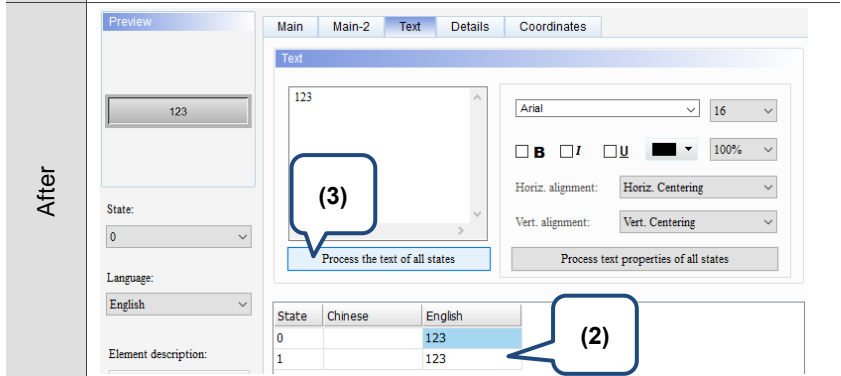
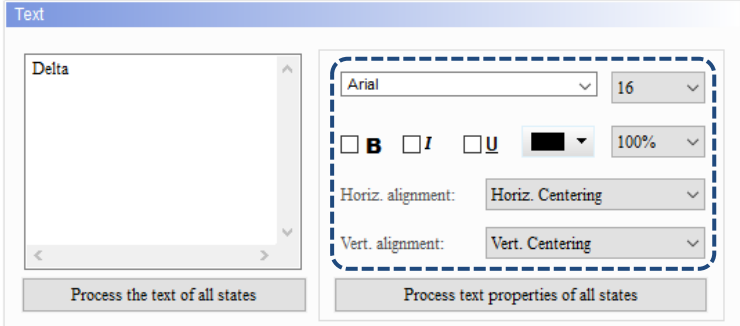
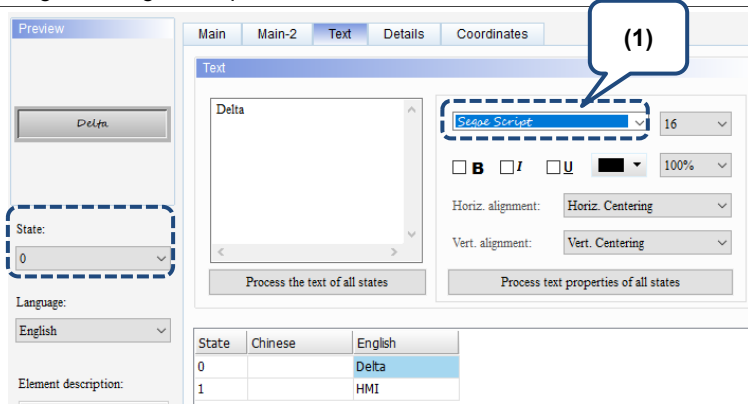
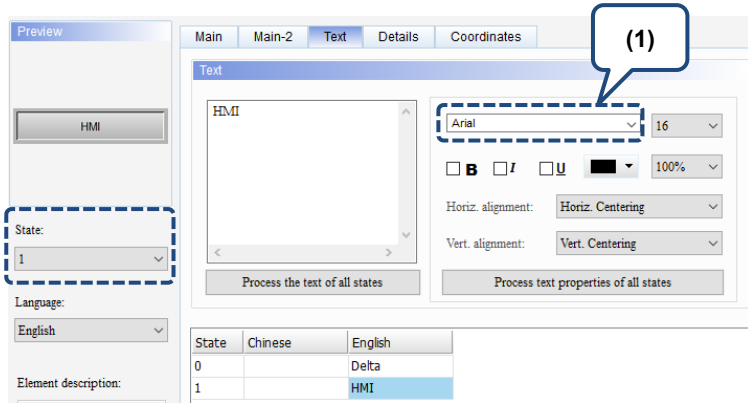
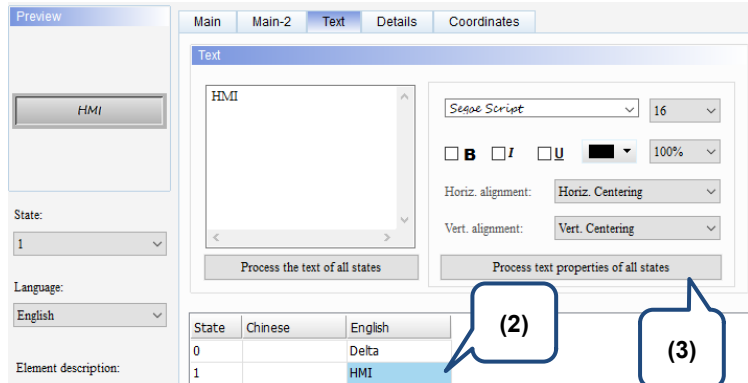


Figure 11.4.4 Text property page for the General Message Display element

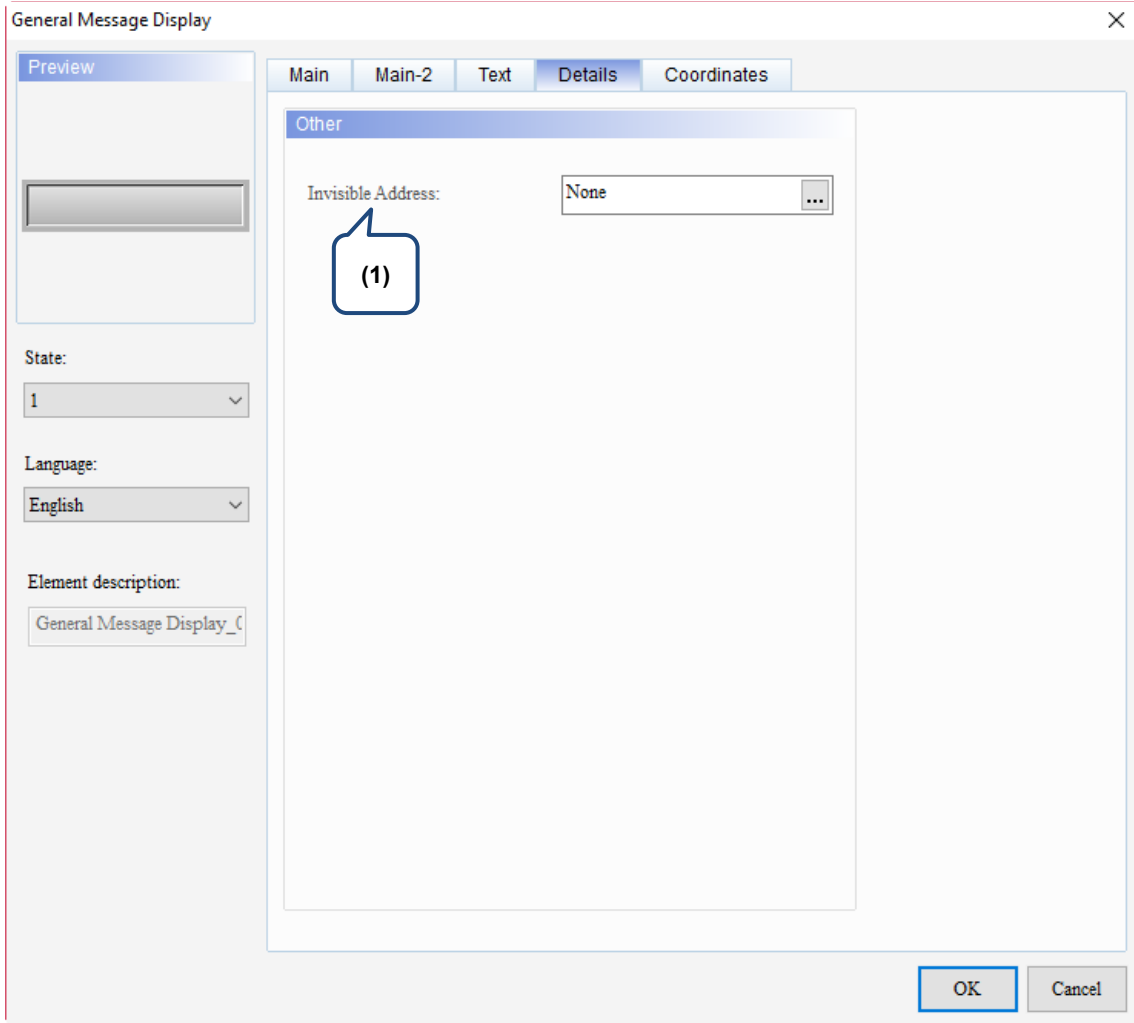
No.	Property	Function description
(1)	Text	<p>You can enter the text to display in this box.</p>  <p>As long as the element allows text input, you can click the element and press the space key to start editing the text.</p>
(2)	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.</p>

No.	Property	Function description
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>This function batch changes the text of the specified state. The example and setting steps are as follows:</p> <ol style="list-style-type: none"> 1. Enter the text "123" for State 0 and "234" for State 1. 2. Select State 0. 3. Execute Process the text of all states and the text of State 1 is changed to "123". <div style="display: flex; flex-direction: column;"> <div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; font-weight: bold;">Before</p>  </div> <div style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center; font-weight: bold;">After</p>  </div> </div>

11

No.	Property	Function description
		<p>This function batch changes the text of the specified property. Items included in the text property are shown in the figure below.</p>  <p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> 1. Enter the text “Delta” for State 0 and “HMI” for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1. 2. Select State 0. 3. Execute Process text properties of all states and the text font of State 1 is changed to Segoe Script.
(5)	Process text properties of all states	<p>Before</p>   <p>After</p> 

■ Details



11

Figure 11.4.5 Details property page for the General Message Display element

No.	Property	Function description						
(1)	Invisible Address	When Invisible Address is set to on, the button element is invisible and you cannot execute its set functions.						
		<table border="1"> <tr> <td>Invisible Address is off</td> <td></td> <td>Invisible Address \$9.0 OFF</td> </tr> <tr> <td>Invisible Address is on</td> <td></td> <td>Invisible Address \$9.0 ON</td> </tr> </table>	Invisible Address is off		Invisible Address \$9.0 OFF	Invisible Address is on		Invisible Address \$9.0 ON
		Invisible Address is off		Invisible Address \$9.0 OFF				
Invisible Address is on		Invisible Address \$9.0 ON						
<table border="1"> <tr> <td>Preview</td> <td>Main Main-2 Text Details Coordinates</td> </tr> <tr> <td></td> <td>Other Invisible Address: \$9.0</td> </tr> </table>	Preview	Main Main-2 Text Details Coordinates		Other Invisible Address: \$9.0				
Preview	Main Main-2 Text Details Coordinates							
	Other Invisible Address: \$9.0							

■ Coordinates

11

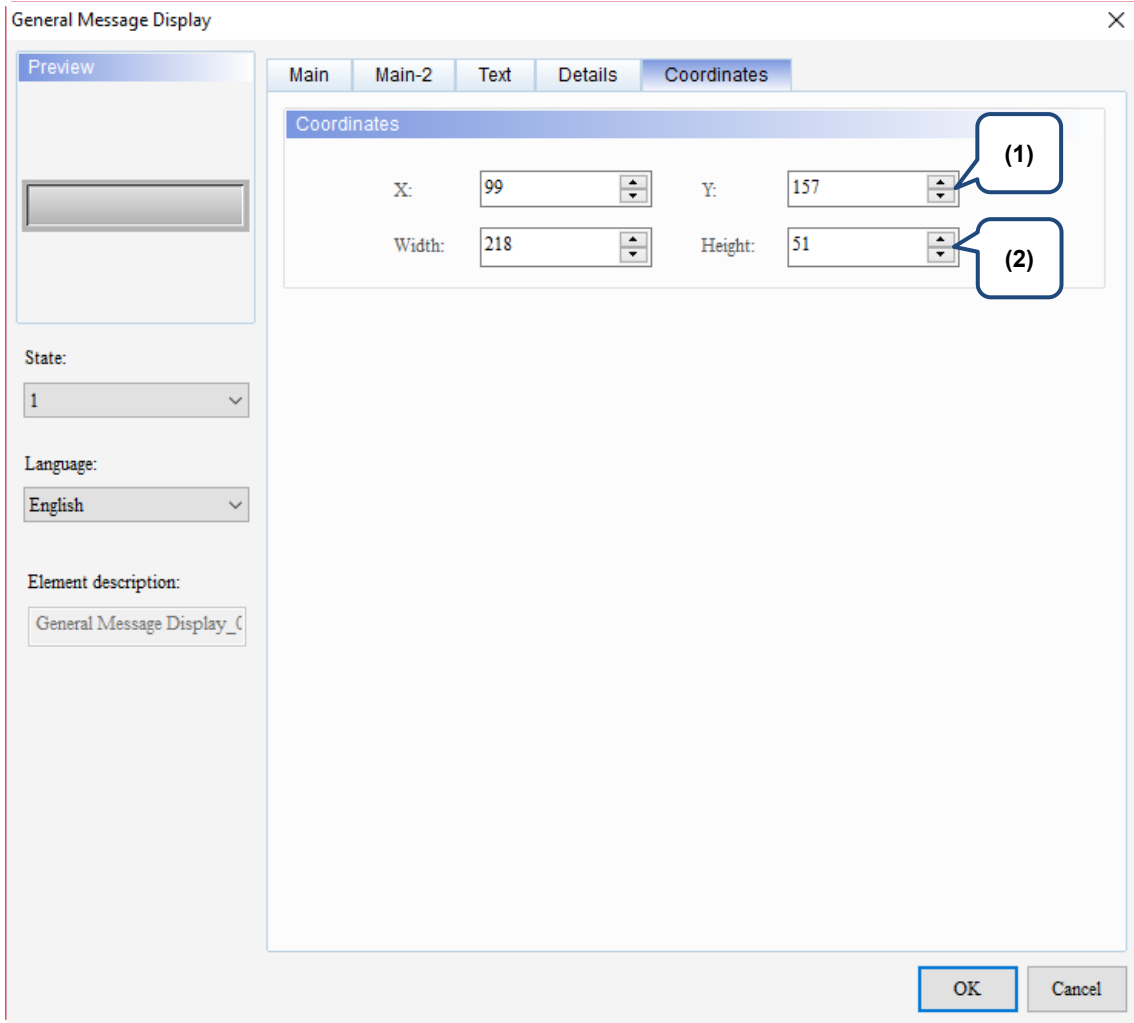



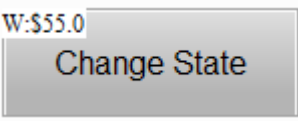
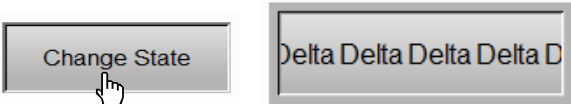

Figure 11.4.6 Coordinates property page for the General Message Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

11.5 Moving Sign

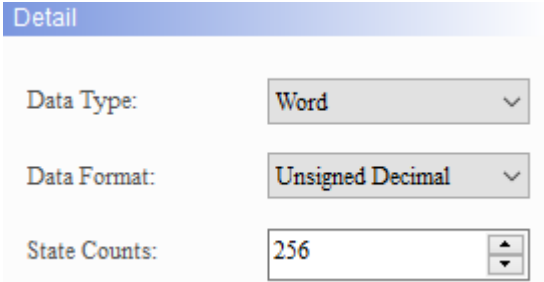
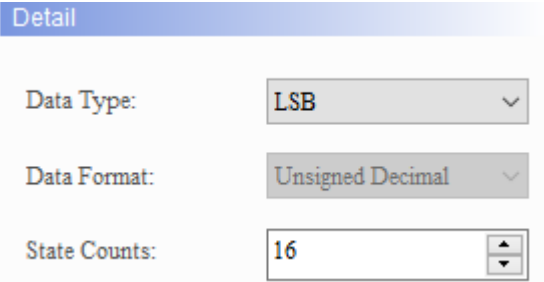
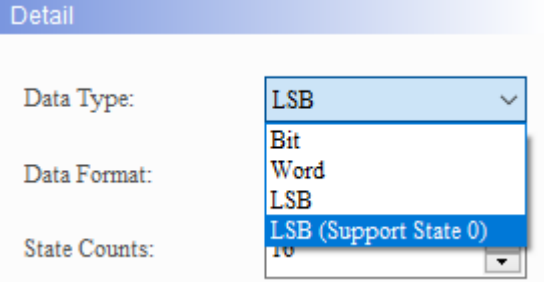

Apart from using the General Message Display to switch the state text messages, you can use the Moving Sign element to adjust the text displaying direction, moving points per time, and interval. Please refer to Table 11.5.1 for the example of Moving Sign.

Table 11.5.1 Moving Sign example

Moving Sign														
Set the Moving Sign element.	Data Type	State Counts	Direction	Points per time	Interval									
	Bit	2	Left	1	100 (ms)									
Read Address	Moving Sign element		Maintained element											
	Read Address	\$55.0	Write Address	\$55.0										
														
State displaying text	Double-click General Message Display to go to the Text page and edit the text to display.													
	<table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>					State	Chinese	English	0		Delta	1		HMI
State	Chinese	English												
0		Delta												
1		HMI												
Execution results	After creating the elements, please compile and download the data to the HMI. Next, use the Maintained element to switch between State 0 and State 1, and the Moving Sign element will display the corresponding state text.													
	State 0													
State 1														

The Moving Sign supports four data types, as shown in Table 11.5.2. To add or reduce the number of states, you can simply add or reduce it from State Counts in the property page.

Table 11.5.2 Data Type of Moving Sign

Moving Sign	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states.</p> 
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> ■ LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object. ■ If the Data Type is LSB, you can set 1 to 16 states, except for State 0.  <ul style="list-style-type: none"> ■ To display State 0, please select LSB (Support State 0).  <ul style="list-style-type: none"> ■ If you selected LSB, then the element is black when the state is 0.  <ul style="list-style-type: none"> ■ The data types include LSB and LSB (Support State 0). The memory address uses Word as the unit.

11

Moving Sign			
Data Type	State Counts		
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> The examples in the following table show how the state value is determined with the lowest non-zero bit after converting from decimal value to binary value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7. 		
	Decimal	Binary	State Value
	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>[LSB (Support State 0) must be selected]</u>
	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.
	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.
	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.
	<u>7</u>	<u>0000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.
	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.
	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.
	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.
	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.
	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.
	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.
4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	
8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.	
Bit	If the Data Type is Bit, only 2 states are available.		

11

When you double-click Moving Sign, the property setting page is shown as follows.

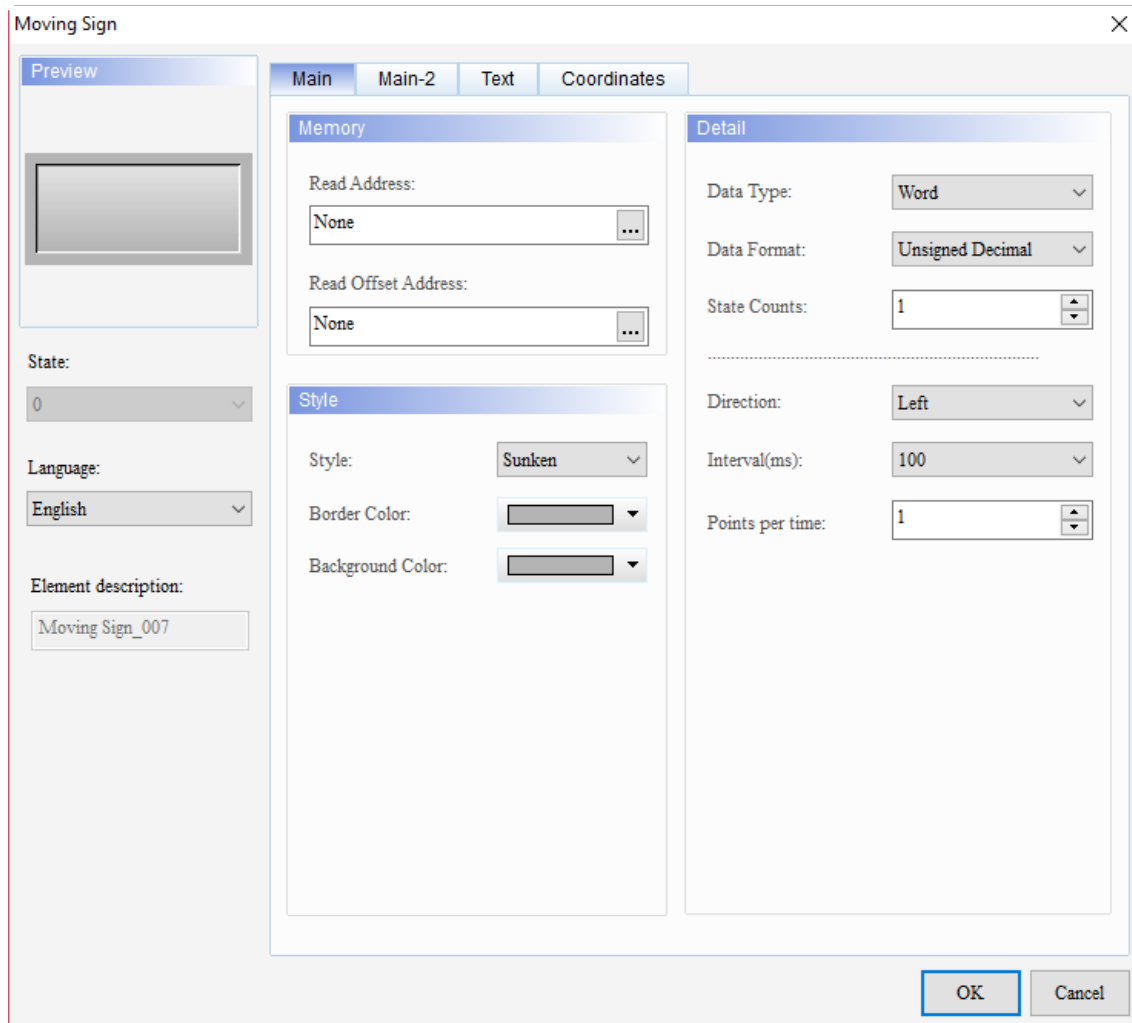
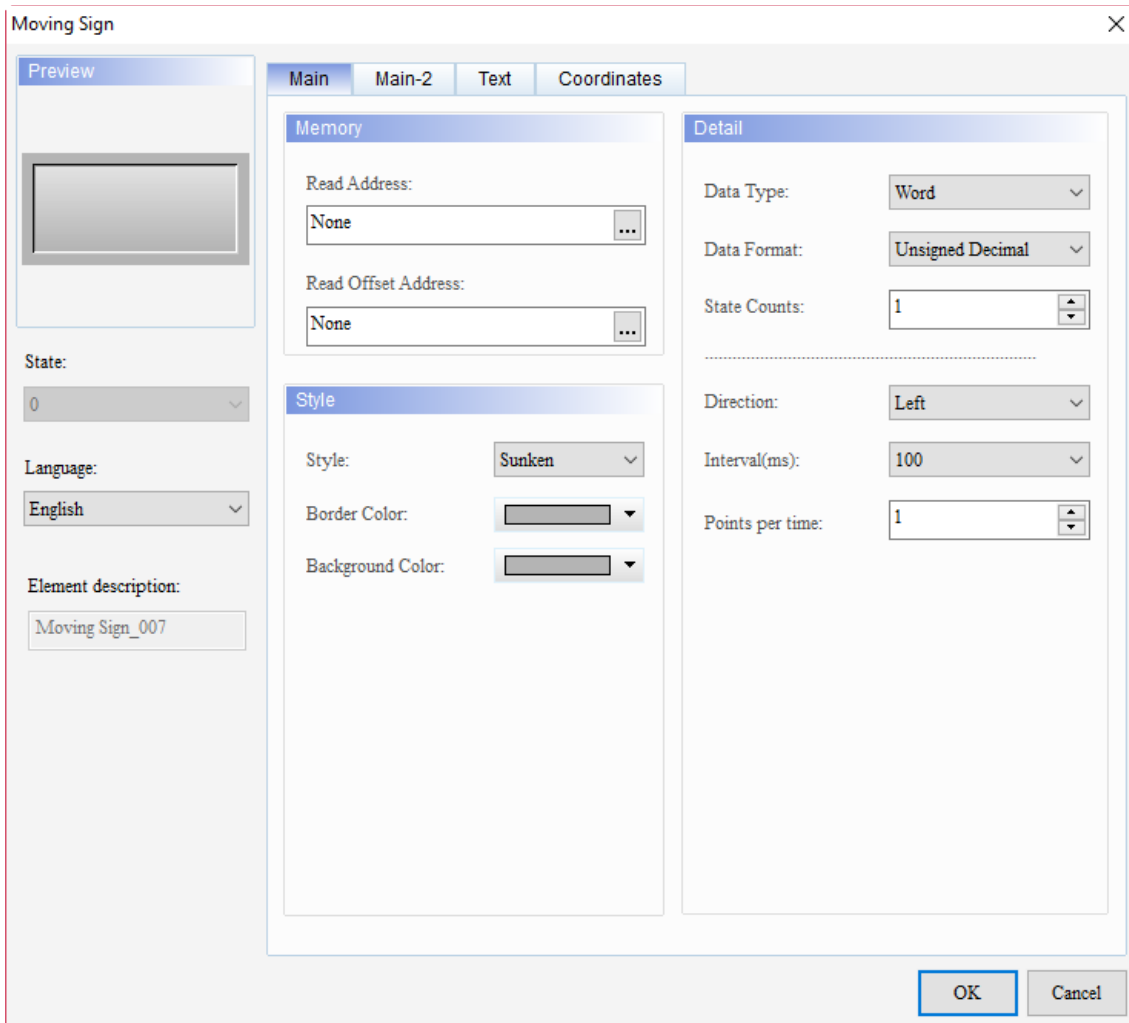


Figure 11.5.1 Properties of Moving Sign

Table 11.5.3 Function page of Moving Sign

Moving Sign	
Function page	Description
Preview	Moving Sign elements can view multiple status values and multi-language data display.
Main	Set the Read Address, Read Offset Address, Style, Background Color, and Border Color. Set the Data Type, Data Format, State Counts, Direction, Interval (ms), and Points per time (for the movement).
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text font, size, color, format, zoom, and alignment.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

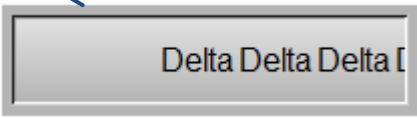
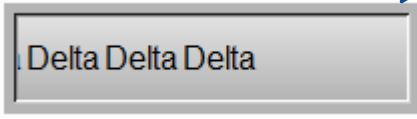
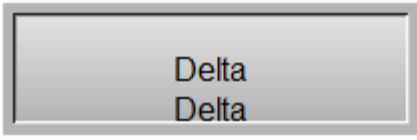
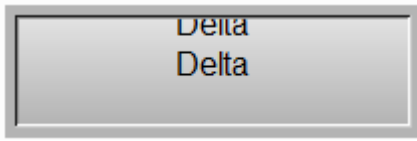
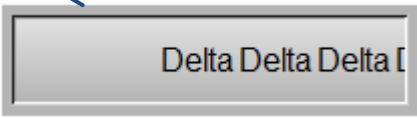
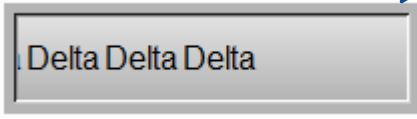
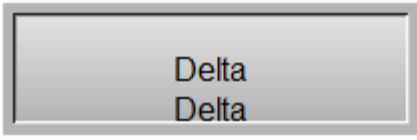
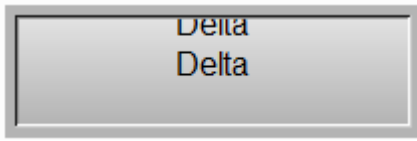
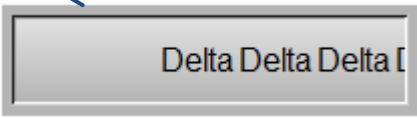
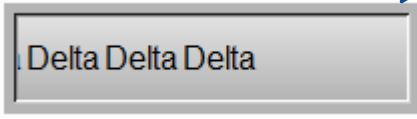
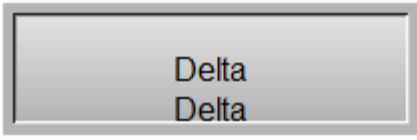
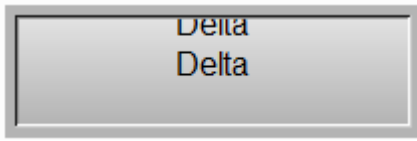
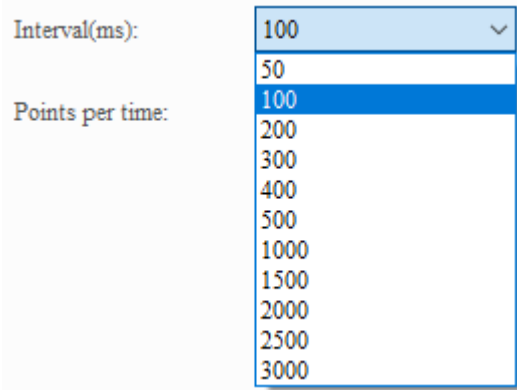














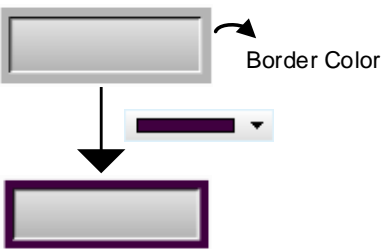
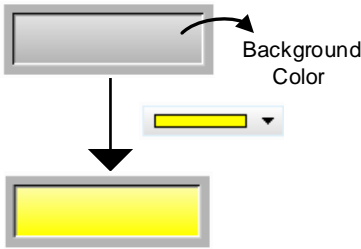
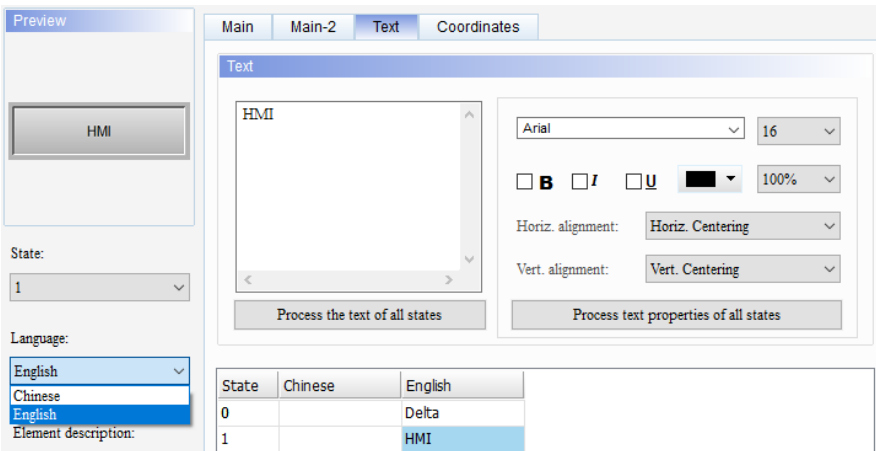
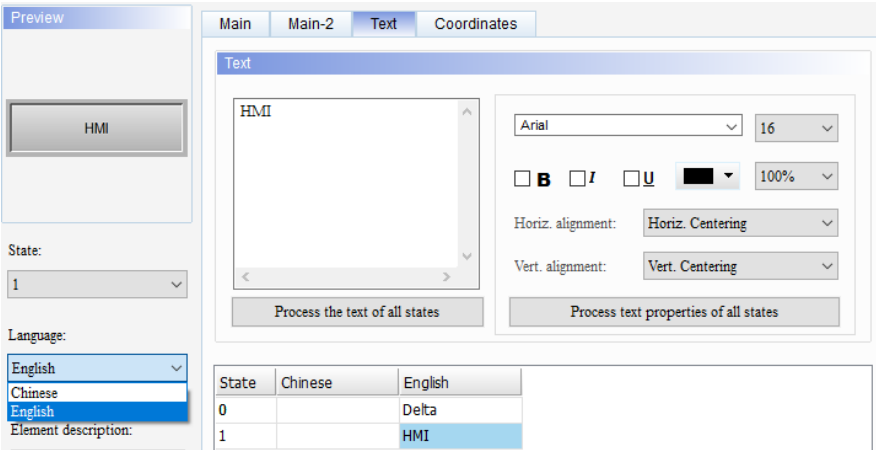
11

Figure 11.5.2 Main property page for the Moving Sign element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can choose the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 11.5.2. Select Link Name or Element Style. Please refer to Section 5.1.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	There four types, Bit, Word, LSB, and LSB (Support State 0). Please refer to Table 11.5.2 for more details.
(3)	Data Format	<ul style="list-style-type: none"> You can only select the Data Format when the Data Type is Word. The available formats include BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.

11

No.	Property	Function description								
(4)	State Counts	Set the State Counts of the Moving Sign element. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, only 2 states are available. Please refer to Table 11.5.2 for more details.								
(5)	Direction	<p>There are four display directions to choose from: Left, Right, Up, and Down. You can select the text moving direction to display.</p> <table border="1"> <tr> <td>Left</td> <td> From right to left  </td> </tr> <tr> <td>Right</td> <td> From left to right  </td> </tr> <tr> <td>Up</td> <td> From bottom to top  </td> </tr> <tr> <td>Down</td> <td> From top to bottom  </td> </tr> </table>	Left	From right to left 	Right	From left to right 	Up	From bottom to top 	Down	From top to bottom 
Left	From right to left 									
Right	From left to right 									
Up	From bottom to top 									
Down	From top to bottom 									
(6)	Interval (ms)	<p>The Interval (ms) defines the interval time (unit: ms) between two message movements of the Moving Sign. And you can set the moving distance in Points per time.</p> 								
(7)	Points per time	The larger the moving points, the greater the distance the text moves each time. The setting range is 1 - 50 pixels.								
(8)	Style	<p>There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
										

No.	Property	Function description									
(9)	Border Color	<ul style="list-style-type: none"> ■ Set the border color. ■ When you set the element style to Transparent, the Border Color setting is invalid. 									
(10)	Background Color	<ul style="list-style-type: none"> ■ Set the Background Color of the element. ■ When you set the element style to Transparent, the Background Color setting is invalid. 									
(11)	State	<p>By switching the State, you can preview or change the settings of each button element state.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI
State	Chinese	English									
0		Delta									
1		HMI									
(12)	Language	<p>If you have set the language data, you can use the language used for the element to edit the displaying text property, etc.</p> 									

■ Main-2

11

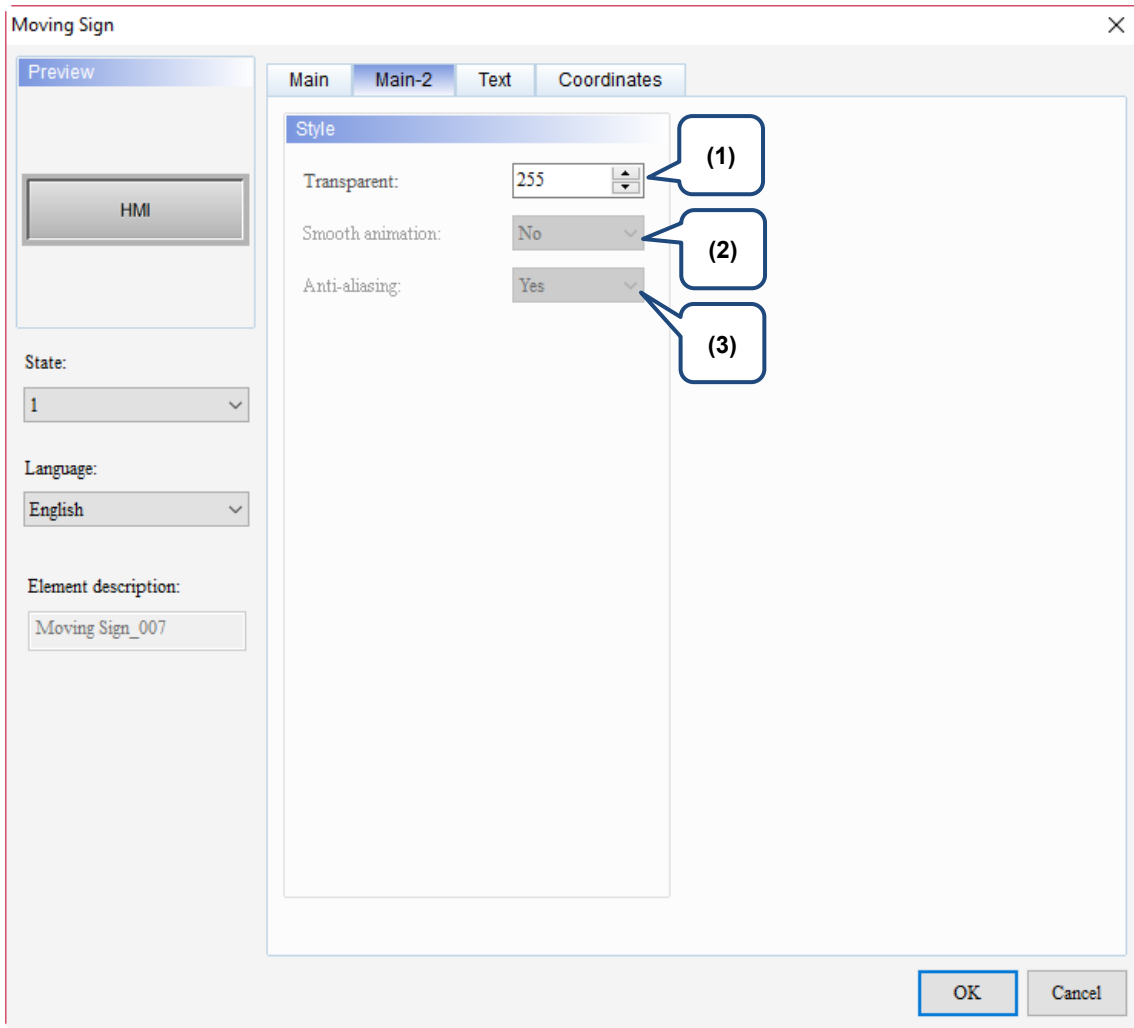
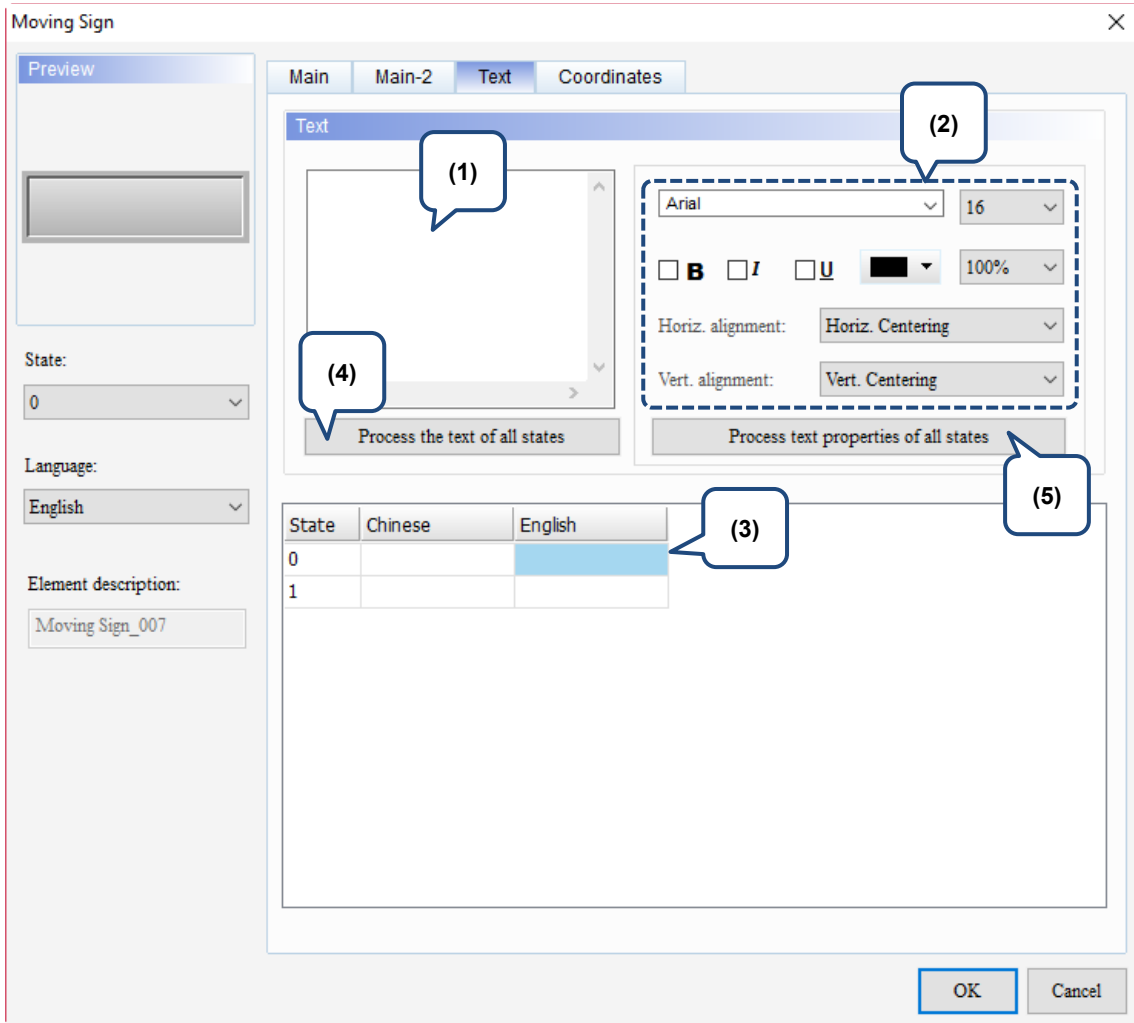


Figure 11.5.3 Main-2 property page for the Moving Sign element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

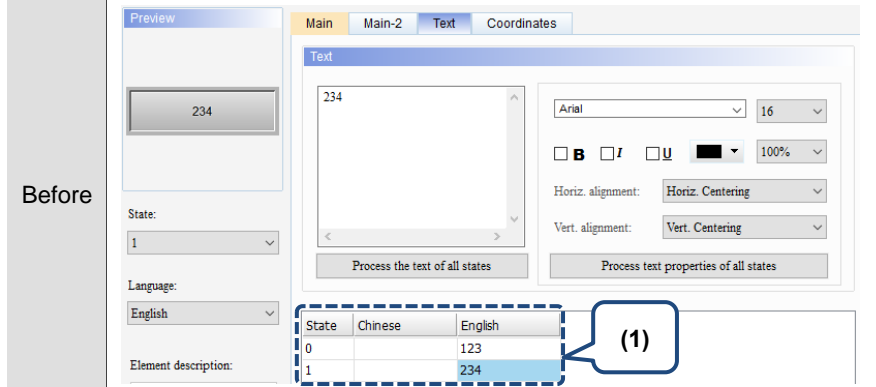
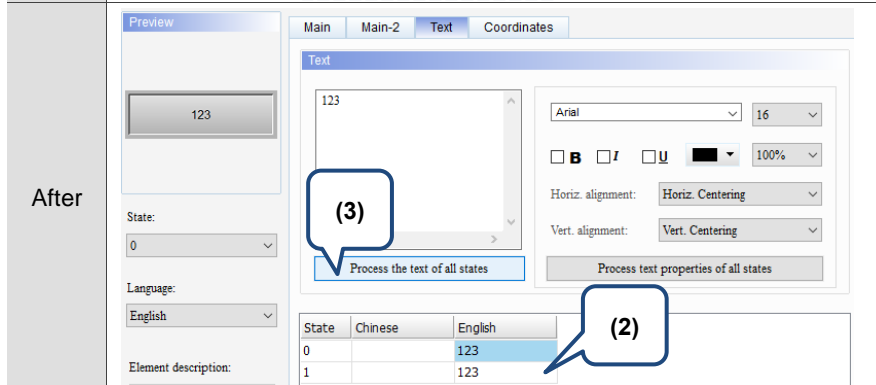


11

Figure 11.5.4 Text property page for the Moving Sign element

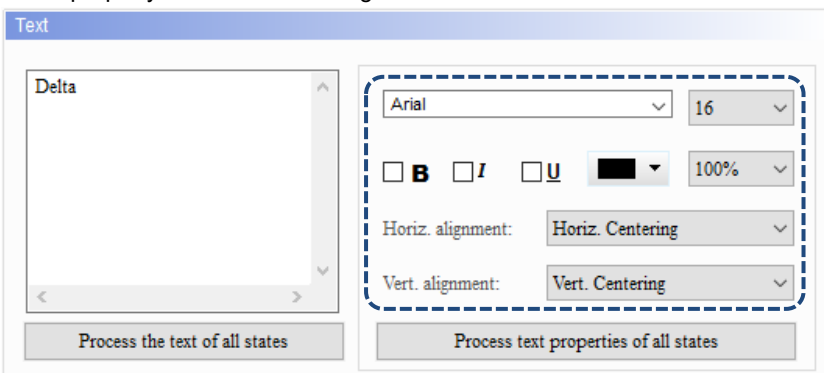
No.	Property	Function description
(1)	Text	<p>You can enter the text to display in this box.</p>
(2)	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.</p>
(3)	Edit multi-language text	<p>If you have added multi-language data, the Text page allows you to edit multi-language data.</p>

11

No.	Property	Function description
(4)	Process the text of all states	<p>This function batch changes the text of the specified state. The example and setting steps are as follows:</p> <ol style="list-style-type: none"> 1. Enter the text "123" for State 0 and "234" for State 1. 2. Select State 0. 3. Execute Process the text of all states and the text of State 1 is changed to "123".  

No.	Property	Function description
-----	----------	----------------------

This function batch changes the text of the specified property. Items included in the text property are shown in the figure below.



The example and setting steps are as follows:

1. Enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.
2. Select State 0.
3. Execute **Process text properties of all states** and the text font of State 1 is changed to Segoe Script.

(5)

Process text properties of all states

Before

After

Coordinates

11

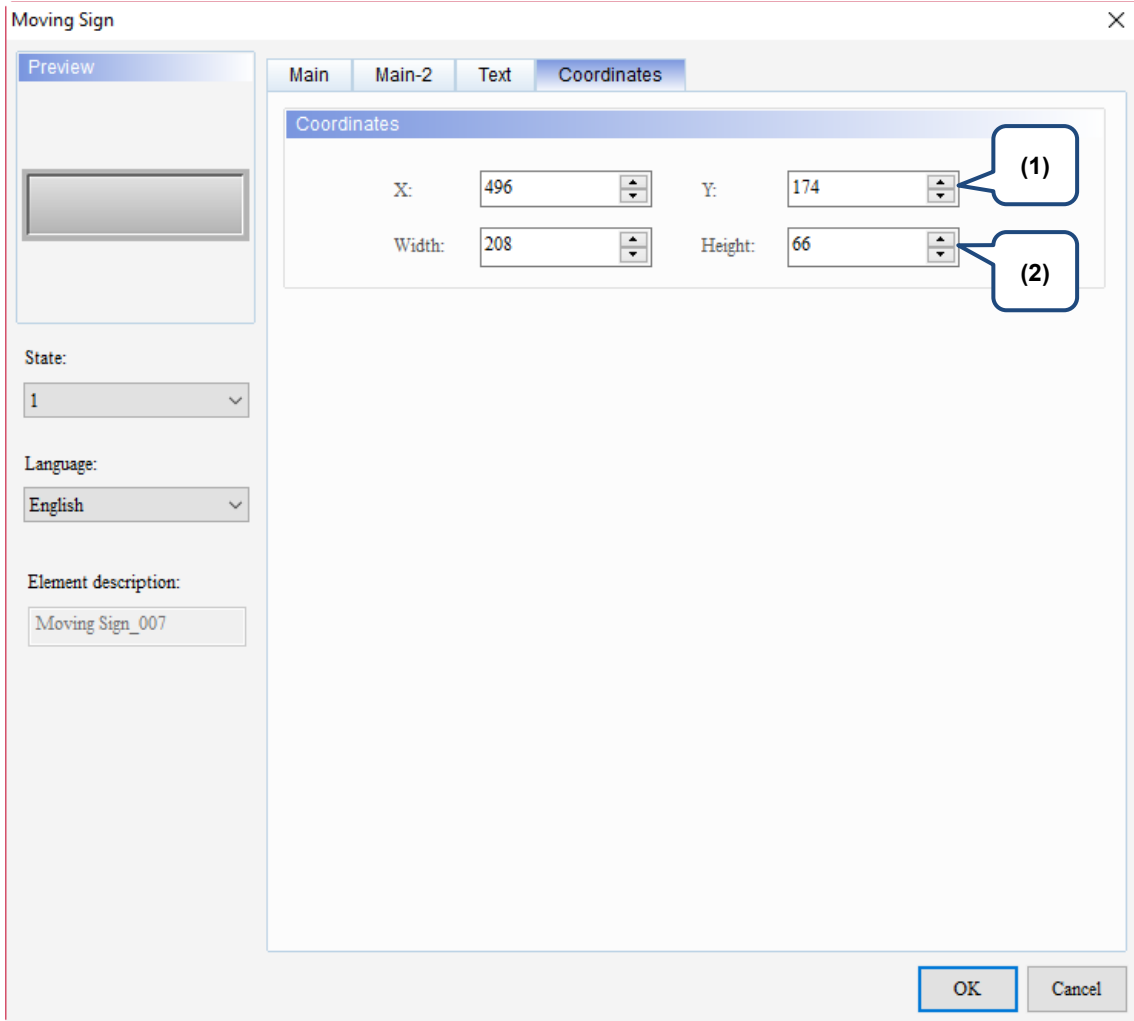


Figure 11.5.5 Coordinates property page for the Moving Sign element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

Graph Display

12

This chapter provides the usage and setting details for the Graph Display elements.



12.1	State Graphic	12-2
12.2	Animated Graphic	12-17
12.3	Real-time Image	12-30

12

12.1 State Graphic

You can create multi-state graphics with the State Graphic element, and the value read by the set read address corresponds to its status value, then have the set state graphic displayed on the HMI.

Examples of the three applications are described below: Table 12.1.1 illustrates the example of Auto Picture Change is set to No, Table 12.1.2 illustrates the example of Auto Picture Change is set to Yes, and Table 12.1.3 illustrates the example of Auto Picture Change is set to Variation.

Table 12.1.1 State Graphic example

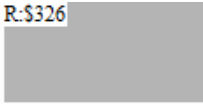
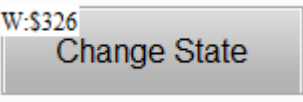
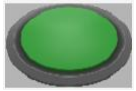

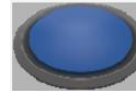
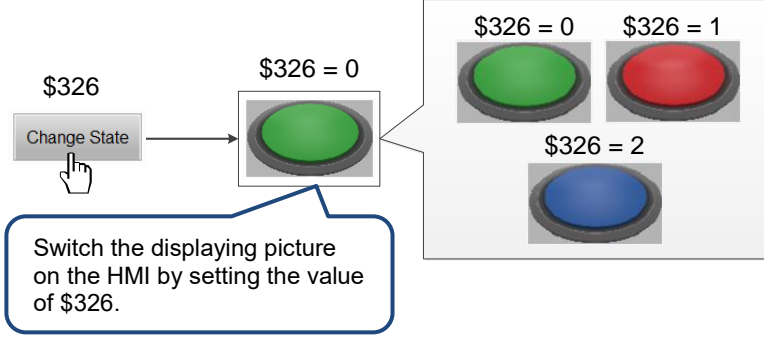
State Graphic example – Auto Picture Change is set to No				
Read Address	State Graphic element		Set Value element	
	Read Address	\$326	Write Address	\$326
				
Settings	State Graphic element			
	Data Type	Data Format	State Counts	Auto Picture Change
	Word	Unsigned Decimal	3	No
Picture	Set the State Graphic display			
	State 0	State 1	State 2	
				
Execution results	After creating the element, please compile and download the element to the HMI. Next, input a value to the Set Value element and the State Graphic will display the picture corresponding to the input value.			
				

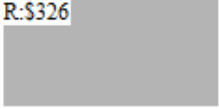


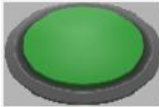


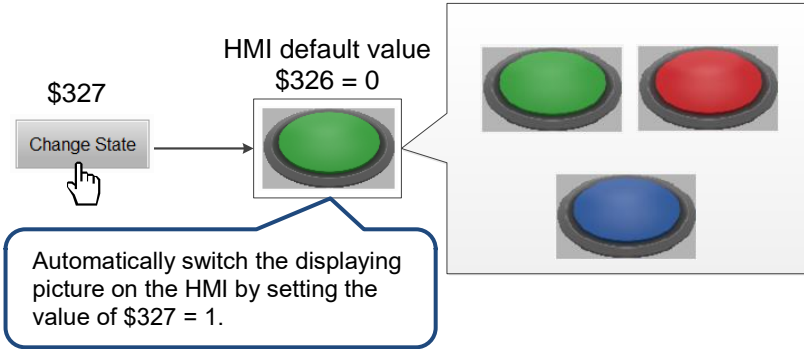
Table 12.1.2 State Graphic example

State Graphic example – Auto Picture Change is set to Yes				
Read Address	State Graphic element		Set Value element	
	Read Address	\$326	Write Address	\$326
Settings	State Graphic element			
	Data Type	Data Format	State Counts	Auto Picture Change
	Word	Unsigned Decimal	3	Yes
Picture	Set the State Graphic display			
	State 0	State 1	State 2	
Execution results	<p>After creating the element, please compile and download the element to the HMI. When you input a value other than 0 to the Set Value element, the State Graphic will automatically change to the set picture display according to the set Change Time (ms). If you input 0, the State Graphic will reset to the initial state without executing any action.</p>			

12

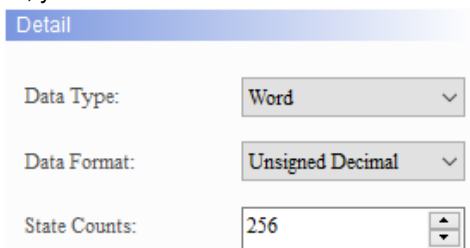
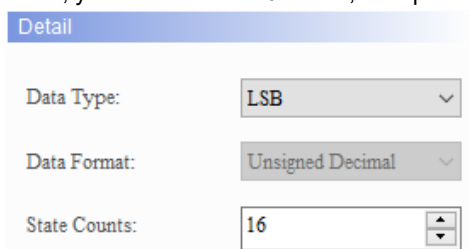
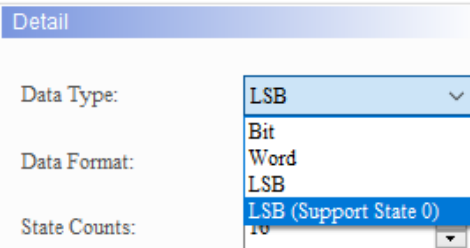

12

Table 12.1.3 State Graphic example

State Graphic example – Auto Picture Change is set to Variation						
Read Address	State Graphic element		Set Value element		Set Value element	
	Read Address	\$326	Write Address	\$326	Write Address	\$327
						
Settings	State Graphic element					
	Data Type	Data Format	State Counts	Auto Picture Change		
	Word	Unsigned Decimal	3	Variation		
Picture	Set the State Graphic display					
	State 0	State 1	State 2			
						
Execution results	<ul style="list-style-type: none"> ■ The Read Address for the State Graphic element indicates the register for the changing state pictures. Read Address+1 is for accessing the register when Auto Picture Change is set to Variation. ■ After creating the element, please compile and download the element to the HMI. If you press the Set Value element of \$327 and input a value other than 0, the State Graphic will automatically change to the set picture display according to the set Change Time (ms). You can also press the Set Value element of \$326 to input the value corresponding to the State Graphic. If you input 0 to the Set Value element of \$327, the automatic change for the State Graphic will not be executed. 					
						

State Graphic supports four data types as shown in Table 12.1.4. If you need to add or reduce the total number of states, you can simply add or reduce it from State Counts in the Properties table.

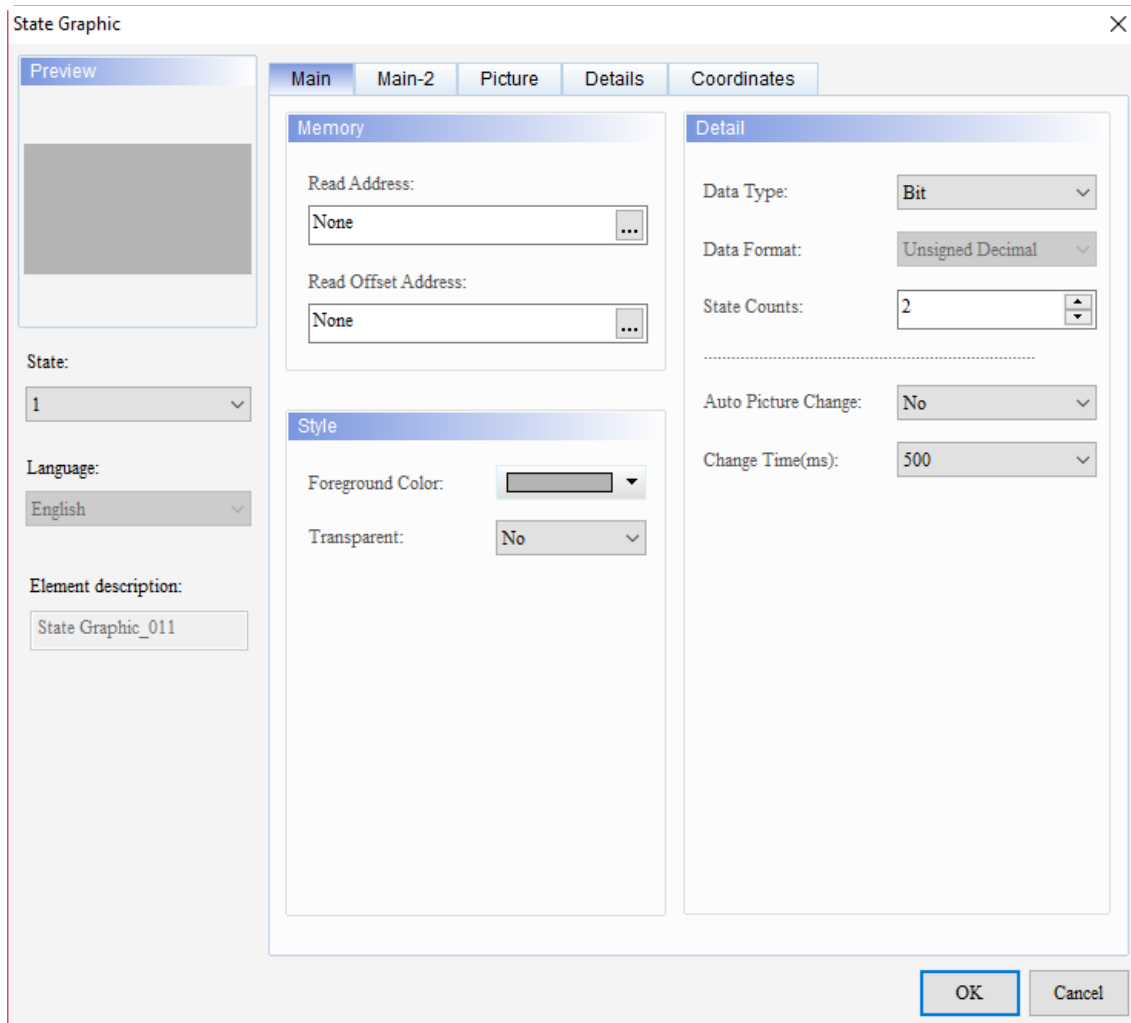
Table 12.1.4 State Graphic Data Type

State Graphic																											
Data Type	State Counts																										
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> 																										
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> ■ LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object. ■ If the Data Type is LSB, you can set 1 to 16 states, except for State 0. 																										
	<ul style="list-style-type: none"> ■ To display State 0, please select LSB (Support State 0).  <ul style="list-style-type: none"> ■ If you selected LSB, the element is black when the state is 0.  <ul style="list-style-type: none"> ■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in Word as the unit. ■ The examples in the following table show how the state value is determined with the lowest non-zero bit after converting from decimal value to binary value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7. <table border="1"> <thead> <tr> <th>Decimal</th> <th>Binary</th> <th>State value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0000000000000000</td> <td>State = 0 when all bits are 0. Note: LSB (Support State 0) must be selected.</td> </tr> <tr> <td>1</td> <td>0000000000000001</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>2</td> <td>0000000000000010</td> <td>The lowest non-zero bit is bit 1, State = 2.</td> </tr> <tr> <td>3</td> <td>0000000000000011</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>4</td> <td>0000000000000100</td> <td>The lowest non-zero bit is bit 2, State = 3.</td> </tr> <tr> <td>7</td> <td>0000000000000111</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>8</td> <td>0000000000001000</td> <td>The lowest non-zero bit is bit 3, State = 4.</td> </tr> <tr> <td>16</td> <td>0000000000010000</td> <td>The lowest non-zero bit is bit 4, State = 5.</td> </tr> </tbody> </table>	Decimal	Binary	State value	0	0000000000000000	State = 0 when all bits are 0. Note: LSB (Support State 0) must be selected.	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	3	0000000000000011	The lowest non-zero bit is bit 0, State = 1.	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.	7	0000000000000111	The lowest non-zero bit is bit 0, State = 1.	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	0000000000010000
Decimal	Binary	State value																									
0	0000000000000000	State = 0 when all bits are 0. Note: LSB (Support State 0) must be selected.																									
1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.																									
2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.																									
3	0000000000000011	The lowest non-zero bit is bit 0, State = 1.																									
4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.																									
7	0000000000000111	The lowest non-zero bit is bit 0, State = 1.																									
8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.																									
16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.																									

12

State Graphic			
Data Type	State Counts		
LSB / LSB (Support State 0)	Decimal	Binary	State value
	32	000000000100000	The lowest non-zero bit is bit 5, State = 6.
	64	000000001000000	The lowest non-zero bit is bit 6, State = 7.
	128	000000010000000	The lowest non-zero bit is bit 7, State = 8.
	256	000000100000000	The lowest non-zero bit is bit 8, State = 9.
	512	000001000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	000010000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	000100000000000	The lowest non-zero bit is bit 11, State = 12.
	4096	001000000000000	The lowest non-zero bit is bit 12, State = 13.
	8192	010000000000000	The lowest non-zero bit is bit 13, State = 14.
	16384	100000000000000	The lowest non-zero bit is bit 14, State = 15.
32768	100000000000000	The lowest non-zero bit is bit 15, State = 16.	
Bit	If the Data Type is Bit, only 2 states are available for the State Counts.		
	<div style="border: 1px solid #ccc; padding: 5px;"> <p>Detail</p> <p>Data Type: <input type="text" value="Bit"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>State Counts: <input type="text" value="2"/></p> </div>		

The following figure shows the property setting screen when you double-click State Graphic.



12

Figure 12.1.1 Properties of State Graphic

Table 12.1.5 Function page of State Graphic

State Graphic	
Function page	Description
Preview	State Graphic elements can view multiple state values, but cannot edit multi-language data display.
Main	Set the read memory address, read offset address, element foreground color and transparency. Set the data type, data format, state counts, Auto Picture Change, and picture change time.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

12

■ Main

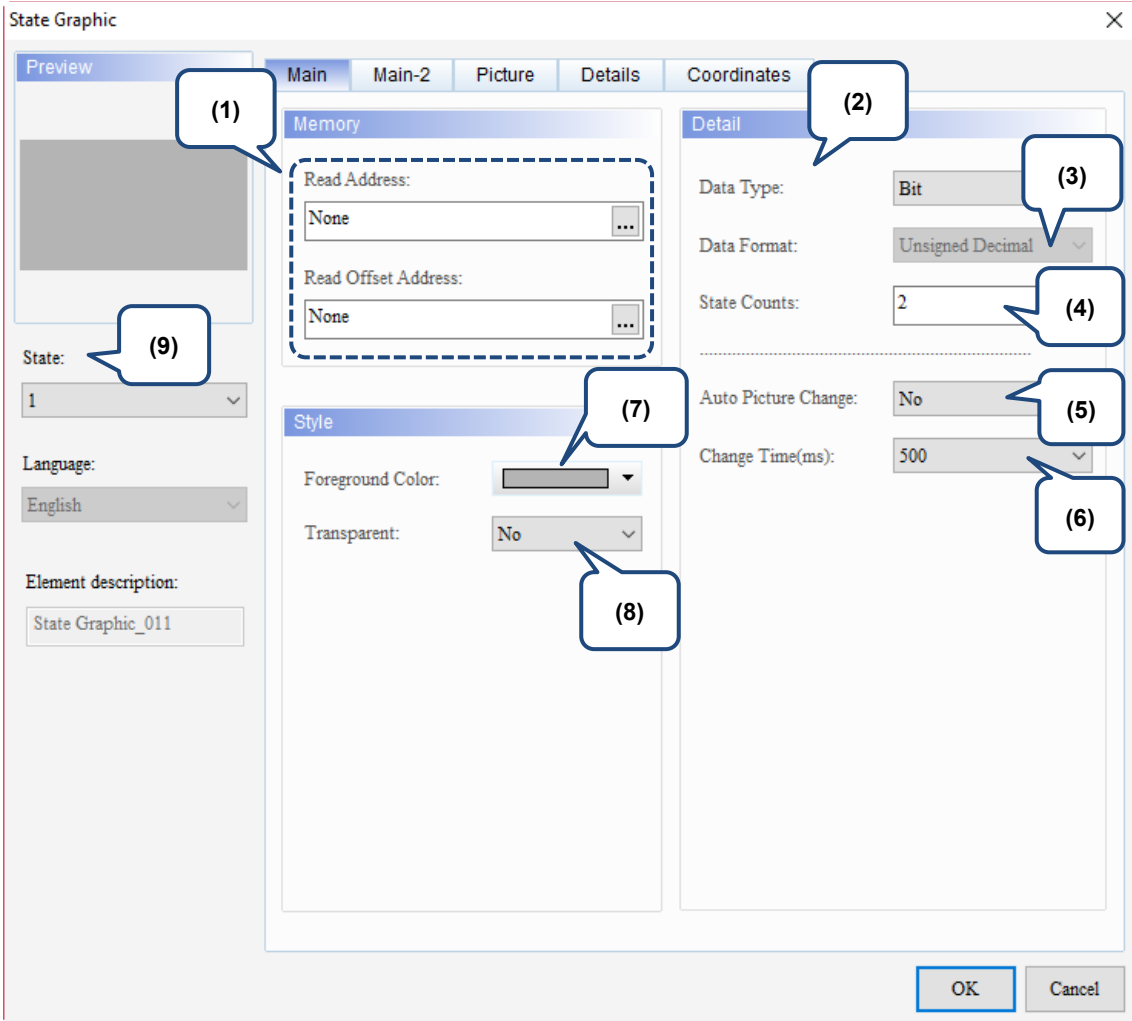
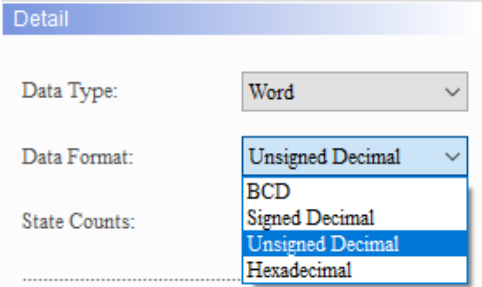
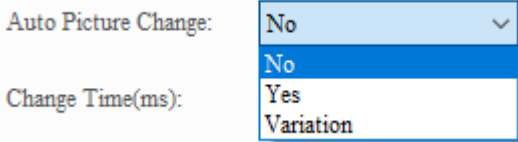
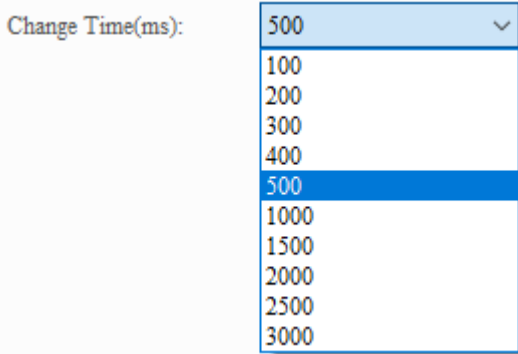
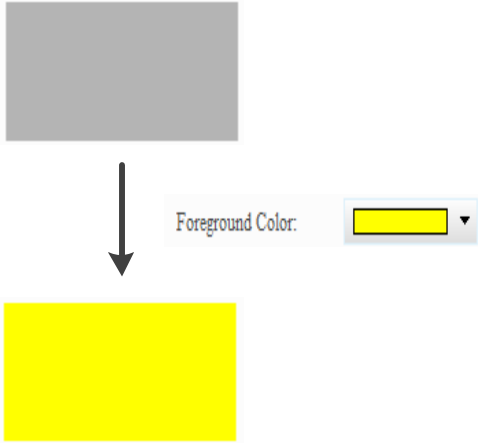




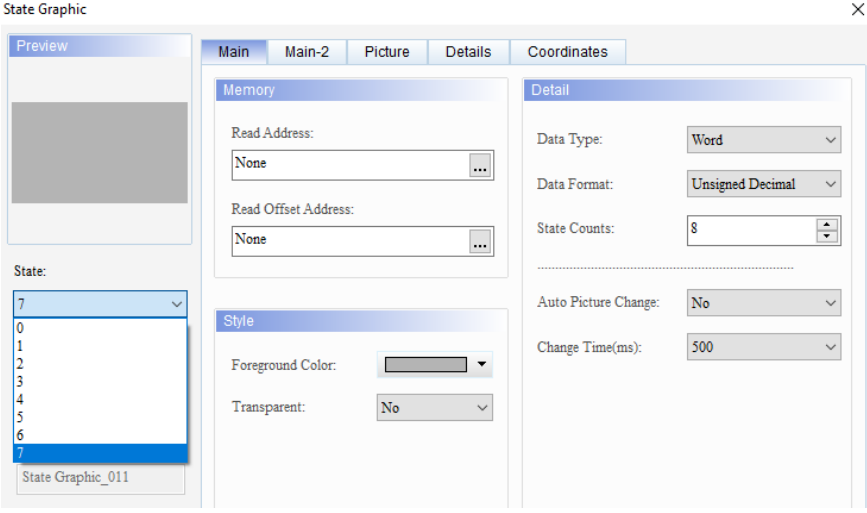


Figure 12.1.2 Main property page for the State Graphic element

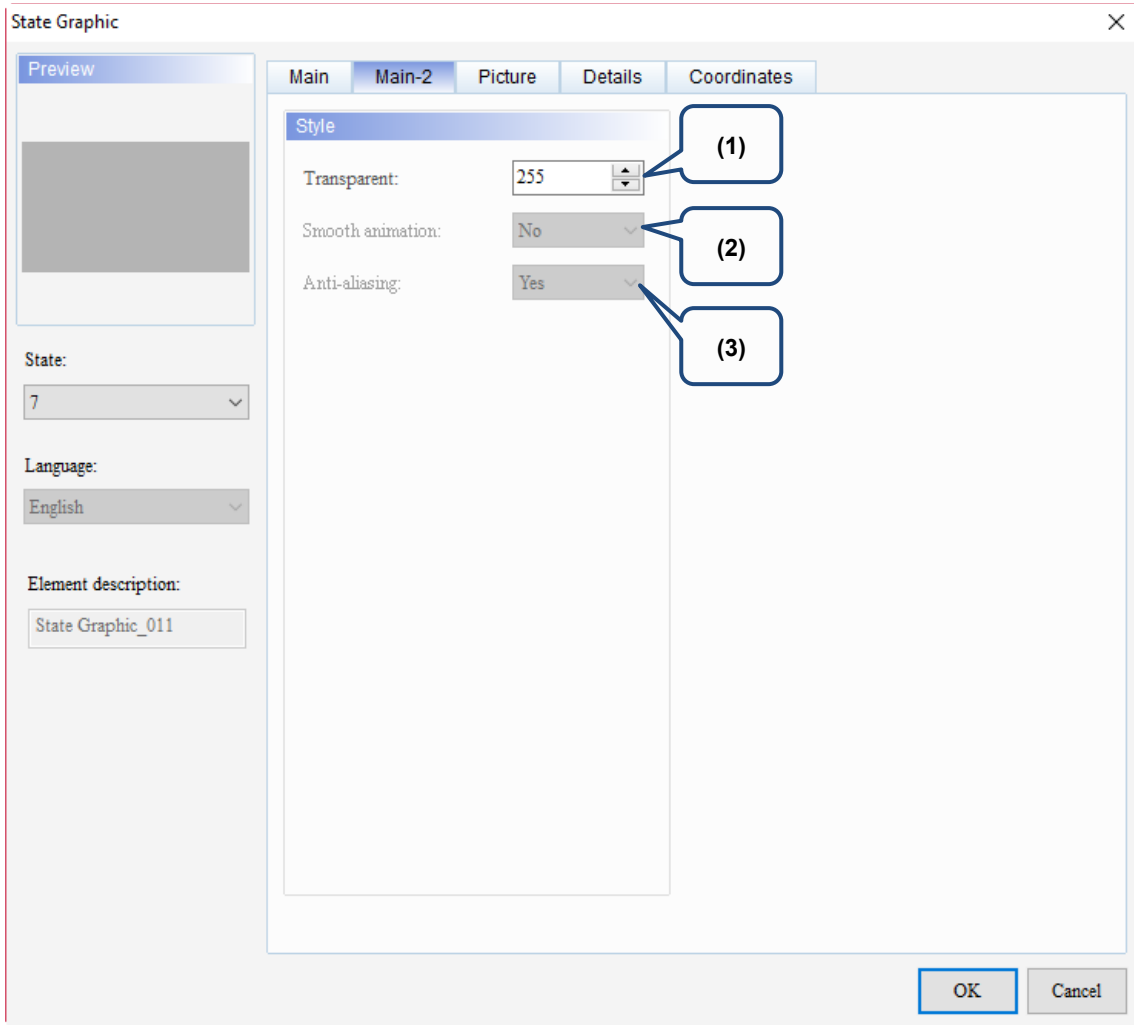
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 12.1.4. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	There are four data types available: Bit, Word, LSB, and LSB (Support State 0). Please refer to Table 12.1.4 for details.
(3)	Data Format	<ul style="list-style-type: none"> You can only select the Data Format when the Data Type is Word. There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal. 

No.	Property	Function description
(4)	State Counts	Set the total state count for the State Graphic. If the Data Type is Word, you can select 1 - 256 states; if the Data Type is LSB, you can select 16 states; if the Data Type is LSB (Support State 0), you can select 17 states; and if the Data Type is Bit, you can select 2 states. Please refer to Table 12.1.4 for details.
(5)	Auto Picture Change	<ul style="list-style-type: none"> There are three options for Auto Picture Change: Yes, No, and Variation.  <ul style="list-style-type: none"> Please refer to Table 12.1.1, Table 12.1.2, and Table 12.1.3 for application examples of Auto Picture Change.
(6)	Change Time (ms)	<ul style="list-style-type: none"> The setting range for the picture change time is 100 - 3000 milliseconds (ms). The default is 500 ms. 
(7)	Foreground Color	<ul style="list-style-type: none"> Set the foreground color of the element. If you set Transparent to Yes, the setting of the foreground color is disabled. 

12

No.	Property	Function description
(8)	Transparent	<ul style="list-style-type: none"> When you select Yes for Transparent, the result is as follows:  You can also specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the black part in the button, the software changes the black part into transparent.  If both the element and graphic are transparent, the result is as follows: 
(9)	State	<p>By switching the State, you can preview or change the settings of each button element state.</p> 

■ Main-2



12

Figure 12.1.3 Main-2 property page for the State Graphic element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

12

■ Picture

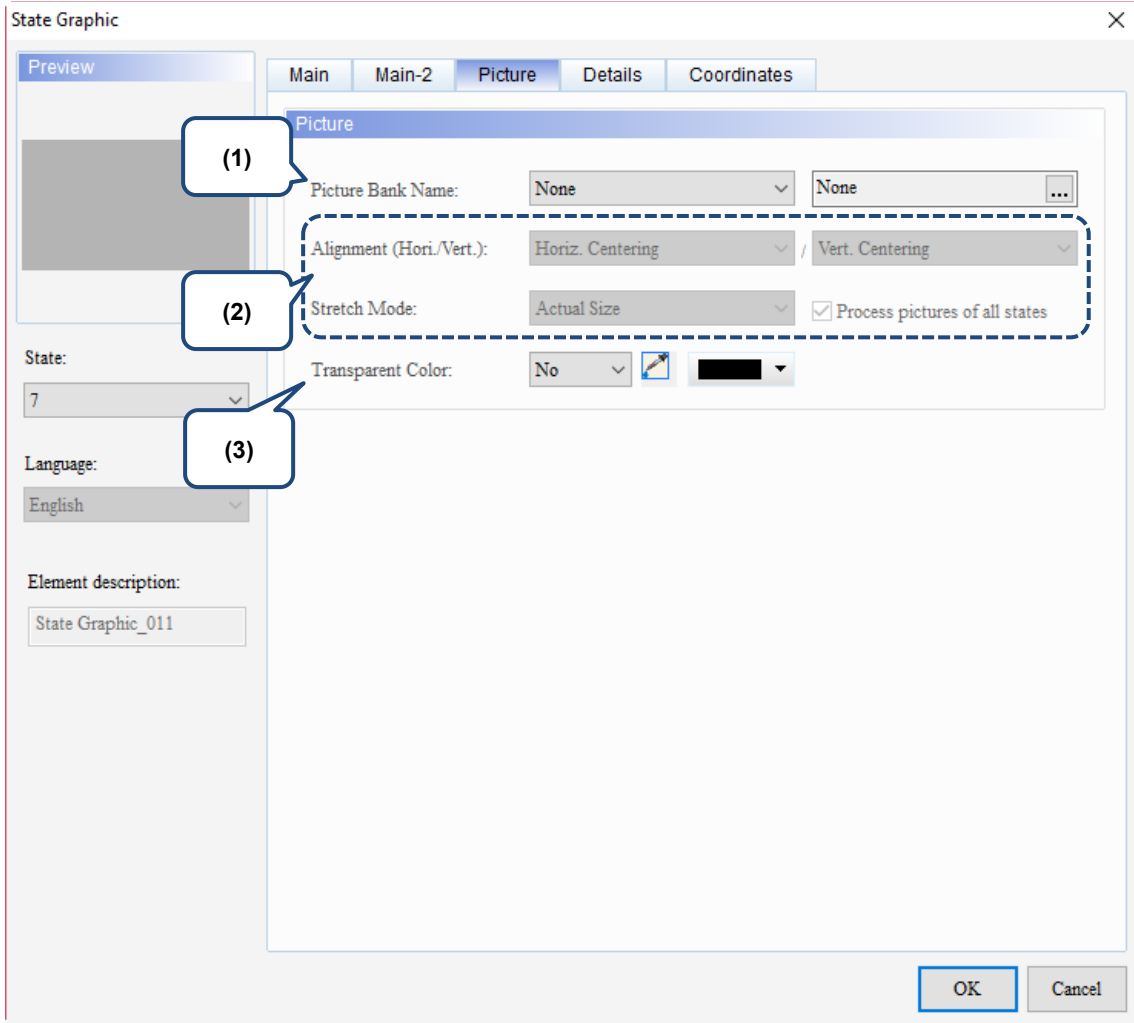
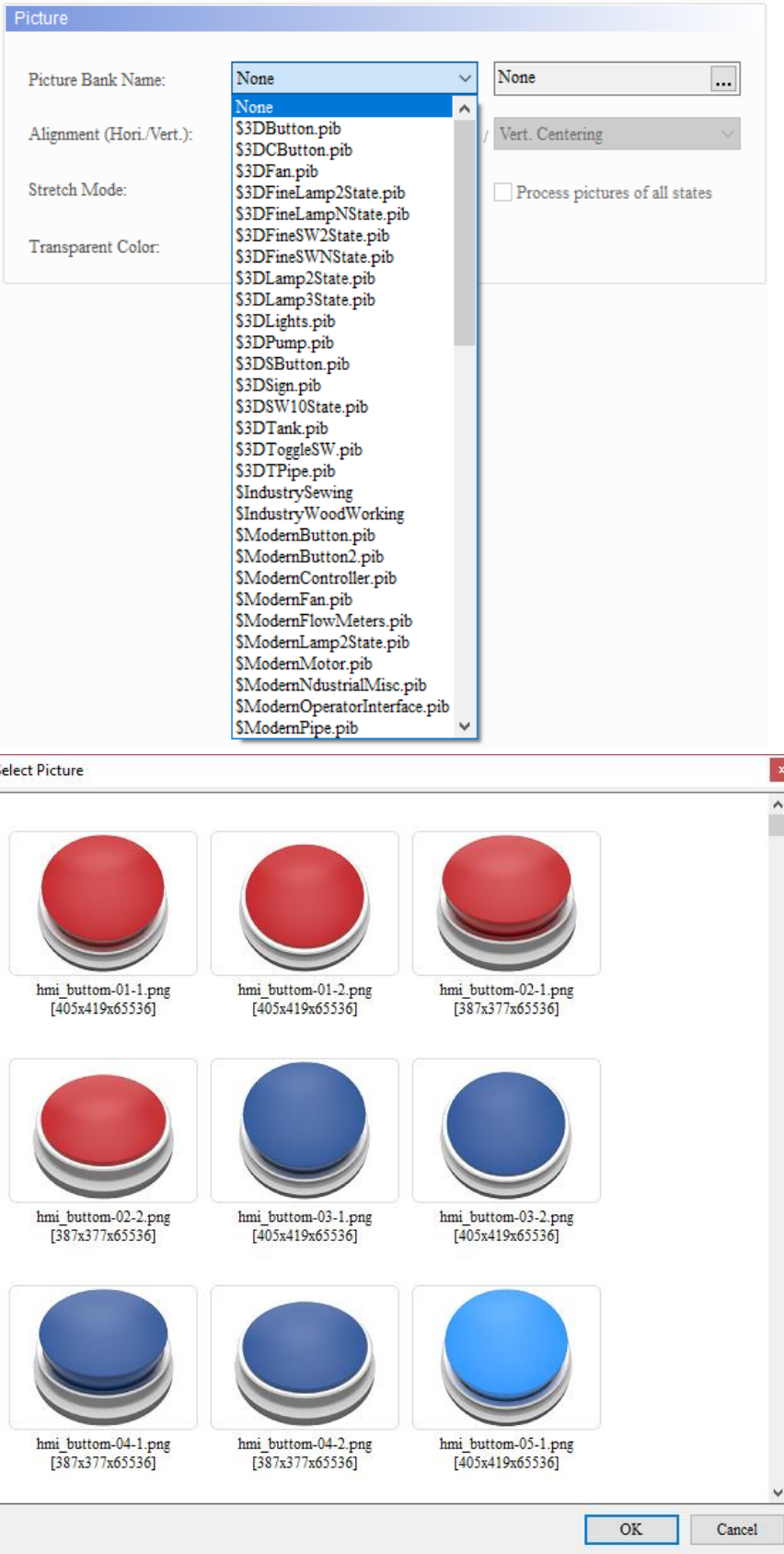
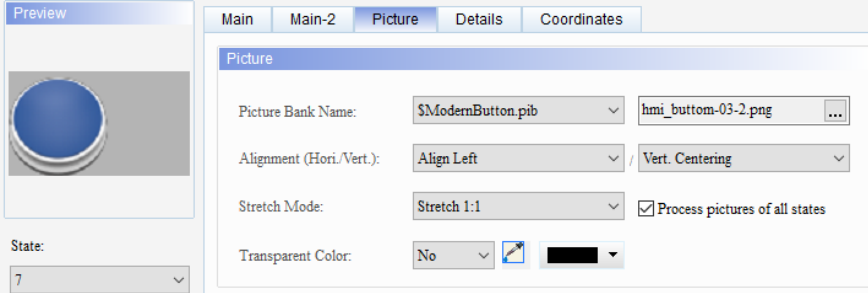











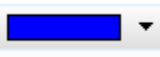



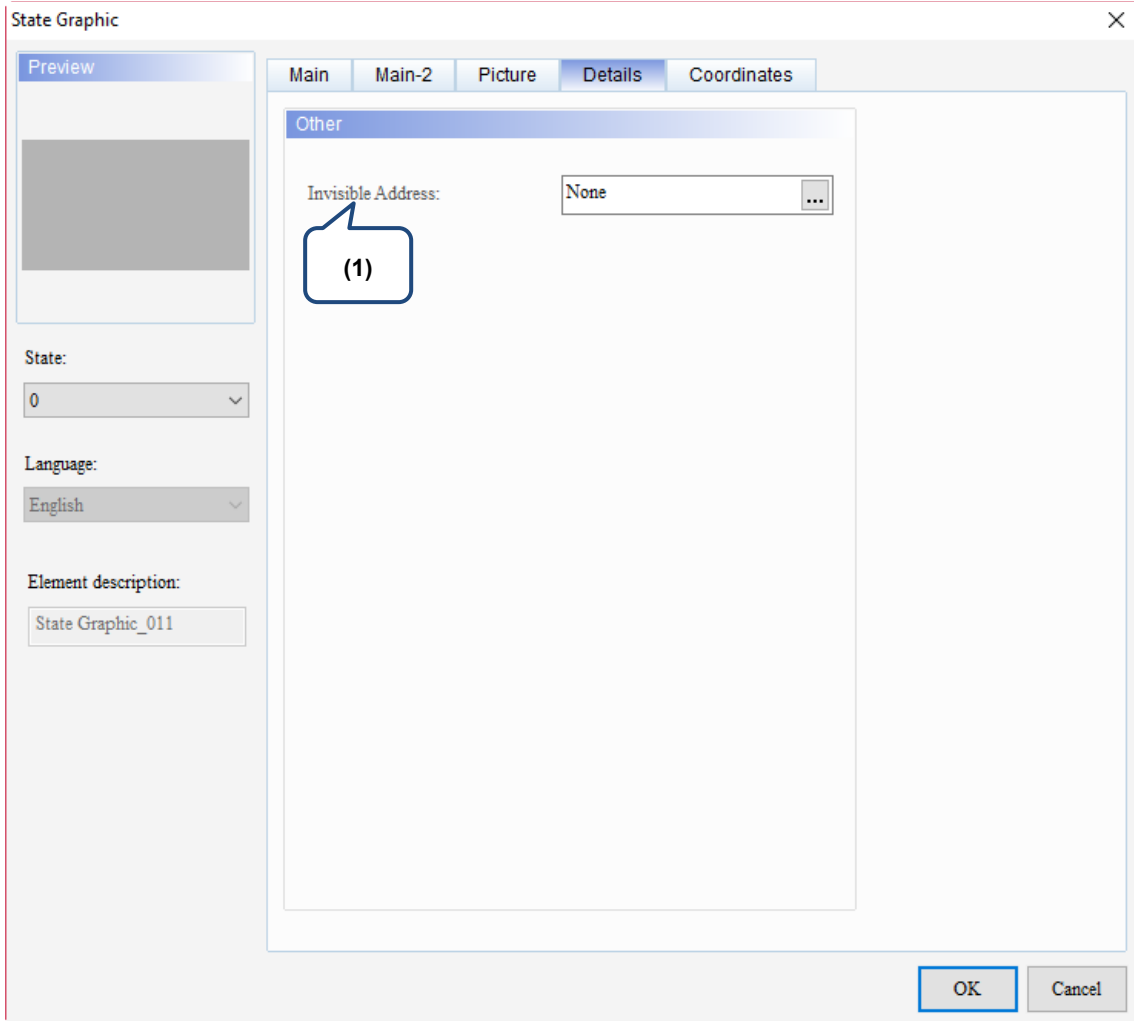
Figure 12.1.4 Picture property page for the State Graphic element

No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.</p>  <p>The 'Picture' dialog box contains the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: A drop-down menu currently showing 'None'. Alignment (Hori./Vert.): A field showing 'None' with a browse button '...'. Stretch Mode: A field showing 'Vert. Centering' with a drop-down arrow. Transparent Color: A checkbox labeled 'Process pictures of all states' which is currently unchecked. <p>The drop-down list for Picture Bank Name includes the following items:</p> <ul style="list-style-type: none"> None \$3DButton.pib \$3DCButton.pib \$3DFan.pib \$3DFineLamp2State.pib \$3DFineLampNState.pib \$3DFineSW2State.pib \$3DFineSWNState.pib \$3DLamp2State.pib \$3DLamp3State.pib \$3DLights.pib \$3DPump.pib \$3DSButton.pib \$3DSign.pib \$3DSW10State.pib \$3DTank.pib \$3DToggleSW.pib \$3DTPipe.pib \$IndustrySewing \$IndustryWoodWorking \$ModernButton.pib \$ModernButton2.pib \$ModernController.pib \$ModernFan.pib \$ModernFlowMeters.pib \$ModernLamp2State.pib \$ModernMotor.pib \$ModernNdustrialMisc.pib \$ModernOperatorInterface.pib \$ModernPipe.pib <p>The 'Select Picture' dialog box displays a grid of nine button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

12

No.	Property	Function description									
	Alignment	<p>You can use the alignment options to set how pictures are aligned.</p> 									
(2)	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
(3)	Transparent Color	<ul style="list-style-type: none"> Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. When you set the Foreground Color to blue, you can use  to select the white part in the calendar, and the software changes the white part into transparent, which you can see becomes identical to the element foreground color. <p style="text-align: center;">Foreground Color: </p> 									

■ Details



12

Figure 12.1.5 Details property page for the State Graphic element

No.	Property	Function description						
(1)	Invisible Address	<p>When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td></td> <td>Invisible Address \$9.0 OFF</td> </tr> <tr> <td>Invisible Address is on</td> <td></td> <td>Invisible Address \$9.0 ON</td> </tr> </table>	Invisible Address is off		Invisible Address \$9.0 OFF	Invisible Address is on		Invisible Address \$9.0 ON
		Invisible Address is off		Invisible Address \$9.0 OFF				
Invisible Address is on		Invisible Address \$9.0 ON						

■ Coordinates

12

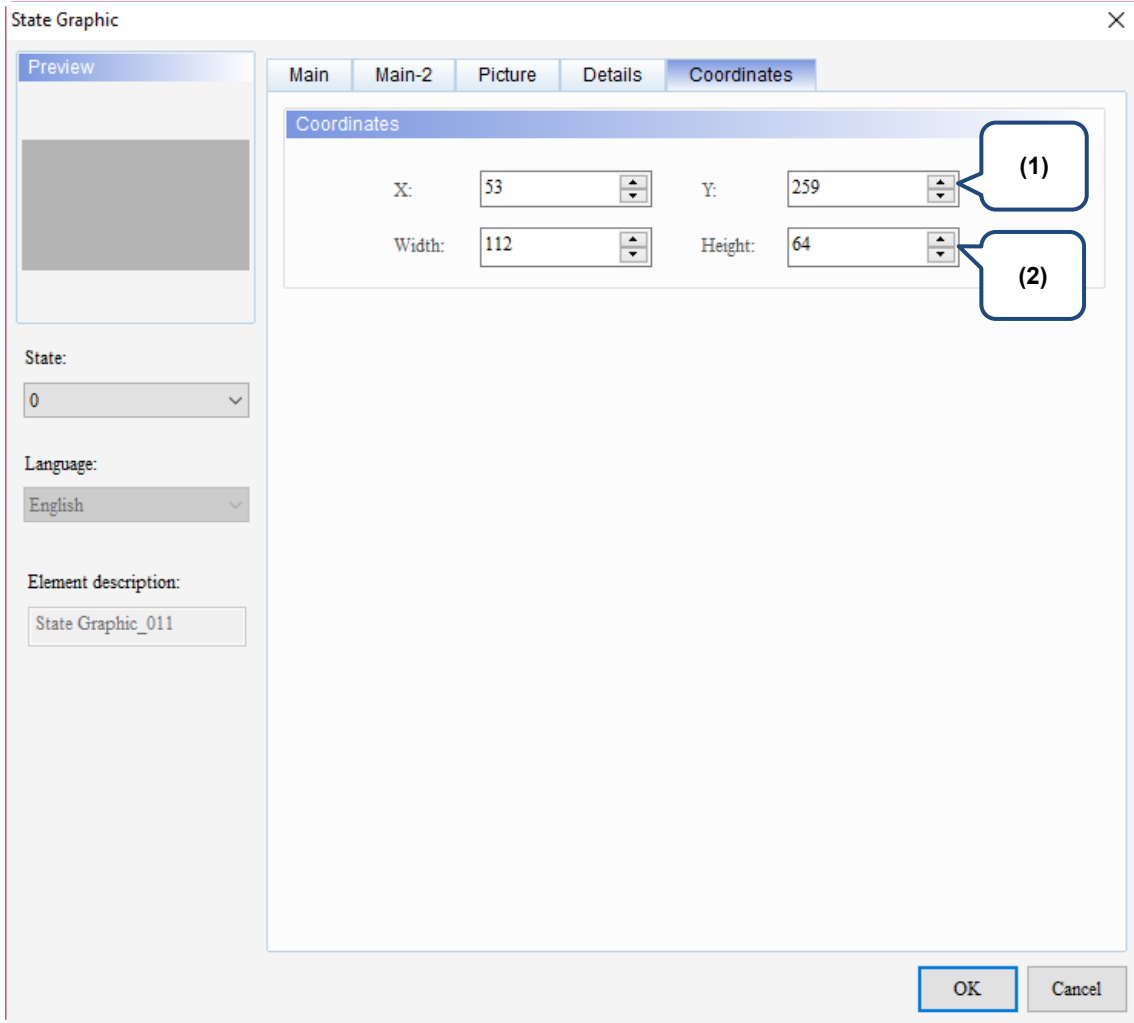


Figure 12.1.6 Coordinates property page for the State Graphic element

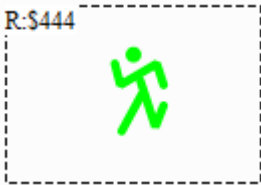
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

12.2 Animated Graphic

You can create multiple state pictures or import GIF images with the Animated Graphic element. Previously, DOPSoft decomposes a GIF file into multiple images, then the user sets the corresponding state one by one, which is inconvenient for programming. The new version of DOPSoft has improved the method for importing GIF images, which is one state corresponds to one GIF image.

The read memory address of the Animated Graphic element enables the read values to correspond to the switching graphics set in the Animated Graphic element as well as specifying the target position for the element to move to. Please refer to Table 12.2.1 for the Animated Graphic example.

Table 12.2.1 Animated Graphic example

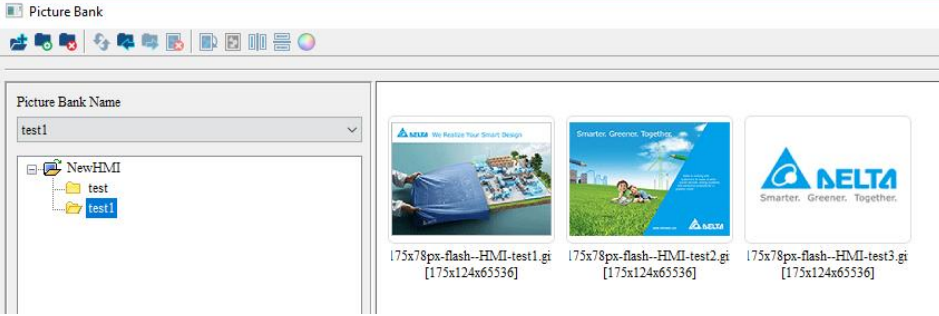
Animated Graphic					
	<table border="1"> <thead> <tr> <th colspan="2">Animated Graphic element</th> </tr> </thead> <tbody> <tr> <td>Read Address</td> <td>\$444</td> </tr> </tbody> </table>	Animated Graphic element		Read Address	\$444
Animated Graphic element					
Read Address	\$444				
Read Address					
Set the property for the Animated Graphic element	<ul style="list-style-type: none"> ■ Set State Counts to 3 which means to import three GIF images. ■ Select Yes for Clear Picture; this means the graphic of the previous state will not stay when switching to the next graphic. 				

12




Animated Graphic

- Create a new picture bank named as “test1” and import three GIF images.

Picture Bank



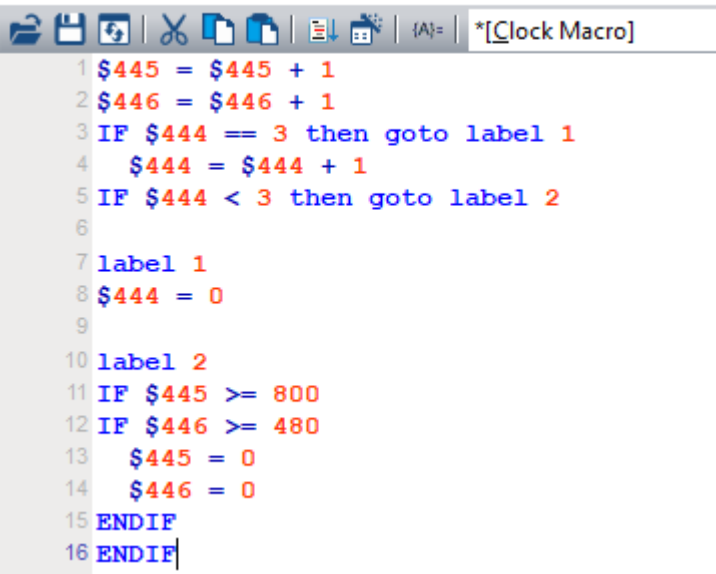
- Enter the Picture page of the Animated Graphic element, import images for State 0, State 1, and State 2 respectively.

Import File	State 0	
	State 1	
	State 2	

Go to [Options] > [Clock Macro]:

- \$445 represents the X coordinate (horizontal axis) of the Animated Graphic element with Read address+1.
- \$446 represents the Y coordinate (vertical axis) of the Animated Graphic element with Read address+2.

*[&Clock Macro]



```

1 $445 = $445 + 1
2 $446 = $446 + 1
3 IF $444 == 3 then goto label 1
4   $444 = $444 + 1
5 IF $444 < 3 then goto label 2
6
7 label 1
8 $444 = 0
9
10 label 2
11 IF $445 >= 800
12 IF $446 >= 480
13   $445 = 0
14   $446 = 0
15 ENDIF
16 ENDIF
                    
```

Animated Graphic

After you compile and download the screen data to the HMI, these three GIF images keep rotating and moving according to the memory addresses read by the horizontal and vertical axes.

12

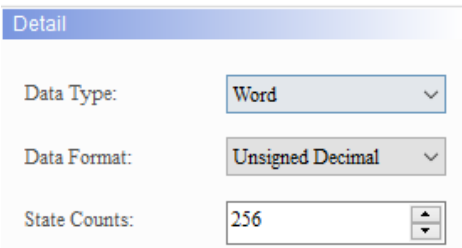
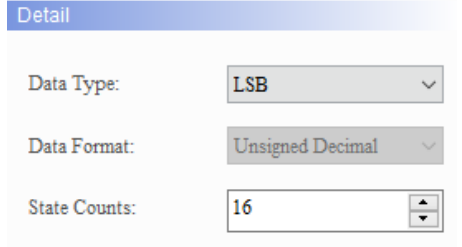
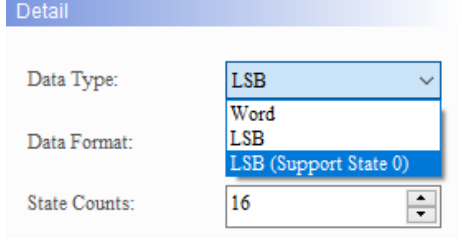

Execution results



12

Animated Graphic element supports three data types as shown in Table 12.2.2. If you need to add or reduce the total number of states, you can simply add or reduce it from State Counts in the Properties table.

Table 12.2.2 Animated Graphic Data Type

Animated Graphic	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> 
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> ■ LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object. ■ If the Data Type is LSB, you can set 1 to 16 states, except for State 0.  <ul style="list-style-type: none"> ■ To display State 0, please select LSB (Support State 0).  <ul style="list-style-type: none"> ■ If you selected LSB, the element is black when the state is 0.  ■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in Word as the unit.

Animated Graphic			
Data Type	State Counts		
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> The examples in the following table show how the state value is determined with the lowest non-zero bit after converting from decimal value to binary value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7. 		
	Decimal	Binary	State value
	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>
	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.
	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.
	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.
	<u>7</u>	<u>0000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.
	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.
	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.
	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.
	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.
	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.
	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.
4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	
8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.	

When you double-click Animated Graphic, the property page is shown as follows.

12

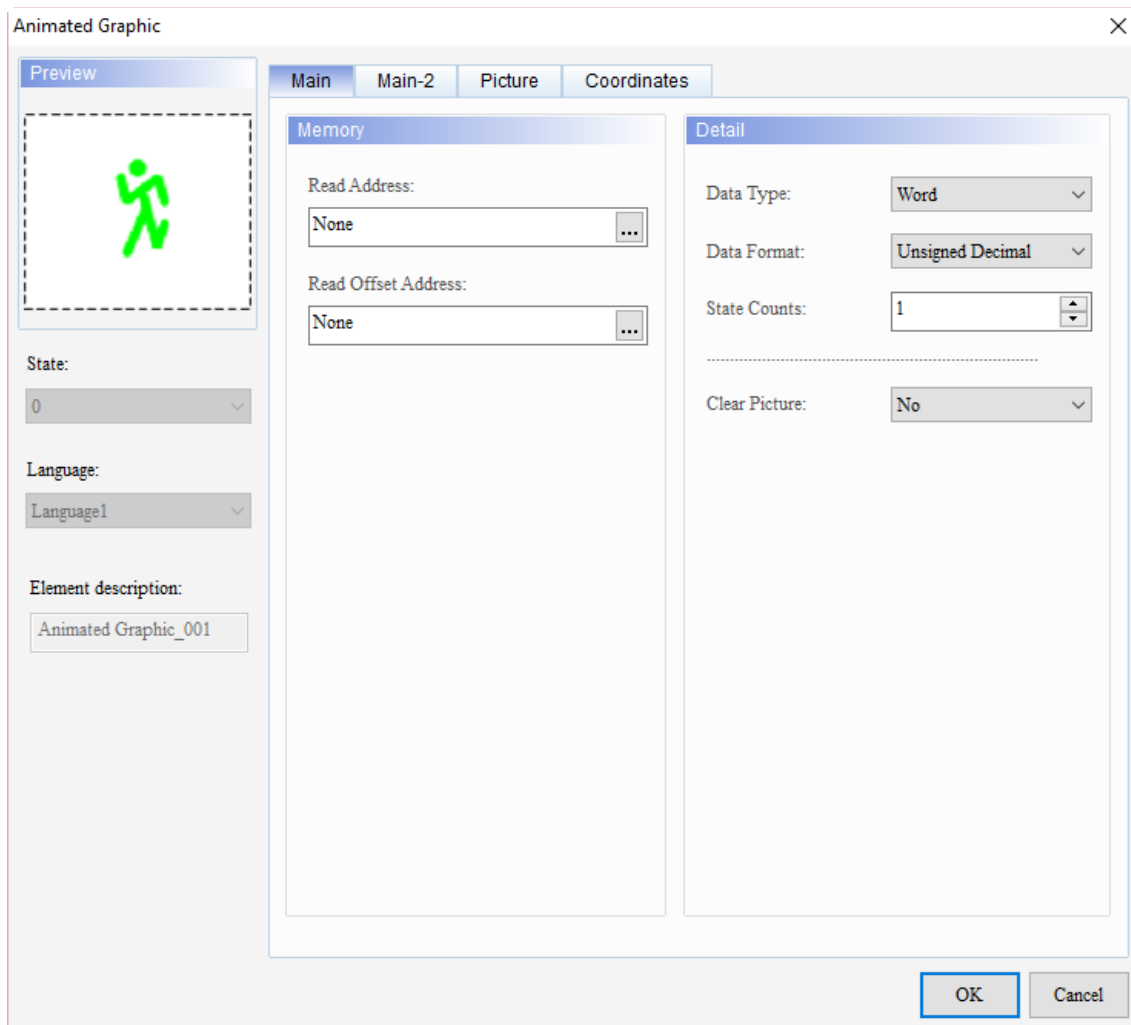


Figure 12.2.1 Properties of Animated Graphic

Figure 12.2.3 Function page of Animated Graphic

Animated Graphic	
Function page	Description
Preview	Animated Graphic elements can view multiple state values, but cannot edit multi-language data display.
Main	Set the Read Address, Read Offset Address, Data Type, Data Format, State Counts, and Clear Picture.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

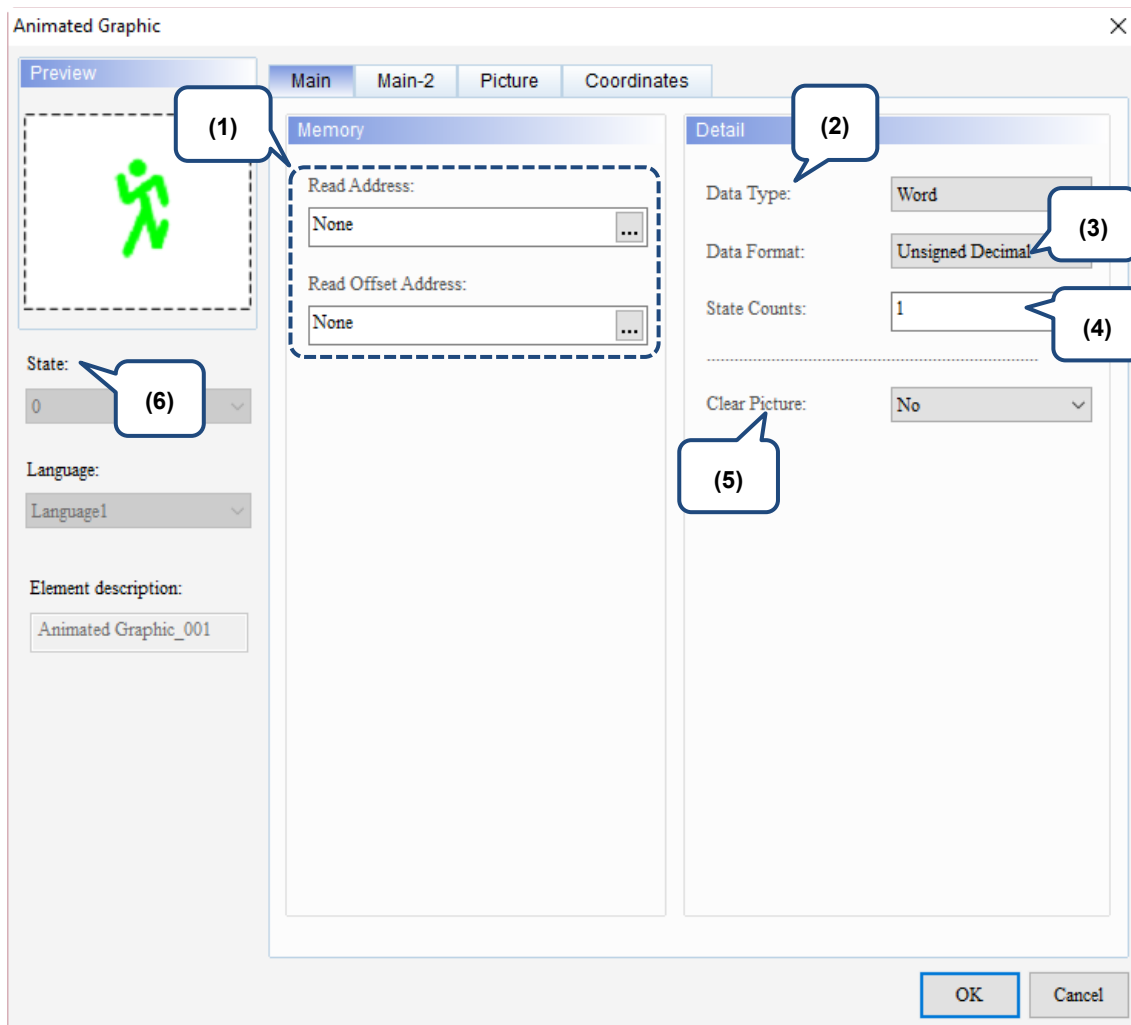
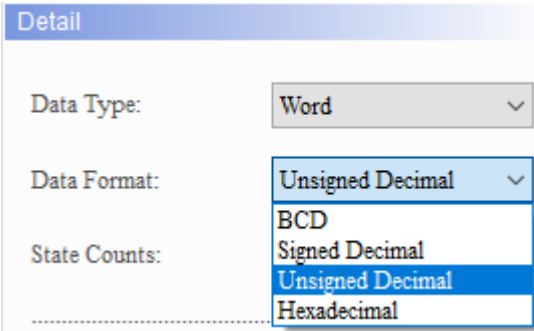
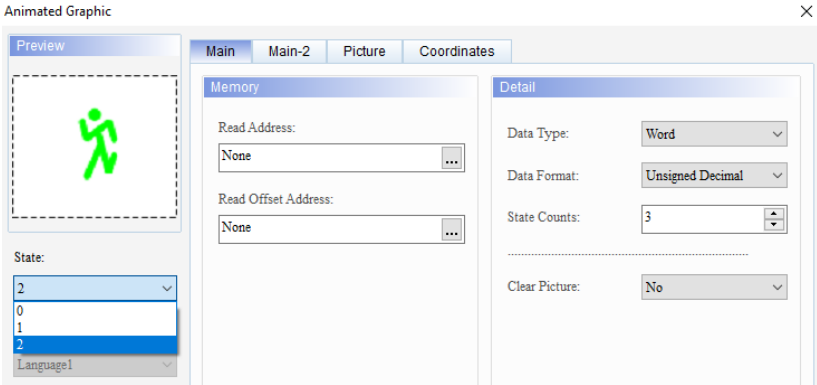


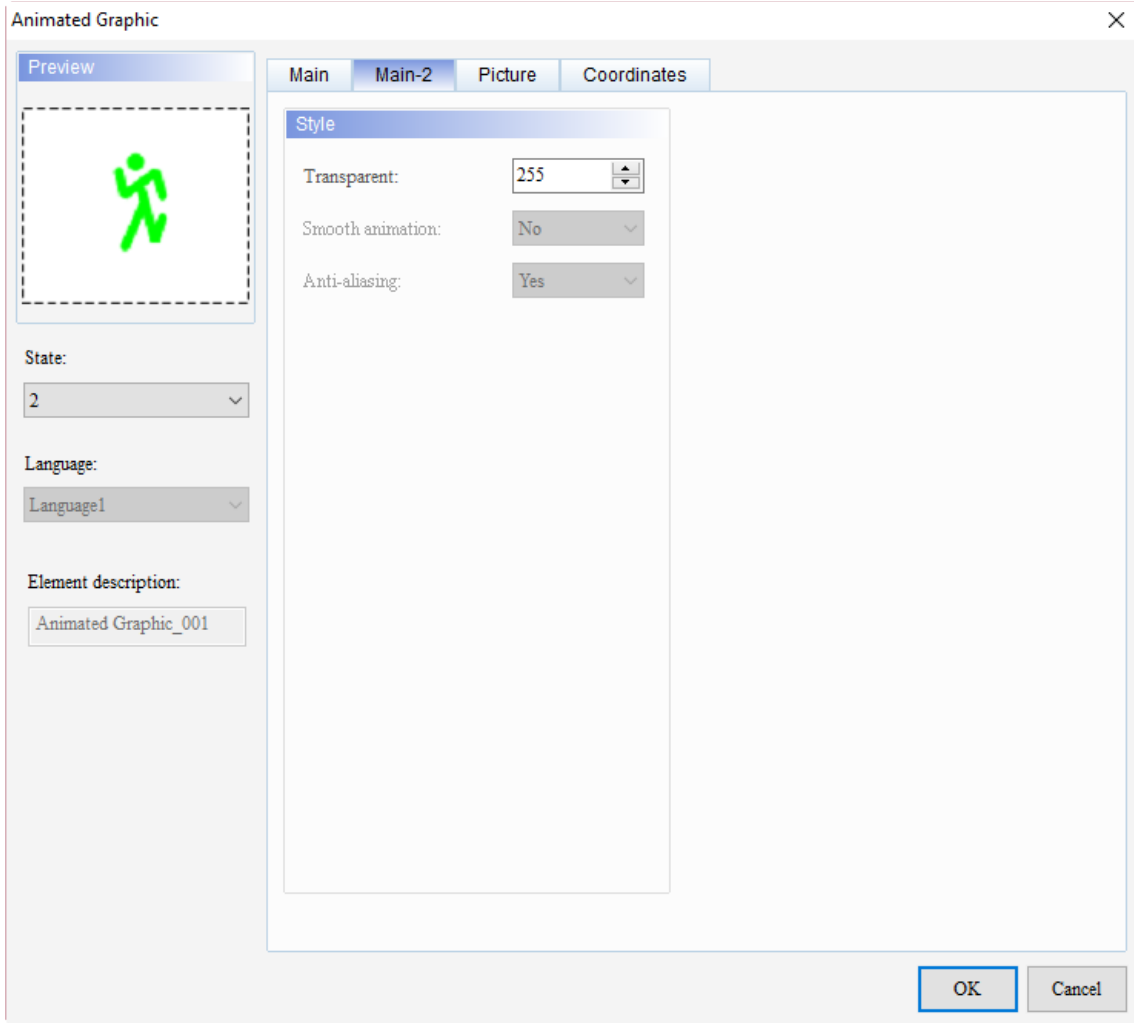
Figure 12.2.2 Main property page for the Animated Graphic element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> ■ You can select the internal memory or the controller register address. ■ The Animated Graphic switches according to the value of the Read Address. ■ Read address+1 is the position where the horizontal axis (X) of the Animated Graphic element moves to. ■ Read address+2 is the position where the vertical axis (Y) of the Animated Graphic element moves to. ■ Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	There are three data types available: Word, LSB, and LSB (Support State 0). Please refer to Table 12.2.2 for details.

12

No.	Property	Function description
(3)	Data Format	<ul style="list-style-type: none"> You can only select the Data Format when the Data Type is Word. There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal. 
(4)	State Counts	<p>Set the State Counts for the Animated Graphic element. If the Data Type is Word, you can select 1 - 256 states; if the Data Type is LSB, you can select 16 states; and if the Data Type is LSB (Support State 0), you can select 17 states. Please refer to Table 12.2.2 for details.</p>
(5)	Clear Picture	<ul style="list-style-type: none"> Whether to clear the graphic of the previous state during animation and when switching the State Graphics. Select No for Clear Picture; this means the HMI will display the graphic of the previous state when switching to the next graphic.
(6)	State	<p>By switching the State, you can preview or change the settings of each button element state.</p> 

■ Main-2



12

Figure 12.2.3 Main-2 property page for the Animated Graphic element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

12

■ Picture

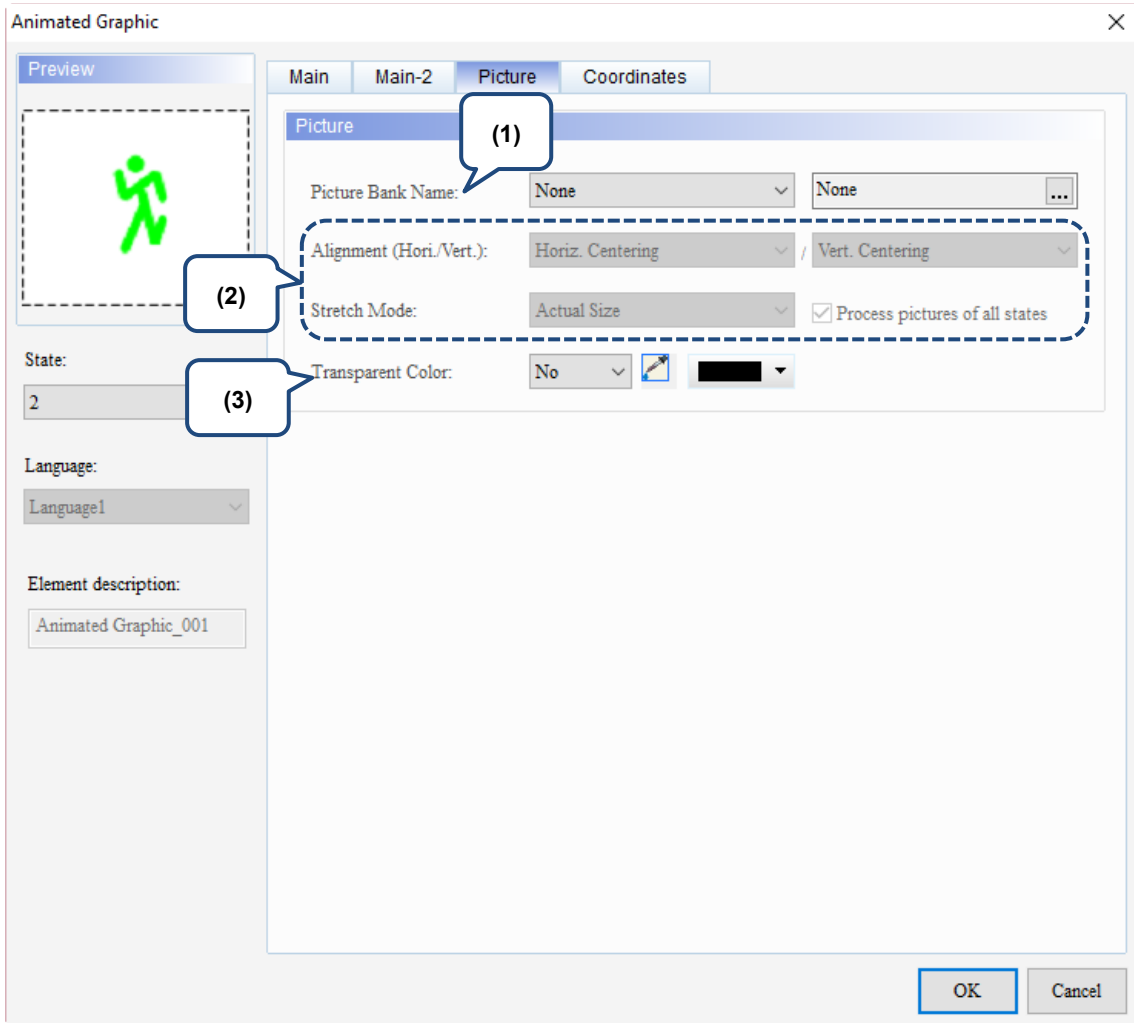
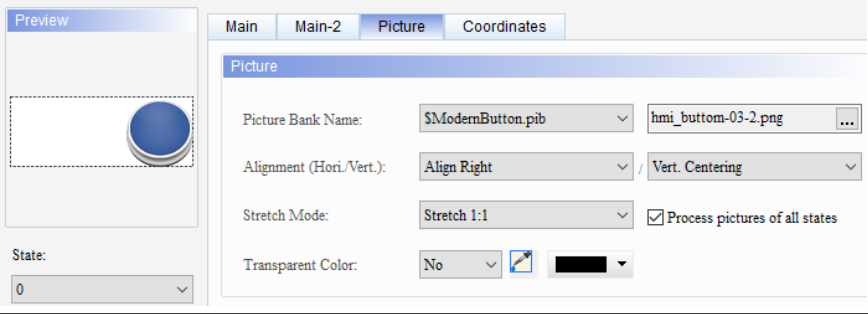















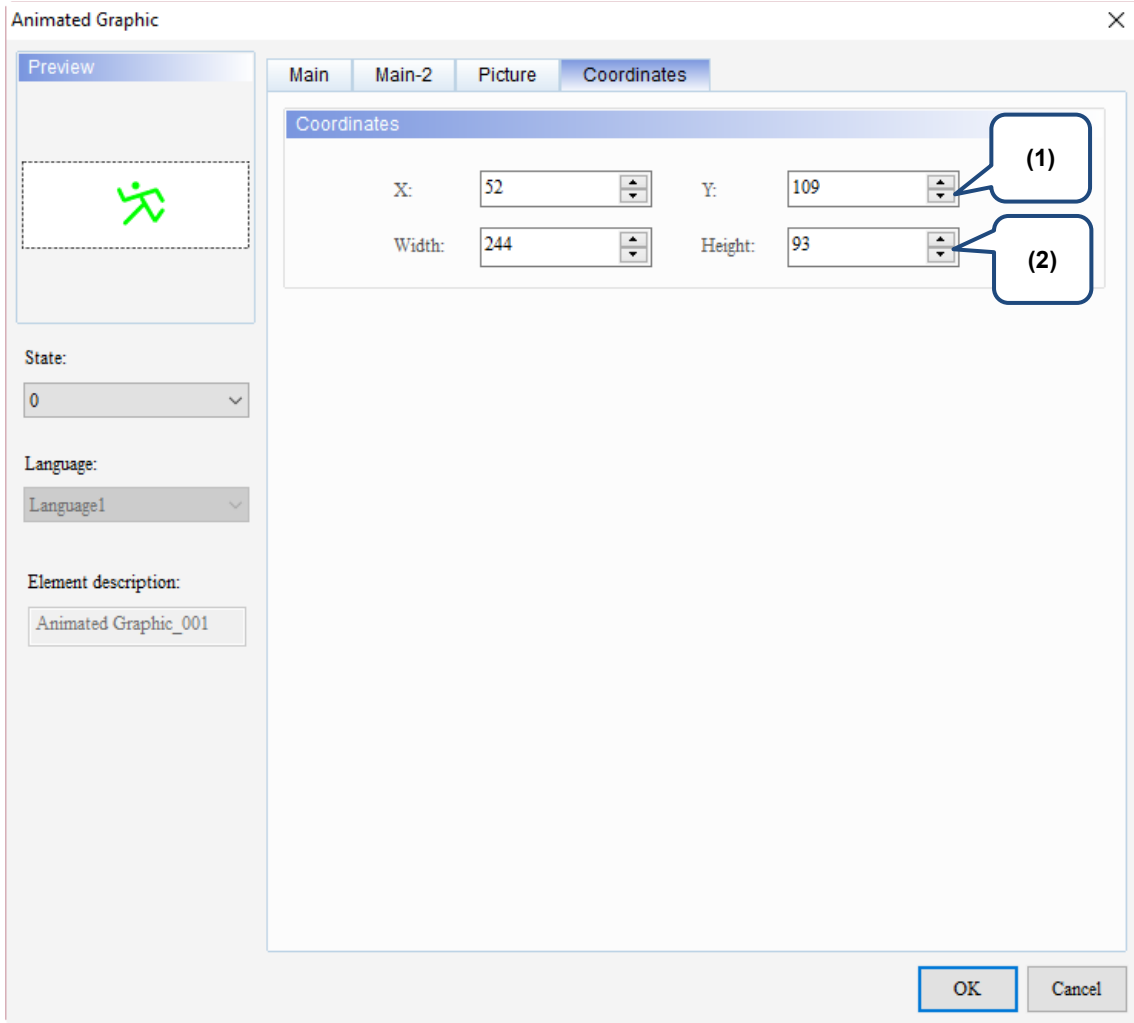
Figure 12.2.4 Picture property page for the Animated Graphic element

No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.</p>  <p>The 'Picture' dialog box contains the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: None (dropdown menu) Alignment (Hori./Vert.): Vert. Centering (dropdown menu) Stretch Mode: (empty) Transparent Color: (empty) <p>The 'Select Picture' dialog box displays a grid of 9 button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

12

No.	Property	Function description									
	Alignment	<p>You can use the alignment options to set how pictures are aligned.</p> <p>Animated Graphic</p> 									
(2)	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
(3)	Transparent Color	<ul style="list-style-type: none"> Specifies a color in the picture and turn this color into transparent.  is for selecting the transparent color. When you set the Foreground Color to blue, you can use  to select the white part in the calendar, and the software changes the white part into transparent, which you can see becomes identical to the element foreground color. <p>Foreground Color:  [Blue]</p> 									

■ Coordinates



12

Figure 12.2.5 Coordinates property page for the Animated Graphic element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

12

12.3 Real-time Image

The Real-time Image is mainly for the user to use the `ImgTrans.dll` library provided by DOPSoft to write external applications and upload graphics to the HMI. Multiple Real-time Image elements can display in one editing screen. The software dynamically configures the available memory capacity according to the created Real-time Image elements and the sizes of the graphics for uploading. Please refer to Table 12.6.1 for the Real-time Image example.

1. Data structure definition:

```
typedef struct _ETHER_INFO
```

```
{
    char    szIP[32];
           WORD  IPPort;
} ETHER_INFO;
```

,szIP is a string indicating the IP address of the Ethernet communication

,IPPort is the port of the Ethernet communication

```
typedef struct _COMM_INFO
```

```
{
    char    szCOM[10];
    unsigned long  dwStation
    ETHER_INFO  EtherInfo;
} COMM_INFO;
```

, szCOM is a string, and the input values are COM1, COM2, COM3, ...; if you are using Ethernet, set this string to "ETHERNET".

, If there is no station number, set dwStation to -1 (set Ethernet to -1); if there is a station number, set dwStation to > 0.

2. Function list:

- (1) int hmOpen(const COMM_INFO* pCommInfo);
- (2) int hmSendImageFromFile(LPCTSTR szFileName);
- (3) int hmSendImageFromFileByStation(LPCTSTR szFileName, int nStation);
- (4) HANDLE hmAsyncSendImageFromFile(LPCTSTR szFileName);
- (5) HANDLE hmAsyncSendImageFromFileByStation(LPCTSTR szFileName, int nStation);
- (6) int hmSendImage(HBITMAP hbmp);
- (7) int hmSendImageByStation(HBITMAP hbmp, int nStation);
- (8) HANDLE hmAsyncSendImage(HBITMAP hbmp);
- (9) HANDLE hmAsyncSendImageByStation(HBITMAP hbmp, int nStation);
- (10) int hmAbortAction();
- (11) int hmClose();

3. Function description:

(1) Function: `int hmOpen(const COMM_INFO* pCommInfo);`

Input value: `COMM_INFO` structure

Return value: 1 is success, 0 is failure

Description: enable the HMI communication and input the string for COM Port, such as COM1, COM2, etc.

(2) Function: `int SendImageFromFile(LPCTSTR szFileName);`

Input value: graphic file name

Return value: 1 is success, 0 is failure

Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI. This function is a synchronous function, and this function will not return the execution result until the data transfer is completed.

(3) Function: `int SendImageFromFileByStation(LPCTSTR szFileName, int nStation);`

Input value: graphic file name, HMI station number (must be greater than 0)

Return value: 1 is success, 0 is failure

Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI with the specified station number. This function is a synchronous function, and this function will not return the execution result until the data transfer is completed.

(4) Function: `HANDLE hmAsyncSendImageFromFile(LPCTSTR szFileName);`

Input value: graphic file name

Return value: 0 is failure, non-zero value is the Thread Handle

Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.

(5) Function: `HANDLE hmAsyncSendImageFromFileByStation(LPCTSTR szFileName, int nStation);`

Input value: graphic file name, HMI station number (must be greater than 0)

Return value: 0 is failure, non-zero value is the Thread Handle

Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI with the specified station number. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.

12

(6) Function: `int hmSendImage(HBITMAP hbmp);`

Input value: Window HBITMAP Handle

Return value: 1 is success, 0 is failure

Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI. This function is a synchronous function, and this function will not return the execution result until the data transfer is completed.

(7) Function: `int hmSendImageByStation(HBITMAP hbmp, int nStation);`

Input value: Window HBITMAP Handle, HMI station number (must be greater than 0)

Return value: 1 is success, 0 is failure

Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI with the specified station number. This function is a synchronous function, and this function will not return the execution result until the data transfer is completed.

(8) Function: `HANDLE hmAsyncSendImage(HBITMAP hbmp);`

Input value: Window HBITMAP Handle

Return value: 0 is failure, non-zero value is the Thread Handle

Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.

(9) Function: `HANDLE hmAsyncSendImage(HBITMAP hbmp, int nStation);`

Input value: Window HBITMAP Handle, HMI station number (must be greater than 0)

Return value: 0 is failure, non-zero value is the Thread Handle

Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI with the specified station number. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.

(10) Function: `int hmAbortAction();`

Input value: none

Return value: 0 is failure, 1 is success

Description: abort the graphics transfer of the asynchronous function.

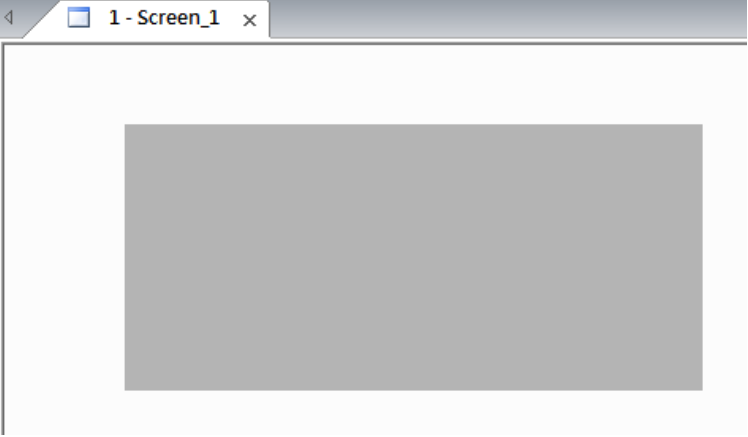
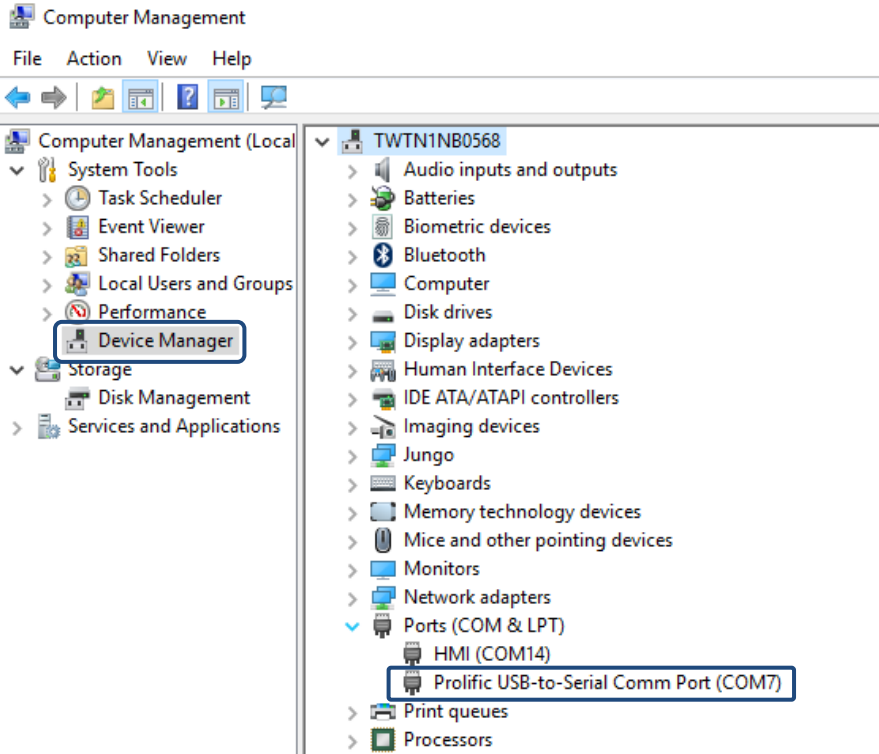
(11) Function: `int hmClose();`

Input value: none

Return value: 0 is failure, 1 is success

Description: disable the HMI communication. This function is automatically called when DII ends.

Table 12.6.1 Real-time Image example

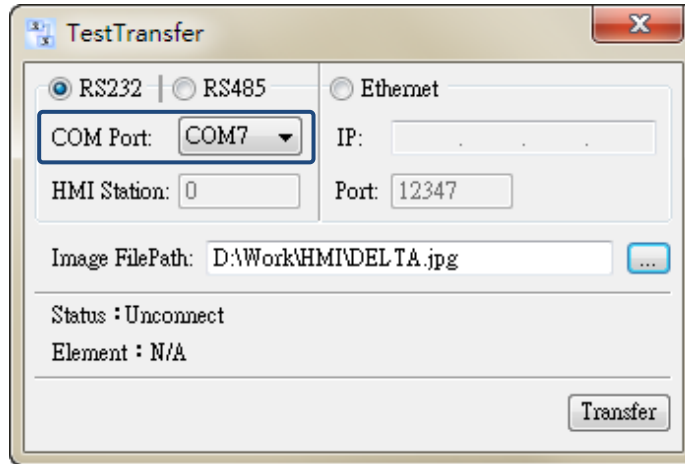
Real-time Image							
Create Real-time Image element	<p>Create a Real-time Image element on the HMI editing screen.</p> 						
Settings	<p>This is a communication port that connects the HMI to the PC, which is set to COM2 and transmits with the RS232 communication interface.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>HMI station number</th> <th>Interface</th> <th>Port</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">RS232</td> <td style="text-align: center;">COM2</td> </tr> </tbody> </table>	HMI station number	Interface	Port	1	RS232	COM2
HMI station number	Interface	Port					
1	RS232	COM2					
Compilation screen	<p>Create a Real-time Image element and set its communication interface and port, then compile and download the screen data to the HMI.</p>						
Execute TestTransfer.exe	<ul style="list-style-type: none"> ■ Use a 9-pin transmission line and a null modem to connect the PC to the HMI. ■ Click [Control Panel] > [Administrative Tools] > [Computer Management] > [Device Manager] > [Ports] to view the connection ports on the PC end, as shown below. 						

12

Real-time Image

Execute
TestTransfer.exe

- Open [My Computer] > go to the following path [C:\Program Files\Delta Industrial Automation\DopSoft 4.00.xx\Utility\ImgTrans] and select [TestTransfer.exe]. Open this tool, set the COM port between PC and HMI to COM7, and select the image file for uploading. This example selects the image file DELTA.jpg located in D:\, please see the figure below.

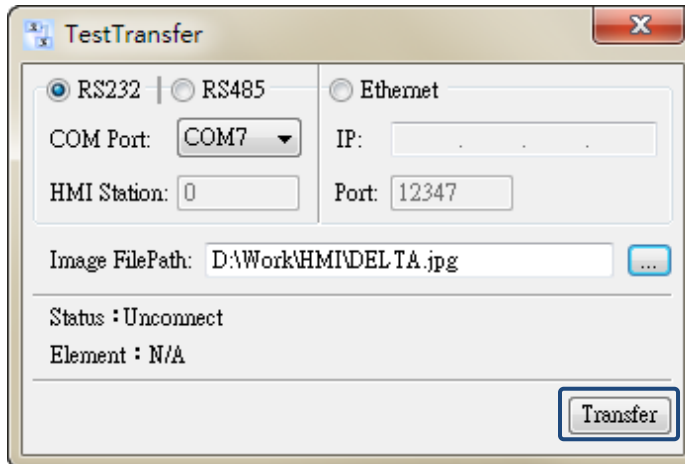


- The figure below is the selected DELTA.jpg file image.



Execution results

- After you selected the image file for uploading, click **Transfer**.



- If the connection is successful, the Status displays "Connect Success". The Real-time Image element on the HMI displays the uploaded image.



The following figure shows the property setting screen when you double-click the Real-time Image element.

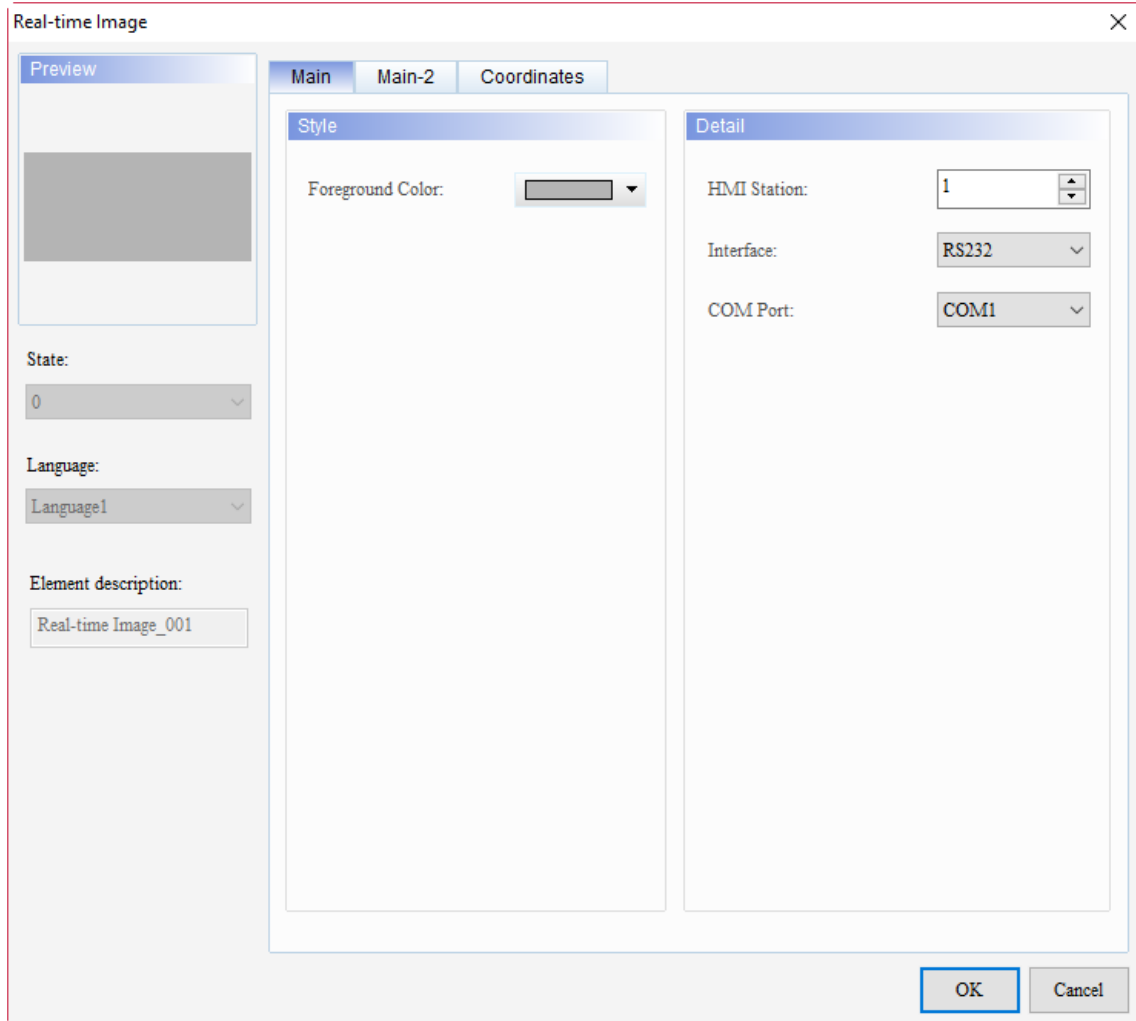


Figure 12.6.1 Properties of Real-time Image

Table 12.6.2 Function page of Real-time Image

Real-time Image	
Function page	Description
Preview	No multiple state values and multi-language data display for viewing.
Main	Set the element foreground color. Set the HMI Station number, Interface, and COM Port.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

12

■ Main

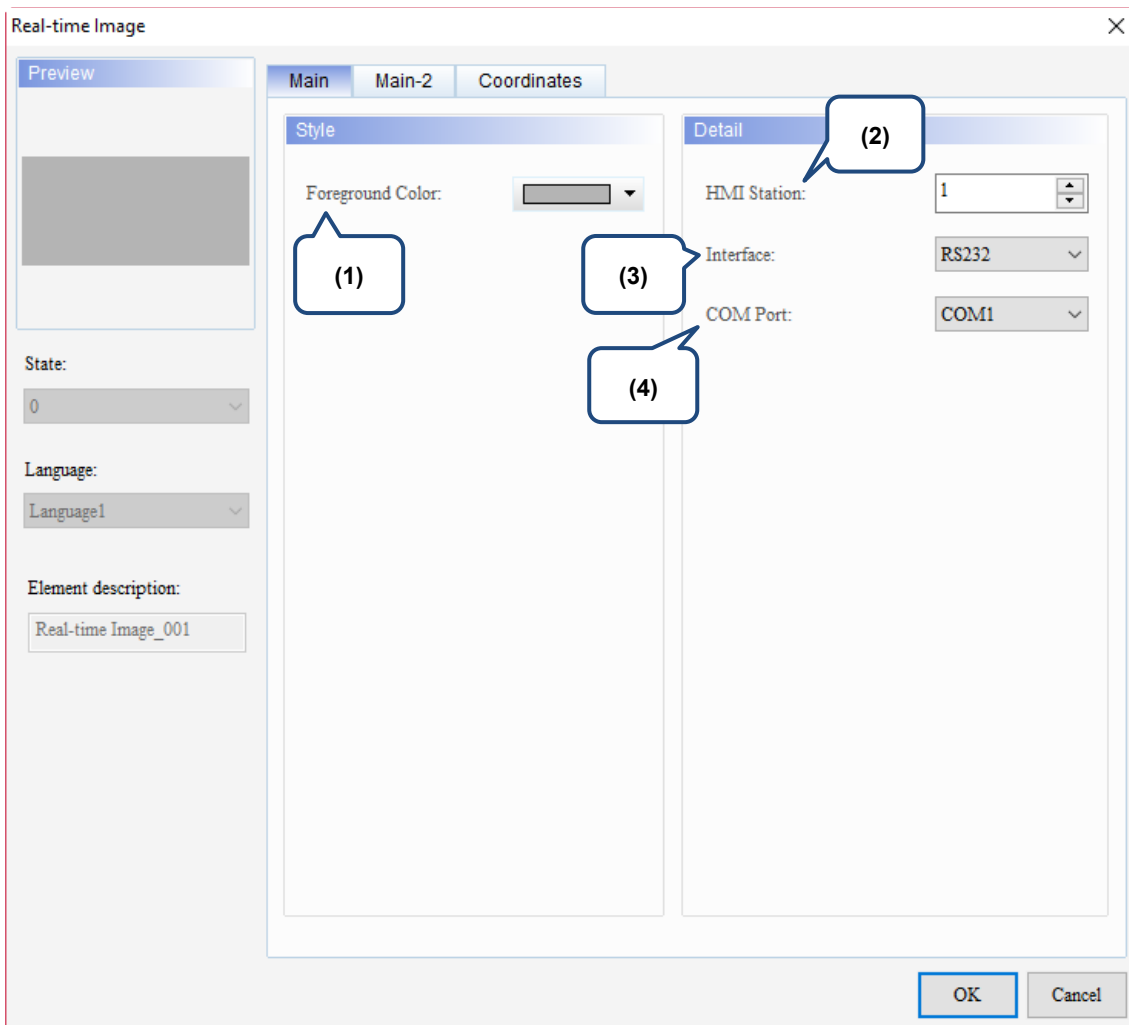
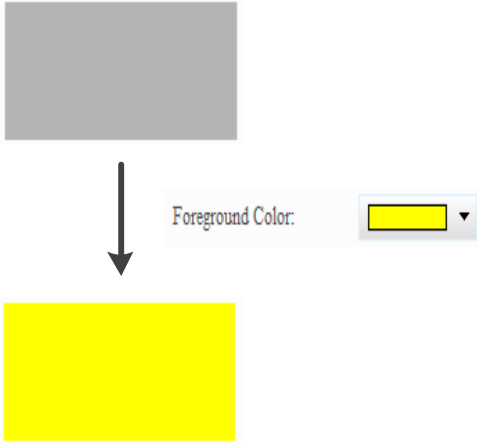
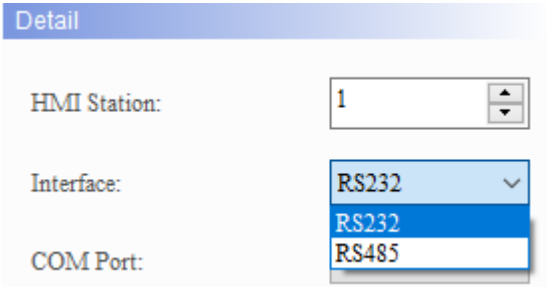
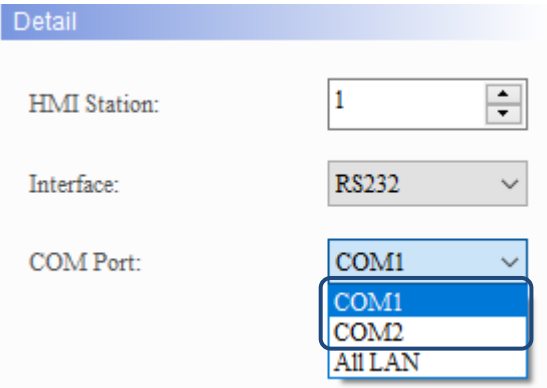
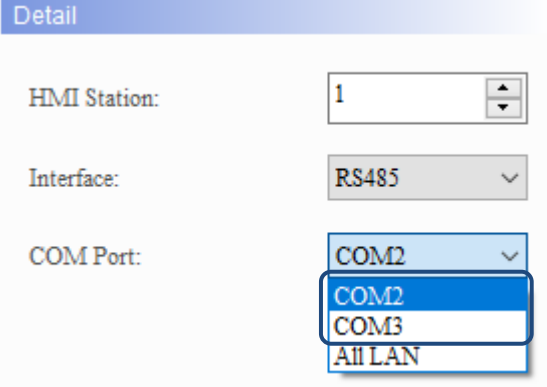
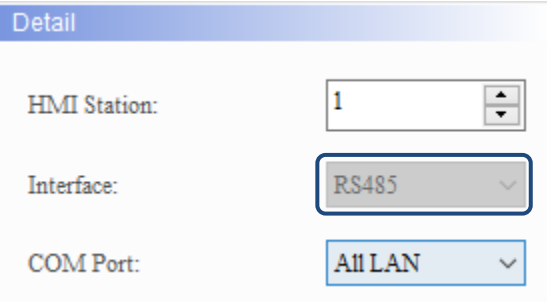


Figure 12.6.2 Main property page for the Real-time Image element

No.	Property	Function description
(1)	Foreground Color	<p>Set the foreground color of the element.</p> 
(2)	HMI Station	<p>The HMI Station number option is mainly for the transmission mode of RS485 with the setting range from 1 to 255, and the default is 1. When you use RS485 to connect multiple HMIs in series, you can use this HMI Station number to distinguish each HMI.</p>

No.	Property	Function description
(3)	Interface	<ul style="list-style-type: none"> The transmission modes include RS232 and RS485.  <ul style="list-style-type: none"> The RS232 communication ports are COM1 and COM2. The RS485 communication ports are COM2 and COM3.
(4)	COM Port	<ul style="list-style-type: none"> The communication ports include COM1, COM2, COM3, and Ethernet. Different communication ports are available depending on the transmission mode.   <ul style="list-style-type: none"> Please note that this communication port is the port of the HMI which cannot share a COM with the communication port of the PLC. For example, if the PLC communication is selected as COM1, then you can only select COM2 or COM3 for the communication port of the HMI. If the PLC communication is selected as COM1 and RS232 is selected as the transmission mode, then you can only select COM2 for the communication port of the HMI. If the communication port is selected as Ethernet, the Interface option is grayed out and cannot be set. 

12

■ Main-2

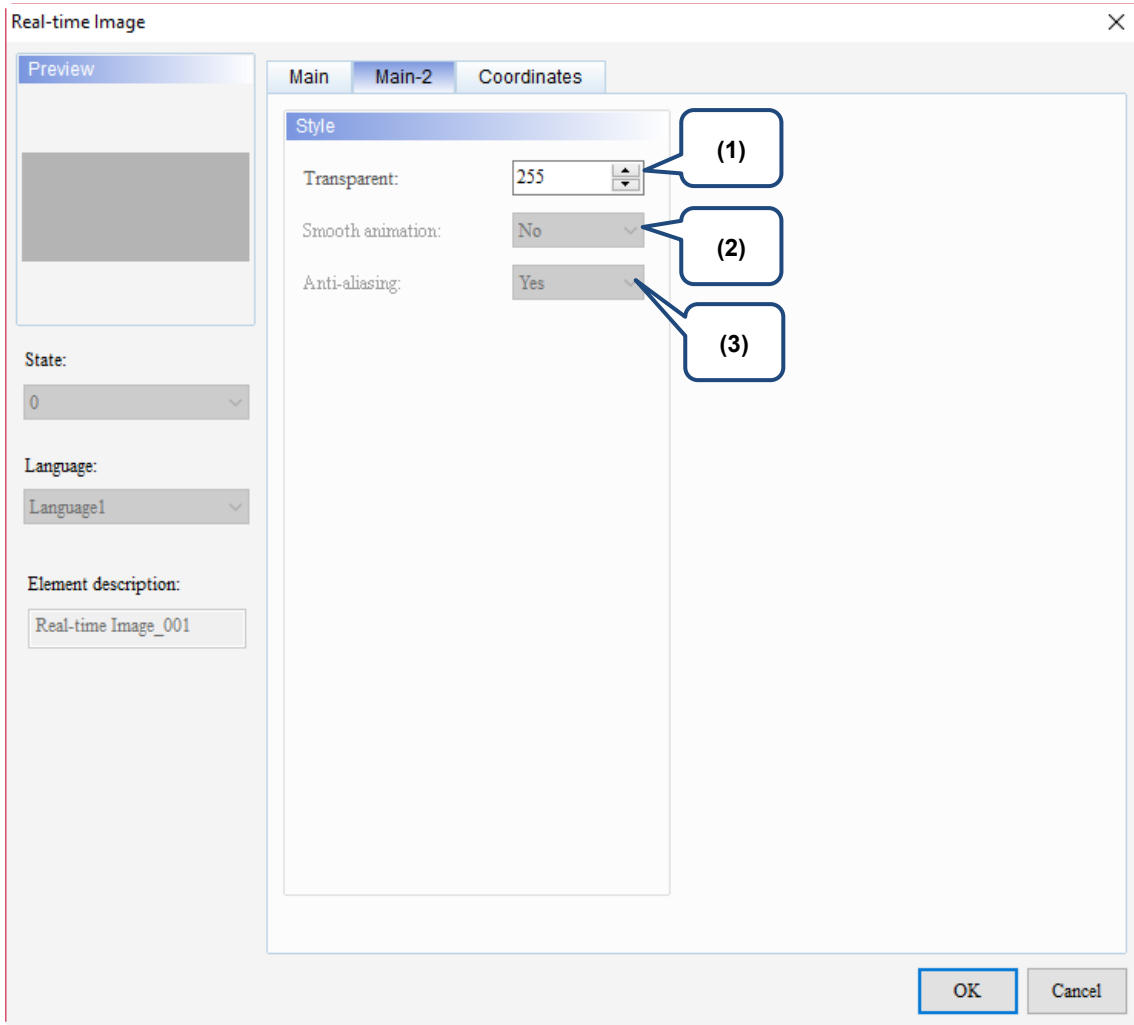
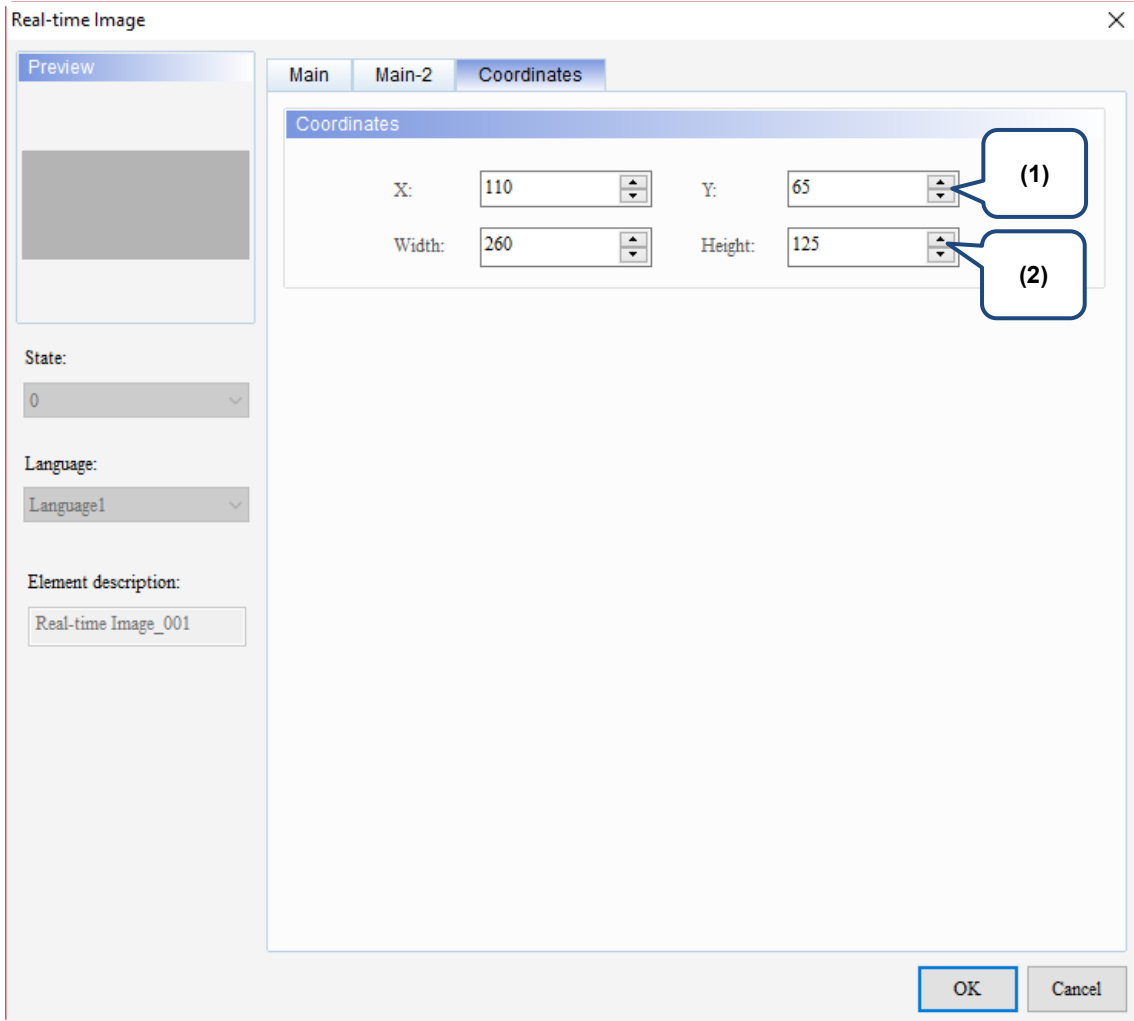


Figure 12.6.3 Main-2 property page for the Real-time Image element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Coordinates



12

Figure 12.6.4 Coordinates property page for the Real-time Image element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

12

The following is the library path and function description.

Library	
Library path	C:\Program Files\Delta Industrial Automation\DopSoft 1.00.01\Utility\ImgTrans
Library description	<ul style="list-style-type: none"> ■ Load ImgTrans.dll. ■ Data structure definition: <pre>typedef struct _COMM_INFO { char szCOM[8]; } COMM_INFO;</pre> szCOM is a string, and the input values are COM1, COM2, COM3... ■ Function list: <ul style="list-style-type: none"> (12) int hmOpen(const COMM_INFO* pCommInfo); (13) int hmSendImageFromFile(LPCTSTR szFileName); (14) HANDLE hmAsyncSendImageFromFile(LPCTSTR szFileName); (15) int hmSendImage(HBITMAP hbmp); (16) HANDLE hmAsyncSendImage(HBITMAP hbmp); (17) int hmAbortAction(); (18) int hmClose(); ■ Function description: <ul style="list-style-type: none"> (1) Function: int hmOpen(const COMM_INFO* pCommInfo); Input value: COMM_INFO structure Return value: 1 is success, 0 is failure Description: enable the HMI communication and input the string for COM Port, such as COM1, COM2, etc. (2) Function: int SendImageFromFile(LPCTSTR szFileName); Input value: graphic file name Return value: 1 is success, 0 is failure Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI. This function is a synchronous function, and this function will not return the execution result until the data transfer is completed. (3) Function: HANDLE hmAsyncSendImageFromFile(LPCTSTR szFileName); Input value: graphic file name Return value: 0 is failure, non-zero value is the Thread Handle Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations. (4) Function: int hmSendImage(HBITMAP hbmp); Input value: Window HBITMAP Handle Return value: 1 is success, 0 is failure Description: after converting the input graphic format to the element width/height and bits of the HMI, then the graphic data starts to transfer to the HMI. This function is a synchronous function, and this function will not return the execution result until the data transfer is completed. (5) Function: HANDLE hmAsyncSendImage(HBITMAP hbmp); Input value: Window HBITMAP Handle Return value: 0 is failure, non-zero value is the Thread Handle

This chapter provides the usage and setting details for the Input elements.

13.1	Numeric Entry	13-2
13.2	Character Entry	13-33
13.3	Barcode Input	13-54
13.4	Multi-language Input	13-69


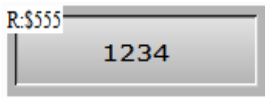
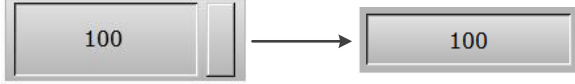
13

13.1 Numeric Entry

With the keypad provided by the Numeric Entry element, you can input a value to the set write address. Next, you can read its value with a read address, such as the Numeric Display element, and then display the value on the HMI.

Please refer to Table 13.1.1 for the Numeric Entry example.

Table 13.1.1 Numeric Entry example

Numeric Entry				
Read Address	Numeric Entry element		Numeric Display element	
	Write Address	\$555	Read Address	\$555
				
Settings	Numeric Entry element			
	Data Type	Data Format	Integer Digits	Fractional Digits
	Word	Unsigned Decimal	4	0
Execution results	After creating the element, please compile and download the element to the HMI. Next, input 100 with the Numeric Entry element, then the Numeric Display element will display the input value.			
	Input a value of 100 and write to the specified address (\$555)			
				
		Value input	Value display	

Numeric Entry supports two data types: Word and Double Word. The allowable range of the Numeric Entry value is as shown in Table 13.1.2.

Table 13.1.2 Numeric Entry allowable range

Numeric Entry		
	Data Format	Allowable range
Word	BCD	0 to 9999
	Signed BCD	-999 to 9999
	Signed Decimal	-32768 to 32767
	Unsigned Decimal	0 to 65535
	Hex	0 to 0xFFFF
	Binary	0 to 0xFFFF
Double Word	Data Format	Allowable range
	BCD	0 to 99999999
	Signed BCD	-99999999 to 99999999
	Signed Decimal	-2147483648 to 2147483647
	Unsigned Decimal	0 to 4294967295
	Hex	0 to 0xFFFFFFFF
	Binary	0 to 0xFFFFFFFF
	Floating	0 to 9999999999999999

13

When you double-click Numeric Entry, the property page is shown as follows.

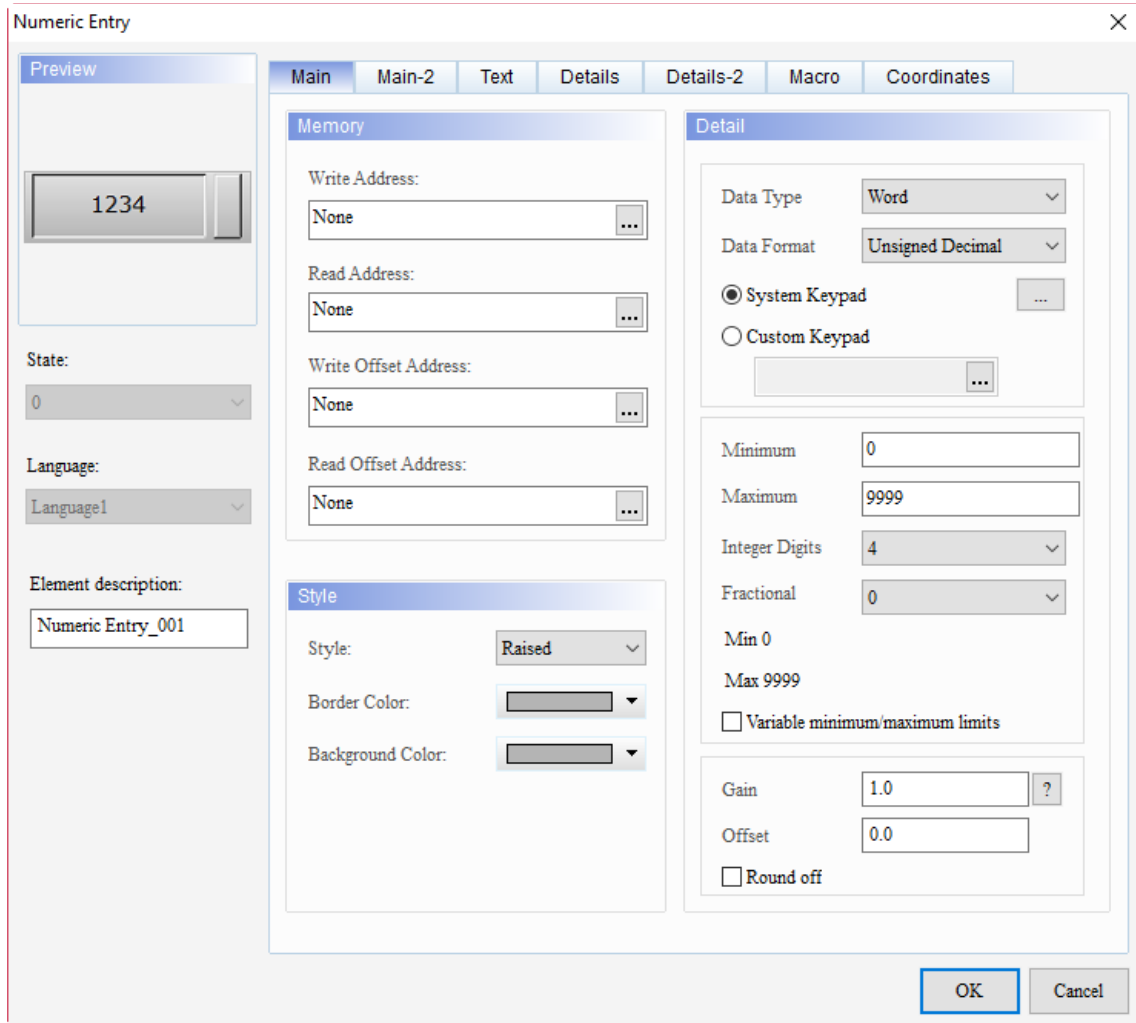


Figure 13.1.1 Properties of Numeric Entry

Table 13.1.3 Function page of Numeric Entry

Numeric Entry	
Function page	Description
Preview	Numeric Entry elements do not support multiple state values and multi-language data display.
Main	Set Read Address, Write Address, Read Offset Address, Write Offset Address; set the Style, Background Color, and Border Color of the element. Set Data Type, Data Format, Integer / Fractional Digits, Minimum / Maximum values, Variable minimum/maximum limits, Gain, and Offset.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text font, size, color, and alignment type.
Details	Set the Input Mode, Interlock State, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, Prefix Zero, Show overrange message, User Security Level, Set Low Security, and Mark as Asterisk (*).
Details-2	Set the Type of the unit, Unit of Source/Display, Custom formula, and Percentage.
Macro	Set Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

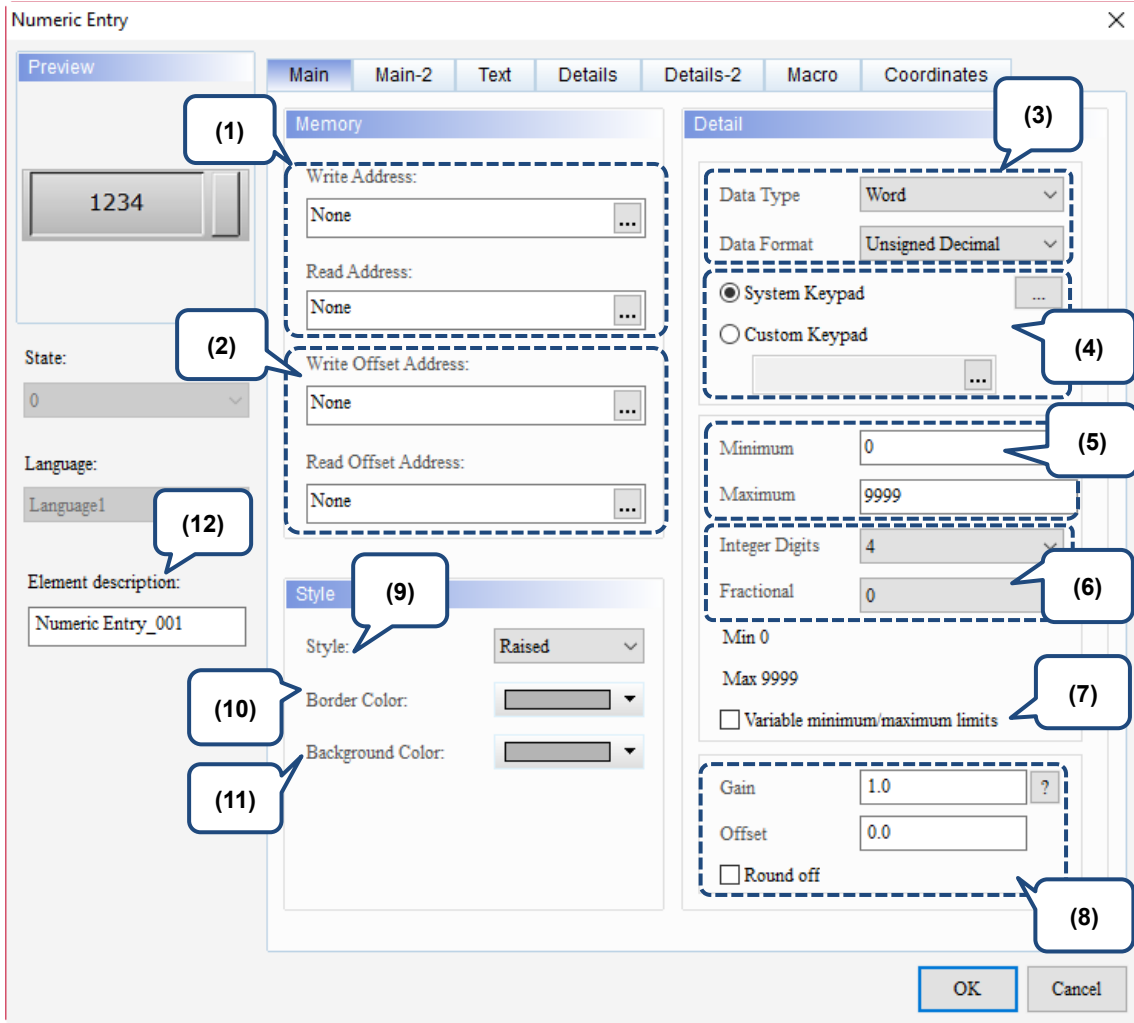

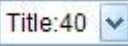





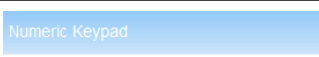
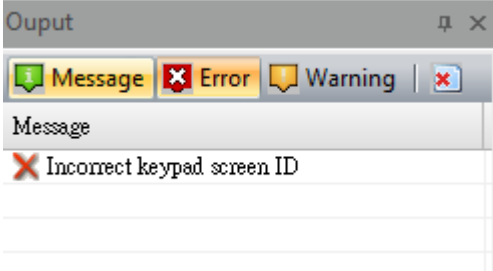
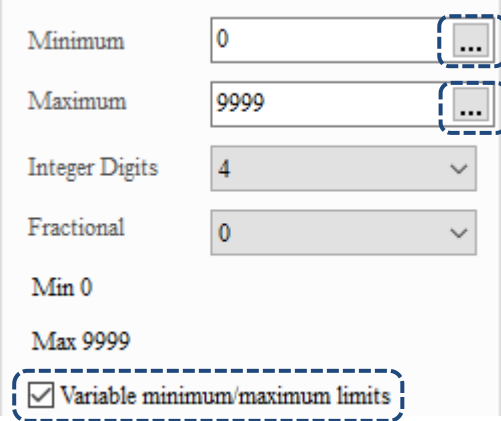
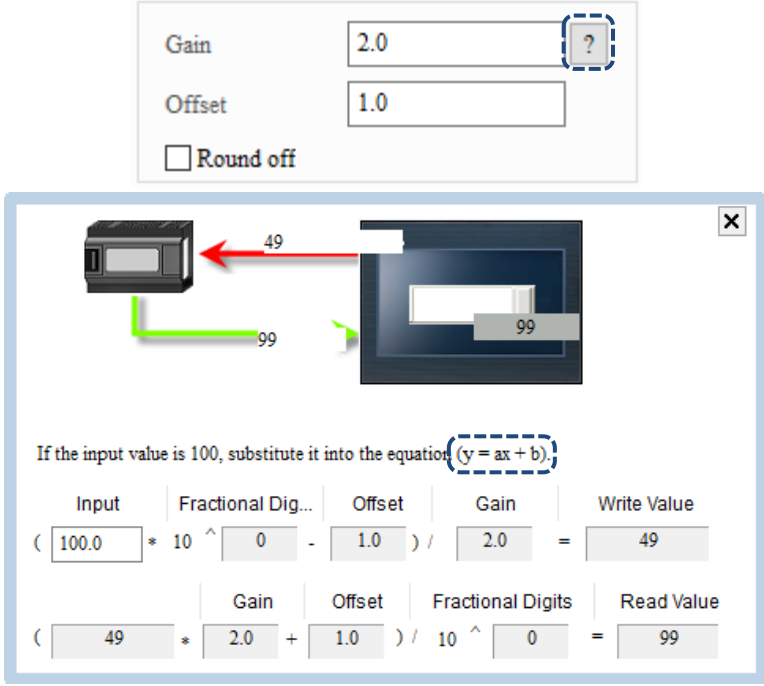


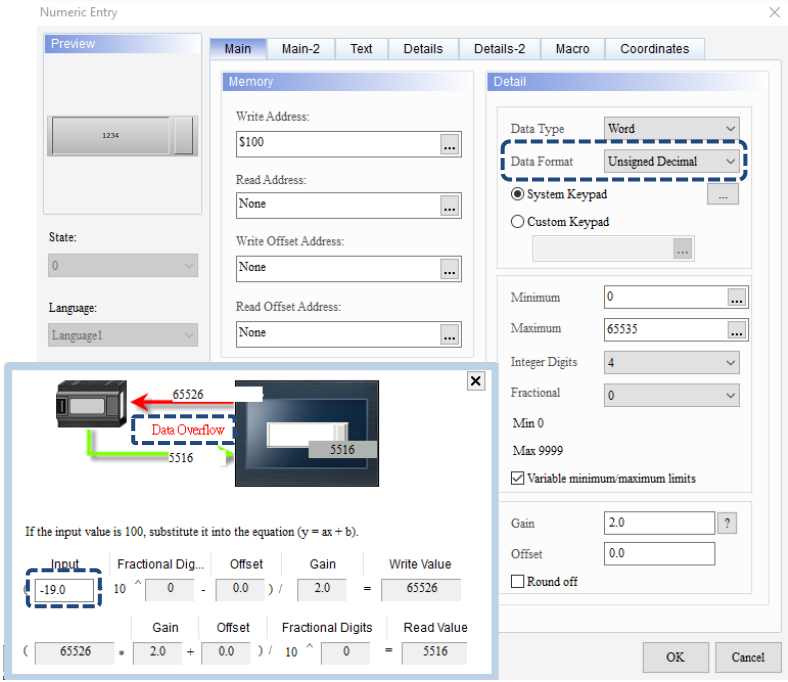
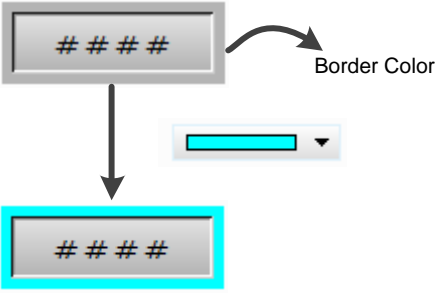
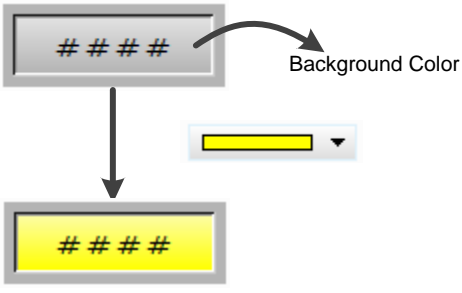
Figure 13.1.2 Main property page for the Numeric Entry element

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
	Read Address	
(2)	Write Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	

No.	Property	Function description																																
(4)	System Keypad	 Select the size of the System Keypad.																																
		 Set the title column height.																																
		 Set the font size.																																
		 Set the font type.																																
		 Set the font color.																																
		 Set the background color.																																
		 Default size.																																
		 Double-click to set the name of the keypad window.																																
(4)	Custom Keypad	<p>You can select the Custom Keypad function only if there is a Keypad Screen in the editing screen. When there is no Keypad Screen, the following message displays when you select the Custom Keypad function:</p> 																																
(5)	Minimum / maximum value	<p>The allowable ranges for the minimum and maximum values vary based on the selected data type and data format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td>Binary</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="6">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to 9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to 2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td>Binary</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td></td> <td>Floating</td> <td>0 to 9999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	Binary	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-9999999 to 9999999	Signed Decimal	-2147483648 to 2147483647	Unsigned Decimal	0 to 4294967295	Hex	0 to 0xFFFFFFFF	Binary	0 to 0xFFFFFFFF		Floating	0 to 9999999
Data Type	Data Format	Allowable range																																
Word	BCD	0 to 9999																																
	Signed BCD	-999 to 9999																																
	Signed Decimal	-32768 to 32767																																
	Unsigned Decimal	0 to 65535																																
	Hex	0 to 0xFFFF																																
	Binary	0 to 0xFFFF																																
Double Word	BCD	0 to 99999999																																
	Signed BCD	-9999999 to 9999999																																
	Signed Decimal	-2147483648 to 2147483647																																
	Unsigned Decimal	0 to 4294967295																																
	Hex	0 to 0xFFFFFFFF																																
	Binary	0 to 0xFFFFFFFF																																
	Floating	0 to 9999999																																
(6)	Integer Digits Fractional Digits	<ul style="list-style-type: none"> You can set the displaying number of integer digits and the number of decimal places. The number of decimal places here is not really a decimal value, but just the display format. Only when Floating is selected as the Data Format, the Fractional setting is the actual decimal. 																																

13

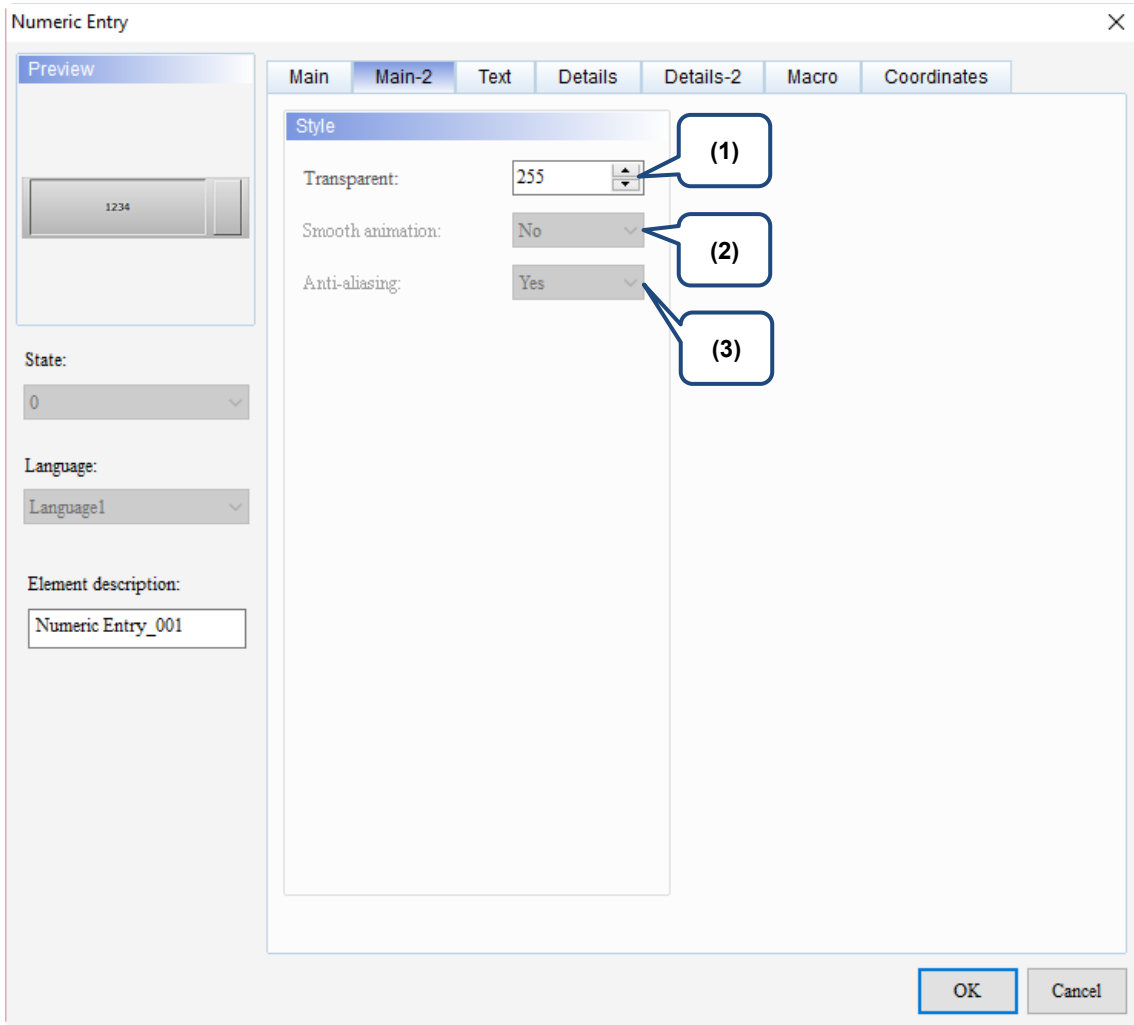
No.	Property	Function description								
(7)	Variable minimum/maximum limits	<p>Check this option to set the maximum and minimum values as variables.</p> 								
(8)	Gain / Offset	<ul style="list-style-type: none"> ■ The formula for gain and offset is $y = (a)x + (b)$. <table border="1"> <thead> <tr> <th>y</th> <th>a</th> <th>x</th> <th>b</th> </tr> </thead> <tbody> <tr> <td>Result</td> <td>Gain value</td> <td>Input value</td> <td>Offset value</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ■ If the set Gain or Offset value is a decimal, set the Data Format to Floating. ■ The Numeric Entry element provides an estimation button to make it easier for users to understand the gain and offset calculations, as shown below:  <ul style="list-style-type: none"> ■ If you check [Round off], the calculation results are rounded off before displaying on the Numeric Display element. ■ When the Data Format is Unsigned Decimal, a message “Data Overflow” pops up when you input a negative value in the estimation. 	y	a	x	b	Result	Gain value	Input value	Offset value
y	a	x	b							
Result	Gain value	Input value	Offset value							

No.	Property	Function description								
(8)	Gain / Offset									
(9)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td>####</td> <td>####</td> <td>####</td> <td>####</td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent	####	####	####	####
Standard	Raised	Sunken	Transparent							
####	####	####	####							
(10)	Border Color	<ul style="list-style-type: none"> Set the Border Color of the element. When you set the element style to Transparent, the Border Color setting is invalid. 								
(11)	Background Color	<ul style="list-style-type: none"> Set the Background Color of the element. When you set the element style to Transparent, the Background Color setting is invalid. 								

13

No.	Property	Function description								
(12)	Element description	Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so users can know what actions have been done.								
		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	
		1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0	
		2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1	
		3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4	
		4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1	
		5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0	
		6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1	
		7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0	
		8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8	
		9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25	

■ Main-2



13

Figure 13.1.3 Main-2 property page for the Numeric Entry element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

13

■ Text

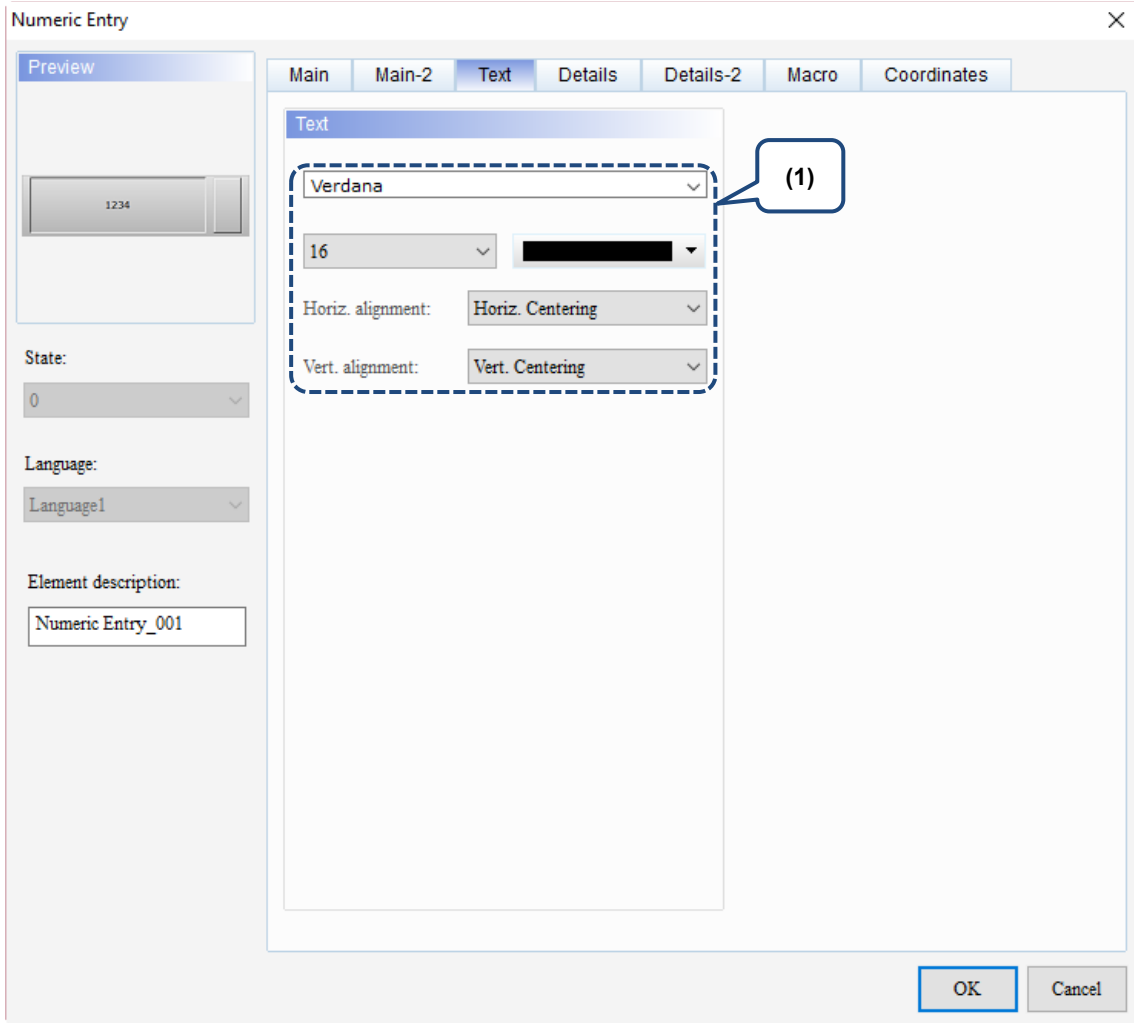


Figure 13.1 4 Text property page for the Numeric Entry element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

■ Details

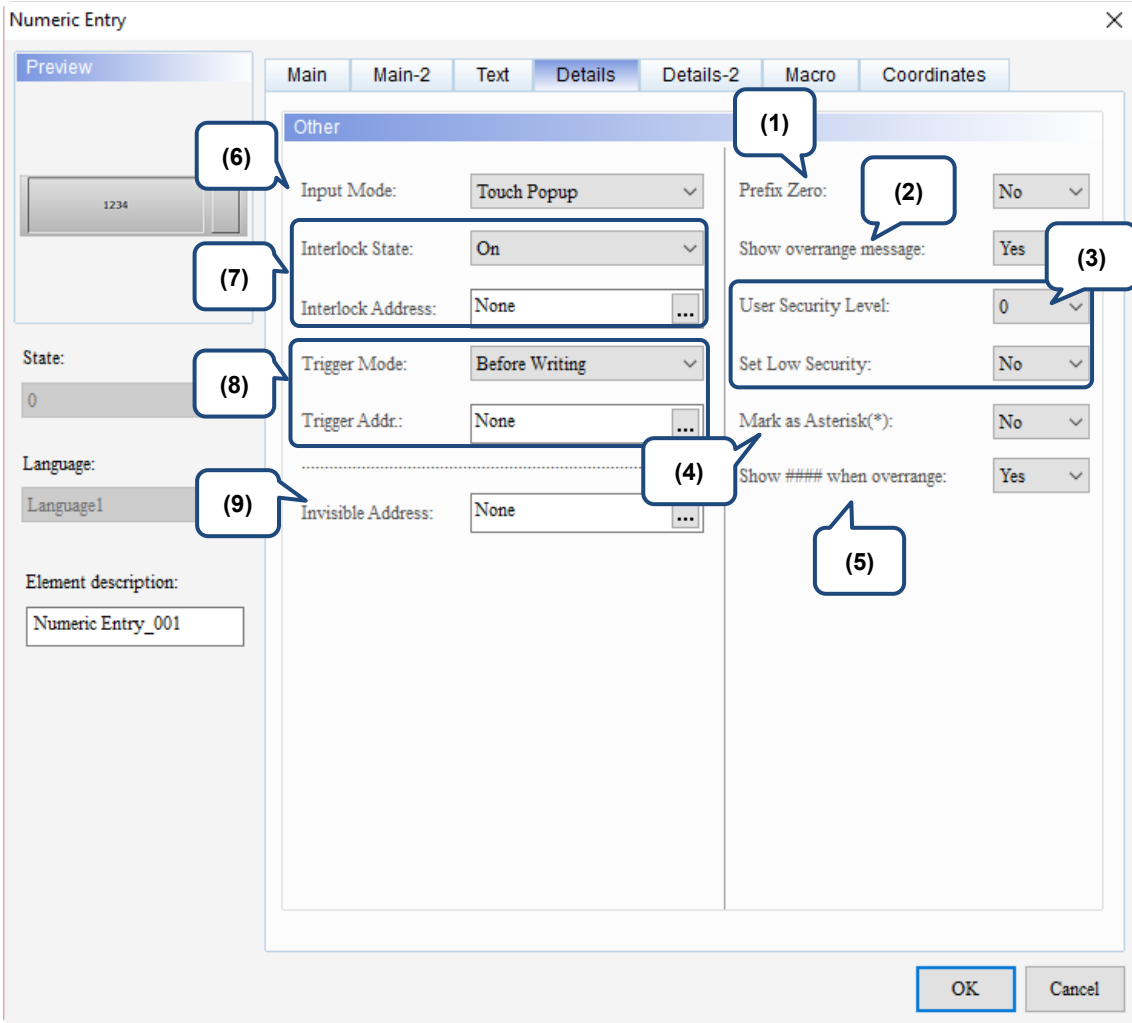
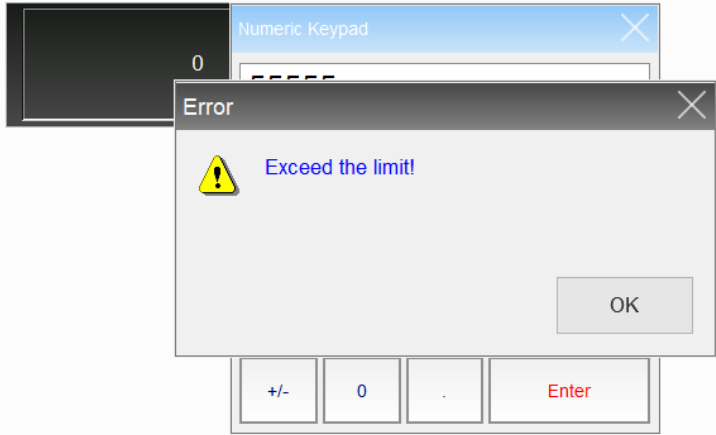
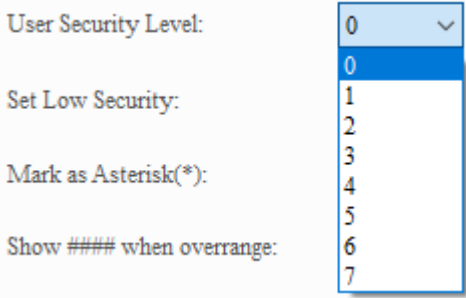
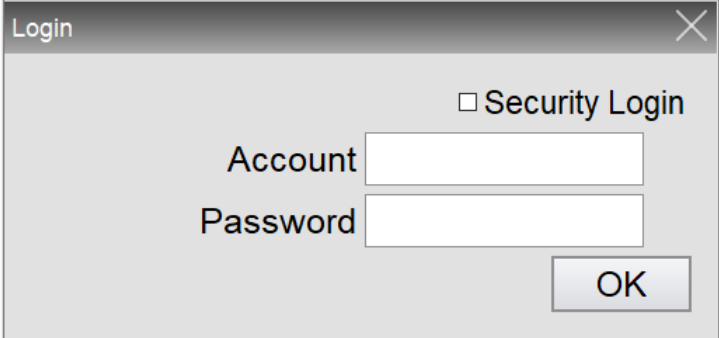

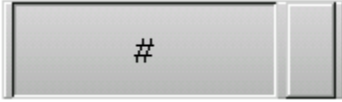
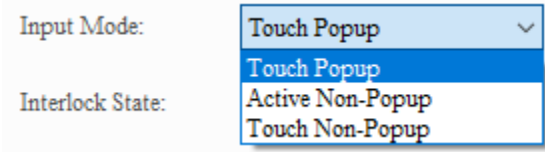
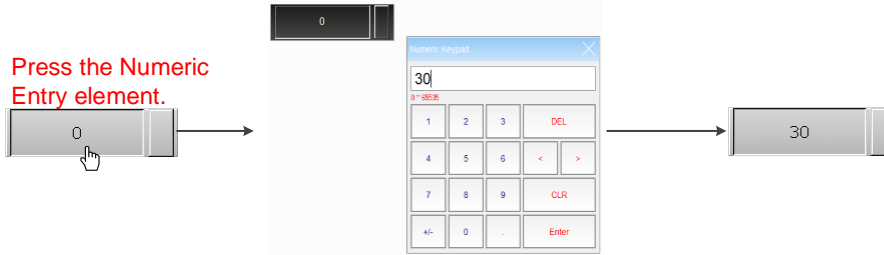


Figure 13.1.5 Details property page for the Numeric Entry element

No.	Property	Function description
(1)	Prefix Zero	<p>The Prefix Zero function determines how many zeros to add according to the set number of integer digits. Please refer to the example below.</p> <p style="text-align: center; color: red;">Integer digits is 5</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <input checked="" type="checkbox"/> Prefix Zero </div> <div style="text-align: center;"> <input type="checkbox"/> Prefix Zero </div> </div>

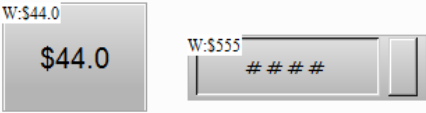
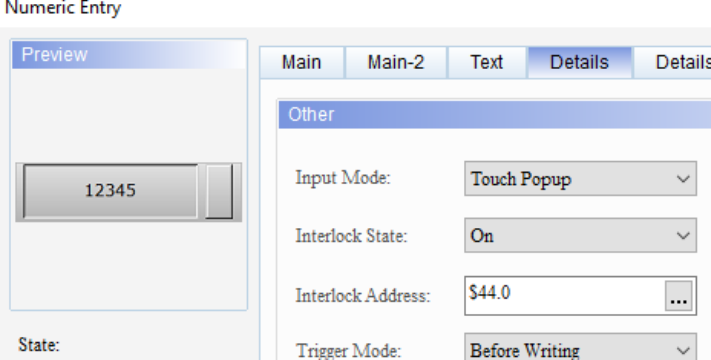
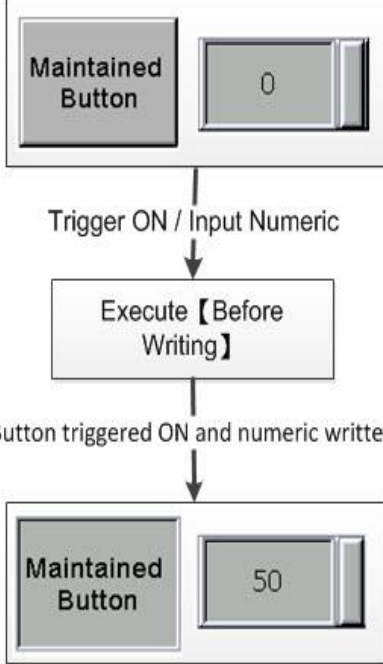
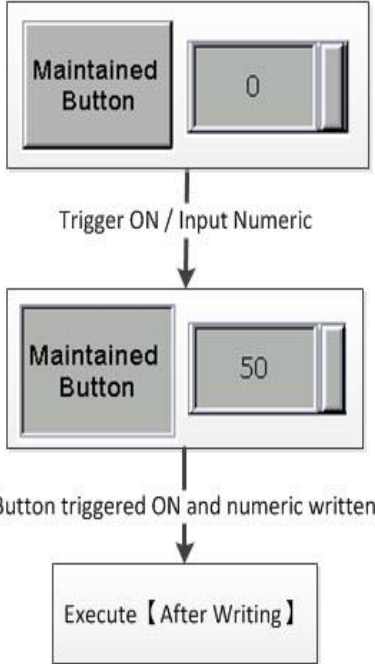
13

No.	Property	Function description
(2)	Show overrange message	<p>If you set Show overrange message to Yes, an error message as shown below will pop up when you input a value exceeding the allowable range.</p> 
(3)	<p>User Security Level</p> <hr/> <p>Set Low Security</p>	 <ul style="list-style-type: none"> ■ You can use this function to set the permission level for pressing the element; this operation is only available to users with the same set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password with the Password Table element, please refer to Section 5.7.2 Password Table Setup).  <ul style="list-style-type: none"> ■ If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.



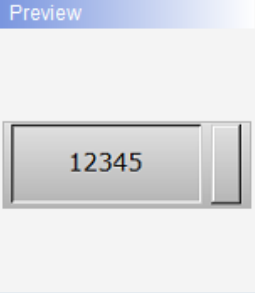
No.	Property	Function description
(4)	Mark as Asterisk (*)	<p>If you specify Mark as Asterisk (*) to Yes, the value appears as asterisks when you input a value to the Numeric Keypad, as shown below:</p> 
(5)	Show ##### when overrange	<ul style="list-style-type: none"> ■ If you specify Show ##### when overrange to Yes, the value appears in ##### when you input a value that is not within the defined minimum and maximum range. ■ For example, set the minimum value to 10 and the maximum value to 50. After executing the command, since the default value is 0 which is not within the set range of 10 - 50, the value appears in #. 
(6)	Input Mode	<ul style="list-style-type: none"> ■ The types of Input Mode include Touch Popup, Active Non-Popup, and Touch Non-Popup. ■ Touch Popup is the default Input Mode for the Numeric Entry element.  <ul style="list-style-type: none"> ■ Touch Popup means that after pressing the Numeric Entry element, the Numeric Keypad will pop up. <p>When the Numeric Keypad pops up, input the value, then press Enter when you are done.</p>  <p>Press the Numeric Entry element.</p>

13

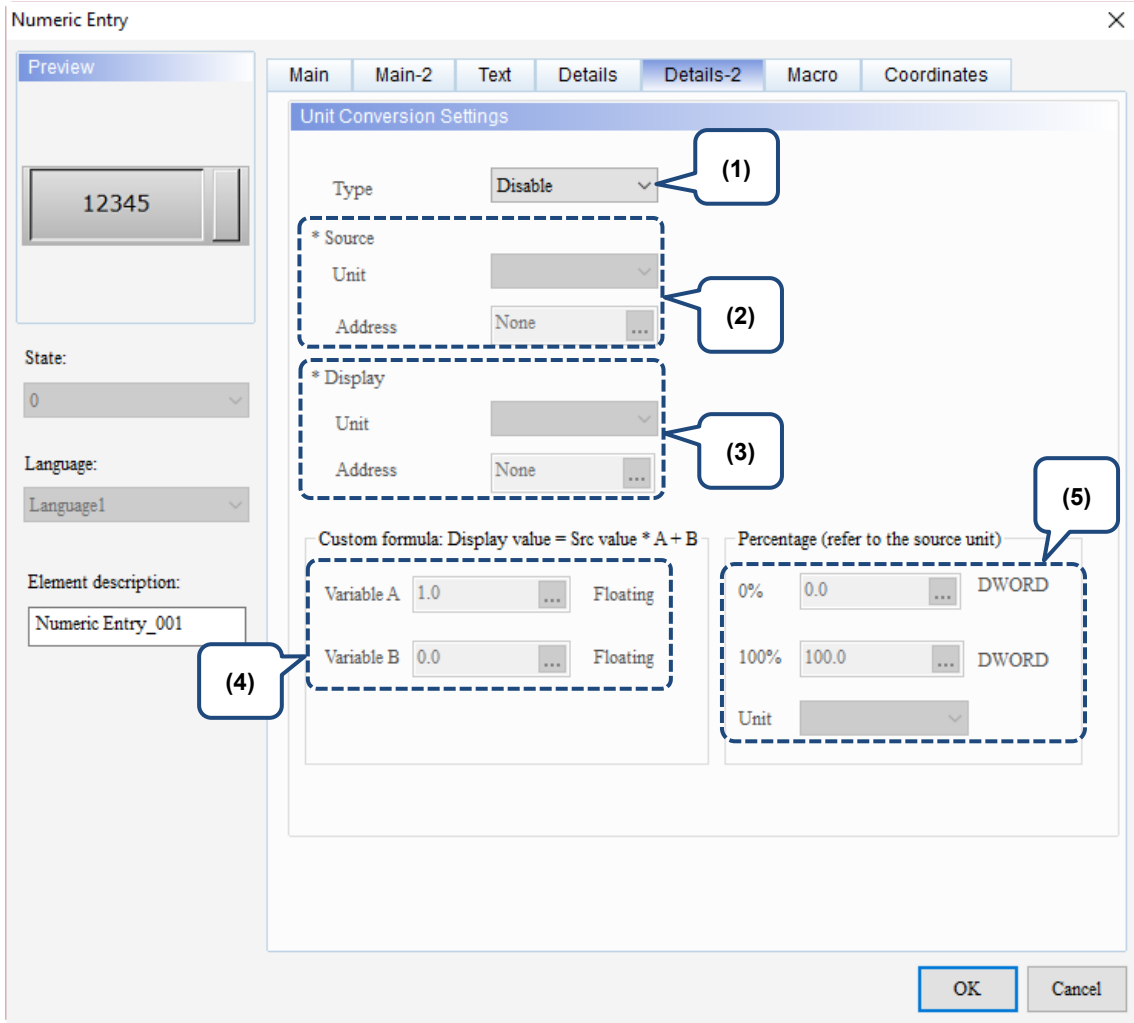
No.	Property	Function description
(6)	Input Mode	<ul style="list-style-type: none"> ■ The Numeric Keypad will not pop up when you press Numeric Entry elements with Active Non-Popup or Touch Non-Popup settings. You must create an additional Keypad element to use with this element. ■ Active Non-Popup must be used with Interlock Address. Set the Input Mode for the Numeric Entry element as Active Non-Popup and the Interlock Address as \$44.0. Then, create a Maintained element and set its Write Address as \$44.0. <p>Numeric Entry</p> <div style="display: flex; justify-content: space-around;"> <div> </div> <div> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div> <p>Press the Maintained element (Interlock Address).</p> </div> <div> <p>The Numeric Entry element shows the effect of Active Non-Popup.</p> </div> <div> </div> <div> </div> </div> <ul style="list-style-type: none"> ■ Like the case of Active Non-Popup, the Numeric Keypad will not pop up when set as Touch Non-Popup, so you must create an additional Keypad element. <div style="display: flex; justify-content: space-around; align-items: center;"> <div> <p>The Numeric Entry element shows the effect of Touch Non-Popup.</p> </div> <div> <p>Use with the Keypad element to input values.</p> </div> <div> </div> </div>

No.	Property	Function description				
(7)	Interlock State	<ul style="list-style-type: none"> Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on. The following describes how it works: <ol style="list-style-type: none"> First, create a Maintained button and set its Write Address as \$44.0. Next, set the Write Address as \$555 for the Numeric Entry element and the Interlock Address as \$44.0. In order for the Numeric Entry element \$555 to become operable, you need to first press the Maintained button \$44.0 to enable \$555. 				
	Interlock Address	 				
(8)	Triggering method	<ul style="list-style-type: none"> Trigger types include Before Writing and After Writing. <table border="1"> <thead> <tr> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td>Trigger Address must be set to on before the value changes.</td> <td>Value is changed before the Trigger Address is set to on.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> The triggering function only switches the set Trigger Address to on, so if triggering again is required, you need to set the Trigger Address to off. 	Before Writing	After Writing	Trigger Address must be set to on before the value changes.	Value is changed before the Trigger Address is set to on.
	Before Writing	After Writing				
Trigger Address must be set to on before the value changes.	Value is changed before the Trigger Address is set to on.					
Trigger Address	<p>Flowchart of Before Writing:</p>  <p>Flowchart of After Writing:</p> 					

13

No.	Property	Function description	
(9)	Invisible Address	When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.	
		Invisible Address is off	
		Invisible Address is on	
<div style="border: 1px solid gray; padding: 5px;"> <p>Numeric Entry</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Preview</p>  <p>State: 0</p> <p>Language: Language1</p> </div> <div style="width: 50%;"> <p>Main Main-2 Text Details Details</p> <p>Other</p> <p>Input Mode: Touch Popup</p> <p>Interlock State: On</p> <p>Interlock Address: None</p> <p>Trigger Mode: Before Writing</p> <p>Trigger Addr.: None</p> <hr/> <p>Invisible Address: \$9.0</p> </div> </div> </div>			

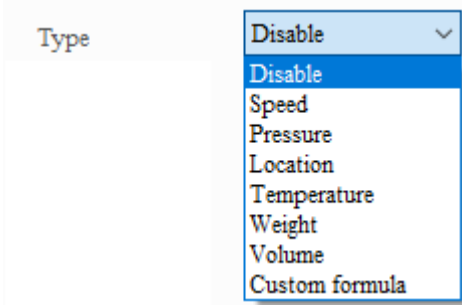
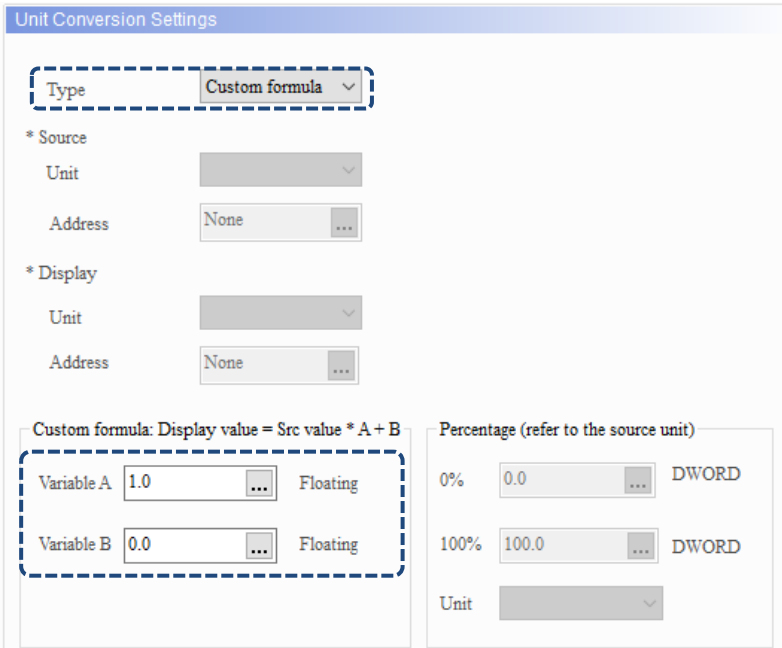
■ Details-2



13

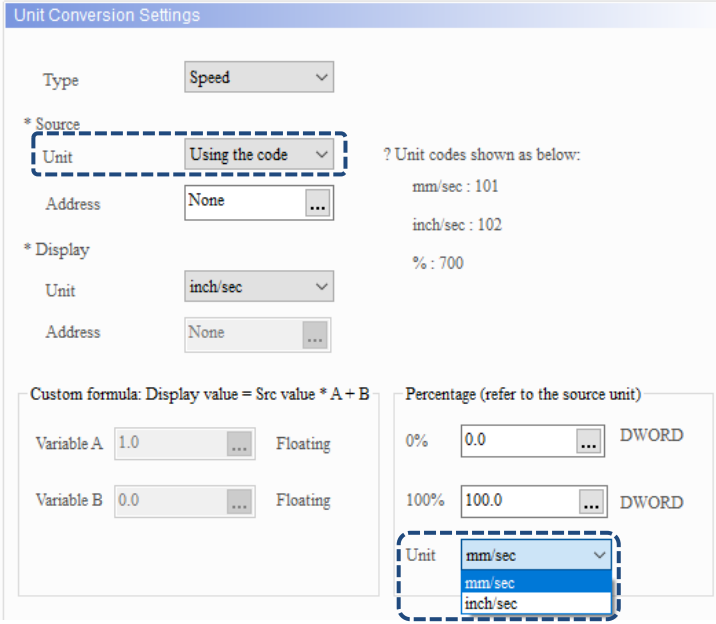
Figure 13.1.6 Details-2 property page for the Numeric Entry element

13

No.	Property	Function description
(1)	Type	<ul style="list-style-type: none"> You can select the conversion type, including Speed, Pressure, Location, Temperature, Weight, Volume, and Custom formula.  <ul style="list-style-type: none"> If you select Disable, it means the value does not need conversion. To set the Custom formula, you have to enter values for Variable A and Variable B. When you select Floating as the unit, the formula is [Display value = Source value * A + B]. 

No.	Property	Function description																																			
(2)	Source	<ul style="list-style-type: none"> The unit is subject to change based on the selected type. The table below lists the corresponding units for each type. <table border="1"> <thead> <tr> <th>Type</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Speed</td> <td>mm/sec</td> </tr> <tr> <td>inch/sec</td> </tr> <tr> <td>%</td> </tr> <tr> <td>Using the code</td> </tr> <tr> <td rowspan="4">Pressure</td> <td>kg/cm</td> </tr> <tr> <td>bar</td> </tr> <tr> <td>%</td> </tr> <tr> <td>Using the code</td> </tr> <tr> <td rowspan="4">Coordinates</td> <td>mm</td> </tr> <tr> <td>inch</td> </tr> <tr> <td>%</td> </tr> <tr> <td>Using the code</td> </tr> <tr> <td rowspan="4">Temperature</td> <td>°F</td> </tr> <tr> <td>°C</td> </tr> <tr> <td>%</td> </tr> <tr> <td>Using the code</td> </tr> <tr> <td rowspan="6">Weight</td> <td>ton</td> </tr> <tr> <td>kN</td> </tr> <tr> <td>g</td> </tr> <tr> <td>oz</td> </tr> <tr> <td>%</td> </tr> <tr> <td>Using the code</td> </tr> <tr> <td rowspan="5">Capacity</td> <td>L</td> </tr> <tr> <td>ml</td> </tr> <tr> <td>kL</td> </tr> <tr> <td>%</td> </tr> <tr> <td>Using the code</td> </tr> </tbody> </table> When you select % (Percentage) or Using the code as the unit for either the Source or Display, the percentage setting interface is enabled. When the percentage setting interface allows data input, you need to define values for 0% and 100% which unit setting refers to the Source. <div> </div> 	Type	Unit	Speed	mm/sec	inch/sec	%	Using the code	Pressure	kg/cm	bar	%	Using the code	Coordinates	mm	inch	%	Using the code	Temperature	°F	°C	%	Using the code	Weight	ton	kN	g	oz	%	Using the code	Capacity	L	ml	kL	%	Using the code
Type	Unit																																				
Speed	mm/sec																																				
	inch/sec																																				
	%																																				
	Using the code																																				
Pressure	kg/cm																																				
	bar																																				
	%																																				
	Using the code																																				
Coordinates	mm																																				
	inch																																				
	%																																				
	Using the code																																				
Temperature	°F																																				
	°C																																				
	%																																				
	Using the code																																				
Weight	ton																																				
	kN																																				
	g																																				
	oz																																				
	%																																				
	Using the code																																				
Capacity	L																																				
	ml																																				
	kL																																				
	%																																				
	Using the code																																				


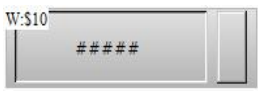
13

No.	Property	Function description																																																			
(2)	Source	 <ul style="list-style-type: none"> When you select Using the code as the unit, it means you can enter variables to specify the unit codes for the Source and Display. The unit codes are as follows: <table border="1"> <thead> <tr> <th>Type</th> <th>Unit</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Speed</td> <td>mm/sec</td> <td>101</td> </tr> <tr> <td>inch/sec</td> <td>102</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="3">Pressure</td> <td>kg/cm</td> <td>201</td> </tr> <tr> <td>bar</td> <td>202</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="3">Position</td> <td>mm</td> <td>301</td> </tr> <tr> <td>inch</td> <td>302</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="3">Temperature</td> <td>°F</td> <td>401</td> </tr> <tr> <td>°C</td> <td>402</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="5">Weight</td> <td>ton</td> <td>501</td> </tr> <tr> <td>kN</td> <td>502</td> </tr> <tr> <td>g</td> <td>503</td> </tr> <tr> <td>oz</td> <td>504</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="4">Capacity</td> <td>L</td> <td>601</td> </tr> <tr> <td>ml</td> <td>602</td> </tr> <tr> <td>kL</td> <td>603</td> </tr> <tr> <td>%</td> <td>700</td> </tr> </tbody> </table> <ul style="list-style-type: none"> User-defined address is only available when you select Using the code for the unit. If both the Source and Display select Using the code as the unit, do not use the same address. 	Type	Unit	Code	Speed	mm/sec	101	inch/sec	102	%	700	Pressure	kg/cm	201	bar	202	%	700	Position	mm	301	inch	302	%	700	Temperature	°F	401	°C	402	%	700	Weight	ton	501	kN	502	g	503	oz	504	%	700	Capacity	L	601	ml	602	kL	603	%	700
Type	Unit	Code																																																			
Speed	mm/sec	101																																																			
	inch/sec	102																																																			
	%	700																																																			
Pressure	kg/cm	201																																																			
	bar	202																																																			
	%	700																																																			
Position	mm	301																																																			
	inch	302																																																			
	%	700																																																			
Temperature	°F	401																																																			
	°C	402																																																			
	%	700																																																			
Weight	ton	501																																																			
	kN	502																																																			
	g	503																																																			
	oz	504																																																			
	%	700																																																			
Capacity	L	601																																																			
	ml	602																																																			
	kL	603																																																			
	%	700																																																			
(3)	Display	<ul style="list-style-type: none"> Please refer to the Source description for details about the units. User-defined address is only available when you select Using the code for the unit. If both the Source and Display select Using the code as the unit, do not use the same address. 																																																			

No.	Property	Function description
(4)	Custom formula	<ul style="list-style-type: none"> ■ You can input external / internal memory addresses and constants for both Variable A and Variable B. ■ To set the Custom formula, you have to enter values for Variable A and Variable B. When you select Floating as the unit, the formula is [Display value = Source value * A + B].
(5)	Percentage settings	<ul style="list-style-type: none"> ■ You can input external / internal memory addresses and constants for both setting values of 0% and 100%. ■ When you select % (Percentage) or Using the code as the unit for either the Source or Display, the percentage setting interface is enabled. ■ The unit is subject to change based on the Source unit setting. Take the speed setting for example, if you select % (Percentage) or Using the code as the Source unit, you can select mm/sec or inch/sec from the Unit drop-down list in the Percentage setting; if you select mm/sec for the Source unit, mm/sec is the only unit available in the Percentage setting.

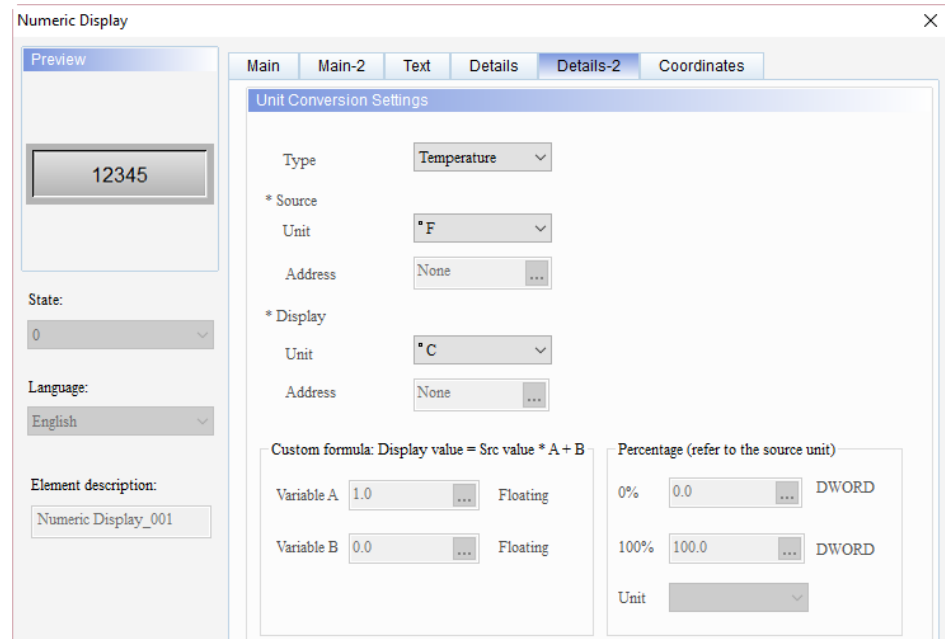
Table 13.1.4 Unit conversion example

13

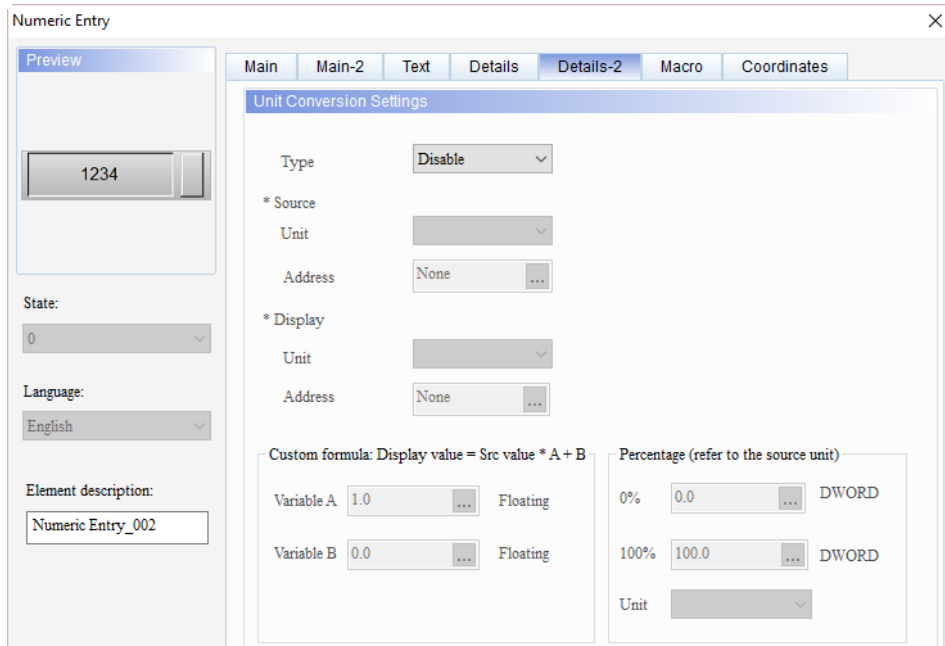
Unit conversion (fixed unit)				
Set Address	Numeric Display element (Display)		Numeric Entry element (Source)	
	Read Address	\$10	Write Address	\$10
				
Numeric Display / Numeric Entry element				
Data Type	Data Format	Integer Digits	Fractional Digits	
Word	Unsigned Decimal	5	0	

- Double-click the Numeric Display element and go to the Details-2 page. Select Temperature as the Type and select °F for the Unit of Source and °C for the Unit of Display.

Unit setting



- Since the Numeric Entry element does not need unit conversion, please select Disable for Type.



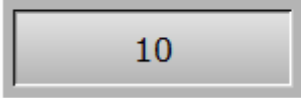
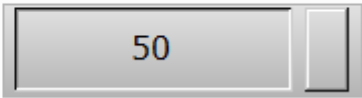



Unit conversion (fixed unit)	
Execution results	<p>After creating the elements, please compile and download the elements to the HMI. Then, enter 50 (°F) to the Numeric Entry element and the Numeric Display element will convert the temperature to 10 (°C).</p> <div style="display: flex; justify-content: space-around; align-items: center;"><div style="text-align: center;"><p>Display (°C)</p></div><div style="text-align: center;"><p>Source (°F)</p></div></div>

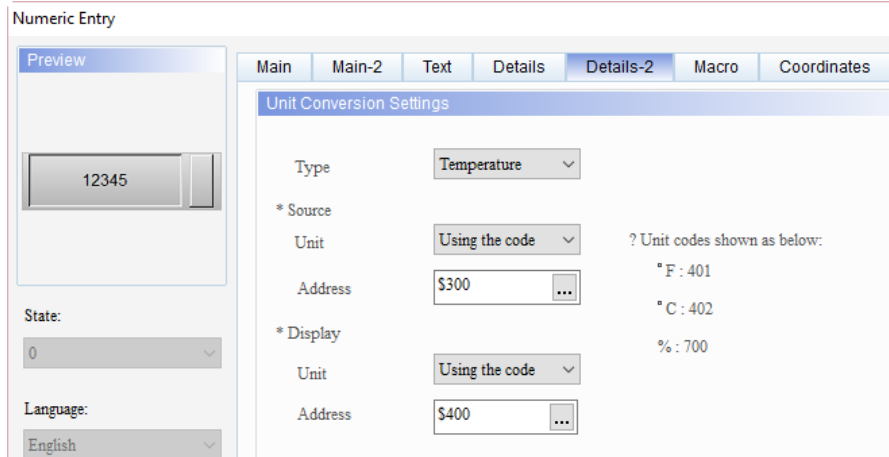
Table 13.1.5 Unit conversion example

13

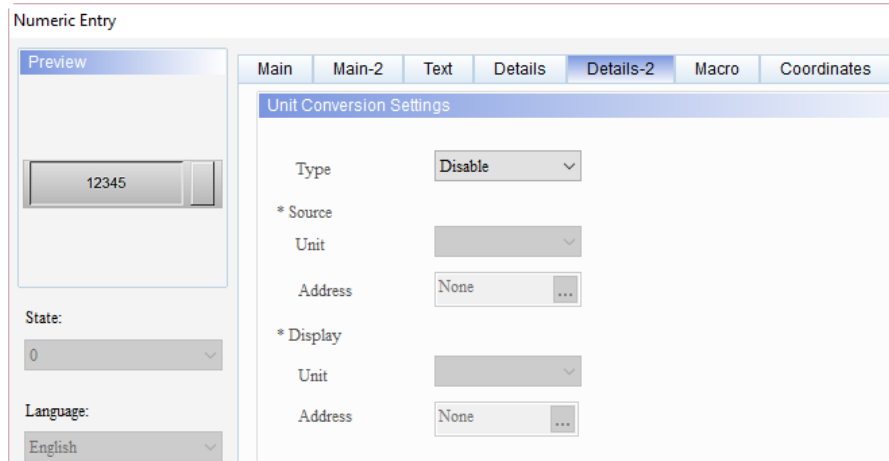
Unit conversion (Using the code)						
Read Address	Numeric Entry element		Numeric Entry element (Source)		Numeric Entry element (Display)	
		Read Address	\$10	Write Address	\$300	Write Address	$400
						
Setting	Numeric Entry element					
	Data Type	Data Format	Integer Digits	Fractional Digits		
	Word	Unsigned Decimal	5	0		

- Double-click the Numeric Entry element of \$10, go to the Details-2 page, and select Temperature as the Type. For the Source settings, select Using the code for the unit and \$300 for the address; for the Display settings, select Using the code for the unit and \$400 for the address.

Unit setting



- Since the Numeric Entry elements of \$300 and \$400 do not need unit conversion, please select Disable for Type.



Unit conversion (Using the code)

Execution results

- After creating the elements, please compile and download the elements to the HMI, then enter 50 to \$10.

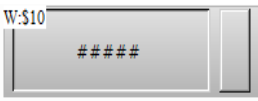

The screenshot shows a control panel with three input fields. The top-left field is labeled '\$10' and contains the value '50'. The top-right field is labeled 'Source \$300' and contains the value '0'. The bottom-right field is labeled 'Display \$400' and contains the value '0'.

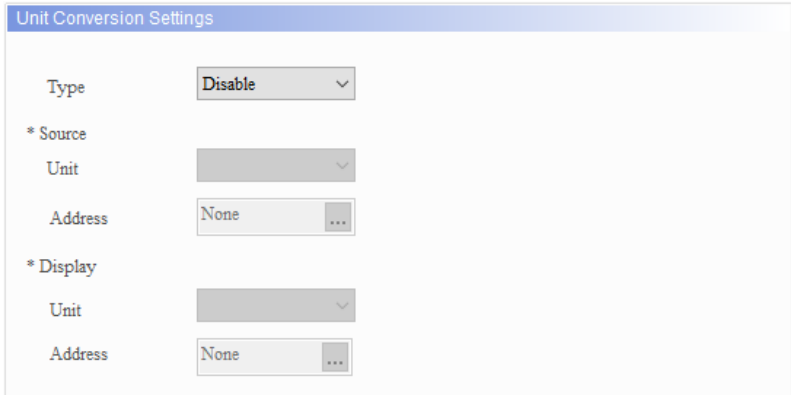


- Enter 401 (stands for °F) to \$300 and enter 402 (stands for °C) to \$400, then \$10 converts the value to 10°C.

The screenshot shows a control panel with three input fields. The top-left field is labeled '\$10' and contains the value '10'. The top-right field is labeled 'Source \$300' and contains the value '401'. The bottom-right field is labeled 'Display \$400' and contains the value '402'.

Table 13.1.6 Unit conversion example

13

Unit conversion (%)				
Read Address	Numeric Display element		Numeric Entry element (Source)	
	Read Address	\$10	Write Address	\$10
				
Settings	Numeric Display / Numeric Entry element			
	Data Type	Data Format	Integer Digits	Fractional Digits
	Word	Unsigned Decimal	5	0
Unit setting	<ul style="list-style-type: none"> Double-click the Numeric Display element of \$10 and go to the Details-2 page. Select Temperature as the Type and select % for the Unit of Source and °C for the Unit of Display. 			
	<div> </div> <ul style="list-style-type: none"> Set the percentage 0% to 30.0 and 100% to 1000.0. Since the Source unit is %, the percentage setting unit can be °F or °C. In this example, °F is used as the unit. <div> </div>			

Unit conversion (%)	
Unit setting	<ul style="list-style-type: none">Since the Numeric Entry element of \$10 does not need unit conversion, please select Disable for Type. 
Execution results	<ul style="list-style-type: none">After creating the elements, please compile and download the elements to the HMI. The value for the Numeric Entry element of \$10 is 0, so the Numeric Display element displays 30, meaning 0% equals the value 30.  <ul style="list-style-type: none">If you set the value for the Numeric Entry element of \$10 to 100, the Numeric Display element displays 1000, which means 100% equals the value 1000. 

13

Macro

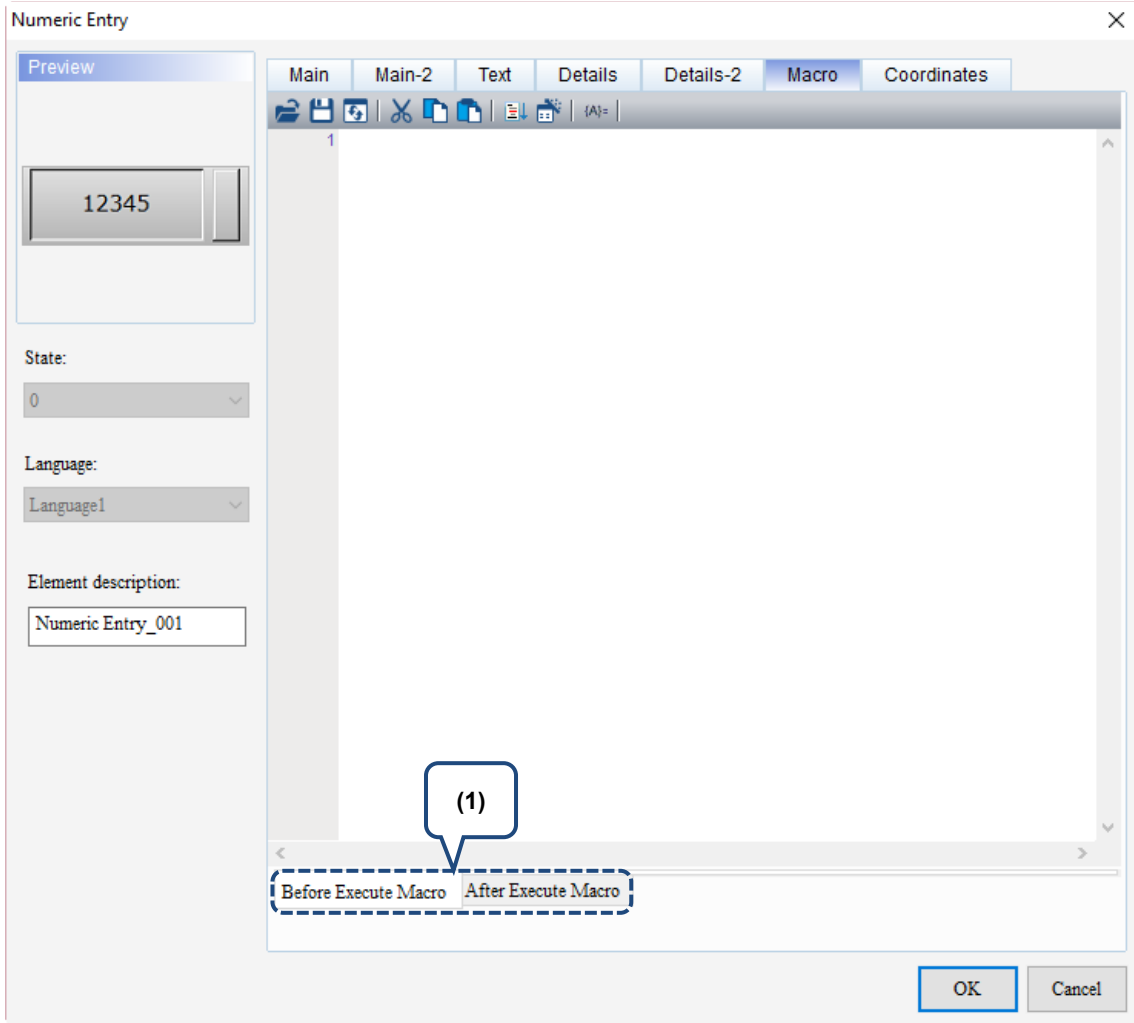


Figure 13.1.7 Macro property page for the Numeric Entry element

No.	Property	Function description
(1)		<p>Flowcharts of Before Execute Macro / After Execute Macro:</p>
	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands, then execute the action of the button. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button, then execute the macro commands. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.

Coordinates

13

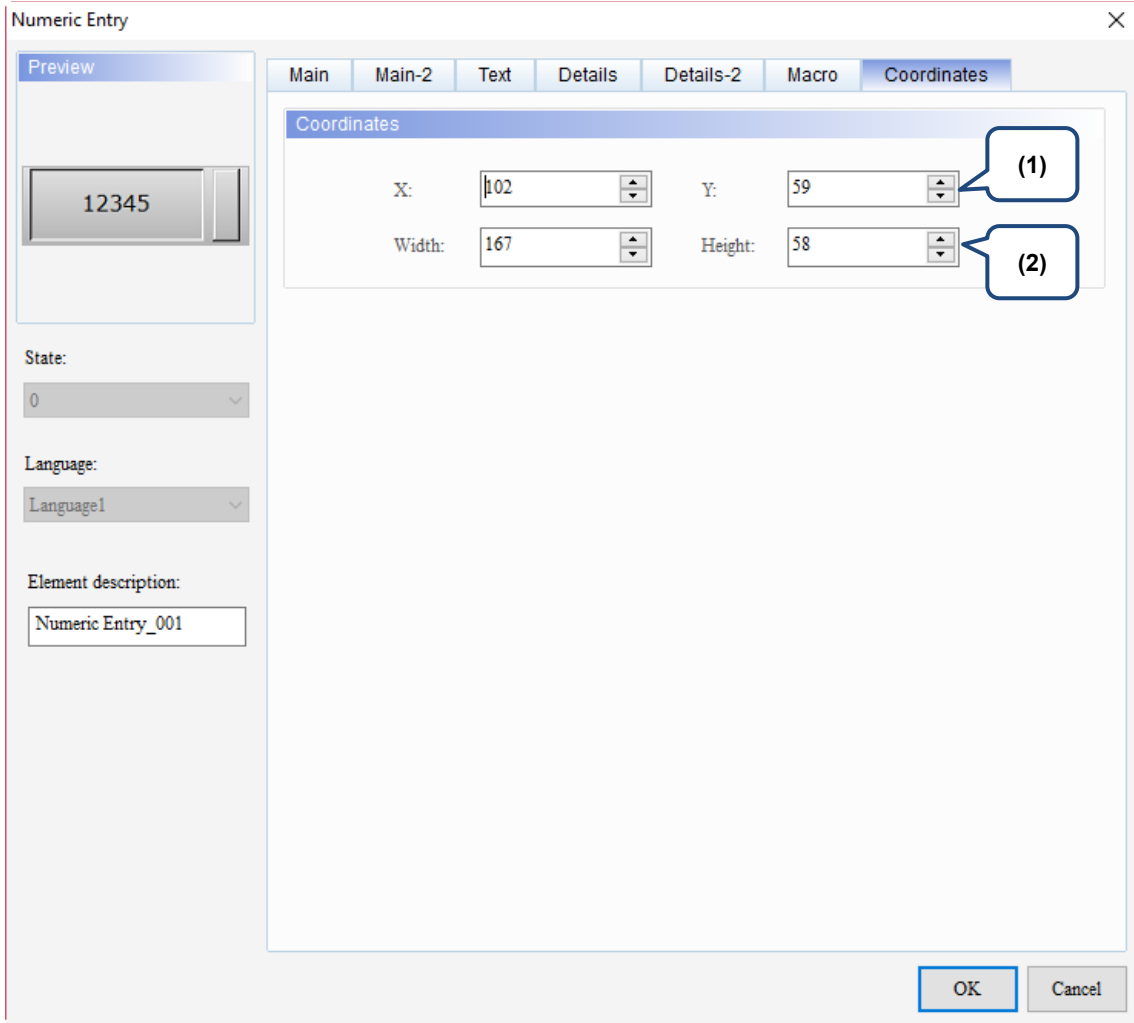


Figure 13.1.8 Coordinates property page for the Numeric Entry element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

13.2 Character Entry

The Character Entry element supports only the ASCII code. Therefore, the format of the display and input is character. You can switch to the ASCII input mode with the ALT key as shown below.

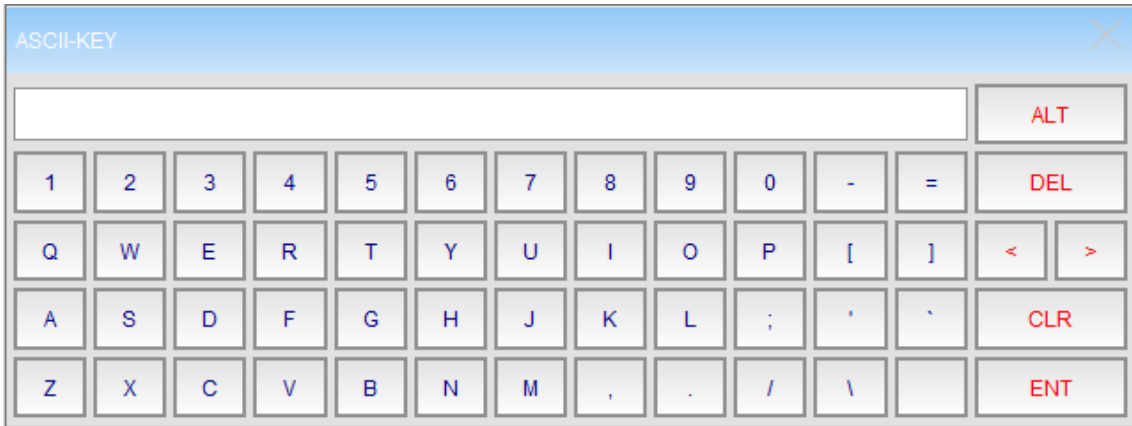


Figure 13.2.1 ASCII keyboard

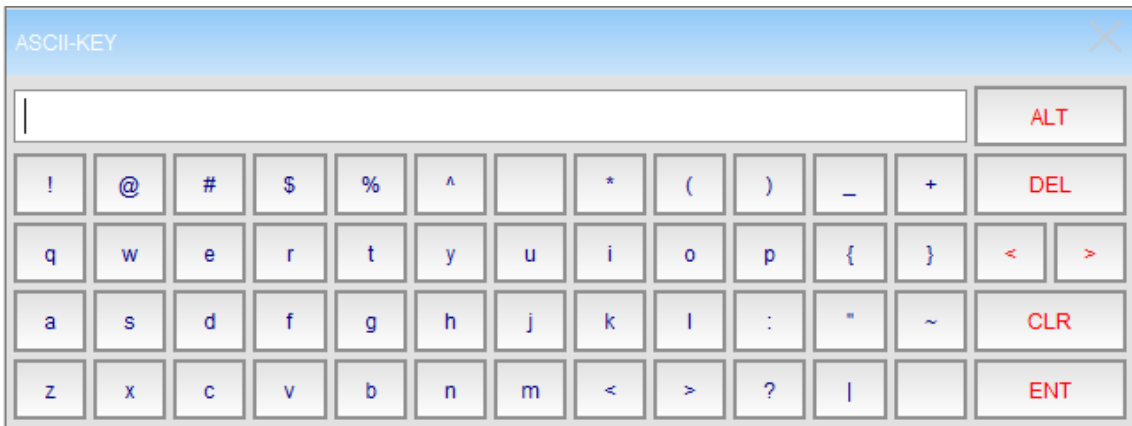


Figure 13.2.2 ASCII keyboard

13

The following conversion table shows the conversion between data formats and characters from A to G. The remaining characters can be deduced with the same pattern.

Unsigned Decimal	Hexadecimal	Character
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G

Table 13.2.1 ASCII conversion table

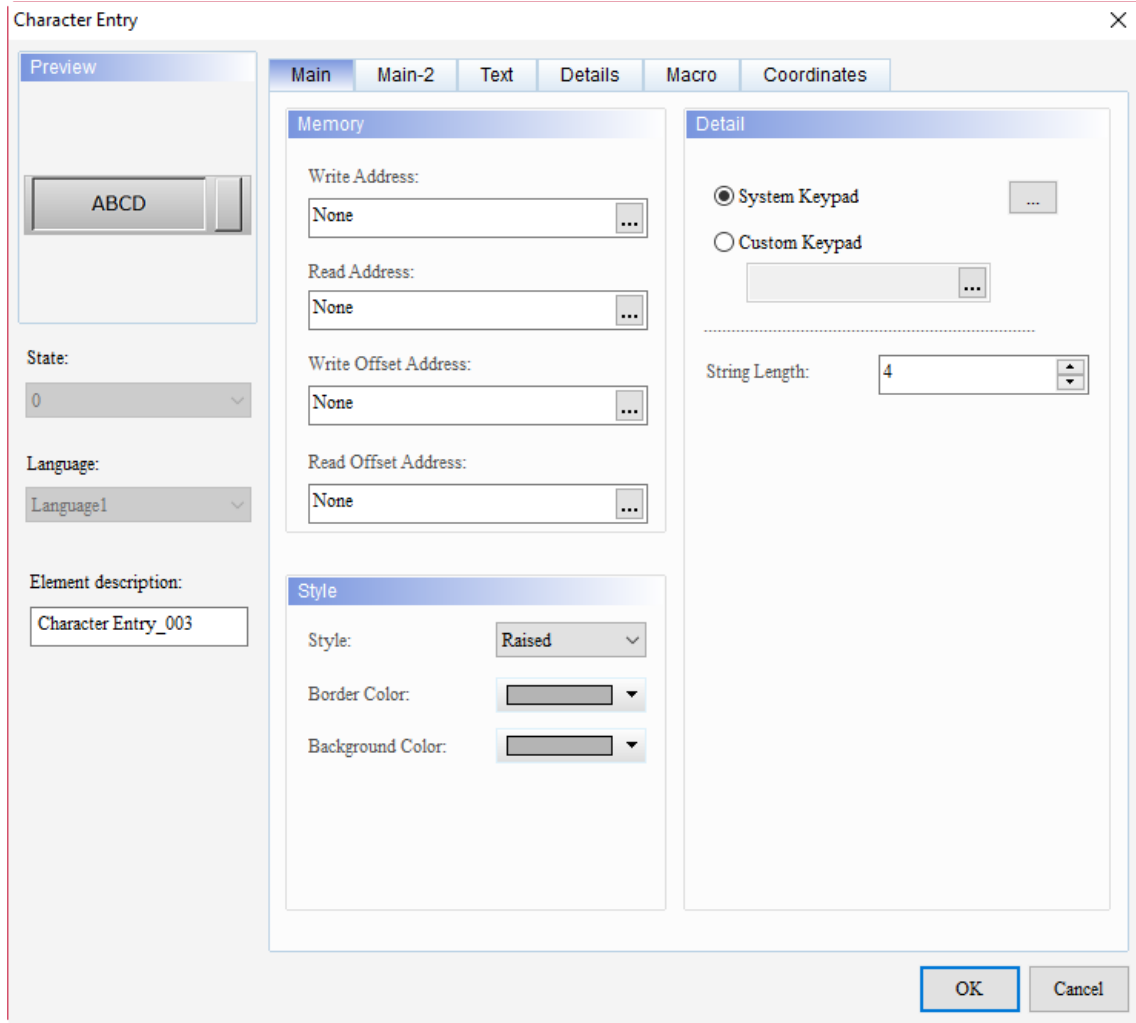
According to Table 13.2.1, if you input the character A to the Character Entry element, the Numeric Entry element will display 65 (Unsigned Decimal).



Table 13.2.2 Character Entry example

Character Entry				
	Character Entry element		Numeric Entry element	
Read Address	Write Address	\$555	Write Address	\$555
Setting	Character Entry element			
	String Length		4	
	Numeric Entry element			
	Data Type	Data Format	Integer Digits	Fractional Digits
	Word	Unsigned Decimal	4	0
Execution results	After creating the elements, please compile and download the elements to the HMI. Next, input A to the Character Entry element, then the Numeric Entry element will display its corresponding ASCII code which is 65.			

When you double-click Character Entry, the property page is shown as follows.



13

Figure 13.2.3 Properties of Character Entry

Table 13.2.3 Function page of Character Entry

Character Entry	
Function page	Description
Preview	Character Entry elements do not support multiple state values and multi-language data display.
Main	Set Read Address, Write Address, Read Offset Address, Write Offset Address; set the Style, Background Color, Border Color of the element, and its String Length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text font, size, color, and alignment type.
Details	Set the Input Mode, Interlock State, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, and Mark as Asterisk (*).
Macro	Set Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

13

■ Main

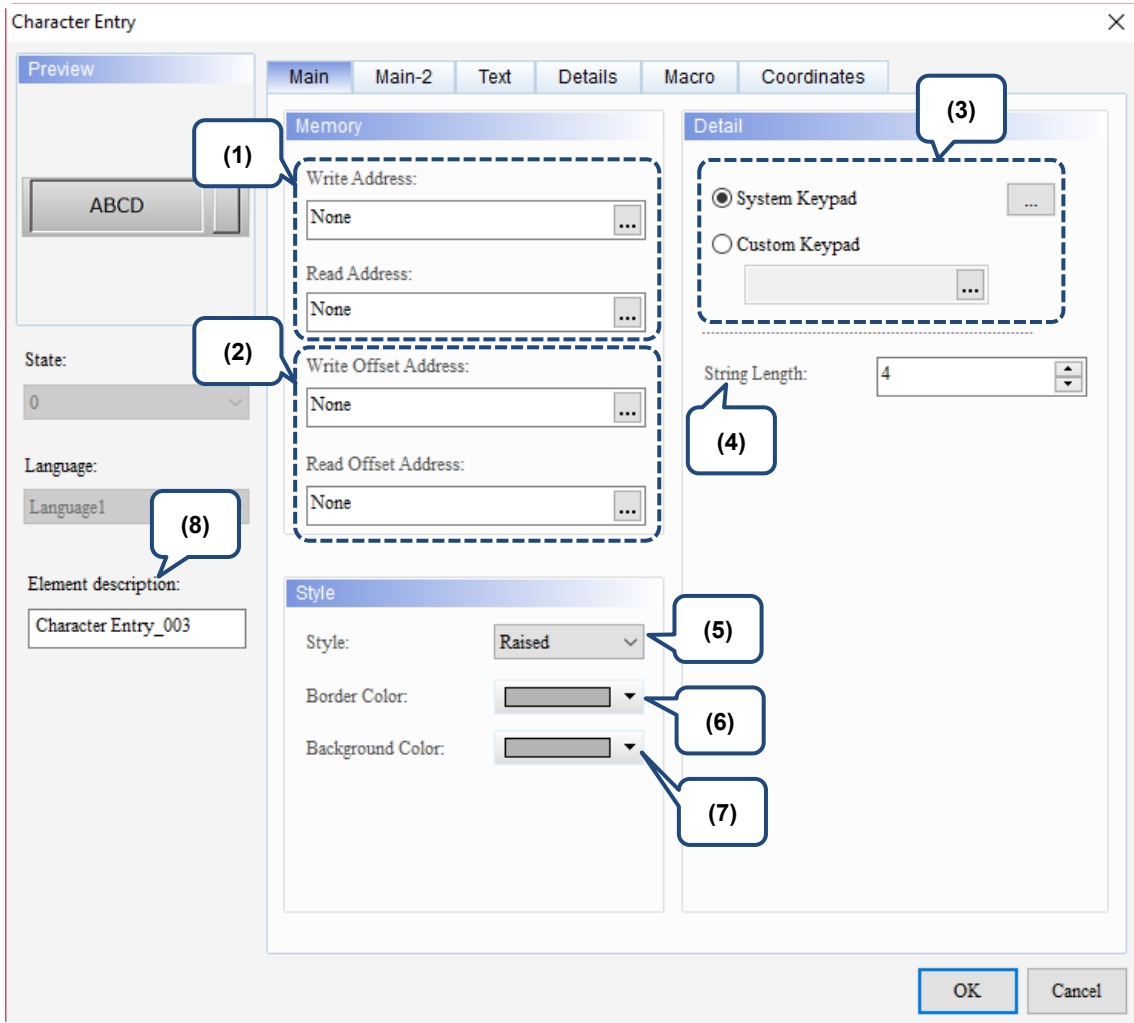
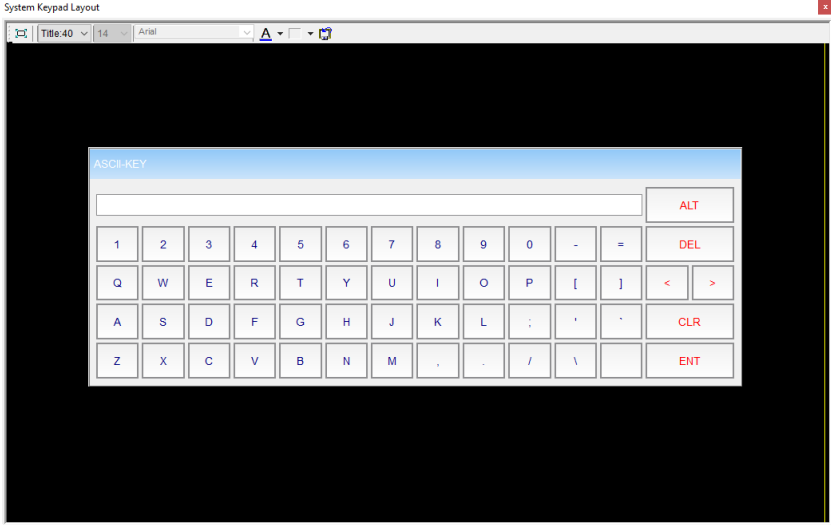
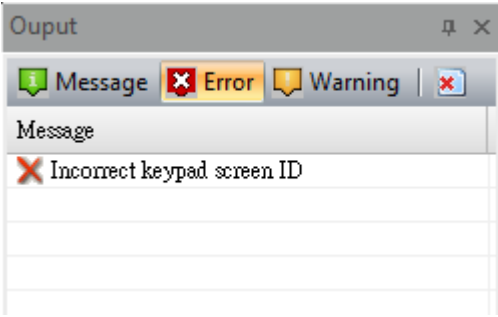


Figure 13.2.4 Main property page for the Character Entry element

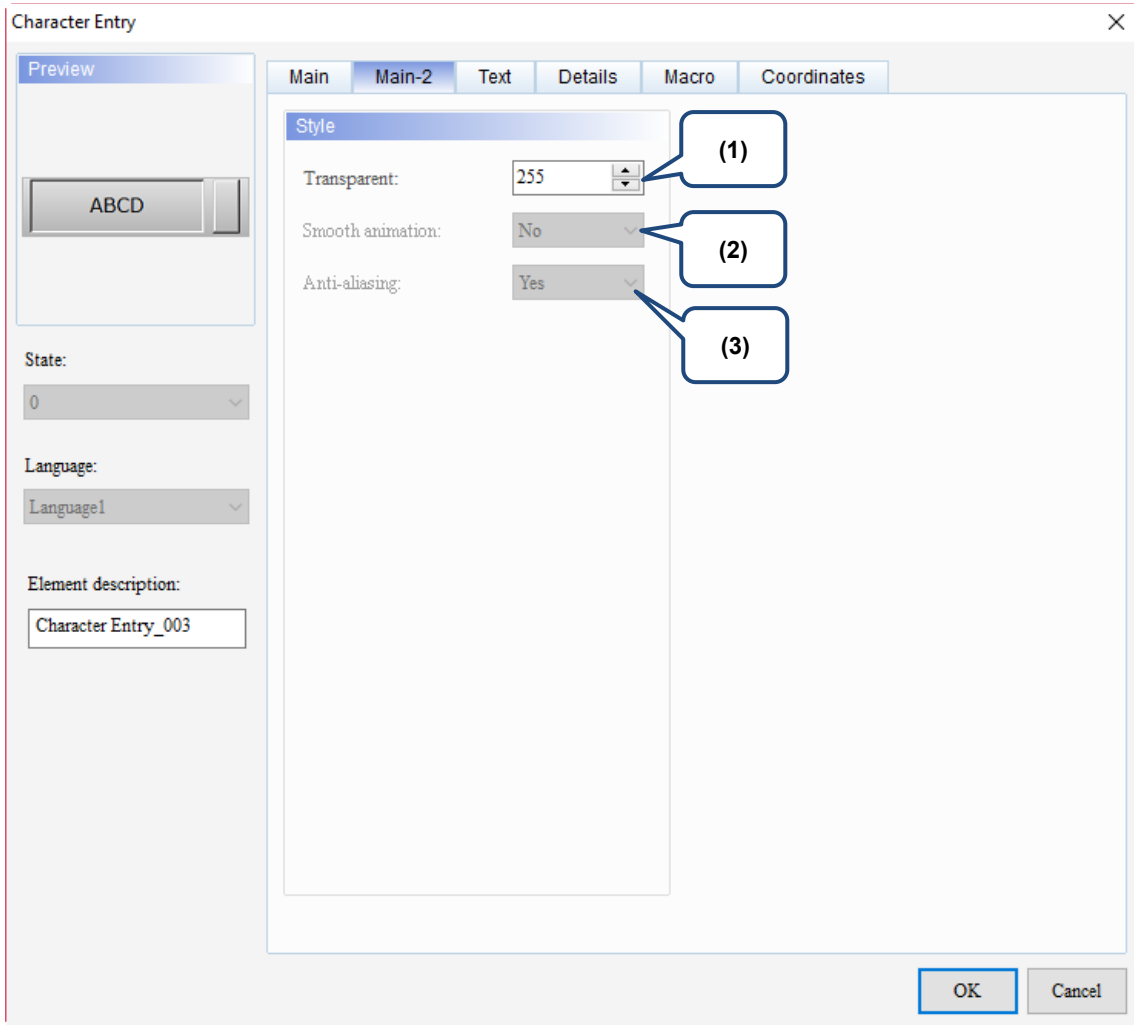
No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> ■ You can select the internal memory or the controller register address. ■ Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
	Read Address	
(2)	Write Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	

No.	Property	Function description																
(3)	System Keypad	<p>By editing the Numeric Keypad, you can adjust the size of the keypad window, title size, font size / type / color of the numeric display, and the background color of the keypad window.</p>  <table border="1"> <tr> <td></td> <td>Select the size of the System Keypad.</td> </tr> <tr> <td>Title:40</td> <td>Set the title column height.</td> </tr> <tr> <td>10</td> <td>Set the font size.</td> </tr> <tr> <td>Arial</td> <td>Set the font type.</td> </tr> <tr> <td></td> <td>Set the font color.</td> </tr> <tr> <td></td> <td>Set the background color.</td> </tr> <tr> <td></td> <td>Default size.</td> </tr> <tr> <td>ASCII-KEY</td> <td>Double-click to set the name of the keypad window.</td> </tr> </table>		Select the size of the System Keypad.	Title:40	Set the title column height.	10	Set the font size.	Arial	Set the font type.		Set the font color.		Set the background color.		Default size.	ASCII-KEY	Double-click to set the name of the keypad window.
		Select the size of the System Keypad.																
	Title:40	Set the title column height.																
	10	Set the font size.																
	Arial	Set the font type.																
		Set the font color.																
		Set the background color.																
		Default size.																
ASCII-KEY	Double-click to set the name of the keypad window.																	
(4)	Custom Keypad	<ul style="list-style-type: none"> You can select the Custom Keypad function only if there is a Keypad Screen in the editing screen. When there is no Keypad Screen, the following message displays when you select the Custom Keypad function. 																
(4)	String Length	The string length ranges from 1 to 256.																
(5)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent												
Standard	Raised	Sunken	Transparent															

13

No.	Property	Function description																																																																																
(6)	Border Color	<ul style="list-style-type: none"> Set the Border Color of the element. When you set the element style to Transparent, the Border Color setting is invalid. 																																																																																
(7)	Background Color	<ul style="list-style-type: none"> Set the Background Color of the element. When you set the element style to Transparent, the Background Color setting is invalid. 																																																																																
(8)	Element Description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so users can know what actions have been done.</p> <table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																											
1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0																																																																											
2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1																																																																											
3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4																																																																											
4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1																																																																											
5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0																																																																											
6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1																																																																											
7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0																																																																											
8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8																																																																											
9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25																																																																											

■ Main-2



13

Figure 13.2.5 Main-2 property page for the Character Entry element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

13

■ Text

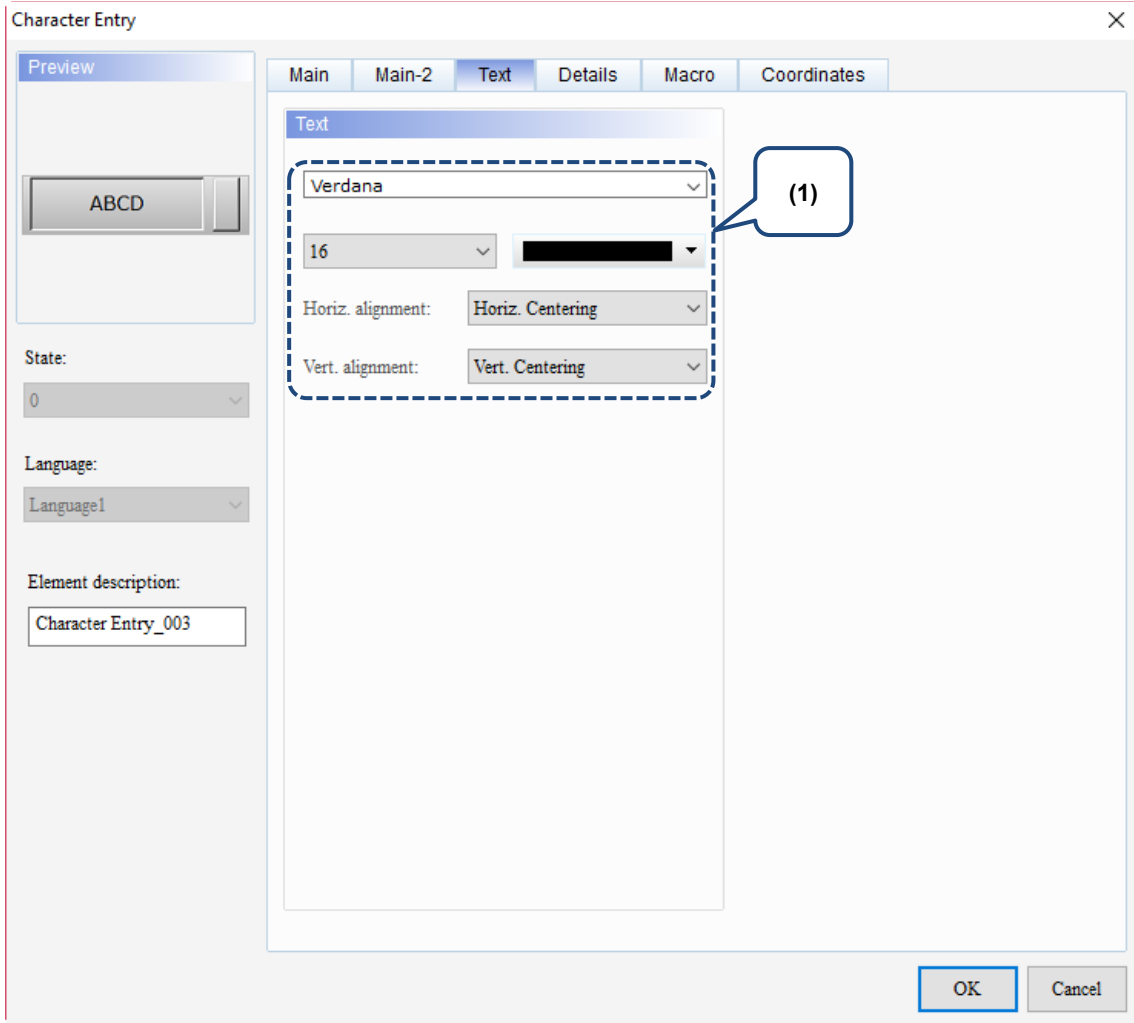
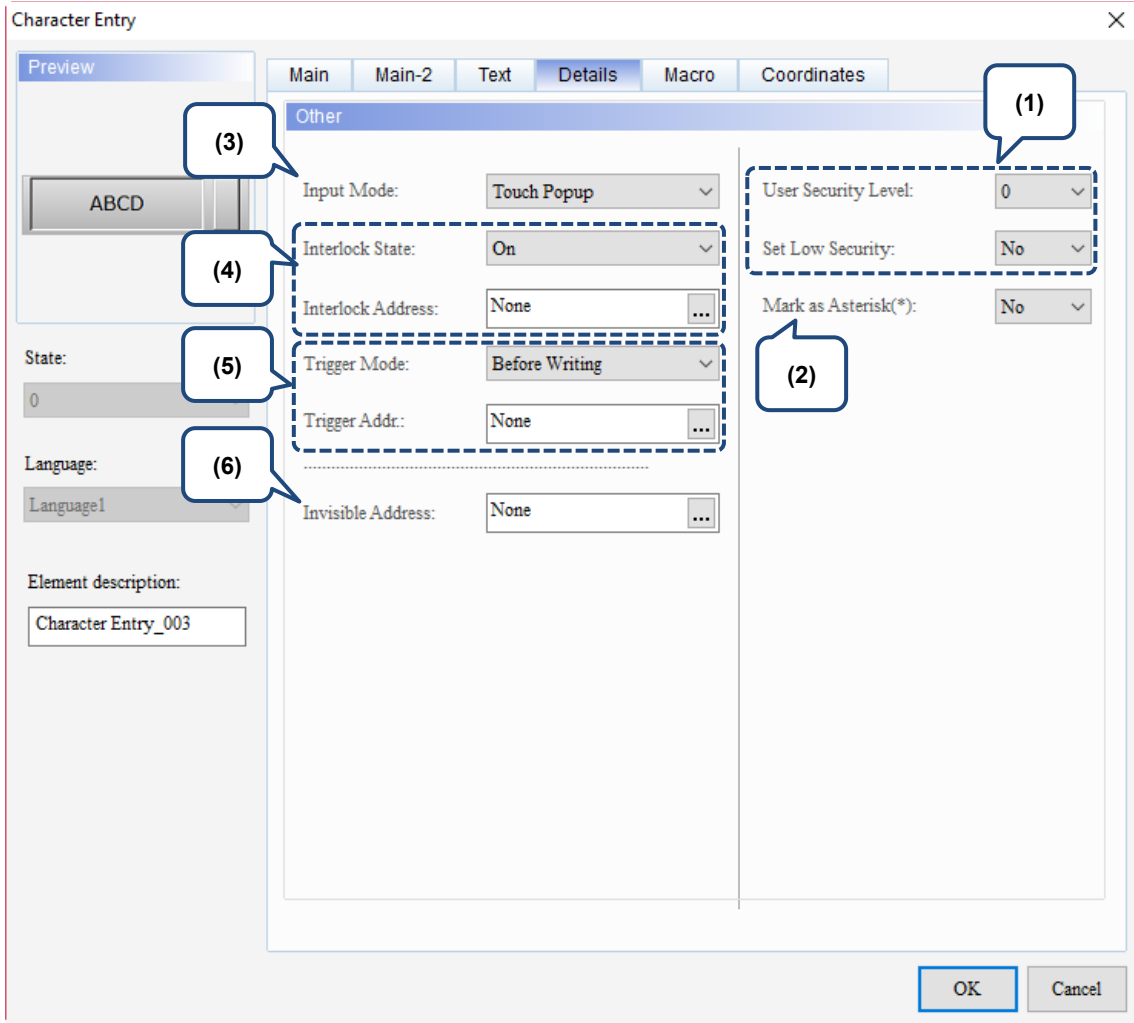


Figure 13.2.6 Text property page for the Character Entry element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

■ Details

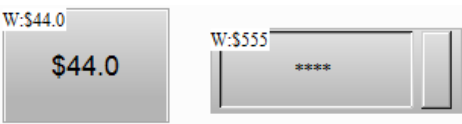
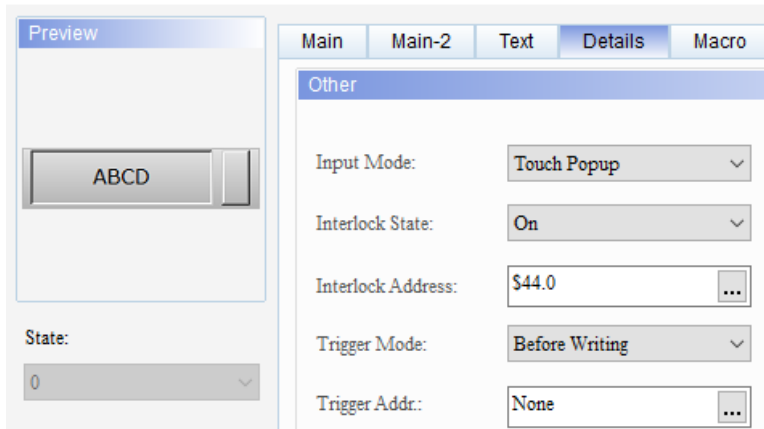
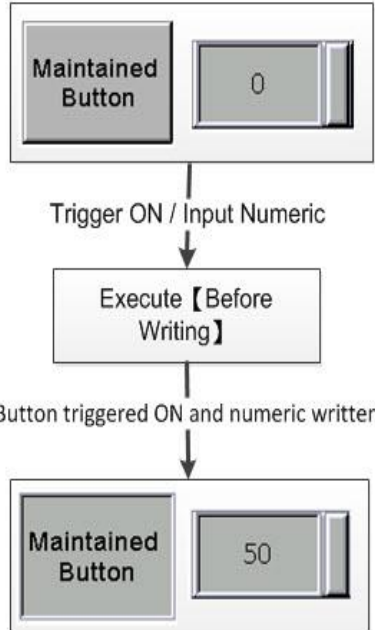
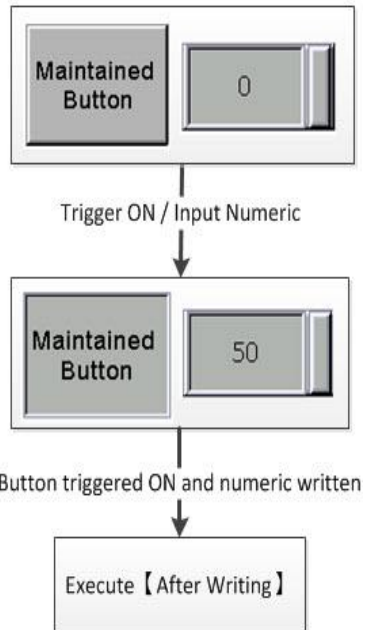
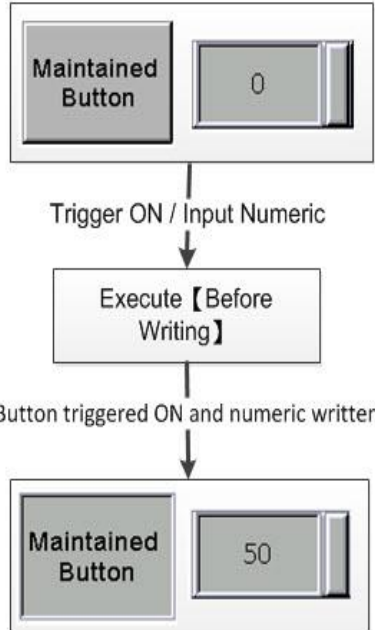
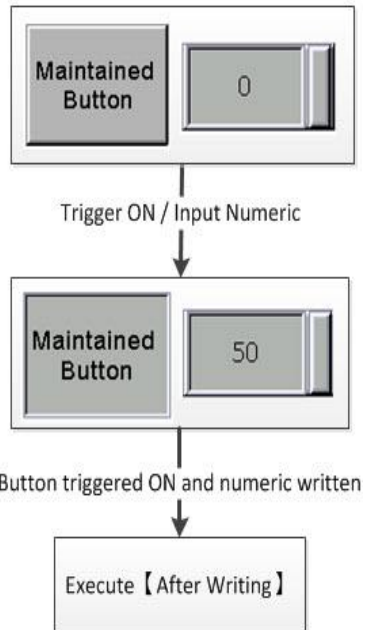
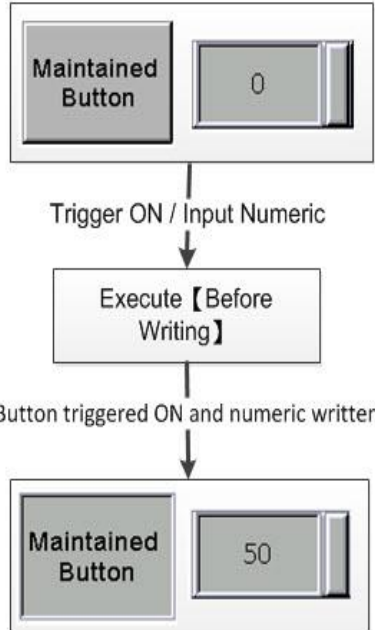
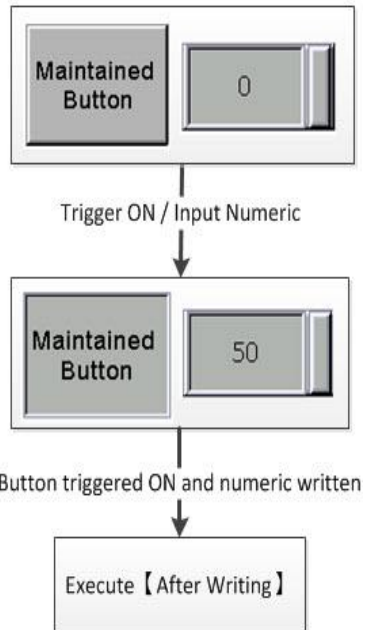




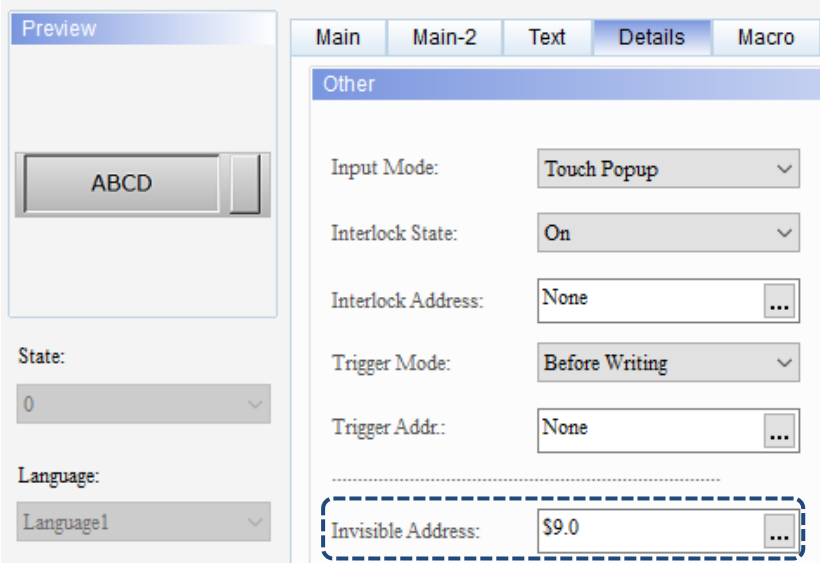
13

Figure 13.2.7 Details property page for the Character Entry element

No.	Property	Function description
(3)	Input Mode	<ul style="list-style-type: none"> <p>The types of Input Mode include Touch Popup, Active Non-Popup, and Touch Non-Popup. Touch Popup is the default Input Mode for the Character Entry element.</p> <div> <p>Input Mode: Touch Popup ▾ Interlock State: Touch Popup Active Non-Popup Touch Non-Popup</p> </div> <p>Touch Popup means that after pressing the Character Entry element, the ASCII Keypad will pop up.</p> <p style="color: red;">When the ASCII Keypad pops up, input the characters, then press Enter when you are done.</p> <div> <p>Press the Character Entry element.</p> </div> <p>The ASCII Keypad will not pop up when you press Character Entry elements with Active Non-Popup or Touch Non-Popup settings. You must create an additional Keypad element to use with this element.</p> <p>Active Non-Popup must be used with Interlock Address. Set the Input Mode for the Character Entry element as Active Non-Popup and the Interlock Address as \$44.0. Then, create a Maintained element and set its Write Address as \$44.0.</p> <div> <p>Press the Maintained element (Interlock Address). The Character Entry element shows the effect of Active Non-Popup.</p> </div> <p>Like the case of Active Non-Popup, the ASCII Keypad will not pop up when set as Touch Non-Popup, so you must create an additional Keypad element.</p> <p style="color: red;">Use with the Keypad element to input values.</p> <div> <p>The Character Entry element shows the effect of Touch Non-Popup.</p> </div>

13

No.	Property	Function description				
(4)	Interlock State	<ul style="list-style-type: none"> Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on. The following describes how it works: <ol style="list-style-type: none"> First, create a Maintained button and set its Write Address as \$44.0. Next, set the Write Address as \$555 for the Character Entry element and the Interlock Address as \$44.0. In order for the Character Entry element \$555 to become operable, you need to first press the Maintained button \$44.0 to enable \$555. 				
	Interlock Address	 <p>Character Entry</p> 				
(5)	Triggering method	<ul style="list-style-type: none"> Trigger types include Before Writing and After Writing. <table border="1"> <thead> <tr> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td>Trigger Address must be set to on before the value changes.</td> <td>Value is changed before the Trigger Address is set to on.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> The triggering function only switches the set Trigger Address to on, so if triggering again is required, you need to set the Trigger Address to off. 	Before Writing	After Writing	Trigger Address must be set to on before the value changes.	Value is changed before the Trigger Address is set to on.
	Before Writing	After Writing				
Trigger Address must be set to on before the value changes.	Value is changed before the Trigger Address is set to on.					
Trigger Address	<table border="1"> <thead> <tr> <th>Flowchart of Before Writing</th> <th>Flowchart of After Writing</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>	Flowchart of Before Writing	Flowchart of After Writing			
Flowchart of Before Writing	Flowchart of After Writing					
						

No.	Property	Function description	
(6)	Invisible Address	When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.	
		Invisible Address is off	
		Invisible Address is on	
<p>Character Entry</p> 			

13

EASCII instructions

The default of the DOP-100 series has been set to support EASCII, so you do not need to enable this function. All you need to do is create a Keypad Screen or Keypad element. Please refer to the example descriptions below for more details.

- The default of this function is Yes meaning the HMI can support Swedish.
- There are IBM and ISO/IEC 8859-1 defined Extended ASCII. The EASCII version is different in every operating system, but most follow the characters defined in ISO/IEC 8859-1. Microsoft adopts the definition of ISO/IEC 8859-1, so the HMI also adopts the definition of ISO/IEC 8859-1.

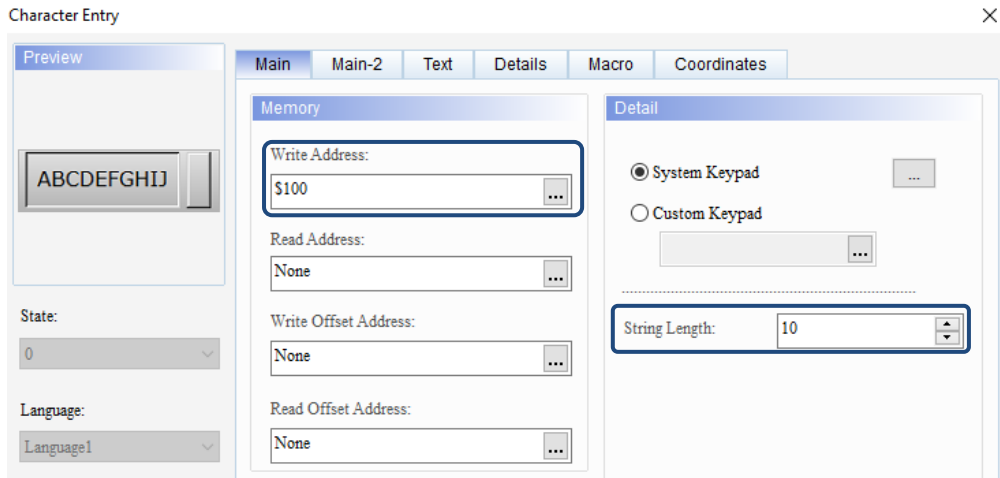
The supported extended characters are shown in the table below:

Character						
€	—	¬	ı	Ò	â	ø
,	~		À	Ó	æ	ù
f	™	®	Á	Ô	ç	ú
„	š	-	Â	Õ	è	û
...	›	°	Ã	Ö	é	ü
†	œ	±	Ä	×	ê	ý
‡	ž	²	Å	Ø	ë	þ
^	ÿ	³	Æ	Ù	ì	ÿ
%oo	ı	´	Ç	Ú	í	
Š	ø	μ	È	Û	î	
‹	£	¶	É	Ü	ï	
Œ	α	·	Ê	Ý	ð	
Ž	¥	¸	Ë	Þ	ñ	
‘	ı	¹	Ì	ß	ò	
,’	§	º	Í	à	ó	
“	”	»	Î	á	ô	
”	©	¼	Ï	â	õ	
•	ª	½	Ð	ã	ö	
–	«	¾	Ñ	ä	÷	

Method 1: Keypad element.

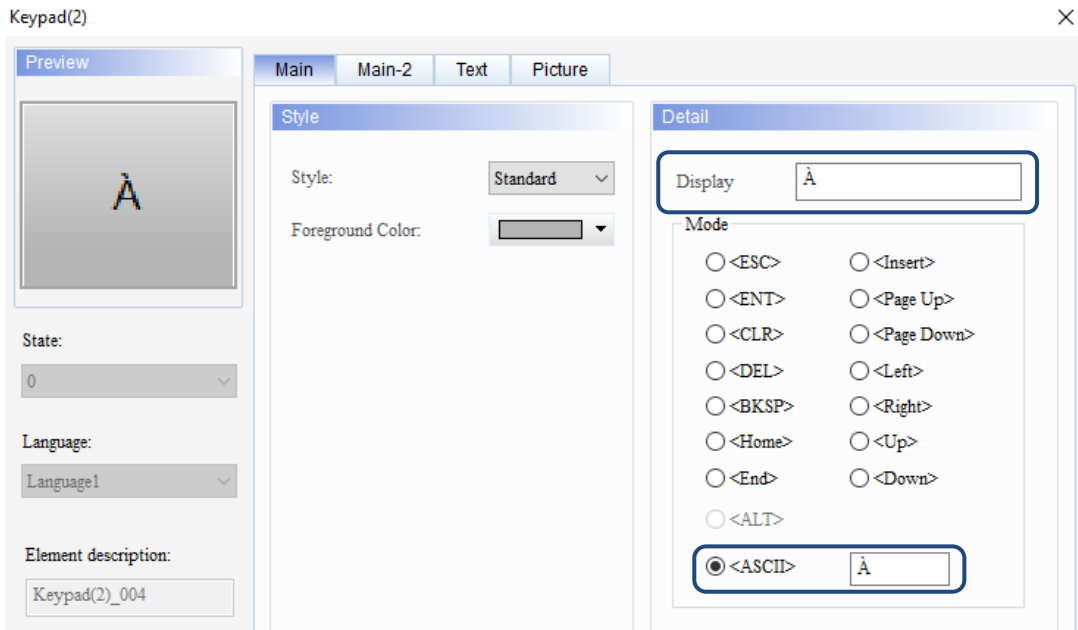
The following explains how the Keypad element works with EASCII.

- 1. Create a Character Entry element:** set the Write Address to \$100 and String Length to 10.



2. Create Keypad(2) element:

- (1) Select any of the above mentioned extended characters to fill in the ASCII display contents on the keypad.



- (2) Continue with the previous step and complete the settings for all characters.

À	Ô	£	§	CLR
ÿ	ø	í	þ	DEL
Æ	μ	Ä	ß	Enter
Ç	Ž	È	f	

13

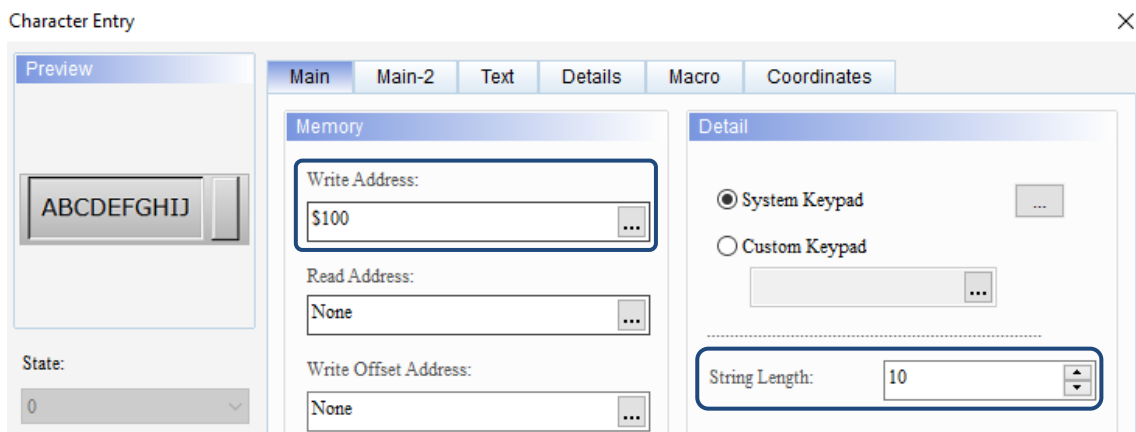
3. **Compile and download:** after completing all settings, please compile and download the element to the HMI. First, press the Character Entry element, then press the extended characters on the keypad. When you are done inputting, press **Enter**.



Method 2: Keypad Screen.

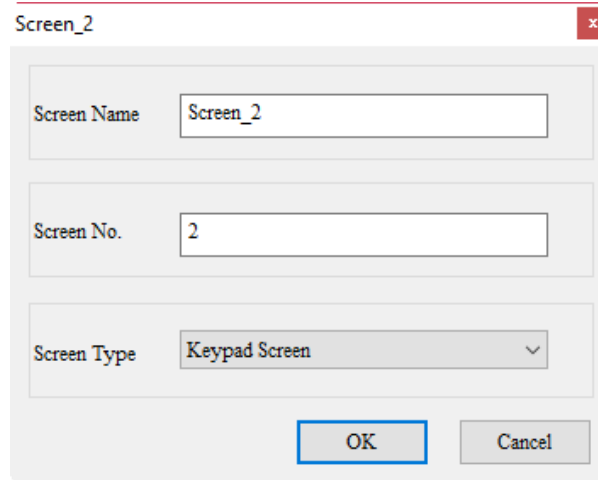
The following explains how to create a Keypad Template with the Keypad Screen to work with EASCII.

1. **Create a Character Entry element:** set the Write Address to \$100 and String Length to 10.

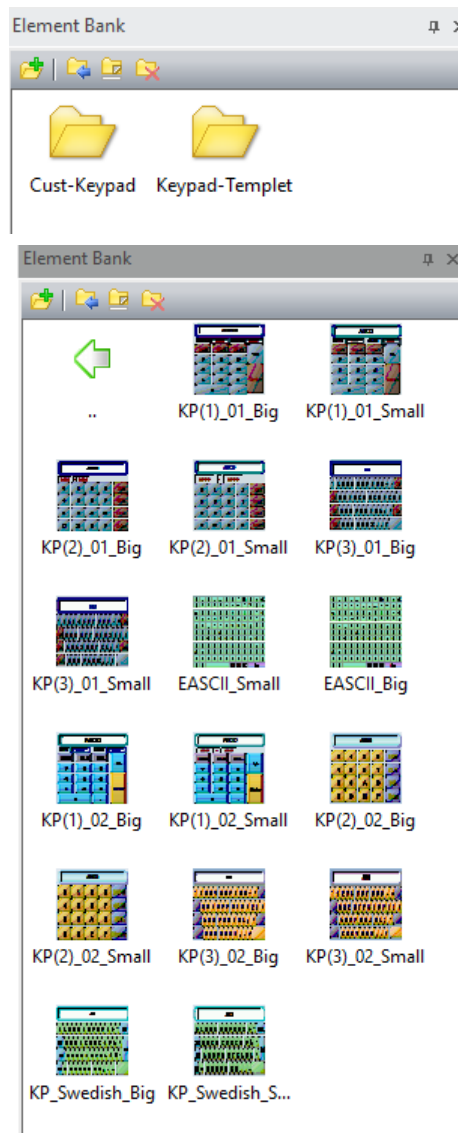


2. Create Keypad Screen:

- (1) Create a new screen and set the Screen Type as Keypad Screen.

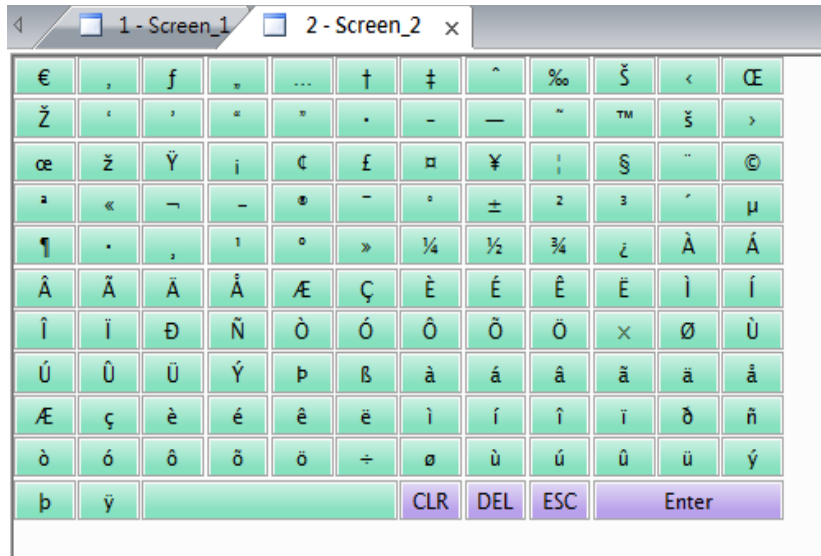


- (2) Go to the Element Bank, select Keypad-Template, and create an EASCII_Small template keypad.



13

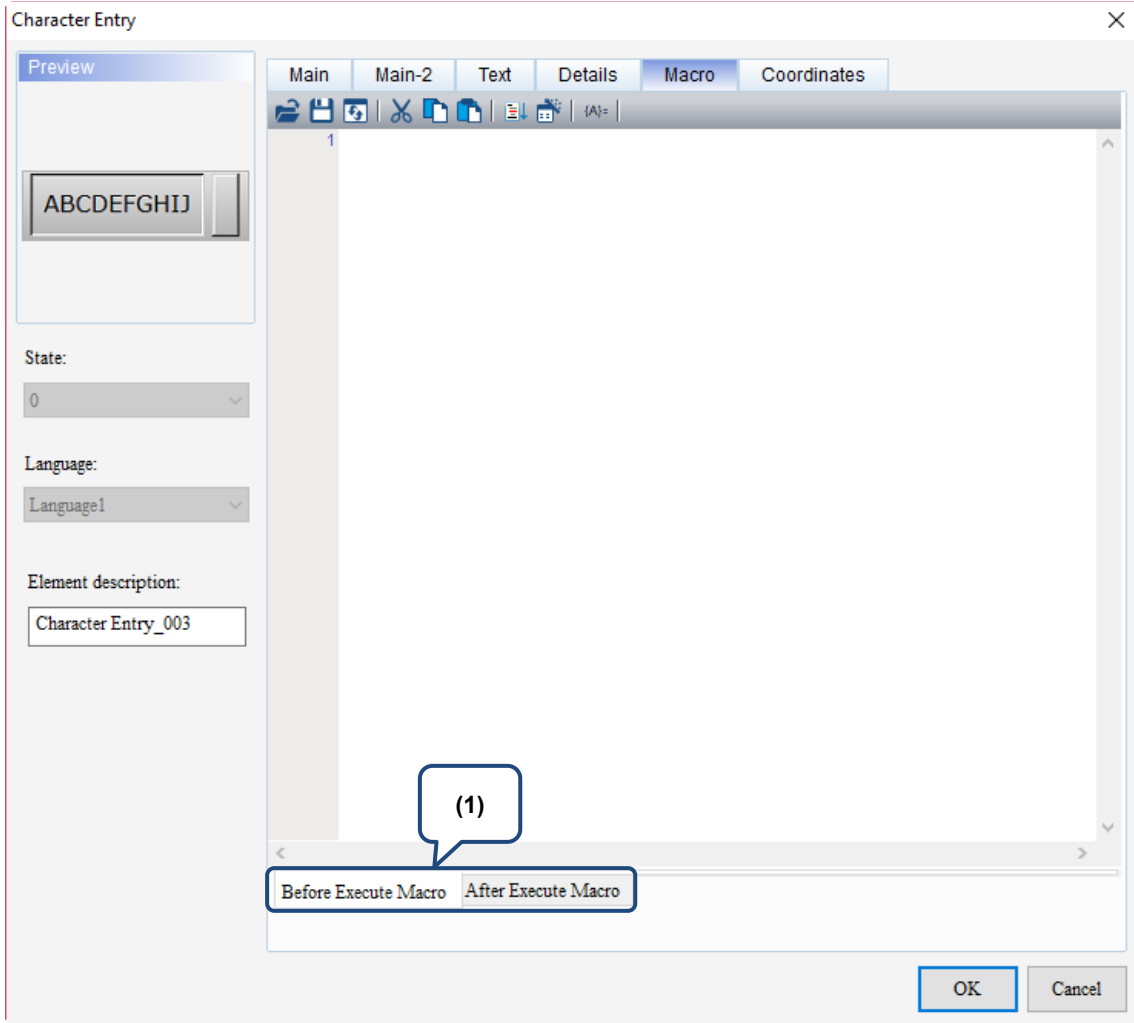
(3) The below figure is how the keypad looks like.



- 3. **Compile and download:** after completing all settings, please compile and download the element to the HMI. First, press the Character Entry element, and the Keypad Template element will pop up, then you can input the External ASCII characters.



■ Macro



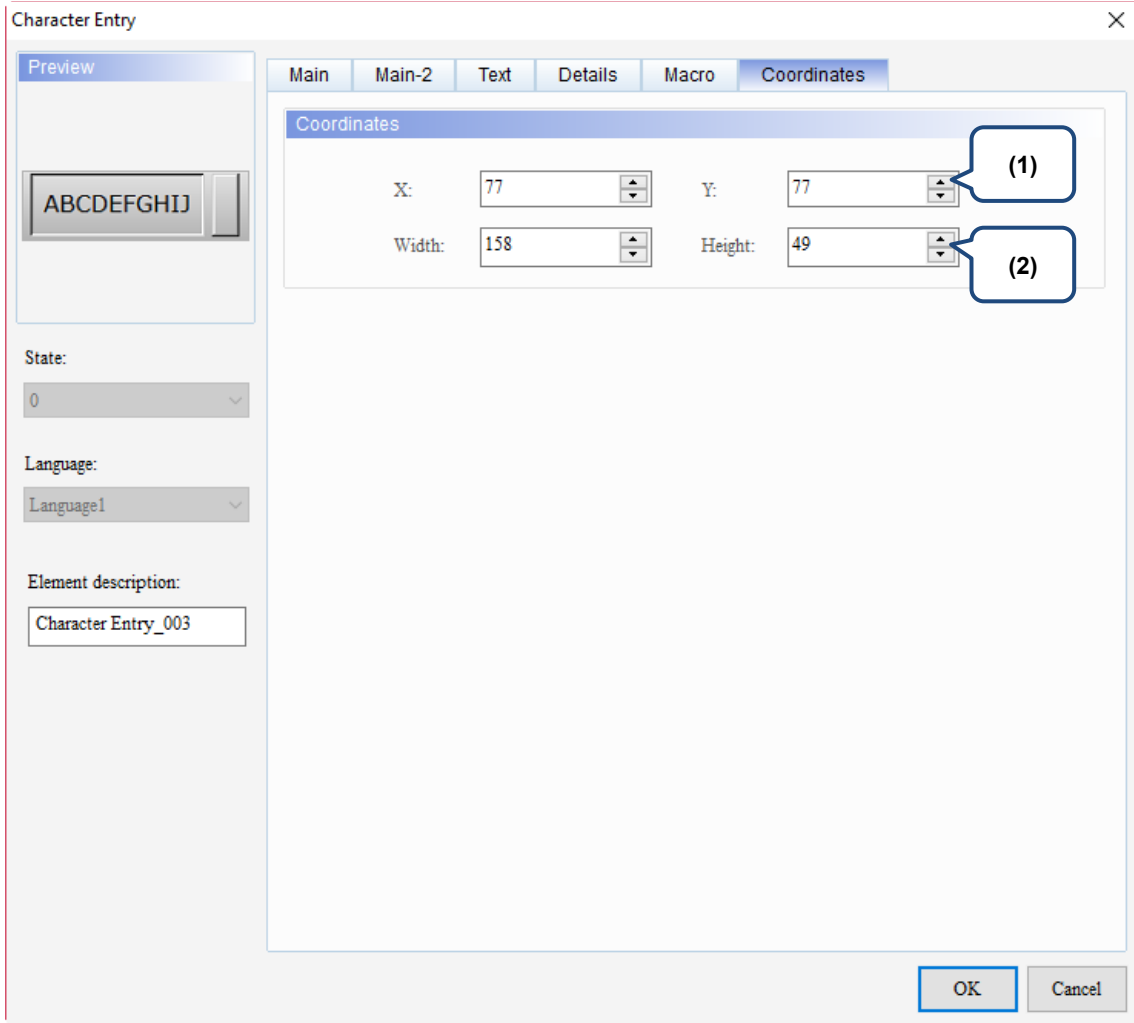
13

Figure 13.2.8 Macro property page for the Character Entry element

13

No.	Property	Function description
(1)		<p>Flowcharts of Before Execute Macro / After Execute Macro:</p> <pre> graph TD subgraph Before_Execute_Macro B0[Maintained Button 0] -- Trigger ON / Input Numeric --> BEM1[Before Execute Macro] BEM1 -- Button triggered ON and numeric written --> B50[Maintained Button 50] B50 -- Trigger OFF / Input Numeric --> BEM2[Before Execute Macro] BEM2 -- Button triggered OFF and numeric written --> B90[Maintained Button 90] B90 -- Trigger at next time --> B0 end subgraph After_Execute_Macro A0[Maintained Button 0] -- Trigger ON / Input Numeric --> AEM1[After Execute Macro] AEM1 -- Button triggered ON and numeric written --> A50[Maintained Button 50] A50 -- Trigger OFF / Input Numeric --> AEM2[After Execute Macro] AEM2 -- Button triggered OFF and numeric written --> A90[Maintained Button 90] A90 -- Trigger at next time --> A0 end </pre>
	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands, then execute the action of the button. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button, then execute the macro commands. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.

■ Coordinates



13

Figure 13.2.9 Coordinates property page for the Character Entry element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

13

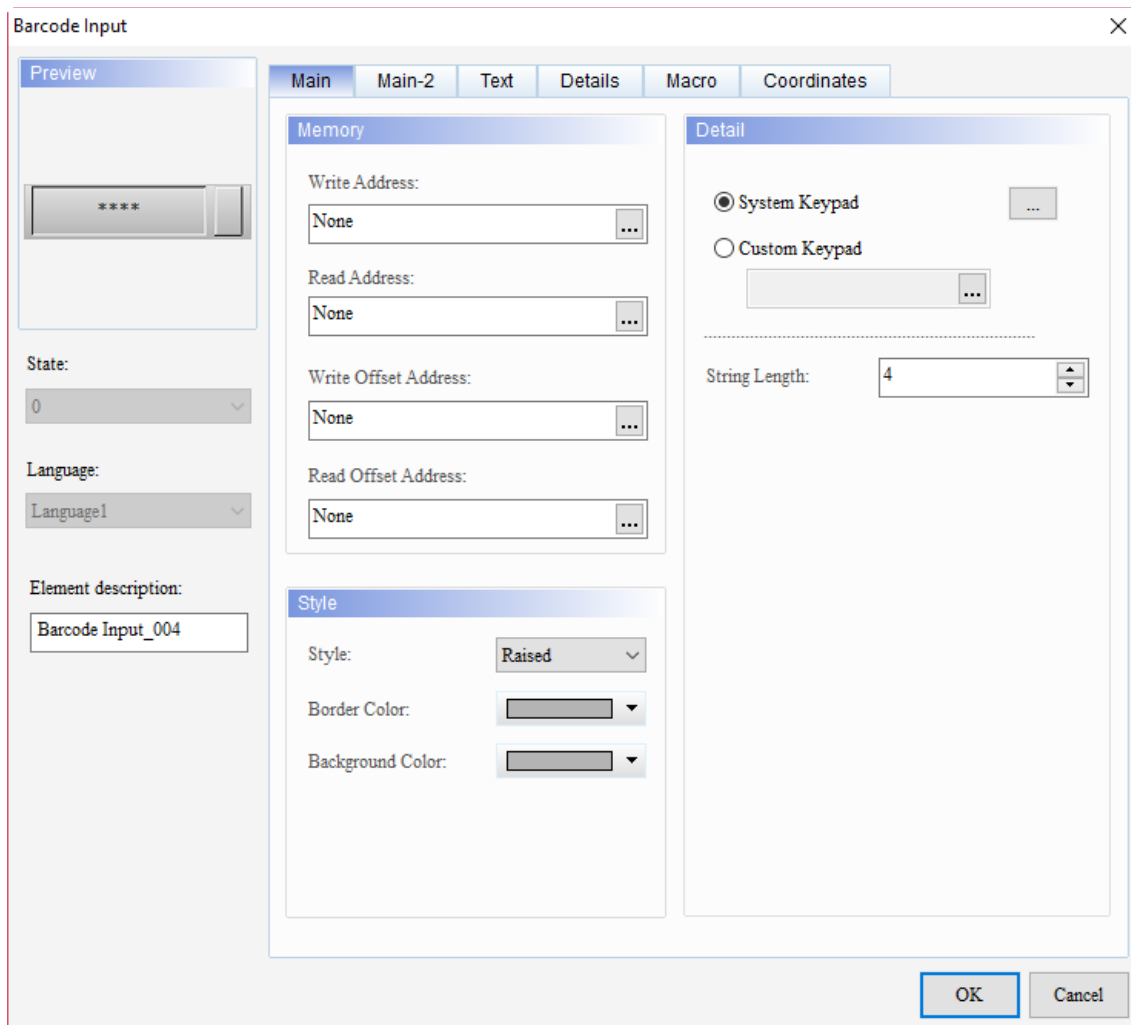
13.3 Barcode Input

The Barcode Input element supports only the 1D barcode input of ASCII code. Therefore, the format of the display and input is both characters. The barcode reader supported by the HMI is a scanning device that does not require additional drivers. Please refer to Table 13.3.1 for the Barcode Input example.

Table 13.3.1 Barcode Input example

Barcode Input							
Read Address	<table border="1"> <thead> <tr> <th colspan="2">Barcode Input element</th> </tr> </thead> <tbody> <tr> <td>Write Address</td> <td>\$555</td> </tr> <tr> <td colspan="2"> </td> </tr> </tbody> </table>	Barcode Input element		Write Address	\$555		
	Barcode Input element						
Write Address	\$555						
Setting	<table border="1"> <thead> <tr> <th colspan="2">Barcode Input element</th> </tr> </thead> <tbody> <tr> <td>String Length</td> <td>10</td> </tr> <tr> <td colspan="2"> <div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p><input checked="" type="radio"/> System Keypad ...</p> <p><input type="radio"/> Custom Keypad</p> <p style="text-align: right;">...</p> <hr/> <p>String Length: <input type="text" value="10"/></p> </div> </td> </tr> </tbody> </table>	Barcode Input element		String Length	10	<div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p><input checked="" type="radio"/> System Keypad ...</p> <p><input type="radio"/> Custom Keypad</p> <p style="text-align: right;">...</p> <hr/> <p>String Length: <input type="text" value="10"/></p> </div>	
Barcode Input element							
String Length	10						
<div style="border: 1px solid gray; padding: 5px;"> <p>Detail</p> <p><input checked="" type="radio"/> System Keypad ...</p> <p><input type="radio"/> Custom Keypad</p> <p style="text-align: right;">...</p> <hr/> <p>String Length: <input type="text" value="10"/></p> </div>							
Execution results	<ul style="list-style-type: none"> After creating the element, please compile and download the element to the HMI, and then connect the barcode reader to the HMI. The HMI will beep once it recognizes the barcode reader. Please press the Barcode Input element. When the element starts flashing, scan the barcode, and the barcode will display on the Barcode Input element. <div style="display: flex; align-items: center; gap: 10px;"> <div style="text-align: center;"> <p style="color: red; font-size: small;">Press the Barcode Input element.</p> </div> <div style="text-align: center;"> <p style="color: red; font-size: small;">Wait till the Barcode Input element starts flashing.</p> </div> <div style="text-align: center;"> <p style="color: red; font-size: small;">Scan the barcode.</p> </div> <div style="text-align: center;"> </div> </div>						

When you double-click Barcode Input, the property page is shown as follows.



13

Figure 13.3.1 Properties of Barcode Input

Table 13.3.2 Function page of Barcode Input

Barcode Input	
Function page	Description
Preview	Barcode Input elements do not support multiple state values and multi-language data display.
Main	Set Read Address, Write Address, Read Offset Address, Write Offset Address; set the Style, Background Color, Border Color of the element, and its String Length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text font, size, color, and alignment type.
Details	Set the Input Mode, Popup Control Addr., Interlock State, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Mark as Asterisk (*), and Support EASCII.
Macro	Set Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

13

■ Main

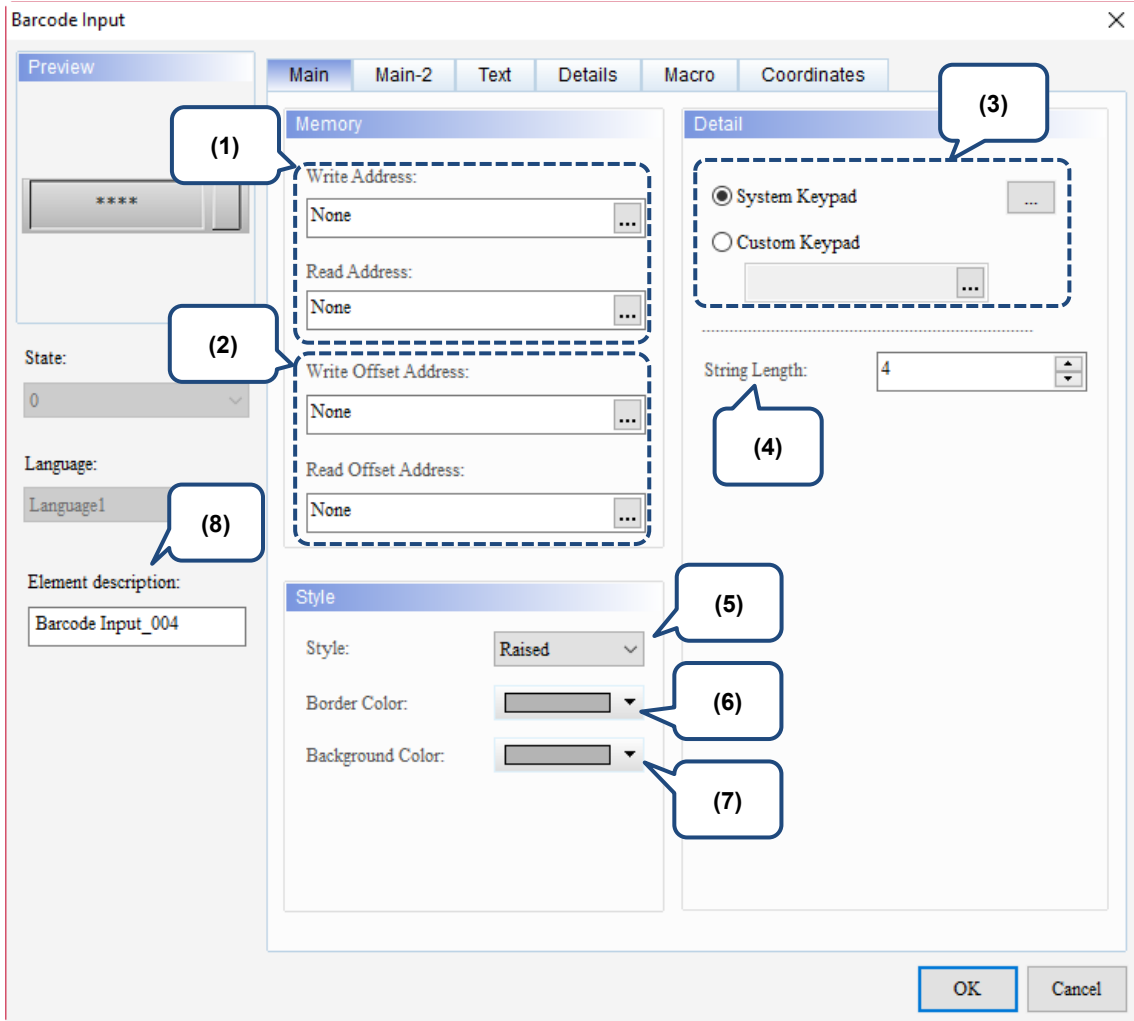
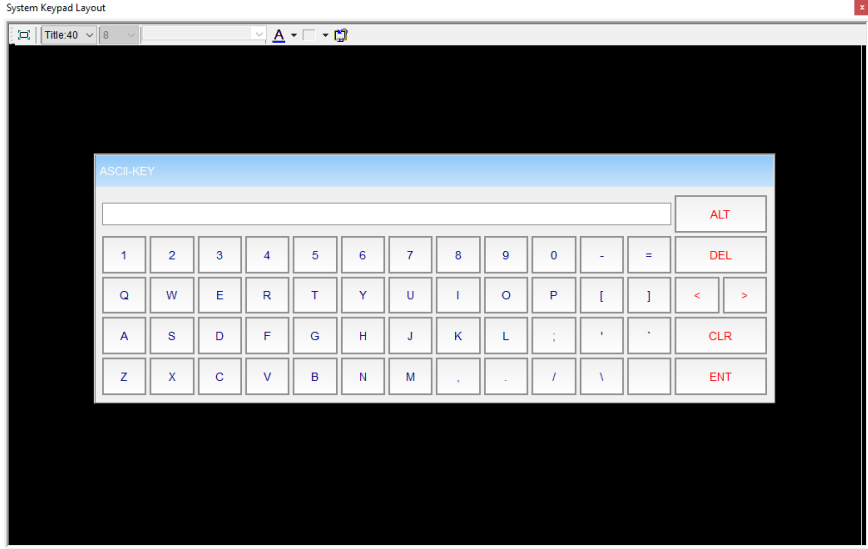

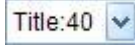






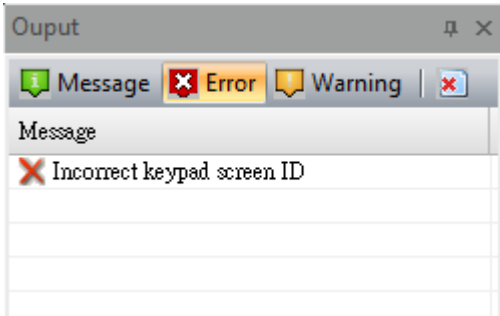
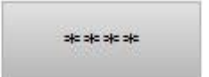
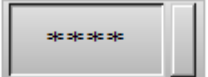
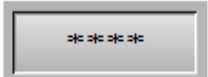
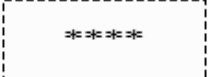
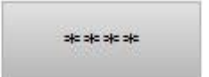
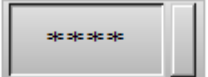
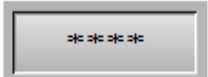
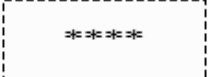
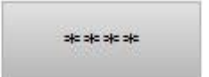
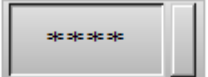
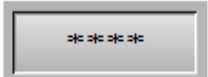
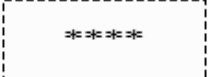
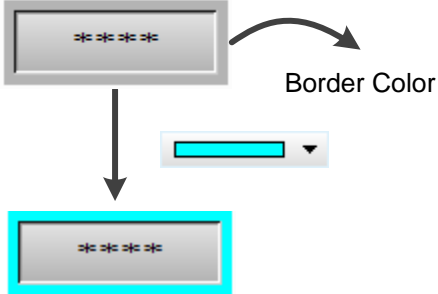
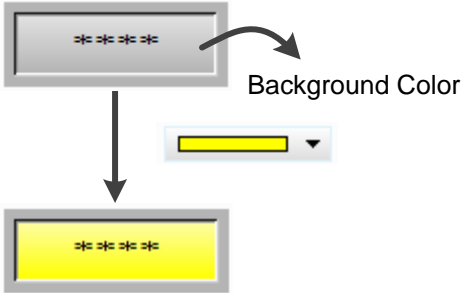


Figure 13.3.2 Main property page for the Barcode Input element

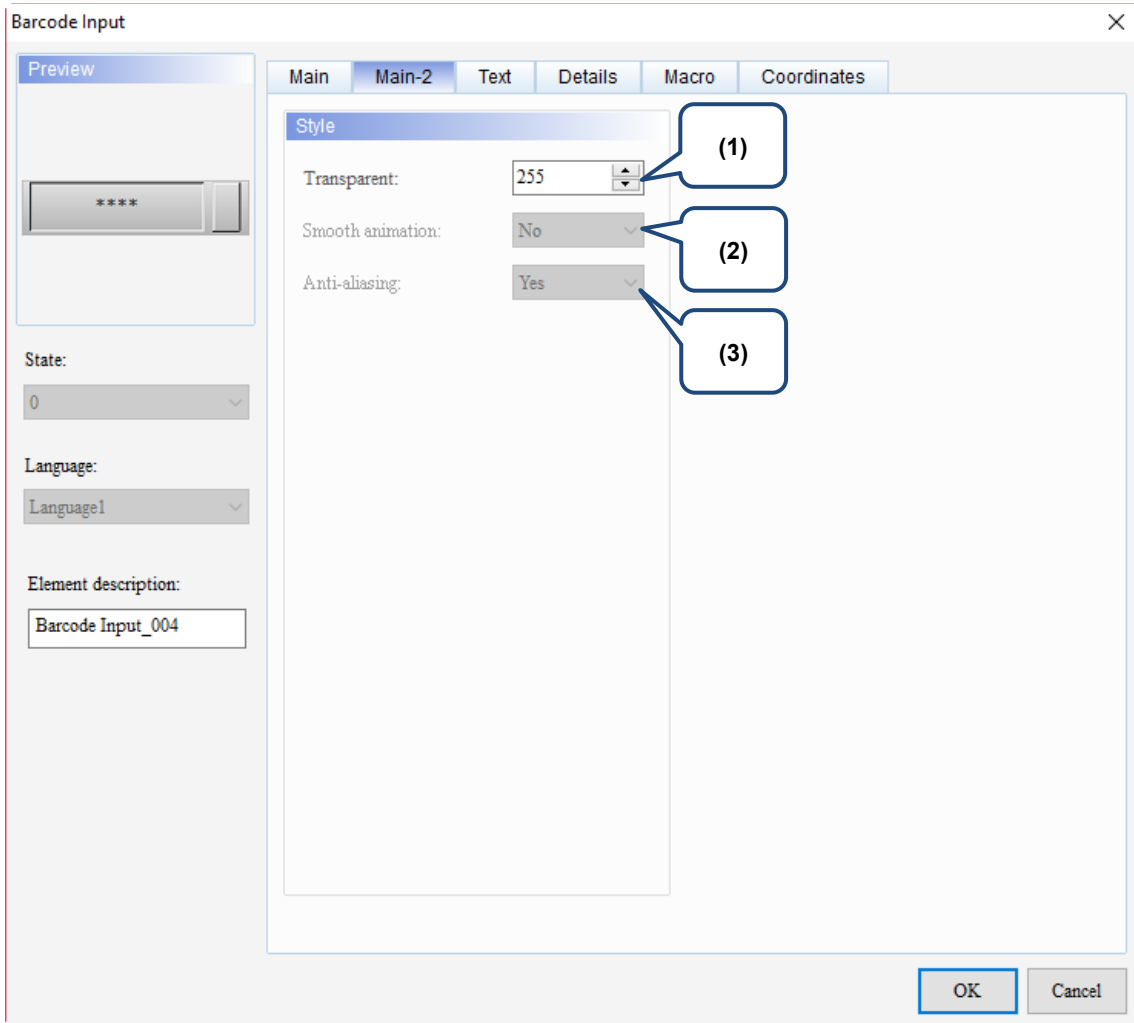
No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
	Read Address	
(2)	Write Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	

No.	Property	Function description								
(3)	System Keypad	<p>By editing the ASCII Keypad, you can adjust the size of the keypad window, title size, font size / type / color of the numeric display, and the background color of the keypad window.</p> 								
			Select the size of the System Keypad.							
			Set the title column height.							
			Set the font size.							
			Set the font type.							
			Set the font color.							
			Set the background color.							
			Default size.							
	Double-click to set the name of the keypad window.									
	Custom Keypad	<ul style="list-style-type: none"> You can select the Custom Keypad function only if there is a Keypad Screen in the editing screen. When there is no Keypad Screen, the following message displays when you select the Custom Keypad function. 								
(4)	String Length	The string length ranges from 1 to 256.								
(5)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
										

13

No.	Property	Function description																																																																																										
(6)	Border Color	<ul style="list-style-type: none"> Set the Border Color of the element. When you set the element style to Transparent, the Border Color setting is invalid. 																																																																																										
(7)	Background Color	<ul style="list-style-type: none"> Set the Background Color of the element. When you set the element style to Transparent, the Background Color setting is invalid. 																																																																																										
(8)	Element Description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so users can know what actions have been done.</p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																																				
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																																				
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																																				
3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																																				
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																																				
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																																				
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																																				
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																																				
8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																																				
9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																																				

■ Main-2



13

Figure 13.3.3 Main-2 property page for the Barcode Input element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

13

■ Text

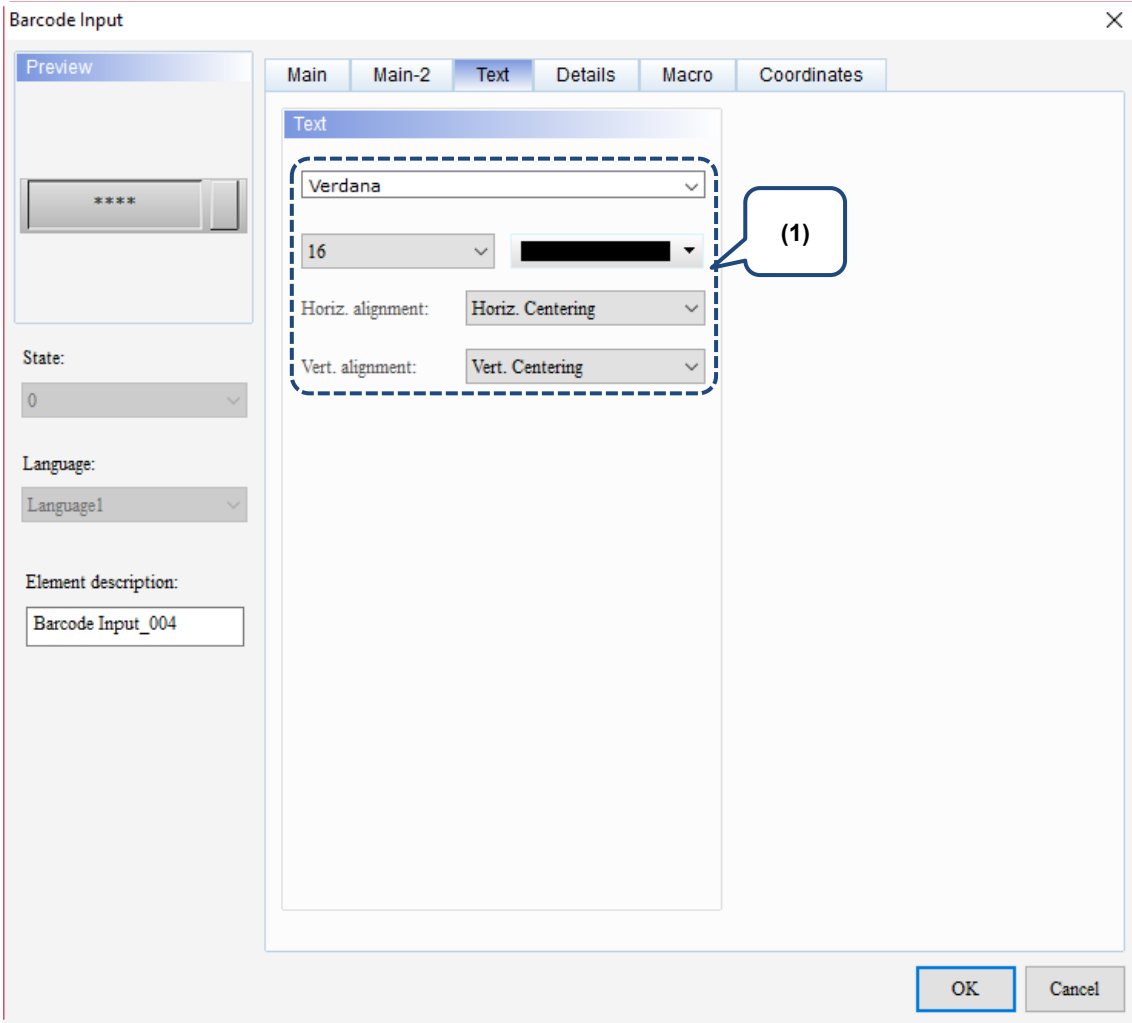
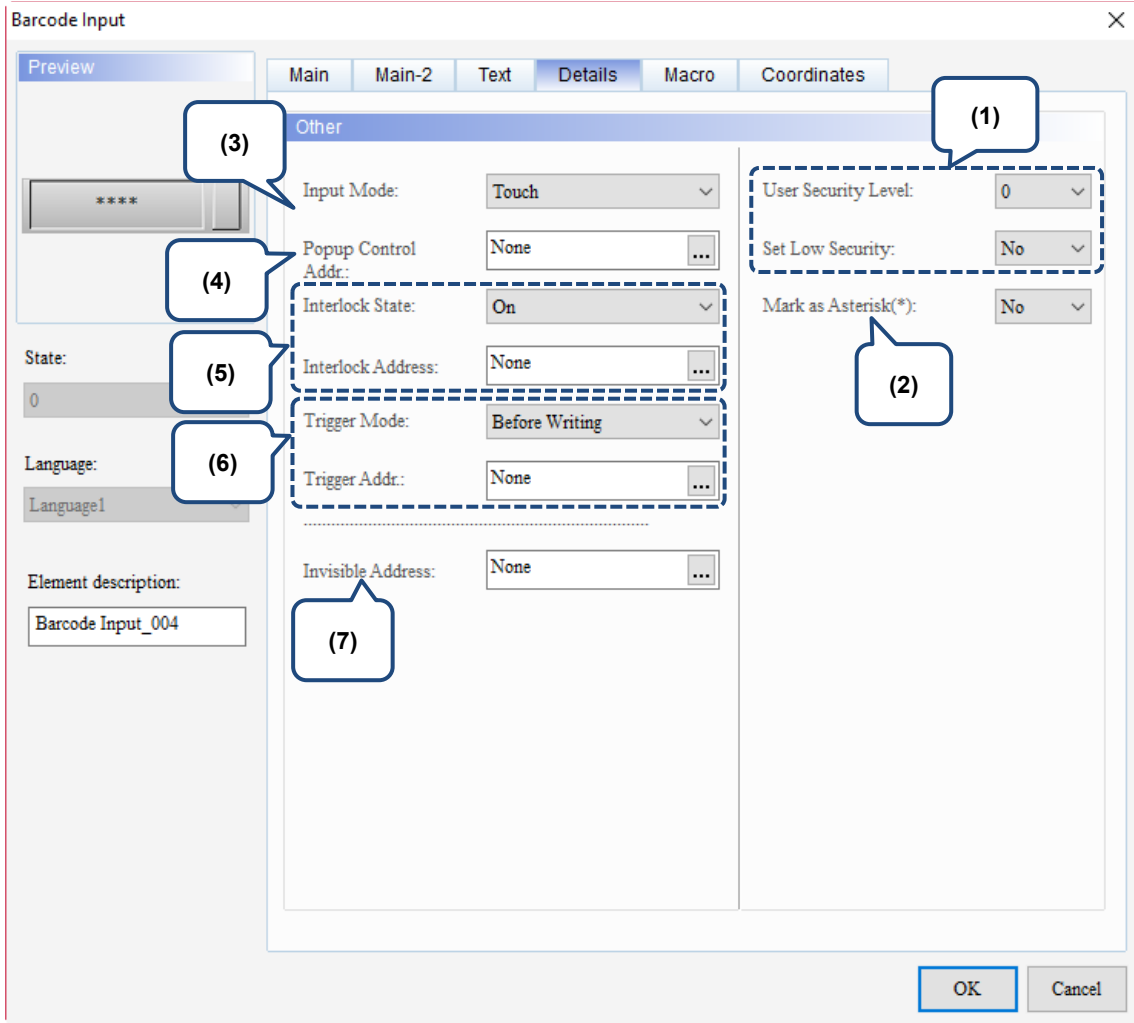


Figure 13.3 4 Text property page for the Barcode Input element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

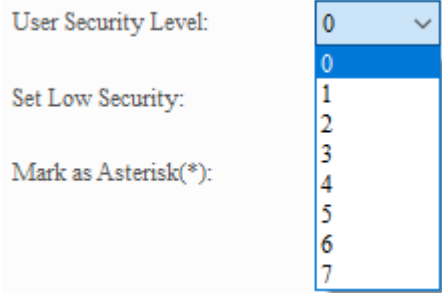
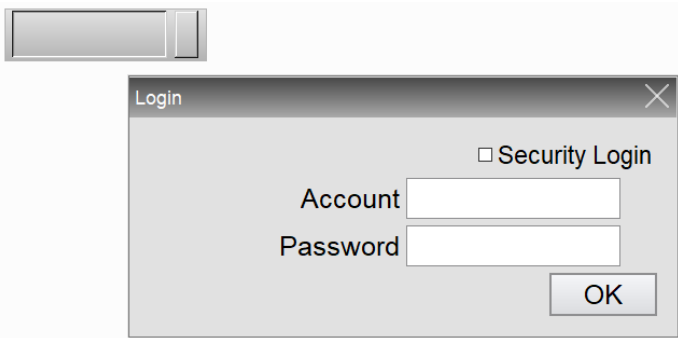

■ Details

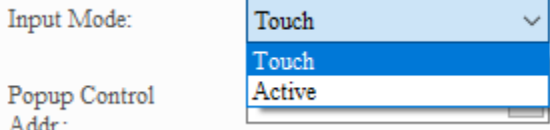




13

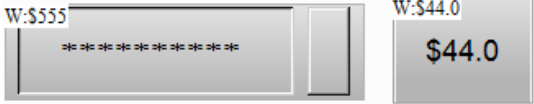
Figure 13.3.5 Details property page for the Barcode Input element

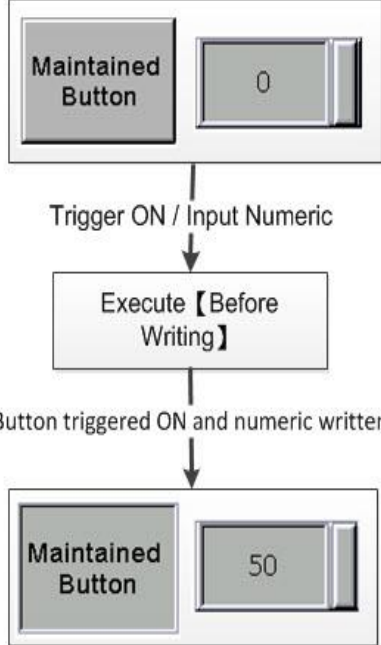
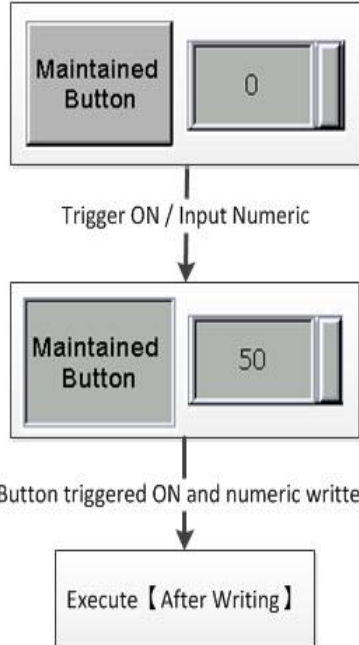
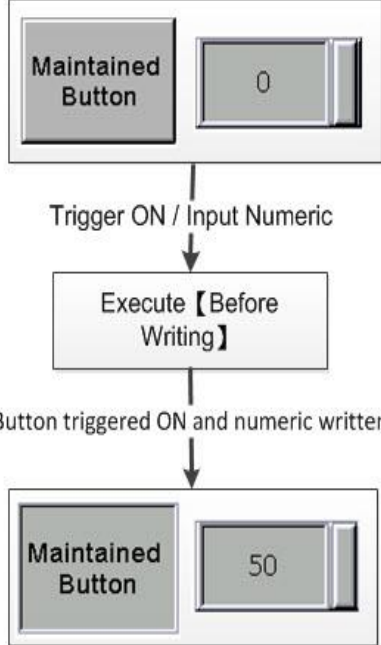
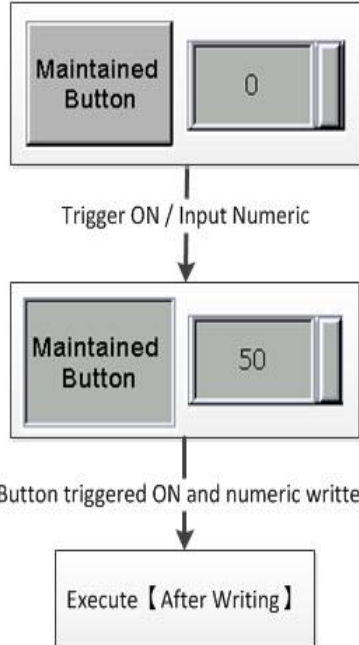
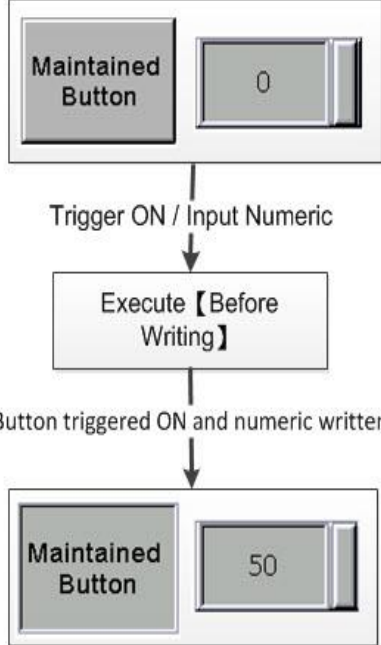
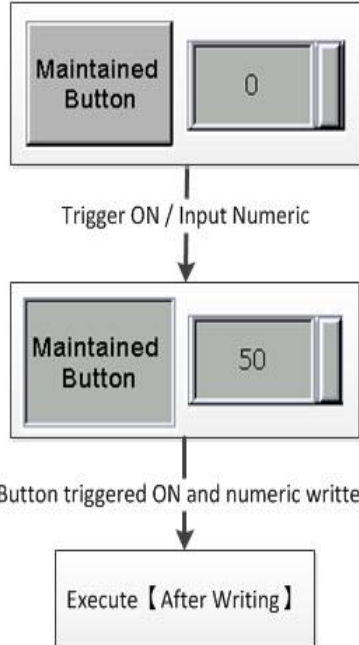






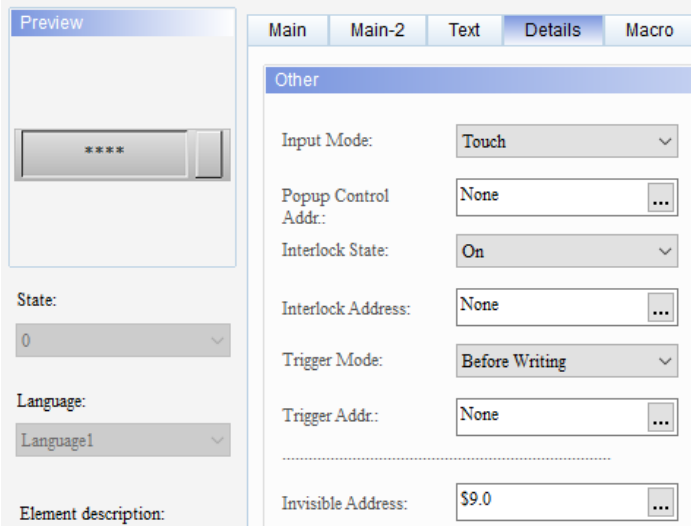
13

No.	Property	Function description
(1)	User Security Level	
	Set Low Security	<ul style="list-style-type: none"> ■ You can use this function to set the permission level for pressing the element; this operation is only available to users with the same set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password with the Password Table element, please refer to Section 5.7.2 Password Table Setup).  <ul style="list-style-type: none"> ■ If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.
(2)	Mark as Asterisk (*)	<p>If you specify Mark as Asterisk (*) to Yes, the value appears as asterisks when you input a value to the ASCII Keypad, as shown below:</p> 

No.	Property	Function description
(3)	Input Mode	<ul style="list-style-type: none"> The types of Input Mode include Touch and Active. Touch is the default Input Mode for the Barcode Input element.  <ul style="list-style-type: none"> Touch means after pressing the Barcode Input element, wait for the element to flash, and scan the barcode or input the barcode using the Custom Keypad. The Barcode Input element will then display the barcode. <p>Press the Barcode Input element. → Wait till the Barcode Input element starts flashing. → Scan the barcode. → DELTA001</p> <p>Press the Barcode Input element. → Wait till the Barcode Input element starts flashing. → Use the Keypad element to input the barcode. → DELTA002</p>  <ul style="list-style-type: none"> Active must be used with Interlock Address. Set the Input Mode for the Barcode Input element as Active and the Interlock Address as \$44.0. Then, create a Maintained element and set its Write Address as \$44.0. If you set the Input Mode to Active, you can directly use the barcode reader or Keypad element to input the barcode. <p>Press the Maintained element (Interlock Address). → The Barcode Input element shows the effect of Active flashing. → Use the barcode reader to scan the barcode. → DELTA001</p> <p>Press the Maintained element (Interlock Address). → The Barcode Input element shows the effect of Active flashing. → Use the Keypad element to input the barcode. → DELTA002</p>
(4)	Popup Control Addr.	<ul style="list-style-type: none"> Use Popup Control Addr. for controlling whether to display the System Keypad or not. If you set Popup Control Addr. to on, when you press the Barcode Input element, the System Keypad pops up. When the System Keypad pops up, the Popup Control Addr. is switched to off. Before you input the barcode next time, you must set Popup Control Addr. to on again. Popup Control Addr. is operable only when the Input Mode is set to Touch. If the Input Mode is set to Active, it means the System Keypad will not pop up, and thus the setting for Popup Control Addr. is invalid. The following example illustrates the Input Mode set as Touch. Set the Popup Control Addr. of the Barcode Input element to \$556.0. When you press the Barcode Input element, and then press the Popup Control Addr., the ASCII Keypad pops up. <p>Press the Barcode Input element. → Wait till the Barcode Input element starts flashing. → Press the Maintained element (Popup Control Addr.). → When the Popup Control Addr. is on, the System Keypad pops up. → DELTA002</p> 

13

No.	Property	Function description
(5)	Interlock State	<ul style="list-style-type: none"> ■ Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on. ■ The following describes how it works: <ol style="list-style-type: none"> a. First, create a Maintained button and set its Write Address as \$44.0. Next, set the Write Address as \$555 for the Barcode Input element and the Interlock Address as \$44.0. b. In order for the Barcode Input element \$555 to become operable, you need to first press the Maintained button \$44.0 to enable \$555.
	Interlock Address	 <p>The diagram illustrates the configuration of two input elements. On the left is a Barcode Input element with a write address of W:\$555 and a series of asterisks below it. To its right is a Maintained button with a write address of W:\$44.0 and a value of \$44.0.</p>

No.	Property	Function description								
(6)	Triggering method	<ul style="list-style-type: none"> Trigger types include Before Writing and After Writing. <table border="1"> <thead> <tr> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td>Trigger Address must be set to on before the value changes.</td> <td>Value is changed before the Trigger Address is set to on.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> The triggering function only switches the set Trigger Address to on, so if triggering again is required, you need to set the Trigger Address to off. <table border="1"> <thead> <tr> <th>Flowchart of Before Writing</th> <th>Flowchart of After Writing</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>	Before Writing	After Writing	Trigger Address must be set to on before the value changes.	Value is changed before the Trigger Address is set to on.	Flowchart of Before Writing	Flowchart of After Writing		
	Before Writing	After Writing								
Trigger Address must be set to on before the value changes.	Value is changed before the Trigger Address is set to on.									
Flowchart of Before Writing	Flowchart of After Writing									
										
Trigger Address										
(7)	Invisible Address	<p>When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.</p> <table border="1"> <tbody> <tr> <td>Invisible Address is off</td> <td></td> <td>Invisible Address \$9.0 OFF</td> </tr> <tr> <td>Invisible Address is on</td> <td></td> <td>Invisible Address \$9.0 ON</td> </tr> </tbody> </table>	Invisible Address is off		Invisible Address \$9.0 OFF	Invisible Address is on		Invisible Address \$9.0 ON		
	Invisible Address is off		Invisible Address \$9.0 OFF							
Invisible Address is on		Invisible Address \$9.0 ON								
	<p>Barcode Input</p> 									

Macro

13

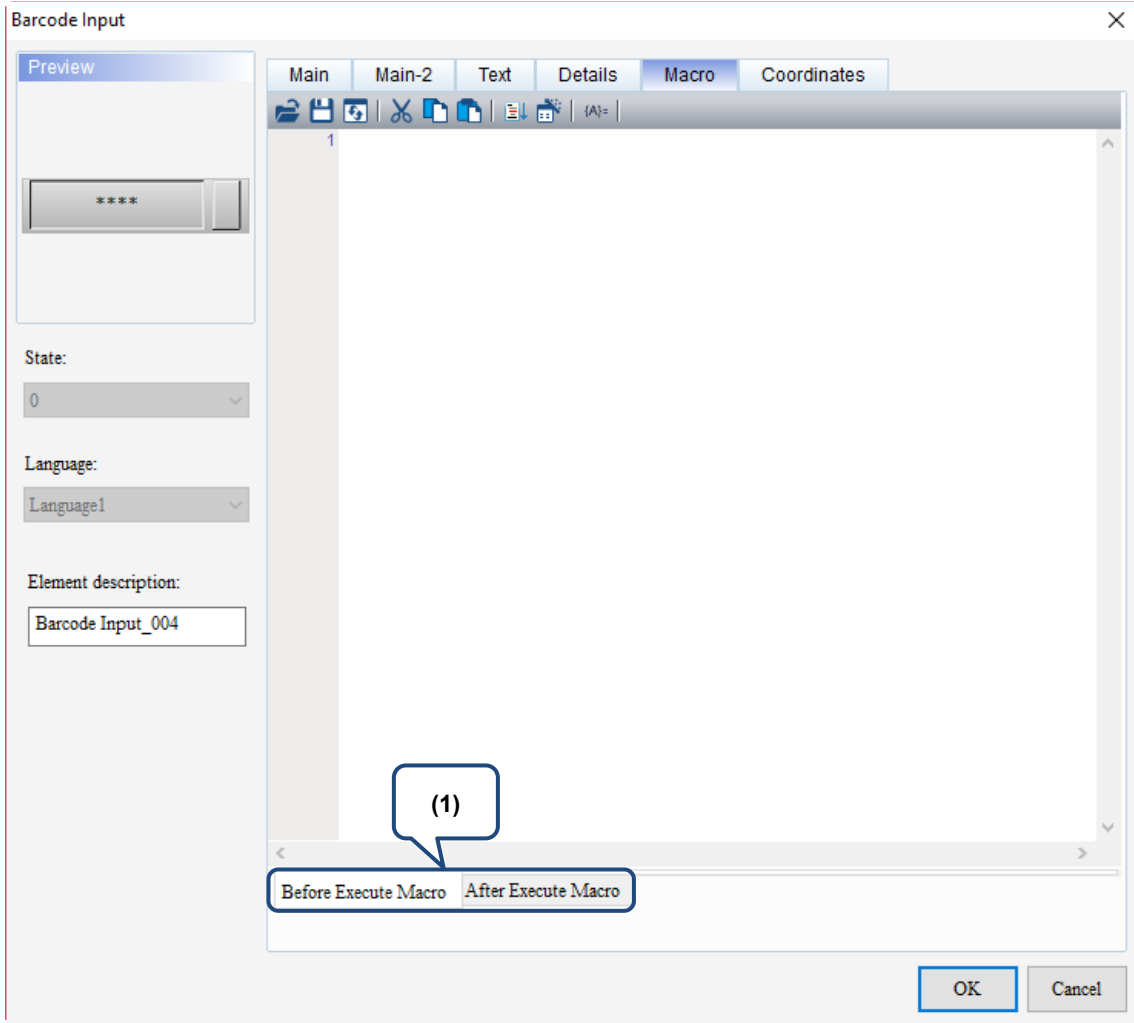


Figure 13.3.6 Macro property page for the Barcode Input element

No.	Property	Function description
<p>(1)</p>		<p>Flowcharts of Before Execute Macro / After Execute Macro:</p>
	<p>Before Execute Macro</p>	<p>When you press the button element, the HMI will first execute the macro commands, then execute the action of the button. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.</p>
<p>After Execute Macro</p>	<p>When you press the button element, the HMI will first execute the action of the button, then execute the macro commands. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.</p>	

Coordinates

13

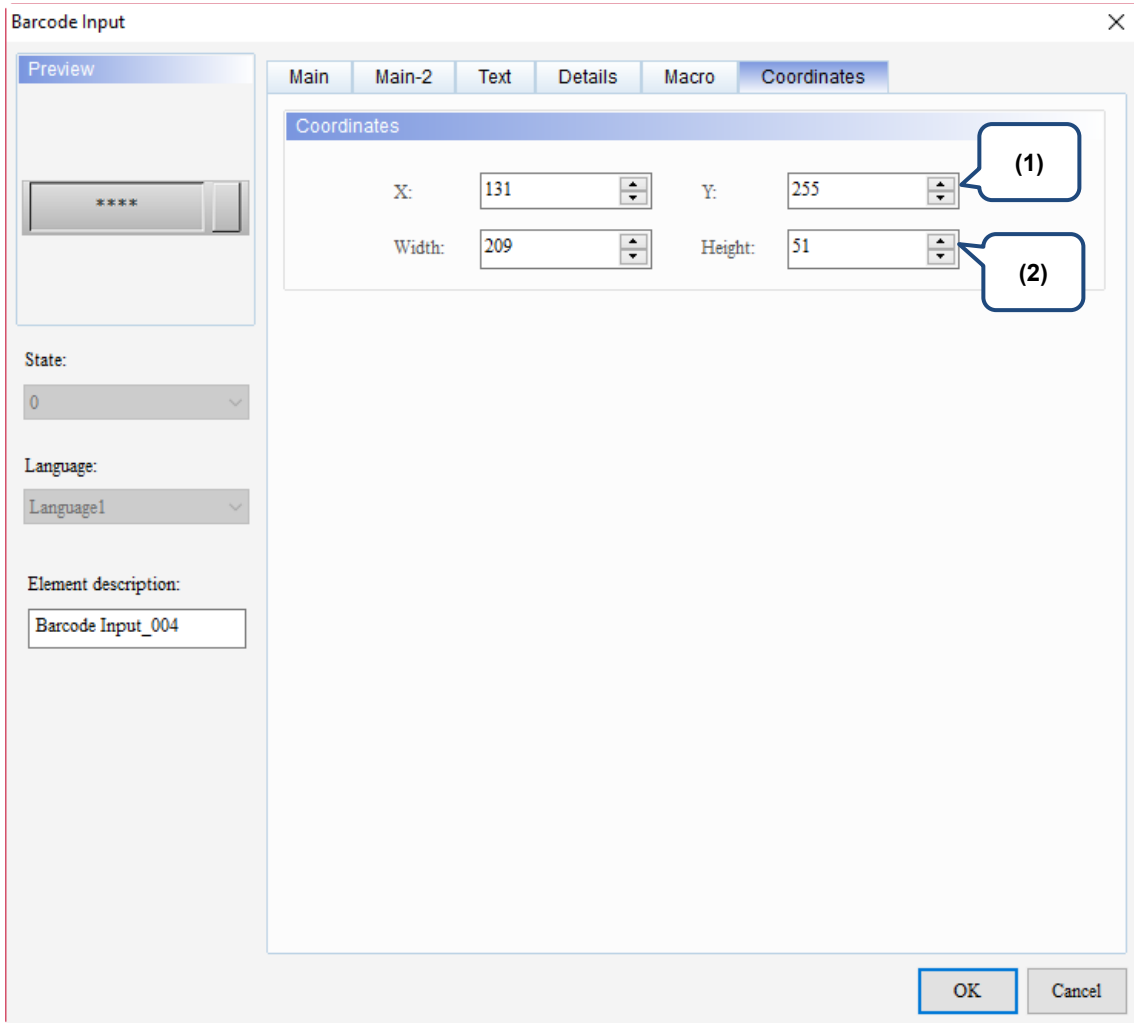


Figure 13.3.7 Coordinates property page for the Barcode Input element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

13.4 Multi-language Input

The Multi-language Input function supports up to 16 languages and you can decide the input methods for editing the display texts.

Go to [Options] > [Configuration] > [Multi-language Settings] to check the preferred languages. Then, with the Multi-language Input element in the Input element, you can use the Multi-language Input function.

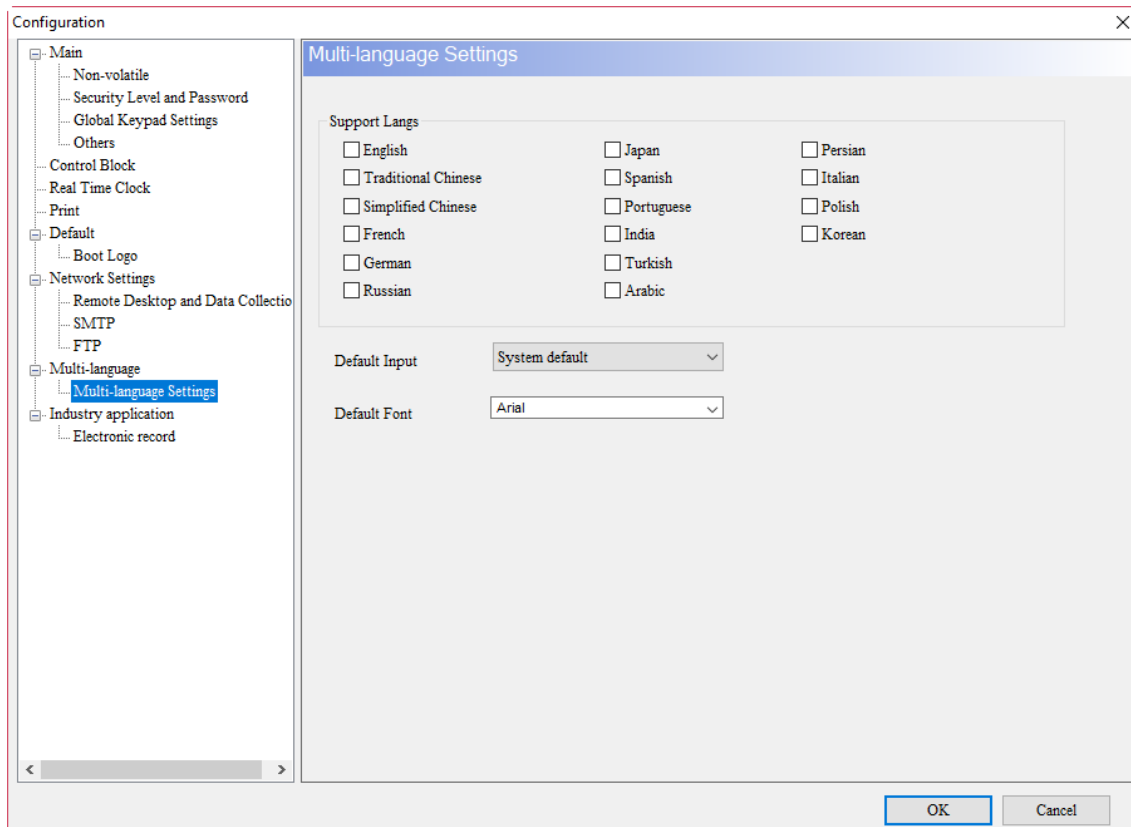


Figure 13.4.1 Multi-language Input

The Multi-language Input element provides functions different from DOP-W, which combines Enhanced Recipe Group naming, Enhanced Recipe Char format, account input, so that you can input Unicode characters for the names and content.

Note: the Multi-language Input function does not support online and offline simulations.

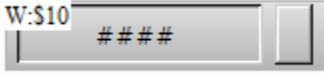
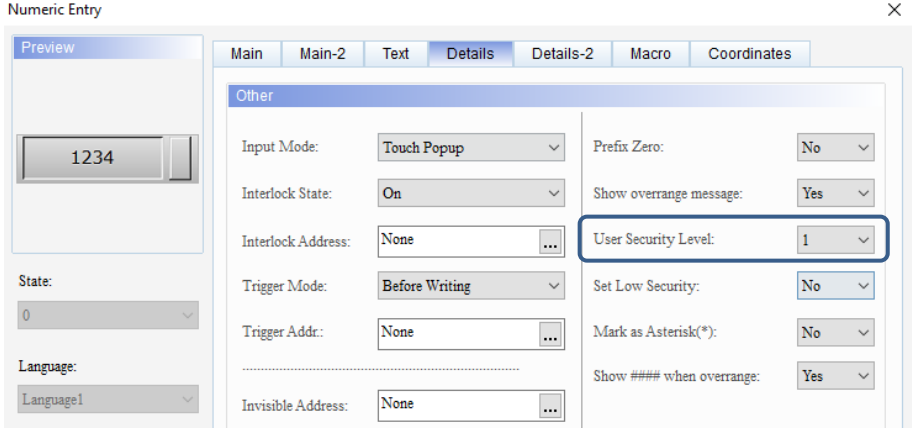
Please refer to Table 13.4.1 for the Multi-language Input example.

Table 13.4.1 Multi-language Input example

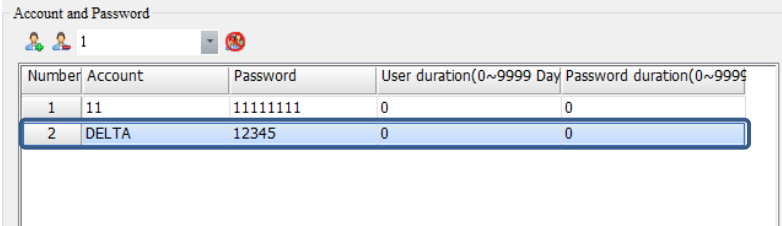
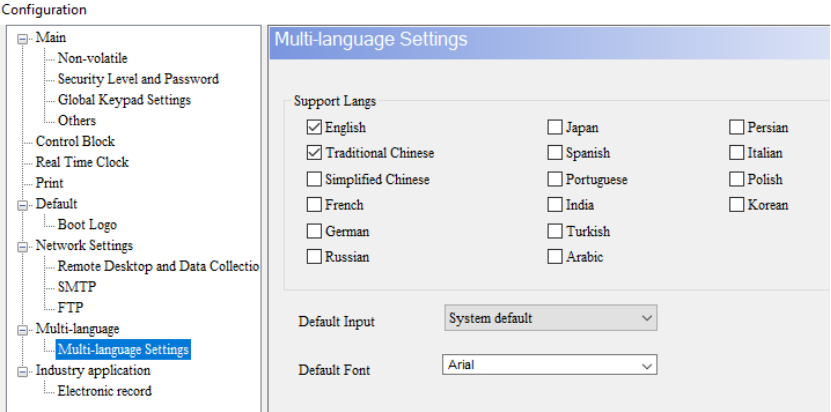
13

Multi-language Input

Write Address

- Create a Numeric Entry element and set the Write Address to \$10.
 
- Set the User Security Level to 1.
 

Setting

- Go to [Options] > [Configuration] > [Security Level and Password] to create a level 1 account as the following.
 
- Go to [Options] > [Configuration] > [Multi-language Settings] to check English and Traditional Chinese as the following.
 

Multi-language Input

- After creating the elements, please compile and download the elements to the HMI.
- Press the Numeric Entry element and the screen will display the following input window.



- Press Account and the Multi-language Input window will pop up. Input DELTA.



Execution results

- Press **?123** to switch to the numeric keyboard and input 12345 as the password.

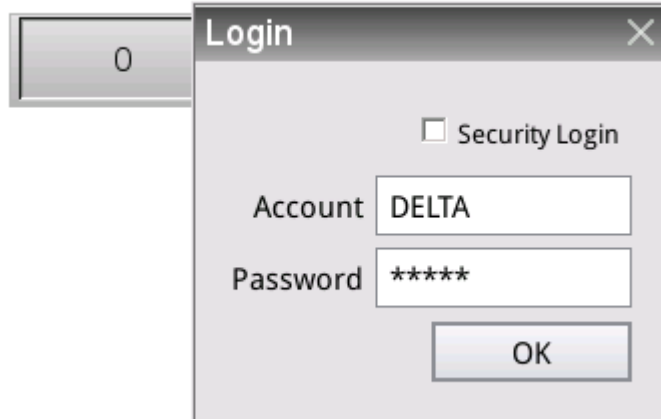


13

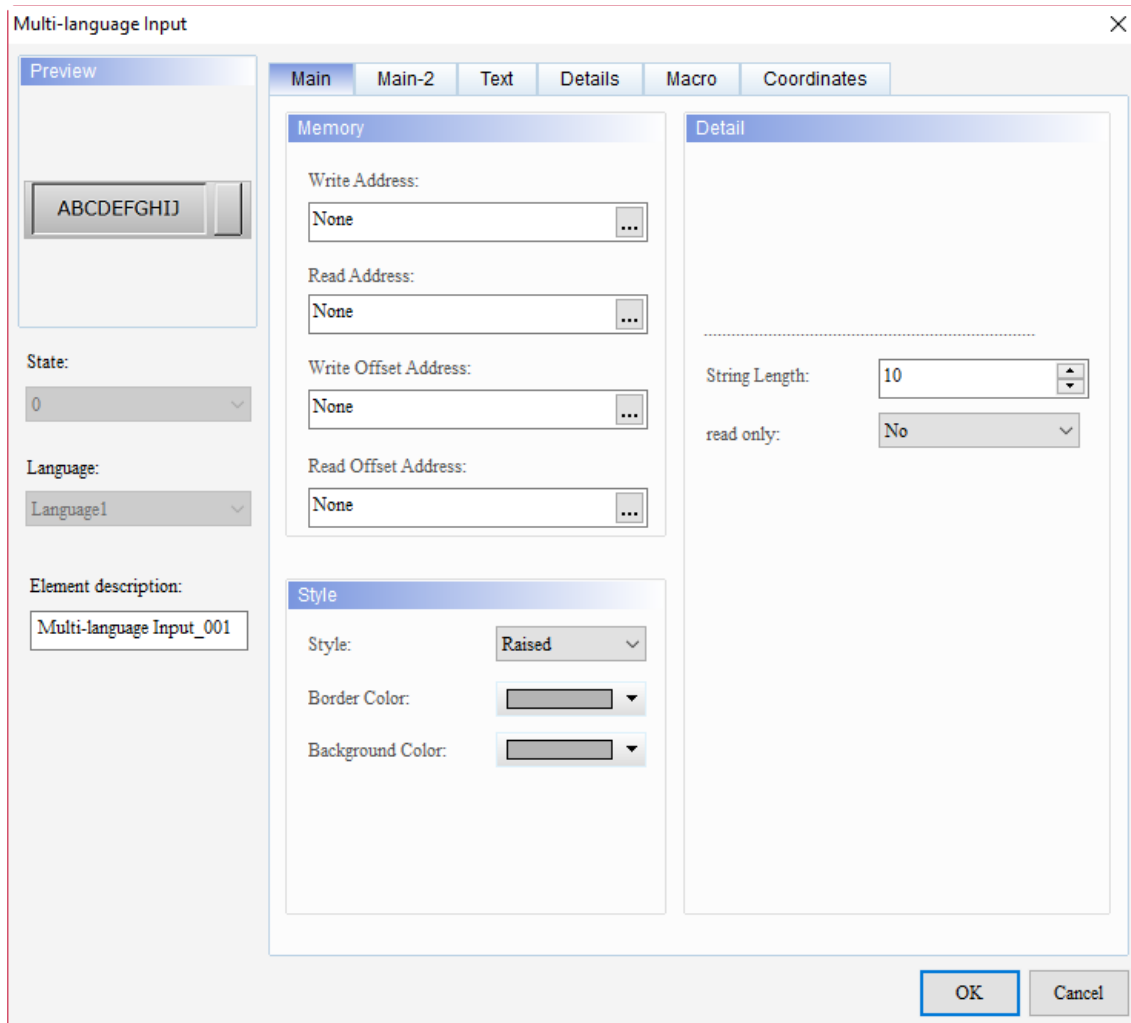
Multi-language Input

- Press **OK** to use the Numeric Entry element.

Execution results



When you double-click Multi-language Input, the property page is shown as follows.



13

Figure 13.4.3 Properties of Multi-language Input

Table 13.4.2 Function page of Multi-language Input

Multi-language Input	
Function page	Description
Preview	Multi-language Input elements do not support multiple state values and multi-language data display.
Main	Set Read Address, Write Address, Read Offset Address, Write Offset Address; set the Style, Background Color, Border Color of the element, and its String Length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text font, size, color, and alignment type.
Details	Set the Input Mode, Interlock State, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, and Mark as Asterisk (*).
Coordinates	Set the X and Y coordinates, width, and height of the elements.

13

■ Main

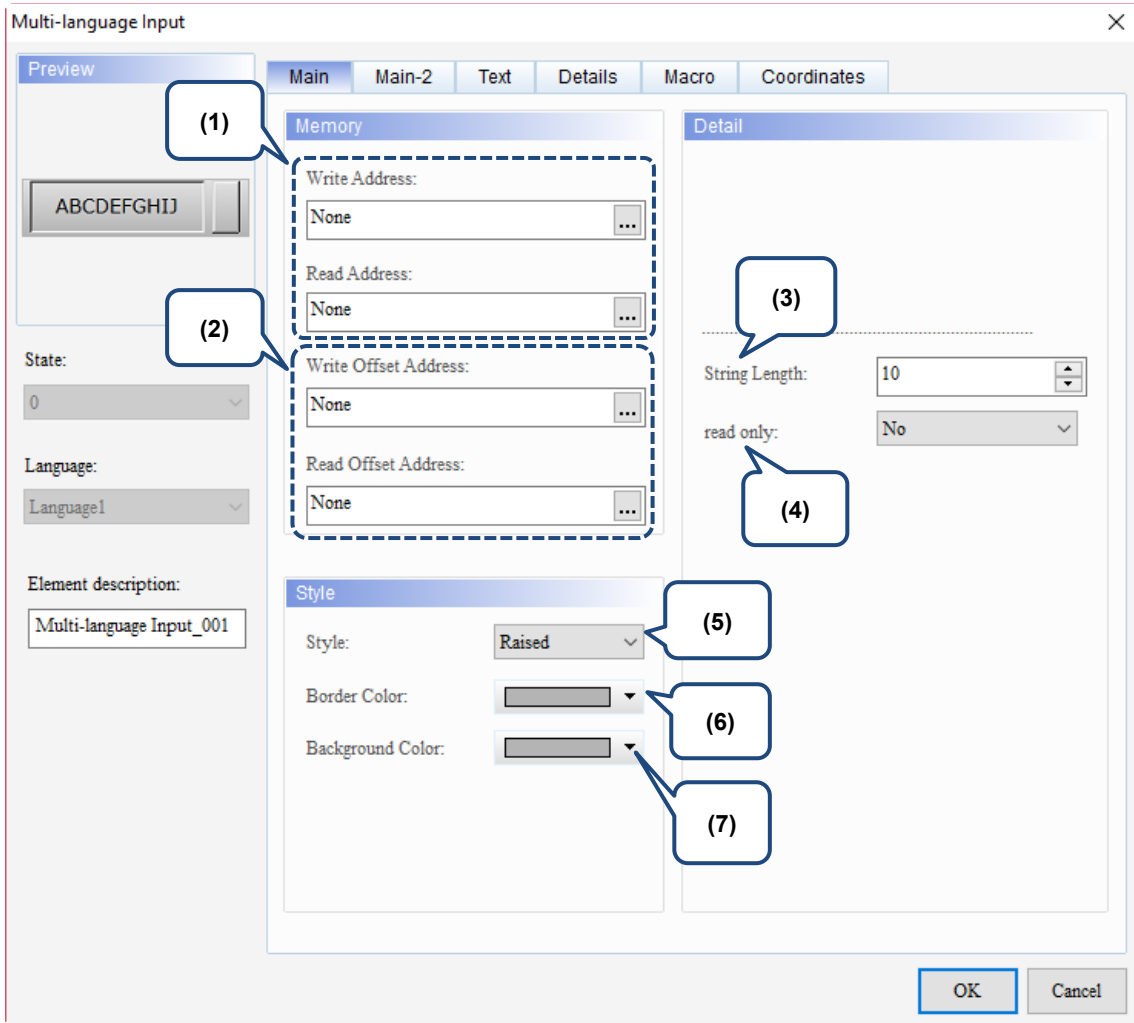
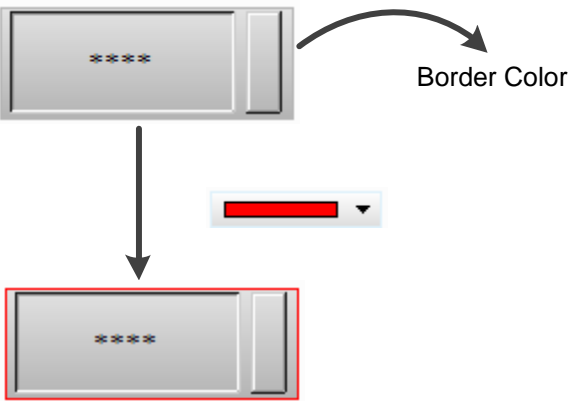
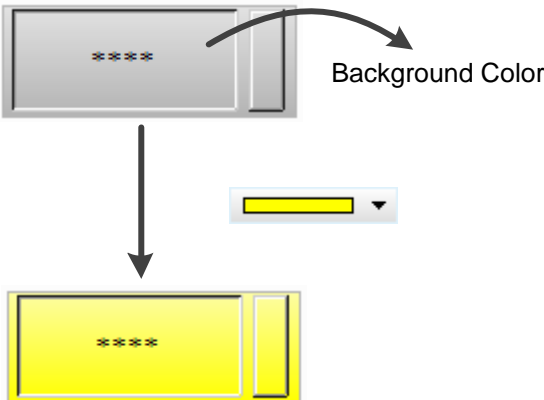


Figure 13.4.4 Main property page for the Multi-language Input element

No.	Property	Function description						
(1)	Write Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details. 						
	Read Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details. 						
(2)	Write Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.						
	Read Offset Address							
(3)	String Length	The string length ranges from 1 to 256.						
(4)	Read only	If this is set to Yes, this element is read-only and not writable.						
(5)	Style	You can change the appearance of the element with this setting. There are four types of element styles:						
		<table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">*****</td> <td style="text-align: center;">*****</td> <td style="text-align: center;">*****</td> <td style="text-align: center;">*****</td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent	*****	*****
Standard	Raised	Sunken	Transparent					
*****	*****	*****	*****					

No.	Property	Function description
(6)	Border Color	<ul style="list-style-type: none"> ■ Set the Border Color of the element. ■ When you set the element style to Transparent, the Border Color setting is invalid. 
(7)	Background Color	<ul style="list-style-type: none"> ■ Set the Background Color of the element. ■ When you set the element style to Transparent, the Background Color setting is invalid. 

13

■ Main-2

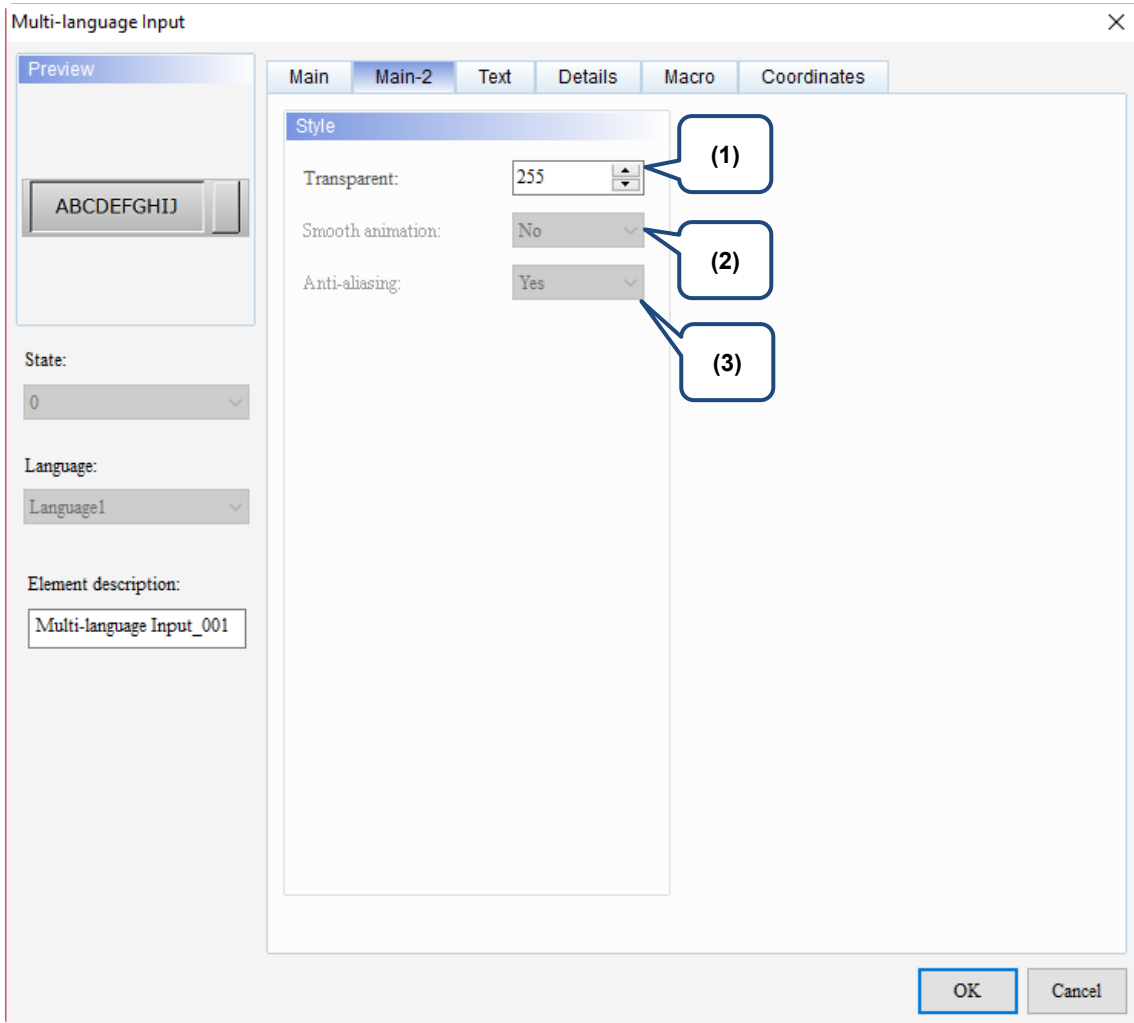
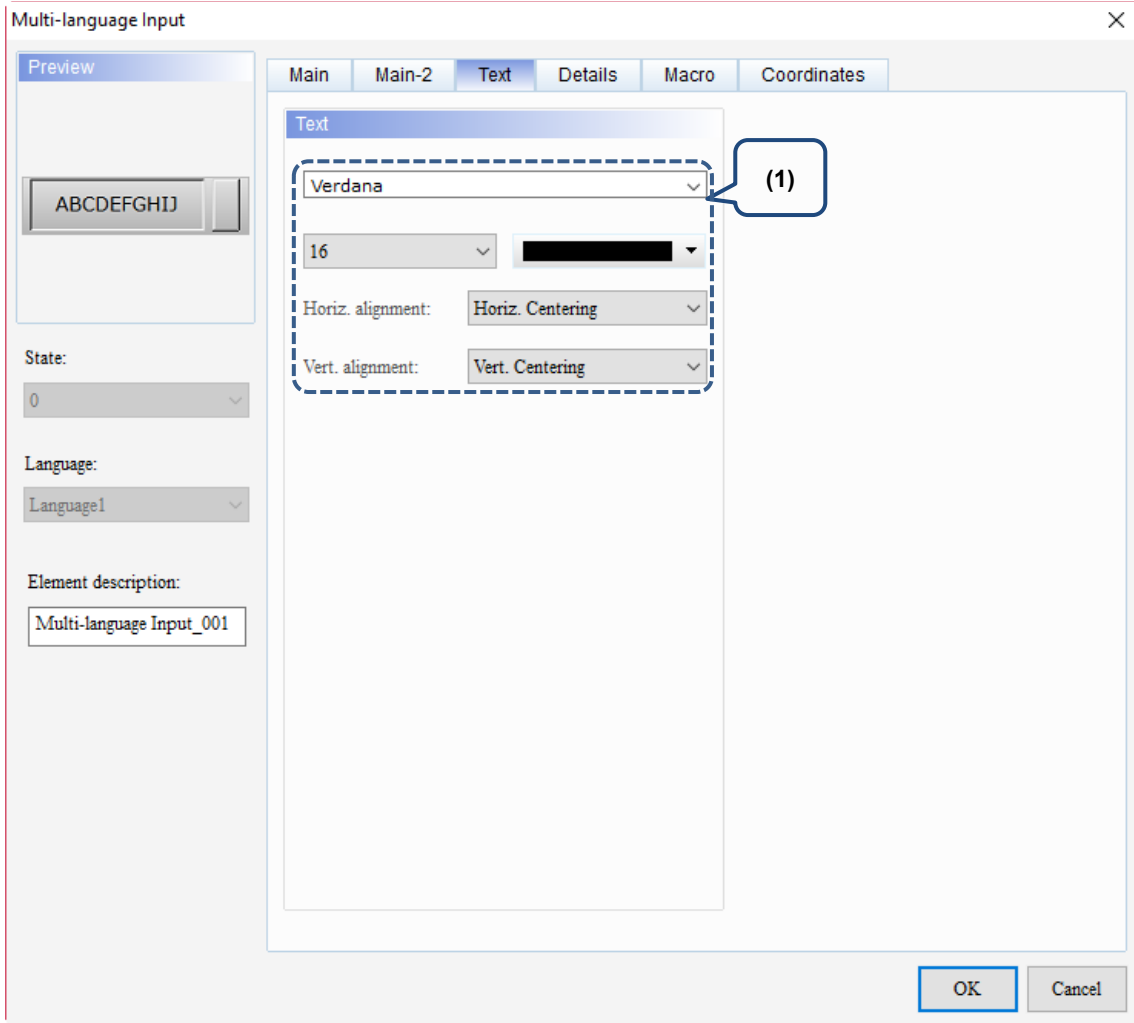


Figure 13.4.5 Main-2 property page for the Multi-language Input element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text



13

Figure 13.4 6 Text property page for the Multi-language Input element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

13

■ Details

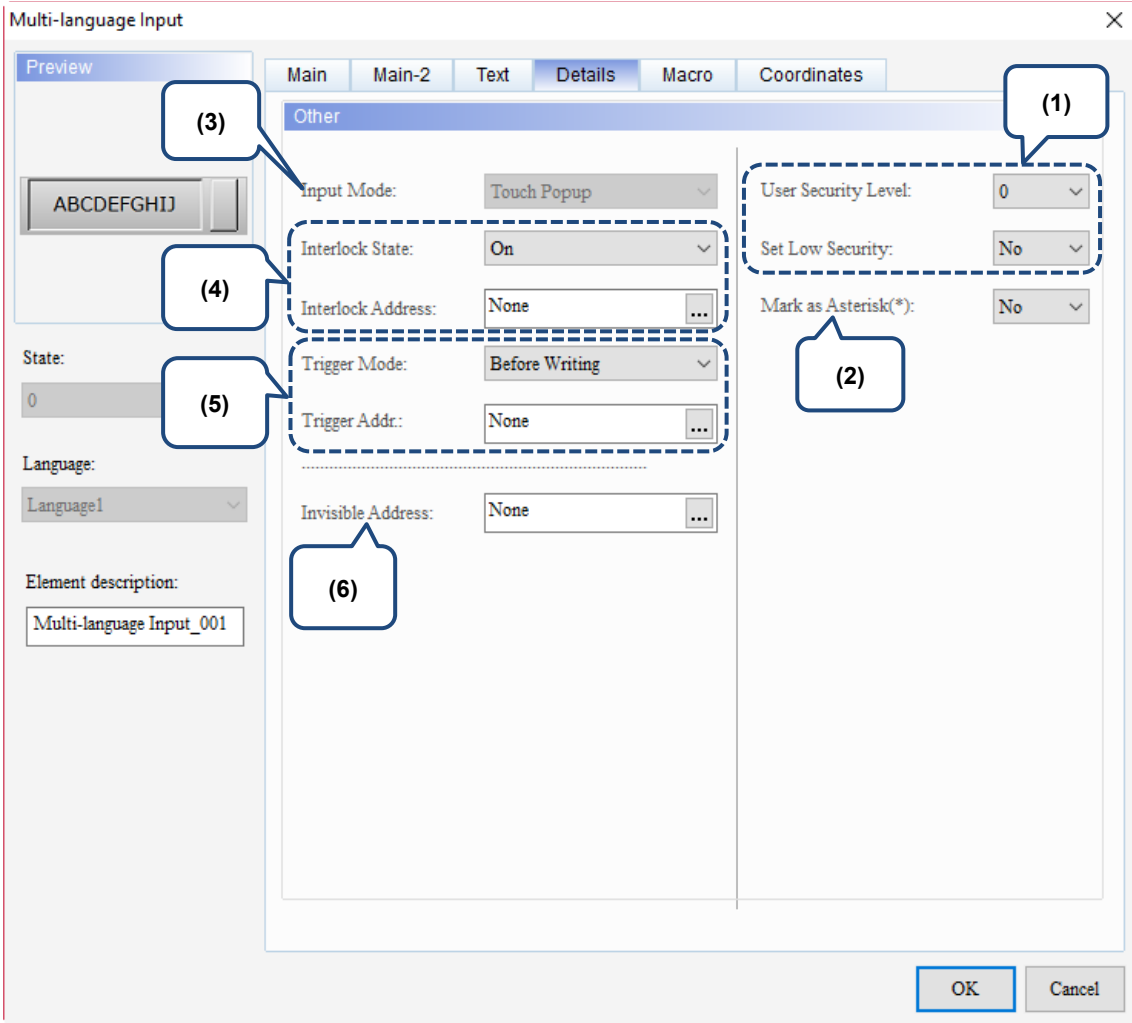
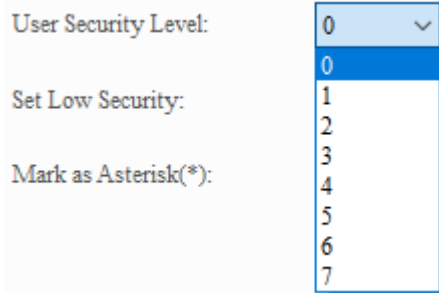



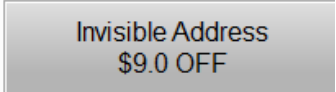
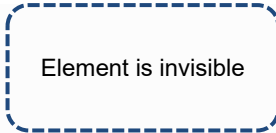
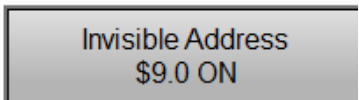

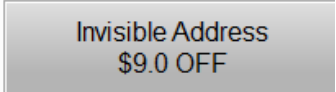

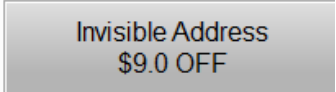
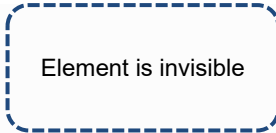
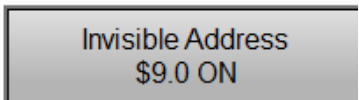
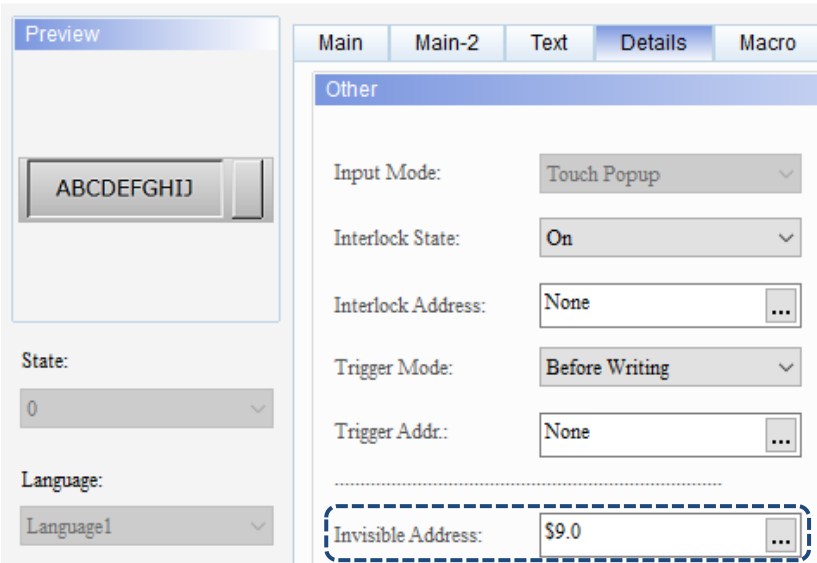


Figure 13.4.7 Details property page for the Multi-language Input element

No.	Property	Function description
(1)	User Security Level	 <ul style="list-style-type: none"> ■ You can use this function to set the permission level for pressing the element; this operation is only available to users with the same set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct.
	Set Low Security	 <ul style="list-style-type: none"> ■ If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.
(2)	Mark as Asterisk (*)	<p>If you specify Mark as Asterisk (*) to Yes, the value appears as asterisks when you input characters in the Multi-language Input window and press Enter, as shown below:</p> 
(3)	Input Mode	The Multi-language Input element does not support the setting of Input Mode.

13

No.	Property	Function description				
(4)	Interlock State	<ul style="list-style-type: none"> Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on. The following describes how it works: <ol style="list-style-type: none"> First, create a Maintained button and set its Write Address as \$44.0. Next, set the Write Address as \$555 for the Multi-language Input element and the Interlock Address as \$44.0. In order for the Multi-language Input element \$555 to become operable, you need to first press the Maintained button \$44.0 to enable \$555. 				
	Interlock Address					
(5)	Triggering method	<ul style="list-style-type: none"> Trigger types include Before Writing and After Writing. <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Before Writing</th> <th style="width: 50%;">After Writing</th> </tr> </thead> <tbody> <tr> <td>Trigger Address must be set to on before the value changes.</td> <td>Value is changed before the Trigger Address is set to on.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> The triggering function only switches the set Trigger Address to on, so if triggering again is required, you need to set the Trigger Address to off. 	Before Writing	After Writing	Trigger Address must be set to on before the value changes.	Value is changed before the Trigger Address is set to on.
	Before Writing	After Writing				
Trigger Address must be set to on before the value changes.	Value is changed before the Trigger Address is set to on.					
Trigger Address	<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Flowchart of Before Writing</th> <th style="width: 50%;">Flowchart of After Writing</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> </tbody> </table>	Flowchart of Before Writing	Flowchart of After Writing			
Flowchart of Before Writing	Flowchart of After Writing					

No.	Property	Function description				
(6)	Invisible Address	When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.				
		<table border="1"> <tr> <td>Invisible Address is off</td> <td>  </td> <td>  </td> </tr> <tr> <td>Invisible Address is on</td> <td>  </td> <td>  </td> </tr> </table>	Invisible Address is off			Invisible Address is on
Invisible Address is off						
Invisible Address is on						
<p>Multi-language Input</p> 						

13

■ Macro

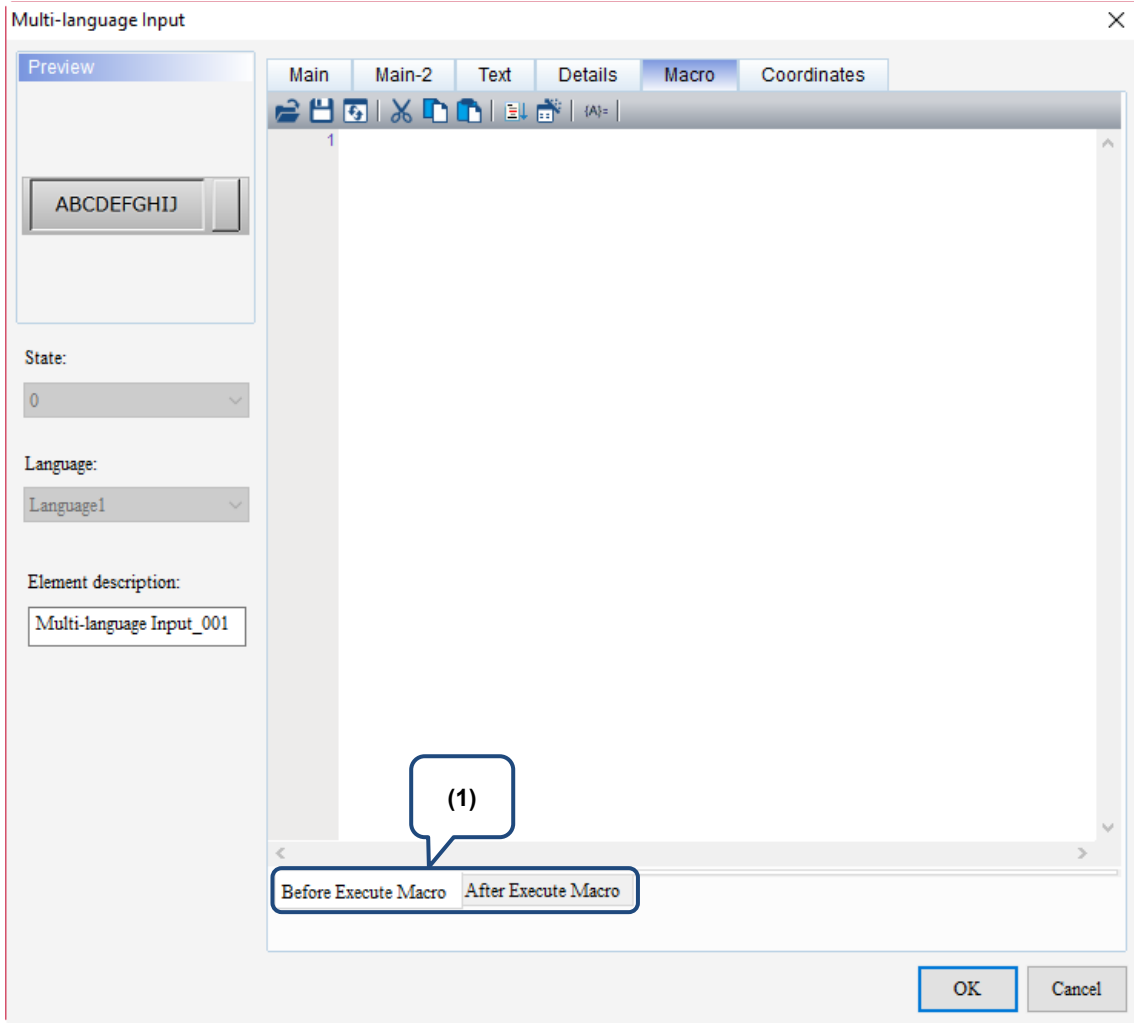


Figure 13.4.8 Macro property page for the Multi-language Input element

No.	Property	Function description
(1)		<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>Flowchart of Before Execute Macro:</p> </div> <div style="width: 48%;"> <p>Flowchart of After Execute Macro:</p> </div> </div>
	<p>Before Execute Macro</p> <p>When you press the button element, the HMI will first execute the macro commands, then execute the action of the button. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.</p>	<p>After Execute Macro</p> <p>When you press the button element, the HMI will first execute the action of the button, then execute the macro commands. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.</p>

13

■ Coordinates

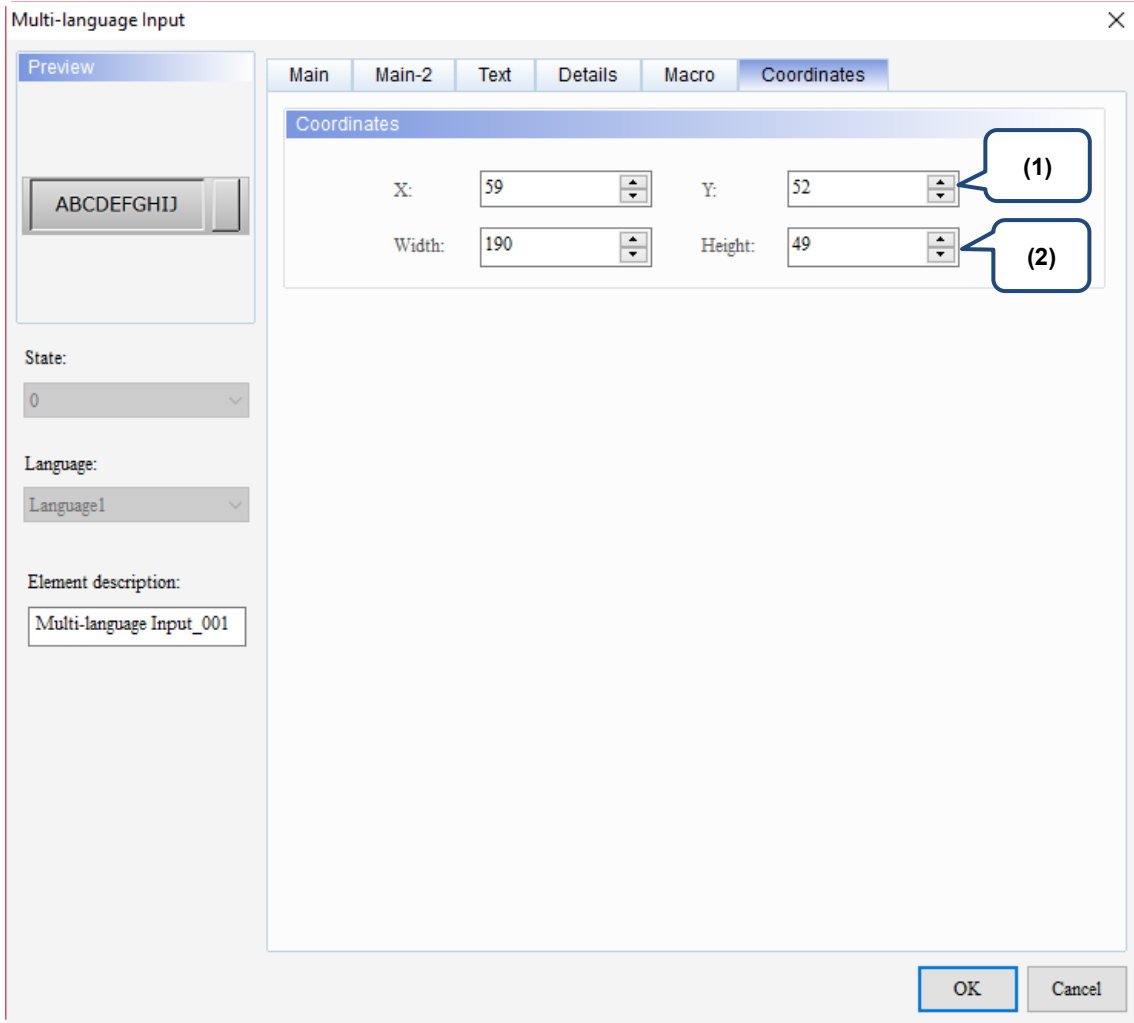



Figure 13.4.9 Coordinates property page for the Multi-language Input element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

This chapter provides the usage and setting details for the Curve elements.



14.1	Trend Graph	14-2
14.2	X-Y Chart	14-19
14.3	X-Y Distribution	14-36
14.4	Curve Input.....	14-47

14

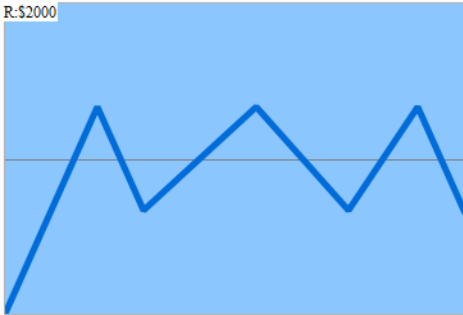
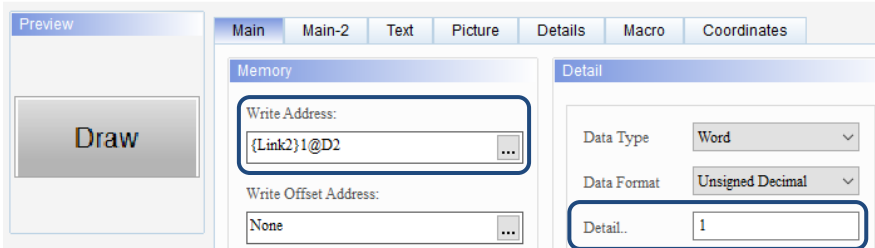
14.1 Trend Graph

Trend Graph is drawn according to the set Read Address, and you can also define the curve count to be displayed. A Trend Graph element supports up to 4 curves. This element requires using the Curve sampling flag from [Options] > [Configuration] > [Control Command] > [Control Block] > [Curve Control] to draw curves. The Curve sampling flags 1 - 4 correspond to the Sampling flags 1 - 4 of the Trend Graph element respectively.

Please refer to Table 14.1.1 for the Trend Graph example.

Table 14.1.1 Trend Graph example

14

Trend Graph													
Trend Graph element	<p>Create a Trend Graph element and set its parameters.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #cccccc;">Trend Graph element</th> </tr> </thead> <tbody> <tr> <td style="width: 50%;">Read Address</td> <td style="text-align: right;">\$2000</td> </tr> <tr> <td>Sample Number</td> <td style="text-align: right;">5</td> </tr> <tr> <td>Sample Flag</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Number of Curves</td> <td style="text-align: right;">1</td> </tr> </tbody> </table> <div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>Minimum / Maximum Line Weight / Line Color</p> </div> <div style="border: 1px solid #ccc; padding: 5px; width: 250px;"> <p>Curve1</p> <p>Minimum <input type="text" value="0"/> ...</p> <p>Maximum <input type="text" value="1000"/> ...</p> <p>Line Weight <input type="text" value="5"/> v</p> <p>Line Color <input style="background-color: #0070c0;" type="color"/> v</p> <p>Projection Axis <input type="text" value="No projection"/> v</p> </div> </div> 	Trend Graph element		Read Address	\$2000	Sample Number	5	Sample Flag	1	Number of Curves	1		
Trend Graph element													
Read Address	\$2000												
Sample Number	5												
Sample Flag	1												
Number of Curves	1												
Numeric Entry element	<p>Create 5 Numeric Entry elements, as the Sample Number of the Trend Graph is set to 5, meaning 5 sampling points are used to draw a curve. Then, the set Read Address \$2000 of the Trend Graph starts reading 5 addresses in sequence, which are \$2000, \$2001, \$2002, \$2003, and \$2004.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="6" style="background-color: #cccccc;">Numeric Entry element</th> </tr> </thead> <tbody> <tr> <td style="width: 20%;">Write Address</td> <td style="text-align: center;">\$2000</td> <td style="text-align: center;">\$2001</td> <td style="text-align: center;">\$2002</td> <td style="text-align: center;">\$2003</td> <td style="text-align: center;">\$2004</td> </tr> </tbody> </table>	Numeric Entry element						Write Address	\$2000	\$2001	\$2002	\$2003	\$2004
Numeric Entry element													
Write Address	\$2000	\$2001	\$2002	\$2003	\$2004								
Set Constant element	<ul style="list-style-type: none"> ■ Create a Constant element and set its Write Address as D2. This D2 address is for the Curve Control flag in the Control Block. <div style="border: 1px solid #ccc; padding: 5px; width: fit-content; margin: 10px auto;"> <p style="margin: 0;">W:({Link2})1@D2</p> <p style="text-align: center; margin: 0;">Draw</p> </div> ■ Set the Detail.. of the Constant element to 1. 1 corresponds to Bit 0 Curve sampling flag 1; 2 corresponds to Bit 1 Curve sampling flag 2; 4 corresponds to Bit 2 Curve sampling flag 3, and so on. You will also find that the Sample Flag setting of the Trend Graph element is 1 as well. <p>Set Constant</p> 												

14

Trend Graph

Control Block

Control Block

Start Address:

Screen No. D0 ...

General Control D1 ...

Curve Control D2 ...

<input type="checkbox"/>	Sampling History	Bit 0	Curve sampling flag 1
<input type="checkbox"/>	Clearing History	Bit 1	Curve sampling flag 2
<input type="checkbox"/>	Recipe Control	Bit 2	Curve sampling flag 3
<input type="checkbox"/>	Recipe Group 1	Bit 3	Curve sampling flag 4
<input type="checkbox"/>	System Control	Bit 8	Curve clear flag 1
		Bit 9	Curve clear flag 2
		Bit 10	Curve clear flag 3
		Bit 11	Curve clear flag 4

- Create another Constant element and set its Write Address as D2 as well, and the Detail.. as 256. 256 corresponds to **Bit 8 Curve clear flag 1**.

W:{Link2}1@D2

Clear

Set Constant element

Set Constant

Preview

Clear

Main Main-2 Text Picture Details Macro Coordinates

Memory

Write Address:

Write Offset Address:

Detail

Data Type: Word

Data Format: Unsigned Decimal

Detail.:

Control Block

Control Block

Start Address:

Screen No. D0 ...

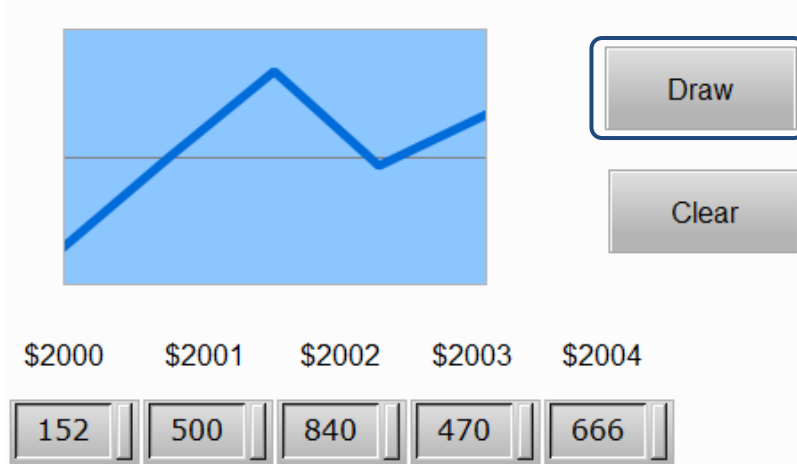
General Control D1 ...

Curve Control D2 ...

<input type="checkbox"/>	Sampling History	Bit 0	Curve sampling flag 1
<input type="checkbox"/>	Clearing History	Bit 1	Curve sampling flag 2
<input type="checkbox"/>	Recipe Control	Bit 2	Curve sampling flag 3
<input type="checkbox"/>	Recipe Group 1	Bit 3	Curve sampling flag 4
<input type="checkbox"/>	System Control	Bit 8	Curve clear flag 1
		Bit 9	Curve clear flag 2
		Bit 10	Curve clear flag 3
		Bit 11	Curve clear flag 4

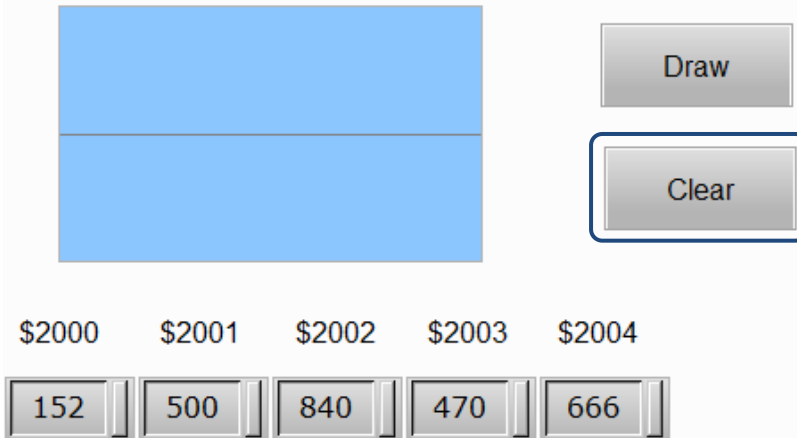
Trend Graph

- After creating the elements, please compile and download the elements to the HMI. Next, use the Numeric Entry element to enter any value, then press **Draw** to draw the curve.



Execution results

- After the curve is drawn, if you press **Clear**, the HMI will clear the drawn curve.



14

When you double-click Trend Graph, the property page is shown as follows.

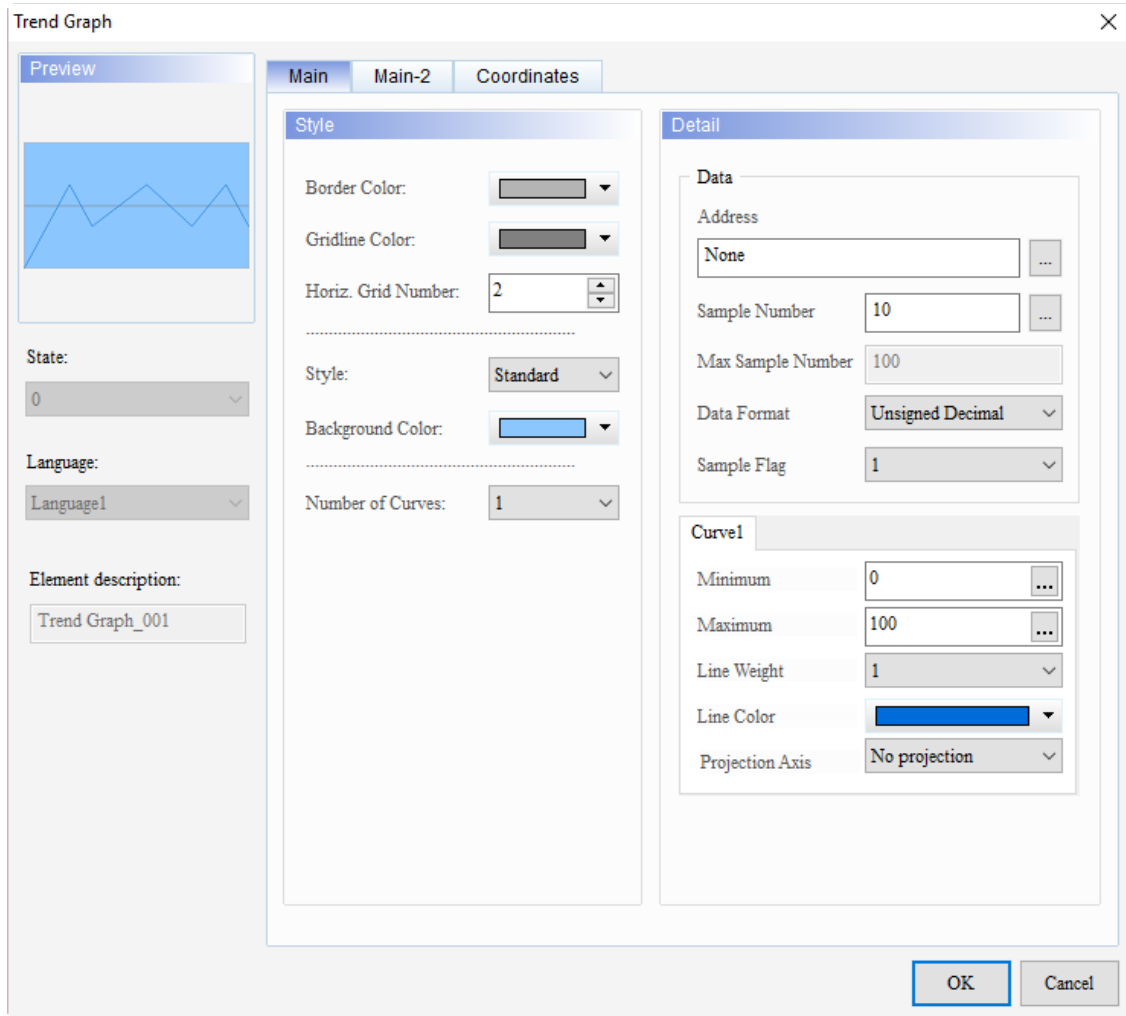
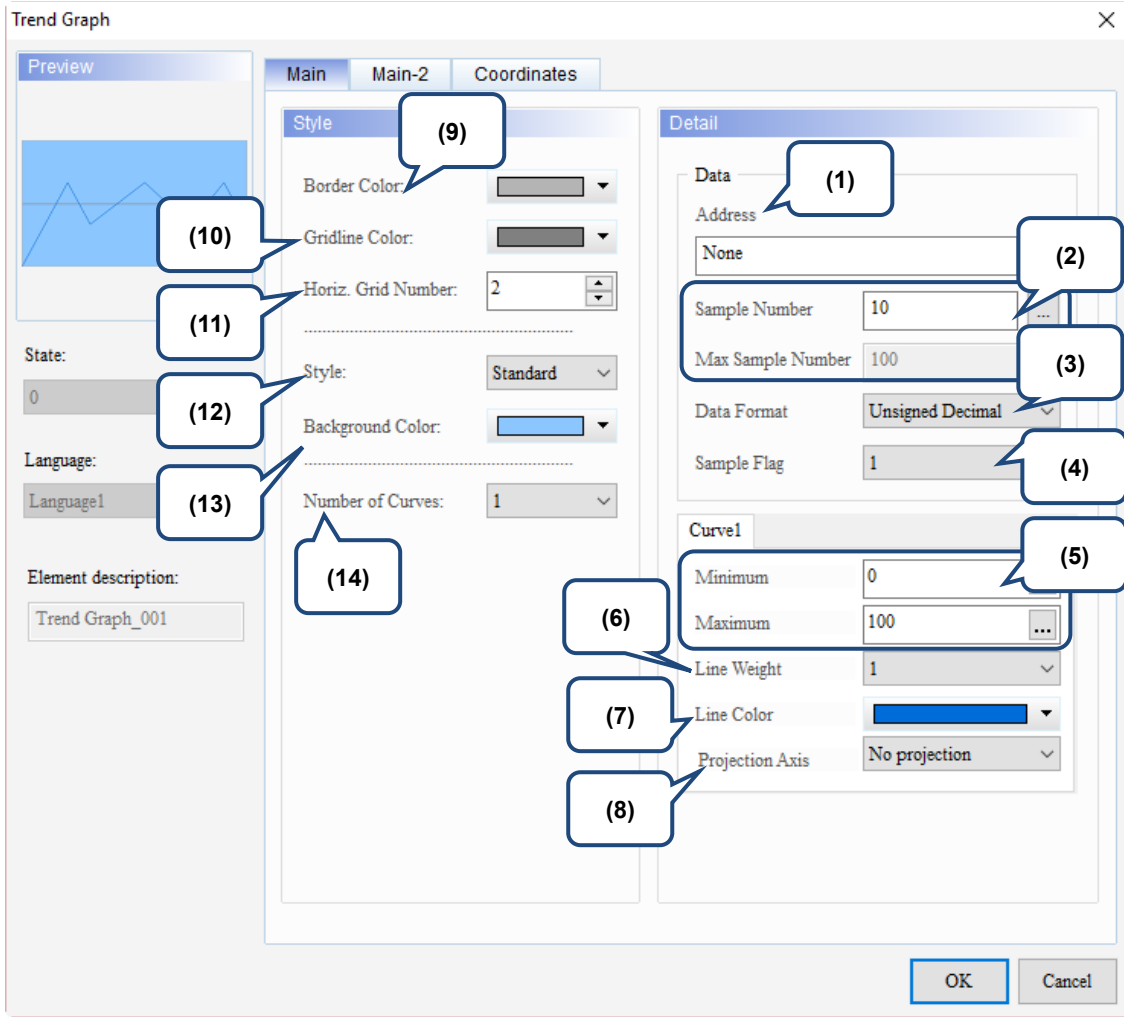


Figure 14.1.1 Properties of Trend Graph

Table 14.1.2 Function page of Trend Graph

Trend Graph	
Function page	Description
Preview	The Trend Graph elements do not support multiple status values and multi-language data display.
Main	Set Address, Sample Number, Max Sample Number, Data Format, Sample Flag, Minimum, Maximum, Line Weight, Line Color, and Projection Axis. Set Border Color, Gridline Color, Horiz. Grid Number, Style and Background Color of the element, and Number of Curves.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

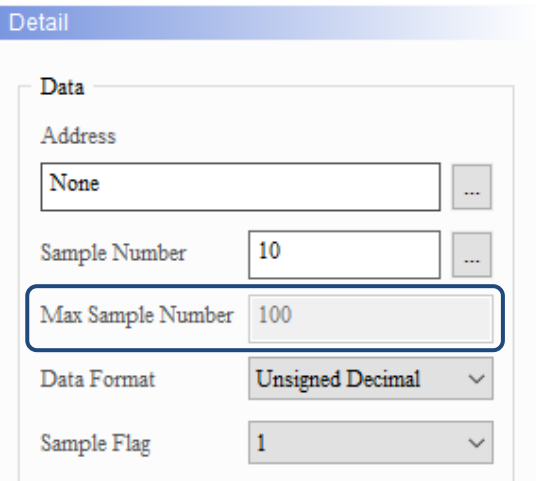
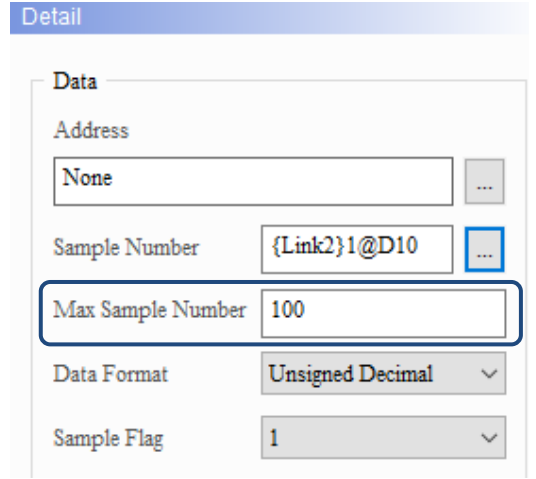
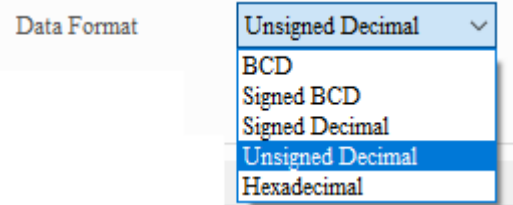
■ Main

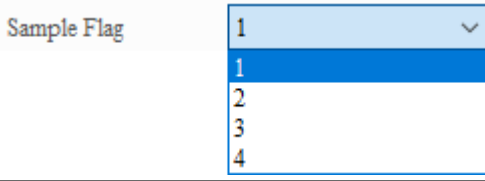
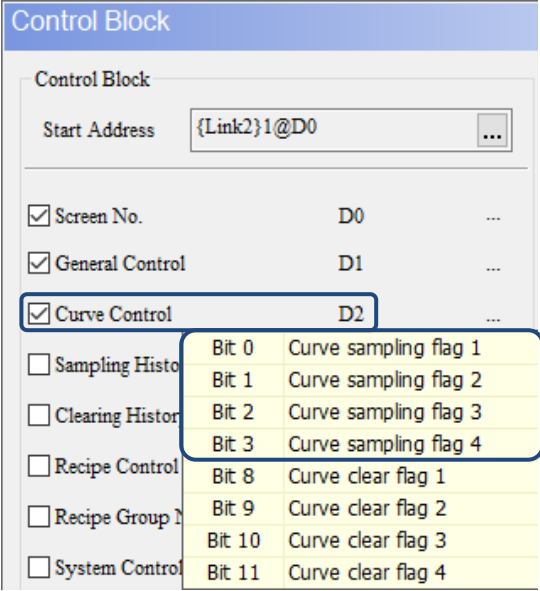
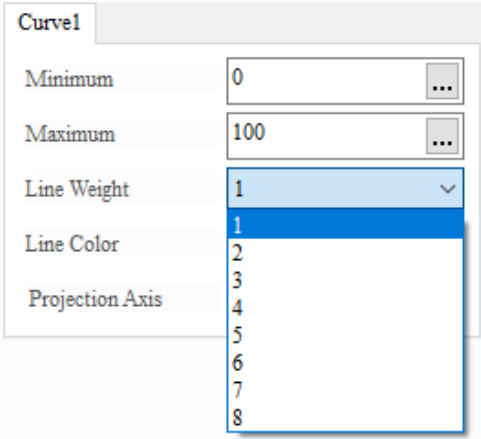


14

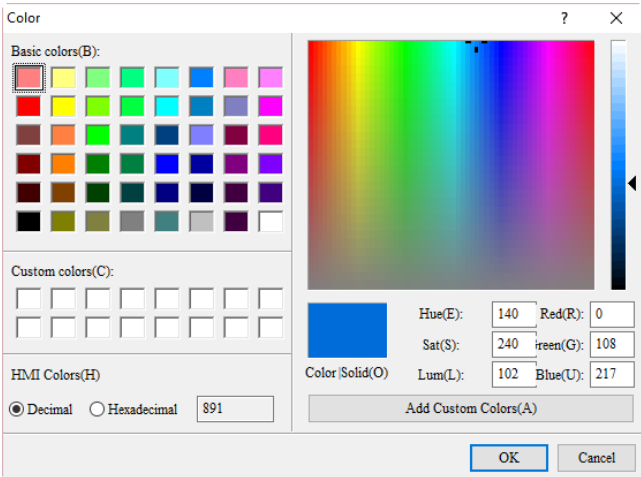
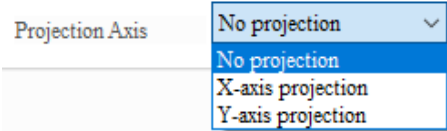
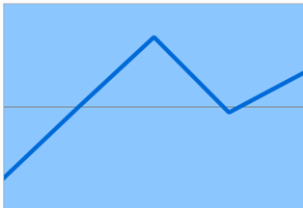
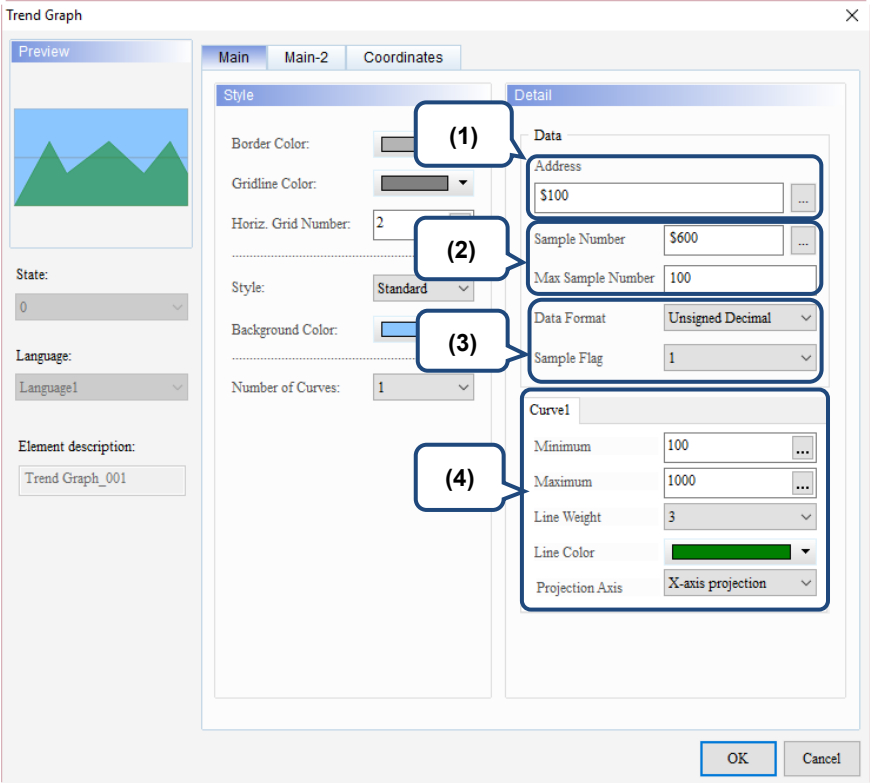
Figure 14.1.2 Main property page for the Trend Graph element

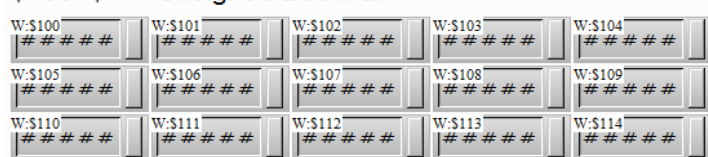
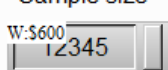
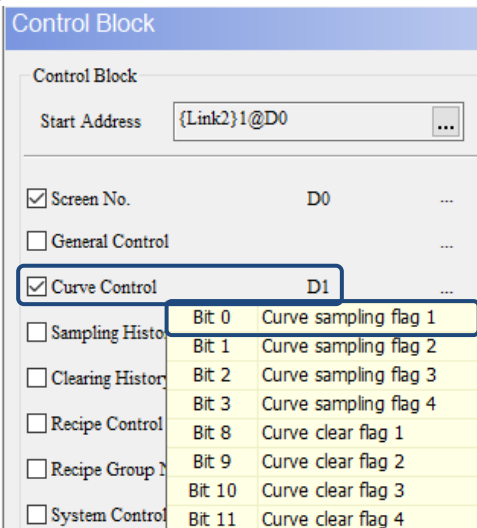

14

No.	Property	Function description
(1)	Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
(2)	Sample Number / Max Sample Number	<ul style="list-style-type: none"> The number of sampling points is determined by the element width and style. When you set the Style of the Trend Graph element as Standard and its width as 391, then the maximum number of points that can be displayed is 391. But if you set the Style of the Trend Graph element as Raise or Sunken (border width is 7 points) and its width as 391, then the maximum number of points that can be displayed is 377 ($391 - (7 \times 2) = 377$). Sampling Number can be set as a constant or a variable. When you set Sample Number as a constant, Max Sample Number is grayed out and cannot be set. 
(2)	Sample Number / Max Sample Number	<p>When you set Sample Number as a variable, you can define its Read Address. Also, you need to set the Max Sample Number, which the value is determined by the element width. If the set Sample Number is greater than the Max Sample Number, the software will refer to the setting of the Max Sample Number.</p> 
(3)	Data Format	<p>Trend Graph supports the following data formats:</p> 

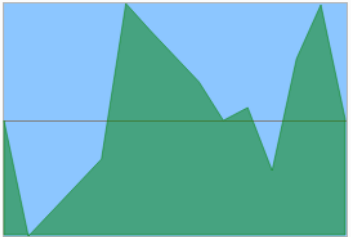
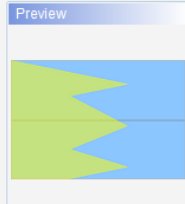
No.	Property	Function description														
(4)	Sample Flag	<p>There are 4 sampling flags corresponding to the Curve sampling flags 1 - 4 in the Control Block respectively.</p>  														
(5)	Minimum / Maximum	<p>The allowable ranges for the minimum and maximum values vary based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 - 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 - 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 - 65535</td> </tr> <tr> <td>Hex</td> <td>0 - 0xFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 - 9999	Signed BCD	-999 - 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 - 65535	Hex	0 - 0xFFFF
Data Type	Data Format	Allowable range														
Word	BCD	0 - 9999														
	Signed BCD	-999 - 9999														
	Signed Decimal	-32768 to 32767														
	Unsigned Decimal	0 - 65535														
	Hex	0 - 0xFFFF														
(6)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 														


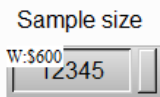
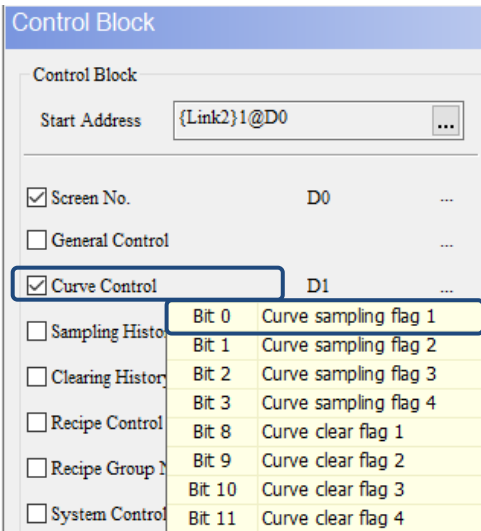

14

No.	Property	Function description
(7)	Line Color	<p>You can set the line color for the curve.</p> 
(8)	Projection Axis	<ul style="list-style-type: none"> There are three types of Projection axis: No projection, X-axis projection, Y-axis projection.  <ul style="list-style-type: none"> When Projection Axis is set to No projection, the setting is the same as the default setting which only the curve is displayed.  <p>Please see below for the details of X-axis projection and Y-axis projection.</p> <p>X-axis projection</p> 

No.	Property	Function description
(8)	Projection Axis	(1) Set the Address to \$100. (2) Set the Sample Number to \$600 and the Max Sample Number to 100. (3) Set the Data Format to Unsigned Decimal and the Sample Flag to 1. (4) Set the Minimum as 100 and the Maximum as 1000. Set the Projection Axis to X-axis projection.
		■ Please create Numeric Entry elements of \$100 - \$114 and set all the Data Format as Unsigned Decimal.
		<p style="text-align: center;">\$100~\$114 Unsigned Decimal</p> 
		■ Please create a Numeric Entry element of \$600 for inputting the Sample Number.
<p style="text-align: center;">Sample size</p> 	■ Go to [Options] > [Configuration] > [Control Command] and check [Curve Control] with the address as D1.	
	■ Create a Numeric Entry element with the address as D1.	
<p style="text-align: center;">Sample Flag 1 is draw 256 is clear</p> 	■ After completing the above steps, please compile and download the elements to the HMI.	


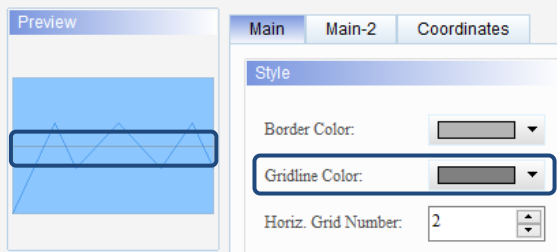
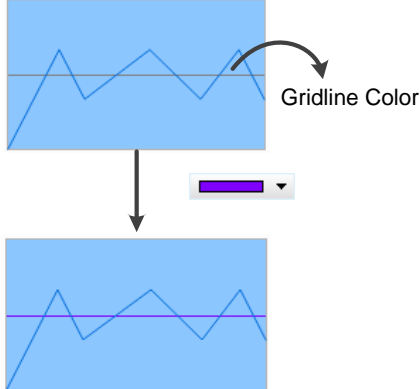
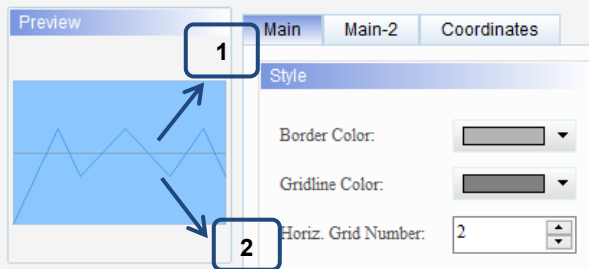
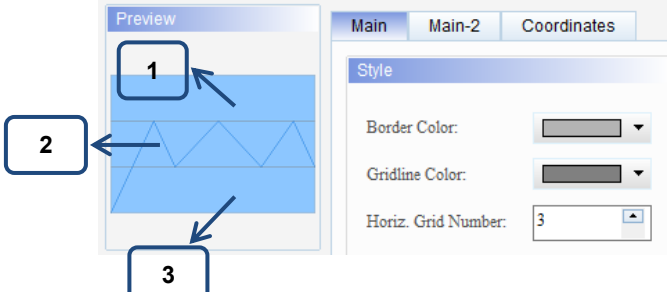
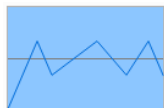
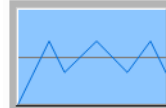
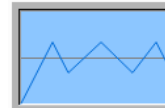
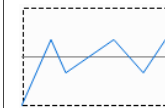
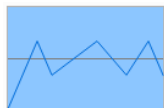
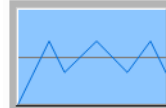
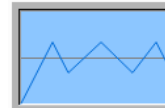
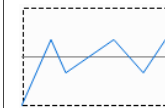
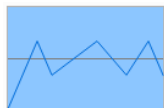
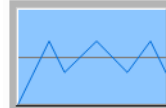
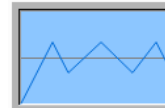
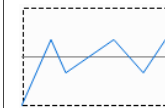
14

No.	Property	Function description															
(8)	Projection Axis	<p>■ Enter any value to \$100 - \$114, input 15 to the Sample Number and 1 to the Sample Flag.</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">Sample size Sample Flag 1 is draw 256 is clear</p> <p style="text-align: center;"> <input type="text" value="15"/> <input type="text" value="1"/> </p> <p style="text-align: center;">\$100~\$114 Unsigned Decimal</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td><input type="text" value="550"/></td> <td><input type="text" value="100"/></td> <td><input type="text" value="200"/></td> <td><input type="text" value="300"/></td> <td><input type="text" value="400"/></td> </tr> <tr> <td><input type="text" value="1000"/></td> <td><input type="text" value="900"/></td> <td><input type="text" value="800"/></td> <td><input type="text" value="700"/></td> <td><input type="text" value="550"/></td> </tr> <tr> <td><input type="text" value="600"/></td> <td><input type="text" value="355"/></td> <td><input type="text" value="789"/></td> <td><input type="text" value="999"/></td> <td><input type="text" value="555"/></td> </tr> </table> </div> <p>■ When you are done inputting the above values, the Trend Graph is as follows:</p> <div style="text-align: center;">  </div> <p>Y-axis projection</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p>Trend Graph</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>Preview</p>  <p>State: 0</p> <p>Language: English</p> <p>Element description: Trend Graph_001</p> </div> <div style="width: 80%;"> <p>Main Main-2 Coordinates</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Style</p> <p>Border Color: <input type="text"/></p> <p>Gridline Color: <input type="text"/></p> <p>Horiz. Grid Number: 2</p> <p>Style: Standard</p> <p>Background Color: <input type="text"/></p> <p>Number of Curves: 1</p> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Detail</p> <p>Data</p> <p>Address: \$100</p> <p>Sample Number: \$600</p> <p>Max Sample Number: 100</p> <p>Data Format: Unsigned Decimal</p> <p>Sample Flag: 1</p> <p>Curve1</p> <p>Minimum: 100</p> <p>Maximum: 1000</p> <p>Line Weight: 4</p> <p>Line Color: <input type="text" value="Yellow"/></p> <p>Projection Axis: Y-axis projection</p> </div> </div> </div> <p style="text-align: right;">OK Cancel</p> </div>	<input type="text" value="550"/>	<input type="text" value="100"/>	<input type="text" value="200"/>	<input type="text" value="300"/>	<input type="text" value="400"/>	<input type="text" value="1000"/>	<input type="text" value="900"/>	<input type="text" value="800"/>	<input type="text" value="700"/>	<input type="text" value="550"/>	<input type="text" value="600"/>	<input type="text" value="355"/>	<input type="text" value="789"/>	<input type="text" value="999"/>	<input type="text" value="555"/>
<input type="text" value="550"/>	<input type="text" value="100"/>	<input type="text" value="200"/>	<input type="text" value="300"/>	<input type="text" value="400"/>													
<input type="text" value="1000"/>	<input type="text" value="900"/>	<input type="text" value="800"/>	<input type="text" value="700"/>	<input type="text" value="550"/>													
<input type="text" value="600"/>	<input type="text" value="355"/>	<input type="text" value="789"/>	<input type="text" value="999"/>	<input type="text" value="555"/>													

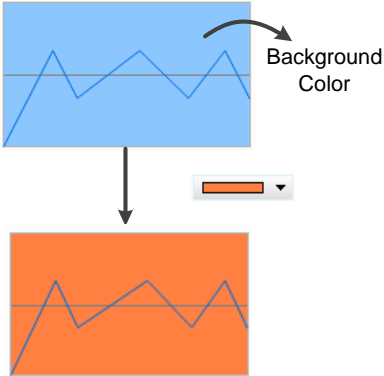
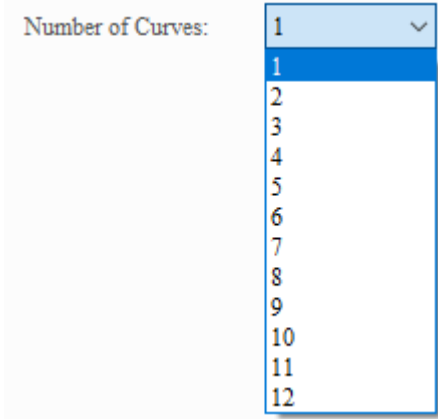
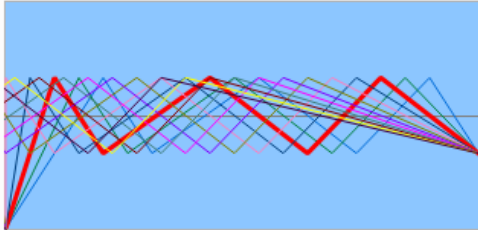
No.	Property	Function description
(8)	Projection Axis	(1) Set the Address to \$100.
		(2) Set the Sample Number to \$600 and the Max Sample Number to 100.
		(3) Set the Data Format to Unsigned Decimal and the Sample Flag to 1.
		(4) Set the Minimum as 100 and the Maximum as 1000. Set the Projection Axis to Y-axis projection.
		<ul style="list-style-type: none"> ■ Please create Numeric Entry elements of \$100 - \$114 and set all the Data Format as Unsigned Decimal.
		<p style="text-align: center;">\$100~\$114 Unsigned Decimal</p> 
		<ul style="list-style-type: none"> ■ Please create a Numeric Entry element of \$600 for inputting the Sample Number.
		
		<ul style="list-style-type: none"> ■ Go to [Options] > [Configuration] > [Control Command] and check [Curve Control] with the address as D1.
		
		<ul style="list-style-type: none"> ■ Create a Numeric Entry element with the address as D1.
		<p style="text-align: center;">Sample Flag 1 is draw 256 is clear</p> 

14

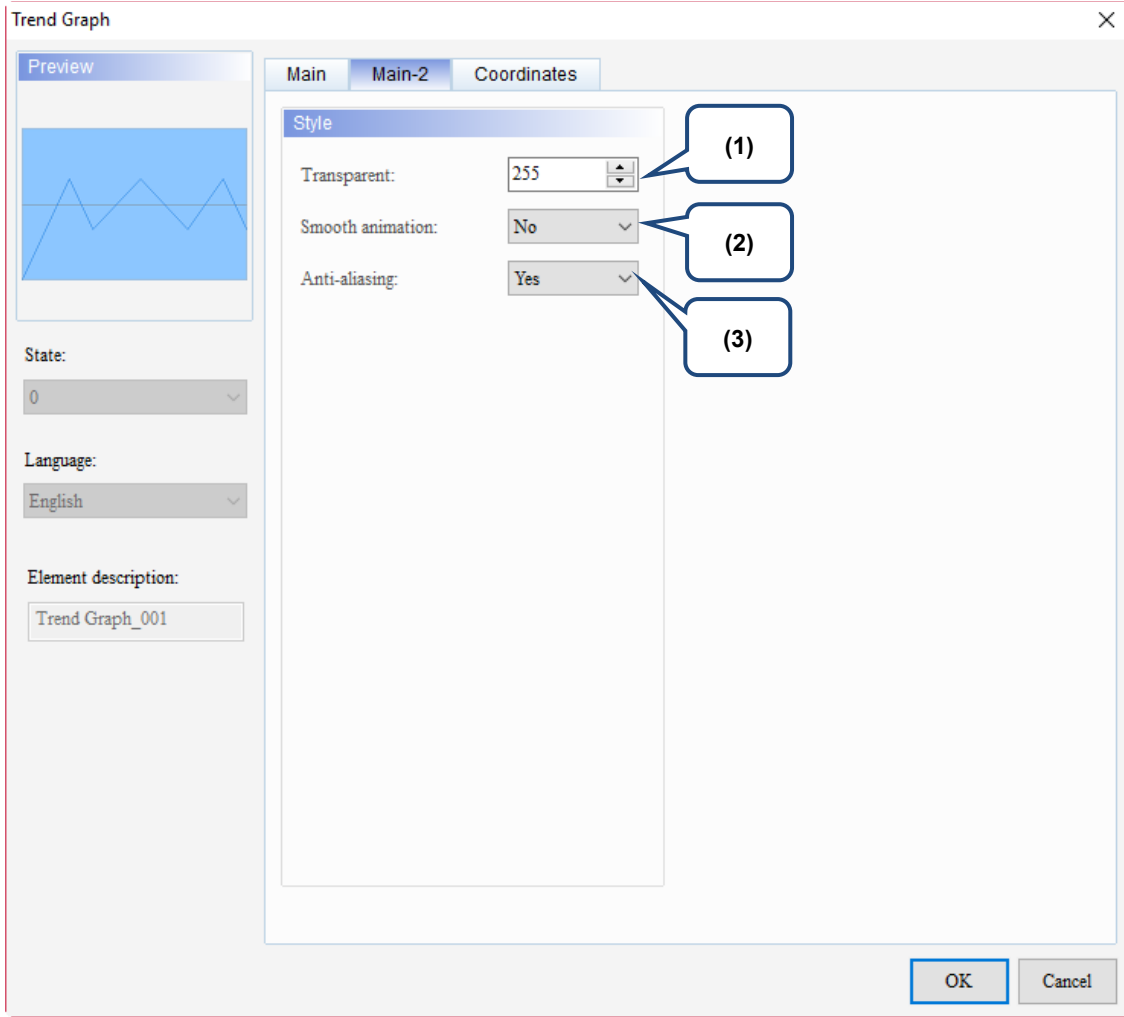
No.	Property	Function description															
(8)	Projection Axis	<ul style="list-style-type: none"> After completing the above steps, please compile and download the elements to the HMI. Enter any value to \$100 - \$114, input 15 to the Sample Number and 1 to the Sample Flag. <div style="text-align: center;"> <p>Sample size: 15 Sample Flag: 1</p> <p>1 is draw 256 is clear</p> </div> <p>\$100~\$114 Unsigned Decimal</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>550</td><td>100</td><td>200</td><td>300</td><td>400</td> </tr> <tr> <td>1000</td><td>900</td><td>800</td><td>700</td><td>550</td> </tr> <tr> <td>600</td><td>355</td><td>789</td><td>999</td><td>555</td> </tr> </table> <ul style="list-style-type: none"> When you are done inputting the above values, the Trend Graph is as follows: <div style="text-align: center;"> </div> <p>Note: when using the Projection Axis, if there are multiple curves at the same time, the larger curve number will cover the smaller curve number.</p>	550	100	200	300	400	1000	900	800	700	550	600	355	789	999	555
550	100	200	300	400													
1000	900	800	700	550													
600	355	789	999	555													
(9)	Border Color	<p>Set the Border Color of the Trend Graph element.</p> <div style="text-align: center;"> </div>															

No.	Property	Function description								
(10)	Gridline Color	<ul style="list-style-type: none"> The Gridline Color is the color of the grid line in the Trend Graph. The default is . <p>Trend Graph</p>  <ul style="list-style-type: none"> You can change the color of the grid line. 								
(11)	Horiz. Grid Number	<ul style="list-style-type: none"> The maximum horizontal grid count is 50. Horiz. Grid Number is for separating the blocks in the Trend Graph element. The default is 2, meaning there is one grid line separating the Trend Graph element into two blocks. If the Horiz. Grid Number is set to 3, there are two grid lines separating the Trend Graph element into 3 blocks, and so on. <p>Trend Graph</p>  <p>Trend Graph</p> 								
(12)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
										

14

No.	Property	Function description
(13)	Background Color	<p>Set the background color of the element.</p> 
(14)	Number of Curves	<ul style="list-style-type: none"> ■ The Trend Graph element supports up to 12 curves.  <ul style="list-style-type: none"> ■ You can also change the width and color of the curves.  <ul style="list-style-type: none"> ■ If you want to use 12 curves, you will only need to set the Read Address as a Continuous Address for sampling. Assuming the Read Address is \$1000 and the Sample Number is 5, then, 60 sampling points are required for 12 curves. Thus, the Read Address is \$1000 - \$1059.

■ Main-2



14

Figure 14.1.3 Main-2 property page for the Trend Graph element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the curve motion is smoother.
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When enabled, the element display becomes more delicate without jagged edges.

■ Coordinates

14

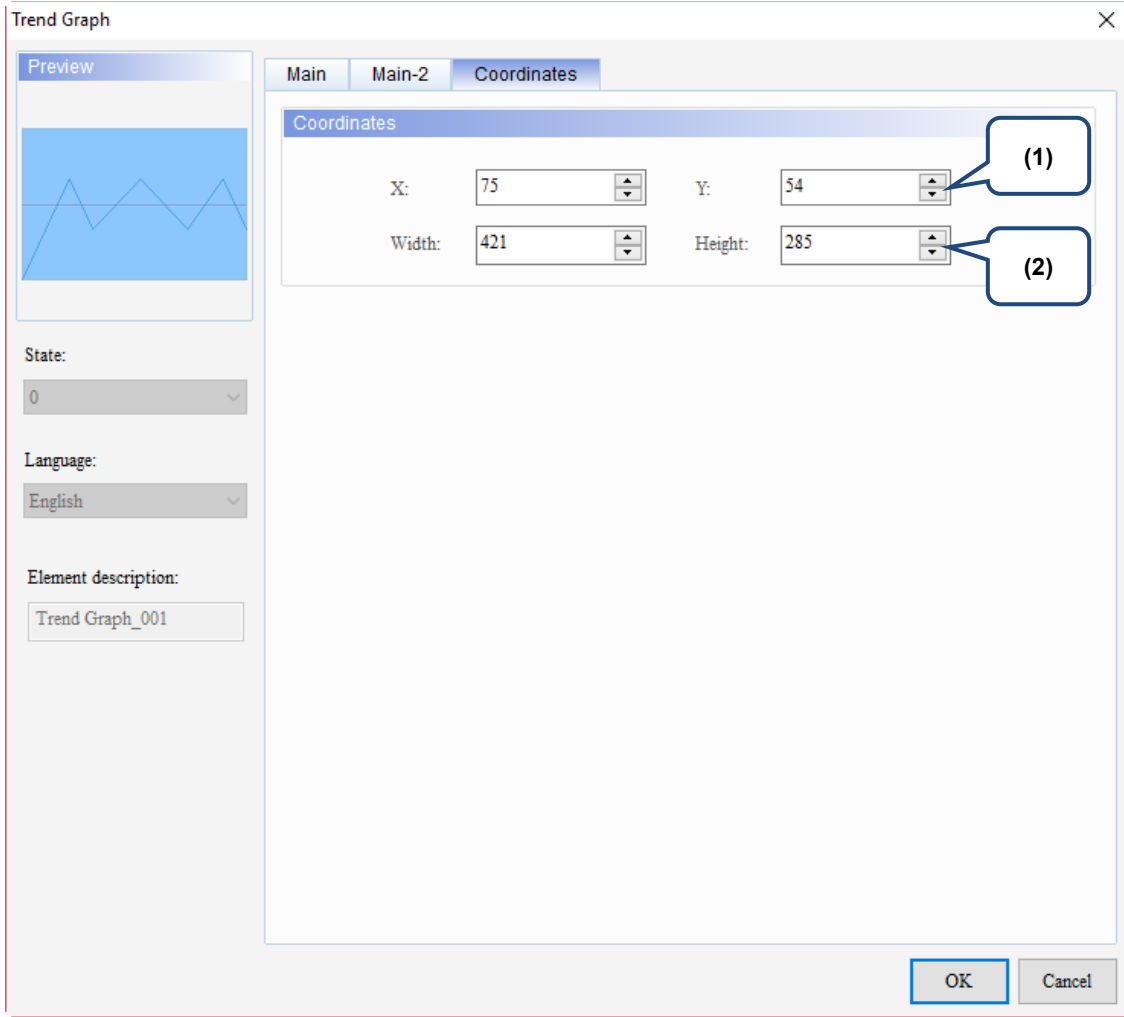


Figure 14.1.4 Coordinates property page for the Trend Graph element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

14.2 X-Y Chart

X-Y Chart is drawn according to the set Horiz. Read Address and Vert. Read Address. You can also define the curve count to be displayed, and if X and Y points are connected. An X-Y Chart element supports up to 4 curves. This element requires using the Curve sampling flag from [Options] > [Configuration] > [Control Command] > [Control Block] > [Curve Control] to draw curves. The Curve sampling flags 1 - 4 correspond to the Sampling flags 1 - 4 of the X-Y Chart Graph element respectively.

Please refer to Table 14.2.1 for the X-Y Chart example.

Table 14.2.1 X-Y Chart example

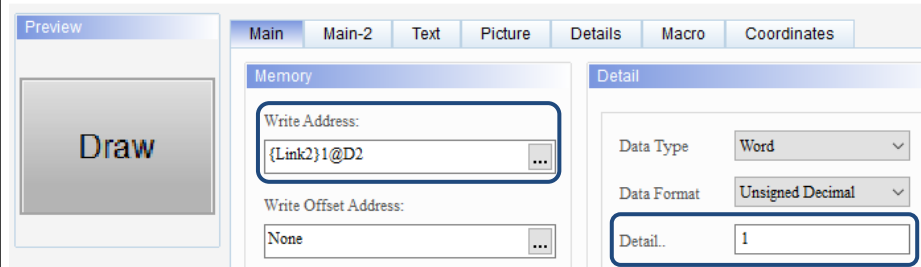
14

X-Y Chart																			
X-Y Chart element	<p>Create an X-Y Chart element and set its parameters.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #cccccc;">X-Y Chart element</th> </tr> </thead> <tbody> <tr> <td style="width: 50%;">Horiz. Read Address</td> <td style="text-align: right;">\$3000</td> </tr> <tr> <td>Vert. Read Address</td> <td style="text-align: right;">\$4000</td> </tr> <tr> <td>Sample Number</td> <td style="text-align: right;">5</td> </tr> <tr> <td>Sample Flag</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Number of Curves</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Connect Adjacent Points</td> <td style="text-align: right;">Yes</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> Horiz. Minimum / Horiz. Maximum Vert. Minimum / Vert. Maximum Line Weight / Line Color </td> <td style="width: 50%; vertical-align: top;"> <div style="border: 1px solid #ccc; padding: 5px;"> Curve1 Horiz. Minimum <input type="text" value="0"/> ... Horiz. Maximum <input type="text" value="1000"/> ... <hr/> Vert. Minimum <input type="text" value="0"/> ... Vert. Maximum <input type="text" value="1000"/> ... <hr/> Line Weight <input type="text" value="3"/> v Line Color <input style="background-color: green; width: 50px;" type="color"/> v Projection Axis <input type="text" value="No projection"/> v </div> </td> </tr> </table> 	X-Y Chart element		Horiz. Read Address	\$3000	Vert. Read Address	\$4000	Sample Number	5	Sample Flag	1	Number of Curves	1	Connect Adjacent Points	Yes	Horiz. Minimum / Horiz. Maximum Vert. Minimum / Vert. Maximum Line Weight / Line Color	<div style="border: 1px solid #ccc; padding: 5px;"> Curve1 Horiz. Minimum <input type="text" value="0"/> ... Horiz. Maximum <input type="text" value="1000"/> ... <hr/> Vert. Minimum <input type="text" value="0"/> ... Vert. Maximum <input type="text" value="1000"/> ... <hr/> Line Weight <input type="text" value="3"/> v Line Color <input style="background-color: green; width: 50px;" type="color"/> v Projection Axis <input type="text" value="No projection"/> v </div>		
X-Y Chart element																			
Horiz. Read Address	\$3000																		
Vert. Read Address	\$4000																		
Sample Number	5																		
Sample Flag	1																		
Number of Curves	1																		
Connect Adjacent Points	Yes																		
Horiz. Minimum / Horiz. Maximum Vert. Minimum / Vert. Maximum Line Weight / Line Color	<div style="border: 1px solid #ccc; padding: 5px;"> Curve1 Horiz. Minimum <input type="text" value="0"/> ... Horiz. Maximum <input type="text" value="1000"/> ... <hr/> Vert. Minimum <input type="text" value="0"/> ... Vert. Maximum <input type="text" value="1000"/> ... <hr/> Line Weight <input type="text" value="3"/> v Line Color <input style="background-color: green; width: 50px;" type="color"/> v Projection Axis <input type="text" value="No projection"/> v </div>																		
Numeric Entry element	<p>Create 5 Numeric Entry elements according to the Horiz. Read Address and Vert. Read Address. As it requires 5 sampling points to draw an X-Y Chart, the X-axis and Y-axis will each sample 5 points to draw the curve. Therefore, the set Horiz. Read Address \$3000 of the X-Y Chart starts reading 5 addresses in sequence, which are \$3000, \$3001, \$3002, \$3003, and \$3004; the Vert. Read Address \$4000 starts reading 5 addresses in sequence, which are \$4000, \$4001, \$4002, \$4003, and \$4004.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="6" style="background-color: #cccccc;">Numeric Entry element</th> </tr> </thead> <tbody> <tr> <td style="background-color: #cccccc;">Write Address</td> <td>\$3000</td> <td>\$3001</td> <td>\$3002</td> <td>\$3003</td> <td>\$3004</td> </tr> <tr> <td style="background-color: #cccccc;">Write Address</td> <td>\$4000</td> <td>\$4001</td> <td>\$4002</td> <td>\$4003</td> <td>\$4004</td> </tr> </tbody> </table>	Numeric Entry element						Write Address	\$3000	\$3001	\$3002	\$3003	\$3004	Write Address	\$4000	\$4001	\$4002	\$4003	\$4004
Numeric Entry element																			
Write Address	\$3000	\$3001	\$3002	\$3003	\$3004														
Write Address	\$4000	\$4001	\$4002	\$4003	\$4004														
Set Constant element	<ul style="list-style-type: none"> ■ Create a Constant element and set its Write Address as D2. This D2 address is for the Curve Control flag in the Control Block. <div style="border: 1px solid #ccc; padding: 5px; width: fit-content; margin: 0 auto;"> W:{Link2}1@D2 <input style="background-color: #ccc; width: 100px; height: 20px;" type="button" value="Draw"/> </div>																		

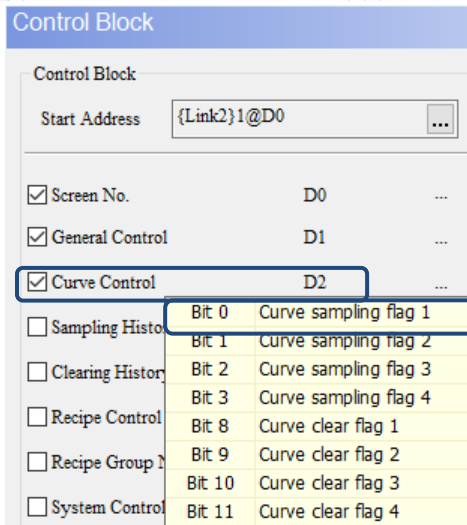
X-Y Chart

- Set the Detail.. of the Constant element to 1. 1 corresponds to **Bit 0 Curve sampling flag 1**; 2 corresponds to **Bit 1 Curve sampling flag 2**; 4 corresponds to **Bit 2 Curve sampling flag 3**, and so on. You will also find that the Sample Flag setting of the X-Y Chart element is 1 as well.

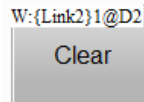
Set Constant



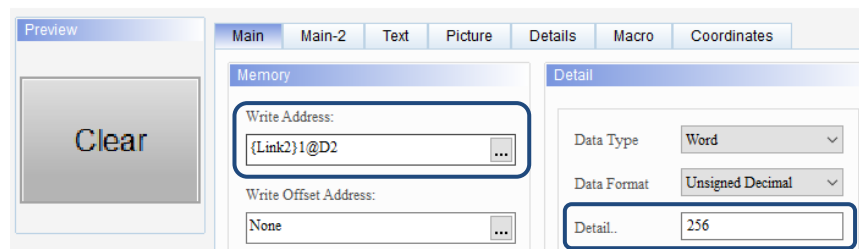
Set Constant element



- Create another Constant element and set its Write Address as D2 as well, and the Detail.. as 256. 256 corresponds to **Bit 8 Curve clear flag 1**.



Set Constant



14

Set Constant element

X-Y Chart

Control Block

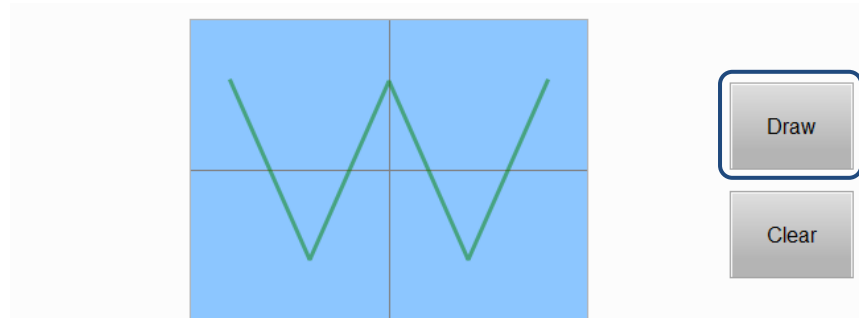
Control Block

Start Address {Link2}1@D0

<input checked="" type="checkbox"/>	Screen No.	D0	...
<input checked="" type="checkbox"/>	General Control	D1	...
<input checked="" type="checkbox"/>	Curve Control	D2	...
<input type="checkbox"/>	Sampling History	Bit 0	Curve sampling flag 1
<input type="checkbox"/>	Clearing History	Bit 1	Curve sampling flag 2
<input type="checkbox"/>	Recipe Control	Bit 2	Curve sampling flag 3
<input type="checkbox"/>	Recipe Group 1	Bit 3	Curve sampling flag 4
<input type="checkbox"/>	System Control	Bit 8	Curve clear flag 1
		Bit 9	Curve clear flag 2
		Bit 10	Curve clear flag 3
		Bit 11	Curve clear flag 4

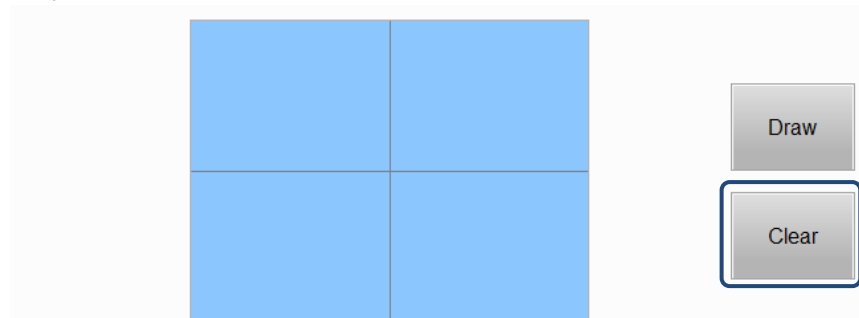
- After creating the elements, please compile and download the elements to the HMI. Next, use the Numeric Entry element to enter any value for the X-axis and Y-axis, then press **Draw**, and the X-Y Chart will draw the curve according to the input values.

Execution results



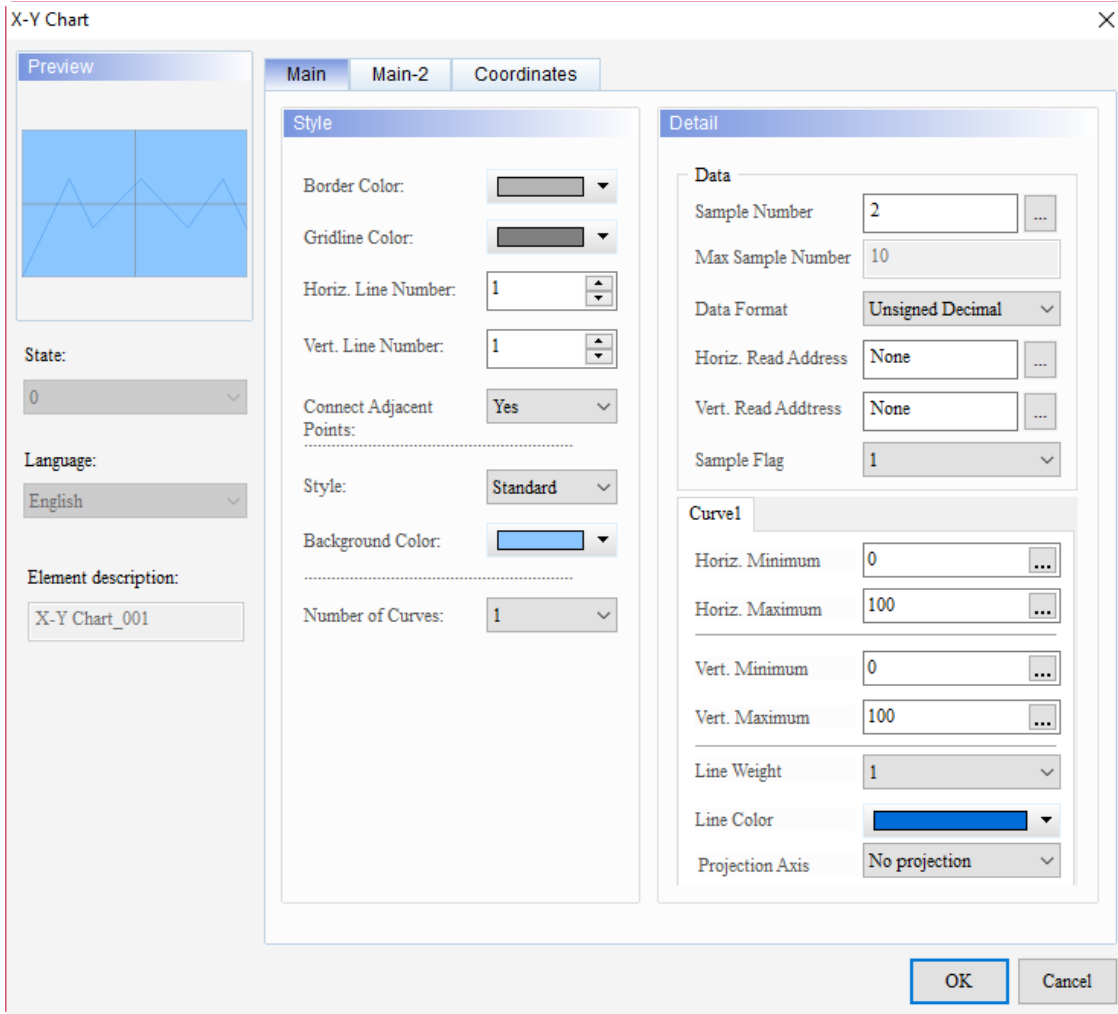
100	300	500	700	900
800	200	800	200	800

- If you press **Clear**, the HMI will clear the drawn X-Y curve.



100	300	500	700	900
800	200	800	200	800

When you double-click X-Y Chart, the property page is shown as follows.



14

Figure 14.2.1 Properties of X-Y Chart

Table 14.2.2 Function page of X-Y Chart

X-Y Chart	
Function page	Description
Preview	The X-Y Chart elements do not support multiple status values and multi-language data display.
Main	Set Horiz. Read Address, Vert. Read Address, Sample Number, Max Sample Number, Data Format, Sample Flag, Horiz. Minimum, Horiz. Maximum, Vert. Minimum, Vert. Maximum, Line Weight, Line Color, and Projection Axis. Set Border Color, Gridline Color, Horiz. Line Number, Vert. Line Number, Connect Adjacent Points, Style and Background Color of the element, and Number of Curves.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

14

■ Main

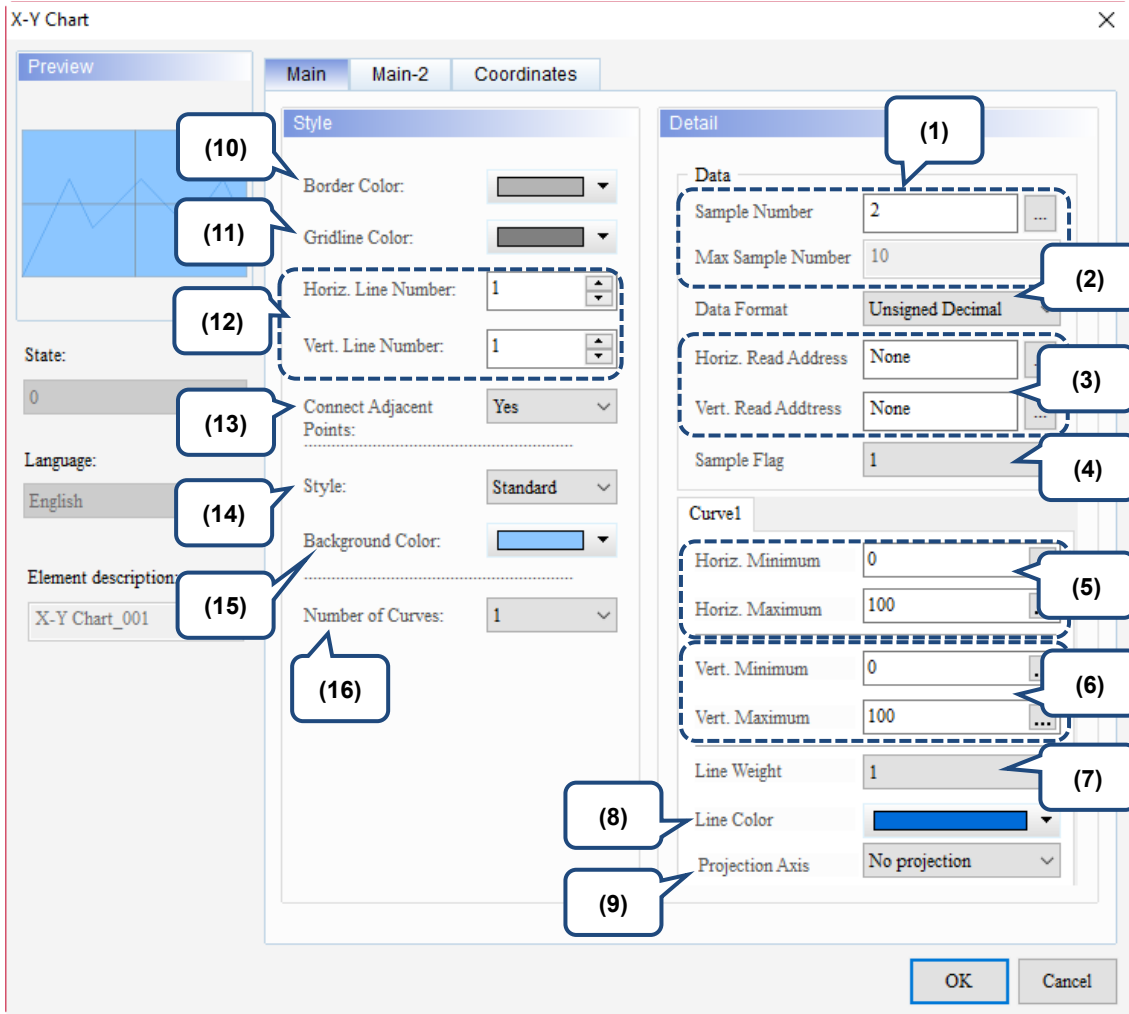
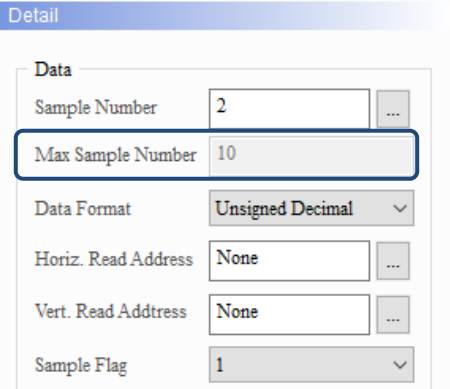
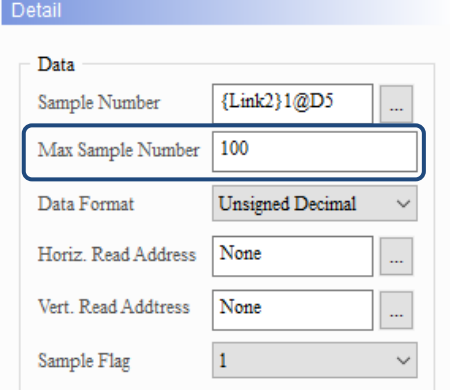
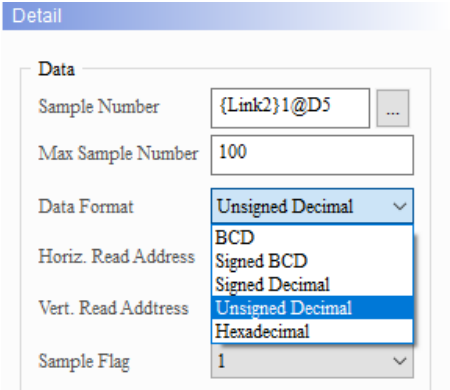
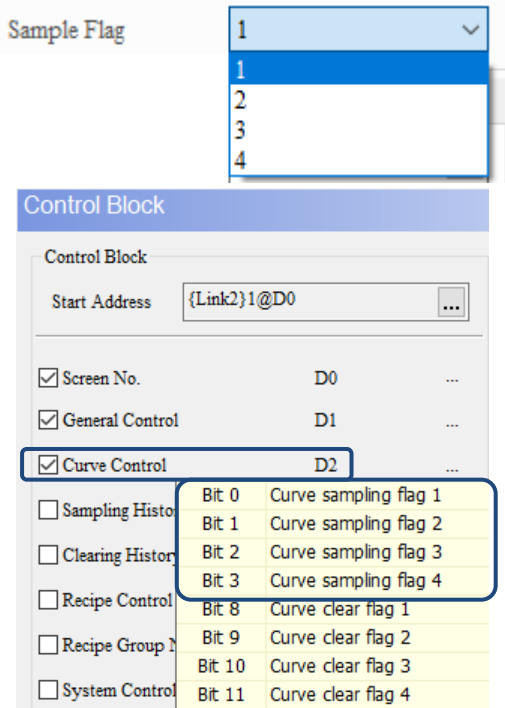
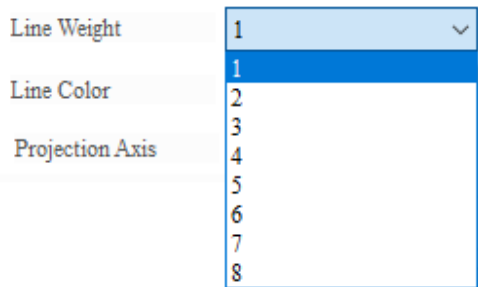
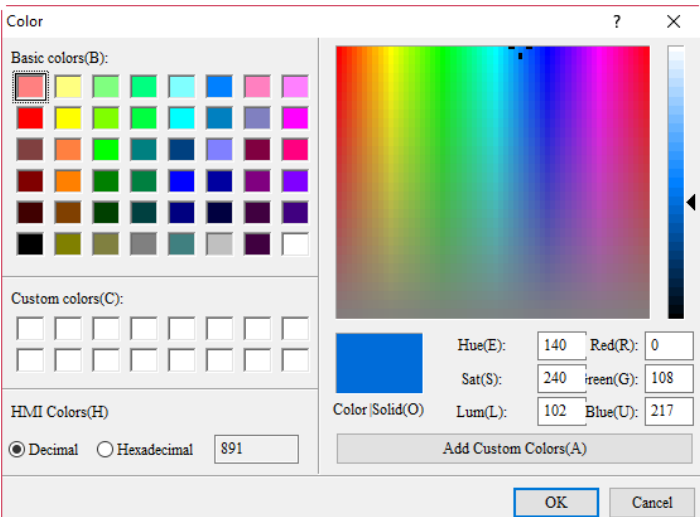
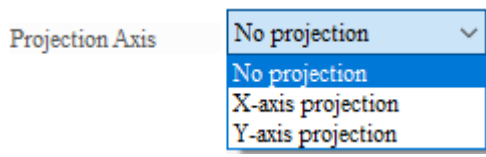
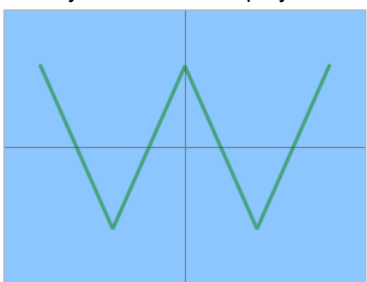


Figure 14.2.2 Main property page for the X-Y Chart element

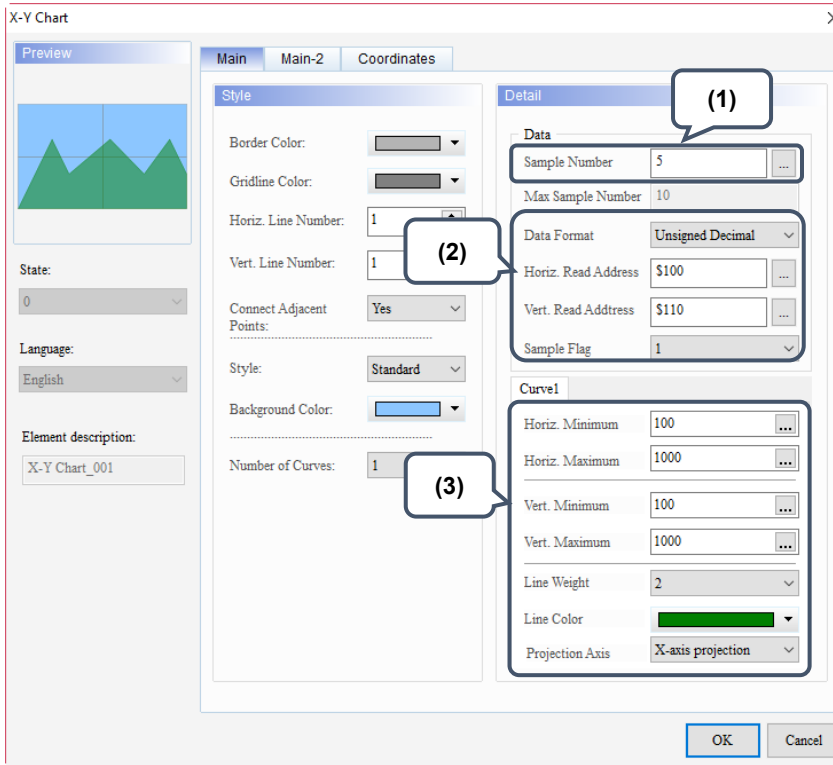

No.	Property	Function description
(1)	Sample Number / Max Sample Number	<ul style="list-style-type: none"> The number of sampling points is determined by the element width / height and style. When you set the Style of the X-Y Chart element as Standard, its width as 363 and height as 231, then the maximum number of points that can be displayed is 231 (based on the minimum value of element width and height). But if you set the Style of the X-Y Chart element as Raise or Sunken (border width is 7 points) and its width and height as 231, then the maximum number of points that can be displayed is 217 ($231 - (7 * 2) = 217$). When you set Sample Number as a constant, Max Sample Number is grayed out and cannot be set.  <ul style="list-style-type: none"> When you set Sample Number as a variable, you can define its Read Address. Also, you need to set the Max Sample Number, which the value is determined by the element width. If the set Sample Number is greater than the Max Sample Number, the software will refer to the setting of the Max Sample Number. 
(2)	Data Format	<p>X-Y Chart supports the following data formats:</p> 
(3)	<p>Horiz. Read Address</p> <p>Vert. Read Address</p>	<ul style="list-style-type: none"> Horiz. Read Address represents the X-axis and Vert. Read Address represents the Y-axis. You can select the internal memory or the controller register address for both Horiz. Read Address and Vert. Read Address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.

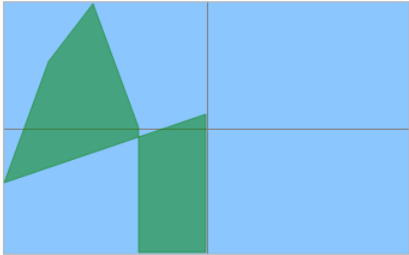
14

No.	Property	Function description																
(4)	Sample Flag	<p>There are 4 sampling flags corresponding to the Curve sampling flags 1 - 4 in the Control Block respectively.</p>  <p>The screenshot shows a 'Sample Flag' dropdown menu with '1' selected. Below it is a 'Control Block' configuration window. The 'Curve Control' checkbox is checked, and its address is set to 'D2'. A legend for the 'Curve Control' bit fields is shown below:</p> <table border="1"> <tr><td>Bit 0</td><td>Curve sampling flag 1</td></tr> <tr><td>Bit 1</td><td>Curve sampling flag 2</td></tr> <tr><td>Bit 2</td><td>Curve sampling flag 3</td></tr> <tr><td>Bit 3</td><td>Curve sampling flag 4</td></tr> <tr><td>Bit 8</td><td>Curve clear flag 1</td></tr> <tr><td>Bit 9</td><td>Curve clear flag 2</td></tr> <tr><td>Bit 10</td><td>Curve clear flag 3</td></tr> <tr><td>Bit 11</td><td>Curve clear flag 4</td></tr> </table>	Bit 0	Curve sampling flag 1	Bit 1	Curve sampling flag 2	Bit 2	Curve sampling flag 3	Bit 3	Curve sampling flag 4	Bit 8	Curve clear flag 1	Bit 9	Curve clear flag 2	Bit 10	Curve clear flag 3	Bit 11	Curve clear flag 4
Bit 0	Curve sampling flag 1																	
Bit 1	Curve sampling flag 2																	
Bit 2	Curve sampling flag 3																	
Bit 3	Curve sampling flag 4																	
Bit 8	Curve clear flag 1																	
Bit 9	Curve clear flag 2																	
Bit 10	Curve clear flag 3																	
Bit 11	Curve clear flag 4																	
(5)	Horiz. Minimum / Horiz. Maximum	<p>The allowable ranges for the minimum and maximum values vary based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF		
Data Type	Data Format	Allowable range																
Word	BCD	0 to 9999																
	Signed BCD	-999 to 9999																
	Signed Decimal	-32768 to 32767																
	Unsigned Decimal	0 to 65535																
	Hex	0 to 0xFFFF																
(6)	Vert. Minimum / Vert. Maximum	<p>The allowable ranges for the minimum and maximum values vary based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF		
Data Type	Data Format	Allowable range																
Word	BCD	0 to 9999																
	Signed BCD	-999 to 9999																
	Signed Decimal	-32768 to 32767																
	Unsigned Decimal	0 to 65535																
	Hex	0 to 0xFFFF																
(7)	Line Weight	<p>The line width setting ranges from 1 to 8.</p>  <p>The screenshot shows a 'Line Weight' dropdown menu with '1' selected. The menu lists options from 1 to 8.</p>																

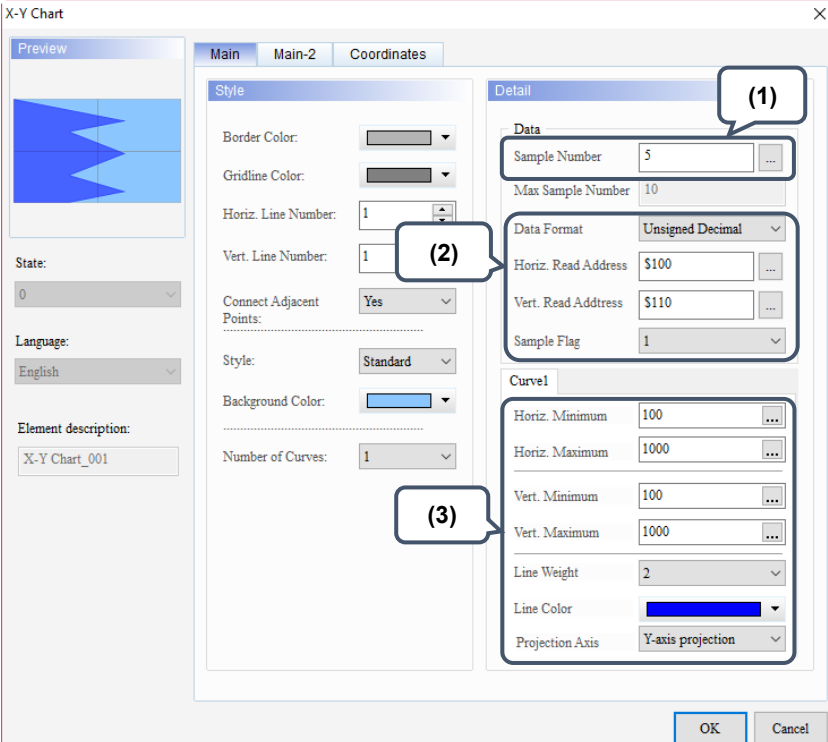

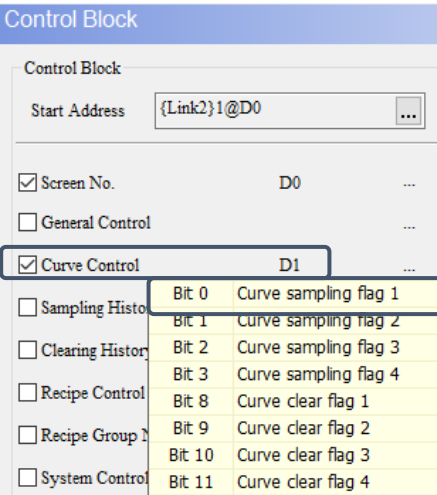
No.	Property	Function description
(8)	Line Color	<p>You can set the line color for the curve.</p> 
(9)	Projection Axis	<ul style="list-style-type: none"> There are three types of Projection axis: No projection, X-axis projection, Y-axis projection.  <ul style="list-style-type: none"> When Projection Axis is set to No projection, the setting is the same as the default setting which only the curve is displayed. 

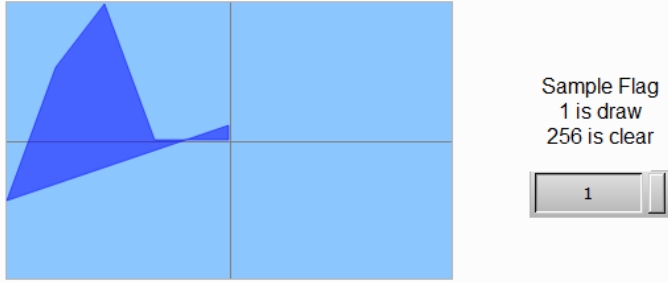
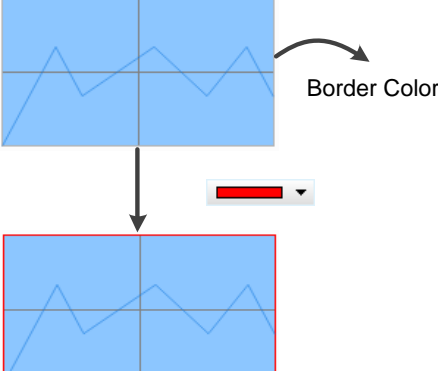
14

No.	Property	Function Description						
(9)	Projection Axis	<p>■ Please see below for the details of X-axis projection and Y-axis projection.</p> <p>X-axis projection</p>  <table border="1"> <tr> <td>(1)</td> <td>Set the Sample Number to 5.</td> </tr> <tr> <td>(2)</td> <td>Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.</td> </tr> <tr> <td>(3)</td> <td>Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Projection Axis to X-axis projection.</td> </tr> </table> <p>■ Please create Numeric Entry elements of \$100 - \$104 and \$110 - \$114, and set all the Data Format as Unsigned Decimal.</p> 	(1)	Set the Sample Number to 5.	(2)	Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.	(3)	Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Projection Axis to X-axis projection.
(1)	Set the Sample Number to 5.							
(2)	Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.							
(3)	Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Projection Axis to X-axis projection.							

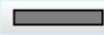
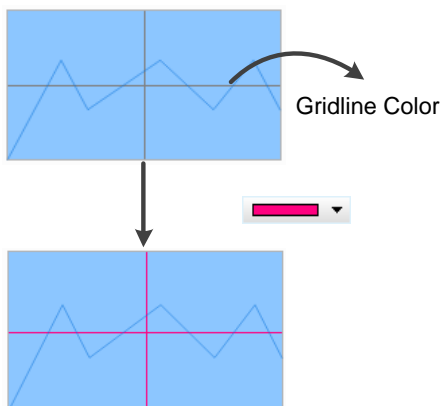
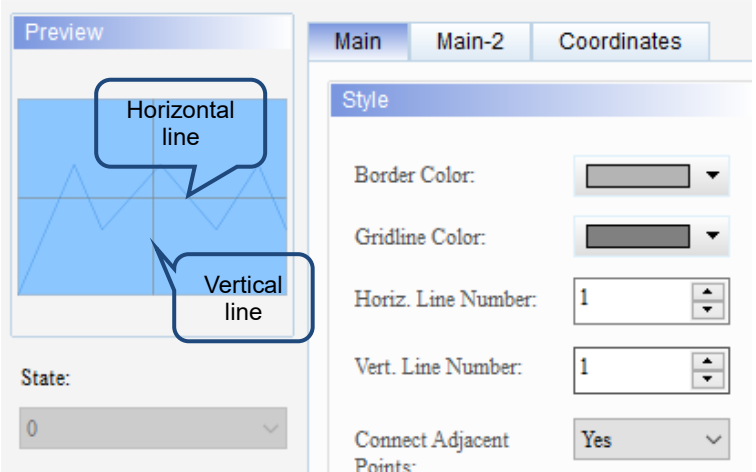
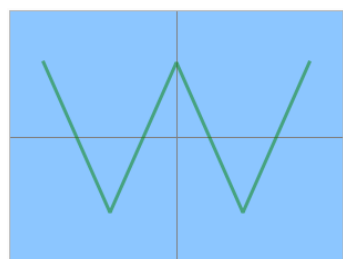
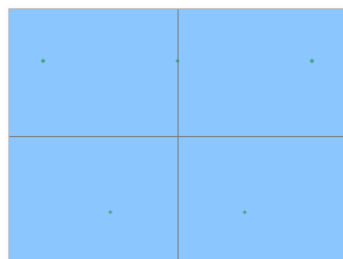
No.	Property	Function Description																										
(9)	Projection Axis	<ul style="list-style-type: none"> Go to [Options] > [Configuration] > [Control Command] and check [Curve Control] with the address as D1. <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p>Control Block</p> <p>Control Block</p> <p>Start Address {Link2}1@D0</p> <p><input checked="" type="checkbox"/> Screen No. D0</p> <p><input type="checkbox"/> General Control</p> <p><input checked="" type="checkbox"/> Curve Control D1</p> <table border="1" style="font-size: small;"> <tr><td>Bit 0</td><td>Curve sampling flag 1</td></tr> <tr><td>Bit 1</td><td>Curve sampling flag 2</td></tr> <tr><td>Bit 2</td><td>Curve sampling flag 3</td></tr> <tr><td>Bit 3</td><td>Curve sampling flag 4</td></tr> <tr><td>Bit 8</td><td>Curve clear flag 1</td></tr> <tr><td>Bit 9</td><td>Curve clear flag 2</td></tr> <tr><td>Bit 10</td><td>Curve clear flag 3</td></tr> <tr><td>Bit 11</td><td>Curve clear flag 4</td></tr> </table> </div> Create a Numeric Entry element with the address as D1. <div style="border: 1px solid gray; padding: 5px; margin: 10px 0; text-align: center;"> <p>Sample Flag</p> <p>1 is draw</p> <p>256 is clear</p> <p>W:{Link2}1@D1</p> <p>12345</p> </div> After completing the above steps, please compile and download the elements to the HMI. Enter any value to \$100 - \$104 and \$110 - \$114, and input 1 to the Sample Flag. When you are done inputting the above values, the X-Y Chart is as follows: <div style="border: 1px solid gray; padding: 10px; margin: 10px 0;">  <div style="float: right; text-align: center;"> <p>Sample Flag</p> <p>1 is draw</p> <p>256 is clear</p> <p>1</p> </div> <div style="clear: both;"></div> <table border="1" style="width: 100%; text-align: center; font-size: small;"> <tr> <td>550</td><td>100</td><td>200</td><td>300</td><td>400</td> </tr> <tr> <td>600</td><td>355</td><td>789</td><td>999</td><td>555</td> </tr> </table> </div> 	Bit 0	Curve sampling flag 1	Bit 1	Curve sampling flag 2	Bit 2	Curve sampling flag 3	Bit 3	Curve sampling flag 4	Bit 8	Curve clear flag 1	Bit 9	Curve clear flag 2	Bit 10	Curve clear flag 3	Bit 11	Curve clear flag 4	550	100	200	300	400	600	355	789	999	555
Bit 0	Curve sampling flag 1																											
Bit 1	Curve sampling flag 2																											
Bit 2	Curve sampling flag 3																											
Bit 3	Curve sampling flag 4																											
Bit 8	Curve clear flag 1																											
Bit 9	Curve clear flag 2																											
Bit 10	Curve clear flag 3																											
Bit 11	Curve clear flag 4																											
550	100	200	300	400																								
600	355	789	999	555																								

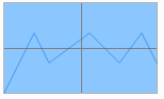
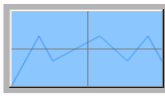
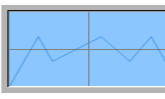
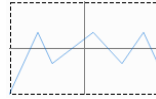
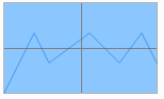
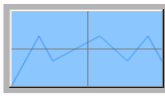
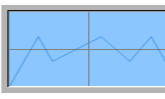
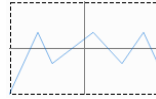
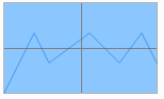
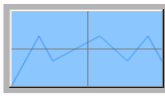
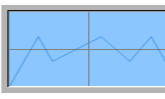
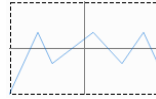
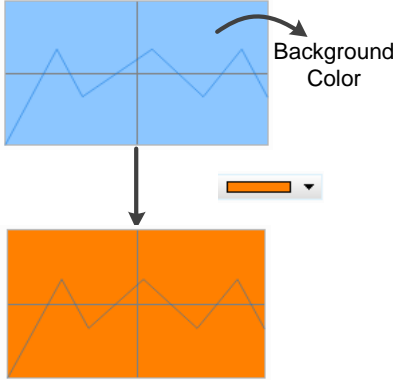
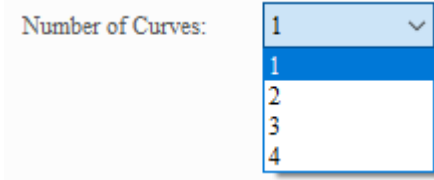
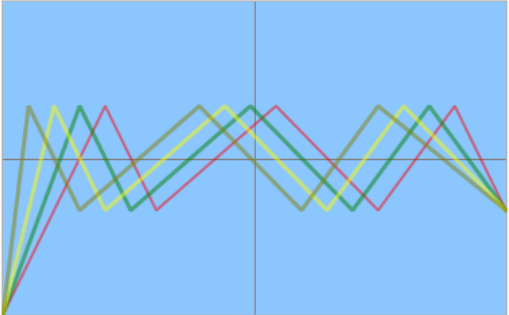
14

No.	Property	Function Description																
		<p>Y-axis projection</p> 																
(9)	Projection Axis	<p>(1) Set the Sample Number to 5.</p> <p>(2) Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.</p> <p>(3) Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Vert. Minimum to 100 and Vert. Maximum to 1000. Set the Projection Axis to Y-axis projection.</p>																
		<ul style="list-style-type: none"> <p>Please create Numeric Entry elements of \$100 - \$104 and \$110 - \$114, and set all the Data Format as Unsigned Decimal.</p>  <p>Go to [Options] > [Configuration] > [Control Command] and check [Curve Control] with the address as D1.</p>  <table border="1"> <tr><td>Bit 0</td><td>Curve sampling flag 1</td></tr> <tr><td>Bit 1</td><td>Curve sampling flag 2</td></tr> <tr><td>Bit 2</td><td>Curve sampling flag 3</td></tr> <tr><td>Bit 3</td><td>Curve sampling flag 4</td></tr> <tr><td>Bit 8</td><td>Curve clear flag 1</td></tr> <tr><td>Bit 9</td><td>Curve clear flag 2</td></tr> <tr><td>Bit 10</td><td>Curve clear flag 3</td></tr> <tr><td>Bit 11</td><td>Curve clear flag 4</td></tr> </table> 	Bit 0	Curve sampling flag 1	Bit 1	Curve sampling flag 2	Bit 2	Curve sampling flag 3	Bit 3	Curve sampling flag 4	Bit 8	Curve clear flag 1	Bit 9	Curve clear flag 2	Bit 10	Curve clear flag 3	Bit 11	Curve clear flag 4
Bit 0	Curve sampling flag 1																	
Bit 1	Curve sampling flag 2																	
Bit 2	Curve sampling flag 3																	
Bit 3	Curve sampling flag 4																	
Bit 8	Curve clear flag 1																	
Bit 9	Curve clear flag 2																	
Bit 10	Curve clear flag 3																	
Bit 11	Curve clear flag 4																	

No.	Property	Function Description
(9)	Projection Axis	<ul style="list-style-type: none"> ■ Create a Numeric Entry element with the address as D1. <div style="border: 1px solid gray; padding: 5px; text-align: center;"> <p>Sample Flag 1 is draw 256 is clear</p> <p>W:{Link2}1@D1 12345</p> </div> <ul style="list-style-type: none"> ■ After completing the above steps, please compile and download the elements to the HMI. ■ Enter any value to \$100 - \$104 and \$110 - \$114, and input 1 to the Sample Flag. ■ When you are done inputting the above values, the X-Y Chart is as follows: <div style="border: 1px solid gray; padding: 10px;">  <p style="text-align: right;">Sample Flag 1 is draw 256 is clear</p> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid gray; padding: 2px 10px;">550</div> <div style="border: 1px solid gray; padding: 2px 10px;">100</div> <div style="border: 1px solid gray; padding: 2px 10px;">200</div> <div style="border: 1px solid gray; padding: 2px 10px;">300</div> <div style="border: 1px solid gray; padding: 2px 10px;">400</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid gray; padding: 2px 10px;">600</div> <div style="border: 1px solid gray; padding: 2px 10px;">355</div> <div style="border: 1px solid gray; padding: 2px 10px;">789</div> <div style="border: 1px solid gray; padding: 2px 10px;">999</div> <div style="border: 1px solid gray; padding: 2px 10px;">555</div> </div> </div>
(10)	Border Color	<p>Set the Border Color of the X-Y Chart element.</p> <div style="border: 1px solid gray; padding: 10px;">  <p style="text-align: right;">Border Color</p> </div>

14

No.	Property	Function Description
(11)	Gridline Color	<ul style="list-style-type: none"> The Gridline Color is the color of the grid line in the X-Y Chart. The default is . You can change the color of the grid line. 
(12)	Horiz. Line Number / Vert. Line Number	<ul style="list-style-type: none"> Both Horiz. Line Number and Vert. Line Number support a maximum of 99 lines. Horiz. Line Number refers to the number of lines on the X-axis and Vert. Line Number refers to the number of lines on the Y-axis. The default is 1. <p>X-Y Chart</p> 
(13)	Connect Adjacent Points	<ul style="list-style-type: none"> You can select Yes or No for Connect Adjacent Points. If you select Yes, the X-coordinate and Y-coordinate will form a curve.  <ul style="list-style-type: none"> If you select No, the chart displays the coordinate points of X-axis and Y-axis. 

No.	Property	Function Description								
(14)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
										
(15)	Background Color	<p>Set the background color of the element.</p> 								
(16)	Number of Curves	<ul style="list-style-type: none"> ■ The X-Y Chart element supports up to 4 curves.  ■ You can also change the width and color of the curves.  ■ If you want to use 4 curves, you will only need to set the Horiz. Read Address and Vert. Read Address as Continuous Address for sampling. Assuming the Horiz. Read Address is \$3000, Vert. Read Address is \$4000, and the Sample Number is 5, then 40 sampling points are required for 4 curves (20 each for horizontal and vertical). Thus, the Read Address is \$3000 - \$3019 and \$4000 - \$4019. 								

14

■ Main-2

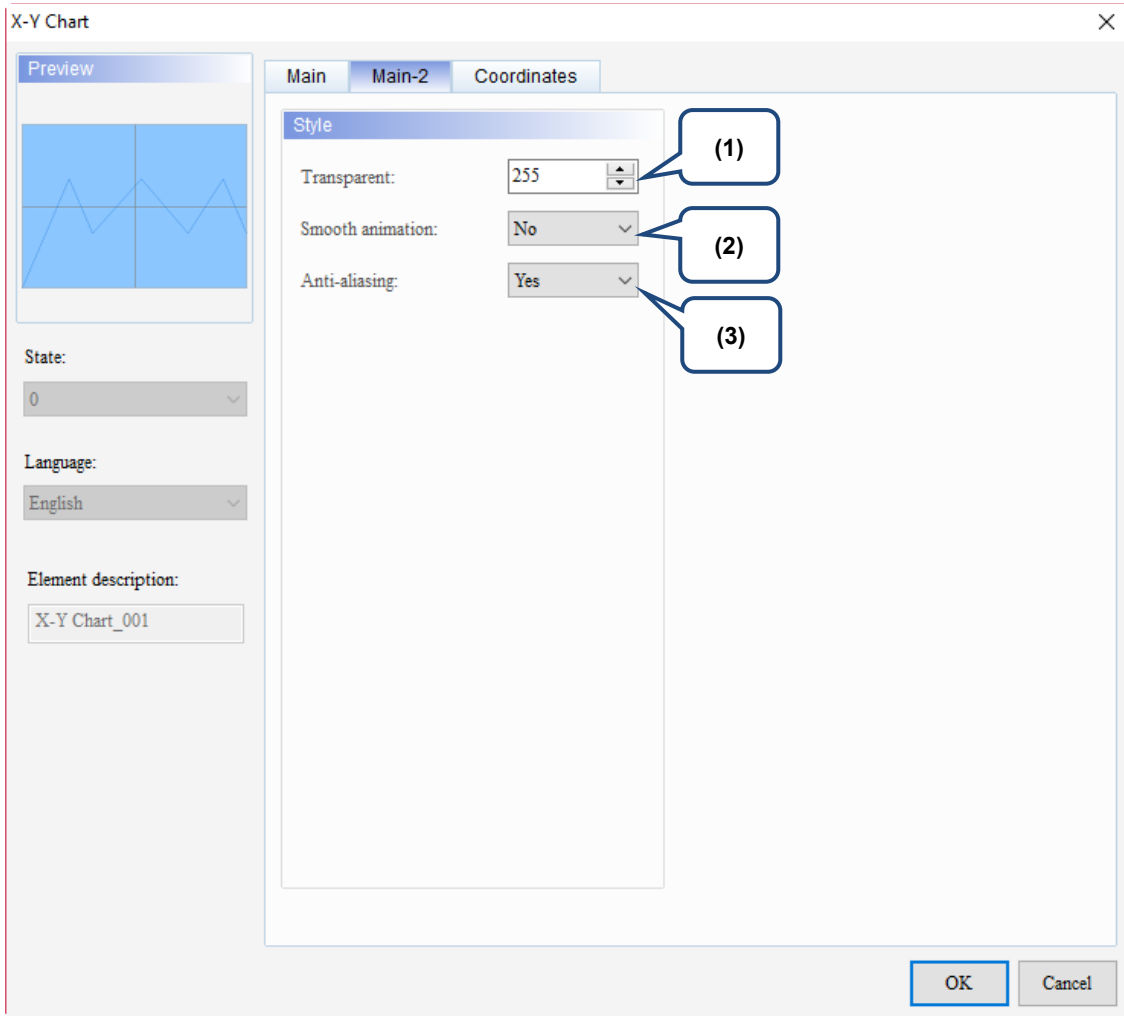
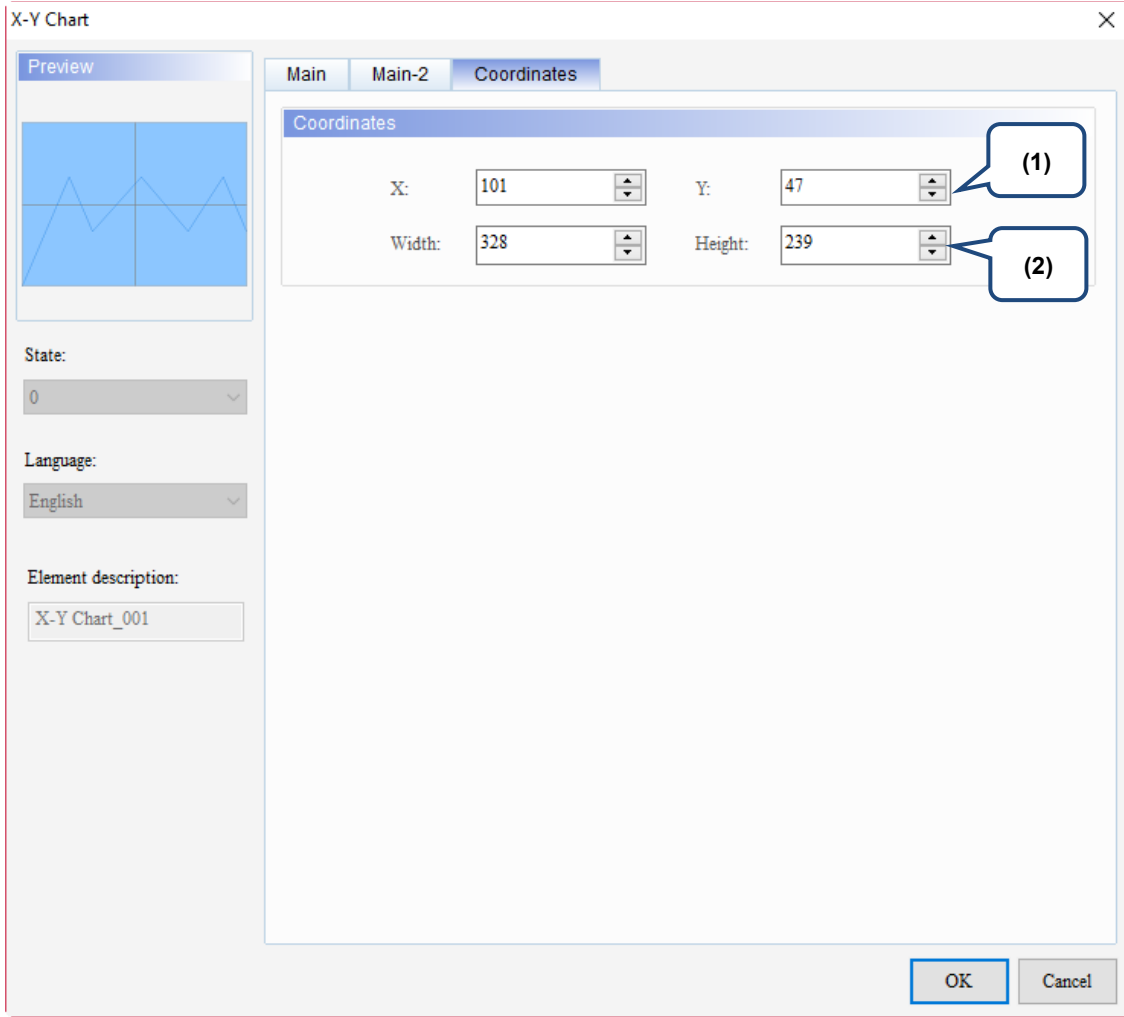


Figure 14.2.3 Main-2 property page for the X-Y Chart element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the curve motion is smoother.
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When enabled, the element display becomes more delicate without jagged edges.

■ Coordinates



14

Figure 14.2.4 Coordinates property page for the X-Y Chart element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

14

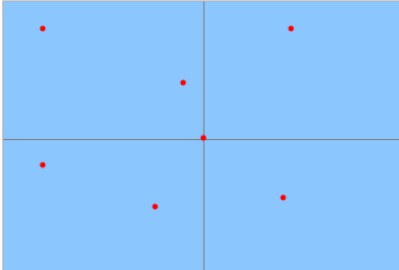
14.3 X-Y Distribution

X-Y Distribution allows users to set a Read Address as a Continuous Address which can continuously sample points on the X-axis and Y-axis with no maximum on the number of sampling points. Although X-Y Chart also uses Continuous Addresses, its number of sampling points is determined by the type, width, and height of the element. When Continuous Address is not checked, you can still set the Read Addresses for both X and Y, and you can also define the Color and Connection as the Read Address or a Constant. On the contrary, if Continuous Address is checked, both X and Y can only be set as continuous addresses, and the Color and Connection will be automatically set as the subsequent addresses of X and Y. In this case, when you want to change the addresses, you will be unable to do so; you can only reset them to constants.

An X-Y Distribution element can sample a maximum of 4 points. The main difference between the X-Y Distribution element and the Trend Graph and X-Y Chart elements is that it does not require to draw curves with the Curve sampling flag from [Options] > [Configuration] > [Control Command] > [Control Block] > [Curve Control], instead it has its own Control flags. Bit 0 is for sampling and Bit 1 is for clearing.

Please refer to Table 14.3.1 for the X-Y Distribution example.

Table 14.3.1 X-Y Distribution example

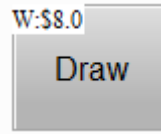
X-Y Distribution																																					
Create an X-Y Distribution element and set its parameters.																																					
X-Y Distribution element																																					
Control	<div style="border: 1px solid #ccc; padding: 5px;"> <div style="background-color: #e0e0e0; padding: 2px; margin-bottom: 5px;">Detail</div> <div style="border: 1px solid #ccc; padding: 5px;"> <div style="display: flex; align-items: center;"> Control <input style="width: 100px;" type="text" value="\$8"/> ... </div> <div style="margin-top: 5px;"> <input checked="" type="checkbox"/> Auto clear </div> </div> </div>																																				
Continuous Address	<input checked="" type="checkbox"/> Continuous Address																																				
Sample Number	2																																				
X-Y Distribution element	<div style="margin-bottom: 20px;"> <div style="border: 1px solid #ccc; padding: 5px;"> <div style="display: flex; border-bottom: 1px solid #ccc;"> Sample 0 Sample 1 </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Name</th> <th style="width: 50%;">Address</th> </tr> </thead> <tbody> <tr><td>X</td><td>\$20</td></tr> <tr><td>Y</td><td>\$21</td></tr> <tr><td>Color</td><td>\$22</td></tr> <tr><td>Connection</td><td>\$23</td></tr> <tr><td>X Min.</td><td>0</td></tr> <tr><td>X Max.</td><td>1000</td></tr> <tr><td>Y Min.</td><td>0</td></tr> <tr><td>Y Max.</td><td>1000</td></tr> </tbody> </table> </div> </div> <div> <div style="border: 1px solid #ccc; padding: 5px;"> <div style="display: flex; border-bottom: 1px solid #ccc;"> Sample 0 Sample 1 </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Name</th> <th style="width: 50%;">Address</th> </tr> </thead> <tbody> <tr><td>X</td><td>\$30</td></tr> <tr><td>Y</td><td>\$31</td></tr> <tr><td>Color</td><td>\$32</td></tr> <tr><td>Connection</td><td>\$33</td></tr> <tr><td>X Min.</td><td>0</td></tr> <tr><td>X Max.</td><td>1000</td></tr> <tr><td>Y Min.</td><td>0</td></tr> <tr><td>Y Max.</td><td>1000</td></tr> </tbody> </table> </div> </div> <div style="text-align: center; margin-top: 20px;">  </div>	Name	Address	X	\$20	Y	\$21	Color	\$22	Connection	\$23	X Min.	0	X Max.	1000	Y Min.	0	Y Max.	1000	Name	Address	X	\$30	Y	\$31	Color	\$32	Connection	\$33	X Min.	0	X Max.	1000	Y Min.	0	Y Max.	1000
Name	Address																																				
X	\$20																																				
Y	\$21																																				
Color	\$22																																				
Connection	\$23																																				
X Min.	0																																				
X Max.	1000																																				
Y Min.	0																																				
Y Max.	1000																																				
Name	Address																																				
X	\$30																																				
Y	\$31																																				
Color	\$32																																				
Connection	\$33																																				
X Min.	0																																				
X Max.	1000																																				
Y Min.	0																																				
Y Max.	1000																																				
Sampling setting																																					
Numeric Entry element	<ul style="list-style-type: none"> ■ As the number of samples is 2, there will be two sets of settings (Sample 0 and Sample 1). ■ Create Numeric Entry elements of \$20 - \$23 as the X, Y, color, and Connection of Sample 0. ■ Create Numeric Entry elements of \$30 - \$33 as the X, Y, color, and Connection of Sample 1. <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 15%;">Sample Number</th> <th style="width: 15%;">X</th> <th style="width: 15%;">Y</th> <th style="width: 15%;">Color</th> <th style="width: 15%;">Connection</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Sample 0</td> <td style="text-align: center;">\$20</td> <td style="text-align: center;">\$21</td> <td style="text-align: center;">\$22</td> <td style="text-align: center;">\$23</td> </tr> <tr> <td style="text-align: center;">Sample 1</td> <td style="text-align: center;">\$30</td> <td style="text-align: center;">\$31</td> <td style="text-align: center;">\$32</td> <td style="text-align: center;">\$33</td> </tr> </tbody> </table>	Sample Number	X	Y	Color	Connection	Sample 0	\$20	\$21	\$22	\$23	Sample 1	\$30	\$31	\$32	\$33																					
Sample Number	X	Y	Color	Connection																																	
Sample 0	\$20	\$21	\$22	\$23																																	
Sample 1	\$30	\$31	\$32	\$33																																	

14

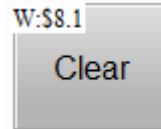
X-Y Distribution

Set Constant element

- Create a Maintained button and set its Write Address as \$8.0, meaning the sampling starts when Bit 0 is on.



- Next, create another Maintained button and set its Write Address as \$8.1, meaning clearing starts when Bit 1 is on.

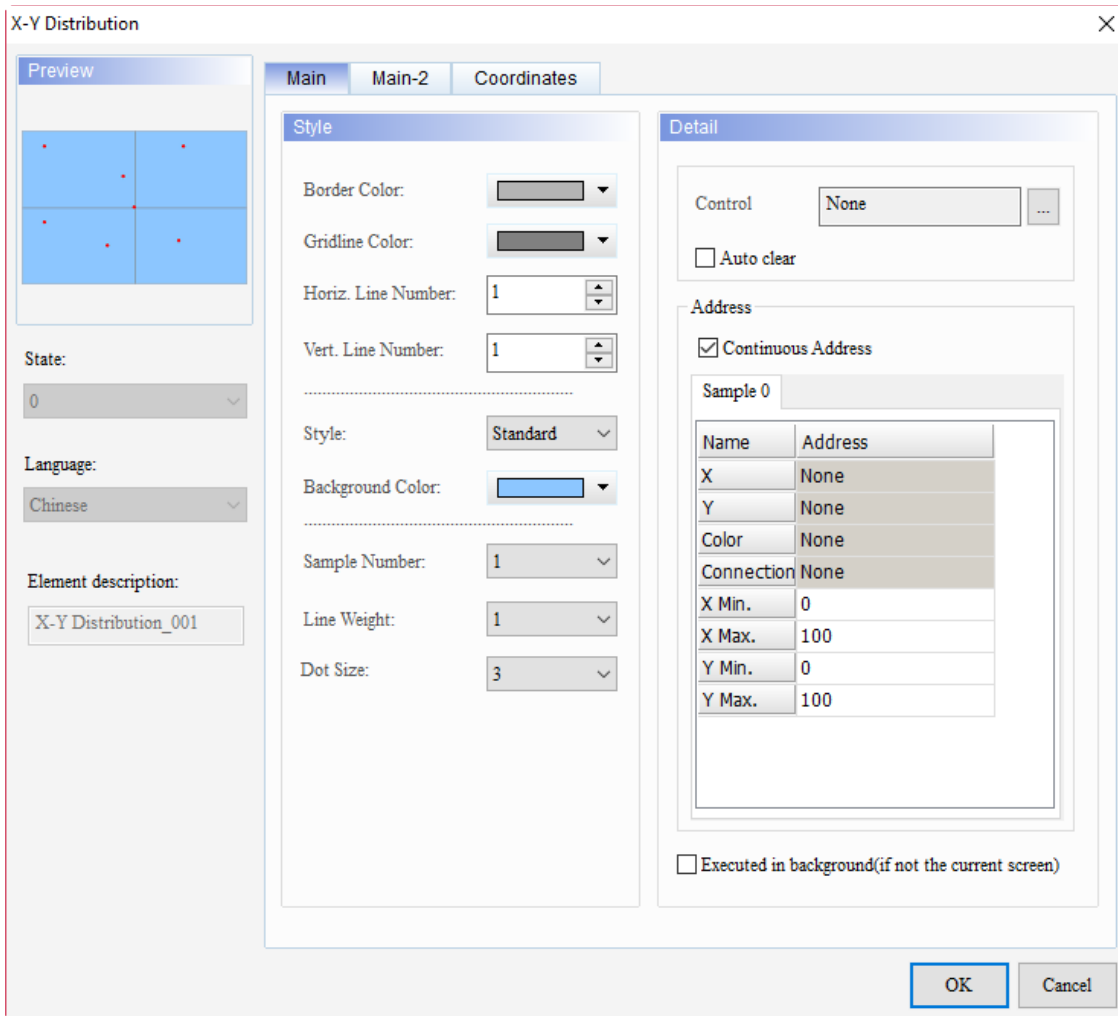


Execution results

- After creating the elements, please compile and download the elements to the HMI. Next, use the Numeric Entry element to enter any value for the X-axis and Y-axis, then the X-Y Distribution will draw the curve according to the input values.
- For the first input, two points are drawn for the entered values.

- For the second input, \$23 and \$33 are both set to 1, so the lines connect the dots.

When you double-click X-Y Distribution, the property page is shown as follows.



14

Figure 14.3.1 Properties of X-Y Distribution

Table 14.3.2 Function page of X-Y Distribution

X-Y Distribution	
Function page	Description
Preview	The X-Y Distribution elements do not support multiple status values and multi-language data display.
Main	Set Control address, Auto clear after sampling, Continuous Address, X, Y, Color, and Connection addresses for sampling, Sample Number, X Min., X Max., Y Min., and Y Max. Set Border Color, Gridline Color, Horiz. Line Number, Vert. Line Number, Style and Background Color of the element, Line Weight, and Dot Size.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

14

■ Main

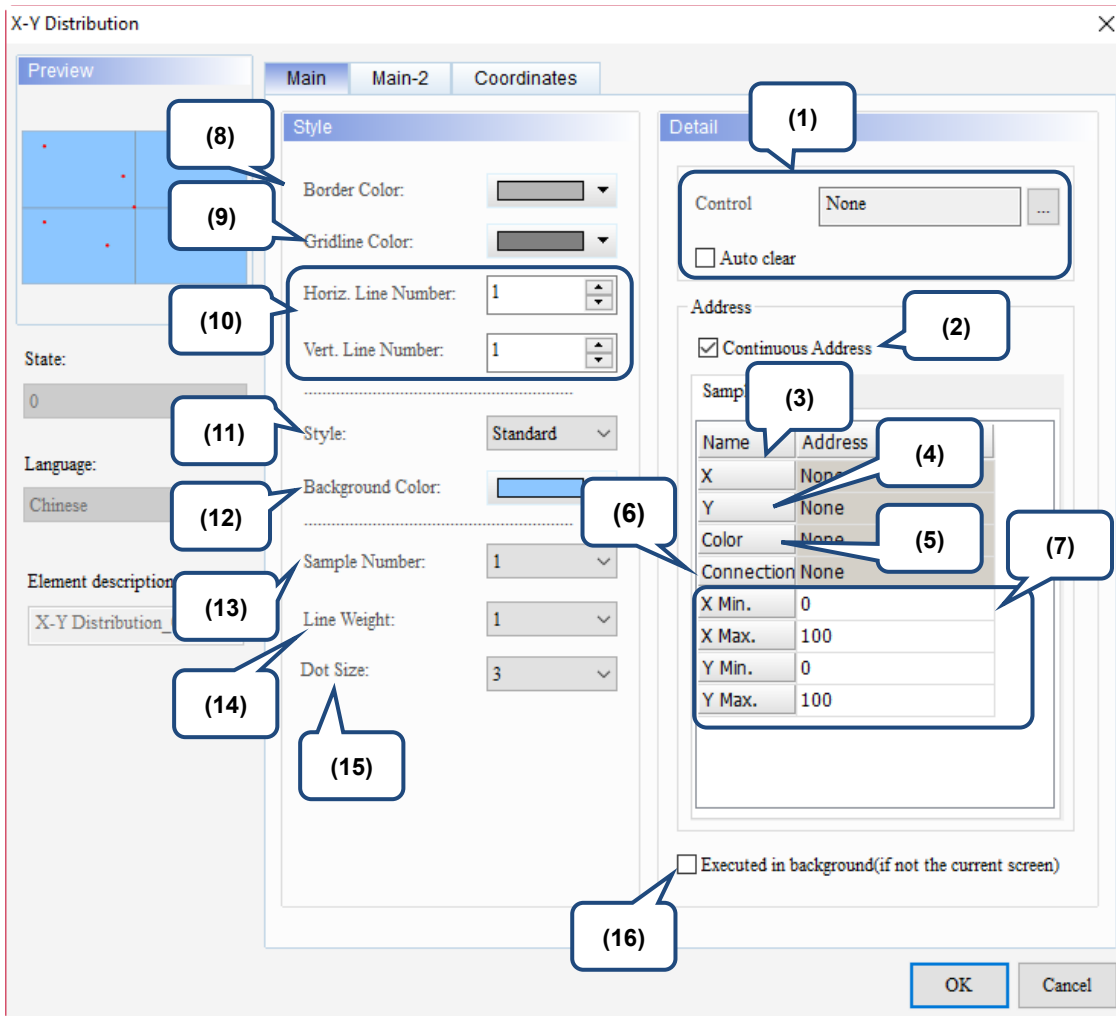
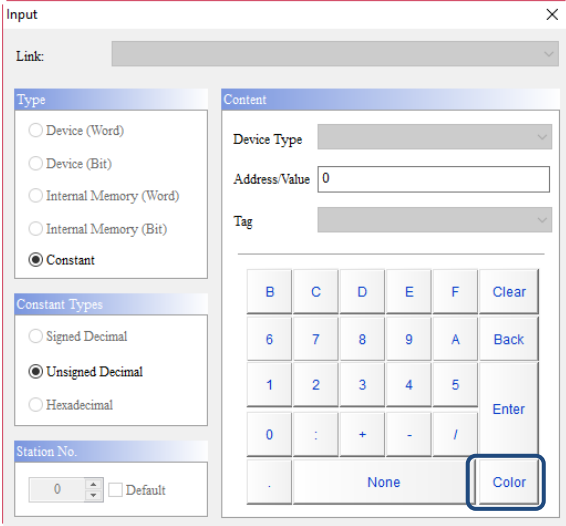
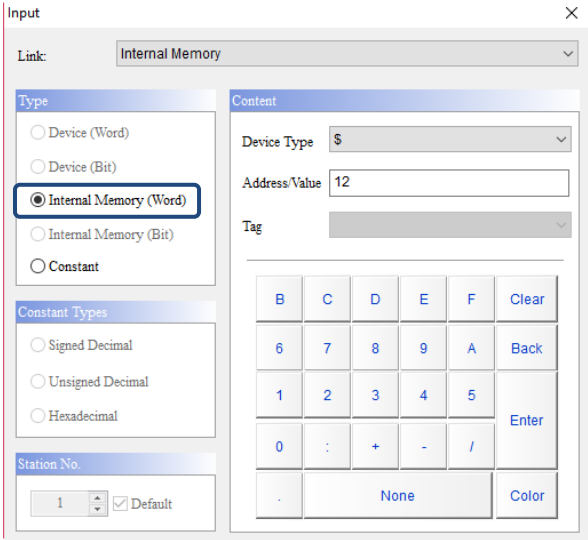
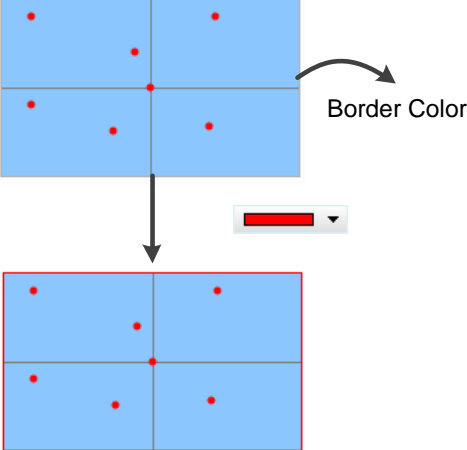

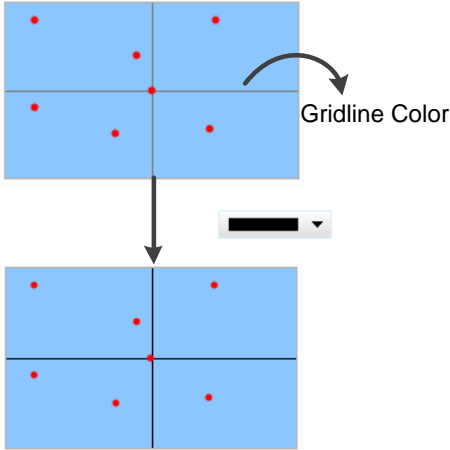


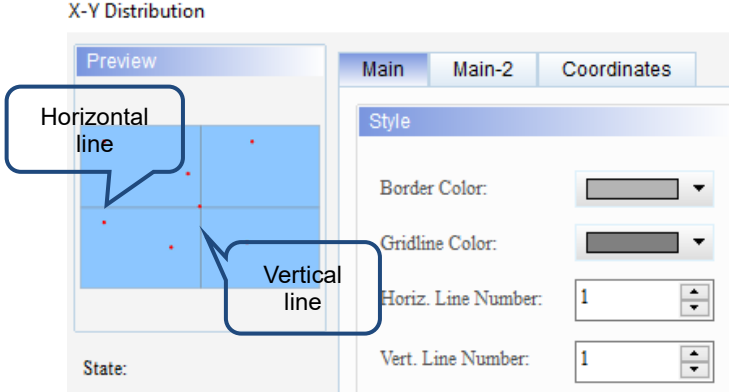
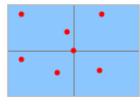
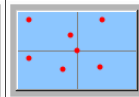
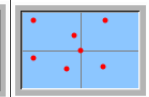
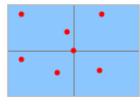
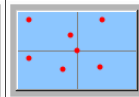
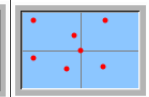
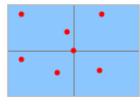
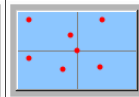
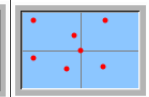
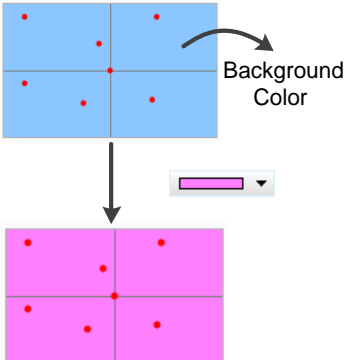
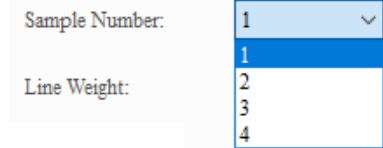
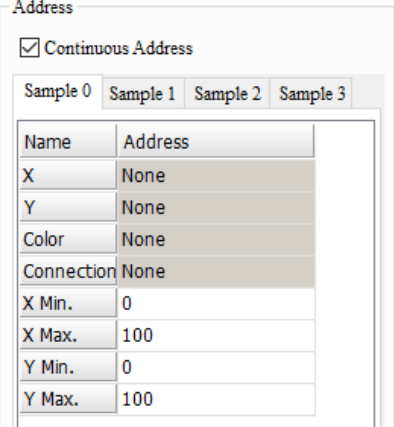
Figure 14.3.2 Main property page for the X-Y Distribution element

No.	Property	Function description
(1)	Control	<ul style="list-style-type: none"> Control address is the independent Curve Control flag of the X-Y Distribution. You do not need to sample data with the Curve Control flags in the Control Block. You can select the internal memory or the controller address for this Control address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details. Trigger Bit 0 to draw the sampling points and trigger Bit 1 to clear the sampling points. The Curve Control flag draws only one point per trigger. To draw the second point, you need to set this flag to off and trigger it again. You can check Auto clear to have the HMI automatically clear the flag. <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p>Detail</p> <p>Control <input type="text" value="None"/> ...</p> <p><input type="checkbox"/> Auto clear</p> </div>

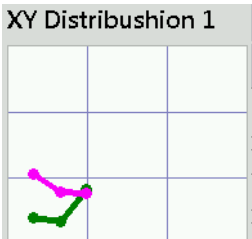
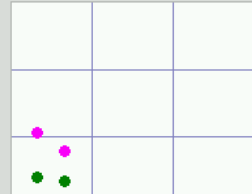
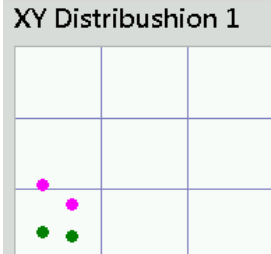
No.	Property	Function description
(2)	Continuous Address	<ul style="list-style-type: none"> If Continuous Address is checked, when you set the address of X, the addresses of Y, Color and Connection will be set as the subsequent addresses of X. For example, if the X address is \$1000, then the addresses of Y, Color, and Connection will be the subsequent addresses of \$1001 - \$1003. If you need to change the Read Addresses of X and Y, you can only change the setting of the X address. Also, you will not be able to change the Read Address of the Color or Connection; you can only set it as a constant. If Continuous Address is not checked, the addresses of X, Y, Color, and Connection are discontinuous, and you can define each Read Address according to the requirement. You can also set the Color and Connection as Read Addresses or constants.
(3)	X	<ul style="list-style-type: none"> You can select the internal memory or the controller register address for the X coordinate. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
(4)	Y	<ul style="list-style-type: none"> You can select the internal memory or the controller register address for the Y coordinate. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
(5)	Color	<ul style="list-style-type: none"> You can select the internal memory, controller register address, or constant for the Color coordinate. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details. To use Constant for setting the color, you can press Color and select the color for the sampling point.  <ul style="list-style-type: none"> You can also use Address/Value to input the value ranging from 0 to 65535. 

14

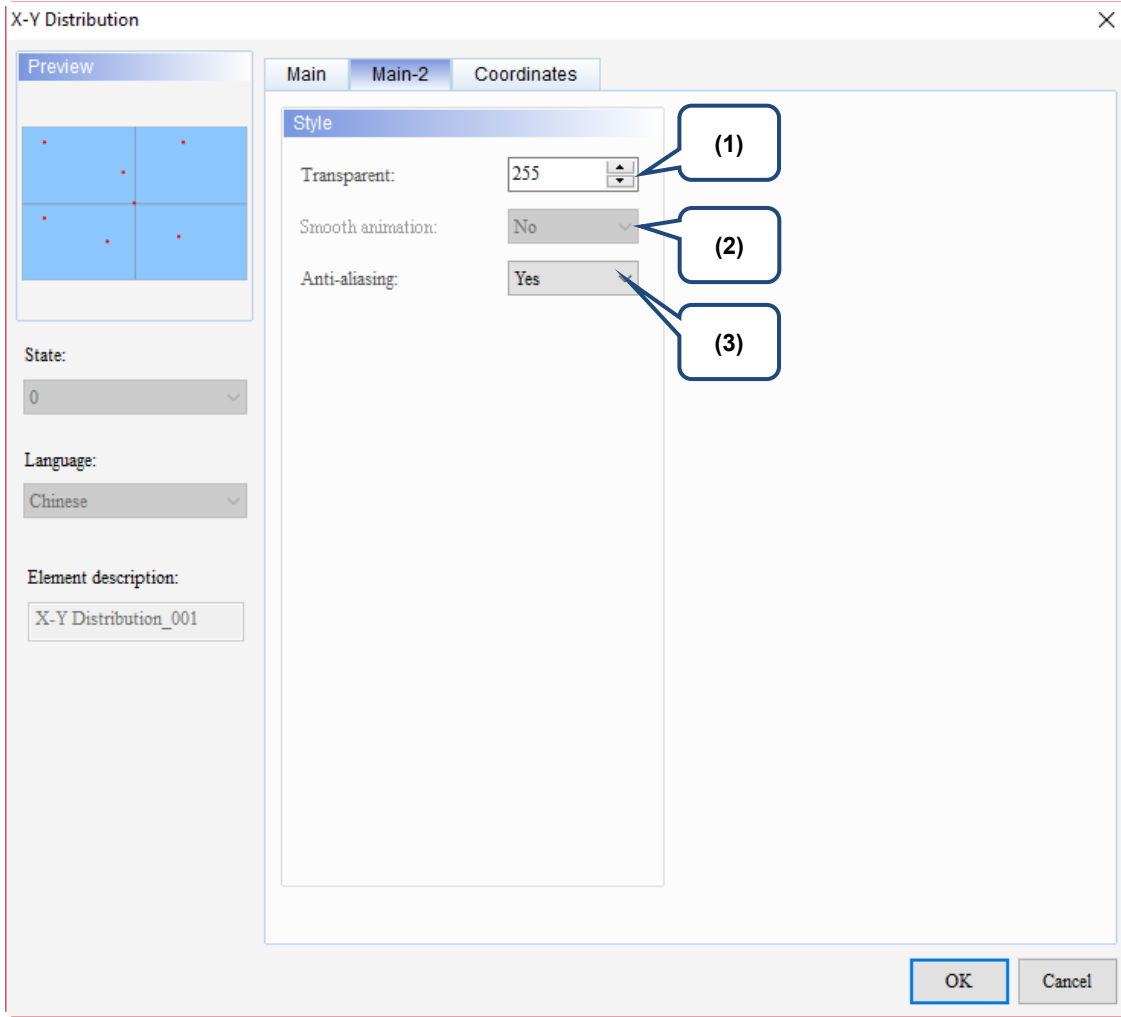
No.	Property	Function description														
(6)	Connection	<ul style="list-style-type: none"> You can select the internal memory, controller register address, or constant for the Connection. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details. The setting of Connection is to determine if the sampling point connects with the previous sampling point to form a curve. Set Constant as 1 to connect and set Constant as 2 for no connection. 														
(7)	X Min. / X Max. / Y Min. / Y Max.	<p>The allowable ranges for the X / Y Min. and X / Y Max. values are subject to change based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF
Data Type	Data Format	Allowable range														
Word	BCD	0 to 9999														
	Signed BCD	-999 to 9999														
	Signed Decimal	-32768 to 32767														
	Unsigned Decimal	0 to 65535														
	Hex	0 to 0xFFFF														
(8)	Border Color	<p>Set the Border Color of the X-Y Distribution element.</p> 														
(9)	Gridline Color	<ul style="list-style-type: none"> The Gridline Color is the color of the grid line in the X-Y Distribution. The default is . You can change the color of the grid line. 														

No.	Property	Function description																		
(10)	Horiz. Line Number / Vert. Line Number	<ul style="list-style-type: none"> Both Horiz. Line Number and Vert. Line Number support a maximum of 99 lines. Horiz. Line Number refers to the number of lines on the X-axis and Vert. Line Number refers to the number of lines on the Y-axis. The default is 1. <p>X-Y Distribution</p> 																		
(11)	Style	<p>You can change the appearance of the element with this setting. There are three types of element styles:</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken															
Standard	Raised	Sunken																		
																				
(12)	Background Color	<p>Set the background color of the element.</p> 																		
(13)	Sample Number	<ul style="list-style-type: none"> The X-Y Distribution element supports up to 4 sets of samples.  <ul style="list-style-type: none"> To use 4 sets of samples, you only need to set the X and Y Read Addresses of Sample 0, Sample 1, Sample 2, and Sample 3 for sampling.  <table border="1"> <thead> <tr> <th>Name</th> <th>Address</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>None</td> </tr> <tr> <td>Y</td> <td>None</td> </tr> <tr> <td>Color</td> <td>None</td> </tr> <tr> <td>Connection</td> <td>None</td> </tr> <tr> <td>X Min.</td> <td>0</td> </tr> <tr> <td>X Max.</td> <td>100</td> </tr> <tr> <td>Y Min.</td> <td>0</td> </tr> <tr> <td>Y Max.</td> <td>100</td> </tr> </tbody> </table>	Name	Address	X	None	Y	None	Color	None	Connection	None	X Min.	0	X Max.	100	Y Min.	0	Y Max.	100
Name	Address																			
X	None																			
Y	None																			
Color	None																			
Connection	None																			
X Min.	0																			
X Max.	100																			
Y Min.	0																			
Y Max.	100																			

14

No.	Property	Function description
(14)	Line Weight	<p>The line width setting ranges from 1 to 8. This setting is only valid when the Constant of Connection is set 1 with the line displaying.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">Connection Constant = 1</div>  </div>
		<div style="display: flex; align-items: center;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">Connection Constant = 0</div>  </div>
(15)	Dot Size	<p>The Dot Size setting ranges from 1 to 8. When it is set to 5, the dot size is as follows.</p> 
(16)	Executed in background (if not the current screen)	<p>If you check this function, it means that X-Y Distribution can also execute sampling when on other screens. For example, assume that Screen 1 has a set X-Y Distribution and Screen 2 doesn't. When you check this function, if sampling is executing on Screen 2, but you switch the screen back to Screen 1, X-Y Distribution will continue to finish the sampling.</p> <p>Note: if you did not check Auto clear, be sure to set the Sample Flag to off after sampling on other screens is completed.</p>

■ Main-2



14

Figure 14.3.3 Main-2 property page for the X-Y Distribution element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When enabled, the element display becomes more delicate without jagged edges.

■ Coordinates

14

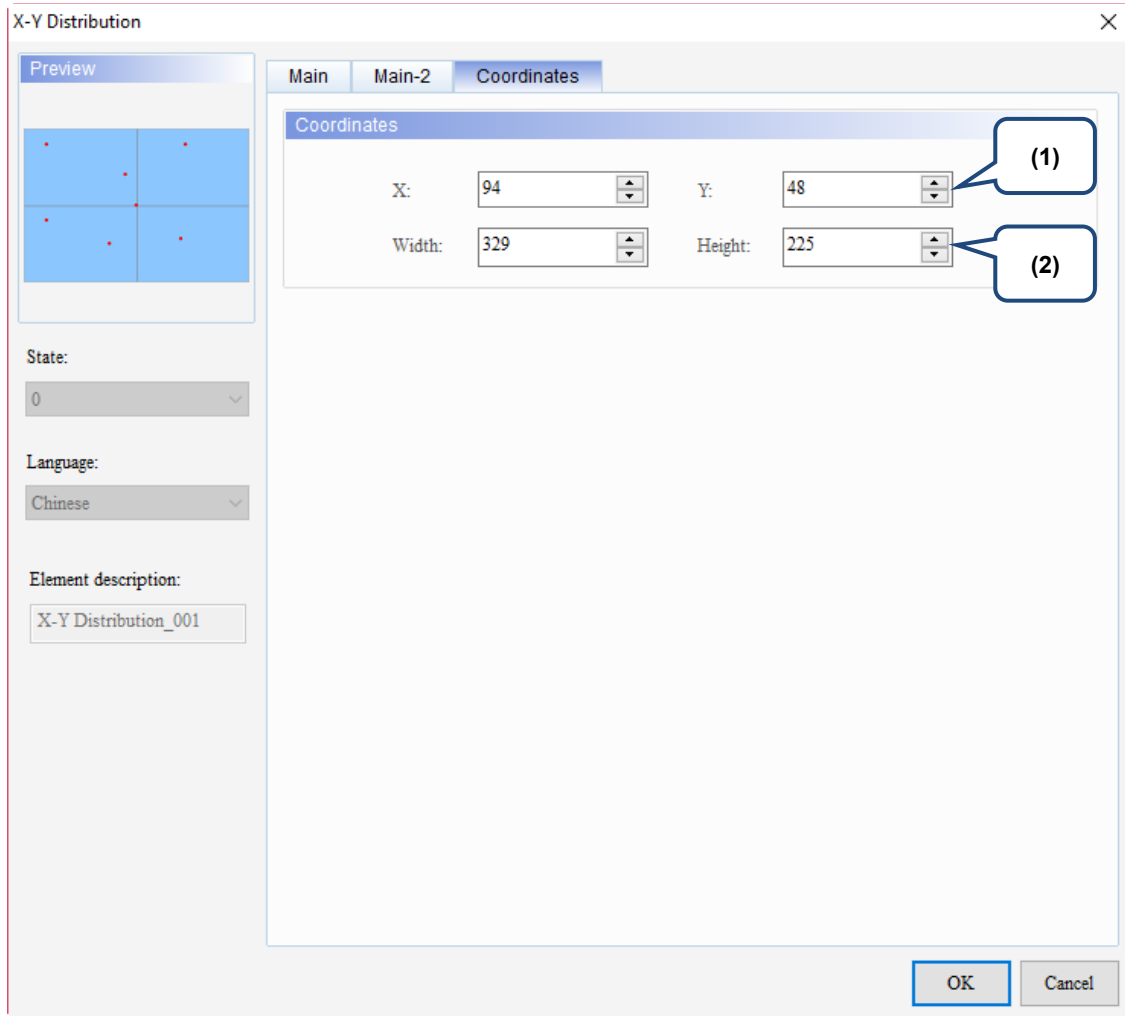


Figure 14.3.4 Coordinates property page for the X-Y Distribution element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

14.4 Curve Input

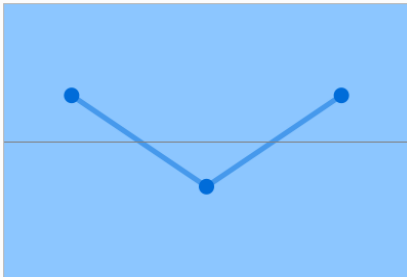
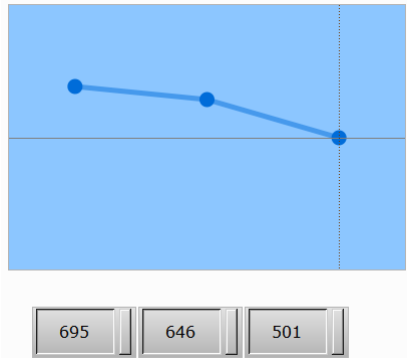
Curve Input draws curves according to the continuous sampling by the set Read Address.

You can also press the Curve Input element to move the curve to the required position.

Curve Input provides two Curve Style options with different effects: Broken line and Block graphs.

Please refer to Table 14.4.1 for the Curve Input example.

Table 14.4.1 Curve Input example

Curve Input											
Curve Input element	<p>Create a Curve Input element and set its parameters.</p> <table border="1"> <thead> <tr> <th colspan="2">Curve Input element</th> </tr> </thead> <tbody> <tr> <td>Address</td> <td>\$1058</td> </tr> <tr> <td>Sample Number</td> <td>3</td> </tr> <tr> <td>Curve Style</td> <td>Broken line</td> </tr> <tr> <td>Minimum / Maximum Line Weight / Line Color</td> <td> <div style="border: 1px solid gray; padding: 5px;"> <p>Curve</p> <p>Minimum <input type="text" value="0"/></p> <p>Maximum <input type="text" value="1000"/></p> <p>Line Weight <input type="text" value="5"/></p> <p>Line Color <input type="text" value="Blue"/></p> </div> </td> </tr> </tbody> </table> 	Curve Input element		Address	\$1058	Sample Number	3	Curve Style	Broken line	Minimum / Maximum Line Weight / Line Color	<div style="border: 1px solid gray; padding: 5px;"> <p>Curve</p> <p>Minimum <input type="text" value="0"/></p> <p>Maximum <input type="text" value="1000"/></p> <p>Line Weight <input type="text" value="5"/></p> <p>Line Color <input type="text" value="Blue"/></p> </div>
	Curve Input element										
Address	\$1058										
Sample Number	3										
Curve Style	Broken line										
Minimum / Maximum Line Weight / Line Color	<div style="border: 1px solid gray; padding: 5px;"> <p>Curve</p> <p>Minimum <input type="text" value="0"/></p> <p>Maximum <input type="text" value="1000"/></p> <p>Line Weight <input type="text" value="5"/></p> <p>Line Color <input type="text" value="Blue"/></p> </div>										
Numeric Entry element	<p>Create 3 Numeric Entry elements, as the Sample Number of the Curve Input is set to 3, meaning 3 sampling points are used to draw a curve. Then, the set Read Address \$1058 of the Curve Input starts reading 3 addresses in sequence, which are \$1058, \$1059, and \$1060 .</p> <table border="1"> <thead> <tr> <th colspan="4">Numeric Entry element</th> </tr> </thead> <tbody> <tr> <td>Write Address</td> <td>\$1058</td> <td>\$1059</td> <td>\$1060</td> </tr> </tbody> </table>	Numeric Entry element				Write Address	\$1058	\$1059	\$1060		
Numeric Entry element											
Write Address	\$1058	\$1059	\$1060								
Execution results	<p>After creating the elements, please compile and download the elements to the HMI. Next, use the Numeric Entry element to enter any value, then the Curve Input will draw the curve according to the input values. You can also press the Curve Input element to move the curve to the required position.</p> 										

14

When you double-click Curve Input, the property page is shown as follows.

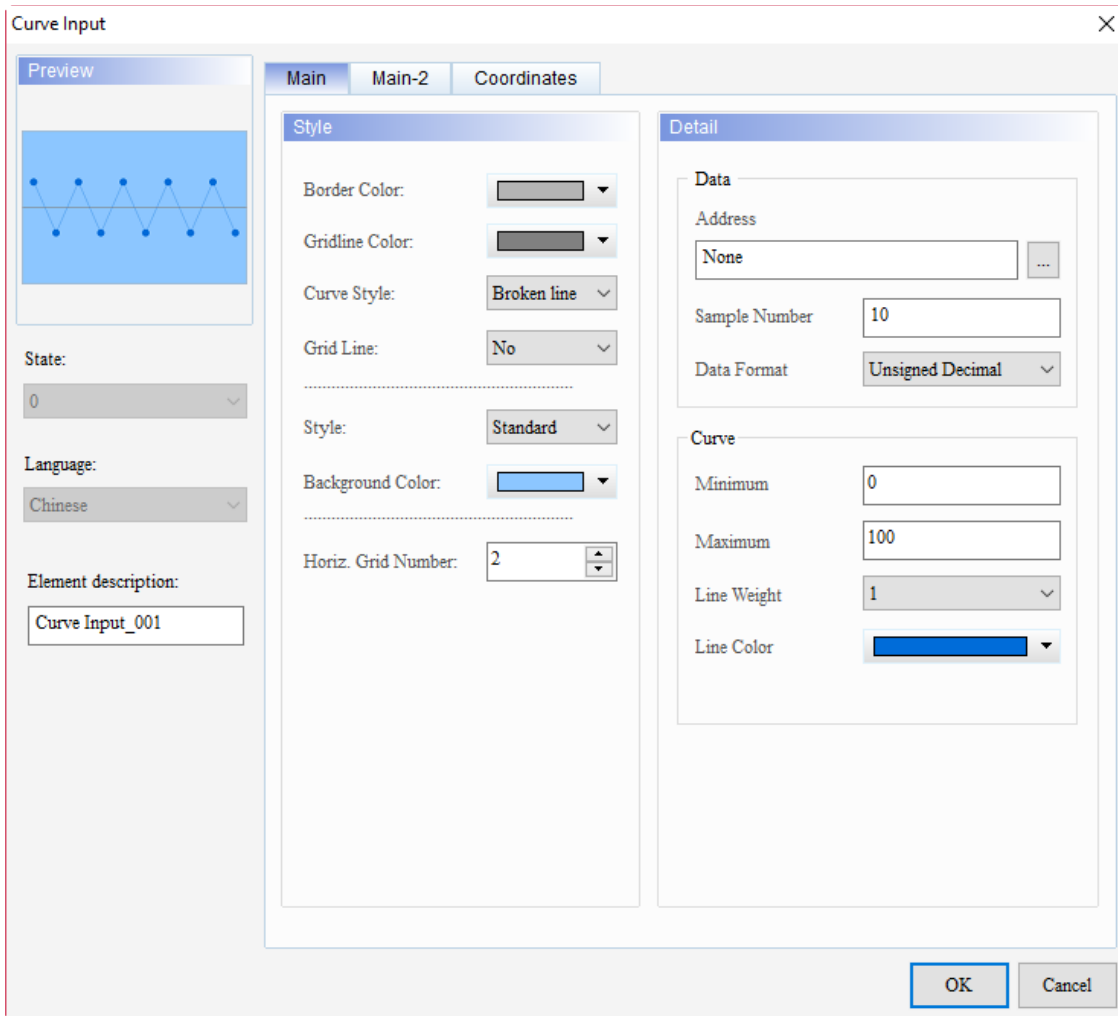
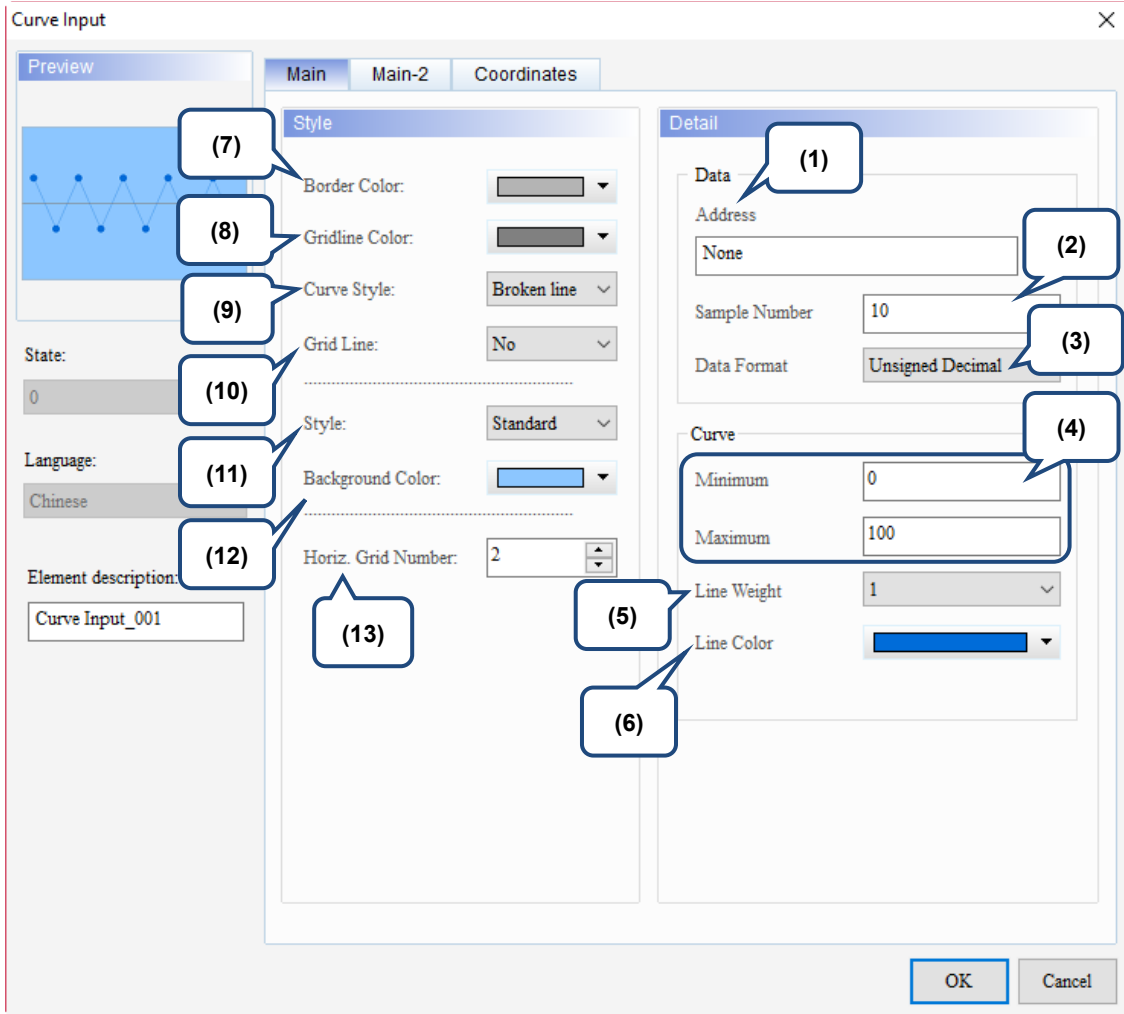


Figure 14.4.1 Properties of Curve Input

Table 14.4.2 Function page of Curve Input

Curve Input	
Function page	Description
Preview	Curve Input elements do not support multiple status values and multi-language data display.
Main	Set Address, Sample Number, Data Format, Sample Flag, Minimum, Maximum, Line Weight, and Line Color. Set Border Color, Gridline Color, Curve Style, Grid Line, Style and Background Color of the element, and Horiz. Grid Number.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

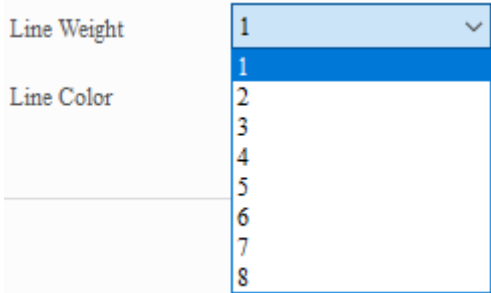
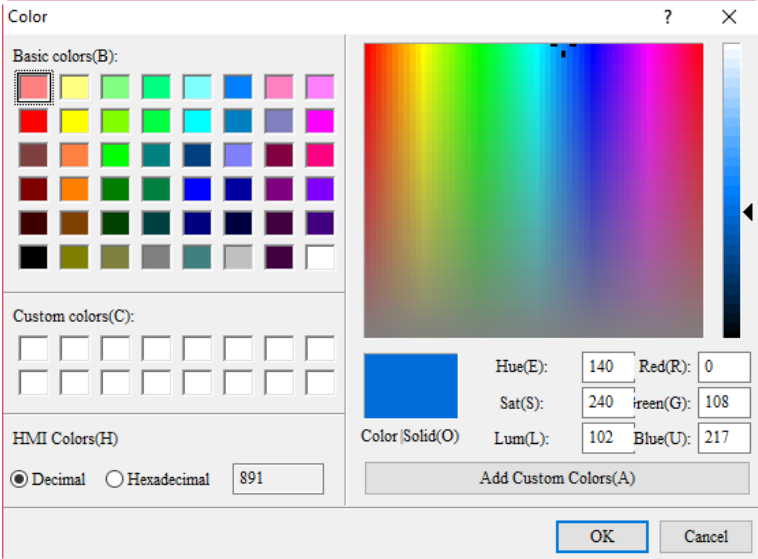
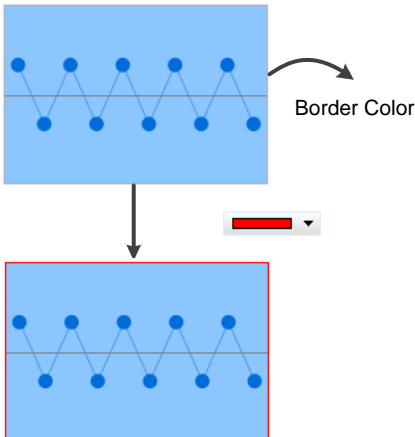


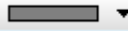
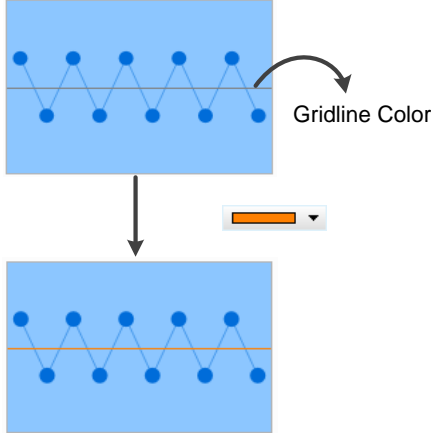
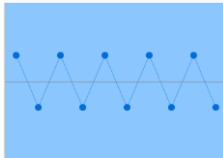
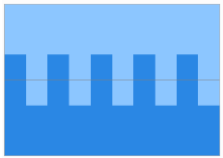
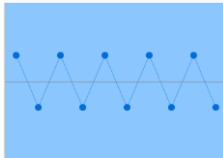
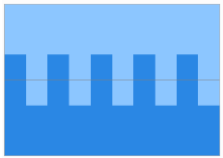
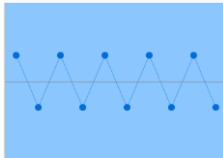
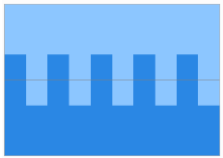
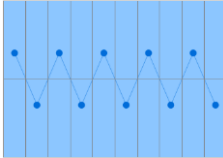

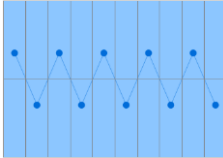

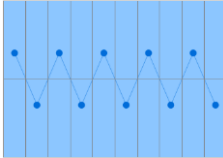


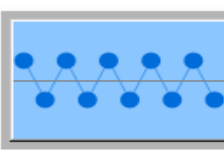
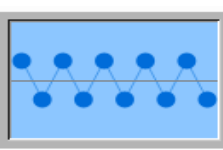

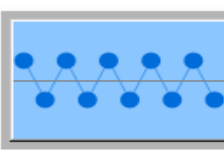
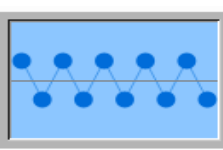

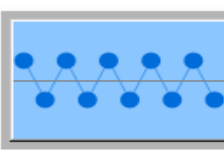
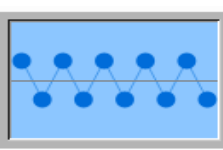
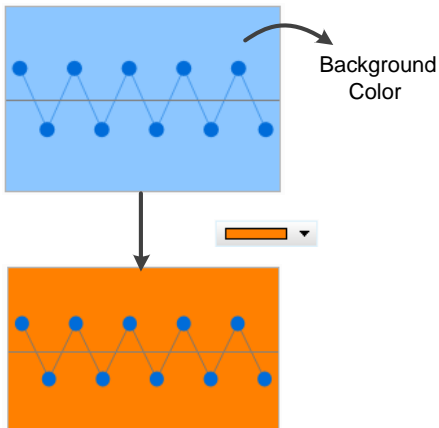
14

Figure 14.4.2 Main property page for the Curve Input element

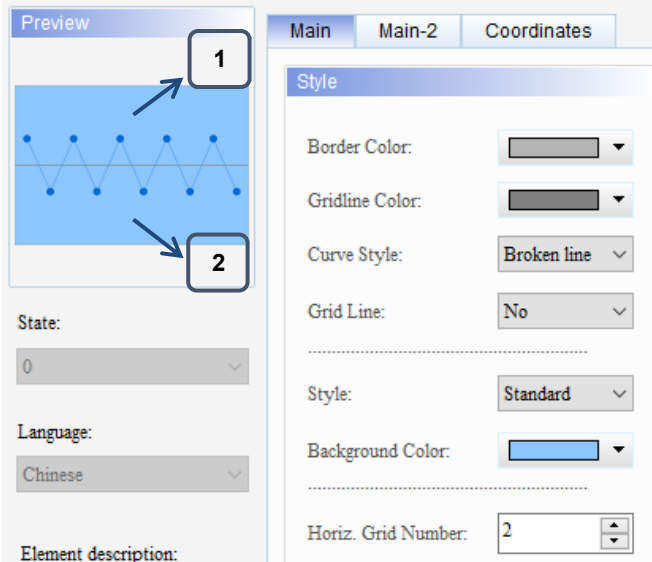
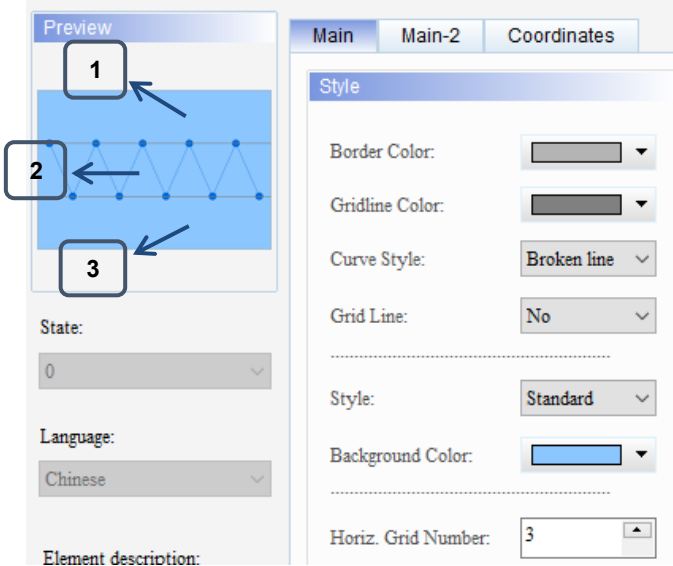
No.	Property	Function description
(1)	Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
(2)	Sample Number	<ul style="list-style-type: none"> The set value of sampling points must be a constant. The number of sampling points is determined by the element width and style. When you set the Style of the Curve Input element as Standard and its width as 167, then the maximum number of points that can be displayed is 167. But if you set the Style of the Curve Input element as Raise or Sunken (border width is 7 points) and its width as 167, then the maximum number of points that can be displayed is 153 (167 - (7*2) = 153).
(3)	Data Format	<p>Curve Input supports the following data formats:</p>

14

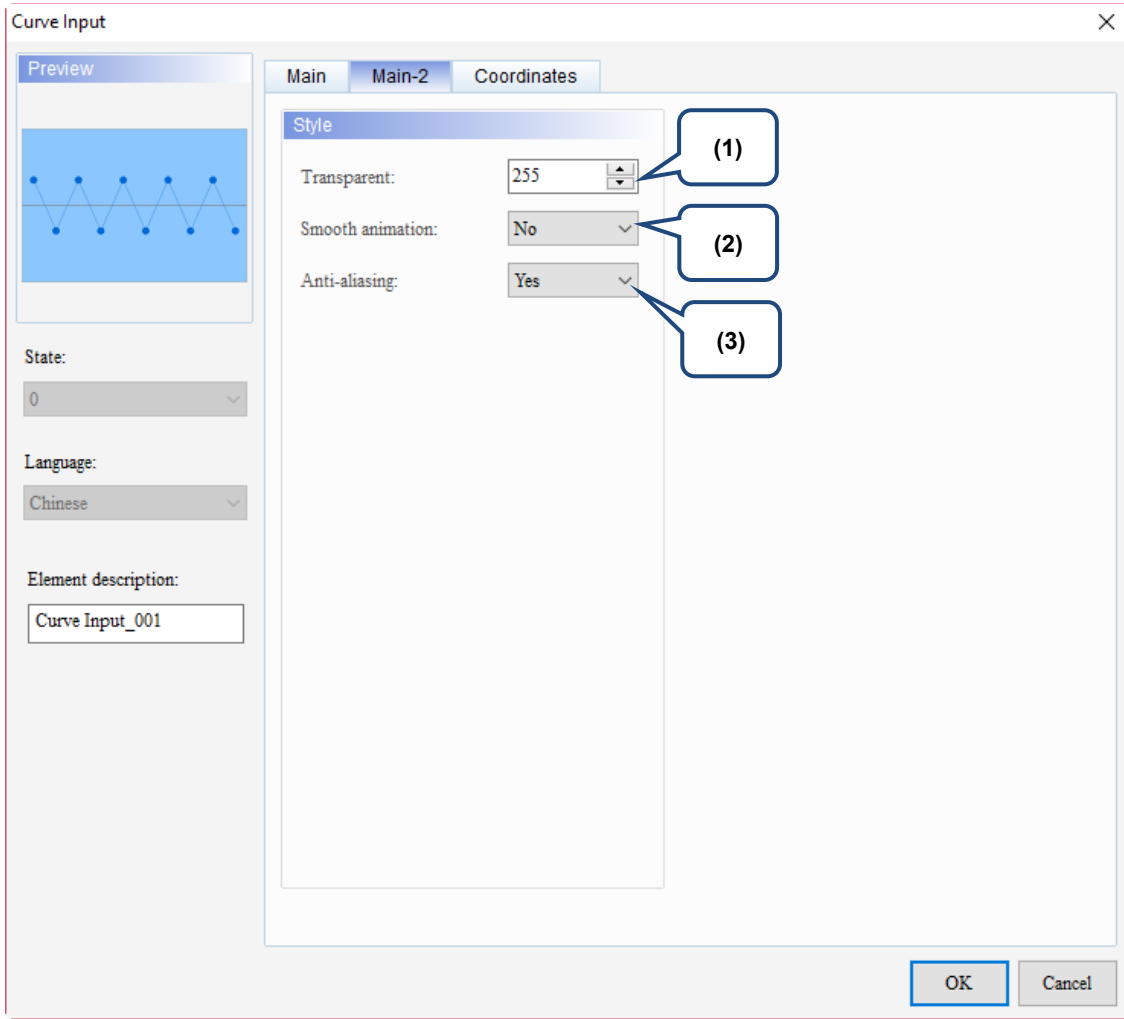
No.	Property	Function description																		
(4)	Minimum / Maximum	<p>The allowable ranges for the minimum and maximum values are subject to change based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td></td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td></td> <td>Signed BCD</td> <td>-999 to 9999</td> </tr> <tr> <td>Word</td> <td>Signed Decimal</td> <td>-32768 to 32767</td> </tr> <tr> <td></td> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td></td> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range		BCD	0 to 9999		Signed BCD	-999 to 9999	Word	Signed Decimal	-32768 to 32767		Unsigned Decimal	0 to 65535		Hex	0 to 0xFFFF
Data Type	Data Format	Allowable range																		
	BCD	0 to 9999																		
	Signed BCD	-999 to 9999																		
Word	Signed Decimal	-32768 to 32767																		
	Unsigned Decimal	0 to 65535																		
	Hex	0 to 0xFFFF																		
(5)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 																		
(6)	Line Color	<p>You can set the line color for the curve.</p> 																		
(7)	Border Color	<p>Set the Border Color of the Curve Input element.</p> 																		

No.	Property	Function description						
(8)	Gridline Color	<ul style="list-style-type: none"> The Gridline Color is the color of the grid line in the Curve Input. The default is . You can change the color of the grid line. 						
(9)	Curve Style	<p>There are two Curve Style options: Broken line and Block graphs.</p> <table border="1"> <thead> <tr> <th>Broken line</th> <th>Block graphs</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Broken line	Block graphs				
Broken line	Block graphs							
								
(10)	Grid Line	<p>You can select Yes or No for Grid Line.</p> <table border="1"> <thead> <tr> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Yes	No				
Yes	No							
								
(11)	Style	<p>You can change the appearance of the element with this setting. There are three types of element styles:</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Raised	Sunken			
Standard	Raised	Sunken						
								
(12)	Background Color	<p>Set the background color of the element.</p> 						

14

No.	Property	Function description
(13)	Horiz. Grid Number	<ul style="list-style-type: none"> ■ The maximum horizontal grid count is 50. ■ Horiz. Grid Number is for separating the blocks in the Curve Input element. The default is 2, meaning there is one grid line separating the Curve Input element into two blocks. If the Horiz. Grid Number is set to 3, there are two grid lines separating the Curve Input element into 3 blocks, and so on. <p>Curve Input</p>  <p>Curve Input</p> 

■ Main-2



14

Figure 14.4.3 Main-2 property page for the Curve Input element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When enabled, the curve motion is smoother.
(3)	Anti-aliasing	Use the anti-aliasing function for this element. When enabled, the element display becomes more delicate without jagged edges.

■ Coordinates

14

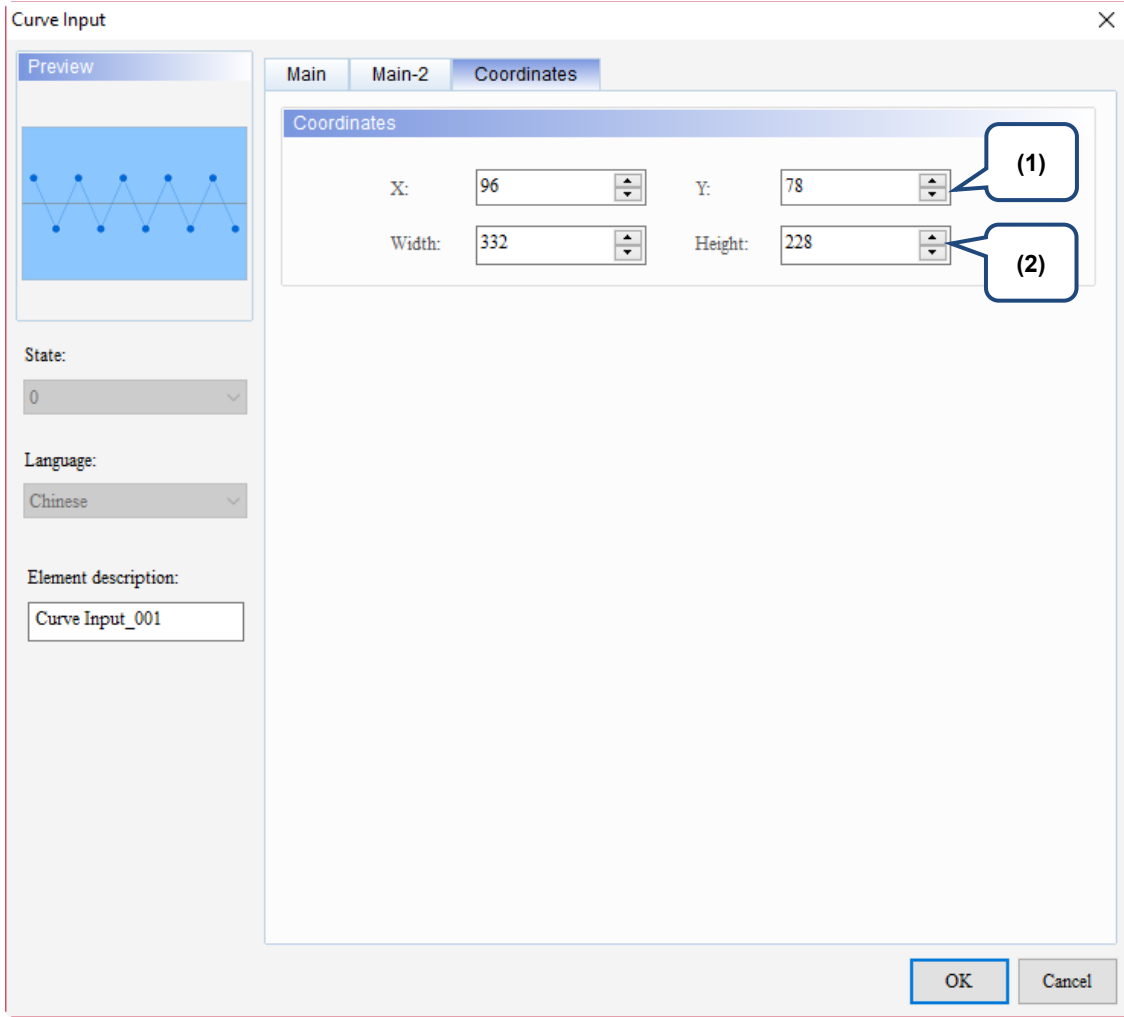


Figure 14.4.4 Coordinates property page for the Curve Input element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

Sampling

15

This chapter introduces the sampling function of the history data and provides the usage and setting details.

15.1	History Buffer	15-2
15.2	Historical Trend Graph	15-40
15.3	Historical Data Table	15-62
15.4	Historical Event Table.....	15-78
15.5	Historical Overview Table.....	15-90
15.6	Operation Log Table	15-113

15

15.1 History Buffer

Before introducing the elements relevant to the sampling function, this chapter will first explain how to use the functions in the History Buffer Setup. The History Buffer Setup is mainly used to define the relevant properties when setting the sampling function elements, such as read address, length of the data type, sampling points, trigger source, whether to record the time and date, whether to store the data in an external device or export as a CSV file, etc.

The formula provided by the software computes all the History Buffer relevant data edited by the users. Then, the set non-volatile memory saves these computation results. If the data is saved in the HMI, the History Buffer size is subject to change based on the HMI model. Please refer to the specifications for non-volatile memory in the HMI installation manual. For data saved in the USB Disk or SD Card, the History Buffer size is determined by the external storage devices.

When you download the history data to the HMI, two log files are generated: DAT and CSV.

1. DAT file formulas

Each history data is stored as a Hxxxx.dat file. xxxx indicates the sequence number of the history data record. Each .dat file uses the file size below.

$$\frac{\{6 \text{ Bytes}(a) + 2 \text{ Bytes}(b)\} \times N(c)}{1024 \times 1024} = \text{Actual file size MBytes}$$

a: time / date data

b: data type

c: sample number

Additional history data will occupy the file header.

$$\{8 \text{ Bytes}(a)\} \times N(b) = \text{Actual file size Bytes}$$

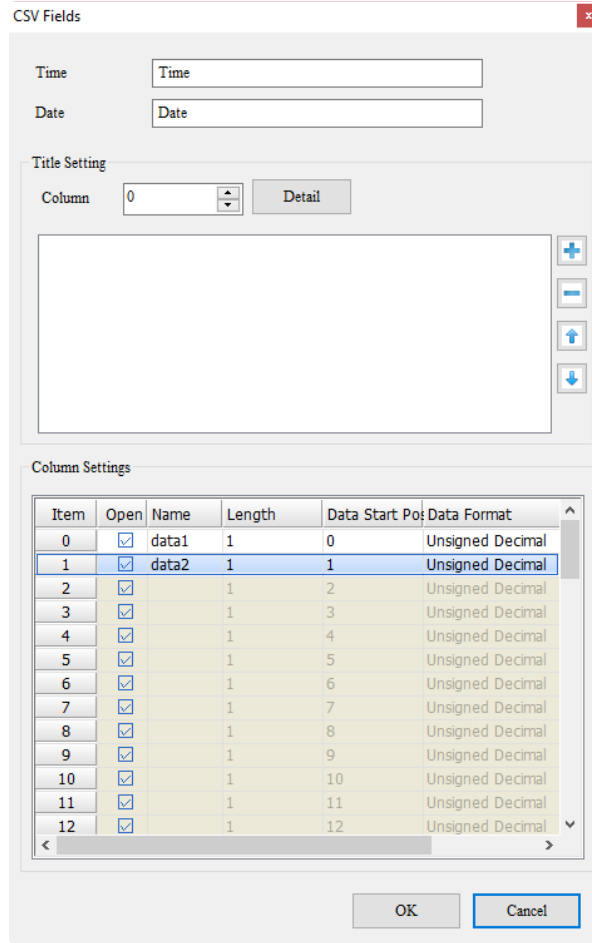
a: file header of each history data

b: sample number

2. CSV file formulas

The CSV file calculation method is by dynamic configuration, which is calculated based on each character counted as 2 bytes. Each item must be separated by a comma (,) and the comma is also 2 bytes. At the end of each row, a total of 4 bytes for the newline command, 0x0D and 0x0A, is also included. The following describes how to calculate the CSV file size.

■ Title



Here are two examples of how to calculate the data size of the title:

1. Each character is counted as 2 bytes (characters*2 bytes)

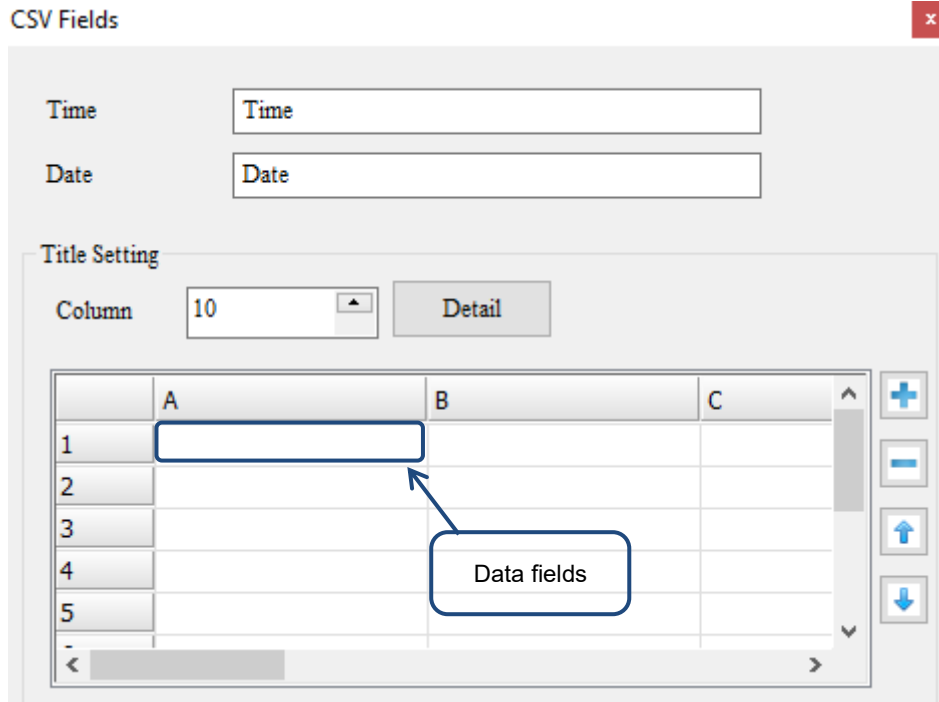
File header	Time column setting	Separator	Date column setting	Separator	Data column setting	Newline command
	Time	,	Date	,	Data1	
2 bytes	8 bytes	2 bytes	8 bytes	2 bytes	10 bytes	4 bytes
Total 36 bytes						

2. Each character is counted as 2 bytes (characters*2 bytes)

File header	Time column setting	Separator	Date column setting	Separator	Data column setting	Data column setting	Newline command
	Time	,	Date	,	Data1	Data2	
2 bytes	8 bytes	2 bytes	8 bytes	2 bytes	10 bytes	10 bytes	4 bytes
Total 46 bytes							

15

■ Field column



CSV field supports up to 10 columns and 10 rows.

Each data field supports up to 128 bytes and each character counts as 2 bytes.

Each character is counted as 2 bytes (characters*2 bytes). Column*row = 2*2.

A1 setting	Separator	B1 setting	Separator	A2 setting	Separator	B2 setting	Newline command
123	,	Delta	,	abc	,	QWE	
6 bytes	2 bytes	10 bytes	2 bytes	6 bytes	2 bytes	6 bytes	4 bytes
Total 38 bytes							

■ Data row

15

Buffer Properties

Sampling

Address: \$1

Read Length (Word): 2

Sample Number: 10

Enable active bit: None

Trigger: Timer

Sampling Cycle (ms): 100

Custom Cycle (ms): None

Stamp Time and Date:

Time Format: hh:mm:ss

Date Format: mm/dd/yy

File Output

Non-volatile: USB Disk

Auto Stop:

Export CSV File: Field Name

Save As Single: File Name: H0001

Save As Multi: File Date: %y %m %d, File Time: %H %M %S, File Name: H0001, Saving trigger: None

OK Cancel

CSV Fields

Time: Time

Date: Date

Title Setting: Column: 0, Detail

Column Settings

Length	Data Start Pos	Data Format	Integer di	Fractional
1	0	Unsigned Decimal	5	0
1	1	Unsigned Decimal	5	0
1	2	Unsigned Decimal	5	0
1	3	Unsigned Decimal	5	0
1	4	Unsigned Decimal	5	0
1	5	Unsigned Decimal	5	0
1	6	Unsigned Decimal	5	0
1	7	Unsigned Decimal	5	0
1	8	Unsigned Decimal	5	0
1	9	Unsigned Decimal	5	0
1	10	Unsigned Decimal	5	0
1	11	Unsigned Decimal	5	0
1	12	Unsigned Decimal	5	0

OK Cancel

15

Here are three examples of how to calculate the data size of the data row:

1. Each character is counted as 2 bytes (characters*2 bytes)

Time Format setting	Separator	Date Format setting	Separator	Integer digits setting	Fractional digits setting	Newline command
hh:mm:ss	,	mm/dd/yyyy	,	5	0	
16 bytes	2 bytes	20 bytes	2 bytes	10 bytes	0 bytes	4 bytes
Total 54 bytes						

2. Each character is counted as 2 bytes (characters*2 bytes)

Time Format setting	Separator	Date Format setting	Separator	Integer digits setting	Fractional digits setting	Newline command
hh:mm	,	mm.dd	,	4	1	
10 bytes	2 bytes	10 bytes	2 bytes	8 bytes	2 bytes	4 bytes
Total 38 bytes						

3. Each character is counted as 2 bytes (characters*2 bytes)

Time Format setting	Separator	Date Format setting	Separator	Data 1		Data 2		Newline command
				Integer digits setting	Fractional digits setting	Integer digits setting	Fractional digits setting	
N/A	,	N/A	,	4	1	3	2	
0 bytes	2 bytes	0 bytes	2 bytes	8 bytes	2 bytes	6 bytes	4 bytes	4 bytes
Total 28 bytes								

Each data size of the above data row must multiply by the Sample Number N(a).

Therefore, Title + Field column + Data row*Sample Number N(a) is the CSV file size exported by History.

The formula is as follows:

$$\frac{\text{Title data size Bytes} + \text{Field column size Bytes} + \text{Data row size Bytes} \times N(a)}{1024 \times 1024} = \text{Actual file size MBytes}$$

a: Sample Number

This chapter will introduce all element examples that the sampling function uses, including History Buffer Setup, Historical Trend Graph, Historical Data Table, and Historical Event Table.

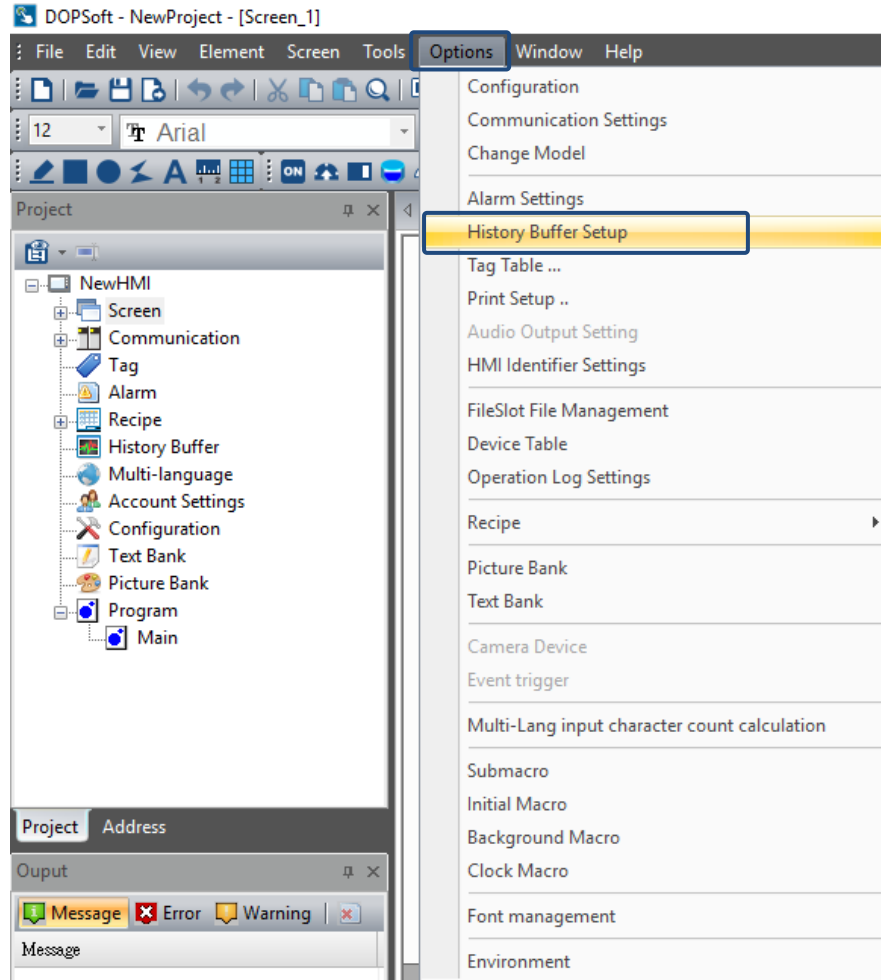
Please refer to Table 15.1.1 for the History Buffer Setup example.


Table 15.1.1 History Buffer Setup example

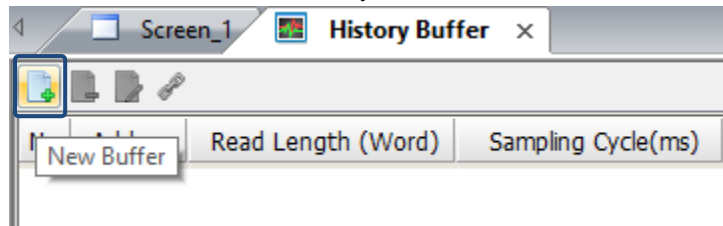
History Buffer Setup

Step 1: go to [Options] > [History Buffer Setup] to set up the properties of the history data.

History Buffer Setup steps



Step 2: press  to add data to the History Buffer.



15

History Buffer Setup steps

History Buffer Setup

Step 3: please set the buffer properties as follows.

Buffer Properties

Sampling

Address: \$0

Read Length (Word): 1

Sample Number: 100

File Output

Non-volatile: HMI

Auto Stop

Export CSV File: Field Name

CSV Fields

Time: Time

Date: Date

Title Setting

Column: 0

Detail

Column Settings

Item	Open	Name	Length	Data Start Po	Data Format
0	<input checked="" type="checkbox"/>	Data0	1	0	Unsigned Decimal
1	<input checked="" type="checkbox"/>		1	1	Unsigned Decimal

Step 4: after the above setting is complete, you can see a new row for the set data is created in the History Buffer.

Screen_1 History Buffer

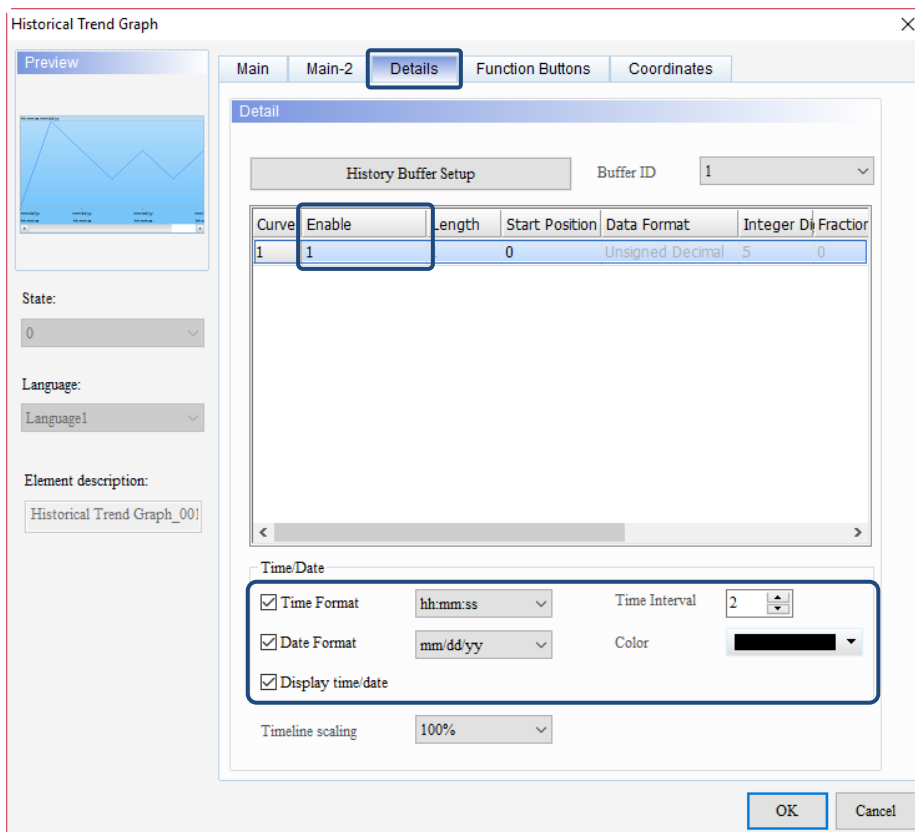
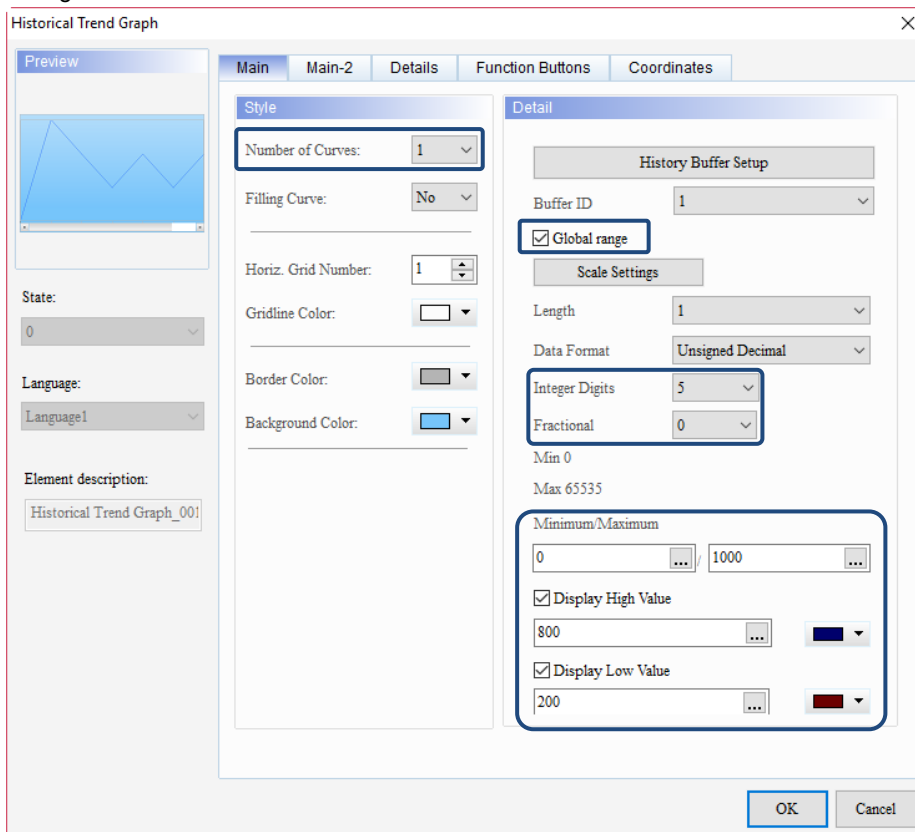
No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source
1	\$0	1	100	100	Timer

History Buffer Setup

Step 5: create a Historical Trend Graph element and set the properties, such as the display for the time and date, displaying integer and fractional digits, and whether or not to use the Global range. Then, go to the Details page to set Curve 1 to 1 to enable the reading of this data.

15

History Buffer Setup steps



15

History Buffer Setup steps

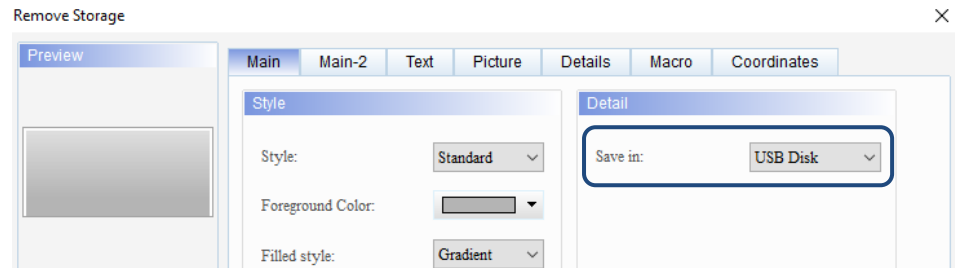
History Buffer Setup

Step 6: go to [Options] > [Clock Macro] and edit the macro command to allow auto increment of \$0.

```

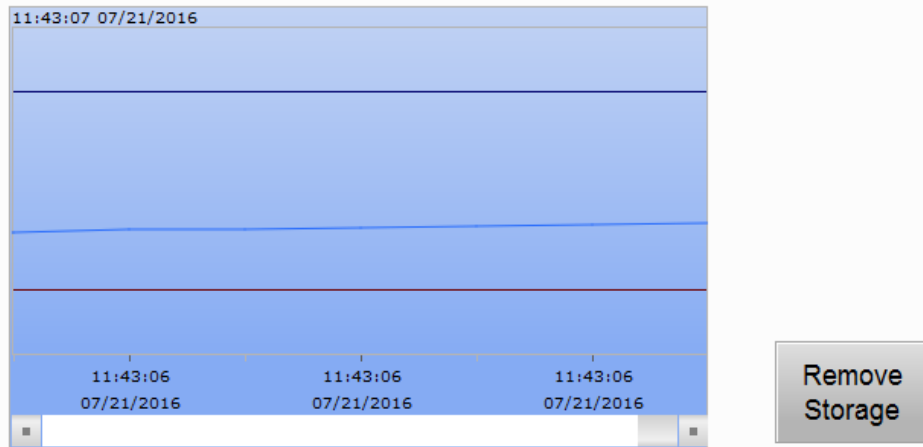
* [&Clock Macro]
1 $0 = $0 + 3
2 If $0 > 1000
3 $0 = 0
4 ENDIF
    
```

Step 7: create a Remove Storage button and select USB Disk for the Save in setting. This ensures that the data is correctly written to the USB Disk. If you do not safely eject the USB Disk before removing it, this may cause data read and write errors leading to the corruption of the saved file.

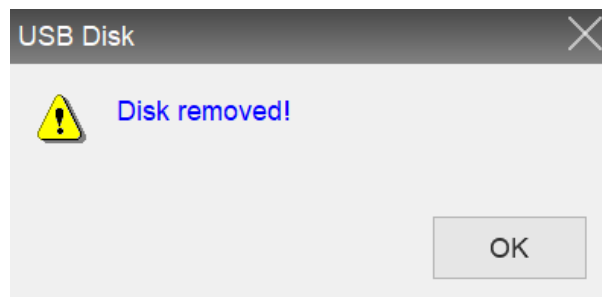


- After completing the setting for the History Buffer Setup and Historical Trend Graph and creating the Remove Storage element, please compile and download the elements to the HMI. The non-volatile memory setting in this example is the USB Disk, so when the HMI reads the screen, the data of H.had and Delta.dat will be generated and stored in the USB Disk. Then, the History Buffer will execute the command in the Clock Macro to change the data, and continue to store the data in the CSV file to the USB Disk. To stop saving the data, press Remove Storage button to remove the external device for ensuring the data is saved correctly.

Execution results



- Press Remove Storage button and the following message appears to inform users that the USB Disk is removed.



History Buffer Setup

You can insert the USB Disk to the PC to read the CSV file and make sure that the data and file name are correct. The file name in this example is Delta and the path to save all CSV files is HMI\HMI-000\CSV\History\xxxxx.CSV.

Execution results

	A	B	C
1	TIME	DATE	Data0
2	11:40:57	07/21/2016	867
3	11:40:57	07/21/2016	870
4	11:40:58	07/21/2016	873
5	11:40:58	07/21/2016	876
6	11:40:58	07/21/2016	879
7	11:40:58	07/21/2016	882
8	11:40:58	07/21/2016	885
9	11:40:58	07/21/2016	888
10	11:40:58	07/21/2016	891
11	11:40:58	07/21/2016	894
12	11:40:58	07/21/2016	897
13	11:40:58	07/21/2016	900
14	11:40:59	07/21/2016	903
15	11:40:59	07/21/2016	906
16	11:40:59	07/21/2016	909
17	11:40:59	07/21/2016	915
18	11:40:59	07/21/2016	918
19	11:40:59	07/21/2016	921
20	11:40:59	07/21/2016	924
21	11:40:59	07/21/2016	927
22	11:40:59	07/21/2016	930
23	11:40:59	07/21/2016	933
24	11:41:00	07/21/2016	936
25	11:41:00	07/21/2016	939
26	11:41:00	07/21/2016	942
27	11:41:00	07/21/2016	945
28	11:41:00	07/21/2016	948
29	11:41:00	07/21/2016	951
30	11:41:00	07/21/2016	954
31	11:41:00	07/21/2016	957
32	11:41:00	07/21/2016	960

15

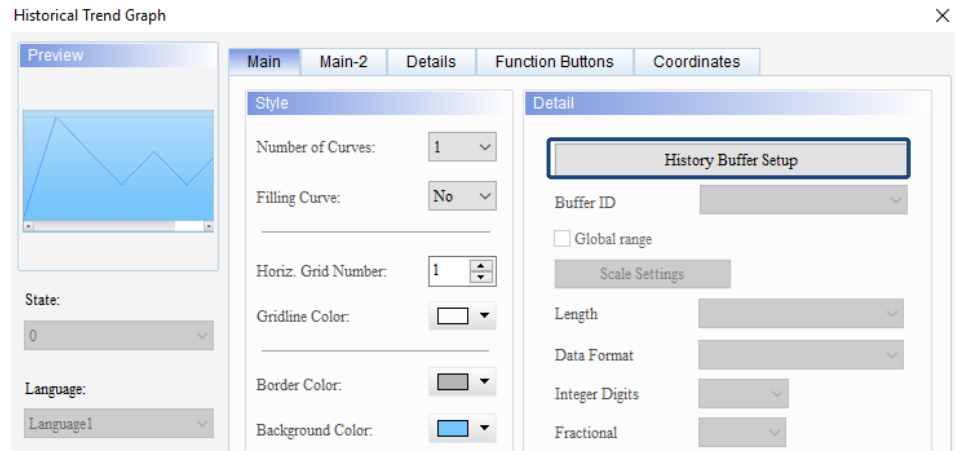
Please refer to Table 15.1.2 for the Historical Trend Graph example.


Table 15.1.2 Historical Trend Graph example

15

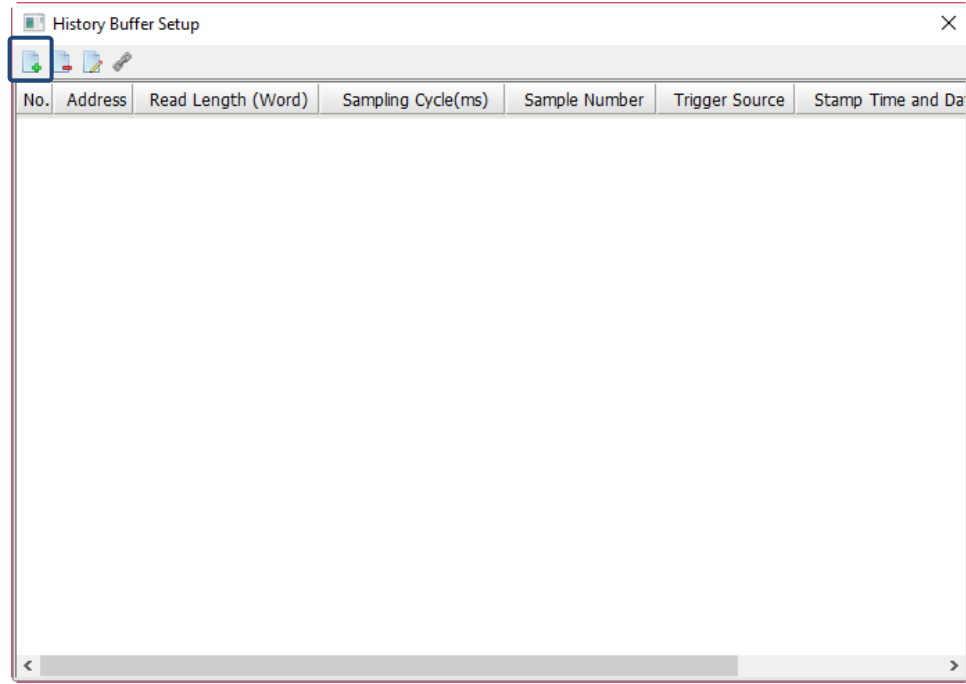
Historical Trend Graph

Step 1: double-click the Historical Trend Graph element and press **History Buffer Setup** to set the parameters.



Step 2: press  to add new history data.

Create Historical Trend Graph element



Historical Trend Graph

Step 3: set Address to \$3765, Read Length (Word) to 2, Sample Number to 100, and check Stamp Time and Date. Use the default H0001 as the File Name, select USB Disk as the Non-volatile memory, check Export CSV File, and set the Field Name. Then, select Timer for Trigger.

Create Historical Trend Graph element

Buffer Properties

Sampling

File Output

Address: \$3765

Read Length (Word): 2

Sample Number: 100

Trigger: Timer

Stamp Time and Date: [checked]

Time Format: hh:mm:ss

Date Format: mm/dd/yy

Export CSV File: [checked]

Field Name

CSV Fields

Time: Time

Date: Date

Column Settings

Item	Open	Name	Length	Data Start Po	Data Format
0	[checked]	data0	1	0	Unsigned Decimal
1	[checked]	data1	1	1	Unsigned Decimal

Step 4: after the above setting is complete, you can see a new row for the set data is created in the History Buffer.

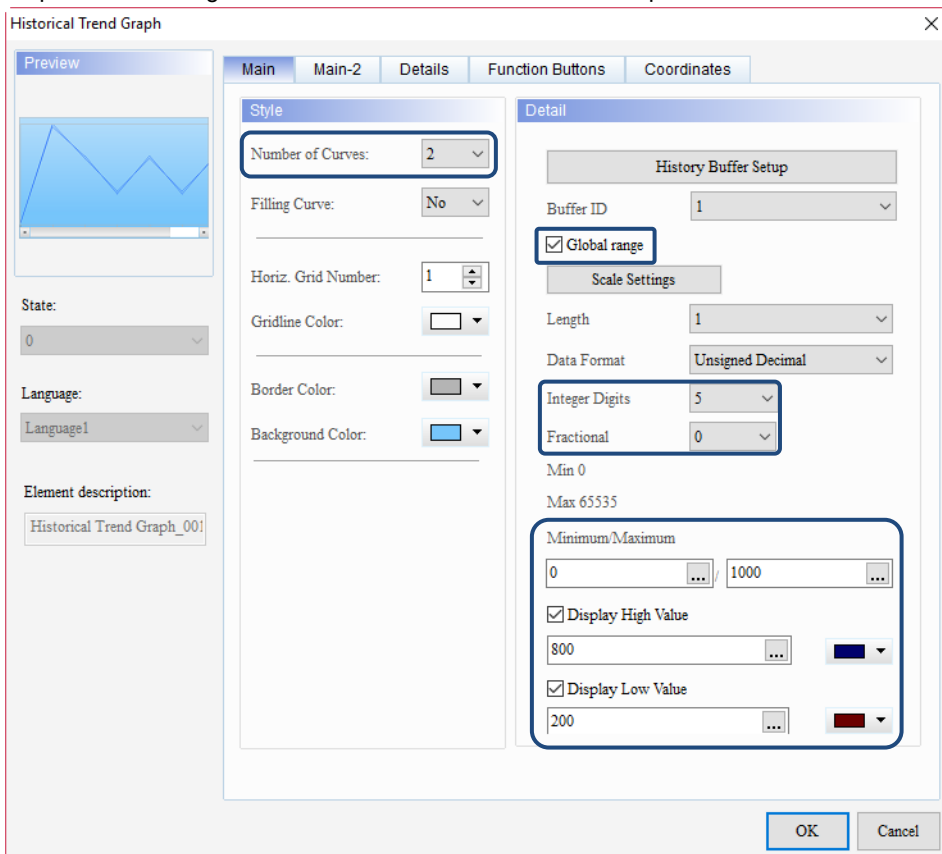
History Buffer Setup

No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source
1	\$3765	2	100	100	Timer

15

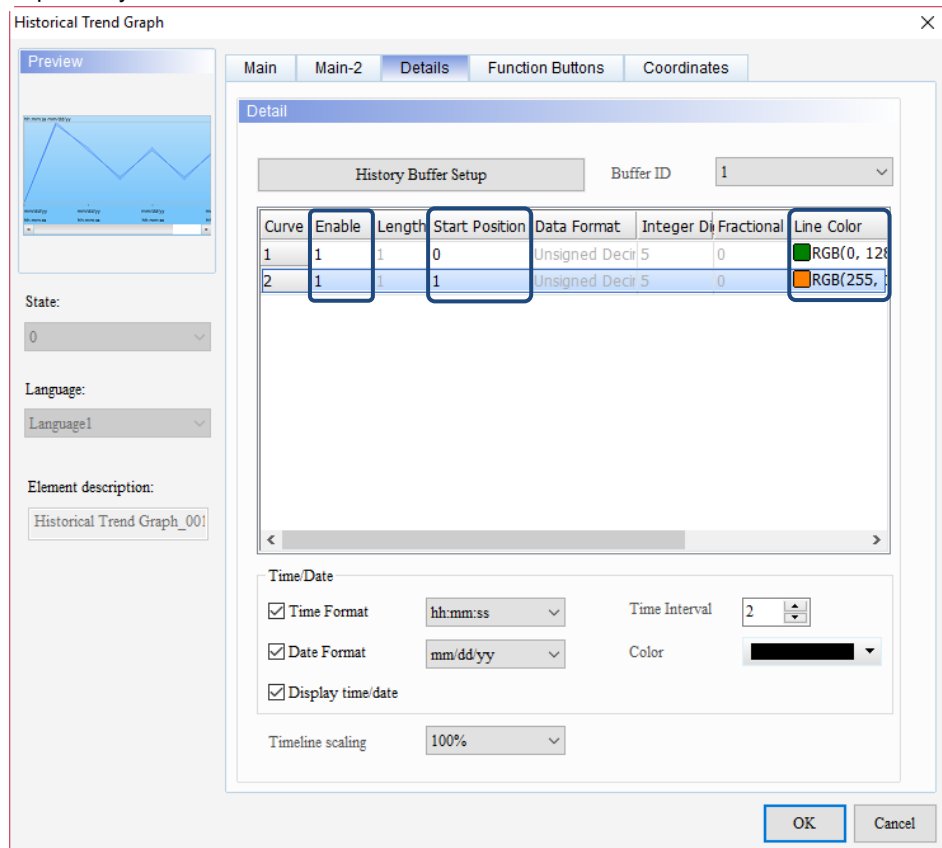
Historical Trend Graph

Step 5: follow the figure below to set the Historical Trend Graph.



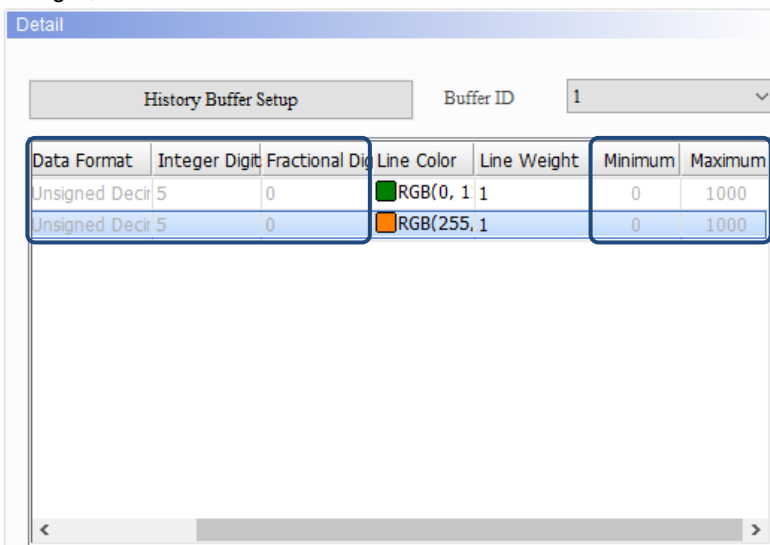
Create Historical Trend Graph element

Go to the Details page to set the Enable field as 1 to enable the data reading of the curves, and set the Start Positions of the data for Curve 1 and Curve 2 to 0 and 1 respectively.



Historical Trend Graph

Since Global range is checked, you will not be able to set the Data Format, Integer Digits, Fractional Digits, and Minimum / Maximum values for each curve.



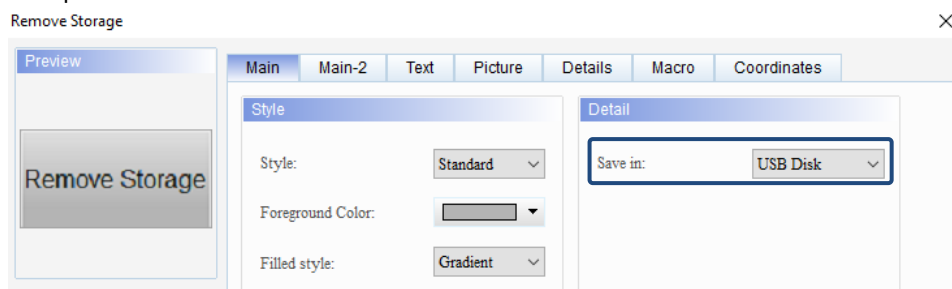
Step 6: go to [Options] > [Clock Macro] to edit the macro program to change the data in the History Buffer, and save the data in the USB Disk. Since the Read Length is set to read two words, there will be two data locations available for access. Thus, in addition to the originally set \$3765 read address, there will be a \$3766 data address in the macro as well.

Create Historical Trend Graph element

```

*[*&Clock Macro]
1 $3765 = $3765 + 3
2 If $3765 > 1000
3 $3765 = 0
4 ENDIF
5
6 $3766 = $3766 + 6
7 If $3766 > 1000
8 $3766 = 0
9 ENDIF
    
```

Step 7: create a Remove Storage button and select USB Disk for the Save in setting. This ensures that the data is correctly written to the USB Disk. If you do not safely eject the USB Disk before removing it, this may cause data read and write errors leading to the corruption of the saved file.

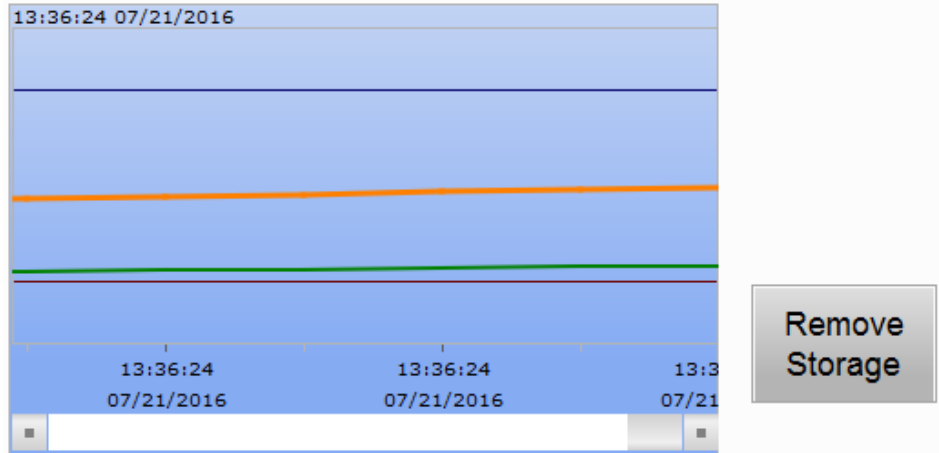


15

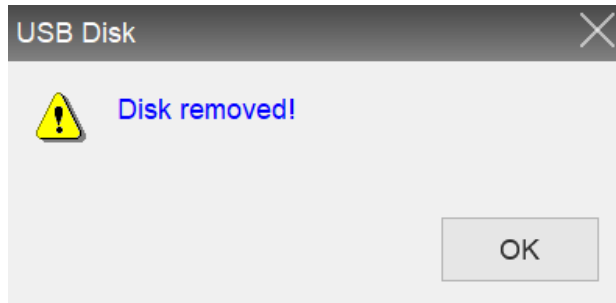
Historical Trend Graph

Execution results

- After completing the setting for the History Buffer and creating the Remove Storage element, please compile and download the elements to the HMI. The non-volatile memory setting in this example is the USB Disk, so when the HMI reads the screen, the data of H.had and H0001.dat will be generated and stored in the USB Disk. Then, the History Buffer will execute the command in the Clock Macro to change the data, and continue to store the data in the CSV file to the USB Disk. To stop saving the data, press Remove Storage button to remove the external device for ensuring the data is saved correctly.



- Press Remove Storage button and the following message appears to inform users that the USB Disk is removed.



Historical Trend Graph

You can insert the USB Disk to the PC to read the CSV file and make sure that the data and file name are correct. The file name in this example is H0001 and the path to save all CSV files is HMI\HMI-000\CSV\ with the file name and file extension of .CSV.

Execution results

	A	B	C	D
1	TIME	DATE	data0	data1
2	13:37:29	07/21/2016	723	444
3	13:37:29	07/21/2016	726	450
4	13:37:29	07/21/2016	729	456
5	13:37:29	07/21/2016	732	462
6	13:37:29	07/21/2016	735	468
7	13:37:30	07/21/2016	738	474
8	13:37:30	07/21/2016	741	480
9	13:37:30	07/21/2016	744	486
10	13:37:30	07/21/2016	747	492
11	13:37:30	07/21/2016	750	498
12	13:37:30	07/21/2016	753	504
13	13:37:30	07/21/2016	756	510
14	13:37:30	07/21/2016	759	516
15	13:37:30	07/21/2016	762	522
16	13:37:30	07/21/2016	765	528
17	13:37:31	07/21/2016	768	534
18	13:37:31	07/21/2016	771	540
19	13:37:31	07/21/2016	774	546
20	13:37:31	07/21/2016	777	552
21	13:37:31	07/21/2016	780	558
22	13:37:31	07/21/2016	783	564
23	13:37:31	07/21/2016	786	570
24	13:37:31	07/21/2016	789	576
25	13:37:31	07/21/2016	792	582
26	13:37:31	07/21/2016	795	588
27	13:37:32	07/21/2016	798	594
28	13:37:32	07/21/2016	801	600
29	13:37:32	07/21/2016	804	606
30	13:37:32	07/21/2016	807	612
31	13:37:32	07/21/2016	810	618
32	13:37:32	07/21/2016	813	624
33	13:37:32	07/21/2016	816	630
34	13:37:32	07/21/2016	819	636
35	13:37:32	07/21/2016	822	642

15

Please refer to Table 15.1.3 for the Historical Data Table example.

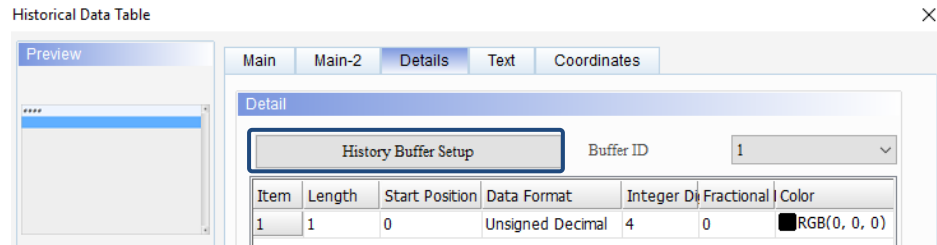
Table 15.1.3 Historical Data Table example

15

Historical Data Table

Historical Data Table should be used with Historical Trend Graph, so you may also refer to Table 15.1.2 Historical Trend Graph example. Use the created Historical Trend Graph and then execute the following setup procedures.

Step 1: double-click the Historical Data Table element and press **History Buffer Setup**, then you can see the data created in the Historical Trend Graph example in Table 15.1.2.

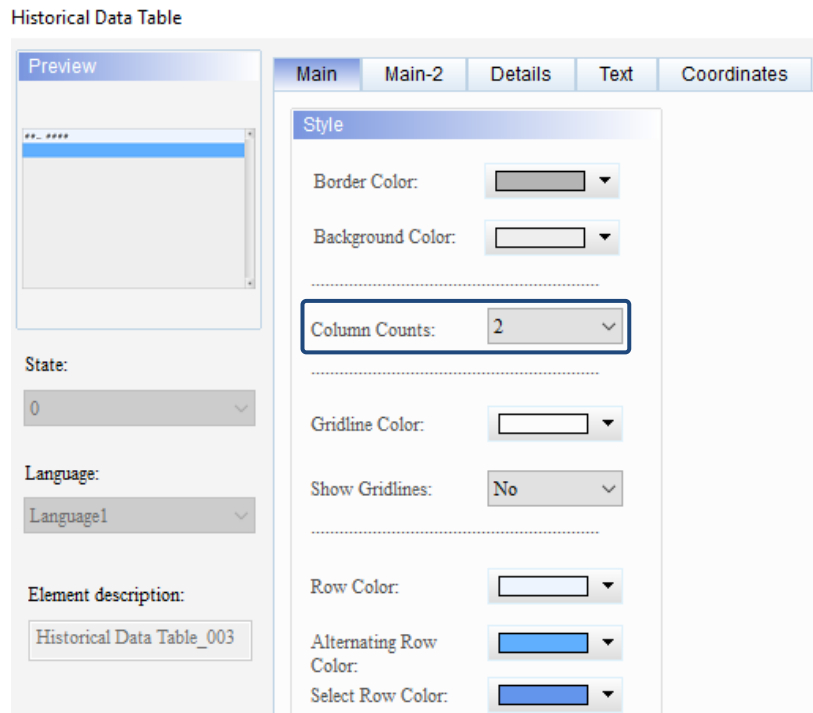


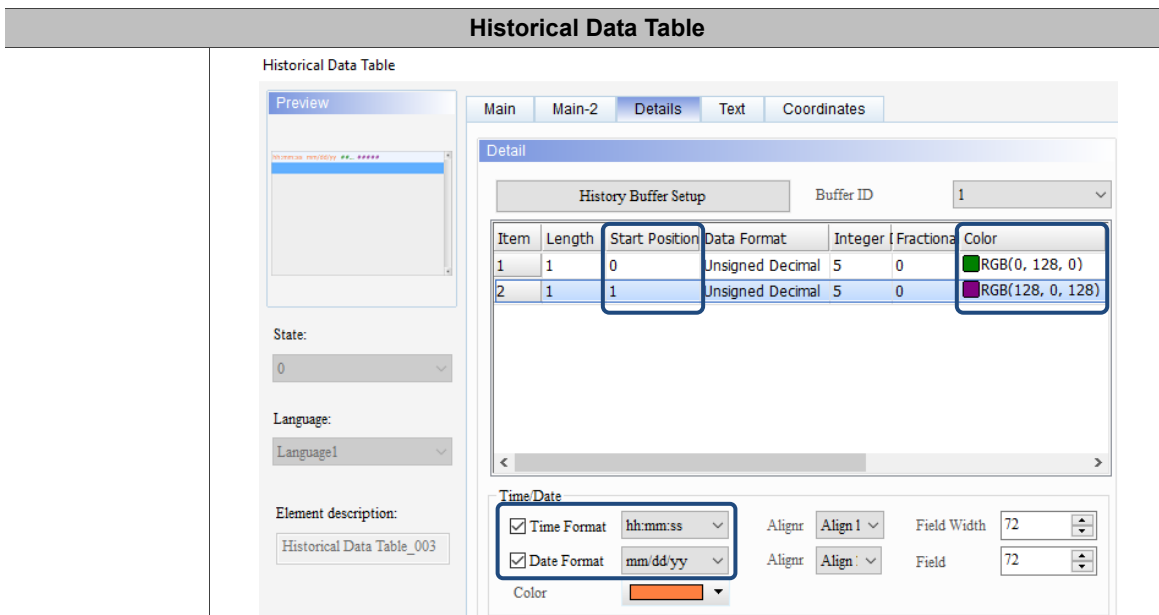
History Buffer Setup

No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source
1	\$3765	2	100	100	Timer

Step 2: set Column Counts to 2 (corresponding to the set Read Length of 2 words in the History Buffer). When Column Counts is 2, you will need to set the relevant parameters for Data 1 and Data 2. Set the Start Positions of the data for Data 1 and Data 2 to 0 and 1 respectively, set the displaying color for the values, and check Time Format and Date Format to display the time and date.

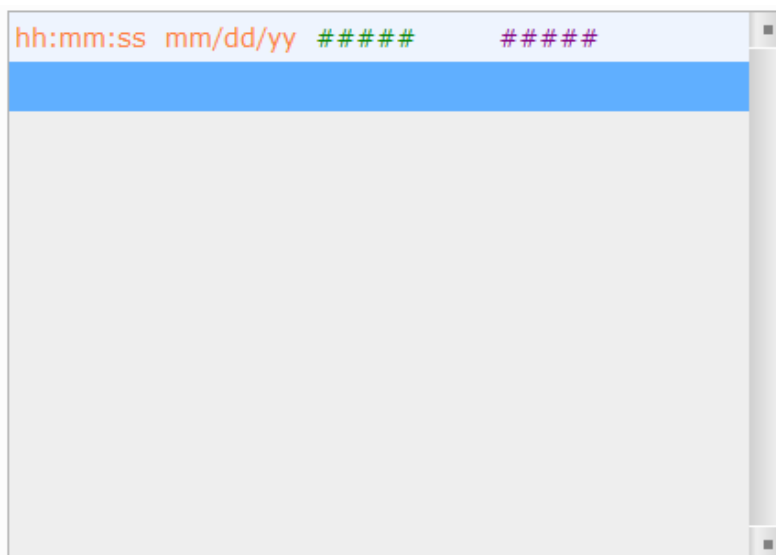
Create Historical Data Table element





Step 3: the created Historical Data Table is as shown below.

Create Historical Data Table element



Step 4: go to [Options] > [Clock Macro] to edit the macro program to change the data in the USB Disk. Since the Read Length is set to read two words and the Column Counts is also 2, the Historical Data Table will display two columns to read two data locations.

```

* [&Clock Macro]
1 $3765 = $3765 + 3
2 If $3765 > 1000
3 $3765 = 0
4 ENDIF
5
6 $3766 = $3766 + 6
7 If $3766 > 1000
8 $3766 = 0
9 ENDIF
    
```

15

Create Historical Data Table element

Historical Data Table

Step 5: create a Remove Storage button and select USB Disk for the Save in setting. This ensures that the data is correctly written to the USB Disk. If you do not safely eject the USB Disk before removing it, this may cause data read and write errors leading to the corruption of the saved file.

Execution results

- After completing the setting for the History Buffer and creating the Remove Storage element, please compile and download the elements to the HMI. The non-volatile memory setting in this example is the USB Disk, so when the HMI reads the screen, the data of H.had and H0001.dat will be generated and stored in the USB Disk. Then, the History Buffer will execute the command in the Clock Macro to change the data, and continue to store the data in the CSV file to the USB Disk. To stop saving the data, press Remove Storage button to remove the external device for ensuring the data is saved correctly.

16:40:05	07/21/2016	649	288
16:40:05	07/21/2016	648	294
16:40:05	07/21/2016	651	300
16:40:05	07/21/2016	654	306
16:40:06	07/21/2016	660	318
16:40:06	07/21/2016	663	324
16:40:06	07/21/2016	669	336
16:40:06	07/21/2016	672	342
16:40:06	07/21/2016	675	348
16:40:06	07/21/2016	681	360
16:40:06	07/21/2016	684	366

- Press Remove Storage button and the following message appears to inform users that the USB Disk is removed.

Please refer to Table 15.1.4 for the Historical Event Table example.

Table 15.1.4 Historical Event Table example

Historical Event Table

Step 1: double-click the Historical Event Table element and press **History Buffer Setup** to create a new buffer. Set Address to \$1, Read Length (Word) to 1, and select HMI as the Non-volatile memory.

Create Historical Event Table element

History Buffer Setup

No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source
1	\$3765	2	100	100	Timer
2	\$1	1	100	10	Timer

15

Historical Event Table

Step 2: set Buffer ID to 2 (corresponding to No. 2 in the History Buffer), Data Type to Word, State Counts to 16, and check Time Format and Date Format to display the time and date.

Historical Event Table

Preview

hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy

State: 15

Language: Language1

Element description: Historical Event Table_003

Main Main-2 Text Coordinates

Style

Border Color: [Color Picker]

Background Color: [Color Picker]

Row Color: [Color Picker]

Alternating Row: [Color Picker]

Select Row Color: [Color Picker]

Detail

Data Type: Word

Data Format: Unsigned Decimal

State Counts: 16

History Buffer Setup

Buffer ID: 2

Data No.: 0

Time/Date

Time Format hh:mm:ss

Date Format mm/dd/yy

Color: [Color Picker]

OK Cancel

Create Historical Event Table element

Step 3: go to the Text page to edit the text message you want to display.

Historical Event Table

Preview

hh:mm:ss mm/dd/yy 1
hh:mm:ss mm/dd/yy 2
hh:mm:ss mm/dd/yy 3
hh:mm:ss mm/dd/yy 4
hh:mm:ss mm/dd/yy 5
hh:mm:ss mm/dd/yy 6
hh:mm:ss mm/dd/yy 7
hh:mm:ss mm/dd/yy 8
hh:mm:ss mm/dd/yy 9
hh:mm:ss mm/dd/yy 10
hh:mm:ss mm/dd/yy 11
hh:mm:ss mm/dd/yy 12
hh:mm:ss mm/dd/yy 13
hh:mm:ss mm/dd/yy 14
hh:mm:ss mm/dd/yy 15
hh:mm:ss mm/dd/yy 16

State: 0

Language: Language1

Element description: Historical Event Table_003

Main Main-2 Text Coordinates

Text

16

Arial 16

B I U [Color Picker] 100%

Horiz. alignment: Horiz. Centering

Vert. alignment: Vert. Centering

Process the text of all states

Process text properties of all states

State	Language1
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
10	11

OK Cancel

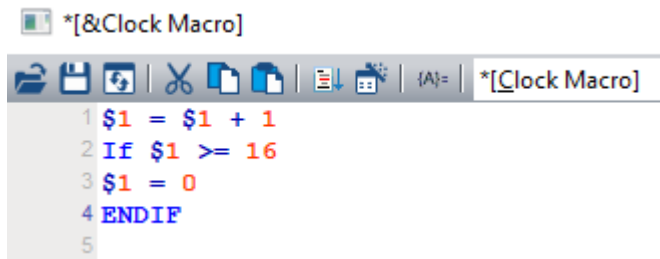
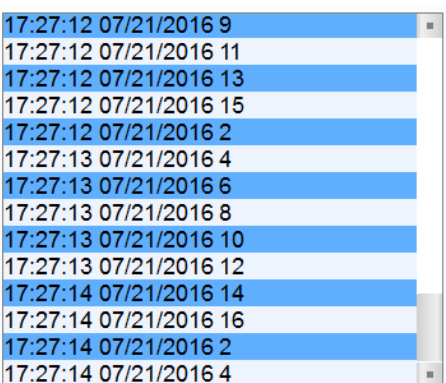
Historical Event Table																																											
Create Historical Event Table element	<p>Step 4: go to [Options] >[Clock Macro] to edit the macro program to change the data in the History Buffer, and display the user-defined text message in the Historical Event Table.</p>  <pre>*[&Clock Macro] 1 \$1 = \$1 + 1 2 If \$1 >= 16 3 \$1 = 0 4 ENDIF 5</pre>																																										
Execution results	<p>After creating the Historical Event Table elements, please compile and download the elements to the HMI. Then, the Historical Event Table will execute the command in the Clock Macro to change the data and display the user-defined text message in this element.</p>  <table border="1"><tbody><tr><td>17:27:12</td><td>07/21/2016</td><td>9</td></tr><tr><td>17:27:12</td><td>07/21/2016</td><td>11</td></tr><tr><td>17:27:12</td><td>07/21/2016</td><td>13</td></tr><tr><td>17:27:12</td><td>07/21/2016</td><td>15</td></tr><tr><td>17:27:12</td><td>07/21/2016</td><td>2</td></tr><tr><td>17:27:13</td><td>07/21/2016</td><td>4</td></tr><tr><td>17:27:13</td><td>07/21/2016</td><td>6</td></tr><tr><td>17:27:13</td><td>07/21/2016</td><td>8</td></tr><tr><td>17:27:13</td><td>07/21/2016</td><td>10</td></tr><tr><td>17:27:13</td><td>07/21/2016</td><td>12</td></tr><tr><td>17:27:14</td><td>07/21/2016</td><td>14</td></tr><tr><td>17:27:14</td><td>07/21/2016</td><td>16</td></tr><tr><td>17:27:14</td><td>07/21/2016</td><td>2</td></tr><tr><td>17:27:14</td><td>07/21/2016</td><td>4</td></tr></tbody></table>	17:27:12	07/21/2016	9	17:27:12	07/21/2016	11	17:27:12	07/21/2016	13	17:27:12	07/21/2016	15	17:27:12	07/21/2016	2	17:27:13	07/21/2016	4	17:27:13	07/21/2016	6	17:27:13	07/21/2016	8	17:27:13	07/21/2016	10	17:27:13	07/21/2016	12	17:27:14	07/21/2016	14	17:27:14	07/21/2016	16	17:27:14	07/21/2016	2	17:27:14	07/21/2016	4
17:27:12	07/21/2016	9																																									
17:27:12	07/21/2016	11																																									
17:27:12	07/21/2016	13																																									
17:27:12	07/21/2016	15																																									
17:27:12	07/21/2016	2																																									
17:27:13	07/21/2016	4																																									
17:27:13	07/21/2016	6																																									
17:27:13	07/21/2016	8																																									
17:27:13	07/21/2016	10																																									
17:27:13	07/21/2016	12																																									
17:27:14	07/21/2016	14																																									
17:27:14	07/21/2016	16																																									
17:27:14	07/21/2016	2																																									
17:27:14	07/21/2016	4																																									

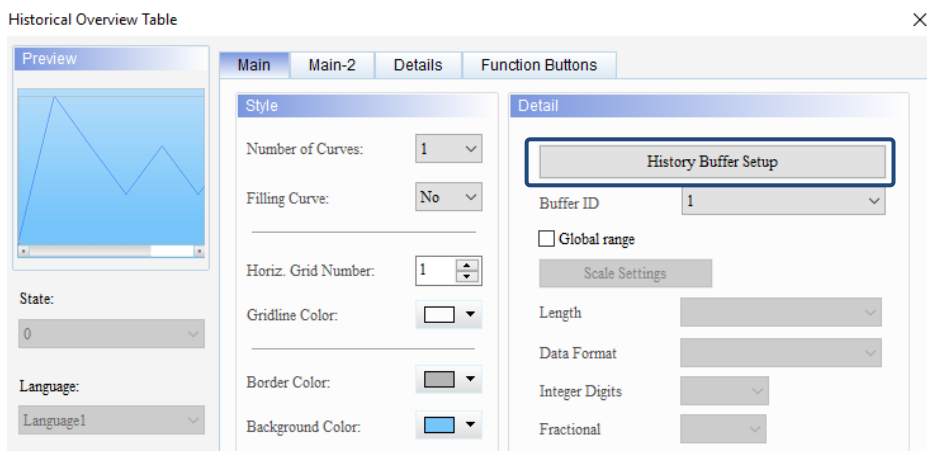
Table 15.1.5 Historical Overview Table example

15

Historical Overview Table

Historical Overview Table should be used with Historical Trend Graph, so you may also refer to Table 15.1.2 Historical Trend Graph example. Use the created Historical Trend Graph and then execute the following setup procedures.

Step 1: double-click the Historical Overview Table element and press **History Buffer Setup**, then you can see the data created in the Historical Trend Graph example in Table 15.1.2.

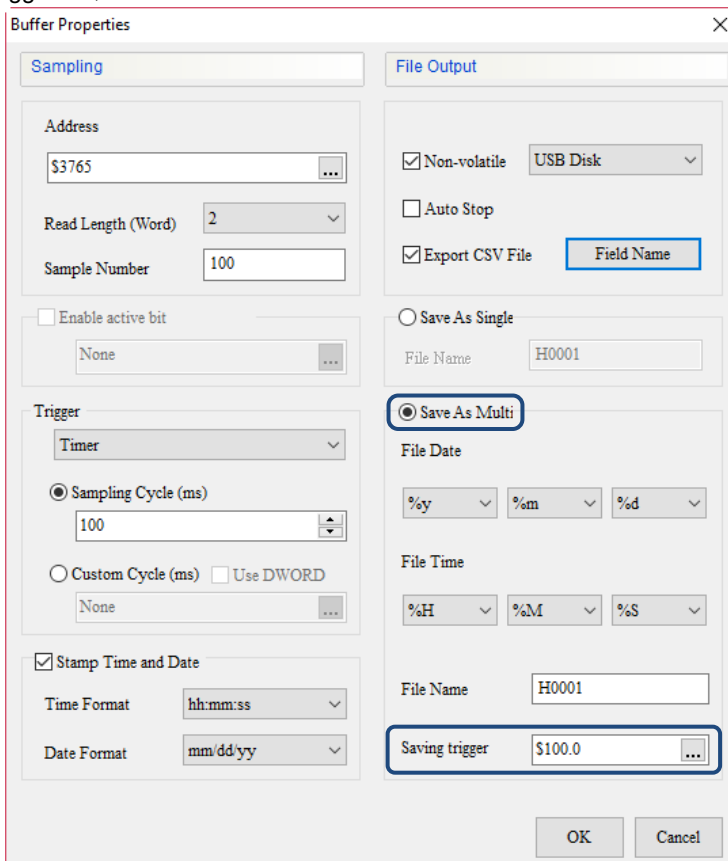


History Buffer Setup

No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source
1	\$3765	2	100	100	Timer

Create Historical Overview Table element

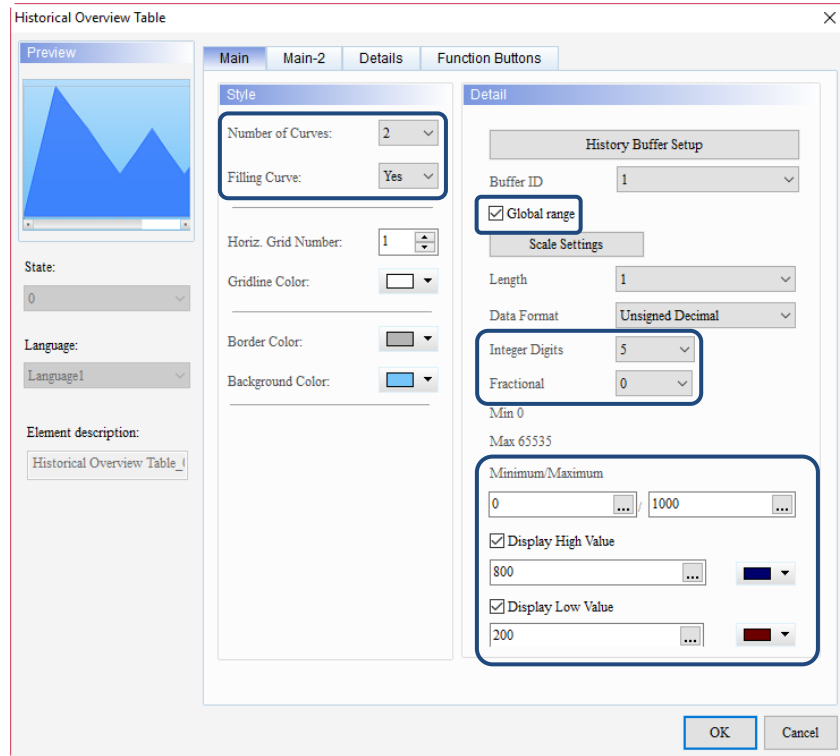
Step 2: press to modify the History Buffer setting, check Save As Multi, and set Saving trigger to \$100.0.



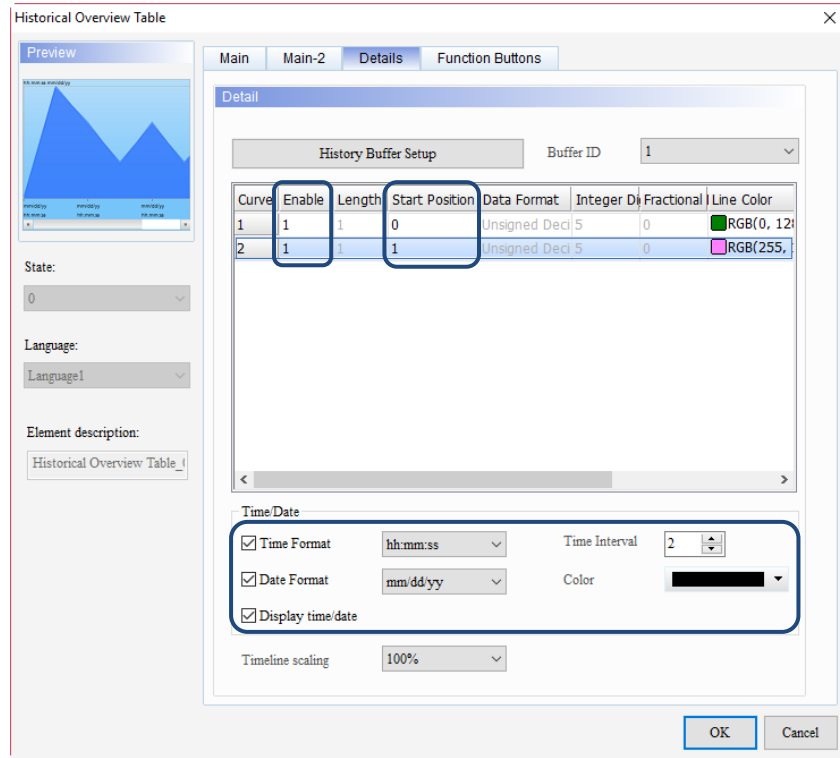
Historical Overview Table

Step 3: complete the other settings for the Historical Trend Graph element, such as the display for the time and date, displaying integer and fractional digits, and check Global range. Also, go to the Details page to set the Enable field as 1 to enable the data reading of the curves. Since Global range is checked, you will not be able to set the Minimum / Maximum values for each curve.

Create Historical Overview Table element



Go to the Details page to set the Enable field as 1 to enable the data reading of the curves, and set the Start Positions of the data for Curve 1 and Curve 2 to 0 and 1 respectively.

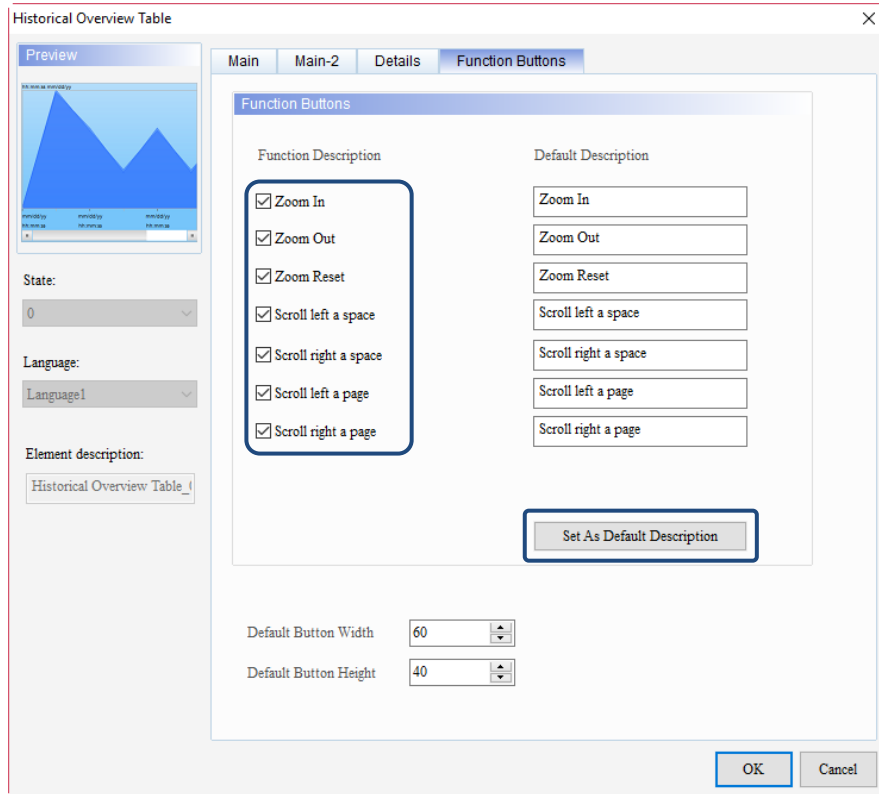


15

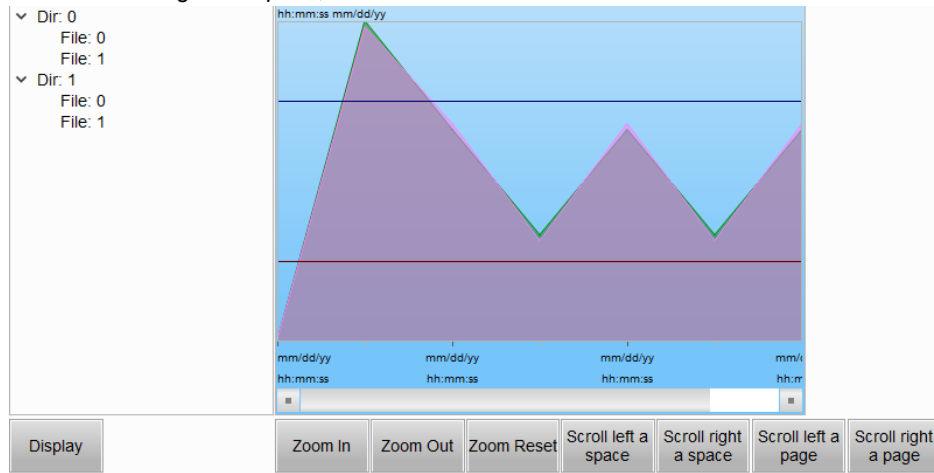
Create Historical Overview Table element

Historical Overview Table

Step 4: go to the Function Buttons page and check the Function Buttons you want to display, then press **Set As Default Description**.



When the setting is complete, the Historical Overview Table is as follows.



Historical Overview Table

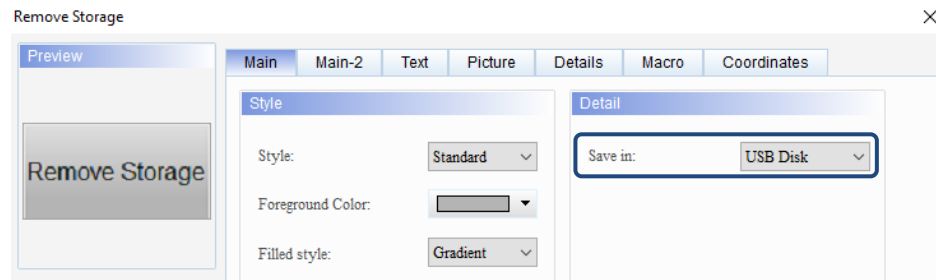
Step 5: go to [Options] > [Clock Macro] to edit the macro program to change the data in the History Buffer, and save the data in the USB Disk. Since the Read Length is set to two words, there will be two data locations available for access. Thus, in addition to the originally set \$3765 read address, there will be a \$3766 data address in the macro as well.

```
*[&Clock Macro]
1 $3765 = $3765 + 3
2 If $3765 > 1000
3 $3765 = 0
4 ENDIF
5
6 $3766 = $3766 + 6
7 If $3766 > 1000
8 $3766 = 0
9 ENDIF
```

Create Historical Overview Table element

Step 6: create a Momentary button and set its address as \$100.0. Execute this button to immediately save the data of the History Buffer without having to wait for the Sample Number to be full.

Step 7: create a Remove Storage button and select USB Disk for the Save in setting. This ensures that the data is correctly written to the USB Disk. If you do not safely eject the USB Disk before removing it, this may cause data read and write errors leading to the corruption of the saved file.



15

Historical Overview Table

- After completing the setting for the History Buffer, Historical Overview Table, and creating the Remove Storage element, please compile and download the elements to the HMI. The non-volatile memory setting in this example is the USB Disk, so when the HMI reads the screen, the data of H.had and H0001.dat will be generated and stored in the USB Disk. Then, the History Buffer will execute the command in the Clock Macro to change the data, and continue to store the data in the CSV file to the USB Disk. To stop saving the data, press Remove Storage button to remove the external device for ensuring the data is saved correctly.

Execution results

The screenshot displays the HMI interface. On the left is a file tree with the following structure:

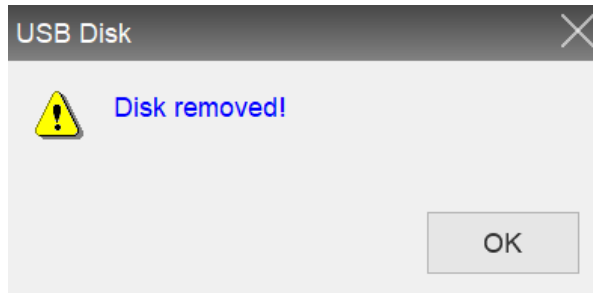
- USB
 - HMI
 - HMI-000
 - History
 - CSV
 - H0001.dat
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - H0001_Date-20
 - History.201805171

The main area shows a table with two columns of data:

16:46:57	16:46:58
05/17/2018	05/17/2018

At the bottom, there are several control buttons: Display, Zoom In, Zoom Out, Zoom Reset, Scroll left a space, Scroll right a space, Scroll left a page, Scroll right a page, Saving Trigger, and Remove Storage.

- Press Remove Storage button and the following message appears to inform users that the USB Disk is removed.



Historical Overview Table

- When the Sample Number is reached or the Saving trigger element is triggered, the file will be stored in the HMI\HMI-000\History folder under the USB directory according to the Save As Multi setting, and a new file will be created to continue sampling. You can view the saved files with the Historical Overview Table.

Execution results

File Explorer view of the History folder. The file list includes:

- CSV
- H.had
- H0001.dat
- H0001_Date-2018-05-18_Time-17-23-13.dat
- H0001_Date-2018-05-18_Time-17-23-13.had
- H0001_Date-2018-05-18_Time-17-23-23.dat
- H0001_Date-2018-05-18_Time-17-23-23.had

16:46:57	16:46:58
05/17/2018	05/17/2018

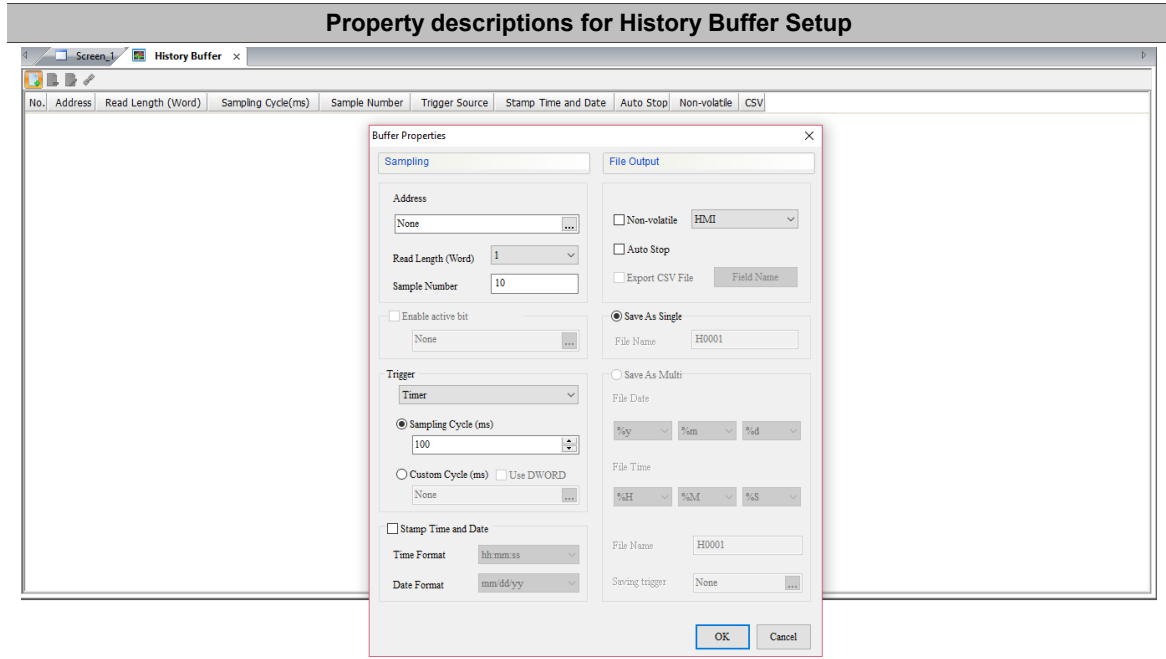
Buttons: Display, Zoom In, Zoom Out, Zoom Reset, Scroll left a space, Scroll right a space, Scroll left a page, Scroll right a page, Saving Trigger, Remove Storage

- Pressing **Saving Trigger** will immediately save the current History Buffer data.

16:46:57	16:46:58
05/17/2018	05/17/2018


Buttons: Saving Trigger, Remove Storage

Table 15.1.6 Property descriptions for History Buffer Setup






Property descriptions for History Buffer Setup

15

-  is for creating additional data buffers and it supports up to 12 sets of buffers. These 12 sets of data buffers also correspond to the sampling flags 1 - 12 and clear flags 1 - 12 of the history buffer respectively in the Control Block area.

No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source	Stamp Time and Date	Auto Stop	Non-volatile	CSV
1	\$0	1	100	10	Timer	No	No	Yes	H0001
2	\$1	1	100	10	Timer	No	No	Yes	H0002
3	\$2	1	100	10	Timer	No	No	Yes	H0003
4	\$3	1	100	10	Timer	No	No	Yes	H0004
5	\$4	1	100	10	Timer	No	No	Yes	H0005
6	\$5	1	100	10	Timer	No	No	Yes	H0006
7	\$6	1	100	10	Timer	No	No	Yes	H0007
8	\$7	1	100	10	Timer	No	No	Yes	H0008
9	\$8	1	100	10	Timer	No	No	Yes	H0009
10	\$9	1	100	10	Timer	No	No	Yes	H0010
11	\$10	1	100	10	Timer	No	No	Yes	H0011
12	\$11	1	100	10	Timer	No	No	Yes	H0012

- Add 
- Delete 
- Modify 

Control Block

Control Block

Start Address

Screen No. ...

General Control ...

Curve Control ...

Sampling History Buffer D0 ...

Clearing History Buffer D1 ...

Recipe Control ...

Recipe Group ...

System Control ...

Enhanced Recipe ...

Enhanced Recipe ...

Sampling Cycle

Bit 0 Sampling flag 1 of history buff
 Bit 1 Sampling flag 2 of history buff
 Bit 2 Sampling flag 3 of history buff
 Bit 3 Sampling flag 4 of history buff
 Bit 4 Sampling flag 5 of history buff
 Bit 5 Sampling flag 6 of history buff
 Bit 6 Sampling flag 7 of history buff
 Bit 7 Sampling flag 8 of history buff
 Bit 8 Sampling flag 9 of history buff
 Bit 9 Sampling flag 10 of history buff
 Bit 10 Sampling flag 11 of history buff
 Bit 11 Sampling flag 12 of history buff

Control Block

Control Block

Start Address

Screen No. ...

General Control ...

Curve Control ...

Sampling History Buffer D0 ...

Clearing History Buffer D1 ...

Recipe Control ...

Recipe Group ...

System Control ...



Enhanced Recipe ...

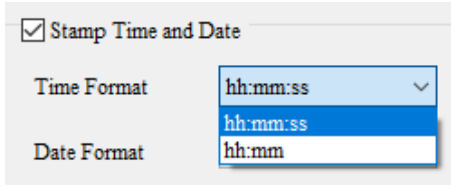
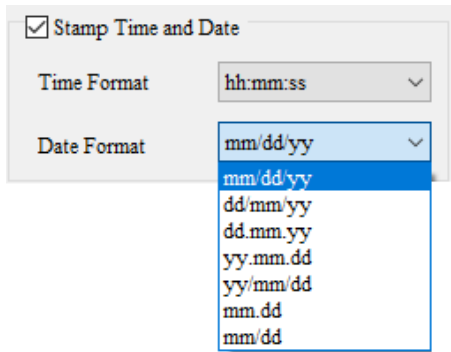
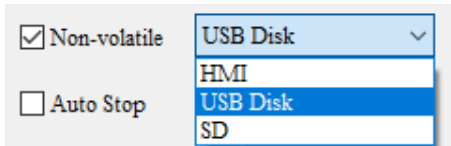
Enhanced Recipe ...

Sampling Cycle

Auto Reset Flag ...

Bit 0 Clear flag 1 of history buffer
 Bit 1 Clear flag 2 of history buffer
 Bit 2 Clear flag 3 of history buffer
 Bit 3 Clear flag 4 of history buffer
 Bit 4 Clear flag 5 of history buffer
 Bit 5 Clear flag 6 of history buffer
 Bit 6 Clear flag 7 of history buffer
 Bit 7 Clear flag 8 of history buffer
 Bit 8 Clear flag 9 of history buffer
 Bit 9 Clear flag 10 of history buffer
 Bit 10 Clear flag 11 of history buffer
 Bit 11 Clear flag 12 of history buffer

- Press  to delete a data buffer.
- Press  to go to the Buffer Properties window to change the relevant settings.

Property descriptions for History Buffer Setup																					
Address		<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details. 																			
Read Length (Word)		Read Length defines the number of words to be sampled, which indicates the data length and supports up to 30 consecutive words.																			
Sample Number		<ul style="list-style-type: none"> Sample Number is the number of data to be recorded and is usually used with the Auto Stop function. If Auto Stop is checked, the recording stops automatically when it reaches the set Sample Number. If Auto Stop is not checked, the recording will not stop when it reaches the set Sample Number; instead, the recording restarts from the first record and overwrites the previous data. Sample Number supports up to 9,999,999 sampling points. 																			
Stamp Time and Date	Time Format	<p>There are two time formats for selection.</p> 																			
	Date Format	<p>There are seven date formats for selection.</p> 																			
Non-volatile	Save location	<ul style="list-style-type: none"> The saving location includes HMI, USB Disk, and SD Card.  <ul style="list-style-type: none"> When you choose to store the data in the HMI, it means when the power is cut off, the data is saved in the HMI SRAM. If Export CSV File is checked, please set the Non-volatile memory to USB Disk. 																			
Auto Stop		<ul style="list-style-type: none"> The Auto Stop function determines whether the recording stops automatically when the set Sample Number is reached. If Auto Stop is checked, the recording stops automatically when the setting in the Sample Number field is reached. If Auto Stop is not checked, the recording will not stop when the setting in the Sample Number field is reached; instead, the recording restarts from the first record and overwrites the previous data. 																			
Export CSV File	Data Format	<ul style="list-style-type: none"> The supported data format varies according to the read length is 1 or 2 words. The supported data format is as follows. In the Char format, if the read length is 1, it represents 2 Chars; if the read length is 2, it represents 4 Chars, and so on. When the read length is over 3, Char is the only supported format. <table border="1"> <thead> <tr> <th colspan="3">Length is 1</th> </tr> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td>Char</td> <td>2 words</td> </tr> </tbody> </table>	Length is 1			Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	Char	2 words
Length is 1																					
Data Type	Data Format	Allowable range																			
Word	BCD	0 to 9999																			
	Signed BCD	-999 to +9999																			
	Signed Decimal	-32768 to +32767																			
	Unsigned Decimal	0 to 65535																			
	Hex	0 to 0xFFFF																			
	Char	2 words																			

15

Property descriptions for History Buffer Setup

Length is 2		
Data Type	Data Format	Allowable range
DWord	BCD	0 to 99999999
	Signed BCD	-9999999 to +9999999
	Signed Decimal	-2147483648 to +2147483647
	Unsigned Decimal	0 to 4294967295
	Hex	0 to 0xFFFFFFFF
	Char	4 words
	Floating	0 to 9999999

Export CSV File

Field Name

You can input the field name for displaying on the exported CSV file, including the time, date, and data name.

CSV Fields ✖

Time

Date

Title Setting

Column Detail

+
-
↑
↓

Column Settings

Item	Open	Name	Length	Data Start Po	Data Format
0	<input checked="" type="checkbox"/>		1	0	Unsigned Decimal
1	<input checked="" type="checkbox"/>		1	1	Unsigned Decimal
2	<input checked="" type="checkbox"/>		1	2	Unsigned Decimal
3	<input checked="" type="checkbox"/>		1	3	Unsigned Decimal
4	<input checked="" type="checkbox"/>		1	4	Unsigned Decimal
5	<input checked="" type="checkbox"/>		1	5	Unsigned Decimal
6	<input checked="" type="checkbox"/>		1	6	Unsigned Decimal
7	<input checked="" type="checkbox"/>		1	7	Unsigned Decimal
8	<input checked="" type="checkbox"/>		1	8	Unsigned Decimal
9	<input checked="" type="checkbox"/>		1	9	Unsigned Decimal
10	<input checked="" type="checkbox"/>		1	10	Unsigned Decimal
11	<input checked="" type="checkbox"/>		1	11	Unsigned Decimal
12	<input checked="" type="checkbox"/>		1	12	Unsigned Decimal

OK
Cancel

Property descriptions for History Buffer Setup

Export CSV File

CSV Fields

Time

Date

Column

Name

- The time and date field names (1), the number of columns and rows (2), and the value field name (3) are user-defined and the naming format supports multi-languages.
- The maximum number of columns and rows is 10 X 10. You can set the displaying name for the title column.

CSV Fields

Time: (1)

Date: (2)

Title Setting

Column: 3 (2) Detail

	A	B	C
1	11	12	13
2	14	15	16
3	17	18	19

Column Settings

Item	Open	Name	Length	Data Start Po	Data Format
0	<input checked="" type="checkbox"/>	data0	1	0	Unsigned Decimal
1	<input checked="" type="checkbox"/>	data1	1	1	Unsigned Decimal
2	<input checked="" type="checkbox"/>	data2	1	2	Unsigned Decimal
3	<input checked="" type="checkbox"/>		1	3	Unsigned Decimal
4	<input checked="" type="checkbox"/>		1	4	Unsigned Decimal
5	<input checked="" type="checkbox"/>		1	5	Unsigned Decimal
6	<input checked="" type="checkbox"/>		1	6	Unsigned Decimal
7	<input checked="" type="checkbox"/>		1	7	Unsigned Decimal
8	<input checked="" type="checkbox"/>		1	8	Unsigned Decimal
9	<input checked="" type="checkbox"/>		1	9	Unsigned Decimal
10	<input checked="" type="checkbox"/>		1	10	Unsigned Decimal
11	<input checked="" type="checkbox"/>		1	11	Unsigned Decimal
12	<input checked="" type="checkbox"/>		1	12	Unsigned Decimal

OK Cancel

- The actual exported CSV file will be the same as the setting in the software, as the (1), (2), and (3) shown in the following figure.

H0001.csv

	A	B	C		
1	11	12	13		
2	14	15	16		
3	17	18	19		
4	TIME	DATE	data0	data1	data2
5	13:39:26	07/28/2016	615	20	30
6	13:39:26	07/28/2016	618	25	40
7	13:39:26	07/28/2016	621	30	50
8	13:39:26	07/28/2016	624	35	60
9	13:39:26	07/28/2016	627	40	70
10	13:39:26	07/28/2016	630	45	80
11	13:39:26	07/28/2016	633	50	90
12	13:39:26	07/28/2016	636	55	100
13	13:39:27	07/28/2016	639	60	110
14	13:39:27	07/28/2016	642	65	120
15	13:39:27	07/28/2016	645	70	130
16	13:39:27	07/28/2016	648	75	140
17	13:39:27	07/28/2016	651	80	150
18	13:39:27	07/28/2016	654	85	160
19	13:39:27	07/28/2016	657	90	170
20	13:39:27	07/28/2016	660	95	180
21	13:39:27	07/28/2016	663	100	190
22	13:39:27	07/28/2016	666	105	200
23	13:39:28	07/28/2016	669	110	210
24	13:39:28	07/28/2016	672	115	220
25	13:39:28	07/28/2016	675	120	230

Property descriptions for History Buffer Setup

The Length corresponds to the Read Length (Word). If the Read Length (Word) is 4, the Length will be 1 - 4.

15

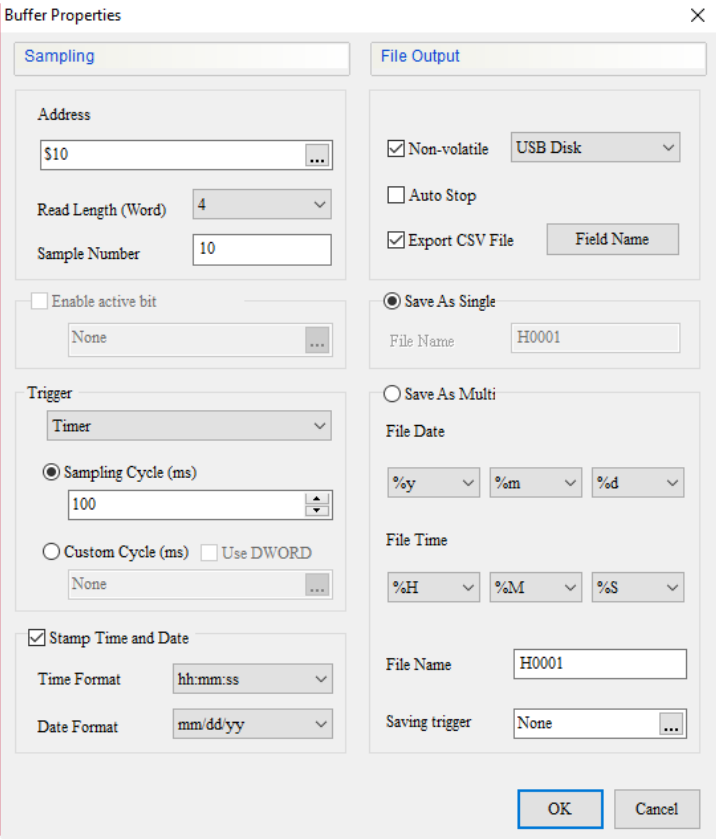
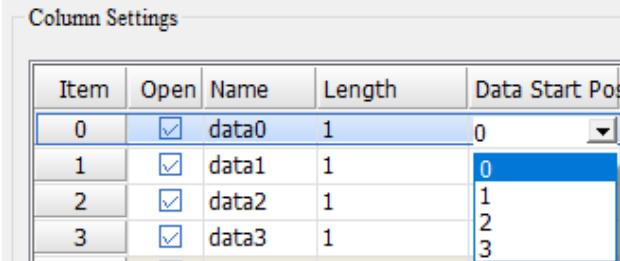
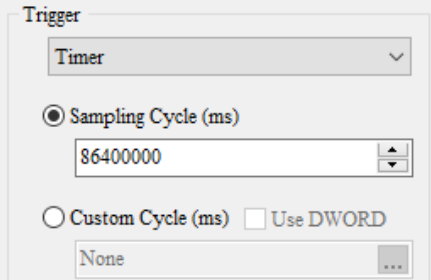
Export CSV File

Field Name

Length

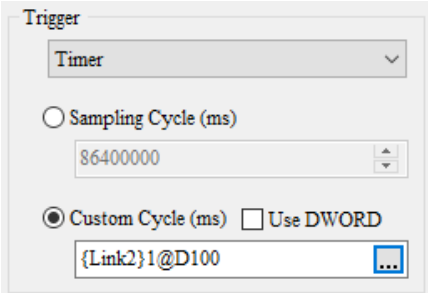
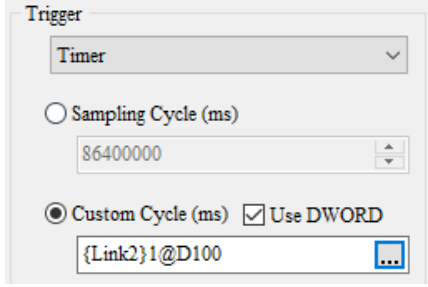
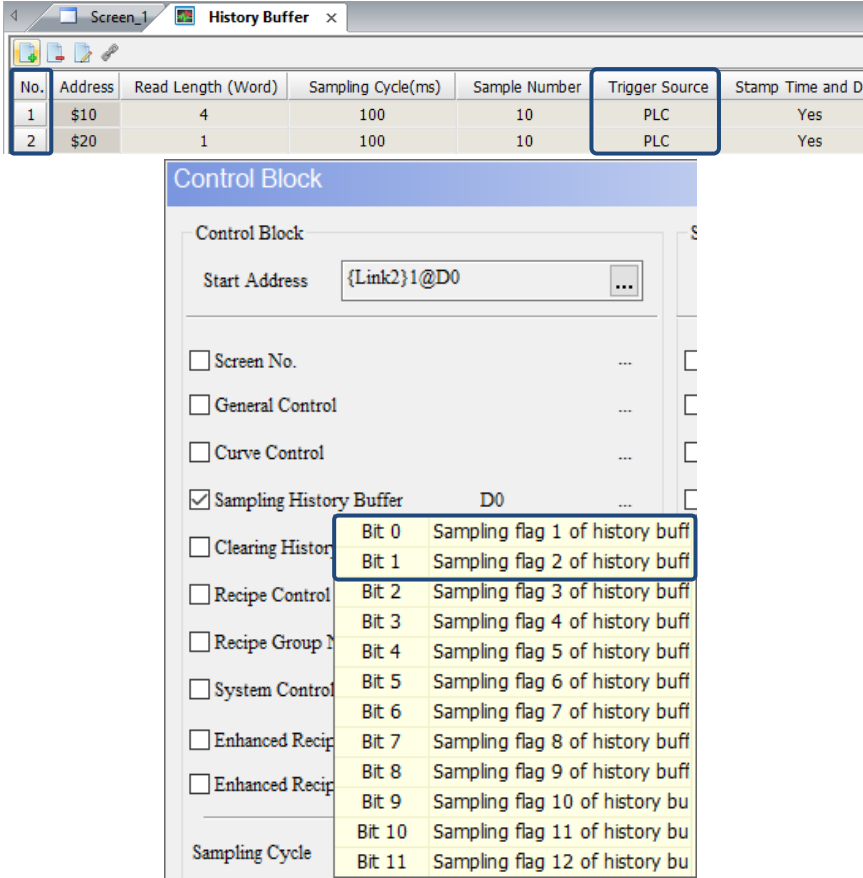
Column Settings

Item	Open	Name	Length	Data Start Pos
0	<input checked="" type="checkbox"/>	data0	1	0
1	<input checked="" type="checkbox"/>	data1	1	1
2	<input checked="" type="checkbox"/>	data2	2	2
3	<input checked="" type="checkbox"/>	data3	3	3
			4	

Property descriptions for History Buffer Setup		
Export CSV File	Field Name	<p>The Data Start Position corresponds to the Read Length (Word). If the Read Length (Word) is 4, the Data Start Position will be 0 - 3.</p>  
		<p>Integer Digits</p> <ul style="list-style-type: none"> Set the integer and fractional digits according to the required format. <p>Fractional Digits</p> <ul style="list-style-type: none"> When the Length is 1, the total number of digits of the integer and fractional digits is 5. When the Length is 2, the total number of digits of the integer and fractional digits is 10.
Trigger	Timer	<p>When Timer is the Trigger source, there are two setting options for the Sampling Cycle (ms).</p> <ul style="list-style-type: none"> Fixed sampling cycle: minimum 100 ms; maximum 86400000 ms. 

15

Property descriptions for History Buffer Setup

Trigger	Timer	<ul style="list-style-type: none"> Dynamic sampling cycle: you can change the sampling cycle time by using the specified memory address to trigger the sampling action.  <ul style="list-style-type: none"> The data type for Custom Cycle (ms) is Word by default; if you need to input as Double Word, please check Use DWORD. 
Trigger	PLC	<ul style="list-style-type: none"> When the PLC is the Trigger Source, the sampling action is triggered by using the history buffer flags in the Control Block. The sampling action is performed when the Bit is on, thus it is irrelevant to the sampling cycle time. Assume that there are two set History Buffers, the Trigger source PLC of the first set corresponds to sampling flag 1 of history buffer and the Trigger source PLC of the second set corresponds to sampling flag 2 of history buffer, and so on. 
Save As Single	<p>The File Name default is H0001, but you can change it according to your preference. The File Name supports alphabetical and numeric characters with the length up to 8 characters.</p>	

Property descriptions for History Buffer Setup																						
	<ul style="list-style-type: none"> ■ If you check Save As Multi, when the History Buffer Sample Number is reached or the Saving trigger bit is triggered, the current data will be saved and sampling continues. ■ The file name of the data file that is currently sampling is the set File Name, such as HMI0001.dat. And the files that are saved as multiple files will have the date and time when it was saved added to the file name, for example, H0001_Date-2015-06-26_Time-12-02-30.dat. ■ If you check Save As Multi, the Auto Stop function is unavailable. And when you press OK on the Buffer Properties window, the following warning pops up. <div style="border: 1px solid red; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">DOPSoft ×</p> <p style="text-align: center;"> ""Auto Stop"" function only supports when ""Saving as single file"" is selected.</p> <p style="text-align: right;"><input type="button" value="OK"/></p> </div>																					
File Date	<ul style="list-style-type: none"> ■ You can arrange the date formats for the file name, such as the order of the year, month, and day of the date, or you can also choose not to display the date. 																					
File Time																						
Save As Multi	<div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p><input checked="" type="radio"/> Save As Multi</p> <p>File Date</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%y</td> <td style="border: 1px solid #ccc; padding: 2px;">%m</td> <td style="border: 1px solid #ccc; padding: 2px;">%d</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%y</td> <td style="border: 1px solid #ccc; padding: 2px;">%y</td> <td style="border: 1px solid #ccc; padding: 2px;">%y</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%m</td> <td style="border: 1px solid #ccc; padding: 2px;">%m</td> <td style="border: 1px solid #ccc; padding: 2px;">%m</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%d</td> <td style="border: 1px solid #ccc; padding: 2px;">%d</td> <td style="border: 1px solid #ccc; padding: 2px;">%d</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">None</td> <td style="border: 1px solid #ccc; padding: 2px;">None</td> <td style="border: 1px solid #ccc; padding: 2px;">None</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%H</td> <td style="border: 1px solid #ccc; padding: 2px;">%M</td> <td style="border: 1px solid #ccc; padding: 2px;">%S</td> </tr> </table> </div>	%y	%m	%d	%y	%y	%y	%m	%m	%m	%d	%d	%d	None	None	None	%H	%M	%S			
%y	%m	%d																				
%y	%y	%y																				
%m	%m	%m																				
%d	%d	%d																				
None	None	None																				
%H	%M	%S																				
File Name	<ul style="list-style-type: none"> ■ You can arrange the time formats for the file name, such as the order of the hour, minute, and second of the time, or you can also choose not to display the time. <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>File Time</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%H</td> <td style="border: 1px solid #ccc; padding: 2px;">%M</td> <td style="border: 1px solid #ccc; padding: 2px;">%S</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%H</td> <td style="border: 1px solid #ccc; padding: 2px;">%H</td> <td style="border: 1px solid #ccc; padding: 2px;">%H</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%M</td> <td style="border: 1px solid #ccc; padding: 2px;">%M</td> <td style="border: 1px solid #ccc; padding: 2px;">%M</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%S</td> <td style="border: 1px solid #ccc; padding: 2px;">%S</td> <td style="border: 1px solid #ccc; padding: 2px;">%S</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">None</td> <td style="border: 1px solid #ccc; padding: 2px;">None</td> <td style="border: 1px solid #ccc; padding: 2px;">None</td> </tr> </table> </div> <ul style="list-style-type: none"> ■ If the File Time, File Date, and File Name are set as follows, and the set Sample Number is reached at the time of 2015/6/26 12:02:30, then the file name for this file is: H0001_Date-2015-06 -26_Time-12-02-30. <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p><input checked="" type="radio"/> Save As Multi</p> <p>File Date</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%y</td> <td style="border: 1px solid #ccc; padding: 2px;">%m</td> <td style="border: 1px solid #ccc; padding: 2px;">%d</td> </tr> </table> <p>File Time</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid #ccc; padding: 2px;">%H</td> <td style="border: 1px solid #ccc; padding: 2px;">%M</td> <td style="border: 1px solid #ccc; padding: 2px;">%S</td> </tr> </table> <p>File Name <input style="width: 100%;" type="text" value="H0001"/></p> </div>	%H	%M	%S	%H	%H	%H	%M	%M	%M	%S	%S	%S	None	None	None	%y	%m	%d	%H	%M	%S
%H	%M	%S																				
%H	%H	%H																				
%M	%M	%M																				
%S	%S	%S																				
None	None	None																				
%y	%m	%d																				
%H	%M	%S																				
Saving trigger	<ul style="list-style-type: none"> ■ Other than reaching the set Sample Number will execute the function of Save As Multi, you can also trigger the Saving trigger bit to perform this function. ■ The controller address (Bit) and the internal register address (Bit) are supported. 																					

15

15.2 Historical Trend Graph

The Historical Trend Graph is for storing and displaying address values read during a specific time period. This function can display up to 60 curves and read up to 60 Words. You can save the data displayed on the Historical Trend Graph to the external storage devices, USB Disk and SD Card, that the HMI supports.

When you double-click Historical Trend Graph, the property page is shown as follows.

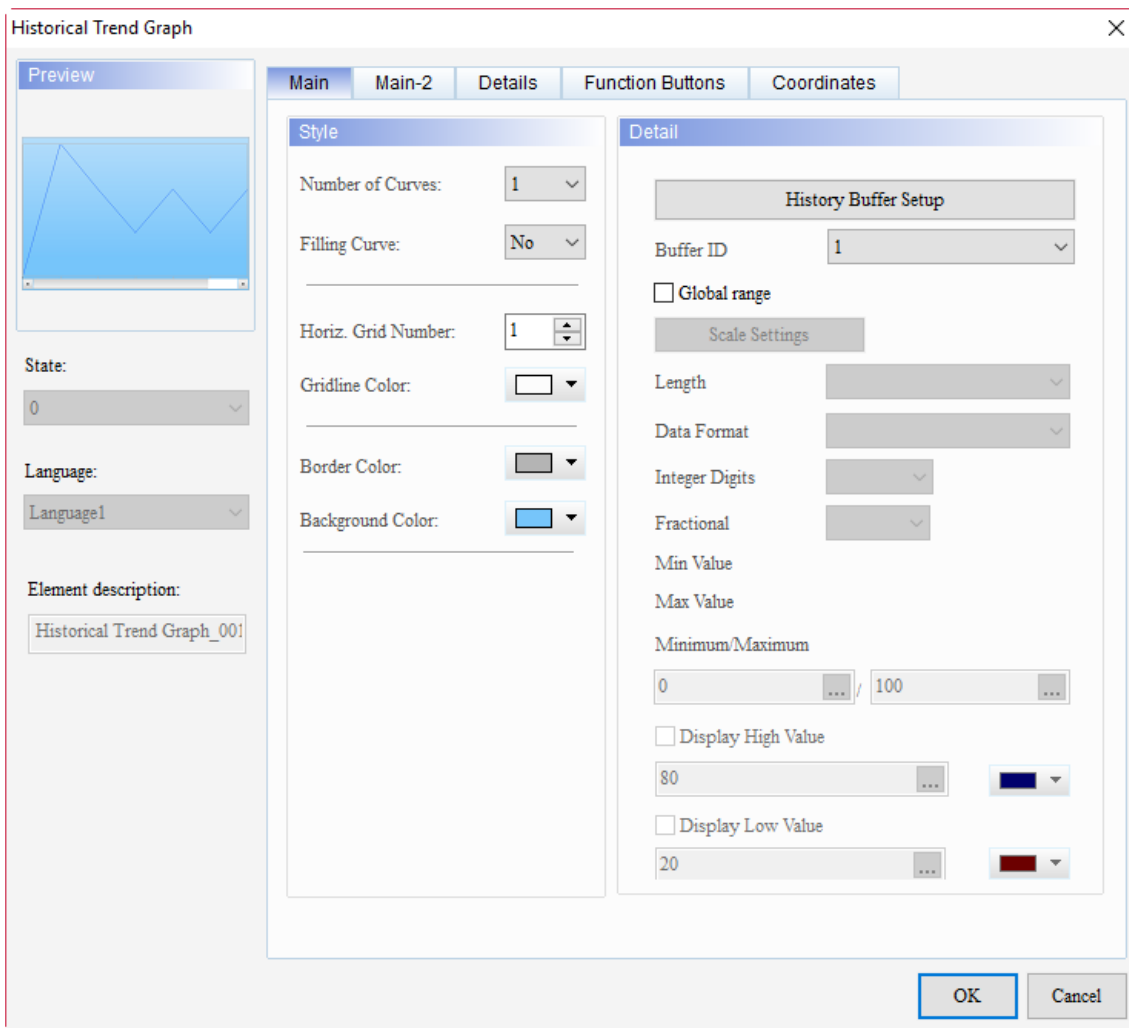


Figure 15.2.1 Properties of Historical Trend Graph

Table 15.2.2 Function page of Historical Trend Graph

Historical Trend Graph		
Function page	Description	
Preview	The Historical Trend Graph elements do not support multiple status values and multi-language data display.	
Main	Data	Set Buffer ID.
	Global range	Set Scale Settings, Length, Data Format, Integer Digits, Fractional, Minimum / Maximum, Display High Value, Display Low Value, High Value color, and Low Value color.
	Scale Settings	Set the Display scale, Display mark, Font size, Text Color, Mark Color, Scale Mark Number, Subscale Mark Number, and Scale Width.
	Style	Set Number of Curves, Filling Curve, Horiz. Grid Number, Gridline Color, Border Color, and Background Color.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Margin.	
Details	Scope setting	Set whether the curve enables, Length, Start Position, Data Format, Integer Digits, Fractional Digits, Line Weight and Color, Minimum, and Maximum.
	Time/Date	Set Display time/date, Time Interval, Time format, Date Format, and Color.
Function Buttons	Check the required function buttons, including Zoom In, Zoom Out, Zoom Reset, Scroll left a space, Scroll right a space, Scroll left a page, and Scroll right a page. Set the Default Description for the function buttons and the Default Button Width and Height.	
Coordinates	Set the X and Y coordinates, width, and height of the elements.	

■ Main

15

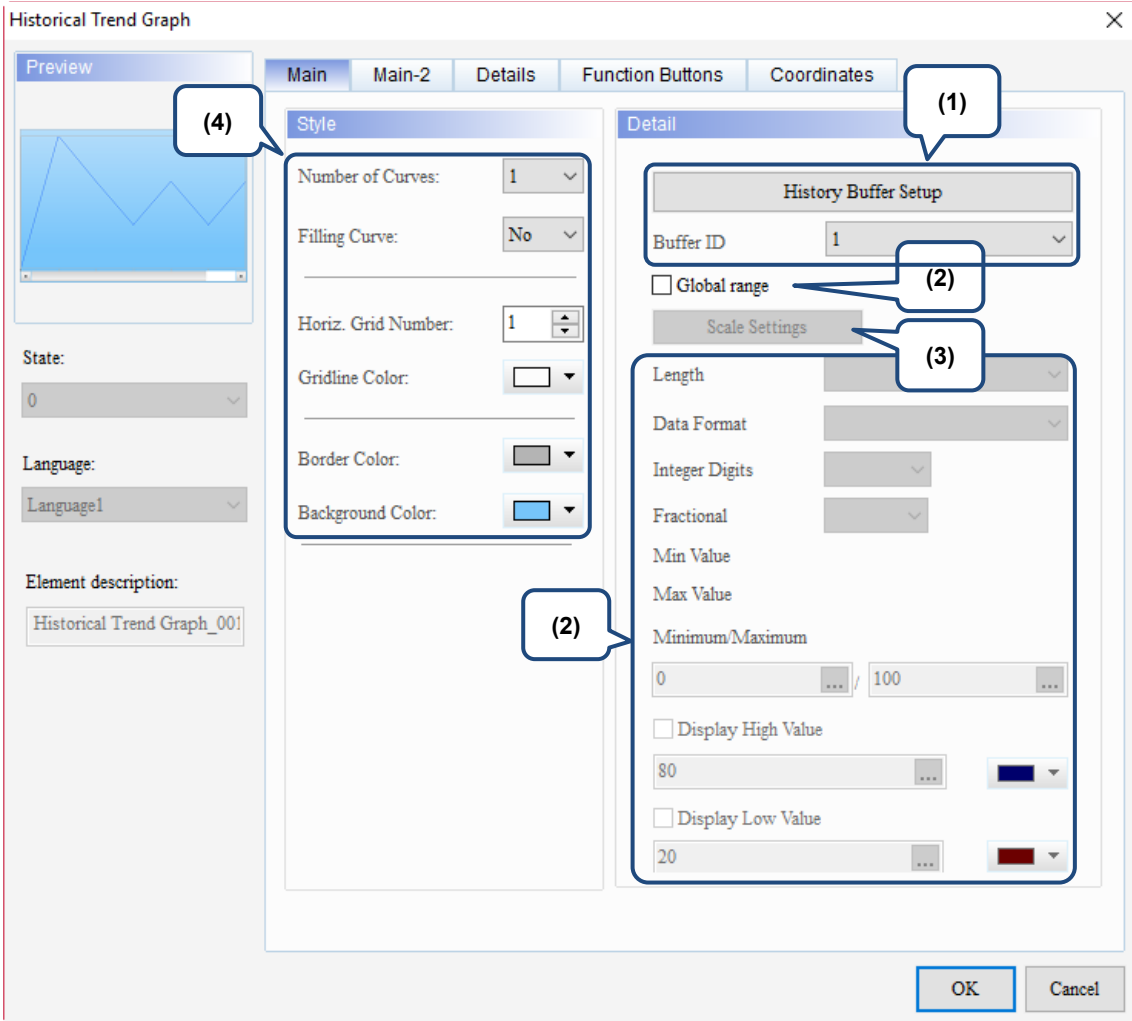
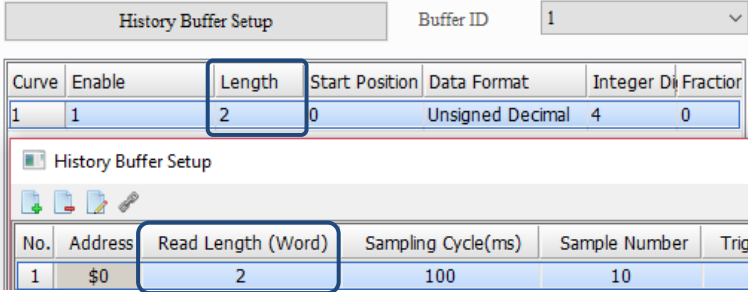
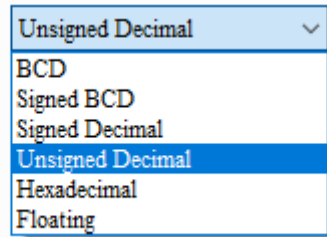
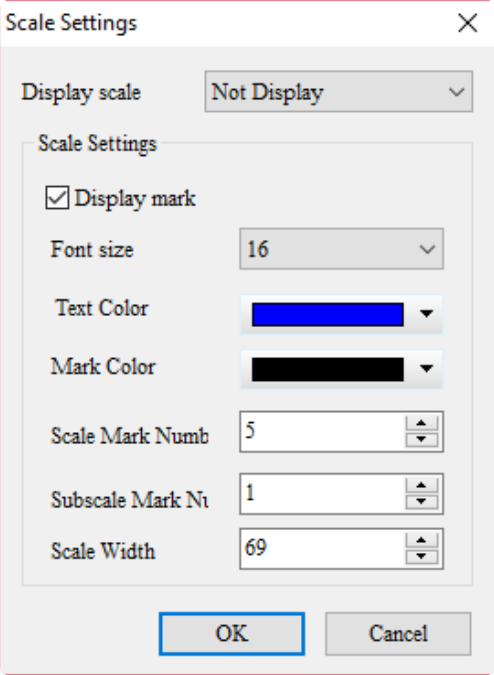


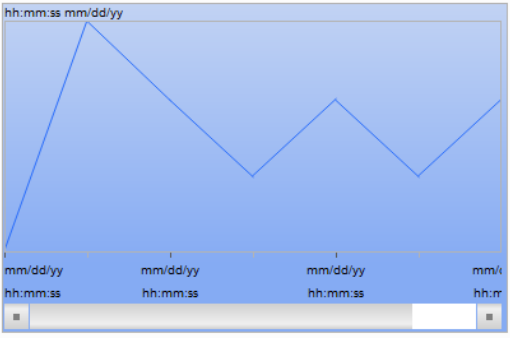
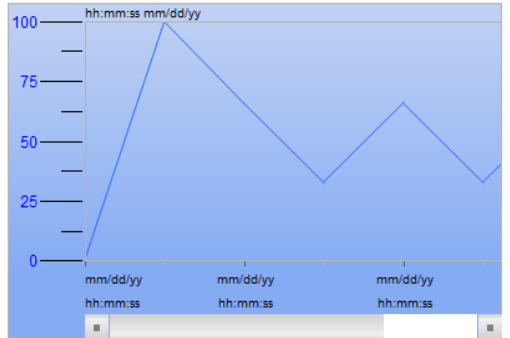
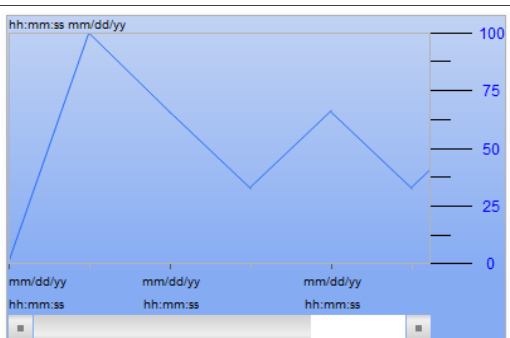
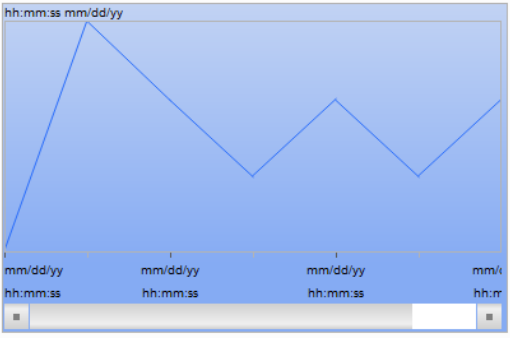
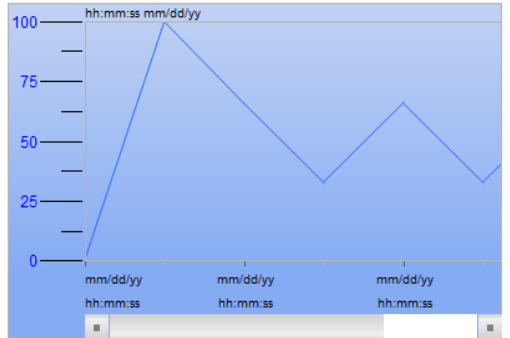
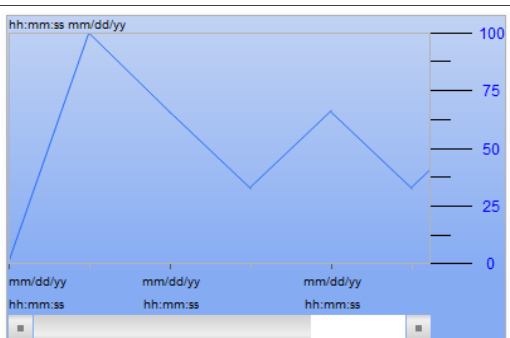
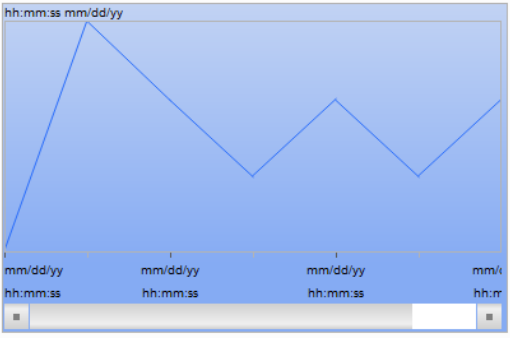
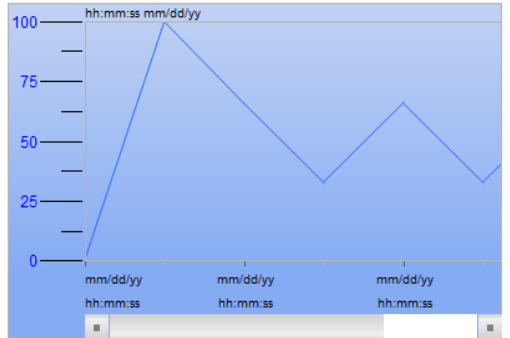
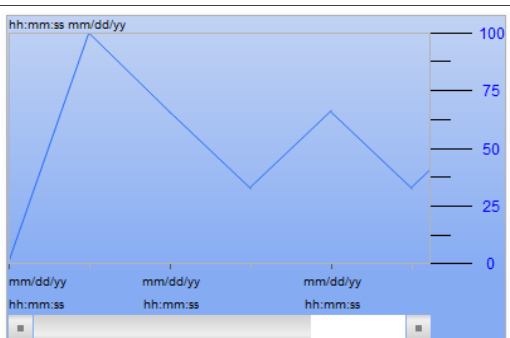
Figure 15.2.2 Main property page for the Historical Trend Graph element

No.	Property	Function description
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can also set up to 12 sets.</p>

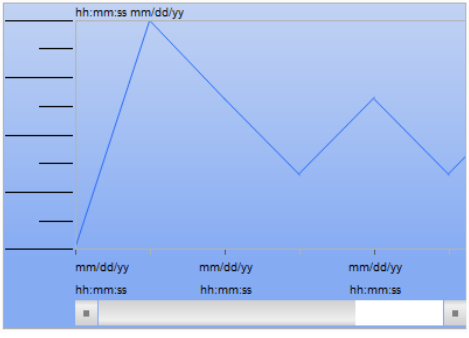
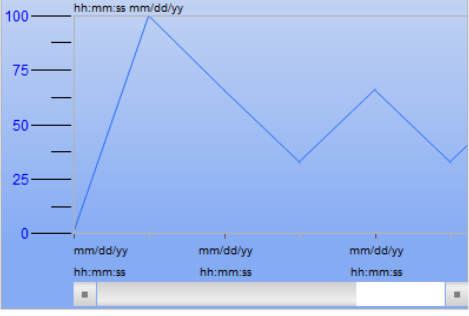
No.	Property	Function description																												
(2)	Global range	<p>Length</p> <ul style="list-style-type: none"> The Length can be set as 1 or 2. If Length is 1, it means the length of the read data is 1 word; if Length is 2, it means the length of the read data is 2 words. <p>Note: when you select 2 as the Length, the Read Length must be 2 or more words.</p>  <p>The screenshot shows the 'History Buffer Setup' dialog with 'Buffer ID' set to 1. A table below it has columns: Curve, Enable, Length, Start Position, Data Format, Integer D, Fraction. Row 1: 1, 1, 2, 0, Unsigned Decimal, 4, 0. Below that is another 'History Buffer Setup' window with a table: No., Address, Read Length (Word), Sampling Cycle(ms), Sample Number, Trig. Row 1: 1, \$0, 2, 100, 10, .</p>																												
		<p>Data Format</p> <ul style="list-style-type: none"> Historical Trend Graph supports the following data formats:  <p>The screenshot shows a dropdown menu for 'Data Format' with options: Unsigned Decimal, BCD, Signed BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, Floating. Below the menu are labels: Data Format, Integer Digits, Fractional, Min 0, Max 9999.</p> <ul style="list-style-type: none"> Floating is only available when Length is 2. 																												
		<p>Integer / Fractional Digits</p> <p>You can set the displaying number of integer digits and the number of decimal places.</p>																												
		<p>Minimum / Maximum</p> <ul style="list-style-type: none"> If Global range is checked, you will not be able to set the Minimum / Maximum values for the curves on the Details page; instead the range is determined by the minimum and maximum of the Global range. The allowable ranges for the minimum and maximum values are subject to change based on the selected data type and data format. <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td rowspan="5">DWord</td> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td rowspan="2"></td> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td>Floating</td> <td>0 to 9999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	DWord	Hex	0 to 0xFFFF	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295		Hex	0 to 0xFFFFFFFF	Floating	0 to 9999999
		Data Type	Data Format	Allowable range																										
Word	BCD	0 to 9999																												
	Signed BCD	-999 to +9999																												
	Signed Decimal	-32768 to +32767																												
	Unsigned Decimal	0 to 65535																												
DWord	Hex	0 to 0xFFFF																												
	BCD	0 to 99999999																												
	Signed BCD	-9999999 to +9999999																												
	Signed Decimal	-2147483648 to +2147483647																												
	Unsigned Decimal	0 to 4294967295																												
	Hex	0 to 0xFFFFFFFF																												
	Floating	0 to 9999999																												
<p>Display High Value / Display Low Value</p> <p>Display High / Low Values are available on the Historical Trend Graph. You can set the constant, select the internal memory or the controller register address (Word), and set the color for the Display High / Low Values.</p>																														

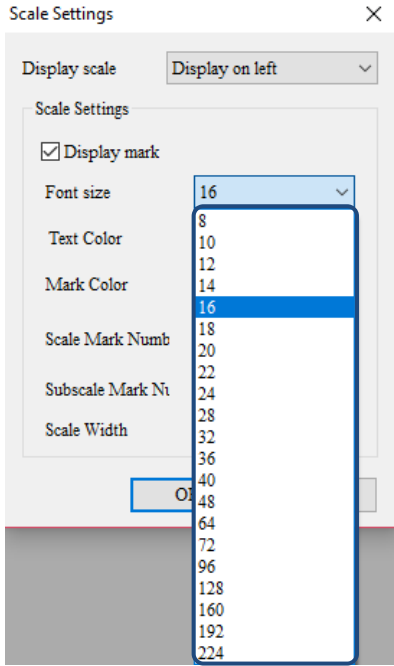
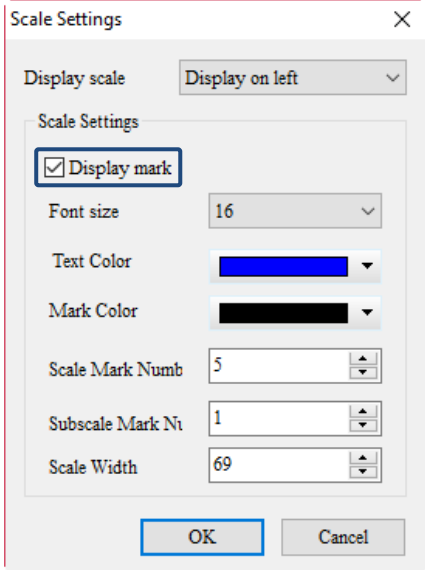
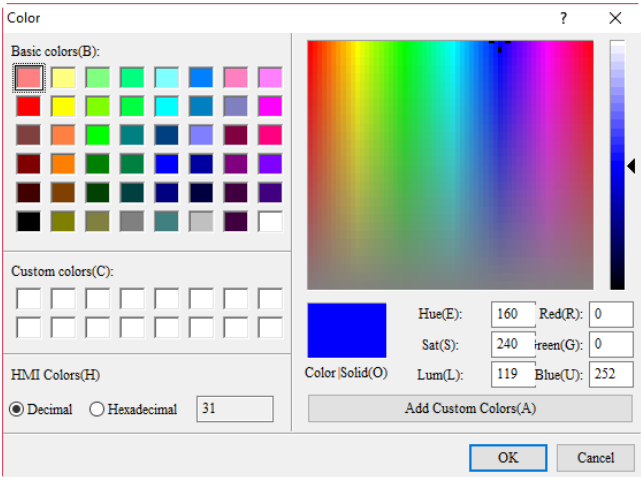
15

No.	Property	Function description				
						
(3)	Scale Settings	<p>Scale Settings is only available when Global range is checked.</p> <table border="1"> <tr> <td>Uncheck</td> <td> <input type="checkbox"/> Global range <div style="border: 1px solid gray; padding: 2px; margin-bottom: 5px;">Scale Settings</div> Length 1 Data Format Unsigned Decimal Integer Digits 4 Fractional 0 Min 0 Max 9999 </td> </tr> <tr> <td>Check</td> <td> <input checked="" type="checkbox"/> Global range <div style="border: 1px solid gray; padding: 2px; margin-bottom: 5px;">Scale Settings</div> Length 1 Data Format Unsigned Decimal Integer Digits 4 Fractional 0 Min 0 Max 9999 </td> </tr> </table>	Uncheck	<input type="checkbox"/> Global range <div style="border: 1px solid gray; padding: 2px; margin-bottom: 5px;">Scale Settings</div> Length 1 Data Format Unsigned Decimal Integer Digits 4 Fractional 0 Min 0 Max 9999	Check	<input checked="" type="checkbox"/> Global range <div style="border: 1px solid gray; padding: 2px; margin-bottom: 5px;">Scale Settings</div> Length 1 Data Format Unsigned Decimal Integer Digits 4 Fractional 0 Min 0 Max 9999
Uncheck	<input type="checkbox"/> Global range <div style="border: 1px solid gray; padding: 2px; margin-bottom: 5px;">Scale Settings</div> Length 1 Data Format Unsigned Decimal Integer Digits 4 Fractional 0 Min 0 Max 9999					
Check	<input checked="" type="checkbox"/> Global range <div style="border: 1px solid gray; padding: 2px; margin-bottom: 5px;">Scale Settings</div> Length 1 Data Format Unsigned Decimal Integer Digits 4 Fractional 0 Min 0 Max 9999					

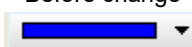
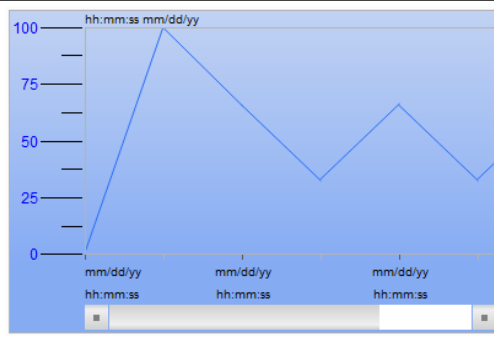
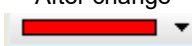
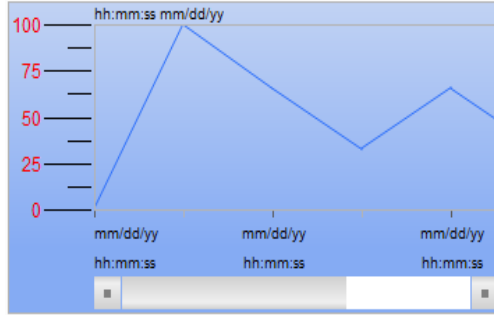

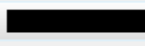


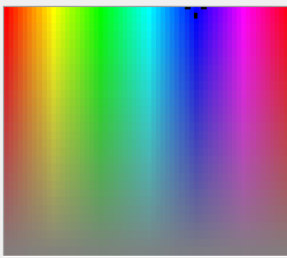

No.	Property	Function description						
(3)	Scale Settings	<div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p style="text-align: right; margin: 0;">Scale Settings ×</p> <p>Display scale: Not Display ▼</p> <p>Scale Settings</p> <p><input checked="" type="checkbox"/> Display mark</p> <p>Font size: 16 ▼</p> <p>Text Color: [Blue] ▼</p> <p>Mark Color: [Black] ▼</p> <p>Scale Mark Numb: 5 ▲▼</p> <p>Subscale Mark N: 1 ▲▼</p> <p>Scale Width: 69 ▲▼</p> <p style="text-align: center; margin-top: 5px;"> OK Cancel </p> </div> <p>The Display scale options include Not Display, Display on left, and Display on Right.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; text-align: center; vertical-align: middle;">Not Display</td> <td style="text-align: center;">  </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;">Display on left</td> <td style="text-align: center;">  </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;">Display on Right</td> <td style="text-align: center;">  </td> </tr> </table>	Not Display		Display on left		Display on Right	
Not Display								
Display on left								
Display on Right								

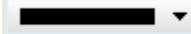
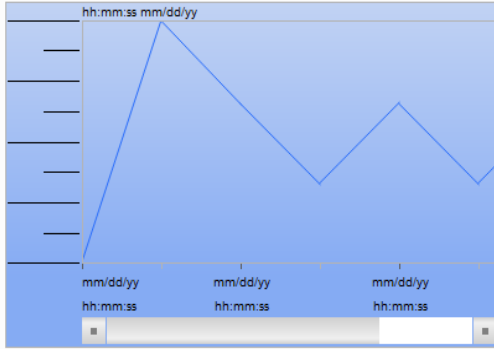

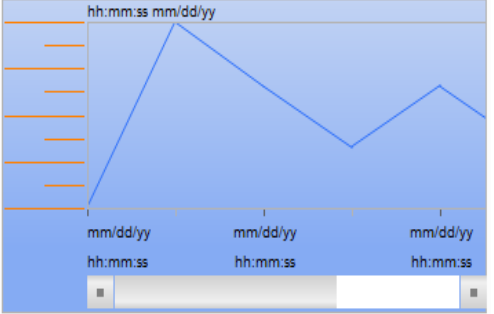
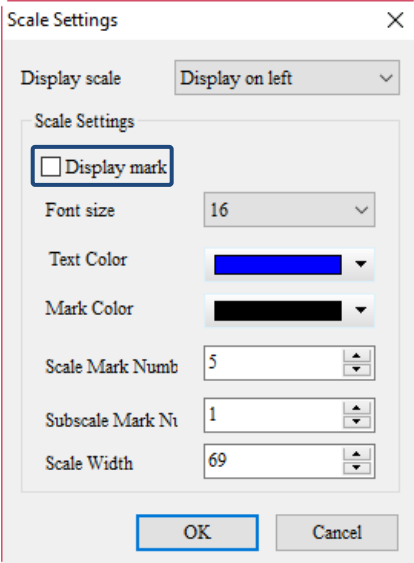
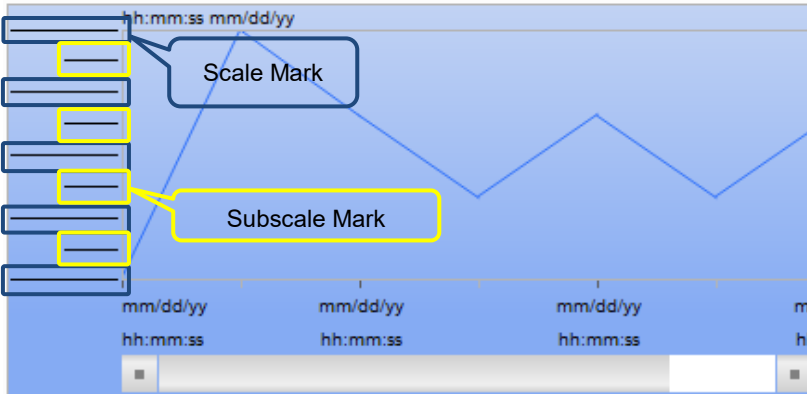
15

No.	Property	Function description
		<p>Select to display the scale numbers or not.</p> <div style="display: flex; justify-content: space-around;"> <div style="background-color: #cccccc; padding: 10px; border: 1px solid #000;">Uncheck</div>  </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="background-color: #cccccc; padding: 10px; border: 1px solid #000;">Check</div>  </div>
(3)	Scale Settings	<p>The Font size setting is valid only when Display mark is checked.</p> 
		Font size

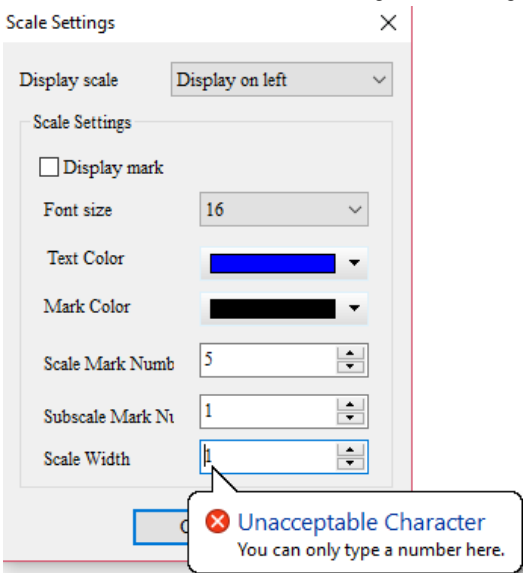
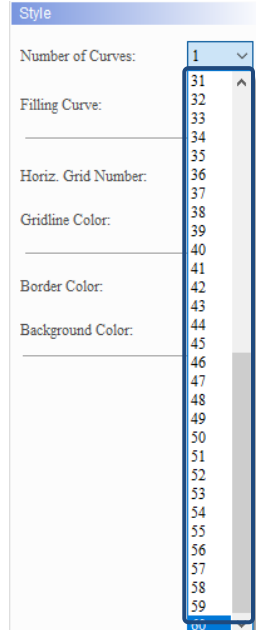
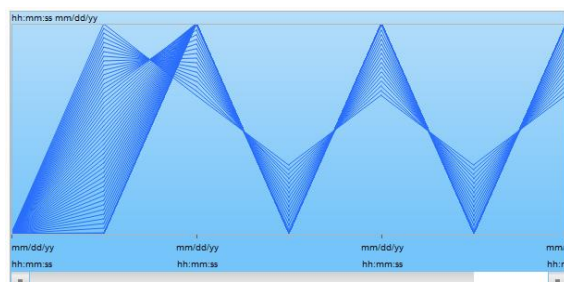
No.	Property	Function description
	Font size	<p>Font size is for setting the size of the numbers displaying on the scale with the font sizes 8 - 224 available.</p> 
(3)	Scale Settings	<p>The Text Color setting is valid only when Display mark is checked.</p>  <p>You can define the text color to be displayed.</p> 

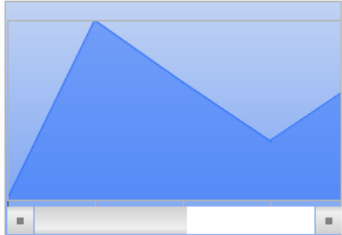
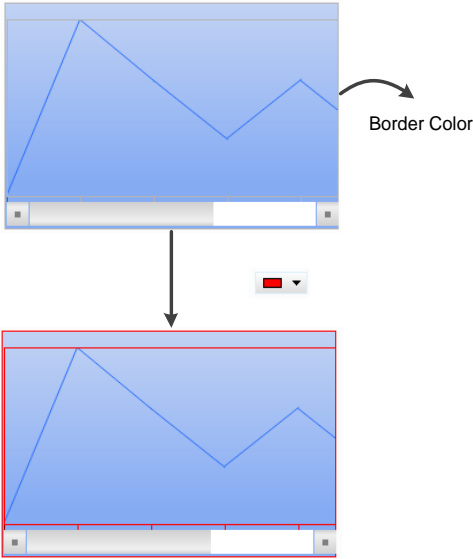
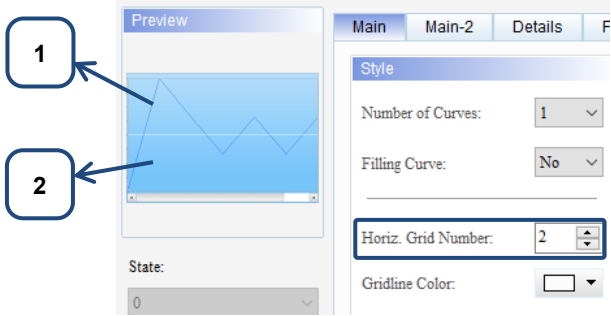
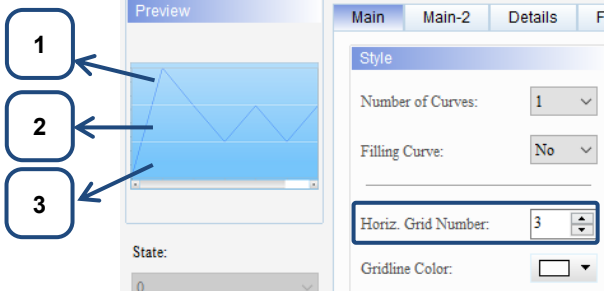
15

No.	Property	Function description	
		Text Color	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;"> <p>Before change</p>  </div> <div style="margin-bottom: 10px;">  </div> <hr/> <div style="margin-bottom: 10px;"> <p>After change</p>  </div> <div>  </div> </div>
(3)	Scale Settings	Mark Color	<ul style="list-style-type: none"> ■ The Mark Color setting is valid even if Display mark is not checked. <div style="border: 1px solid gray; padding: 10px; margin: 10px 0;"> <p style="text-align: center; margin: 0;">Scale Settings ✕</p> <p>Display scale Display on left ▾</p> <hr/> <p>Scale Settings</p> <p><input type="checkbox"/> Display mark</p> <p>Font size 16 ▾</p> <p>Text Color  ▾</p> <p>Mark Color  ▾</p> <p>Scale Mark Num 5 ▾</p> <p>Subscale Mark Nt 1 ▾</p> <p>Scale Width 69 ▾</p> <p style="text-align: center; margin-top: 10px;"> OK Cancel </p> </div> <ul style="list-style-type: none"> ■ You can define the mark color to be displayed. <div style="border: 1px solid gray; padding: 10px; margin: 10px 0;"> <p style="text-align: center; margin: 0;">Color ? ✕</p> <div style="display: flex;"> <div style="flex: 1;"> <p>Basic colors(B):</p>  <p>Custom colors(C):</p>  <p>HMI Colors(H)</p> <p><input checked="" type="radio"/> Decimal <input type="radio"/> Hexadecimal 31</p> </div> <div style="flex: 2;">  <div style="margin-top: 10px;"> <p> Hue(E): <input type="text" value="160"/> Red(R): <input type="text" value="0"/></p> <p>Sat(S): <input type="text" value="240"/> Green(G): <input type="text" value="0"/></p> <p>Color (Solid(O) Lum(L): <input type="text" value="119"/> Blue(U): <input type="text" value="252"/></p> <p style="text-align: center; margin-top: 5px;">Add Custom Colors(A)</p> </div> </div> </div> <p style="text-align: center; margin-top: 10px;"> OK Cancel </p> </div>

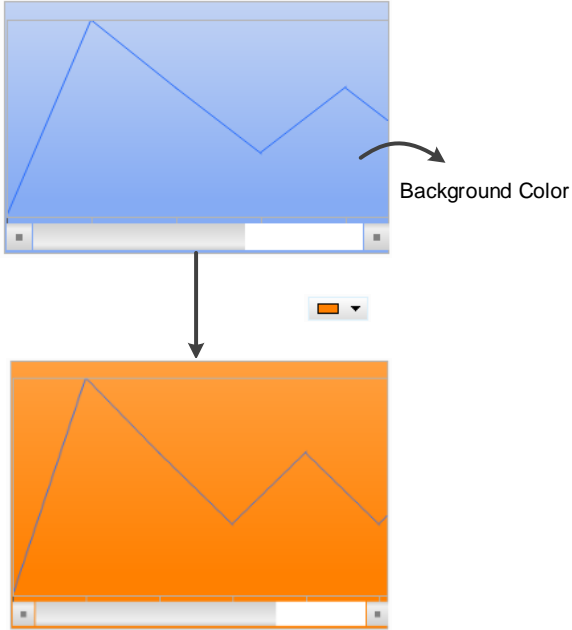

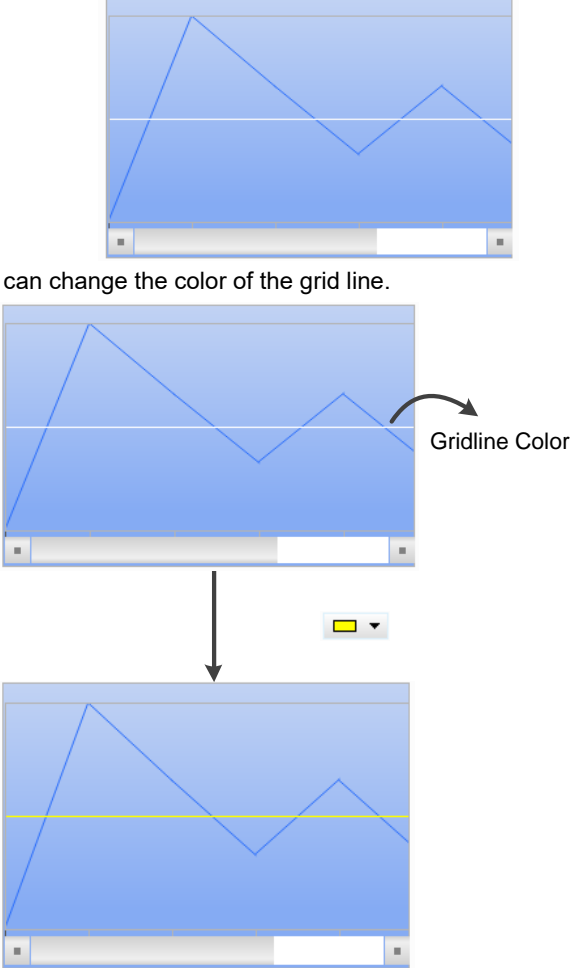
No.	Property	Function description	
		Mark Color	<div style="display: flex; flex-direction: column;"> <div style="margin-bottom: 10px;"> <p>Before change</p>  </div> <div>  </div> </div> <hr/> <div style="display: flex; flex-direction: column;"> <div style="margin-bottom: 10px;"> <p>After change</p>  </div> <div>  </div> </div>
(3)	Scale Settings	Scale Mark Number	<ul style="list-style-type: none"> ■ The Scale Mark Number and Subscale Mark Number settings are valid even if Display mark is not checked. 
		Subscale Mark Number	<ul style="list-style-type: none"> ■ The minimum is 1 and the maximum is 99 for both the Scale Mark Number and Subscale Mark Number. ■ When the Scale Mark Number is 5 and the Subscale Mark Number is 1, the graph is as follows. 

15

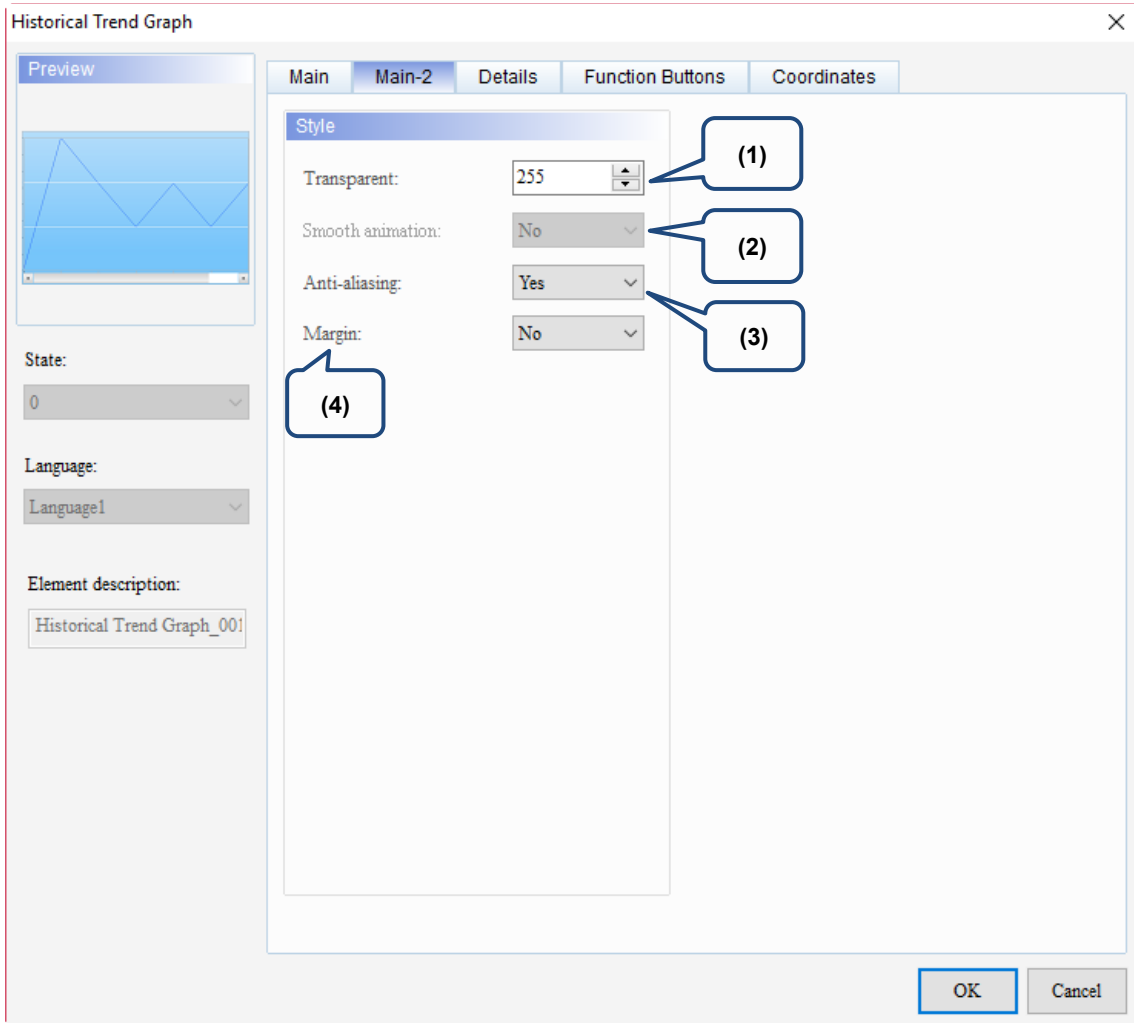
No.	Property	Function description
(3)	Scale Settings Scale Width	<p>When the font size is set too big, you can adjust Scale Width so the text shows.</p> <p>Note:</p> <ol style="list-style-type: none"> Scale Width must be smaller than the element width. When you drag the scale width so it is larger than the element width, the scale will not display. When you use the set value to make the scale width larger than the element width, the Scale Width is immediately adjusted to the element width -1. If you enter a non-numeric character, the following error message pops up. 
(4)	Style Number of Curves	<ul style="list-style-type: none"> A Historical Trend Graph element supports up to 60 curves.  <ul style="list-style-type: none"> If you select 60 curves, you can still change the width and color of each curve. 

No.	Property	Function description
		<ul style="list-style-type: none"> ■ Set to fill the area below the curve. ■ The default is No. If set to Yes, the curve is as follows. 
(4)	Style	<p>Set the Historical Trend Graph element border color.</p> 
		<ul style="list-style-type: none"> ■ The maximum horizontal grid count is 50. ■ Horiz. Grid Number is for separating the blocks in the Historical Trend Graph element. The default is 1, meaning there is no grid line. If the Horiz. Grid Number is set to 2, there is one grid line separating the Historical Trend Graph element into 2 blocks; if set to 3, there are two grid lines separating the element into 3 blocks, and so on. <p>Historical Trend Graph</p>  <p>Historical Trend Graph</p> 

15

No.	Property	Function description
	Background Color	<p>Set the background color of the element.</p> 
(4)	Style	<ul style="list-style-type: none"> ■ The Gridline Color is the color of the grid line in the Historical Trend Graph. The default is .  <ul style="list-style-type: none"> ■ You can change the color of the grid line.

■ Main-2



15

Figure 15.2.3 Main-2 property page for the Historical Trend Graph element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When enabled, the element display becomes more delicate without jagged edges.				
(4)	Margin	<p>The Margin function is available for this element. When you select Yes for Margin, the element will indent as shown in the figure below.</p> <table border="1"> <tr> <td>Margin is set to Yes</td> <td></td> </tr> <tr> <td>Margin is set to No</td> <td></td> </tr> </table>	Margin is set to Yes		Margin is set to No	
Margin is set to Yes						
Margin is set to No						

■ Details

15

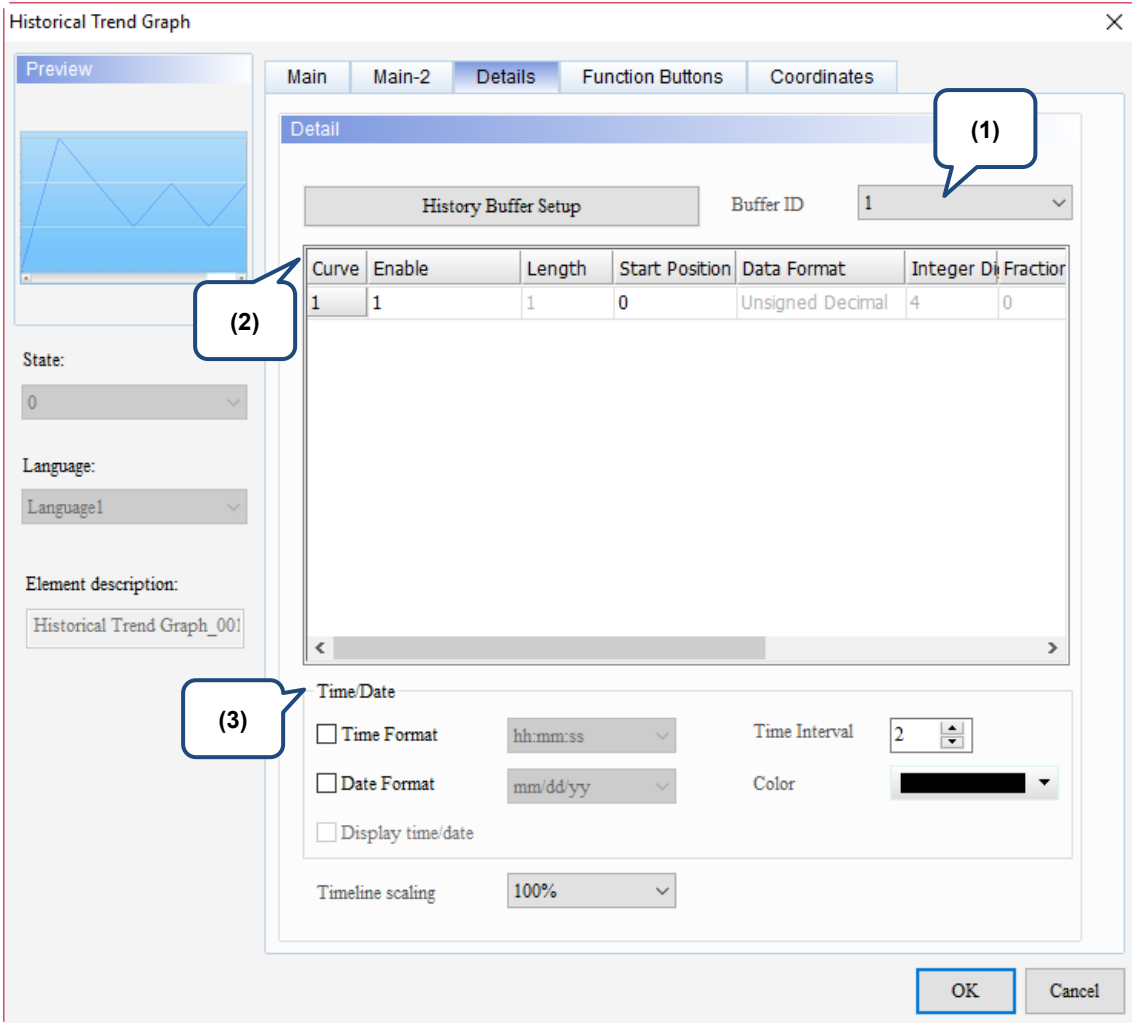
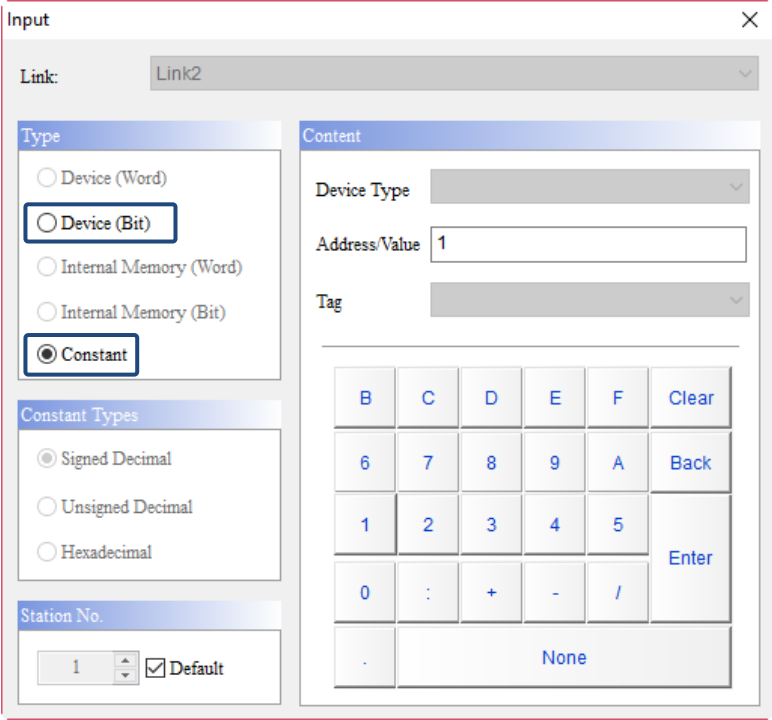
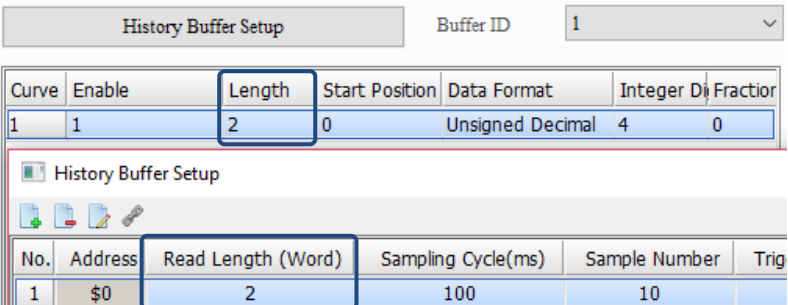


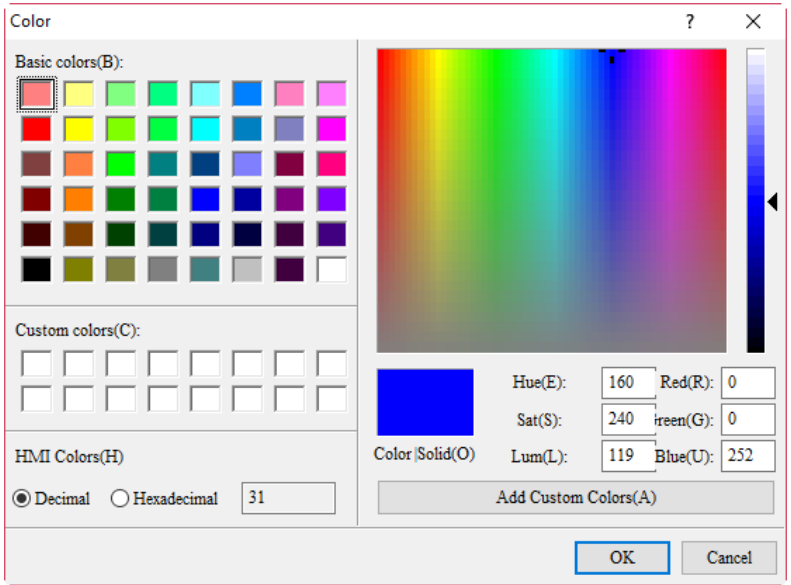
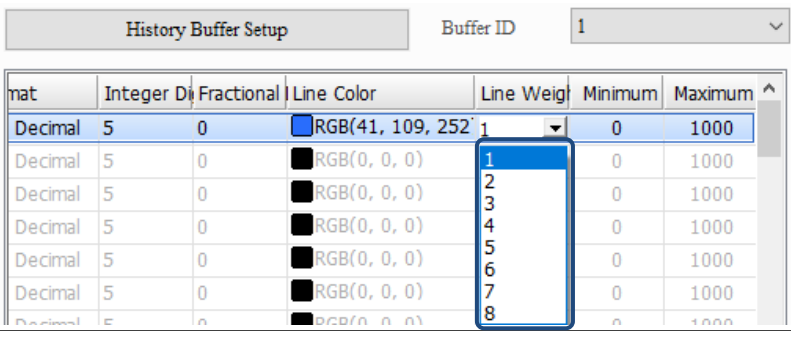
Figure 15.2.4 Details property page for the Historical Trend Graph element

No.	Property	Function description
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can also set up to 12 sets.</p>

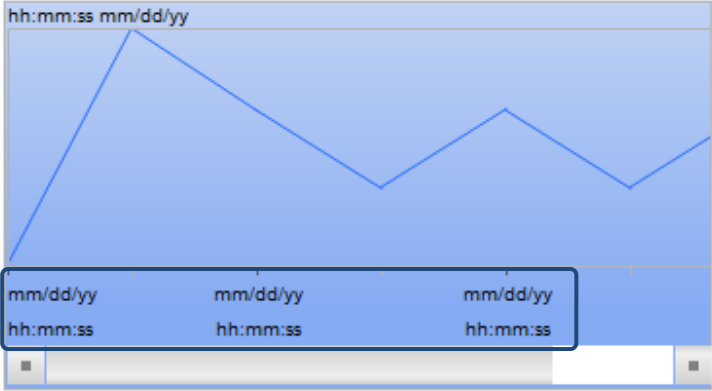
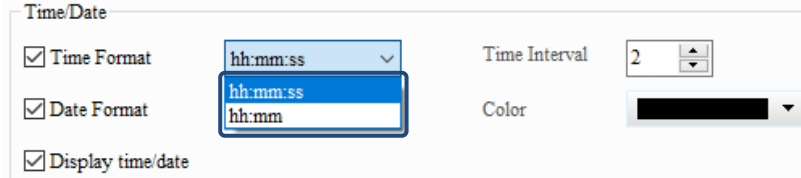
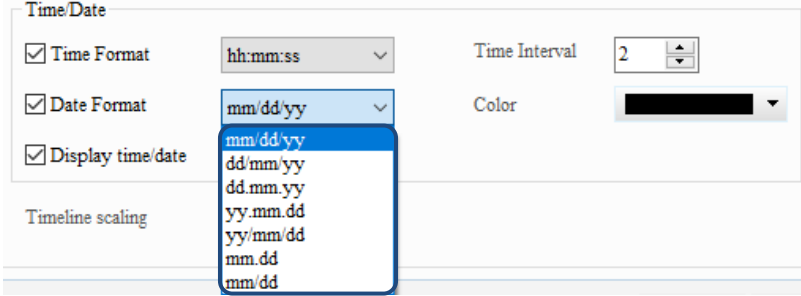

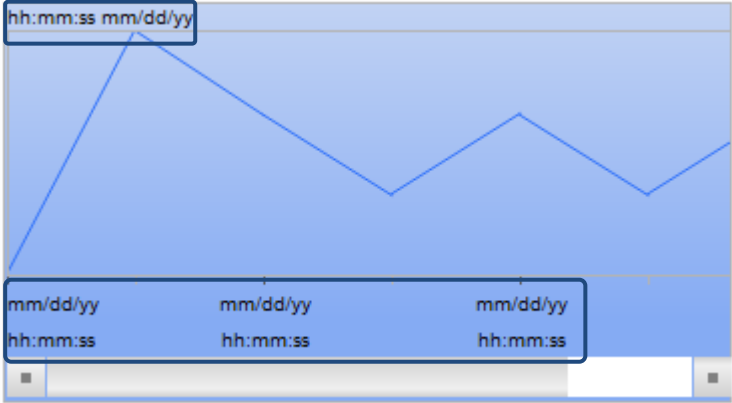
No.	Property	Function description
(2)	Curve setting	<ul style="list-style-type: none"> Set whether the curve is enabled to read data. If Constant is selected for Type, then setting the value to 1 indicates enable and setting to 2 indicates disable. If Bit is selected for Type, then Bit On indicates enable and Bit Off indicates disable. The value supports the Bit of the element, Bit of the internal memory, and constant setting. 
	Length	<ul style="list-style-type: none"> You can set Length to 1 or 2. You can only set Length to 2 when Read Length (Word) is set to 2 or above.  <ul style="list-style-type: none"> When Global range is checked, you cannot set this function.

15

No.	Property	Function description																																							
(2)	Curve setting	<ul style="list-style-type: none"> The Start Position setting is determined by the set Read Length (Word). If the Read Length (Word) is 60, the Start Position can be 0 - 59. <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$0</td> <td>60</td> <td>100</td> </tr> </tbody> </table>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	60	100																															
		No.	Address	Read Length (Word)	Sampling Cycle(ms)																																				
1	\$0	60	100																																						
Data Format	<ul style="list-style-type: none"> The supported data formats are as follows: <table border="1"> <thead> <tr> <th>Curve</th> <th>Enable</th> <th>Length</th> <th>Start Position</th> <th>Data Format</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>Unsigned Decima</td> </tr> <tr> <td>2</td> <td>0</td> <td>1</td> <td>0</td> <td>BCD</td> </tr> <tr> <td>3</td> <td>0</td> <td>1</td> <td>0</td> <td>Signed BCD</td> </tr> <tr> <td>4</td> <td>0</td> <td>1</td> <td>0</td> <td>Signed Decimal</td> </tr> <tr> <td>5</td> <td>0</td> <td>1</td> <td>0</td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>Hexadecimal</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>Floating</td> </tr> </tbody> </table> <ul style="list-style-type: none"> When Global range is checked, you cannot set this function. <p>Note:</p> <ol style="list-style-type: none"> If you select Floating as the Data Format, please set Length to 2. If you select Floating as the Data Format, but set Length to 1 word, a message will pop up to remind you that you need to set Length to 2 or more words. 	Curve	Enable	Length	Start Position	Data Format	1	1	1	0	Unsigned Decima	2	0	1	0	BCD	3	0	1	0	Signed BCD	4	0	1	0	Signed Decimal	5	0	1	0	Unsigned Decimal					Hexadecimal					Floating
Curve	Enable	Length	Start Position	Data Format																																					
1	1	1	0	Unsigned Decima																																					
2	0	1	0	BCD																																					
3	0	1	0	Signed BCD																																					
4	0	1	0	Signed Decimal																																					
5	0	1	0	Unsigned Decimal																																					
				Hexadecimal																																					
				Floating																																					

No.	Property	Function description																											
(2)	Integer / Fractional Digits	<ul style="list-style-type: none"> You can set the displaying number of integer digits and the number of decimal places. When Global range is checked, you cannot set this function. 																											
	Line Color	<p>You can set the line color for the curve.</p> 																											
	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 																											
Minimum / Maximum	<ul style="list-style-type: none"> If Global range is checked, you will not be able to set the Minimum / Maximum values for the curves; instead the range is determined by the minimum and maximum of the Global range. The allowable ranges for the minimum and maximum values are subject to change based on the selected data type and data format. <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td rowspan="6">DWord</td> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294697295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td></td> <td>Floating</td> <td>0 to 9999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	DWord	Hex	0 to 0xFFFF	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294697295	Hex	0 to 0xFFFFFFFF		Floating	0 to 9999999
Data Type	Data Format	Allowable range																											
Word	BCD	0 to 9999																											
	Signed BCD	-999 to +9999																											
	Signed Decimal	-32768 to +32767																											
	Unsigned Decimal	0 to 65535																											
DWord	Hex	0 to 0xFFFF																											
	BCD	0 to 99999999																											
	Signed BCD	-9999999 to +9999999																											
	Signed Decimal	-2147483648 to +2147483647																											
	Unsigned Decimal	0 to 4294697295																											
	Hex	0 to 0xFFFFFFFF																											
	Floating	0 to 9999999																											

15

No.	Property	Function description
	Display time/date	<ul style="list-style-type: none"> When you check Display time/date, the time scale will display below the Historical Trend Graph element; if it is not checked, the time scale will not display.  <ul style="list-style-type: none"> You can set the number of the time scales (up to 9,999) when you check Display time/date. The above figure displays two time scales.
(3)	Time/Date Time Format / Date Format	<ul style="list-style-type: none"> Two time formats are supported as follows:  <ul style="list-style-type: none"> Seven date formats are supported as follows: 
	Color	<p>With this setting, you can change the displaying color of the time and date, including the recorded time and date shown on top of the Historical Trend Graph and the time scales. The default is .</p> 

■ Function Buttons

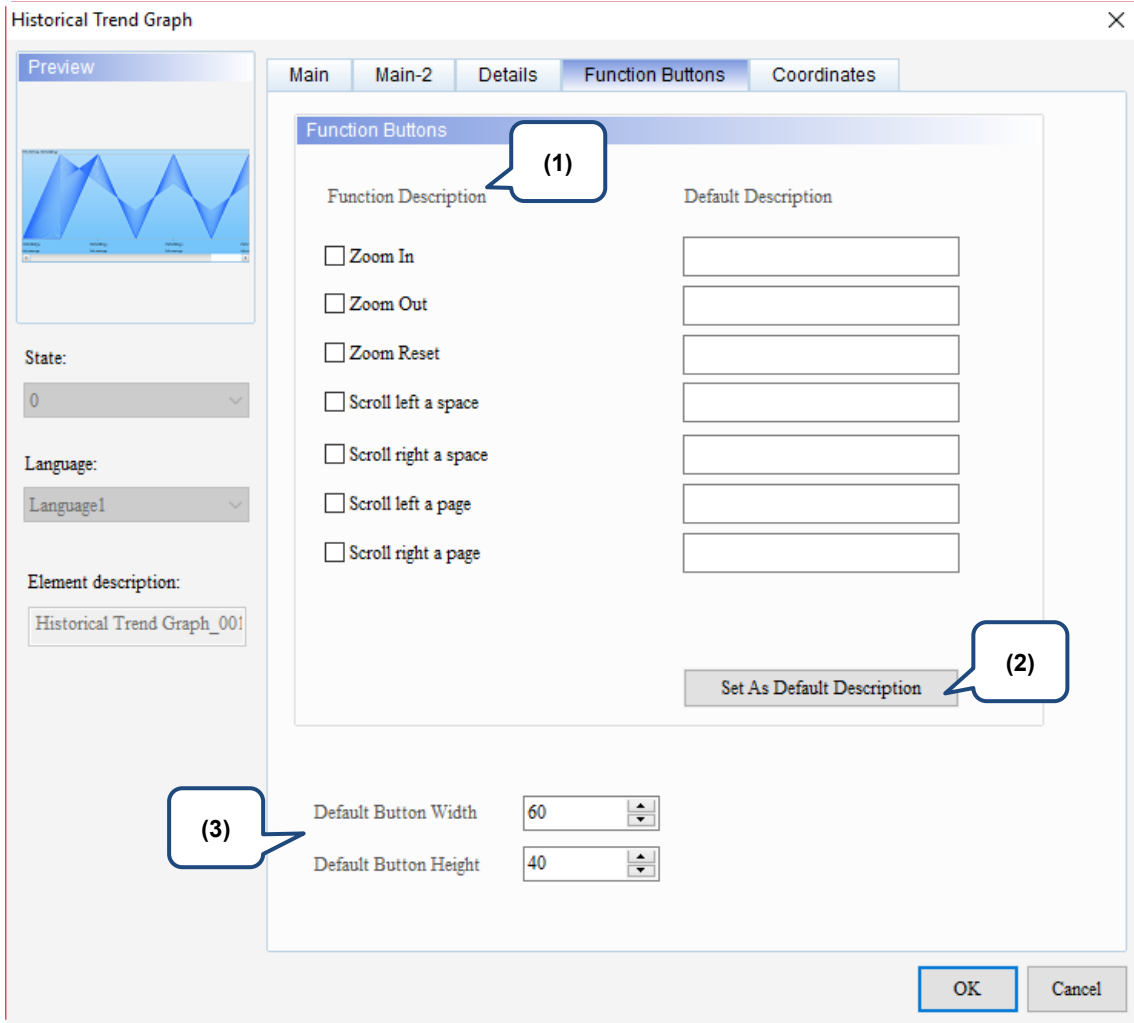
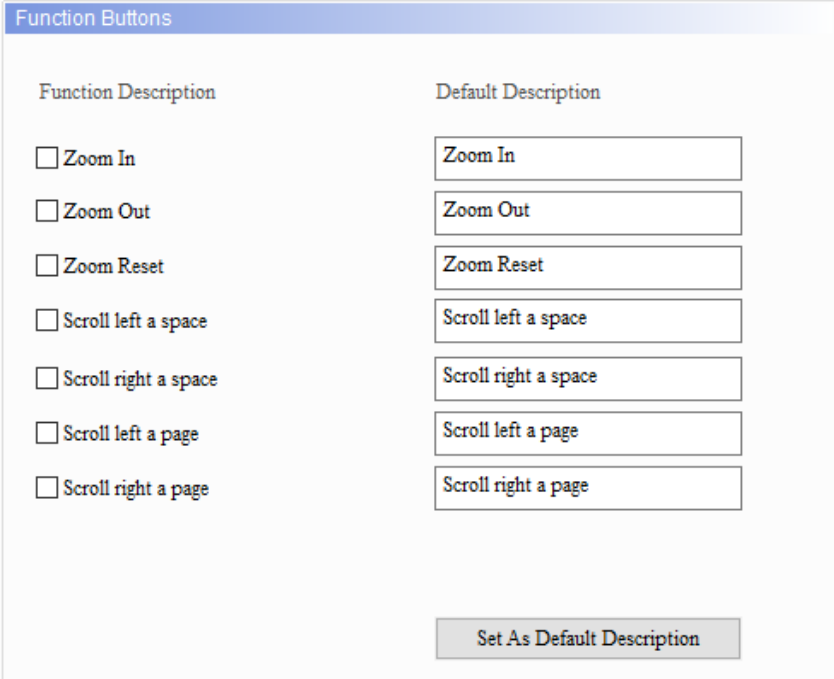
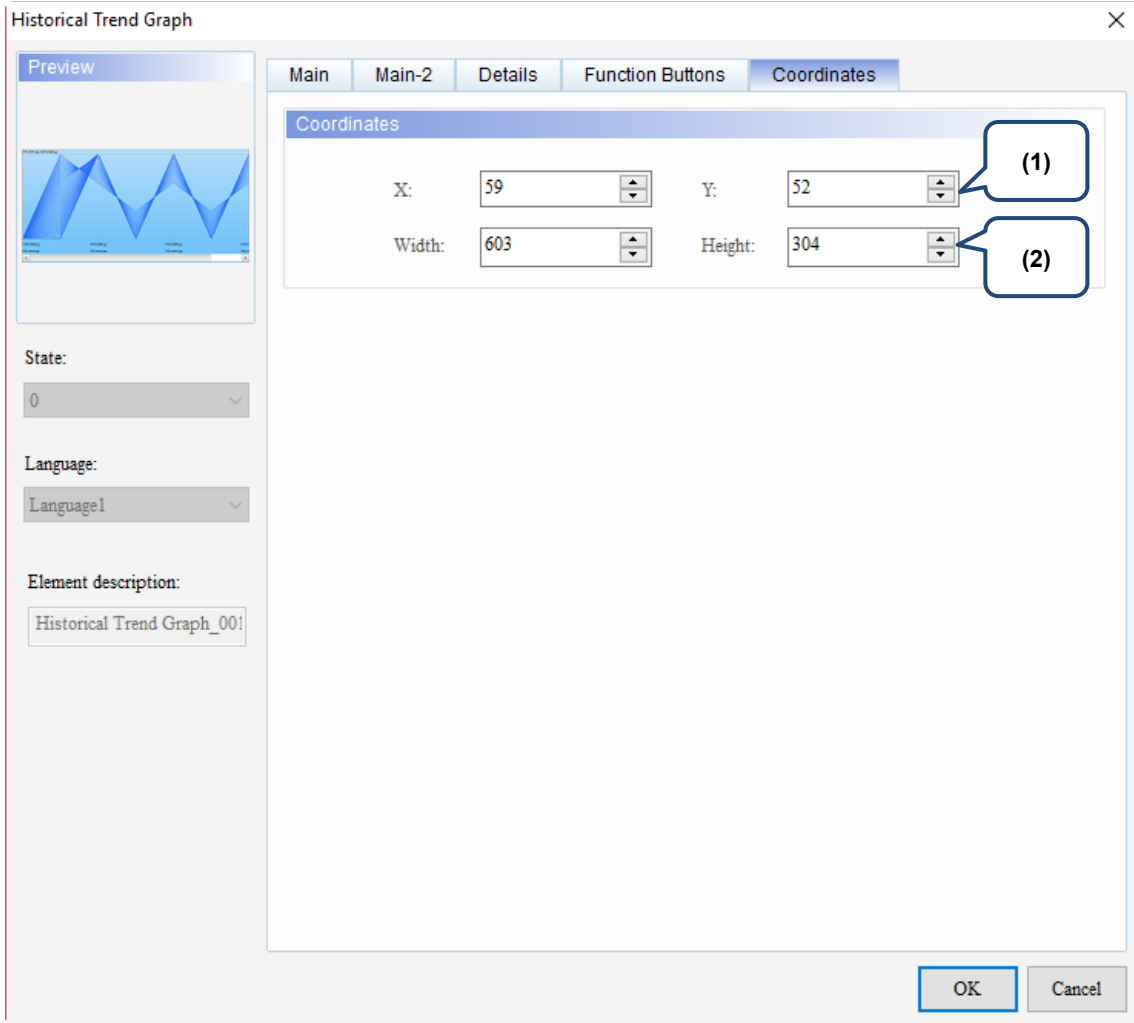


Figure 15.2.5 Function Buttons property page for the Historical Trend Graph element

15

No.	Property	Function description																
(1)	Function description	<p>Check the Function Buttons you want to display on the Historical Trend Graph.</p> <table border="1"> <tr> <td>Zoom In</td> <td>Zoom in on the history data of X-axis.</td> </tr> <tr> <td>Zoom Out</td> <td>Zoom out on the history data of X-axis.</td> </tr> <tr> <td>Zoom Reset</td> <td>Reset the history data of X-axis to the default size.</td> </tr> <tr> <td>Scroll left a space</td> <td>Scroll to the left a bit.</td> </tr> <tr> <td>Scroll right a space</td> <td>Scroll to the right a bit.</td> </tr> <tr> <td>Scroll left a page</td> <td>Scroll to the left for a page.</td> </tr> <tr> <td>Scroll right a page</td> <td>Scroll to the right for a page.</td> </tr> </table>	Zoom In	Zoom in on the history data of X-axis.	Zoom Out	Zoom out on the history data of X-axis.	Zoom Reset	Reset the history data of X-axis to the default size.	Scroll left a space	Scroll to the left a bit.	Scroll right a space	Scroll to the right a bit.	Scroll left a page	Scroll to the left for a page.	Scroll right a page	Scroll to the right for a page.		
Zoom In	Zoom in on the history data of X-axis.																	
Zoom Out	Zoom out on the history data of X-axis.																	
Zoom Reset	Reset the history data of X-axis to the default size.																	
Scroll left a space	Scroll to the left a bit.																	
Scroll right a space	Scroll to the right a bit.																	
Scroll left a page	Scroll to the left for a page.																	
Scroll right a page	Scroll to the right for a page.																	
(2)	Set As Default Description	<p>If you press Set As Default Description, the texts are automatically set as default.</p>  <table border="1"> <thead> <tr> <th>Function Description</th> <th>Default Description</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Zoom In</td> <td>Zoom In</td> </tr> <tr> <td><input type="checkbox"/> Zoom Out</td> <td>Zoom Out</td> </tr> <tr> <td><input type="checkbox"/> Zoom Reset</td> <td>Zoom Reset</td> </tr> <tr> <td><input type="checkbox"/> Scroll left a space</td> <td>Scroll left a space</td> </tr> <tr> <td><input type="checkbox"/> Scroll right a space</td> <td>Scroll right a space</td> </tr> <tr> <td><input type="checkbox"/> Scroll left a page</td> <td>Scroll left a page</td> </tr> <tr> <td><input type="checkbox"/> Scroll right a page</td> <td>Scroll right a page</td> </tr> </tbody> </table> <p style="text-align: right;"><input type="button" value="Set As Default Description"/></p>	Function Description	Default Description	<input type="checkbox"/> Zoom In	Zoom In	<input type="checkbox"/> Zoom Out	Zoom Out	<input type="checkbox"/> Zoom Reset	Zoom Reset	<input type="checkbox"/> Scroll left a space	Scroll left a space	<input type="checkbox"/> Scroll right a space	Scroll right a space	<input type="checkbox"/> Scroll left a page	Scroll left a page	<input type="checkbox"/> Scroll right a page	Scroll right a page
Function Description	Default Description																	
<input type="checkbox"/> Zoom In	Zoom In																	
<input type="checkbox"/> Zoom Out	Zoom Out																	
<input type="checkbox"/> Zoom Reset	Zoom Reset																	
<input type="checkbox"/> Scroll left a space	Scroll left a space																	
<input type="checkbox"/> Scroll right a space	Scroll right a space																	
<input type="checkbox"/> Scroll left a page	Scroll left a page																	
<input type="checkbox"/> Scroll right a page	Scroll right a page																	
(3)	Default Button Width / Height	You can adjust the button height and width.																

■ Coordinates



15

Figure 15.2.6 Coordinates property page for the Historical Trend Graph element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

15

15.3 Historical Data Table

The Historical Data Table displays the numerical values converted from the data read by the History Buffer. The 60 columns of the Historical Data Table correspond to the Read Length of 60 words in the Historical Trend Graph.

When you double-click Historical Data Table, the property page is shown as follows.

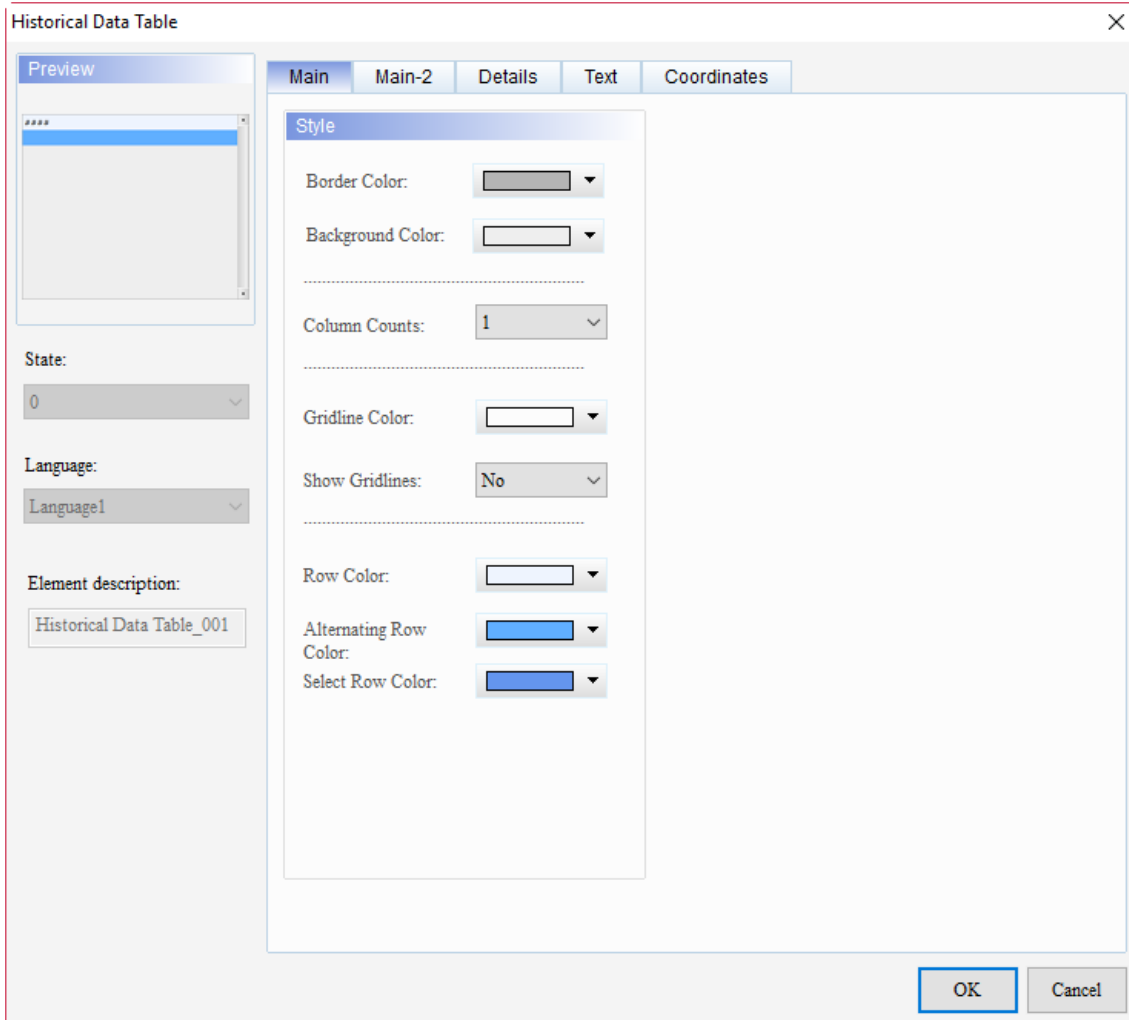


Figure 15.3.1 Properties of Historical Data Table

Table 15.3.1 Function page of Historical Data Table

Historical Data Table	
Function page	Description
Preview	Historical Data Table elements do not support multiple status values and multi-language data display.
Main	Set Border Color, Background Color, Column Counts, Gridline Color, Show Gridlines, Row Color, Alternating Row Color, and Select Row Color of the element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Details	Set Buffer ID. Set Time/Date. Set Length, Start Position, Data Format, Integer Digits, Fractional Digits, Color, Field Width, Prefix Zero, and Title. Set Show Title, Background Color, Text Color, Time, and Date.
Text	Set the text size of the displayed numeric data.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

15

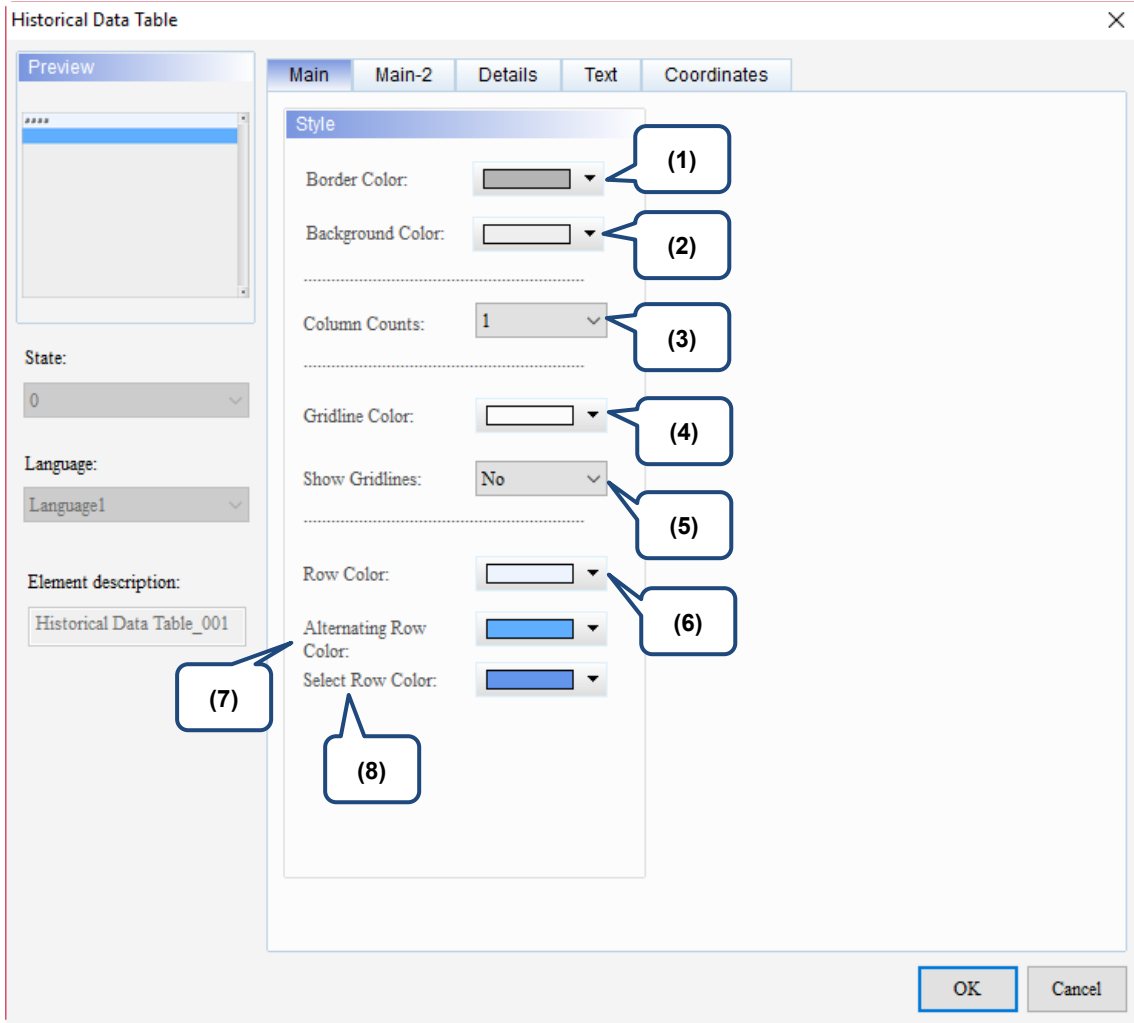
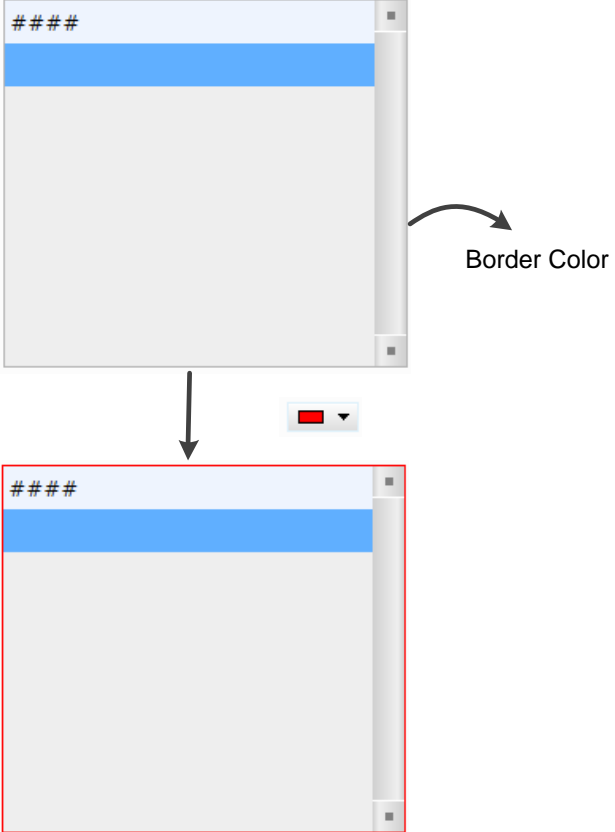
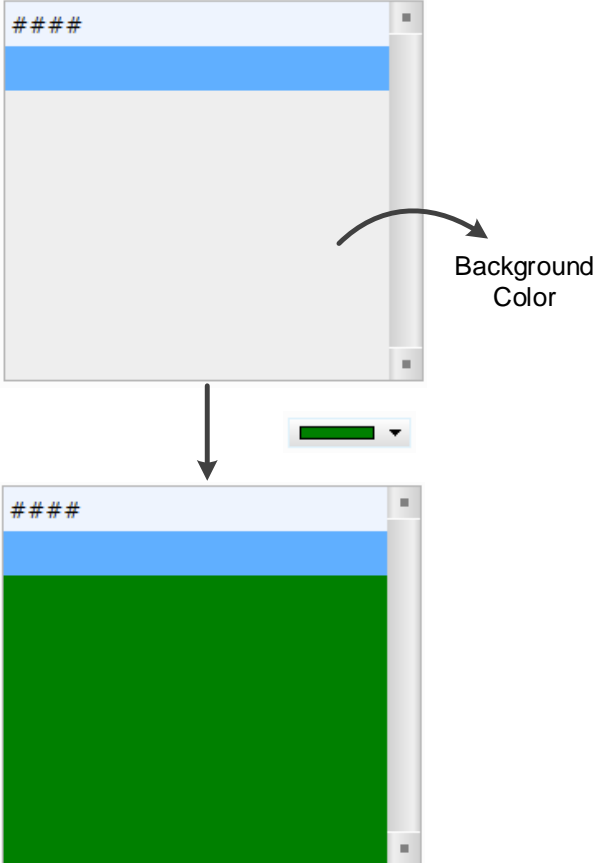
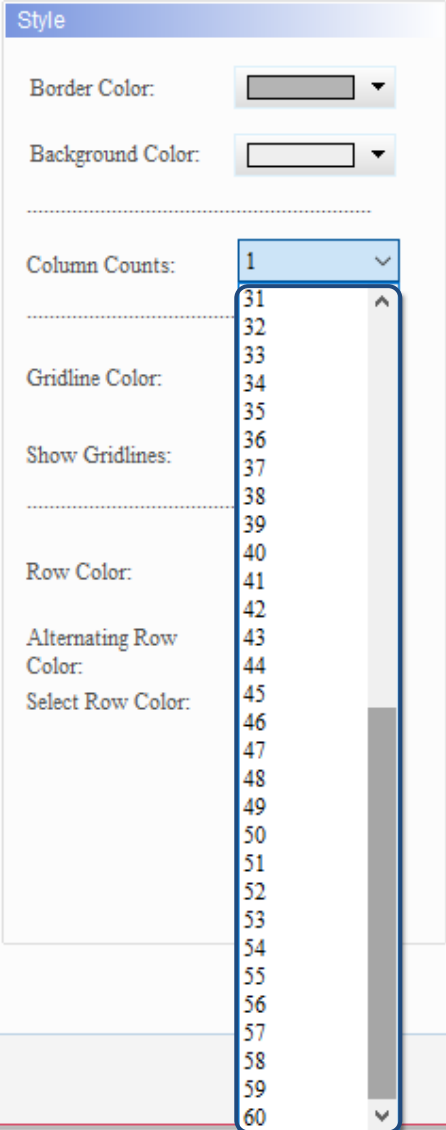
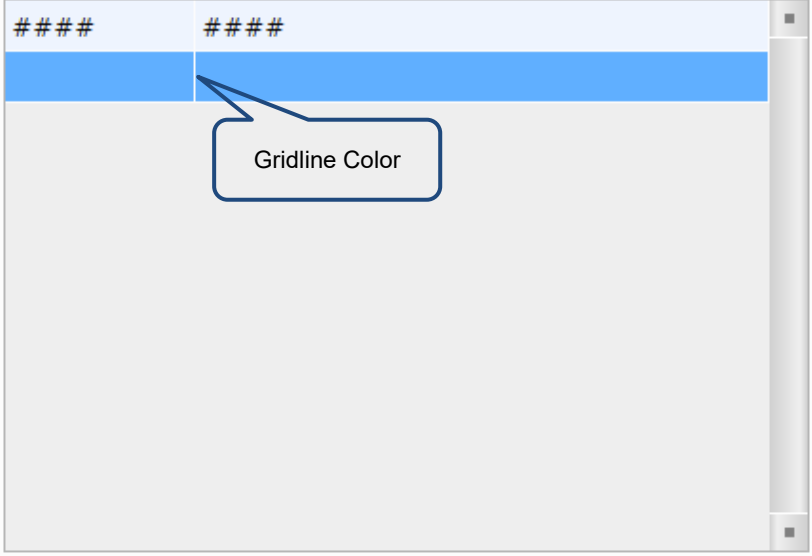


Figure 15.3.2 Main property page for the Historical Data Table element

No.	Property	Function description
(1)	Border Color	<p>Set the Historical Data Table element border color.</p> 
(2)	Background Color	<p>Set the background color of the element.</p> 

15

No.	Property	Function description
(3)	Column Counts	<p>The maximum of Column Counts is 60 which correspond to the Read Length of 60 words in the History Buffer Setup respectively.</p> 
(4)	Gridline Color	<ul style="list-style-type: none"> ■ Set the gridline color of the element. The default is white. ■ The Gridline color setting is valid only when Show Gridlines is set to Yes and Column Counts is set to 2 or more.
(5)	Show Gridlines	

No.	Property	Function description																				
(6)	Row Color	<p>Color of the odd rows. The default is <input type="text" value=""/></p> <table border="1"> <tr><td>370</td><td>740</td></tr> <tr><td>375</td><td>750</td></tr> <tr><td>385</td><td>770</td></tr> <tr><td>390</td><td>780</td></tr> <tr><td>395</td><td>790</td></tr> <tr><td>400</td><td>800</td></tr> <tr><td>410</td><td>820</td></tr> <tr><td>415</td><td>830</td></tr> <tr><td>425</td><td>850</td></tr> <tr><td>430</td><td>860</td></tr> </table>	370	740	375	750	385	770	390	780	395	790	400	800	410	820	415	830	425	850	430	860
370	740																					
375	750																					
385	770																					
390	780																					
395	790																					
400	800																					
410	820																					
415	830																					
425	850																					
430	860																					
(7)	Alternating Row Color	<p>Color of the even rows. The default is <input type="text" value=""/></p> <table border="1"> <tr><td>370</td><td>740</td></tr> <tr><td>375</td><td>750</td></tr> <tr><td>385</td><td>770</td></tr> <tr><td>390</td><td>780</td></tr> <tr><td>395</td><td>790</td></tr> <tr><td>400</td><td>800</td></tr> <tr><td>410</td><td>820</td></tr> <tr><td>415</td><td>830</td></tr> <tr><td>425</td><td>850</td></tr> <tr><td>430</td><td>860</td></tr> </table>	370	740	375	750	385	770	390	780	395	790	400	800	410	820	415	830	425	850	430	860
370	740																					
375	750																					
385	770																					
390	780																					
395	790																					
400	800																					
410	820																					
415	830																					
425	850																					
430	860																					
(8)	Select Row Color	<p>When you select the data rows to view, the rows are in the color specified in this setting. The default is <input type="text" value=""/></p> <table border="1"> <tr><td>165</td><td>330</td></tr> <tr><td>175</td><td>350</td></tr> <tr><td>180</td><td>360</td></tr> <tr><td>185</td><td>370</td></tr> <tr><td>190</td><td>380</td></tr> <tr><td>200</td><td>400</td></tr> <tr><td>205</td><td>410</td></tr> <tr><td>215</td><td>430</td></tr> <tr><td>220</td><td>440</td></tr> <tr><td>225</td><td>450</td></tr> </table>	165	330	175	350	180	360	185	370	190	380	200	400	205	410	215	430	220	440	225	450
165	330																					
175	350																					
180	360																					
185	370																					
190	380																					
200	400																					
205	410																					
215	430																					
220	440																					
225	450																					

■ Main-2

15

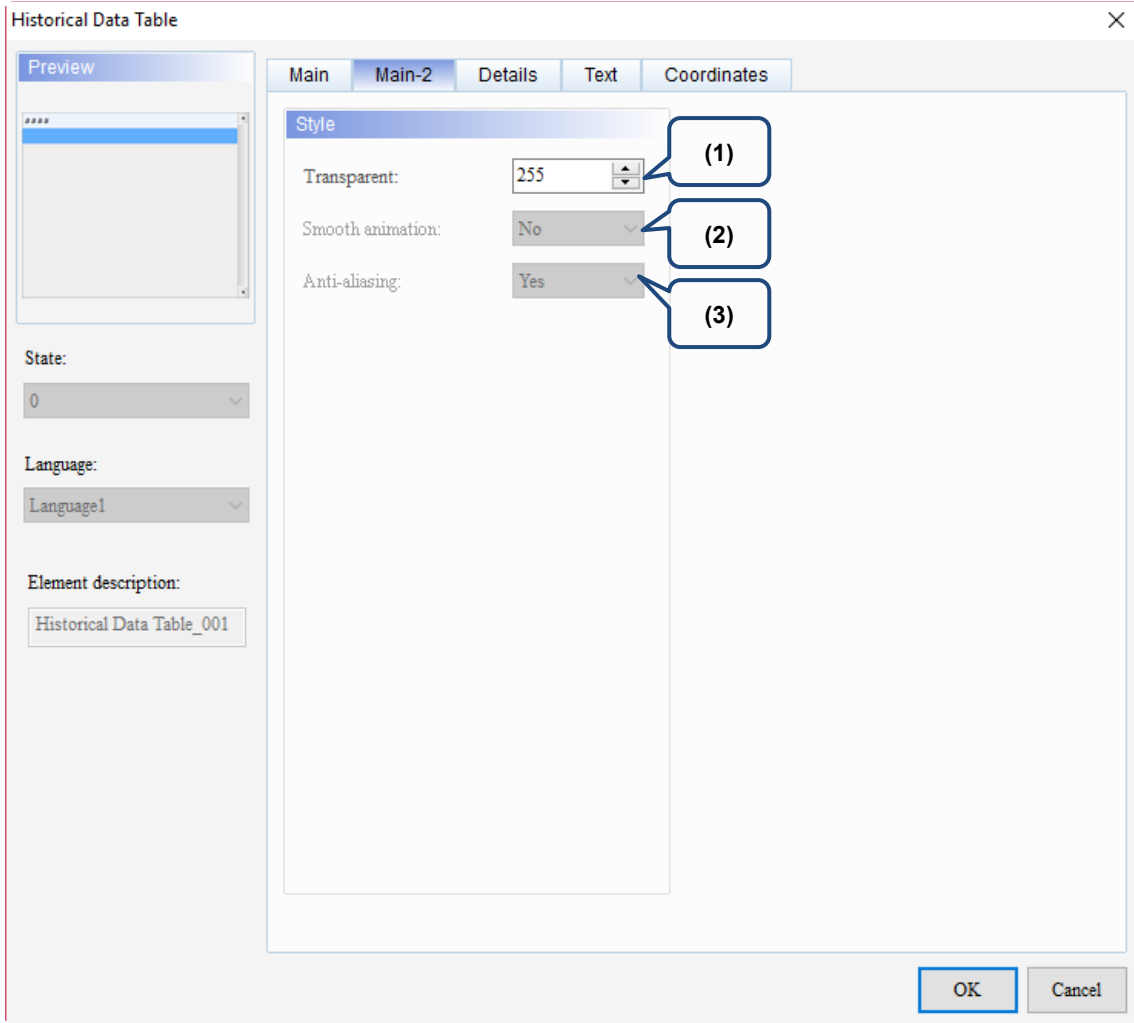
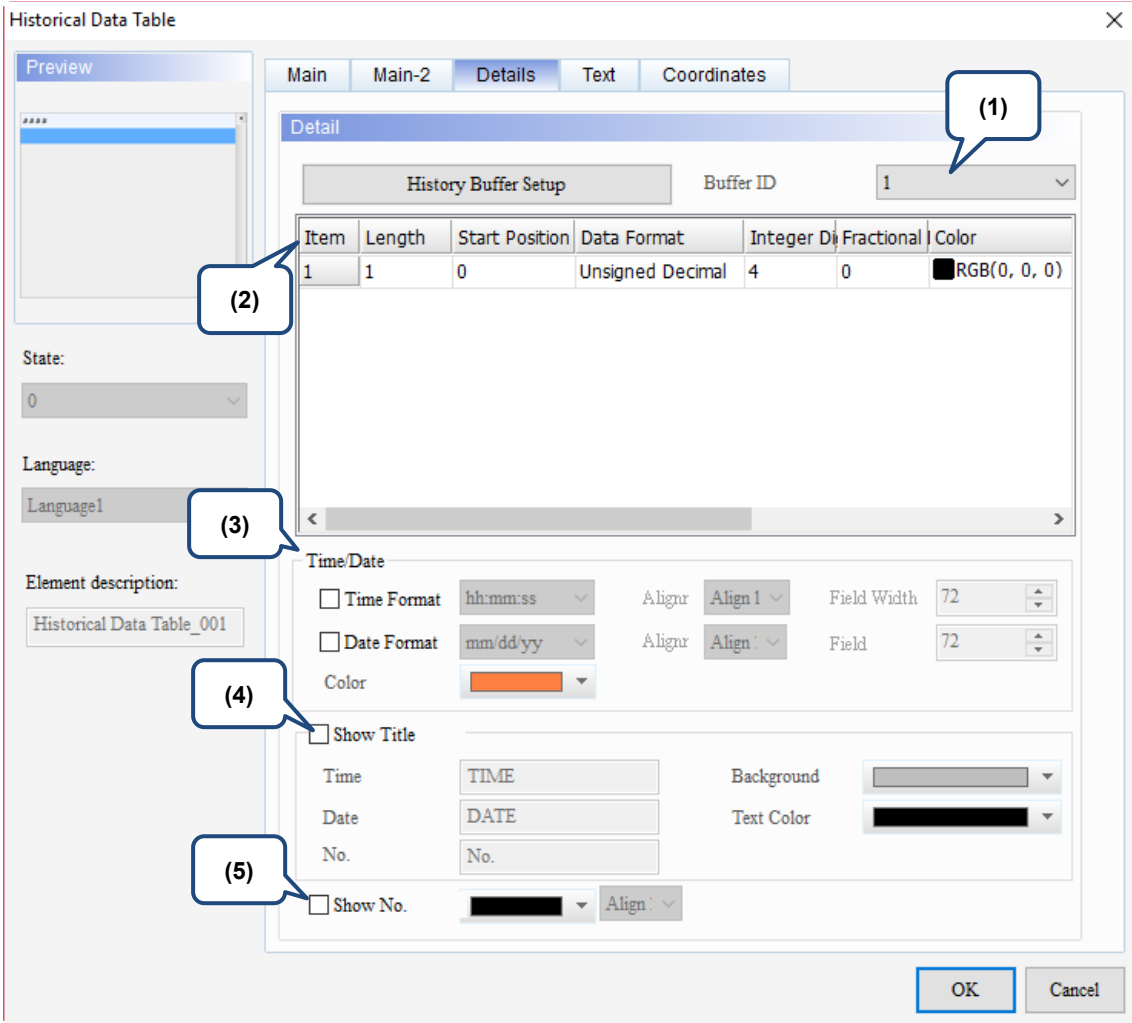


Figure 15.3.3 Main-2 property page for the Historical Data Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Details



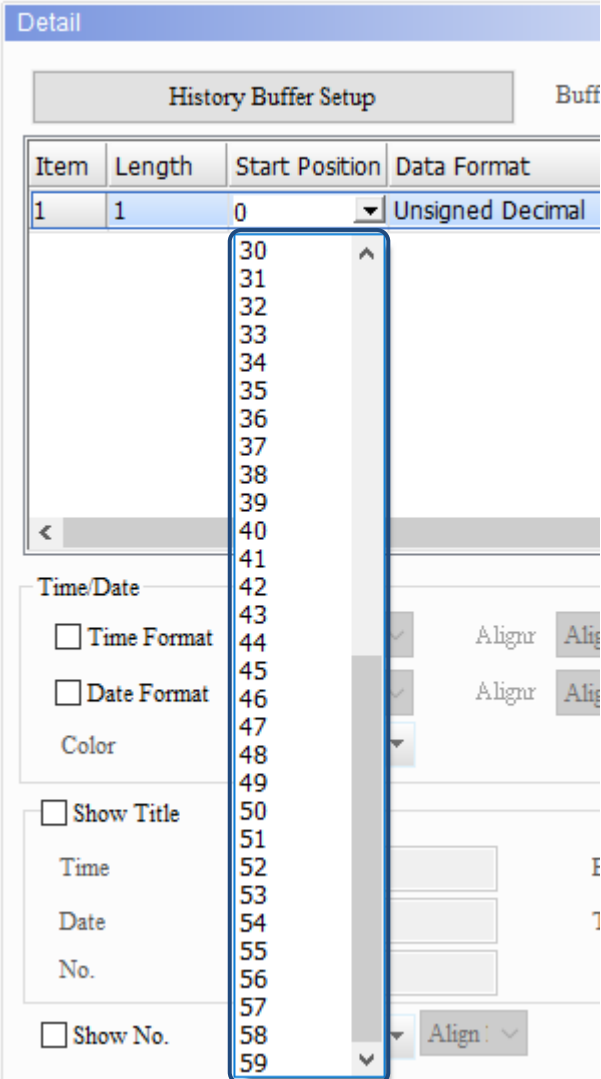
15

Figure 15.3.4 Details property page for the Historical Data Table element

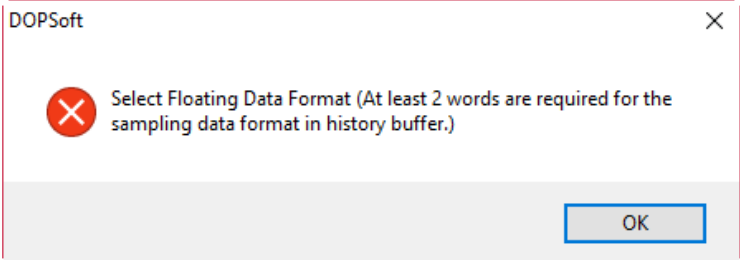
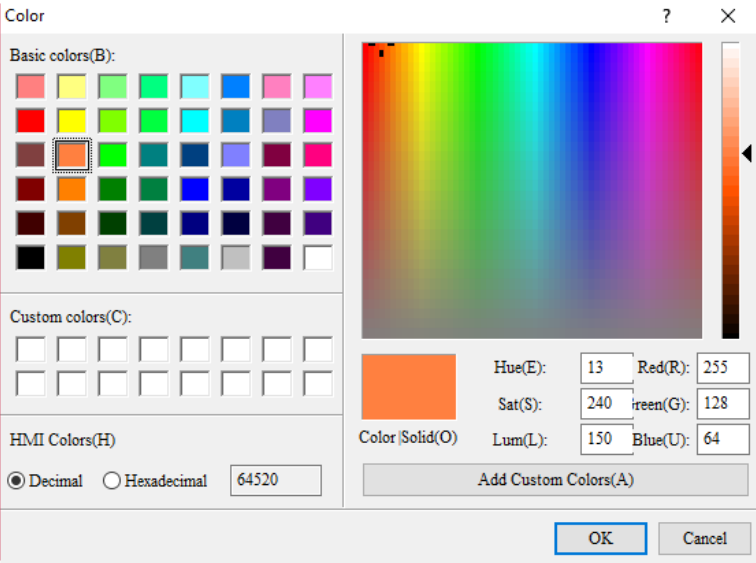
No.	Property	Function description
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can also set up to 12 sets.</p>

15

No.	Property	Function description								
(2)	Item setting	<p>The Length corresponds to the Read Length (Word). If the Read Length (Word) is 60, the Length will be 1 - 60.</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$0</td> <td>60</td> <td>100</td> </tr> </tbody> </table>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	60	100
No.	Address	Read Length (Word)	Sampling Cycle(ms)							
1	\$0	60	100							

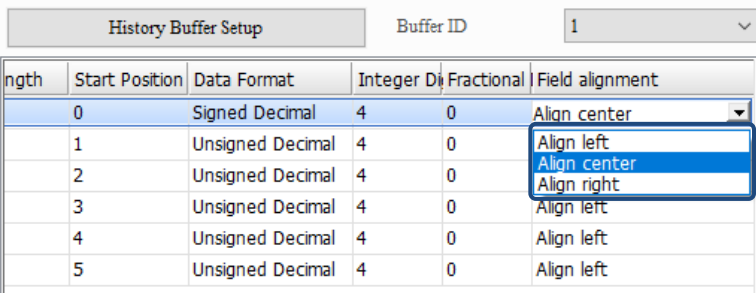
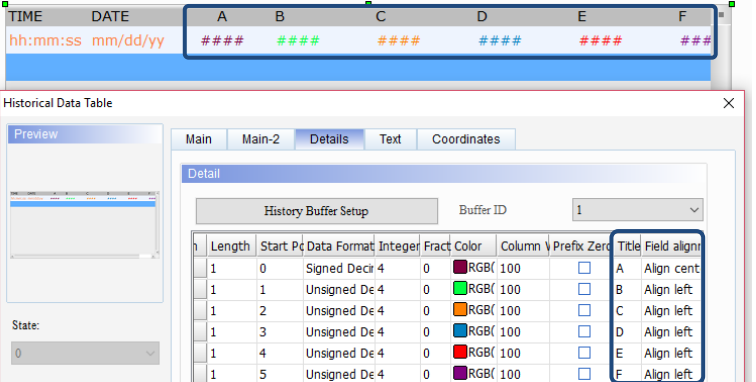
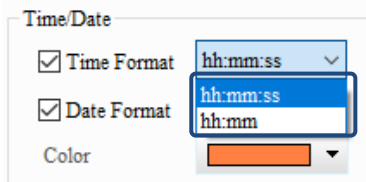
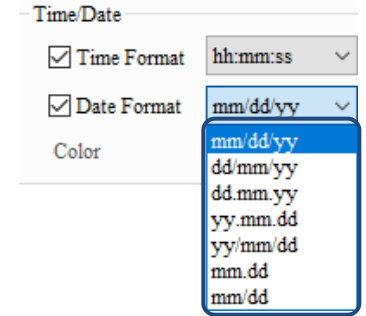
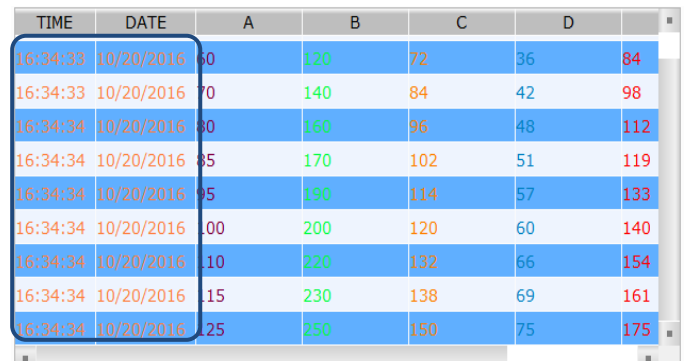
No.	Property	Function description																			
(2)	Item setting	<p>The Start Position setting is determined by the set Read Length (Word). If the Read Length (Word) is 60, the Start Position can be 0 - 59.</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$0</td> <td>60</td> <td>100</td> </tr> </tbody> </table>  <p>Start Position</p>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	60	100											
No.	Address	Read Length (Word)	Sampling Cycle(ms)																		
1	\$0	60	100																		
	Data Format	<ul style="list-style-type: none"> ■ The supported data format varies according to the read length is 1 or 2 words. The supported data format is as follows. ■ In the Char format, if the read length is 1, it represents 2 Chars; if the read length is 2, it represents 4 Chars, and so on. ■ When the read length is over 3, Char is the only supported format. <table border="1"> <thead> <tr> <th colspan="3">Length is 1</th> </tr> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td>Char</td> <td>2 words</td> </tr> </tbody> </table>	Length is 1			Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	Char	2 words
Length is 1																					
Data Type	Data Format	Allowable range																			
Word	BCD	0 to 9999																			
	Signed BCD	-999 to +9999																			
	Signed Decimal	-32768 to +32767																			
	Unsigned Decimal	0 to 65535																			
	Hex	0 to 0xFFFF																			
	Char	2 words																			

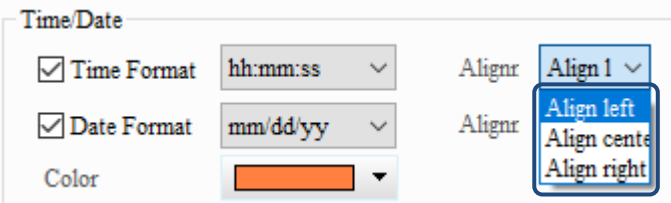
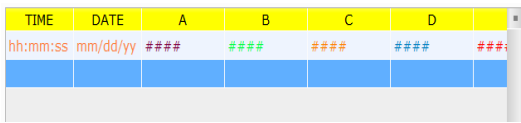
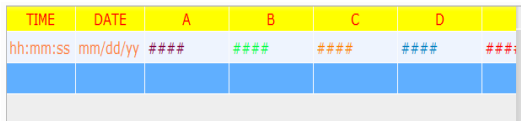
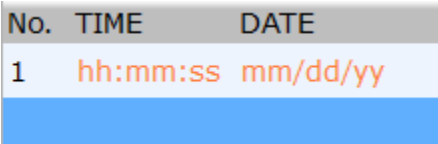
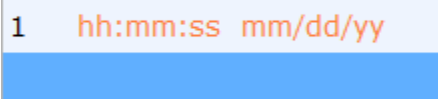

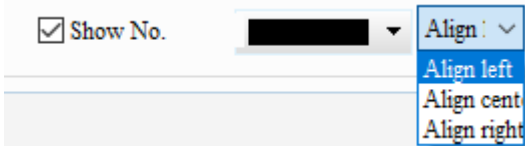
15

No.	Property	Function description																					
(2)	Item setting	<table border="1"> <thead> <tr> <th colspan="3">Length is 2</th> </tr> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="7">DWord</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td>Char</td> <td>4 words</td> </tr> <tr> <td>Floating</td> <td>0 to 9999999</td> </tr> </tbody> </table> <p>Note: 1. If you select Floating as the Data Format, please set Length to 2. 2. If you select Floating as the Data Format, but set Length to 1 word, a message will pop up to remind you that you need to set Length to 2 or more words.</p> 	Length is 2			Data Type	Data Format	Allowable range	DWord	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hex	0 to 0xFFFFFFFF	Char	4 words	Floating	0 to 9999999
		Length is 2																					
		Data Type	Data Format	Allowable range																			
DWord	BCD	0 to 99999999																					
	Signed BCD	-9999999 to +9999999																					
	Signed Decimal	-2147483648 to +2147483647																					
	Unsigned Decimal	0 to 4294967295																					
	Hex	0 to 0xFFFFFFFF																					
	Char	4 words																					
	Floating	0 to 9999999																					
Integer / Fractional Digits	<ul style="list-style-type: none"> You can set the displaying number of integer digits and the number of decimal places. When Global range is checked, you cannot set this function. 																						
Line Color	<p>You can set the line color for the curve.</p> 																						
	Column Width	<ul style="list-style-type: none"> Column Width is for setting the distance between the numeric data records. For example, if the Column Counts is set to 2 and Column Width is set to 40, then the width between the first and second data records is 40. The Column Width is 40 by default and the setting range is 0 - 999. 																					

No.	Property	Function description																																																																																																																		
(2)	Item setting	<p>The Prefix Zero function determines how many zeros to add according to the set number of integer digits. The following example illustrates integers of four digits.</p> <table border="1"> <tr><td colspan="2" rowspan="10">Apply Prefix Zero</td> <td>0140</td><td>0280</td></tr> <tr><td>0145</td><td>0290</td></tr> <tr><td>0150</td><td>0300</td></tr> <tr><td>0160</td><td>0320</td></tr> <tr><td>0165</td><td>0330</td></tr> <tr><td>0175</td><td>0350</td></tr> <tr><td>0180</td><td>0360</td></tr> <tr><td>0185</td><td>0370</td></tr> <tr><td>0195</td><td>0390</td></tr> <tr><td>0200</td><td>0400</td></tr> </table> <table border="1"> <tr><td colspan="2" rowspan="10">Do not apply Prefix Zero</td> <td>370</td><td>740</td></tr> <tr><td>375</td><td>750</td></tr> <tr><td>385</td><td>770</td></tr> <tr><td>390</td><td>780</td></tr> <tr><td>395</td><td>790</td></tr> <tr><td>400</td><td>800</td></tr> <tr><td>410</td><td>820</td></tr> <tr><td>415</td><td>830</td></tr> <tr><td>425</td><td>850</td></tr> <tr><td>430</td><td>860</td></tr> </table>	Apply Prefix Zero		0140	0280	0145	0290	0150	0300	0160	0320	0165	0330	0175	0350	0180	0360	0185	0370	0195	0390	0200	0400	Do not apply Prefix Zero		370	740	375	750	385	770	390	780	395	790	400	800	410	820	415	830	425	850	430	860																																																																						
		Apply Prefix Zero			0140	0280																																																																																																														
0145	0290																																																																																																																			
0150	0300																																																																																																																			
0160	0320																																																																																																																			
0165	0330																																																																																																																			
0175	0350																																																																																																																			
0180	0360																																																																																																																			
0185	0370																																																																																																																			
0195	0390																																																																																																																			
0200	0400																																																																																																																			
Do not apply Prefix Zero		370	740																																																																																																																	
		375	750																																																																																																																	
		385	770																																																																																																																	
		390	780																																																																																																																	
		395	790																																																																																																																	
		400	800																																																																																																																	
		410	820																																																																																																																	
		415	830																																																																																																																	
		425	850																																																																																																																	
		430	860																																																																																																																	
<p>This function allows you to name the titles for the data display.</p> <div> <p>Detail</p> <p>History Buffer Setup Buffer ID: 1</p> <table border="1"> <thead> <tr> <th></th> <th>Integer Di</th> <th>Fractional</th> <th>Color</th> <th>Column W</th> <th>Prefix Zero</th> <th>Title</th> </tr> </thead> <tbody> <tr><td>al</td><td>4</td><td>0</td><td>RGB(128, 0, 64)</td><td>40</td><td><input type="checkbox"/></td><td>A</td></tr> <tr><td>imal</td><td>4</td><td>0</td><td>RGB(0, 255, 64)</td><td>40</td><td><input type="checkbox"/></td><td>B</td></tr> <tr><td>imal</td><td>4</td><td>0</td><td>RGB(255, 128, 0)</td><td>40</td><td><input type="checkbox"/></td><td>C</td></tr> <tr><td>imal</td><td>4</td><td>0</td><td>RGB(0, 128, 192)</td><td>40</td><td><input type="checkbox"/></td><td>D</td></tr> <tr><td>imal</td><td>4</td><td>0</td><td>RGB(255, 0, 0)</td><td>40</td><td><input type="checkbox"/></td><td>E</td></tr> <tr><td>imal</td><td>4</td><td>0</td><td>RGB(128, 0, 128)</td><td>40</td><td><input type="checkbox"/></td><td>F</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> </tr> </thead> <tbody> <tr><td>130</td><td>260</td><td>156</td><td>78</td><td>182</td><td>234</td></tr> <tr><td>140</td><td>280</td><td>168</td><td>84</td><td>196</td><td>252</td></tr> <tr><td>145</td><td>290</td><td>174</td><td>87</td><td>203</td><td>261</td></tr> <tr><td>150</td><td>300</td><td>180</td><td>90</td><td>210</td><td>270</td></tr> <tr><td>155</td><td>310</td><td>186</td><td>93</td><td>217</td><td>279</td></tr> <tr><td>165</td><td>330</td><td>198</td><td>99</td><td>231</td><td>297</td></tr> <tr><td>170</td><td>340</td><td>204</td><td>102</td><td>238</td><td>306</td></tr> <tr><td>180</td><td>360</td><td>216</td><td>108</td><td>252</td><td>324</td></tr> <tr><td>185</td><td>370</td><td>222</td><td>111</td><td>259</td><td>333</td></tr> <tr><td>190</td><td>380</td><td>228</td><td>114</td><td>266</td><td>342</td></tr> </tbody> </table> </div>		Integer Di	Fractional	Color	Column W	Prefix Zero	Title	al	4	0	RGB(128, 0, 64)	40	<input type="checkbox"/>	A	imal	4	0	RGB(0, 255, 64)	40	<input type="checkbox"/>	B	imal	4	0	RGB(255, 128, 0)	40	<input type="checkbox"/>	C	imal	4	0	RGB(0, 128, 192)	40	<input type="checkbox"/>	D	imal	4	0	RGB(255, 0, 0)	40	<input type="checkbox"/>	E	imal	4	0	RGB(128, 0, 128)	40	<input type="checkbox"/>	F		A	B	C	D	E	F	130	260	156	78	182	234	140	280	168	84	196	252	145	290	174	87	203	261	150	300	180	90	210	270	155	310	186	93	217	279	165	330	198	99	231	297	170	340	204	102	238	306	180	360	216	108	252	324	185	370	222	111	259	333	190	380	228	114	266	342
	Integer Di	Fractional	Color	Column W	Prefix Zero	Title																																																																																																														
al	4	0	RGB(128, 0, 64)	40	<input type="checkbox"/>	A																																																																																																														
imal	4	0	RGB(0, 255, 64)	40	<input type="checkbox"/>	B																																																																																																														
imal	4	0	RGB(255, 128, 0)	40	<input type="checkbox"/>	C																																																																																																														
imal	4	0	RGB(0, 128, 192)	40	<input type="checkbox"/>	D																																																																																																														
imal	4	0	RGB(255, 0, 0)	40	<input type="checkbox"/>	E																																																																																																														
imal	4	0	RGB(128, 0, 128)	40	<input type="checkbox"/>	F																																																																																																														
	A	B	C	D	E	F																																																																																																														
130	260	156	78	182	234																																																																																																															
140	280	168	84	196	252																																																																																																															
145	290	174	87	203	261																																																																																																															
150	300	180	90	210	270																																																																																																															
155	310	186	93	217	279																																																																																																															
165	330	198	99	231	297																																																																																																															
170	340	204	102	238	306																																																																																																															
180	360	216	108	252	324																																																																																																															
185	370	222	111	259	333																																																																																																															
190	380	228	114	266	342																																																																																																															

15

No.	Property	Function description
(2)	Item setting	<p>Set the alignment style for the text in the title field and data. The alignment styles include: Align left, Align center, and Align right.</p>  <p>Historical Data Table</p> 
	Field alignment	
(3)	Time Format	<p>Two time formats are supported as follows:</p> 
	Date Format	<p>Seven date formats are supported as follows:</p> 
	Color	<p>Set the displaying color of the date and time. The default is</p> 

No.	Property	Function description
(3)	Time/Date	<p>Set the alignment style for the date and time. The alignment styles include: Align left, Align center, and Align right.</p> 
	Field Width	<ul style="list-style-type: none"> Field Width is for setting the distance between the date and time. For example, if the Field Width is set to 40, then the width between the date and time is 40. The Field Width is 72 by default and the setting range is 0 - 800.
(4)	Background	<p>Set the background color of the column title.</p> <p>Change the background color to yellow</p> 
	Text Color	<p>Set the text color of the column title.</p> <p>Change the text color to red</p> 
	Time	<p>You can set the title name for No., Time, and Date.</p> 
	Date	<p>Change to the texts of time and date</p> 
(5)	Show No.	<p>Color of No. Set the color of the No. The default is .</p> <p>Alignment of No. Set the alignment style for the No. The alignment styles include: Align left, Align center, and Align right.</p> 

■ Text

15

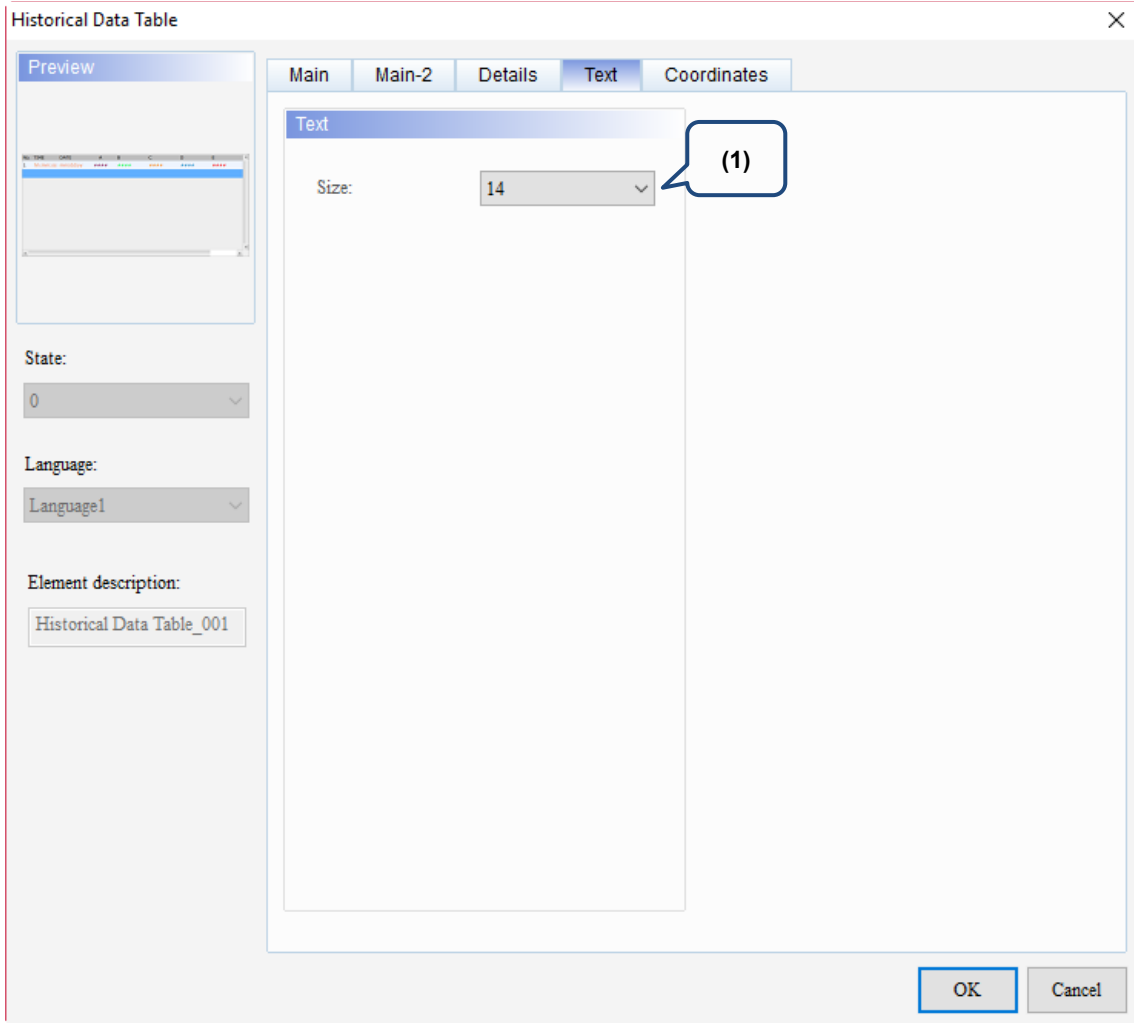
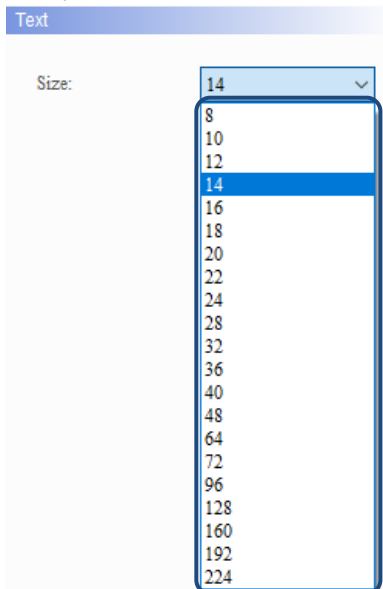
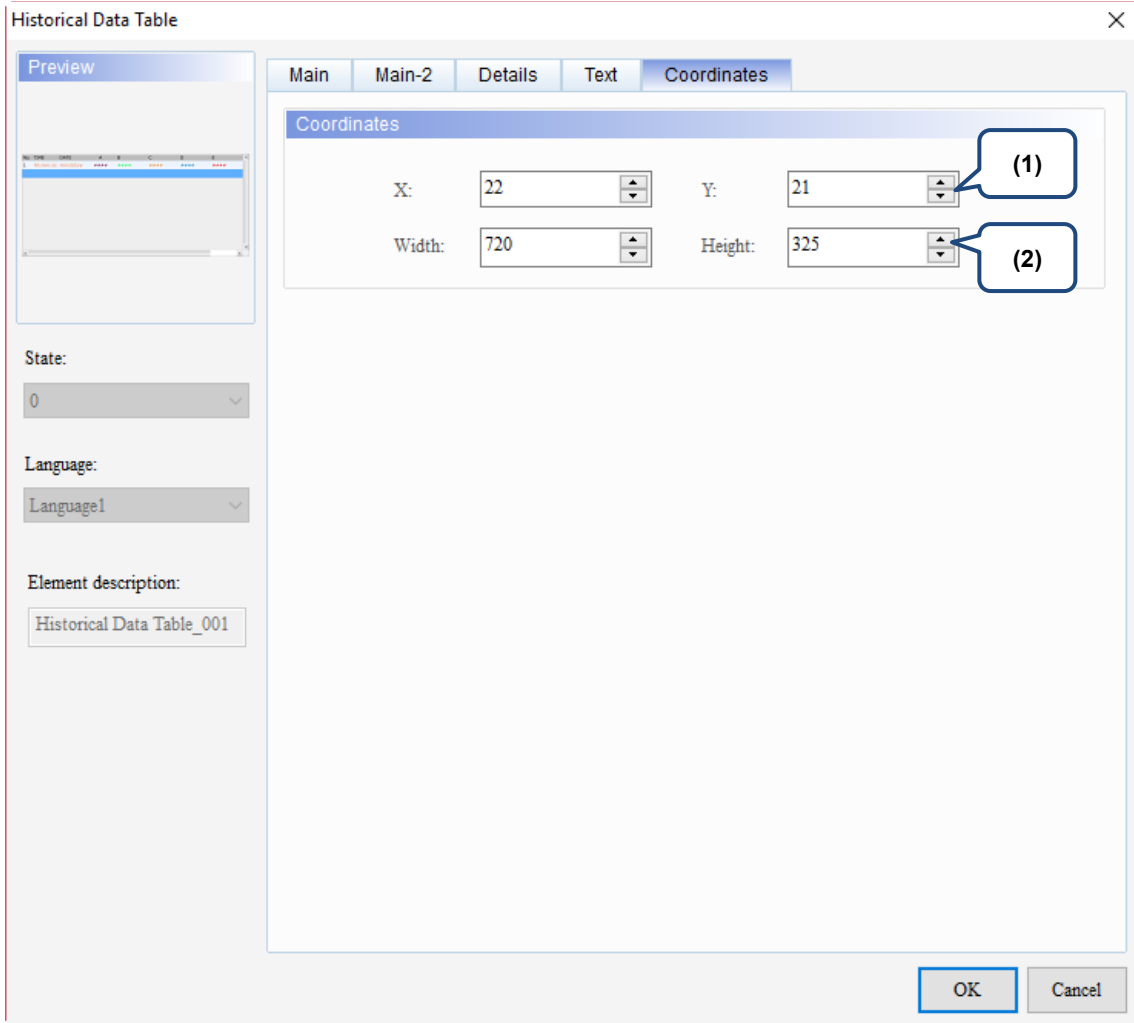


Figure 15.3.5 Text property page for the Historical Data Table element

No.	Property	Function description
(1)	Text	<p>Set the text size of the displayed numeric data.</p> 

■ Coordinates



15

Figure 15.3.6 Coordinates property page for the Historical Data Table element

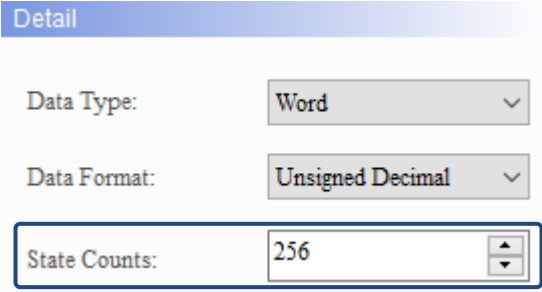
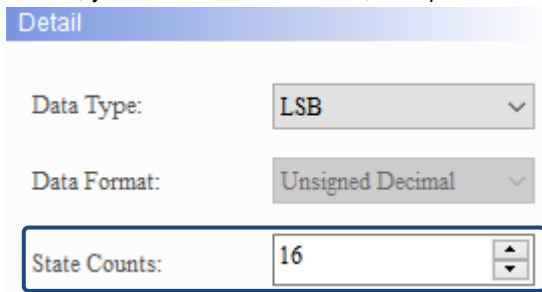
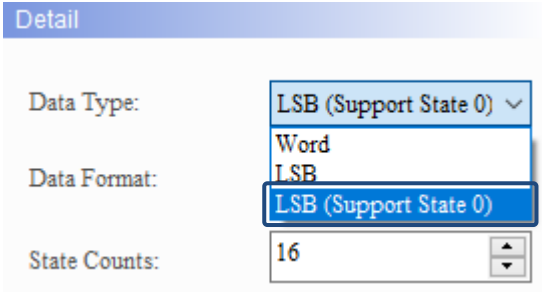

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

15

15.4 Historical Event Table

Historical Event Table supports three data types as shown in Table 15.4.1. If you need to add or reduce the total number of states, you can simply add or reduce it from State Counts in the property page.

Table 15.4.1 Data Type of the Historical Event Table

Historical Event Table	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> 
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> ■ LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object. ■ If the Data Type is LSB, you can set 1 to 16 states, except for State 0. 
	<ul style="list-style-type: none"> ■ To display State 0, please select LSB (Support State 0).  <ul style="list-style-type: none"> ■ If you selected LSB, the element is black when the state is 0.  ■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in Word as the unit.

Historical Event Table			
Data Type	State Counts		
LSB / LSB (Support State 0)	The examples in the following table show how the state value is determined with the lowest non-zero bit after converting from decimal value to binary value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.		
	Decimal	Binary	State value
	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>
	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.
	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.
	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.
	<u>7</u>	<u>0000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.
	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.
	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.
	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.
	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.
	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.
	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.
4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	
8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.	

When you double-click Historical Event Table, the property page is shown as follows.

15

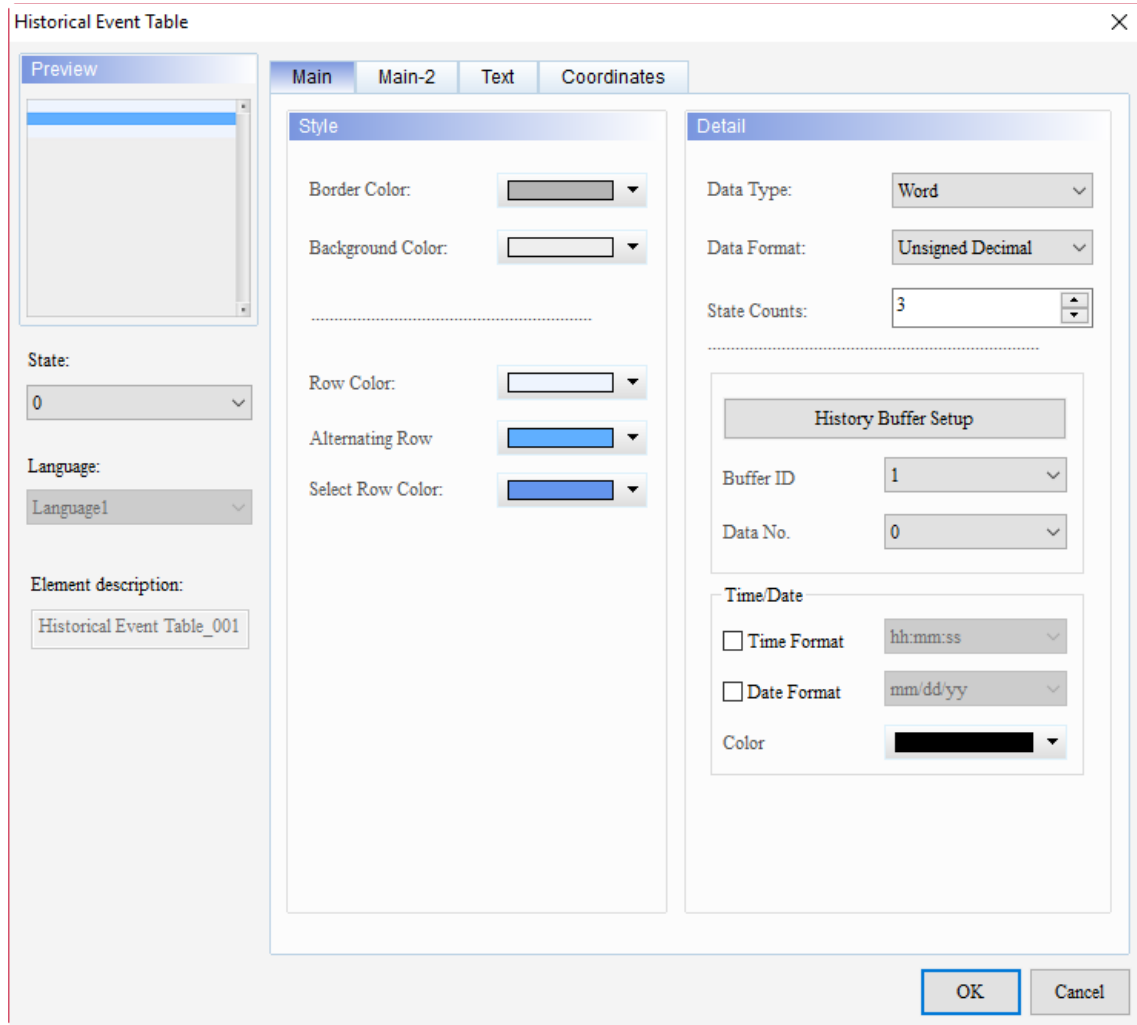
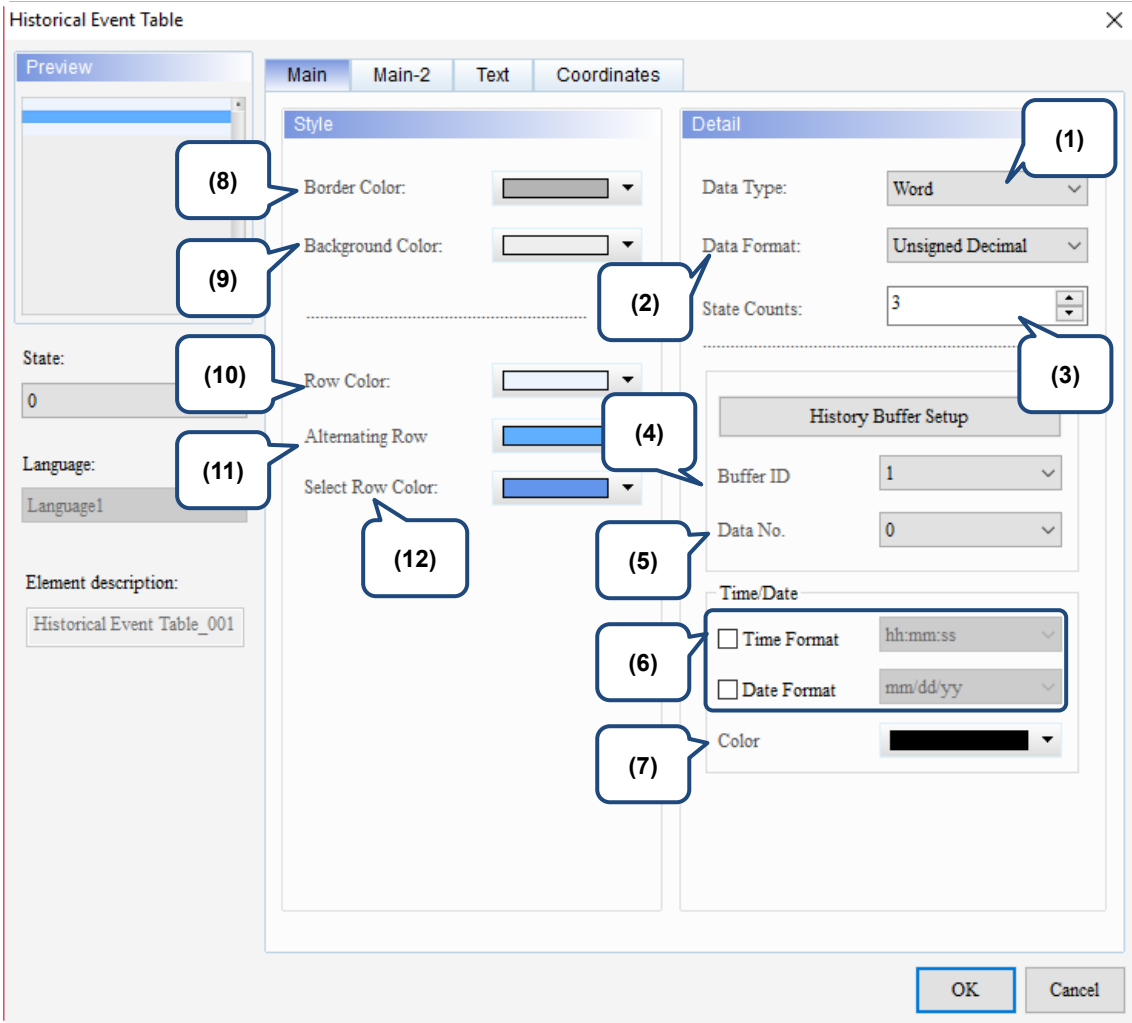


Figure 15.4.1 Properties of Historical Event Table

Table 15.4.2 Function page of Historical Event Table

Historical Event Table	
Function page	Description
Preview	Historical Event Table elements can view multiple status values and multi-language data display.
Main	Set Border Color and Background Color. Set Data Type, Data Format, State Counts, Buffer ID, and Data No. Set Time/Date.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

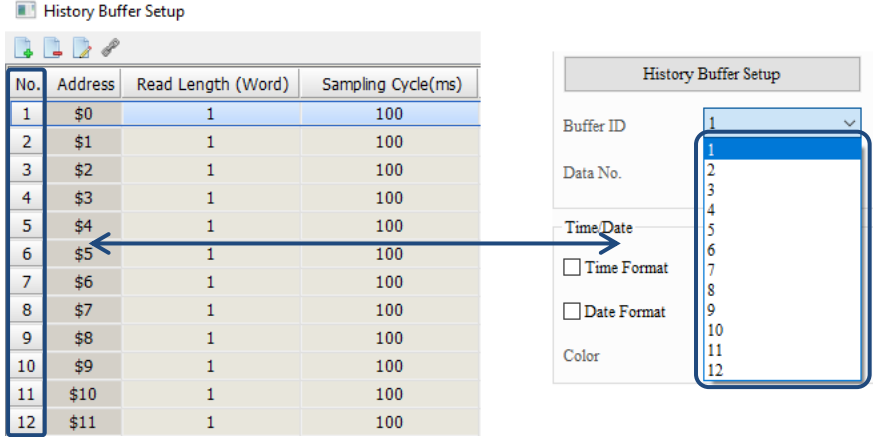
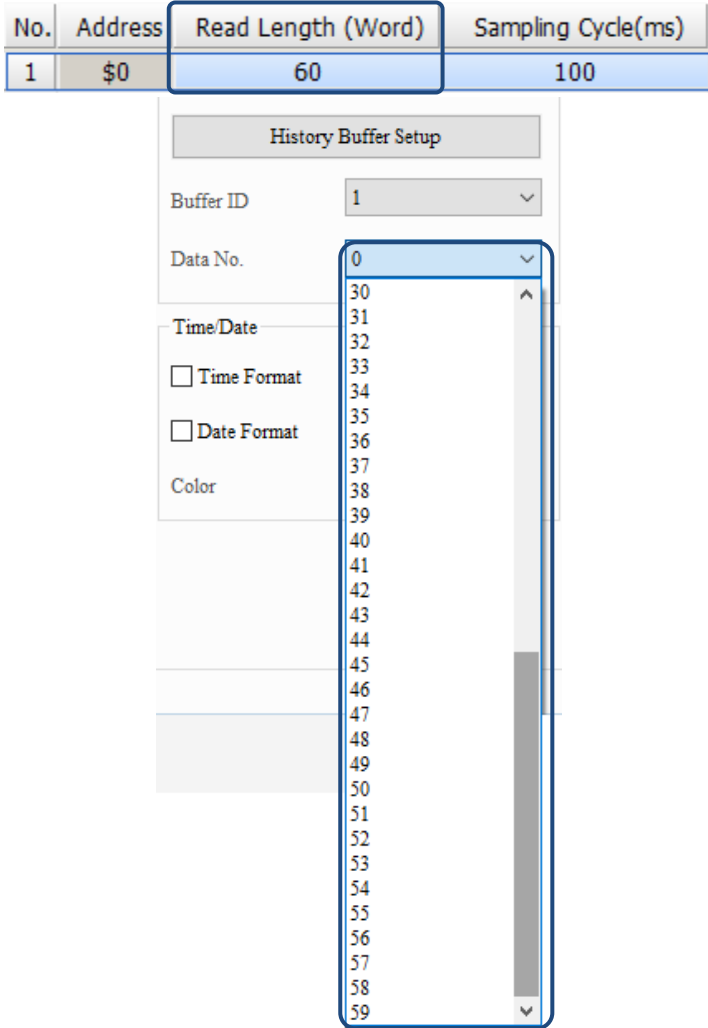


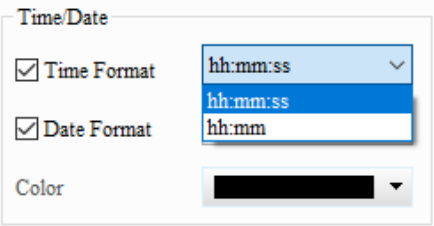
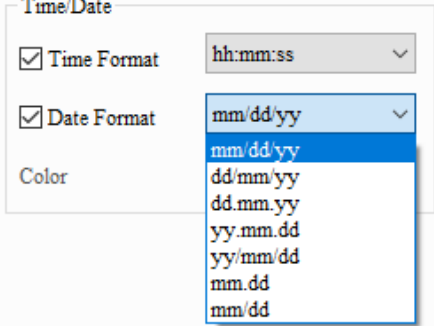

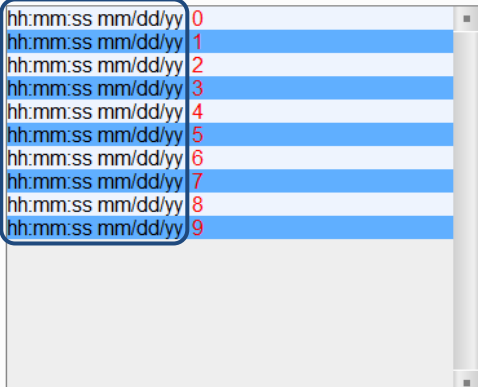
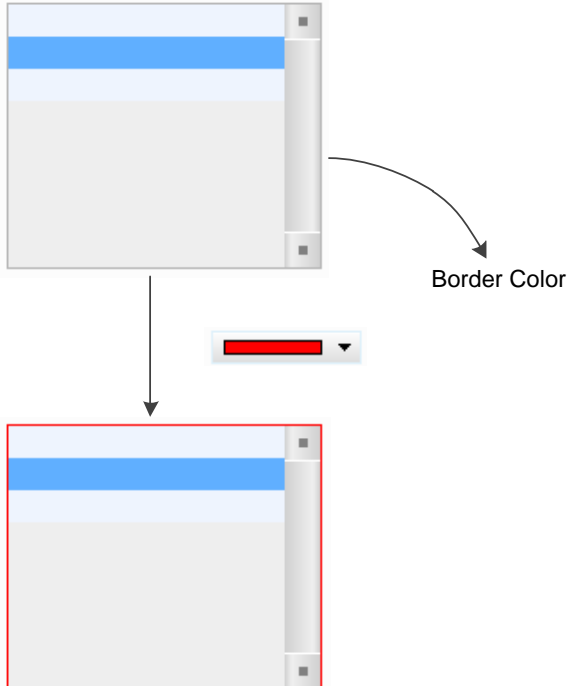
15

Figure 15.4.2 Main property page for the Historical Event Table element

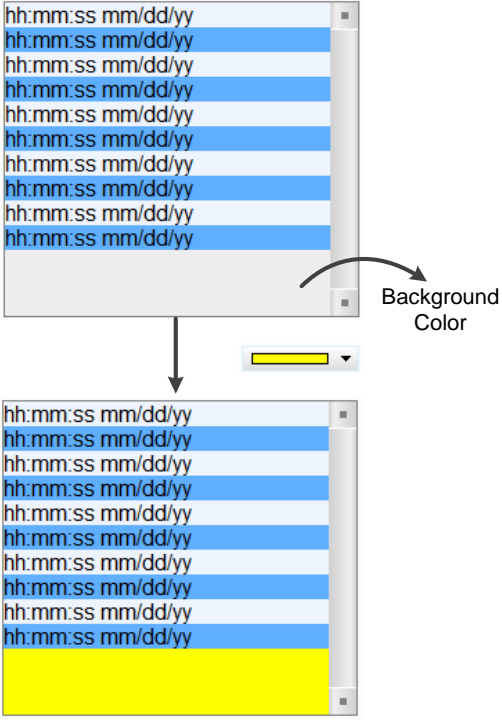
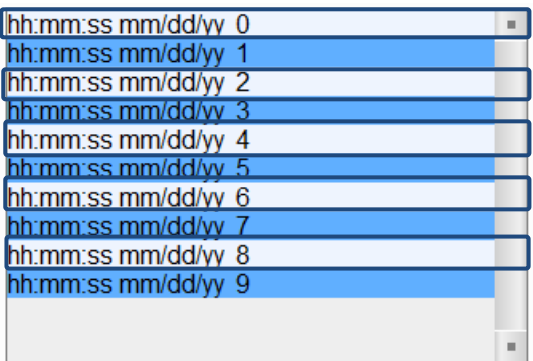
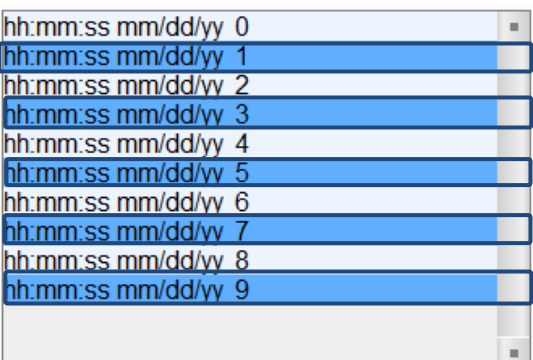
No.	Property	Function description
(1)	Data Type	<p>There are three data types available: Word, LSB, and LSB (Support State 0).</p>
(2)	Data Format	<p>You can only select the Data Format when the Data Type is Word. There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p>


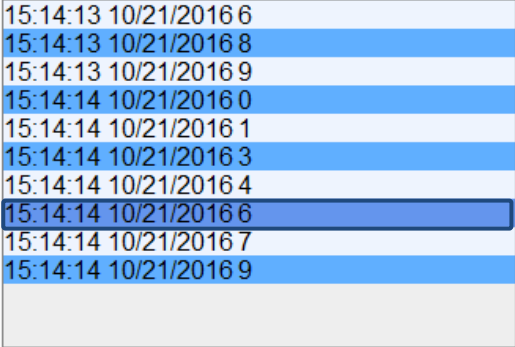
15

No.	Property	Function description																																																				
(3)	State Counts	Set the State Counts for the Historical Event Table. If the Data Type is Word, you can select 1 - 256 states; if the Data Type is LSB, you can select 16 states; and if the Data Type is LSB (Support State 0), you can select 17 states. Please refer to Table 15.4.1 for details.																																																				
(4)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can also set up to 12 sets.</p>  <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr><td>1</td><td>\$0</td><td>1</td><td>100</td></tr> <tr><td>2</td><td>\$1</td><td>1</td><td>100</td></tr> <tr><td>3</td><td>\$2</td><td>1</td><td>100</td></tr> <tr><td>4</td><td>\$3</td><td>1</td><td>100</td></tr> <tr><td>5</td><td>\$4</td><td>1</td><td>100</td></tr> <tr><td>6</td><td>\$5</td><td>1</td><td>100</td></tr> <tr><td>7</td><td>\$6</td><td>1</td><td>100</td></tr> <tr><td>8</td><td>\$7</td><td>1</td><td>100</td></tr> <tr><td>9</td><td>\$8</td><td>1</td><td>100</td></tr> <tr><td>10</td><td>\$9</td><td>1</td><td>100</td></tr> <tr><td>11</td><td>\$10</td><td>1</td><td>100</td></tr> <tr><td>12</td><td>\$11</td><td>1</td><td>100</td></tr> </tbody> </table>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	1	100	2	\$1	1	100	3	\$2	1	100	4	\$3	1	100	5	\$4	1	100	6	\$5	1	100	7	\$6	1	100	8	\$7	1	100	9	\$8	1	100	10	\$9	1	100	11	\$10	1	100	12	\$11	1	100
No.	Address	Read Length (Word)	Sampling Cycle(ms)																																																			
1	\$0	1	100																																																			
2	\$1	1	100																																																			
3	\$2	1	100																																																			
4	\$3	1	100																																																			
5	\$4	1	100																																																			
6	\$5	1	100																																																			
7	\$6	1	100																																																			
8	\$7	1	100																																																			
9	\$8	1	100																																																			
10	\$9	1	100																																																			
11	\$10	1	100																																																			
12	\$11	1	100																																																			
(5)	Data No.	<p>Data No. reads the Read Length (Word) set in the History Data Buffer. When the Read Length is 1, the Data No. is 0; when the Read Length is 2, the Data No. can be 0 or 1. Thus, when 60 words are read, the Data No. is 0 - 59.</p>  <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$0</td> <td>60</td> <td>100</td> </tr> </tbody> </table>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	60	100																																												
No.	Address	Read Length (Word)	Sampling Cycle(ms)																																																			
1	\$0	60	100																																																			

No.	Property	Function description
(6)	Time Format	<ul style="list-style-type: none"> Two time formats are supported as follows: 
	Date Format	<ul style="list-style-type: none"> Seven date formats are supported as follows: 
(7)	Color	<p>Set the displaying color of the date and time. The default is .</p> 
(8)	Border Color	<p>Set the Historical Event Table element border color.</p> 

15

No.	Property	Function description
(9)	Background Color	<p>Set the background color of the element.</p>  <p>The image shows a list of rows with the format 'hh:mm:ss mm/dd/yy'. In the top part, the list has a white background. An arrow points to a 'Background Color' dropdown menu where a yellow color is selected. Below, the same list is shown with the entire background highlighted in yellow.</p>
(10)	Row Color	<p>Color of the odd rows. The default is <input type="text" value=""/></p>  <p>The image shows a list of rows with the format 'hh:mm:ss mm/dd/yy' followed by a number from 0 to 9. The rows are highlighted in alternating colors: row 0 is white, row 1 is blue, row 2 is white, row 3 is blue, row 4 is white, row 5 is blue, row 6 is white, row 7 is blue, row 8 is white, and row 9 is blue.</p>
(11)	Alternating Row	<p>Color of the even rows. The default is <input type="text" value=""/></p>  <p>The image shows a list of rows with the format 'hh:mm:ss mm/dd/yy' followed by a number from 0 to 9. The rows are highlighted in alternating colors: row 0 is white, row 1 is blue, row 2 is white, row 3 is blue, row 4 is white, row 5 is blue, row 6 is white, row 7 is blue, row 8 is white, and row 9 is blue.</p>

No.	Property	Function description
(12)	Select Row Color	<p>When you select the data rows to view, the rows are in the color specified in this setting. The default is .</p> 

■ Text

15

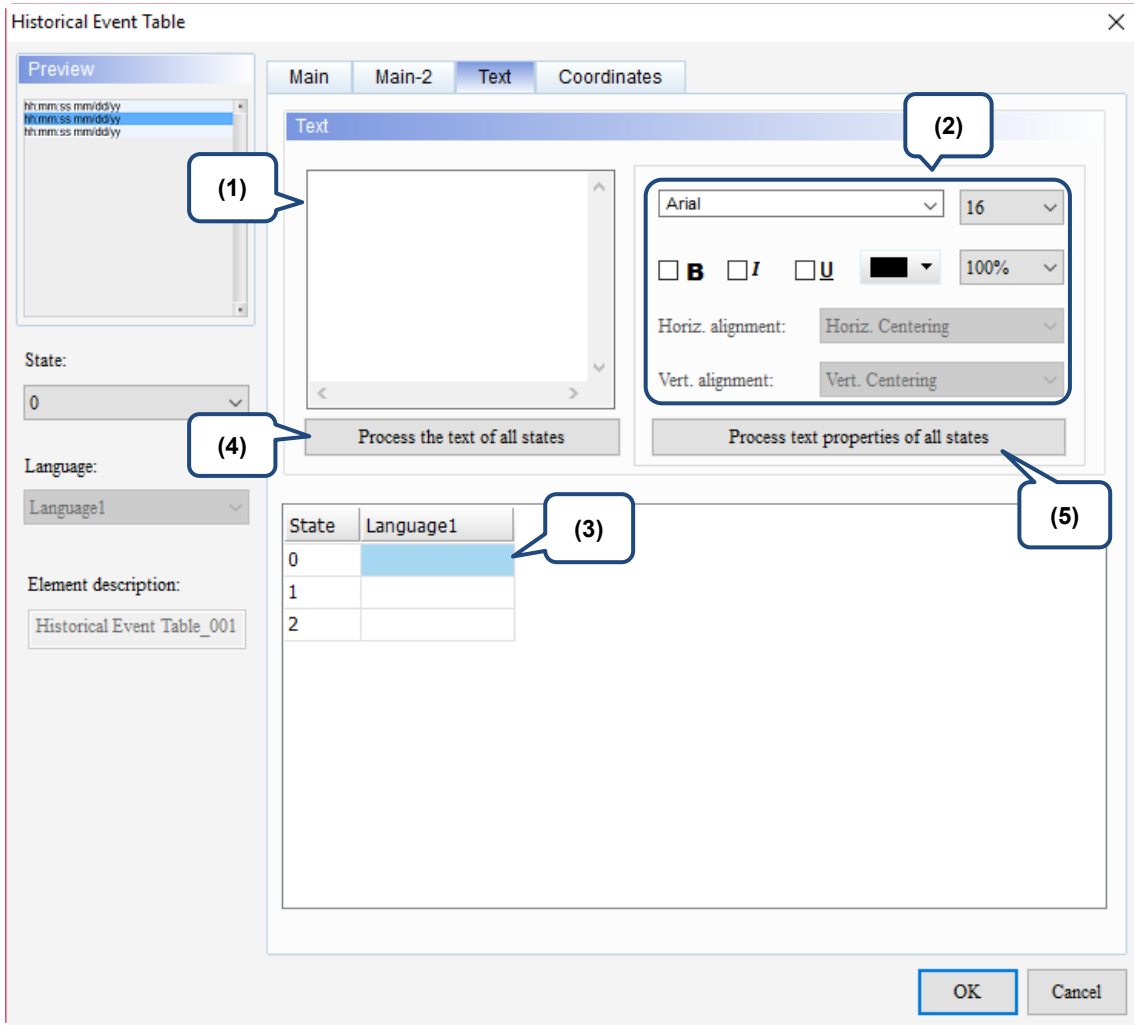
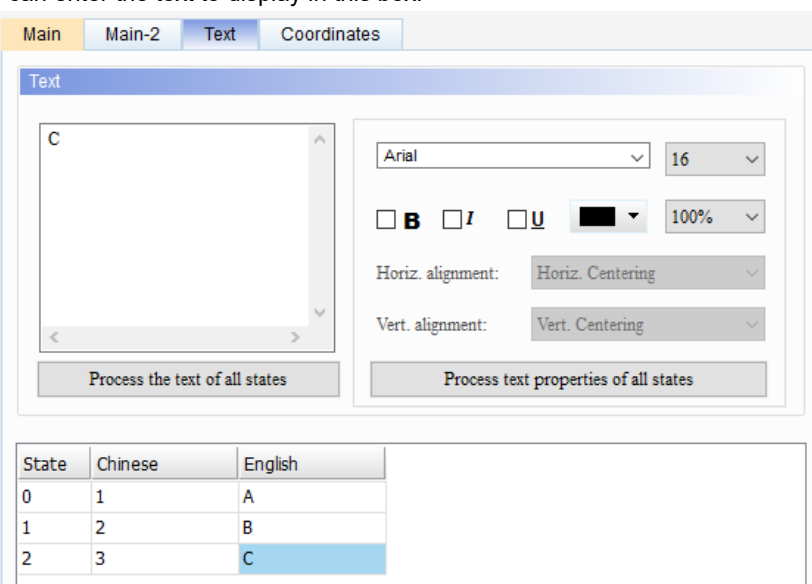
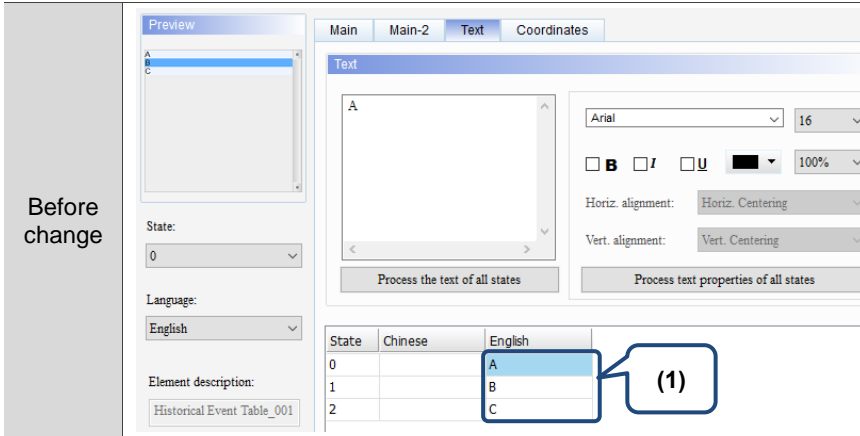
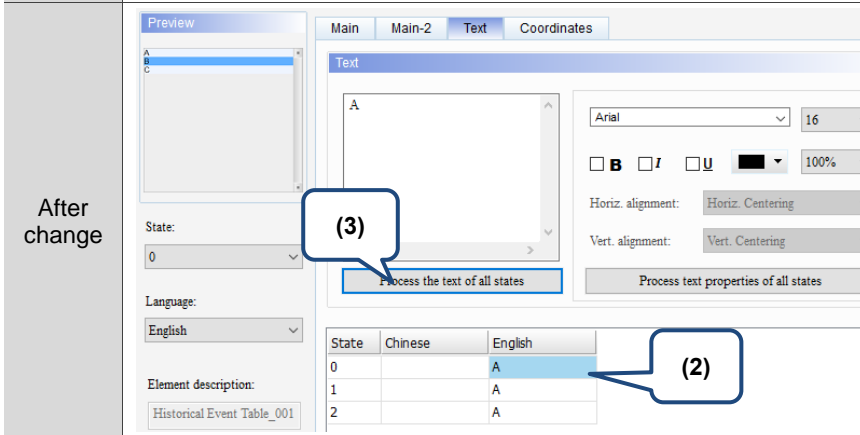
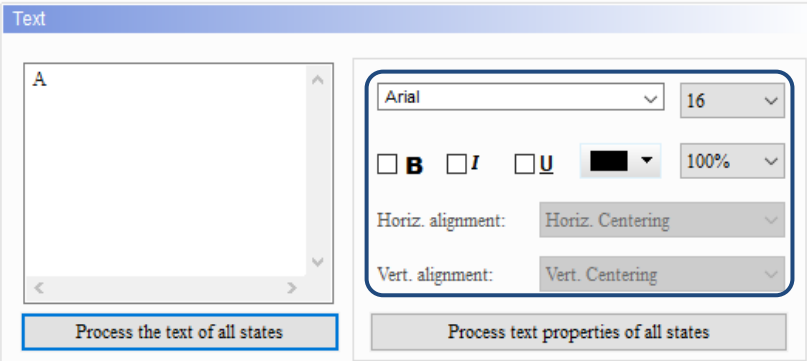


Figure 15.4.3 Text property page for the Historical Event Table element

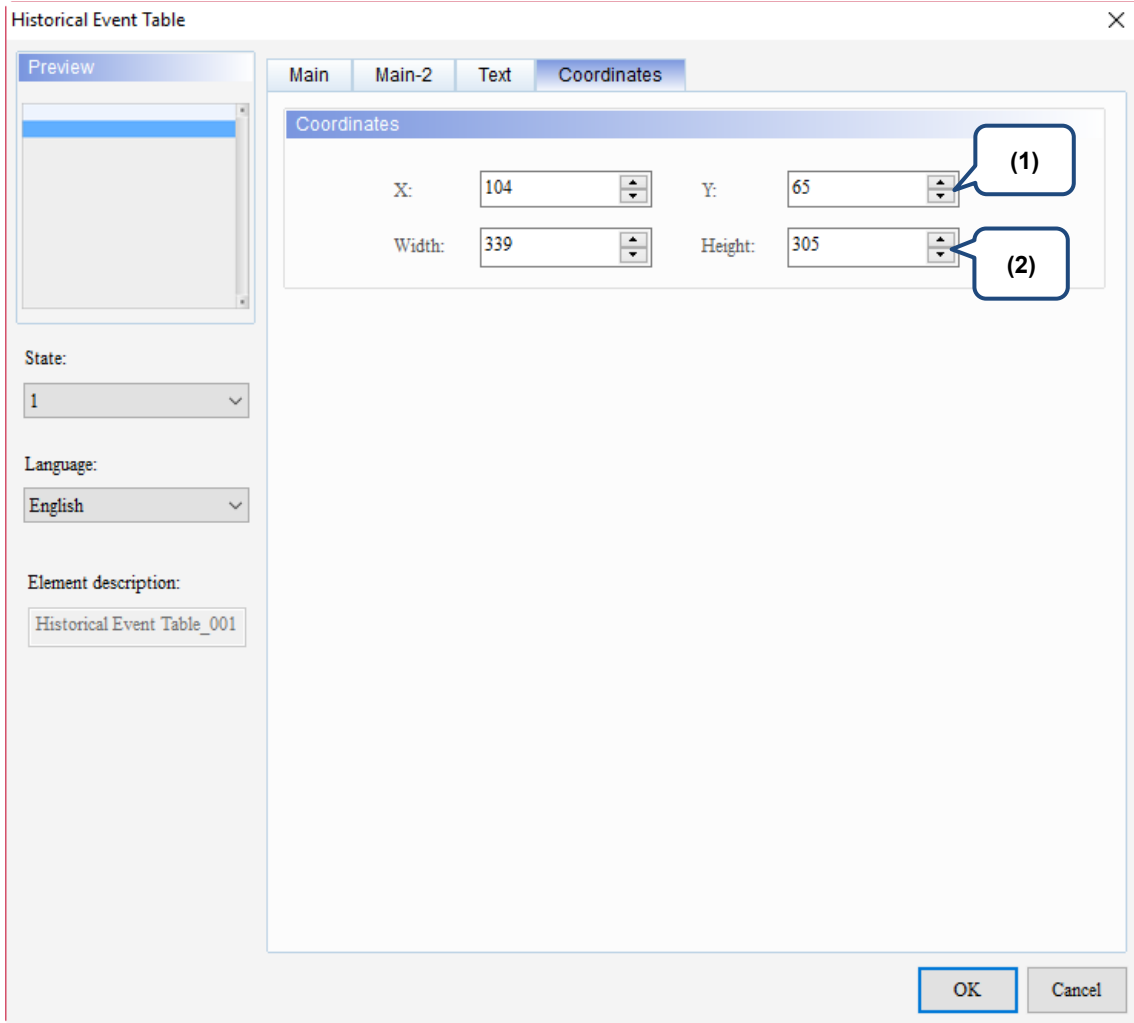
No.	Property	Function description												
(1)	Text	<p>You can enter the text to display in this box.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>2</td> <td>B</td> </tr> <tr> <td>2</td> <td>3</td> <td>C</td> </tr> </tbody> </table>	State	Chinese	English	0	1	A	1	2	B	2	3	C
State	Chinese	English												
0	1	A												
1	2	B												
2	3	C												
(2)	Text Property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts. You can refer to the Preview section in the figure above for the text property setting results.</p>												

No.	Property	Function description
(3)	Edit Multi-language Text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>When this function is enabled, it batch changes the text of the specified state. Please see the following example: Step 1: enter the text of State 0 as A, the text of State 1 as B, and the text of State 2 as C. Step 2: use your cursor to select State 0. Step 3: execute [Process the text of all states], then the texts of State 1 and State 2 will be changed to A.</p>  
(5)	Process text properties of all states	<p>When this function is enabled, it batch changes the text of the specified property. Items included in the text property are shown in the figure below.</p> 

15

No.	Property	Function description
	(5) Process text properties of all states	<p>Please see the following example:</p> <p>Step 1: enter the text of State 0 as Delta and the text of State 1 as HMI; set the font of State 0 as Segoe Script and the font of State 1 as Arial.</p> <p>Step 2: use your mouse to select State 0.</p> <p>Step 3: execute [Process text properties of all states], then the font of State 1 will be changed to Segoe Script.</p> <div style="display: flex; flex-direction: column;"> <div style="margin-bottom: 10px;"> <p>Before change</p> </div> <div style="margin-bottom: 10px;"> <p>After change</p> </div> </div>

■ Position



15

Figure 15.4.4 Coordinates property page for the Historical Event Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

15.5 Historical Overview Table

15

The Historical Overview Table element is for viewing the stored Historical Trend Graph data.

The left side of the element is the file browsing area and the right side is the trend graph. You can select Historical Trend Graph data stored in the USB Disk or SD Card through the file browsing area on the left. Like the Historical Trend Graph, a Historical Overview Table can display up to 60 curves and read 60 words. .

When you double-click Historical Overview Table, the property page is shown as follows.

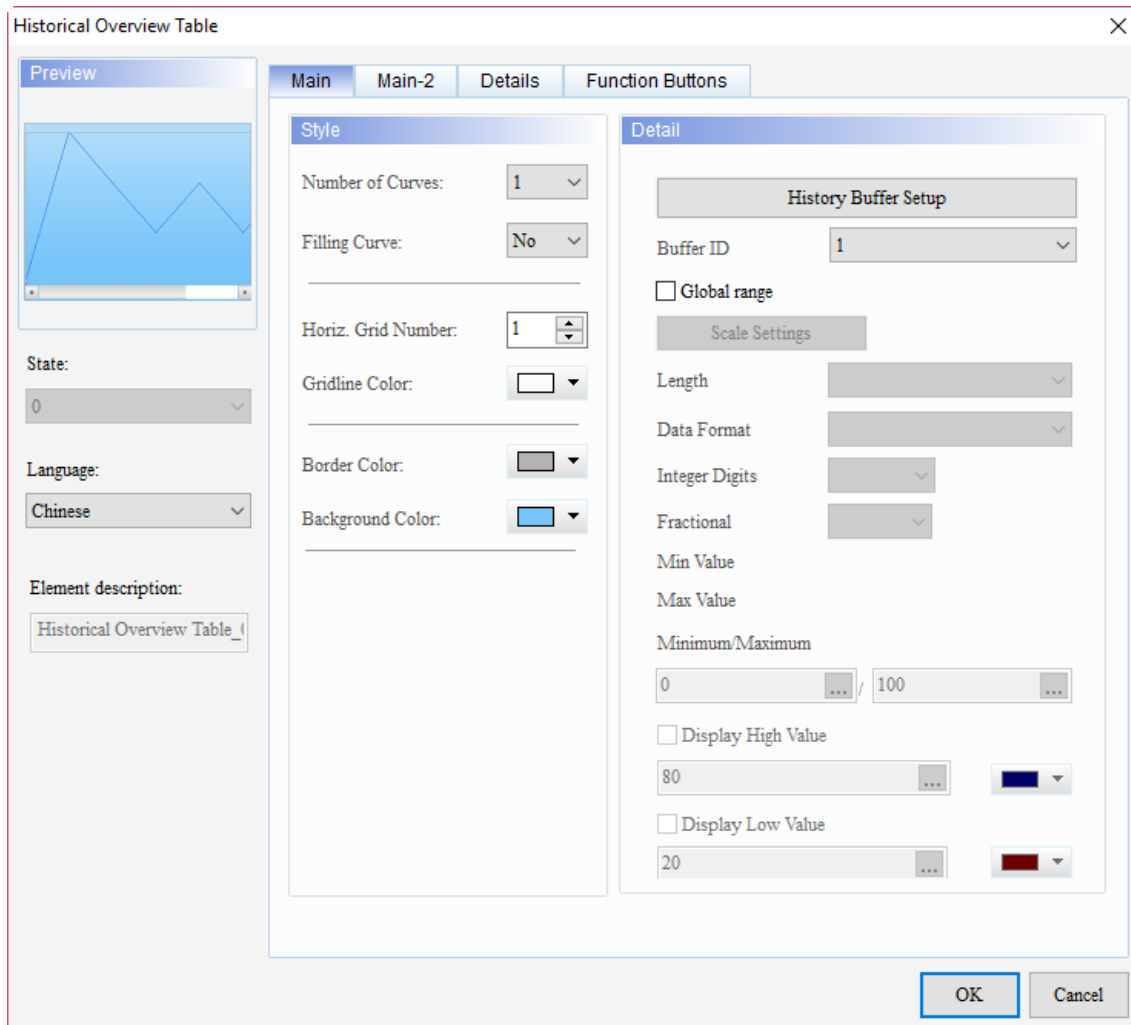


Figure 15.5.1 Properties of Historical Overview Table

Table 15.5.1 Function page of Historical Overview Table

Historical Overview Table		
Function page	Description	
Preview	The Historical Overview Table elements do not support multiple status values and multi-language data display.	
Main	Data	Set Buffer ID.
	Global range	Set Scale Settings, Length, Data Format, Integer Digits, Fractional, Minimum / Maximum, Display High Value, Display Low Value, High Value color, and Low Value color.
	Scale Settings	Set the Display scale, Display mark, Font size, Text Color, Mark Color, Scale Mark Number, and Subscale Mark Number.
	Style	Set Number of Curves, Filling Curve, Horiz. Grid Number, Gridline Color, Border Color, and Background Color.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Margin.	
Details	Scope setting	Set the curve's Length, Start Position, Data Format, Integer Digits, Fractional Digits, Line Weight and Color, Minimum, and Maximum.
	Time/Date	Set Display time/date, Time Interval, Time format, Date Format, and Color.
Function Buttons	Set the function buttons to be enabled and the buttons' width and height.	
Coordinates	Set the X and Y coordinates, width, and height of the elements.	

■ Main

15

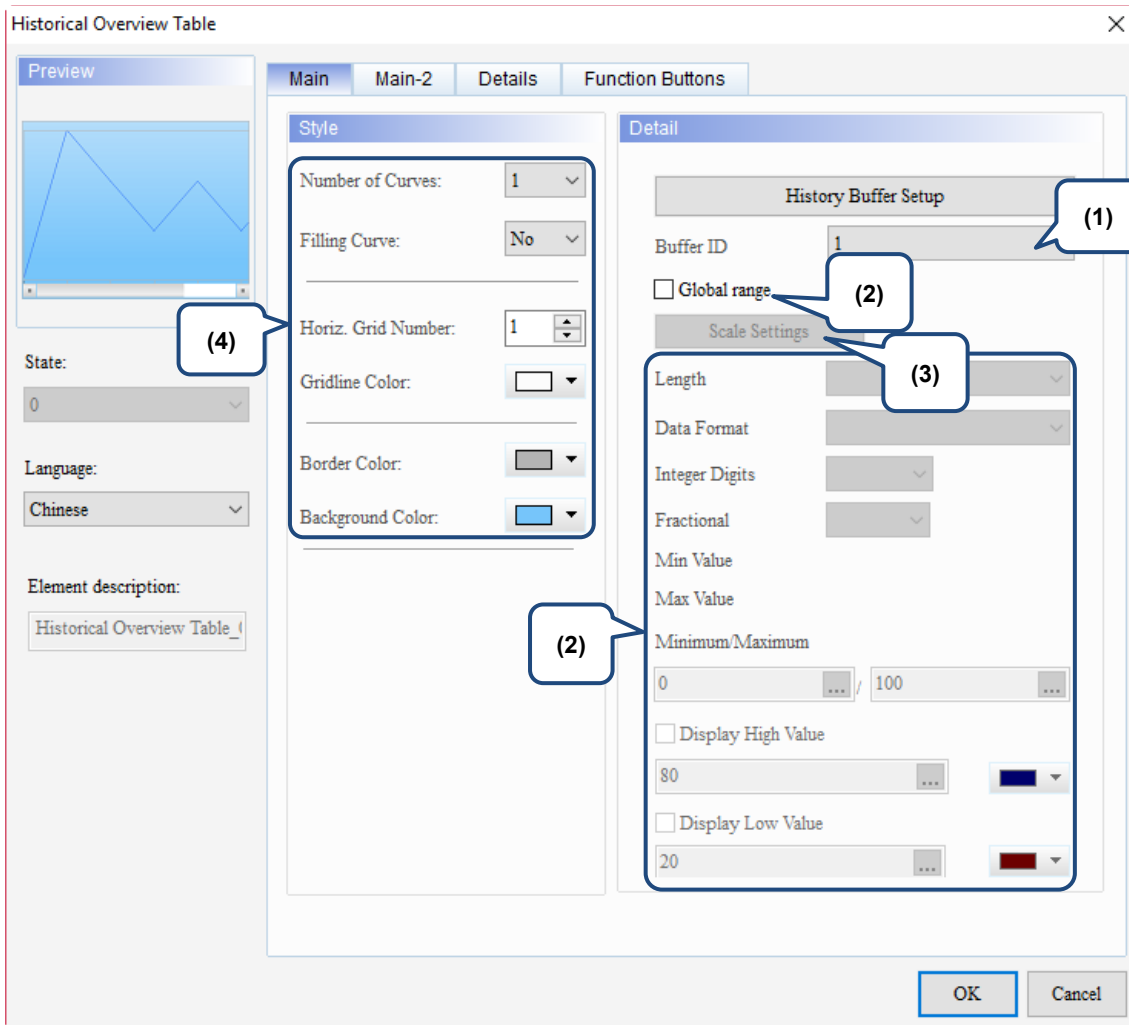
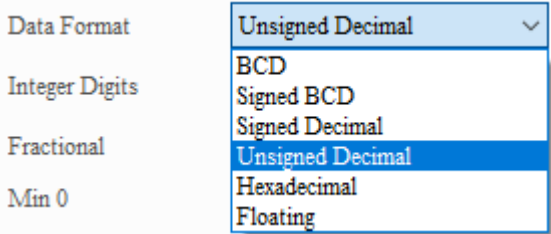


Figure 15.5.2 Main property page for the Historical Overview Table element

No.	Property	Function description
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can also set up to 12 sets.</p>

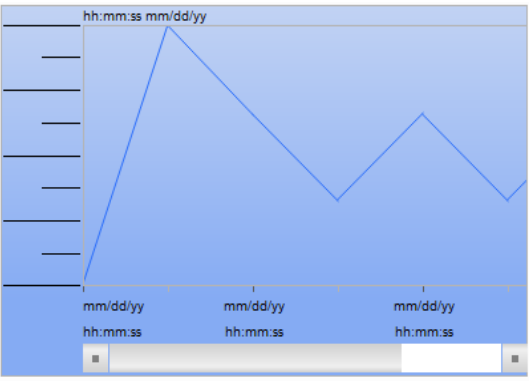
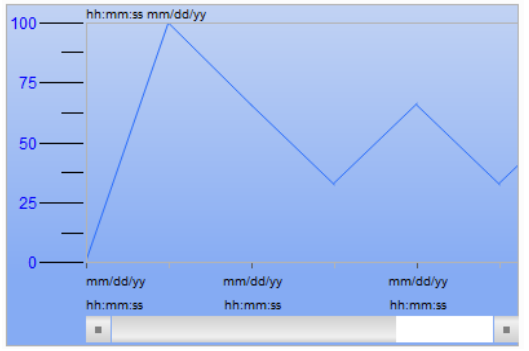
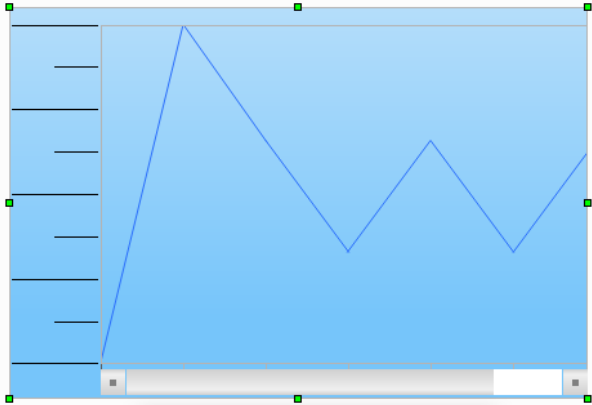
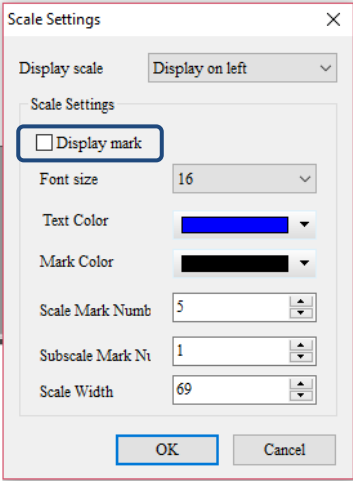
No.	Property	Function description																											
(2)	Global range	<p>Length</p> <p>The Length can be set as 1 or 2. If Length is 1, it means the length of the read data is 1 word; if Length is 2, it means the length of the read data is 2 words. Note: when you select 2 as the Length, the Read Length must be 2 or more words.</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$0</td> <td>2</td> </tr> </tbody> </table>	No.	Address	Read Length (Word)	1	\$0	2																					
		No.	Address	Read Length (Word)																									
		1	\$0	2																									
		<p>Data Format</p> <ul style="list-style-type: none"> Historical Overview Table supports the following data formats: BCD, Signed BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, and Floating. Floating is only available when Length is 2. 																											
		<p>Integer / Fractional Digits</p> <p>You can set the displaying number of integer digits and the number of decimal places.</p>																											
		<p>Minimum / Maximum</p> <ul style="list-style-type: none"> If Global range is checked, you will not be able to set the Minimum / Maximum values for the curves on the Details page; instead the range is determined by the minimum and maximum of the Global range. The allowable ranges for the minimum and maximum values are subject to change based on the selected data type and data format. <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">DWord</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td>Floating</td> <td>0 to 9999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	DWord	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hex	0 to 0xFFFFFFFF	Floating	0 to 9999999
		Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																											
	Signed BCD	-999 to +9999																											
	Signed Decimal	-32768 to +32767																											
	Unsigned Decimal	0 to 65535																											
	Hex	0 to 0xFFFF																											
DWord	BCD	0 to 99999999																											
	Signed BCD	-9999999 to +9999999																											
	Signed Decimal	-2147483648 to +2147483647																											
	Unsigned Decimal	0 to 4294967295																											
	Hex	0 to 0xFFFFFFFF																											
Floating	0 to 9999999																												
<p>Display High Value</p> <p>Display High Value is available on the Historical Overview Table. You can set the constant, select the internal memory or the controller register address (Word), and set the color for the Display High Value.</p>																													
<p>Display Low Value</p> <p>Display Low Value is available on the Historical Overview Table. You can set the constant, select the internal memory or the controller register address (Word), and set the color for the Display Low Value.</p>																													

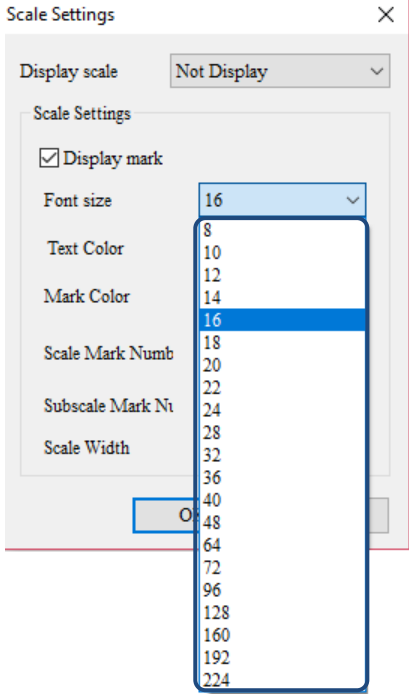
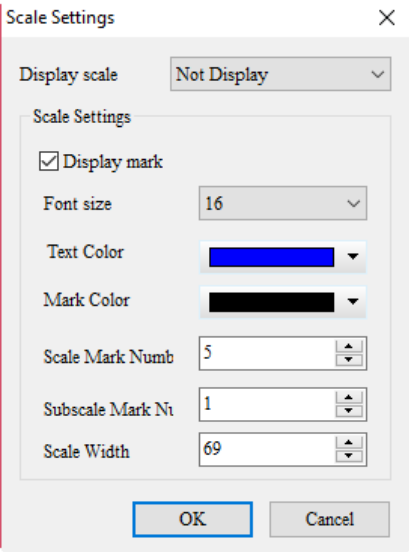
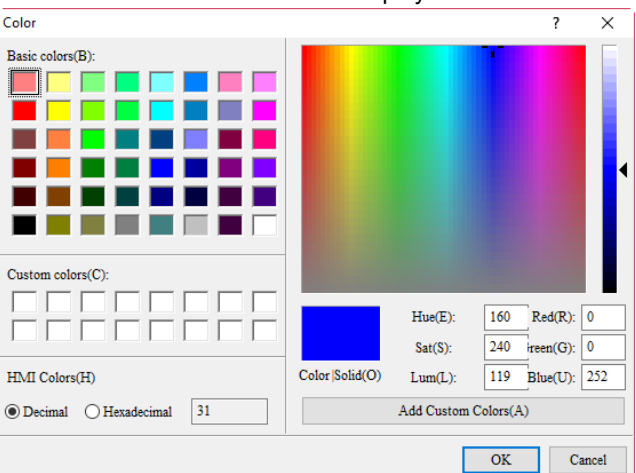
15

No.	Property	Function description				
(3)	Scale Settings	<div style="border: 1px solid red; padding: 5px;"> <p>Scale Settings [X]</p> <p>Display scale: Not Display [v]</p> <p>Scale Settings</p> <p><input checked="" type="checkbox"/> Display mark</p> <p>Font size: 16 [v]</p> <p>Text Color: [Blue] [v]</p> <p>Mark Color: [Black] [v]</p> <p>Scale Mark Numb: 5 [up/down]</p> <p>Subscale Mark Nt: 1 [up/down]</p> <p>Scale Width: 69 [up/down]</p> <p>OK [v] Cancel</p> </div> <p>Scale Settings is only available when Global range is checked.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; text-align: center; vertical-align: middle;">Uncheck</td> <td style="padding: 5px;"> <input type="checkbox"/> Global range <div style="background-color: #cccccc; padding: 2px; text-align: center;">Scale Settings</div> <p>Length: 1 [v]</p> <p>Data Format: Unsigned Decimal [v]</p> <p>Integer Digits: 4 [v]</p> <p>Fractional: 0 [v]</p> </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;">Check</td> <td style="padding: 5px;"> <input checked="" type="checkbox"/> Global range <div style="background-color: #cccccc; padding: 2px; text-align: center;">Scale Settings</div> <p>Length: 1 [v]</p> <p>Data Format: Unsigned Decimal [v]</p> <p>Integer Digits: 4 [v]</p> <p>Fractional: 0 [v]</p> </td> </tr> </table>	Uncheck	<input type="checkbox"/> Global range <div style="background-color: #cccccc; padding: 2px; text-align: center;">Scale Settings</div> <p>Length: 1 [v]</p> <p>Data Format: Unsigned Decimal [v]</p> <p>Integer Digits: 4 [v]</p> <p>Fractional: 0 [v]</p>	Check	<input checked="" type="checkbox"/> Global range <div style="background-color: #cccccc; padding: 2px; text-align: center;">Scale Settings</div> <p>Length: 1 [v]</p> <p>Data Format: Unsigned Decimal [v]</p> <p>Integer Digits: 4 [v]</p> <p>Fractional: 0 [v]</p>
Uncheck	<input type="checkbox"/> Global range <div style="background-color: #cccccc; padding: 2px; text-align: center;">Scale Settings</div> <p>Length: 1 [v]</p> <p>Data Format: Unsigned Decimal [v]</p> <p>Integer Digits: 4 [v]</p> <p>Fractional: 0 [v]</p>					
Check	<input checked="" type="checkbox"/> Global range <div style="background-color: #cccccc; padding: 2px; text-align: center;">Scale Settings</div> <p>Length: 1 [v]</p> <p>Data Format: Unsigned Decimal [v]</p> <p>Integer Digits: 4 [v]</p> <p>Fractional: 0 [v]</p>					

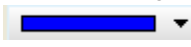
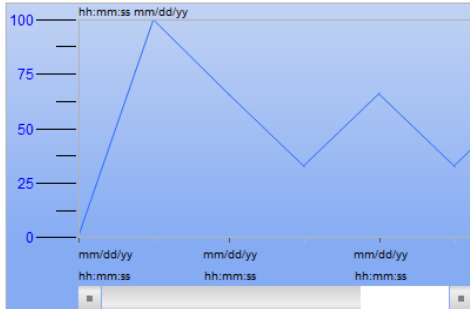
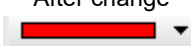
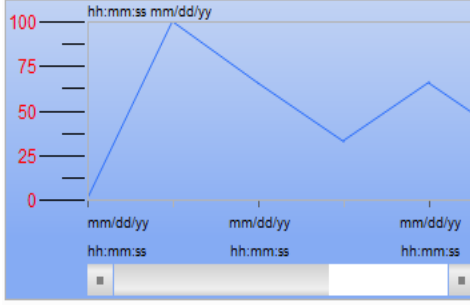
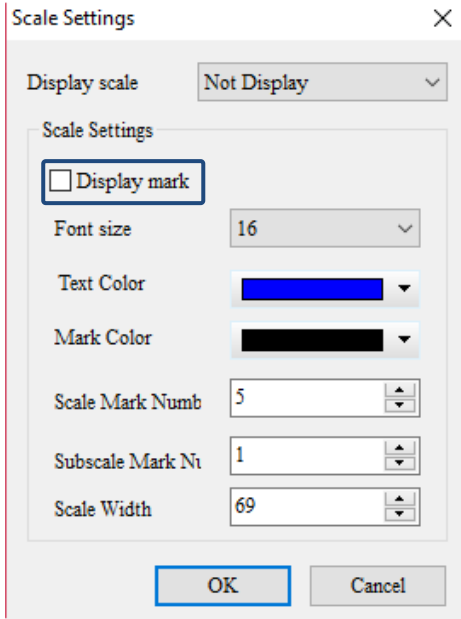
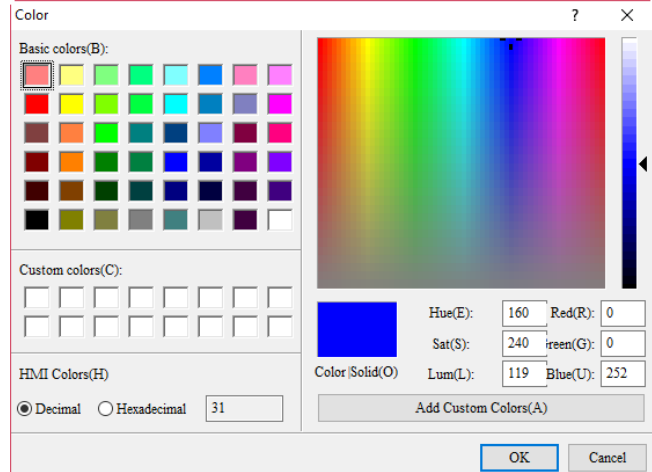
No.	Property	Function description		
(3)	Scale Settings	Display scale		
			<p>The Display scale options include Not Display, Display on left, and Display on Right.</p>	
			Not Display	
			Display on left	
Display on Right				

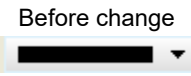

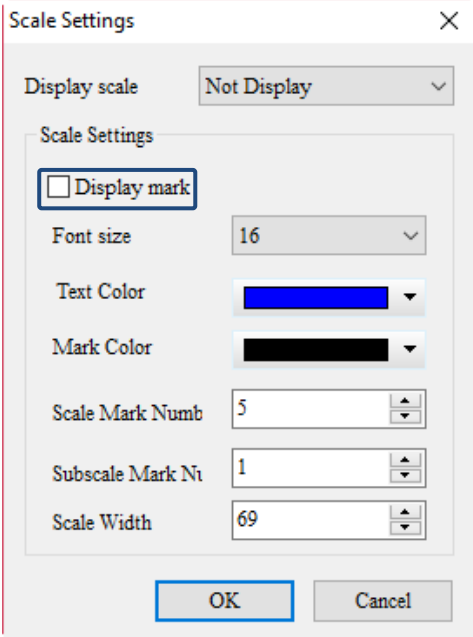
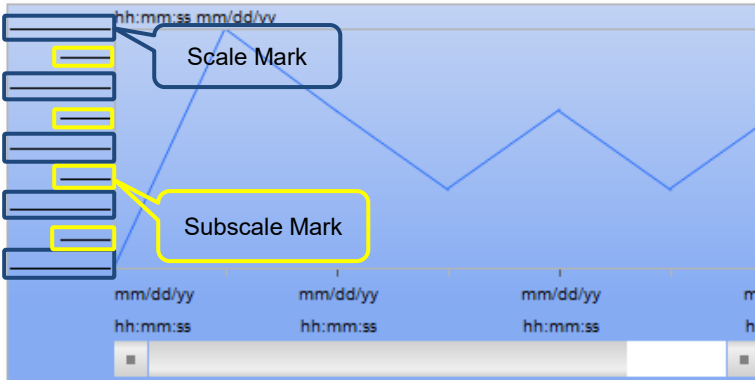
15

No.	Property	Function description
		<p>Select to display the scale numbers or not.</p> <div style="display: flex; justify-content: space-around;"> <div style="background-color: #cccccc; padding: 10px; border: 1px solid #000;">Uncheck</div>  </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="background-color: #cccccc; padding: 10px; border: 1px solid #000;">Check</div>  </div>
(3)	Scale Settings	<p>If you do not check Display mark when you set the Font size, the texts will not display on the scale, but the spacing for the set Font size will be reserved on the scale. For example, if you selected 72 for the Font size, the spacing on the scale will be wider, but without the texts.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;">  </div> </div>

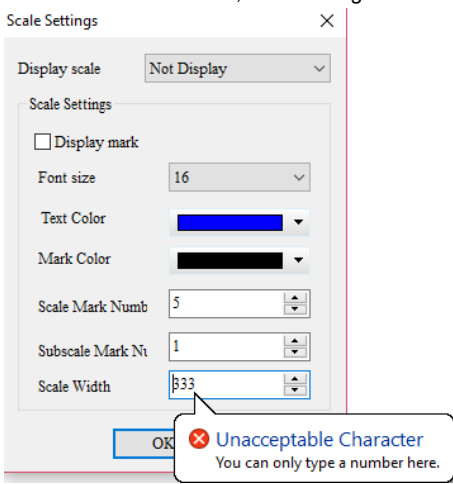
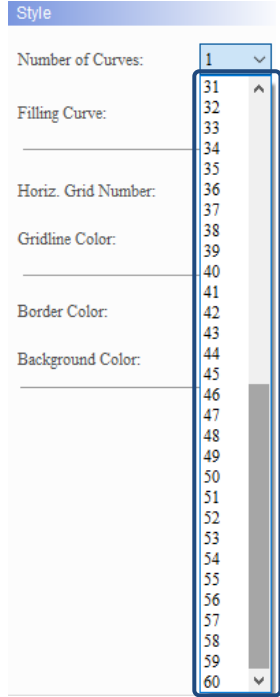
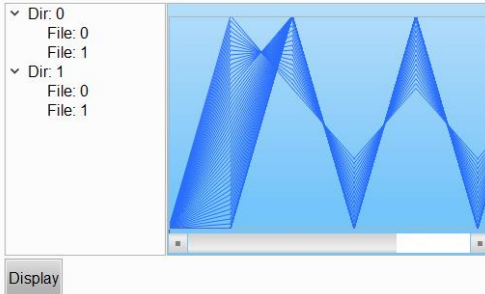
No.	Property	Function description
	Font size	<p>Font size is for setting the size of the numbers displaying on the scale with the font sizes 8 - 224 available.</p> 
(3)	Scale Settings	<ul style="list-style-type: none"> ■ The Text Color setting is valid only when Display mark is checked.  <ul style="list-style-type: none"> ■ You can define the text color to be displayed. 

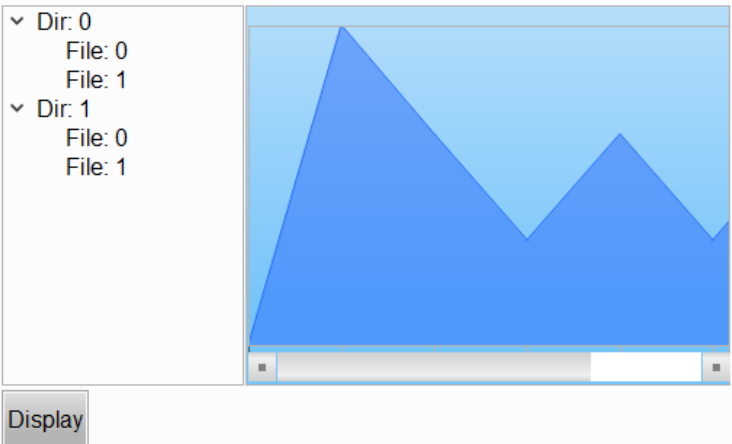
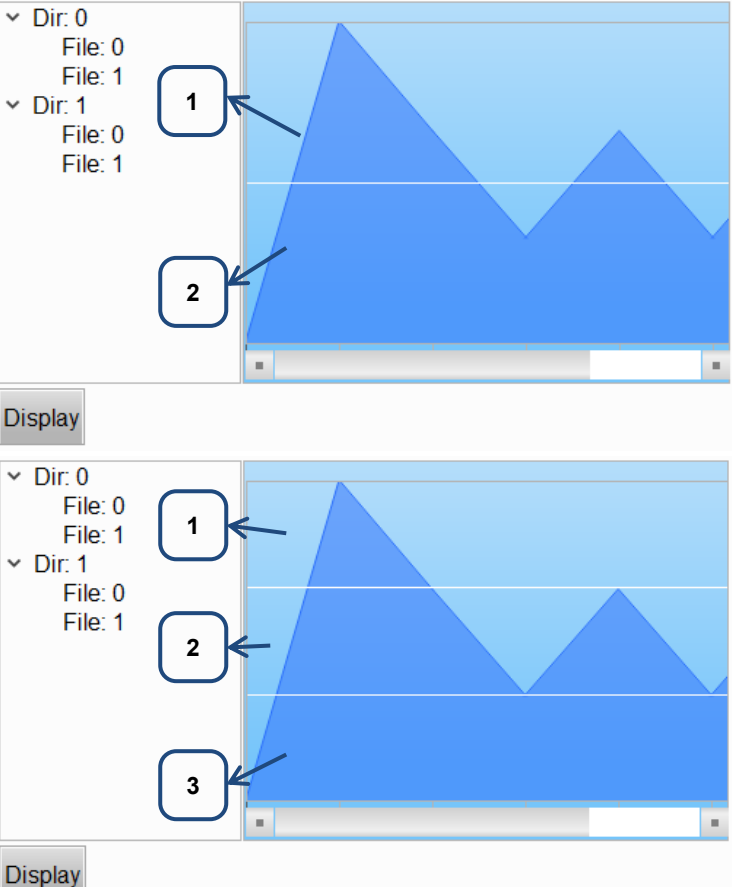
15

No.	Property	Function description	
	Text Color	<p>Before change</p> 	
(3)	Scale Settings	<p>After change</p> 	 <p>■ The Mark Color setting is valid even if Display mark is not checked.</p>  <p>■ You can define the mark color to be displayed.</p> 
	Mark Color		


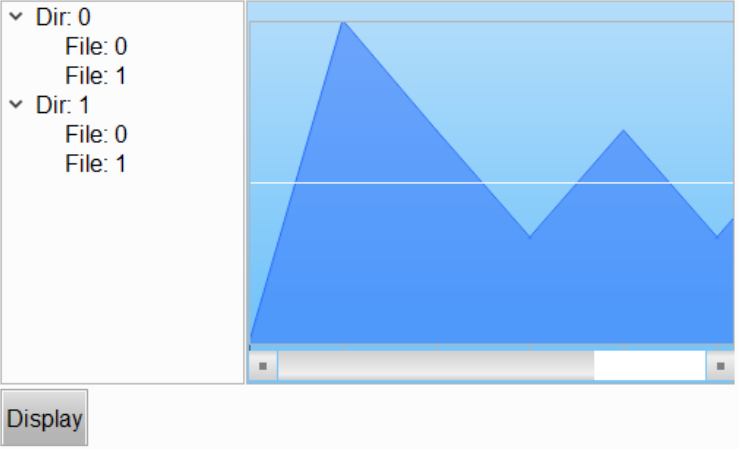
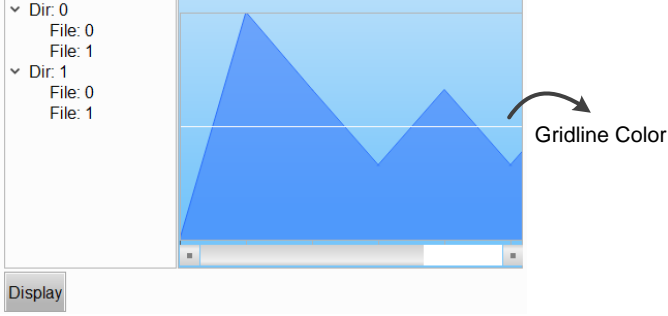
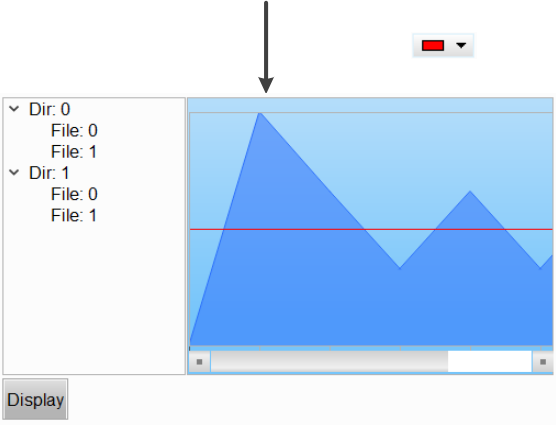
No.	Property	Function description	
		Mark Color	<div style="display: flex; flex-direction: column;"> <div style="margin-bottom: 10px;"> <p>Before change</p>  </div> <div> <p>After change</p>  </div> </div>
(3)	Scale Settings	Scale Mark Number	<ul style="list-style-type: none"> ■ The Scale Mark Number and Subscale Mark Number settings are valid even if Display mark is not checked. 
		Subscale Mark Number	<ul style="list-style-type: none"> ■ The minimum is 1 and the maximum is 99 for both the Scale Mark Number and Subscale Mark Number. ■ When the Scale Mark Number is 5 and the Subscale Mark Number is 1, the graph is as follows. 

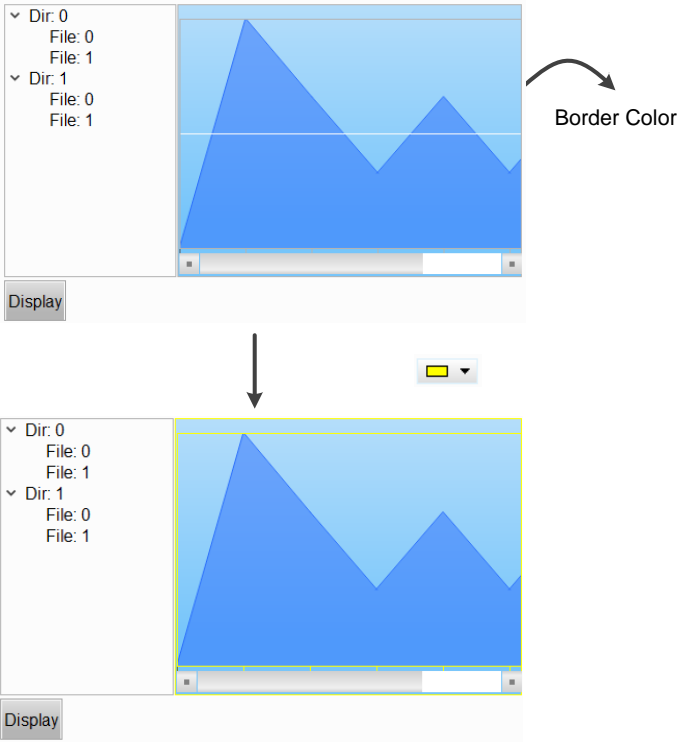
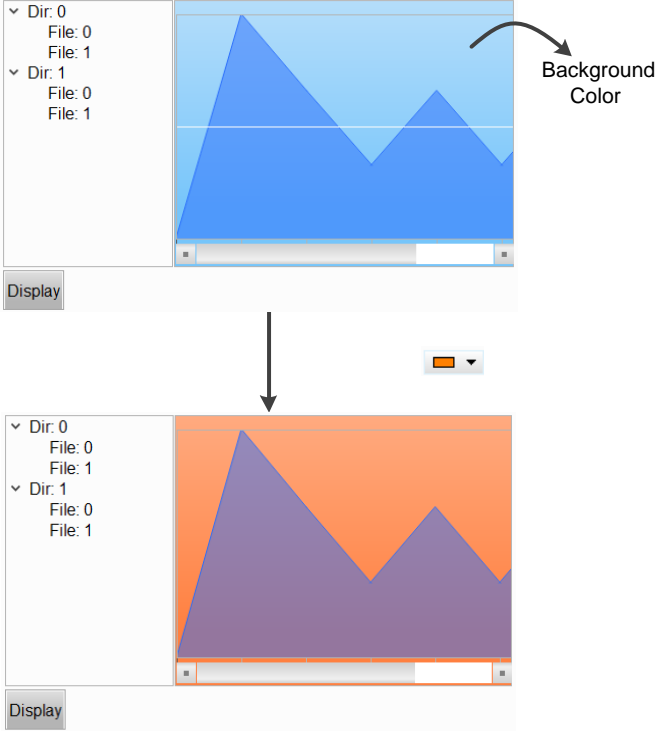
15

No.	Property	Function description
(3)	Scale Settings Scale Width	<p>When the font size is set too big, you can adjust Scale Width so the text shows.</p> <p>Note:</p> <ol style="list-style-type: none"> Scale Width must be smaller than the element width. When you drag the scale width so it is larger than the element width, the scale will not display. When you use the set value to make the scale width larger than the element width, the Scale Width is immediately adjusted to the element width -1. If you enter a non-numeric character, the following error message pops up. 
(4)	Style Number of Curves	<ul style="list-style-type: none"> A Historical Overview Table element supports up to 60 curves.  <ul style="list-style-type: none"> If you select 60 curves, you can still change the width and color of each curve. 

No.	Property	Function description
	Filling Curve	<ul style="list-style-type: none"> ■ Set to fill the area below the curve. ■ The default is No. If set to Yes, the curve is as follows. 
(4)	Style	<ul style="list-style-type: none"> ■ The maximum horizontal grid count is 50. ■ Horiz. Grid Number is for separating the blocks for the trend graph on the right side of the Historical Overview Table. The default is 1, meaning there is no grid line. If the Horiz. Grid Number is set to 2, there is one grid line separating the trend graph into 2 blocks; if set to 3, there are two grid lines separating the trend graph into 3 blocks, and so on. 

15

No.	Property	Function description
(4)	Style	<p>■ The Gridline Color is the color of the grid line in the trend graph on the right side of the Historical Overview Table. The default is</p> <div>  </div> <div>  </div> <p>■ You can change the color of the grid line.</p> <div>  </div> <div>  </div>

No.	Property	Function description
(4)	Style	<p>Set the Historical Overview Table element border color.</p> <div>  <p>Border Color</p> </div>
		<p>Set the Historical Overview Table element background color.</p> <div>  <p>Background Color</p> </div>

■ Main-2

15

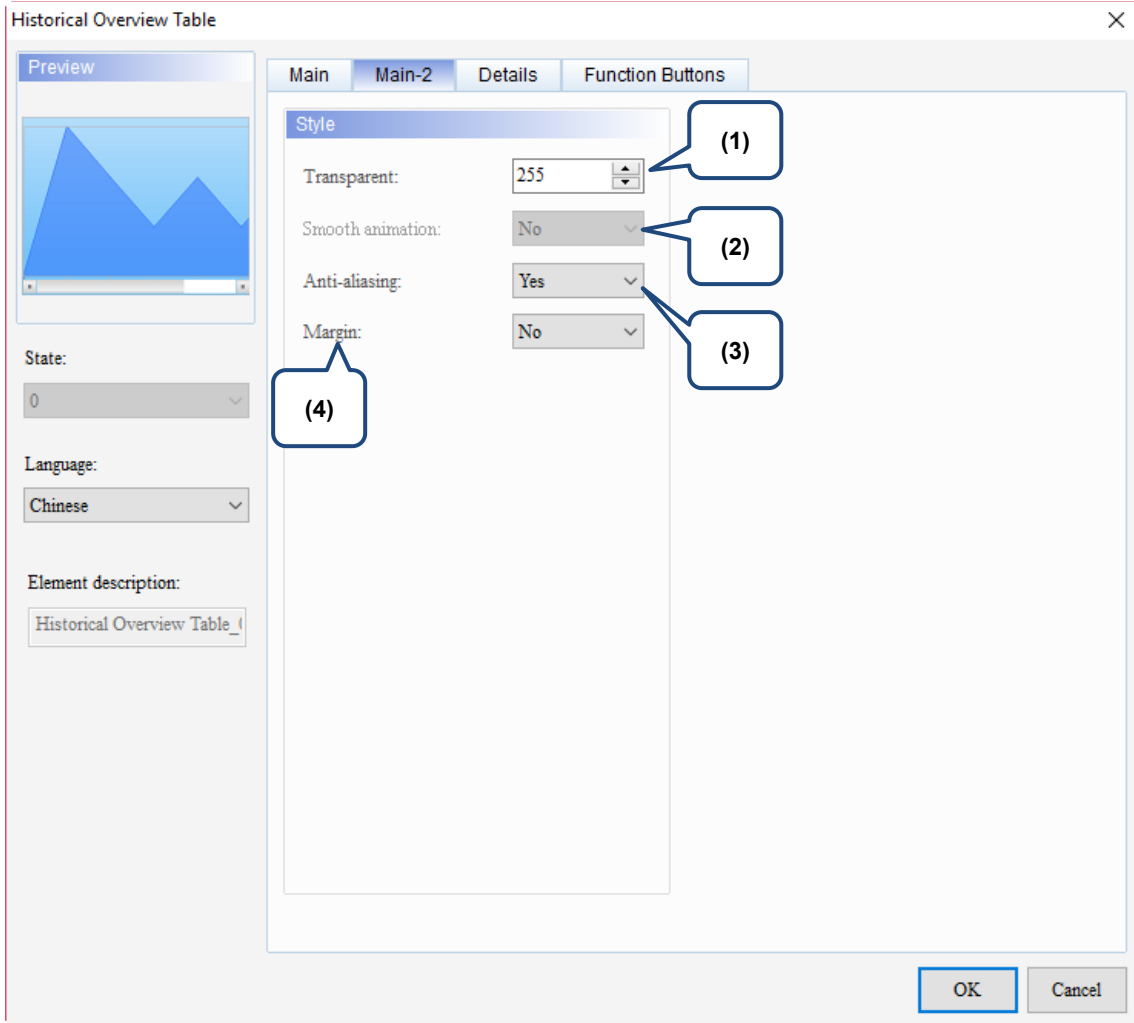
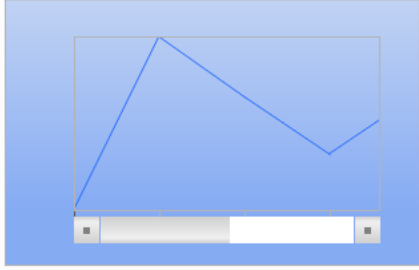

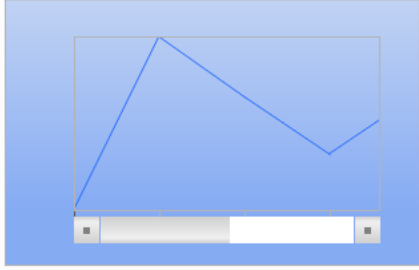

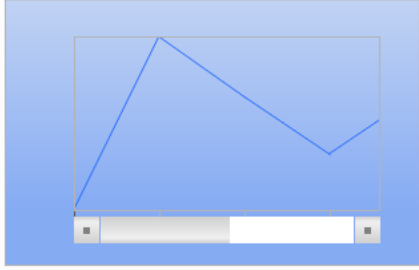



Figure 15.5.3 Main-2 property page for the Historical Overview Table element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When enabled, the element display becomes more delicate without jagged edges.				
(4)	Margin	<p>The Margin function is available for this element. When you select Yes for Margin, the element will indent as shown in the figure below.</p> <table border="1"> <tr> <td>Margin is set to Yes</td> <td>  </td> </tr> <tr> <td>Margin is set to No</td> <td>  </td> </tr> </table>	Margin is set to Yes		Margin is set to No	
Margin is set to Yes						
Margin is set to No						

■ Details

15

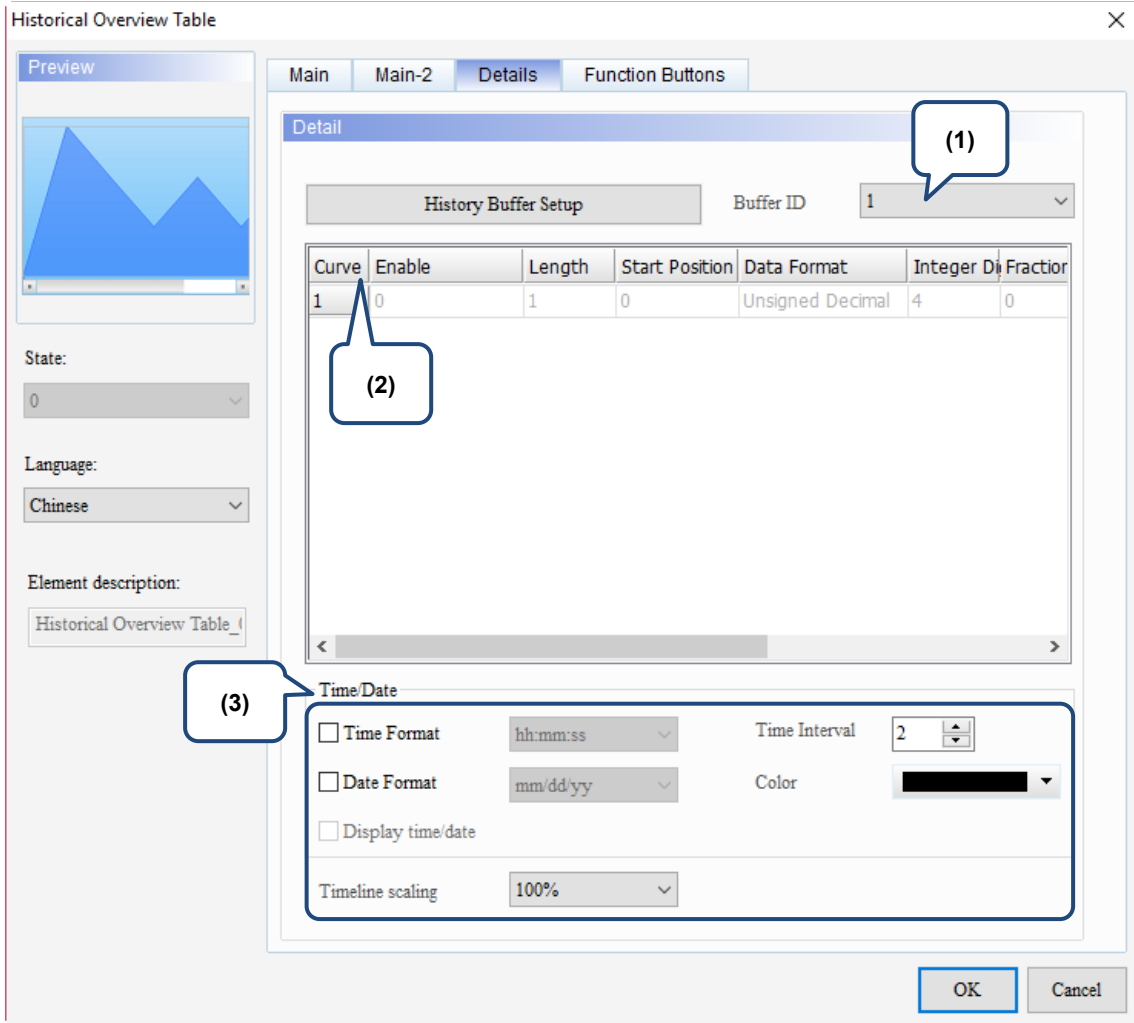
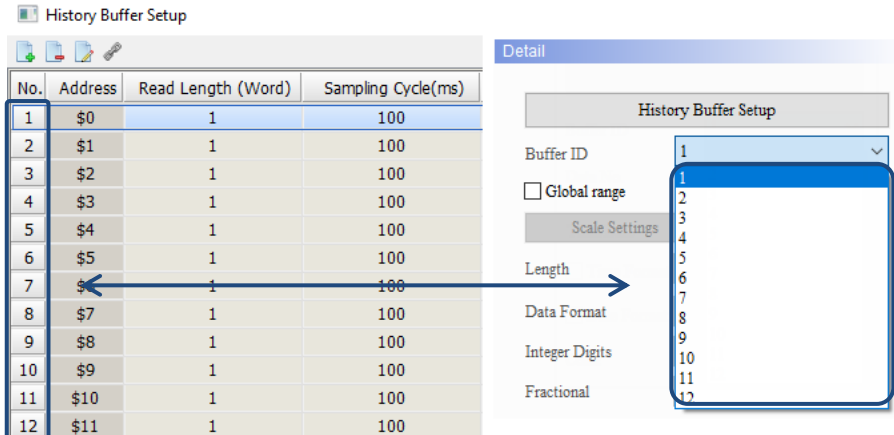
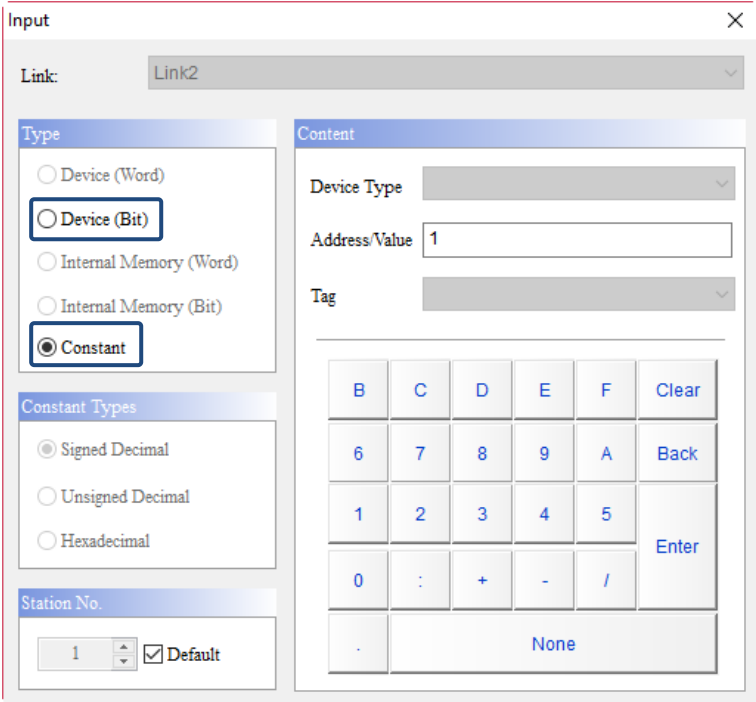
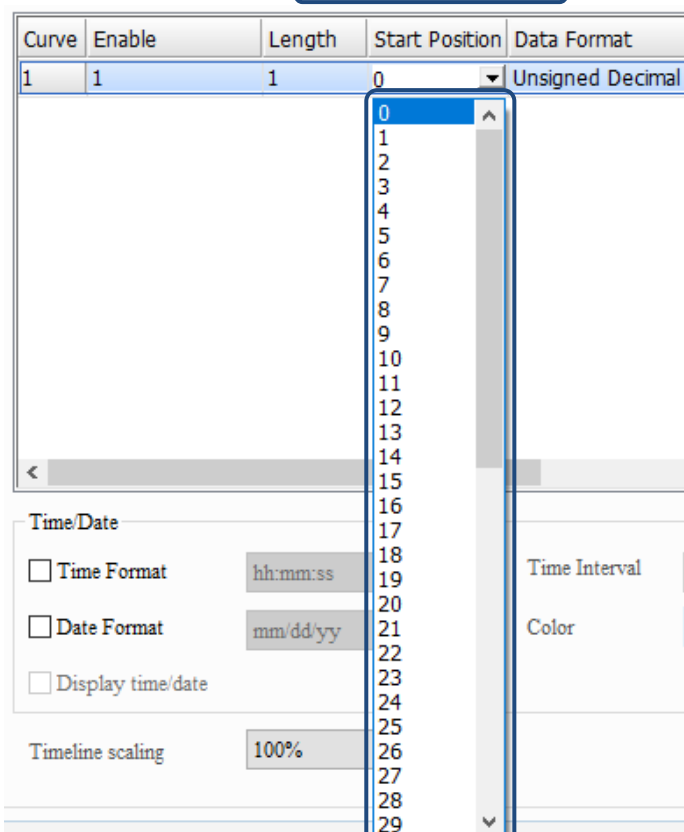
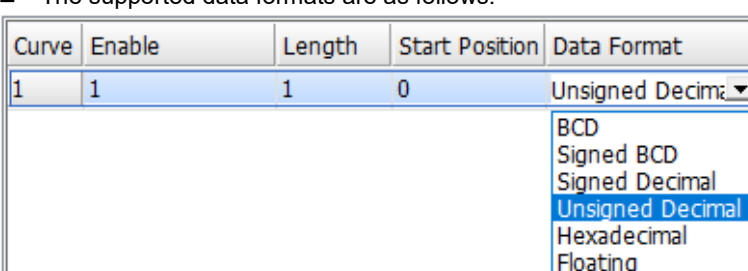
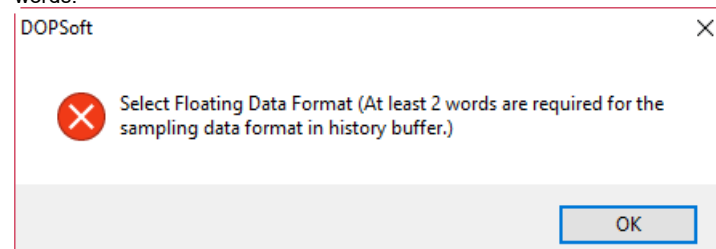
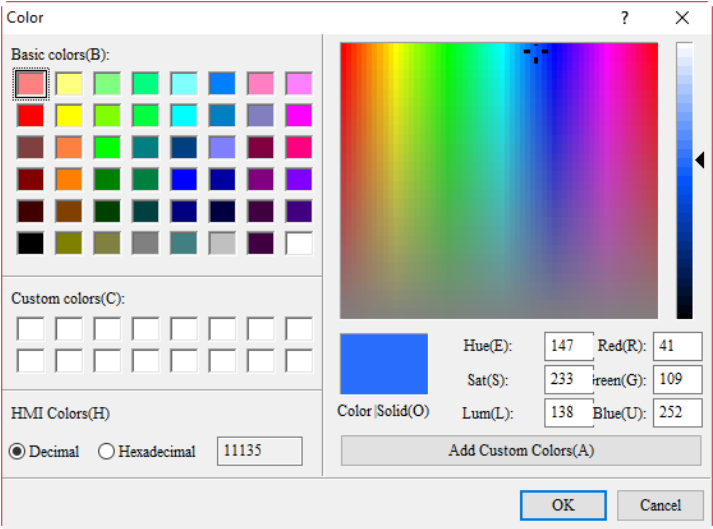
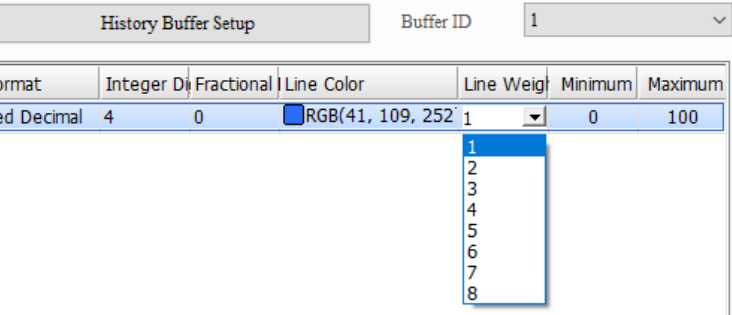


Figure 15.5.4 Details property page for the Historical Overview Table element

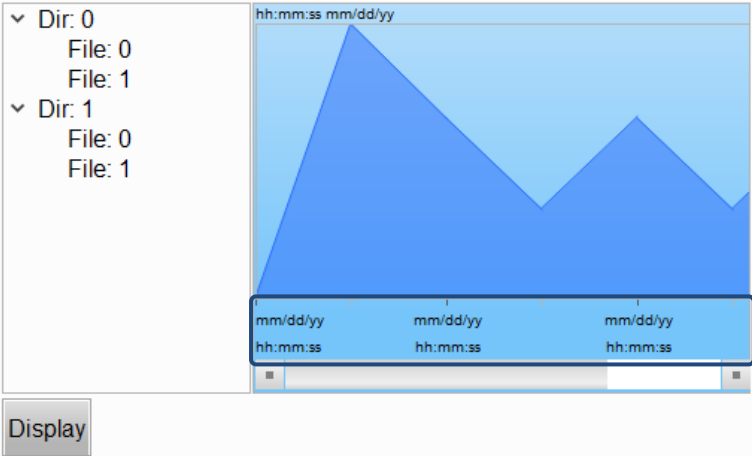
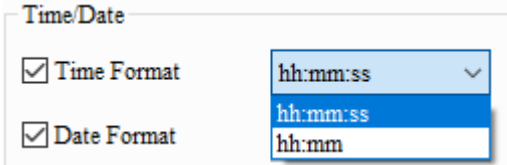
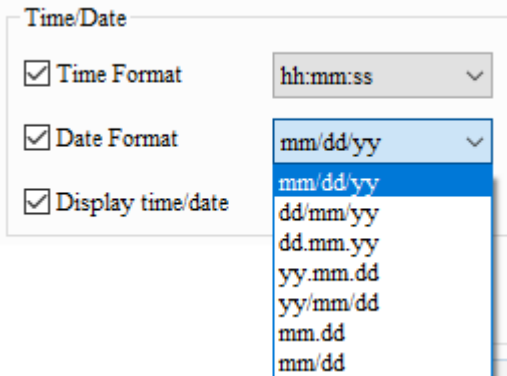
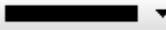
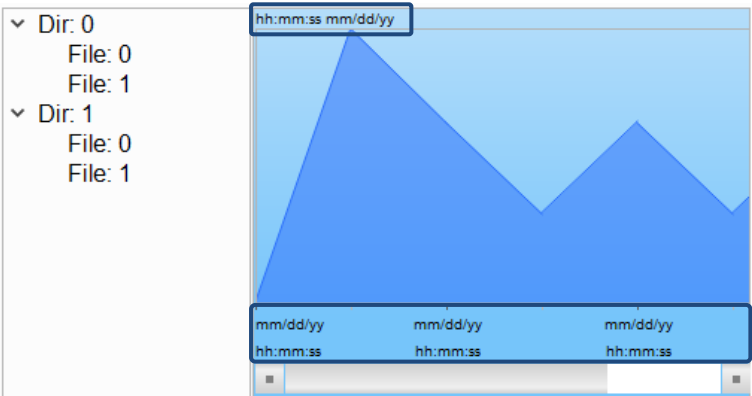
No.	Property	Function description												
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can also set up to 12 sets.</p> 												
(2)	Curve setting	<ul style="list-style-type: none"> ■ Set whether the curve is enabled to read data. ■ If Constant is selected for Type, then setting the value to 1 indicates enable and setting to 2 indicates disable. If Bit is selected for Type, then Bit On indicates enable and Bit Off indicates disable. ■ The value supports the Bit of the element, Bit of the internal memory, and constant setting.  <p>Enable</p> <ul style="list-style-type: none"> ■ You can set Length to 1 or 2. You can only set Length to 2 when Read Length (Word) is set to 2 or above. <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$0</td> <td>2</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Curve</th> <th>Enable</th> <th>Length</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>2</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ■ When Global range is checked, you cannot set this function. 	No.	Address	Read Length (Word)	1	\$0	2	Curve	Enable	Length	1	1	2
No.	Address	Read Length (Word)												
1	\$0	2												
Curve	Enable	Length												
1	1	2												

15

No.	Property	Function description									
(2)	Curve setting	<p>Start Position</p> <ul style="list-style-type: none"> The Start Position setting is determined by the set Read Length (Word). If the Read Length (Word) is 60, the Start Position can be 0 - 59. <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$0</td> <td>60</td> </tr> </tbody> </table> 	No.	Address	Read Length (Word)	1	\$0	60			
		No.	Address	Read Length (Word)							
1	\$0	60									
Data Format	<ul style="list-style-type: none"> The supported data formats are as follows: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Curve</th> <th>Enable</th> <th>Length</th> <th>Start Position</th> <th>Data Format</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>Unsigned Decimal</td> </tr> </tbody> </table>  <ul style="list-style-type: none"> When Global range is checked, you cannot set this function. <p>Note:</p> <ol style="list-style-type: none"> If you select Floating as the Data Format, please set Length to 2. If you select Floating as the Data Format, but set Length to 1 word, a message will pop up to remind you that you need to set Length to 2 or more words. 	Curve	Enable	Length	Start Position	Data Format	1	1	1	0	Unsigned Decimal
Curve	Enable	Length	Start Position	Data Format							
1	1	1	0	Unsigned Decimal							

No.	Property	Function description																											
(2)	Integer / Fractional Digits	<ul style="list-style-type: none"> You can set the displaying number of integer digits and the number of decimal places. When Global range is checked, you cannot set this function. 																											
	Line Color	<p>You can set the line color for the curve.</p> 																											
	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 																											
Minimum / Maximum	<ul style="list-style-type: none"> If Global range is checked, you will not be able to set the Minimum / Maximum values for the curves; instead the range is determined by the minimum and maximum of the Global range. The allowable ranges for the minimum and maximum values are subject to change based on the selected data type and data format. <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">DWord</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-99999999 to +99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td></td> <td>Floating</td> <td>0 to 9999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	DWord	BCD	0 to 99999999	Signed BCD	-99999999 to +99999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hex	0 to 0xFFFFFFFF		Floating	0 to 9999999
Data Type	Data Format	Allowable range																											
Word	BCD	0 to 9999																											
	Signed BCD	-999 to +9999																											
	Signed Decimal	-32768 to +32767																											
	Unsigned Decimal	0 to 65535																											
	Hex	0 to 0xFFFF																											
DWord	BCD	0 to 99999999																											
	Signed BCD	-99999999 to +99999999																											
	Signed Decimal	-2147483648 to +2147483647																											
	Unsigned Decimal	0 to 4294967295																											
	Hex	0 to 0xFFFFFFFF																											
	Floating	0 to 9999999																											

15

No.	Property	Function description
	Display time/date	<ul style="list-style-type: none"> When you check Display time/date, the time scale will display below the trend graph; if it is not checked, the time scale will not display. 
(3)	Time/Date	<ul style="list-style-type: none"> Two time formats are supported as follows:  <ul style="list-style-type: none"> Seven date formats are supported as follows: 
	Color	<p>With this setting, you can change the displaying color of the time and date, including the recorded time and date shown on top of the trend graph and the time scales. The default is .</p> 

■ Function Buttons

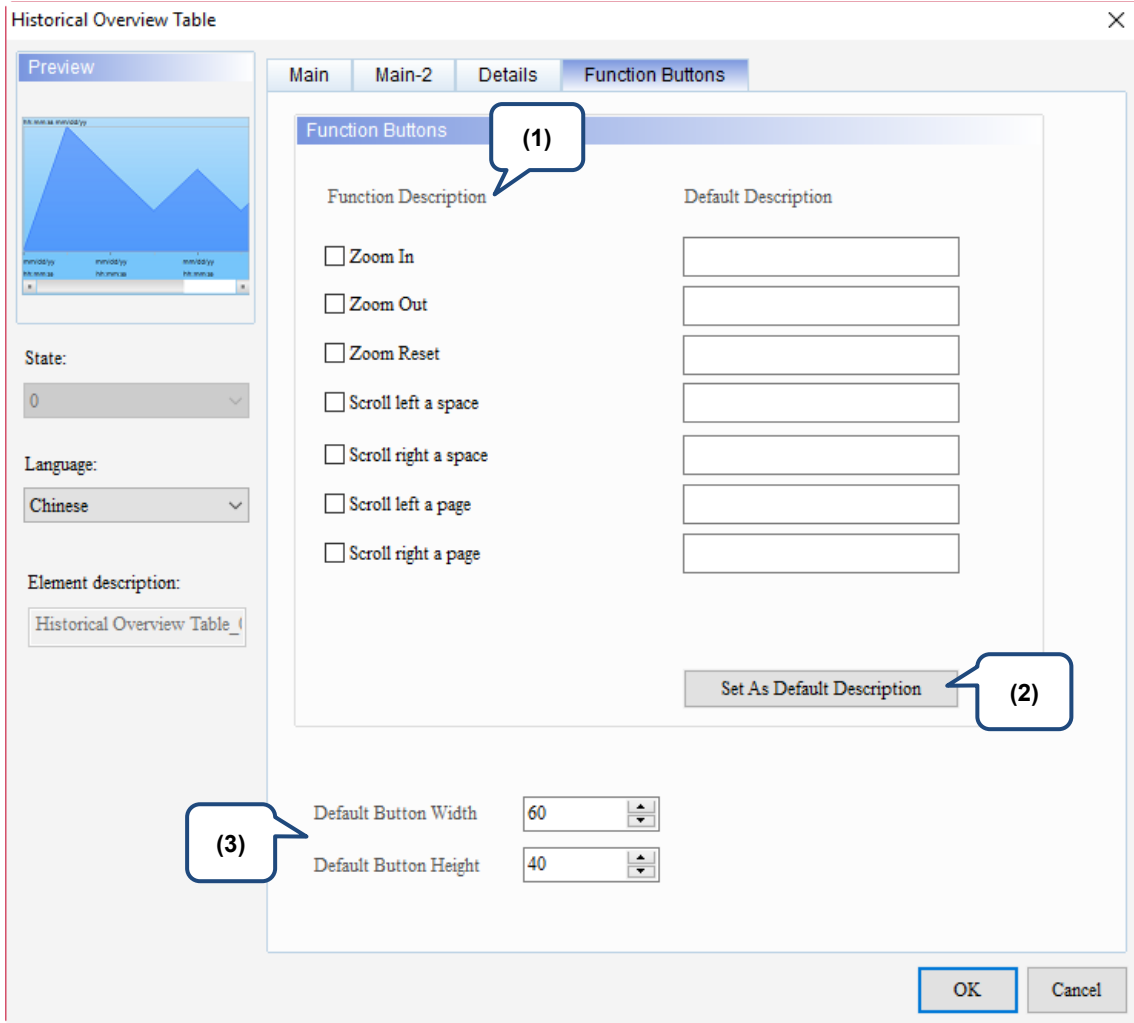
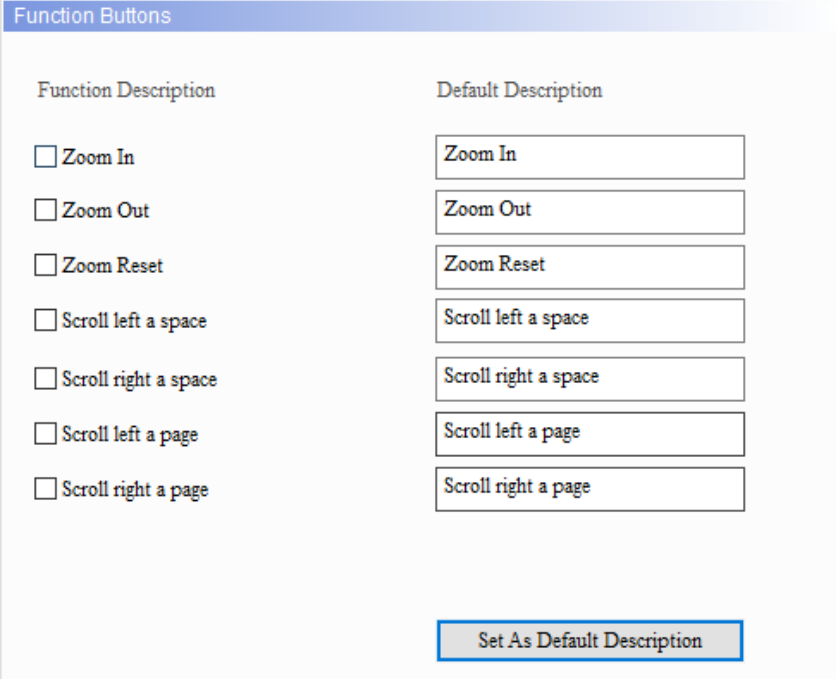
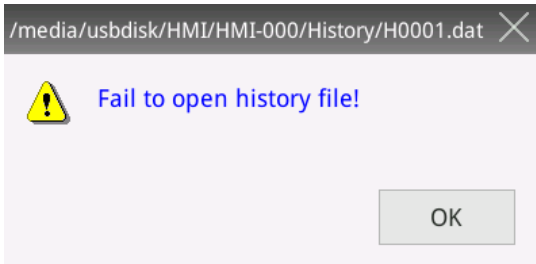


Figure 15.5.5 Function Buttons property page for the Historical Overview Table element

15

No.	Property	Function description														
(1)	Function description	<p>Check the Function Buttons you want to display on the trend graph.</p> <table border="1"> <tr> <td>Zoom In</td> <td>Zoom in on the history data of X-axis.</td> </tr> <tr> <td>Zoom Out</td> <td>Zoom out on the history data of X-axis.</td> </tr> <tr> <td>Zoom Reset</td> <td>Reset the history data of X-axis to the default size.</td> </tr> <tr> <td>Scroll left a space</td> <td>Scroll to the left a bit.</td> </tr> <tr> <td>Scroll right a space</td> <td>Scroll to the right a bit.</td> </tr> <tr> <td>Scroll left a page</td> <td>Scroll to the left for a page.</td> </tr> <tr> <td>Scroll right a page</td> <td>Scroll to the right for a page.</td> </tr> </table>	Zoom In	Zoom in on the history data of X-axis.	Zoom Out	Zoom out on the history data of X-axis.	Zoom Reset	Reset the history data of X-axis to the default size.	Scroll left a space	Scroll to the left a bit.	Scroll right a space	Scroll to the right a bit.	Scroll left a page	Scroll to the left for a page.	Scroll right a page	Scroll to the right for a page.
Zoom In	Zoom in on the history data of X-axis.															
Zoom Out	Zoom out on the history data of X-axis.															
Zoom Reset	Reset the history data of X-axis to the default size.															
Scroll left a space	Scroll to the left a bit.															
Scroll right a space	Scroll to the right a bit.															
Scroll left a page	Scroll to the left for a page.															
Scroll right a page	Scroll to the right for a page.															
(2)	Set As Default Description	<p>If you press Set As Default Description, the texts are automatically set as default.</p>  <p>Note:</p> <ol style="list-style-type: none"> The display area for the trend graph can only display .dat files. If the file in the file browsing area has the same file name as the File Name set in the Buffer Properties without containing any time and date, it means the History Buffer file is still sampling and the Historical Overview Table cannot display it. If you press Display in the file browsing area, the following warning pops up. 														
(3)	Default Button Width / Height	Adjust the button height and width to display.														

15.6 Operation Log Table

The Operation Log Table is for recording the operation and date/time of the operation of each element when users enter the HMI screen, such as changing the element data, security level, switching elements, etc. You may refer to the Operation Log Table when the machine malfunctions or there are defects in the products. In addition, you can save the records as CSV files and view them with PCs.

Note:

1. The default for Operation Log Table is a CSV file which saves up to 10,000 sets of data.
2. The Operation Log Table can only be saved in USB Disks or SD Cards, so the read speed of the external storage device affects the display speed of the Operation Log Table and the update speed of the screen operation.

When you double-click Operation Log Table, the property page is shown as follows.

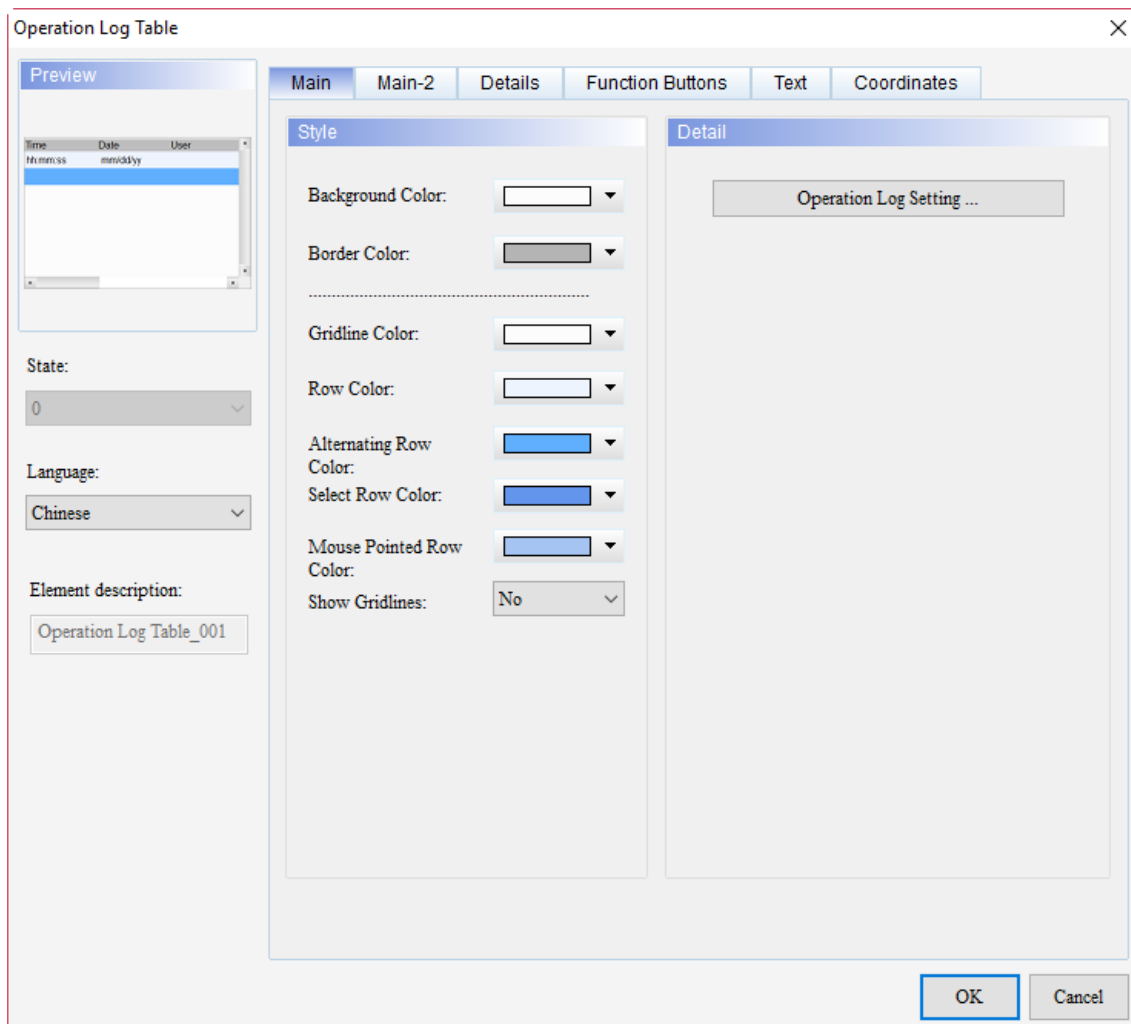


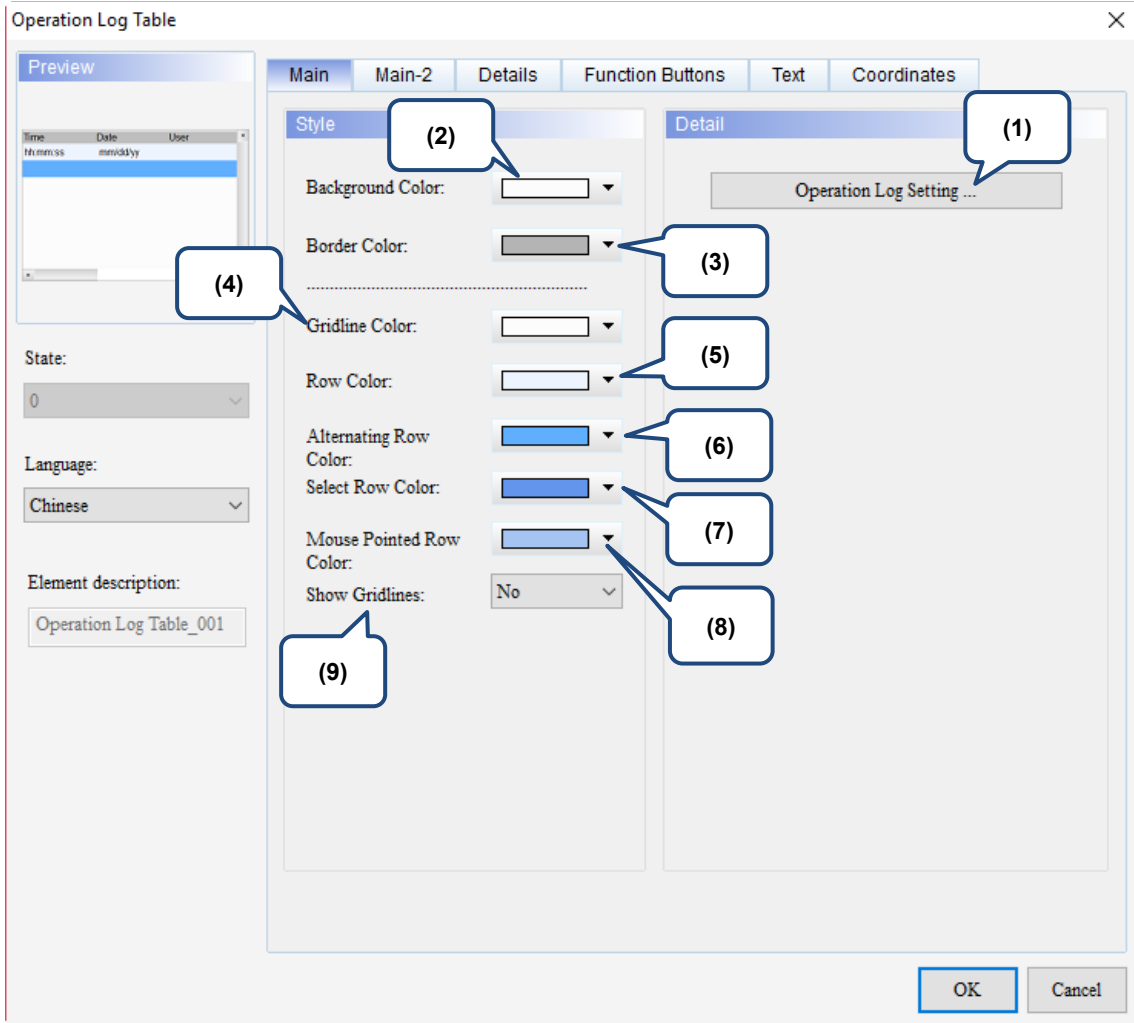
Figure 15.6.1 Properties of Operation Log Table

Table 15.6.1 Function page of Operation Log Table

Operation Log Table		
Function page	Description	
Preview	Operation Log Table elements do not support multiple status values and multi-language data display.	
Main	Style	Set Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, Mouse Pointed Row Color, and Show Gridlines.
	Settings	Enable, Trigger, Save Settings (storage space setting and solutions for insufficient space), and CSV output settings (date/time format, whether to save the records to an external device as CSV file).
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.	
Details	Display settings	You can set whether to record the Time, Date, User Account, Level, Screen, Description, Action, Address, Previous value, New value, and adjust Column order.
	Title setting	Set the text alignment, background color, and text color.
	Time/Date	Set Time Format, Date Format, and Color.
Function Buttons	Set the function buttons to be enabled and the buttons' width and height.	
Text	Set the text font, size, and color.	
Coordinates	Set the X and Y coordinates, width, and height of the elements.	

15

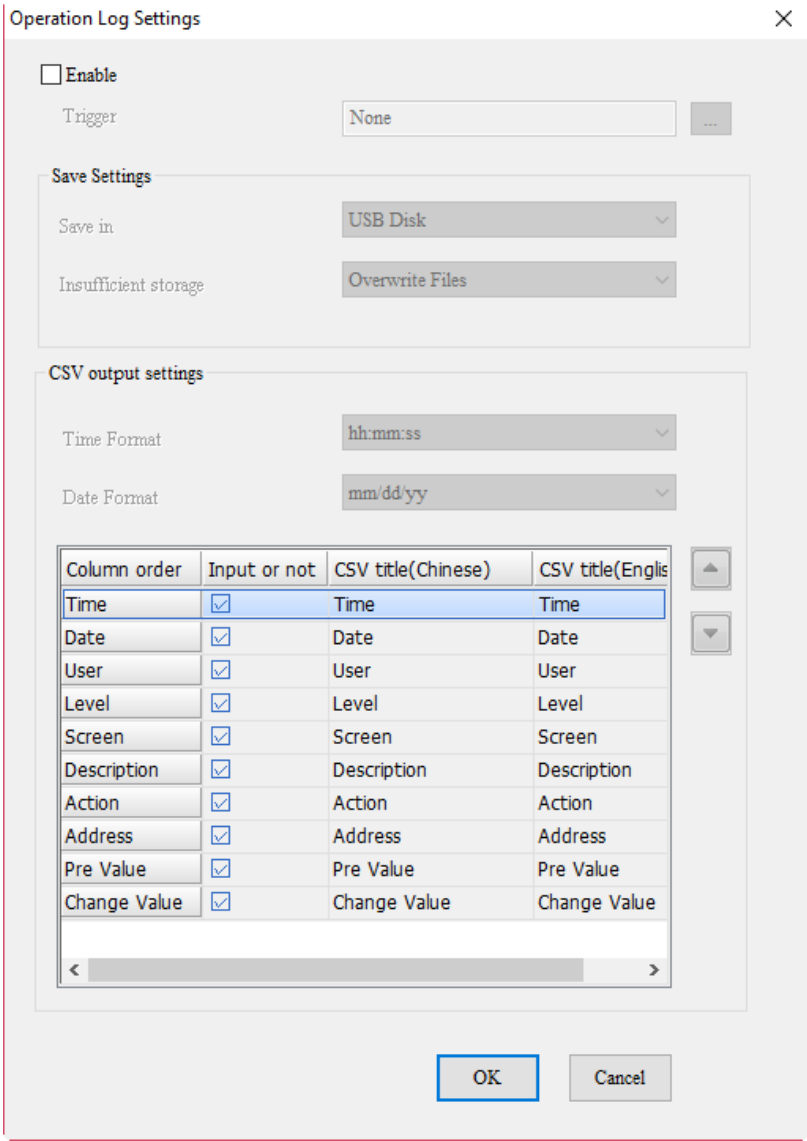
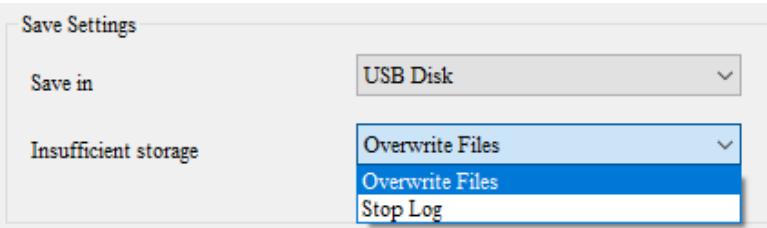
■ Main

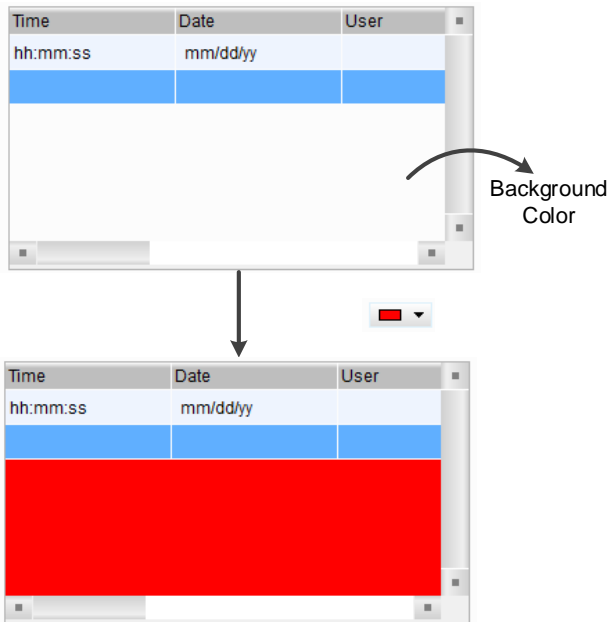


15

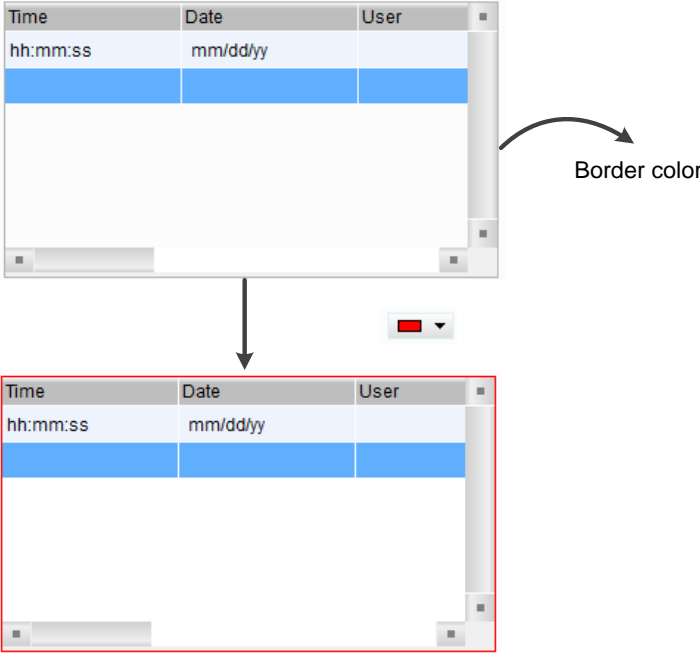
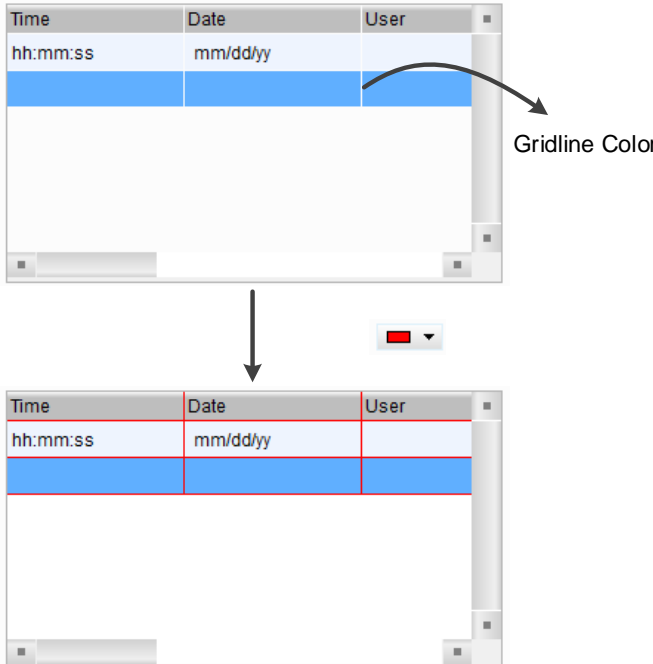
Figure 15.6.2 Main property page for the Operation Log Table element

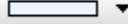
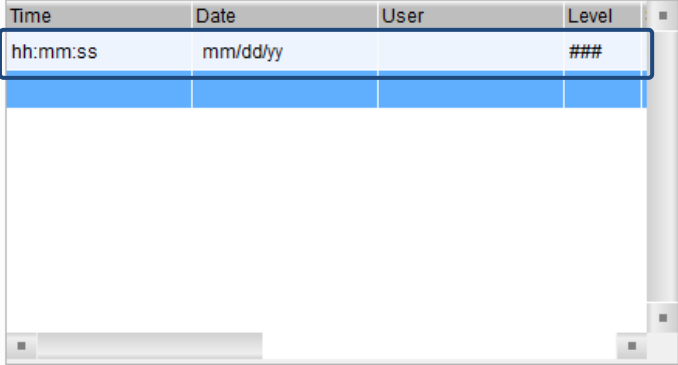
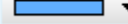
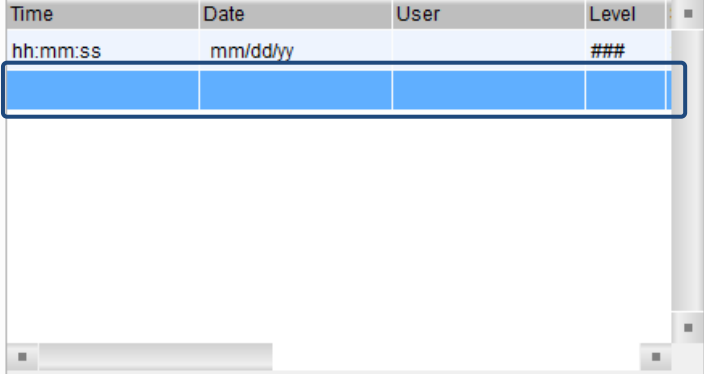

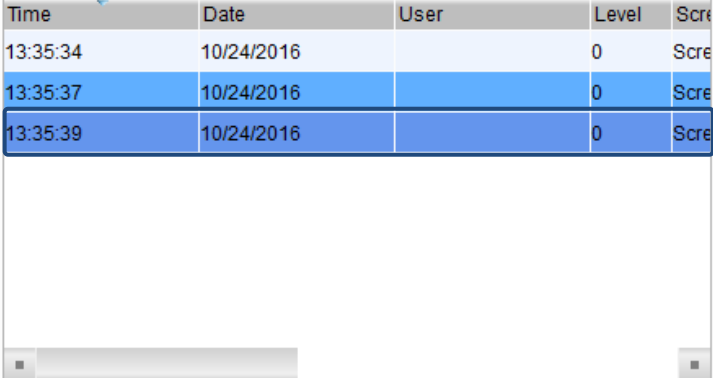
15

No.	Property	Function description
(1)	Operation Log Settings	<p>You can start the setting by pressing Operation Log Setting... or by going to [Options] > [Operation Log Settings].</p> 
	Enable	Default is not enabled. Check Enable to edit settings.
	Trigger	Set Operation Log Table trigger address, and provide addresses of the internal memory and external PLC. Only supports bit trigger. As soon as this address is triggered, the Operation Log Table starts recording all operations of the HMI.
	Save Settings	<ul style="list-style-type: none"> ■ Set the Operation Log Table to save in a USB Disk or SD Card in CSV format. ■ When the external storage space is insufficient, two solutions are available, to stop recording [Stop Log] or to overwrite the files [Overwrite Files]. [Stop Log] is to stop recording the HMI operations; [Overwrite Files] is to delete the recorded operation data and start recording the operation all over again. 

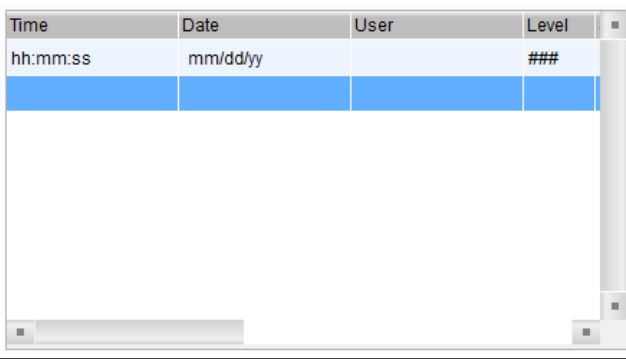
No.	Property	Function description																																	
(1)	Operation Log Settings	<p>CSV output settings</p> <p>Time Format: hh:mm:ss</p> <p>Date Format: hh:mm</p> <p>CSV output settings</p> <p>Time Format: hh:mm:ss</p> <p>Date Format: mm/dd/yy</p> <table border="1"> <thead> <tr> <th>Column order</th> <th>Input or not</th> <th>CSV title(Chinese)</th> </tr> </thead> <tbody> <tr> <td>Time</td> <td><input checked="" type="checkbox"/></td> <td>Time</td> </tr> <tr> <td>Date</td> <td><input checked="" type="checkbox"/></td> <td>Date</td> </tr> <tr> <td>User</td> <td><input checked="" type="checkbox"/></td> <td>User</td> </tr> <tr> <td>Level</td> <td><input checked="" type="checkbox"/></td> <td>Level</td> </tr> <tr> <td>Screen</td> <td><input checked="" type="checkbox"/></td> <td>Screen</td> </tr> <tr> <td>Description</td> <td><input checked="" type="checkbox"/></td> <td>Description</td> </tr> <tr> <td>Action</td> <td><input checked="" type="checkbox"/></td> <td>Action</td> </tr> <tr> <td>Address</td> <td><input checked="" type="checkbox"/></td> <td>Address</td> </tr> <tr> <td>Pre Value</td> <td><input checked="" type="checkbox"/></td> <td>Pre Value</td> </tr> <tr> <td>Change Value</td> <td><input checked="" type="checkbox"/></td> <td>Change Value</td> </tr> </tbody> </table> <p>Check the display field (a) to output, adjust the column displaying order (b), and define the setting column display name (c).</p>	Column order	Input or not	CSV title(Chinese)	Time	<input checked="" type="checkbox"/>	Time	Date	<input checked="" type="checkbox"/>	Date	User	<input checked="" type="checkbox"/>	User	Level	<input checked="" type="checkbox"/>	Level	Screen	<input checked="" type="checkbox"/>	Screen	Description	<input checked="" type="checkbox"/>	Description	Action	<input checked="" type="checkbox"/>	Action	Address	<input checked="" type="checkbox"/>	Address	Pre Value	<input checked="" type="checkbox"/>	Pre Value	Change Value	<input checked="" type="checkbox"/>	Change Value
Column order	Input or not	CSV title(Chinese)																																	
Time	<input checked="" type="checkbox"/>	Time																																	
Date	<input checked="" type="checkbox"/>	Date																																	
User	<input checked="" type="checkbox"/>	User																																	
Level	<input checked="" type="checkbox"/>	Level																																	
Screen	<input checked="" type="checkbox"/>	Screen																																	
Description	<input checked="" type="checkbox"/>	Description																																	
Action	<input checked="" type="checkbox"/>	Action																																	
Address	<input checked="" type="checkbox"/>	Address																																	
Pre Value	<input checked="" type="checkbox"/>	Pre Value																																	
Change Value	<input checked="" type="checkbox"/>	Change Value																																	
(2)	Background Color	<p>Set the background color for the Operation Log Table element.</p> 																																	

15

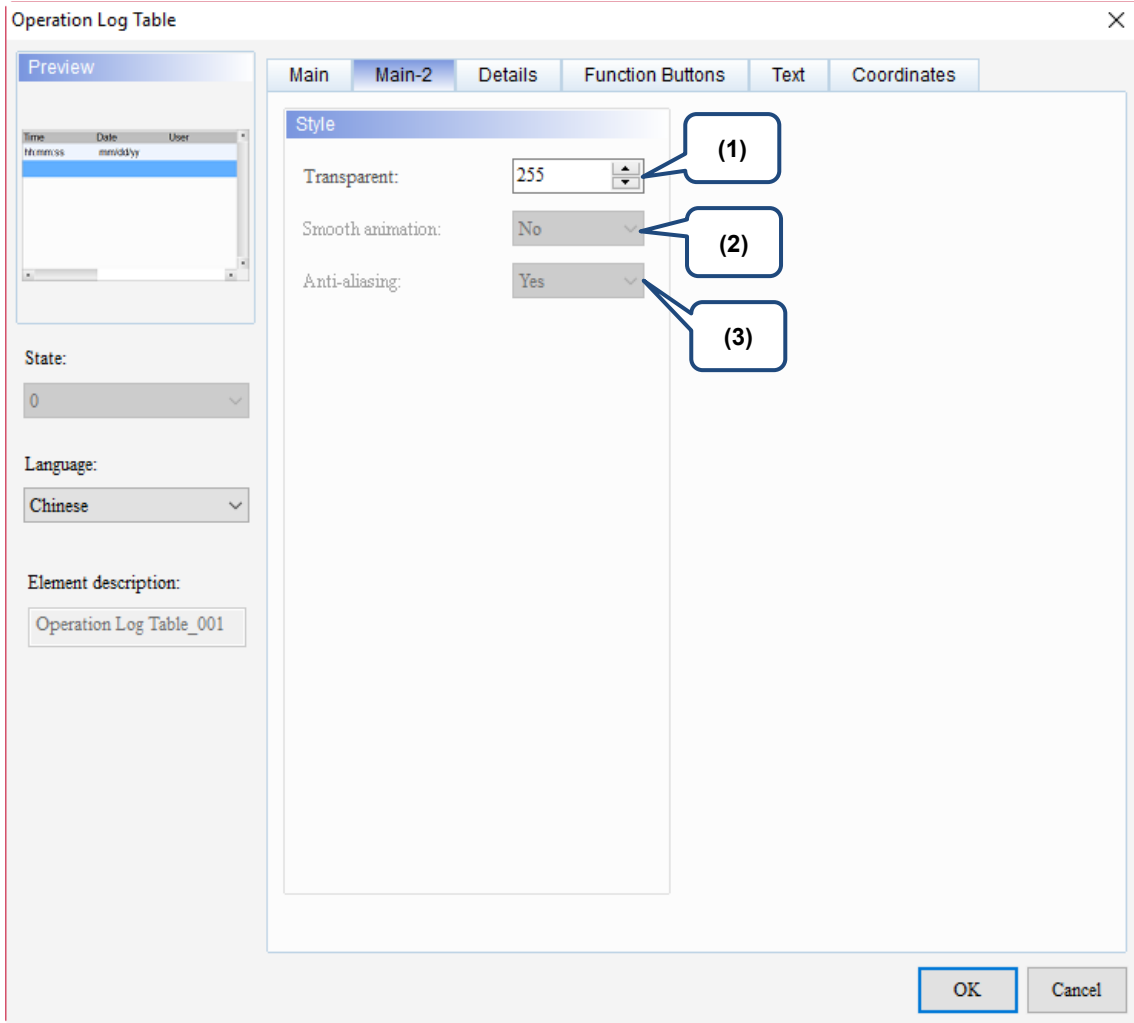
No.	Property	Function description
(3)	Border Color	<p>Set the border color of the Operation Log Table element.</p> 
(4)	Gridline Color	<p>Set the gridline color of the Operation Log Table element.</p> 

No.	Property	Function description
(5)	Row Color	<p>Color of the odd rows. The default is .</p> 
(6)	Alternating Row Color	<p>Color of the even rows. The default is .</p> 
(7)	Select Row Color	<p>When you select the data rows to view, the rows are in the color specified in this setting. The default is .</p> 
(8)	Mouse Pointed Row Color	<p>When the cursor is enabled, the row changes to the specified color where the cursor is placed at.</p>

15

No.	Property	Function description
(9)	Show Gridlines	<p>The default is Yes meaning to show gridlines between each data entry in the Operation Log Table.</p> <div style="background-color: #cccccc; padding: 10px; border: 1px solid #ccc;"> Select Yes for Show Gridlines </div> 
		Select No for Show Gridlines

■ Main-2



15

Figure 15.6.3 Main-2 property page for the Operation Log Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Details

15

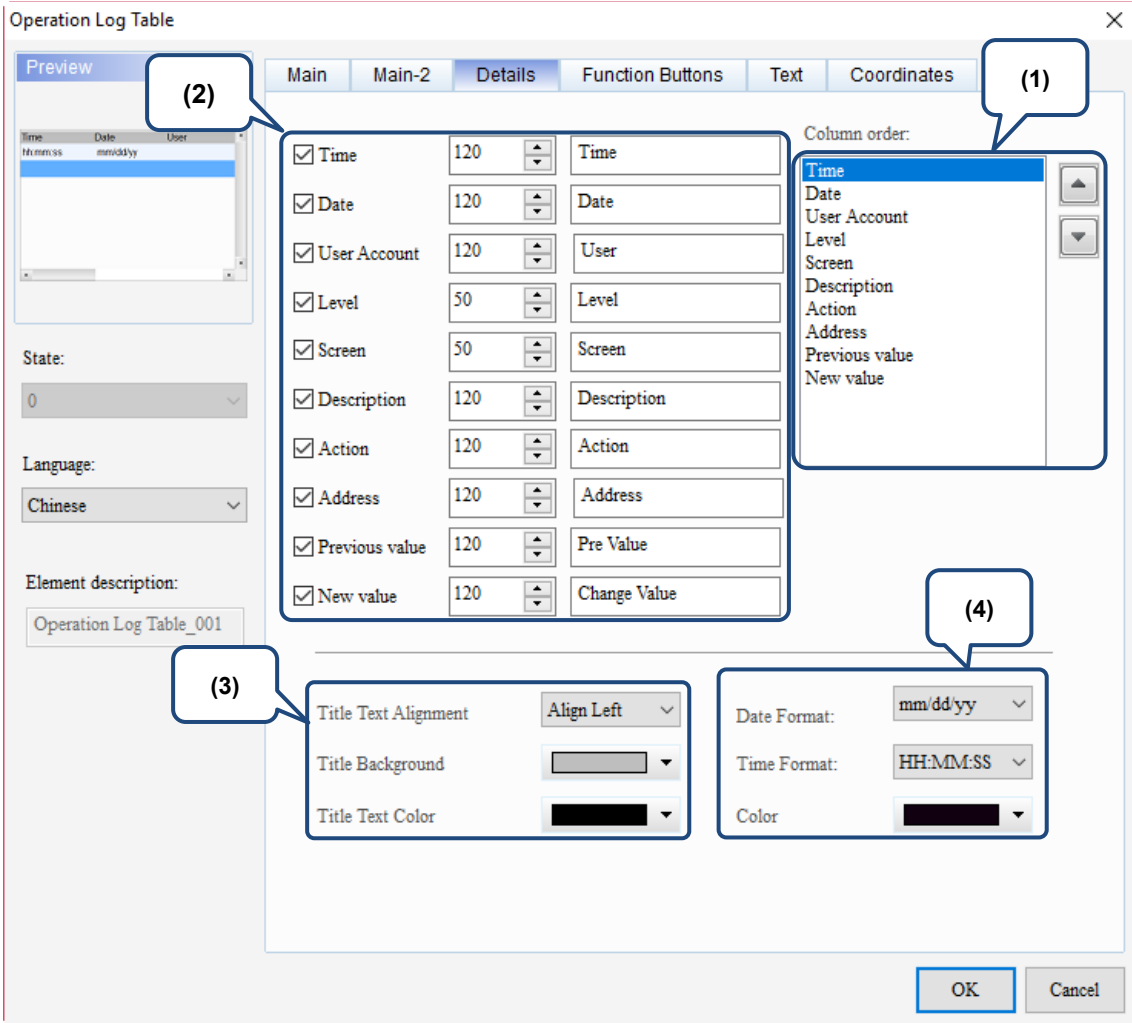
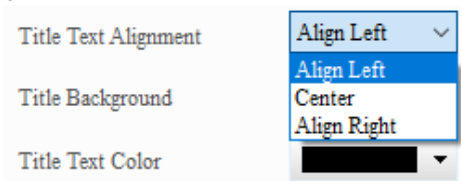
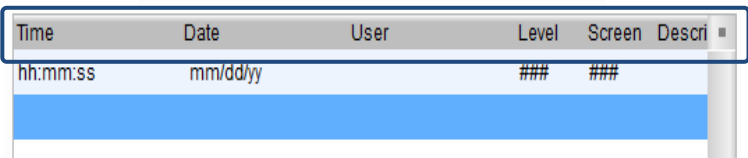
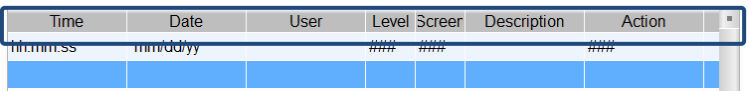
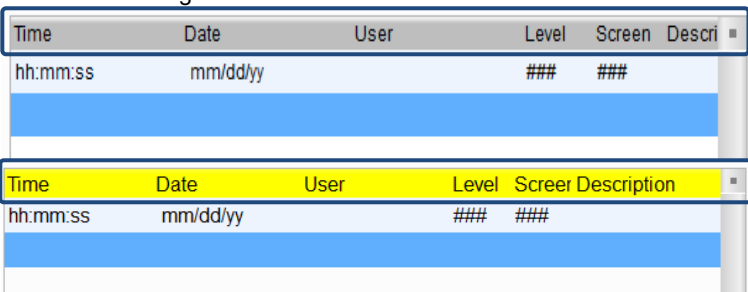
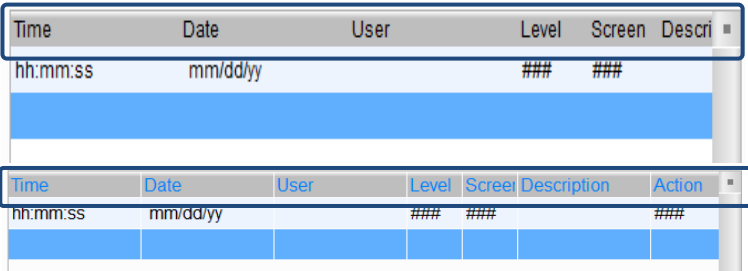
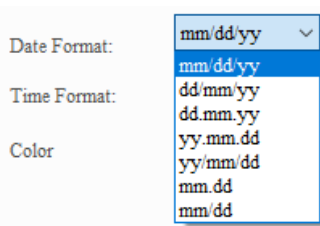
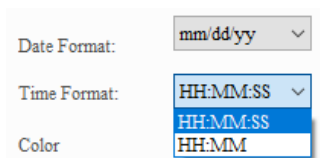
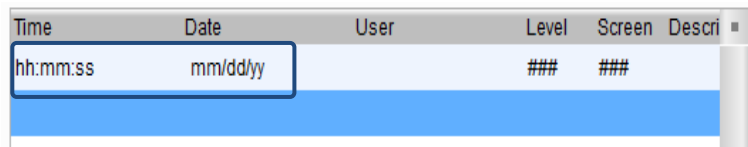


Figure 15.6.4 Details property page for the Operation Log Table element

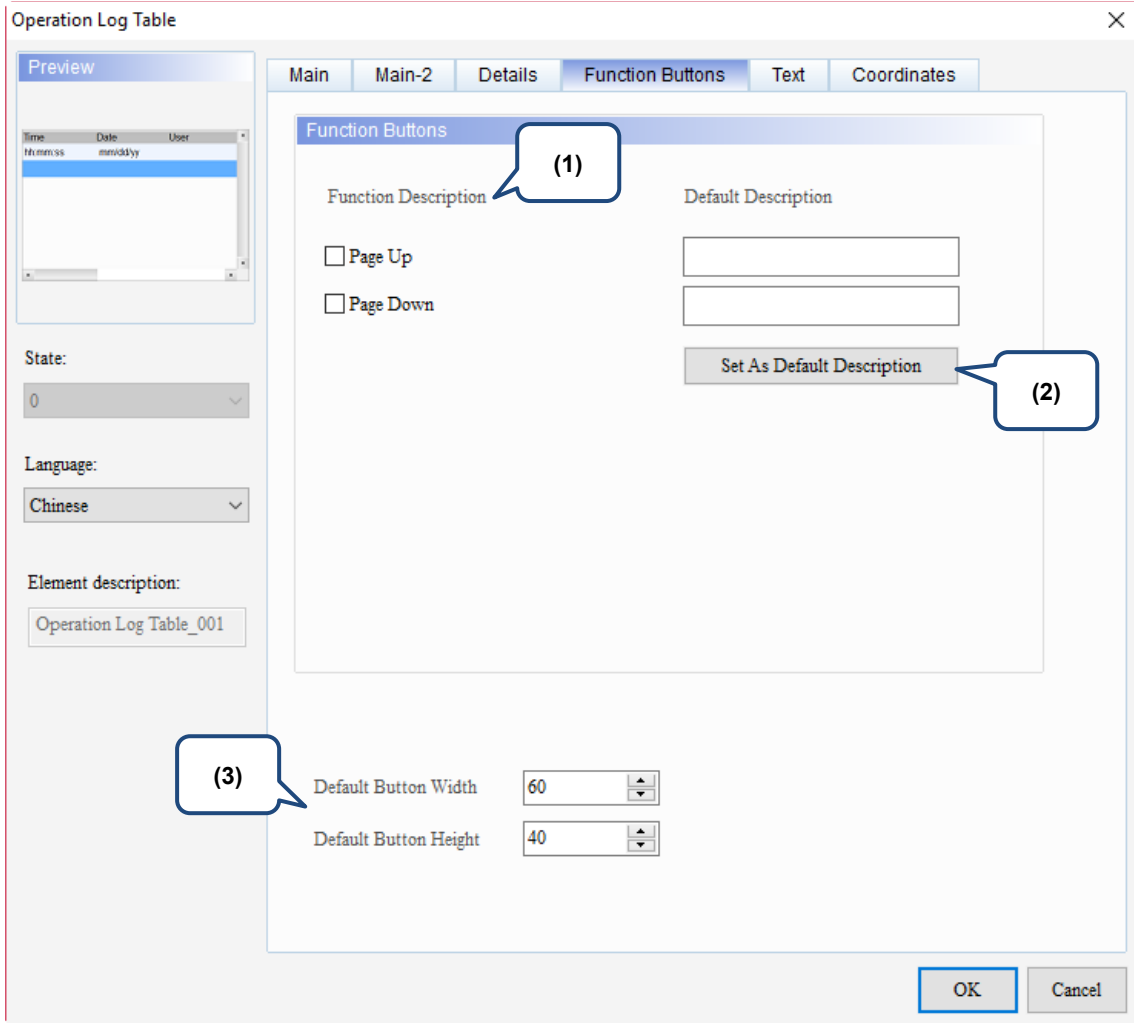
No.	Property	Function description
(1)	Column order	<p>Set the column display order in the Operation Log Table.</p>

No.	Property	Function description																														
(2)	Column Settings	<p>In the default setting, all columns are checked and shown in the Operation Log Table; however, you can uncheck the checkboxes of the display columns as required.</p> <table border="1"> <tr><td><input checked="" type="checkbox"/> Time</td><td>120</td><td>Time</td></tr> <tr><td><input checked="" type="checkbox"/> Date</td><td>120</td><td>Date</td></tr> <tr><td><input checked="" type="checkbox"/> User Account</td><td>120</td><td>User</td></tr> <tr><td><input checked="" type="checkbox"/> Level</td><td>50</td><td>Level</td></tr> <tr><td><input checked="" type="checkbox"/> Screen</td><td>50</td><td>Screen</td></tr> <tr><td><input checked="" type="checkbox"/> Description</td><td>120</td><td>Description</td></tr> <tr><td><input checked="" type="checkbox"/> Action</td><td>120</td><td>Action</td></tr> <tr><td><input checked="" type="checkbox"/> Address</td><td>120</td><td>Address</td></tr> <tr><td><input checked="" type="checkbox"/> Previous value</td><td>120</td><td>Pre Value</td></tr> <tr><td><input checked="" type="checkbox"/> New value</td><td>120</td><td>Change Value</td></tr> </table>	<input checked="" type="checkbox"/> Time	120	Time	<input checked="" type="checkbox"/> Date	120	Date	<input checked="" type="checkbox"/> User Account	120	User	<input checked="" type="checkbox"/> Level	50	Level	<input checked="" type="checkbox"/> Screen	50	Screen	<input checked="" type="checkbox"/> Description	120	Description	<input checked="" type="checkbox"/> Action	120	Action	<input checked="" type="checkbox"/> Address	120	Address	<input checked="" type="checkbox"/> Previous value	120	Pre Value	<input checked="" type="checkbox"/> New value	120	Change Value
	<input checked="" type="checkbox"/> Time	120	Time																													
	<input checked="" type="checkbox"/> Date	120	Date																													
<input checked="" type="checkbox"/> User Account	120	User																														
<input checked="" type="checkbox"/> Level	50	Level																														
<input checked="" type="checkbox"/> Screen	50	Screen																														
<input checked="" type="checkbox"/> Description	120	Description																														
<input checked="" type="checkbox"/> Action	120	Action																														
<input checked="" type="checkbox"/> Address	120	Address																														
<input checked="" type="checkbox"/> Previous value	120	Pre Value																														
<input checked="" type="checkbox"/> New value	120	Change Value																														
Adjust column width	<p>Adjust the column width in the Operation Log Table.</p> <table border="1"> <tr><td><input checked="" type="checkbox"/> Time</td><td>120</td><td>Time</td></tr> <tr><td><input checked="" type="checkbox"/> Date</td><td>120</td><td>Date</td></tr> <tr><td><input checked="" type="checkbox"/> User Account</td><td>120</td><td>User</td></tr> <tr><td><input checked="" type="checkbox"/> Level</td><td>50</td><td>Level</td></tr> <tr><td><input checked="" type="checkbox"/> Screen</td><td>50</td><td>Screen</td></tr> <tr><td><input checked="" type="checkbox"/> Description</td><td>120</td><td>Description</td></tr> <tr><td><input checked="" type="checkbox"/> Action</td><td>120</td><td>Action</td></tr> <tr><td><input checked="" type="checkbox"/> Address</td><td>120</td><td>Address</td></tr> <tr><td><input checked="" type="checkbox"/> Previous value</td><td>120</td><td>Pre Value</td></tr> <tr><td><input checked="" type="checkbox"/> New value</td><td>120</td><td>Change Value</td></tr> </table>	<input checked="" type="checkbox"/> Time	120	Time	<input checked="" type="checkbox"/> Date	120	Date	<input checked="" type="checkbox"/> User Account	120	User	<input checked="" type="checkbox"/> Level	50	Level	<input checked="" type="checkbox"/> Screen	50	Screen	<input checked="" type="checkbox"/> Description	120	Description	<input checked="" type="checkbox"/> Action	120	Action	<input checked="" type="checkbox"/> Address	120	Address	<input checked="" type="checkbox"/> Previous value	120	Pre Value	<input checked="" type="checkbox"/> New value	120	Change Value	
<input checked="" type="checkbox"/> Time	120	Time																														
<input checked="" type="checkbox"/> Date	120	Date																														
<input checked="" type="checkbox"/> User Account	120	User																														
<input checked="" type="checkbox"/> Level	50	Level																														
<input checked="" type="checkbox"/> Screen	50	Screen																														
<input checked="" type="checkbox"/> Description	120	Description																														
<input checked="" type="checkbox"/> Action	120	Action																														
<input checked="" type="checkbox"/> Address	120	Address																														
<input checked="" type="checkbox"/> Previous value	120	Pre Value																														
<input checked="" type="checkbox"/> New value	120	Change Value																														
Edit display title	<p>You can edit the column titles in the Operation Log Table. The defaults are English strings, but Chinese characters are also supported.</p> <table border="1"> <tr><td><input checked="" type="checkbox"/> Time</td><td>120</td><td>Time</td></tr> <tr><td><input checked="" type="checkbox"/> Date</td><td>120</td><td>Date</td></tr> <tr><td><input checked="" type="checkbox"/> User Account</td><td>120</td><td>User</td></tr> <tr><td><input checked="" type="checkbox"/> Level</td><td>50</td><td>Level</td></tr> <tr><td><input checked="" type="checkbox"/> Screen</td><td>50</td><td>Screen</td></tr> <tr><td><input checked="" type="checkbox"/> Description</td><td>120</td><td>Description</td></tr> <tr><td><input checked="" type="checkbox"/> Action</td><td>120</td><td>Action</td></tr> <tr><td><input checked="" type="checkbox"/> Address</td><td>120</td><td>Address</td></tr> <tr><td><input checked="" type="checkbox"/> Previous value</td><td>120</td><td>Pre Value</td></tr> <tr><td><input checked="" type="checkbox"/> New value</td><td>120</td><td>Change Value</td></tr> </table>	<input checked="" type="checkbox"/> Time	120	Time	<input checked="" type="checkbox"/> Date	120	Date	<input checked="" type="checkbox"/> User Account	120	User	<input checked="" type="checkbox"/> Level	50	Level	<input checked="" type="checkbox"/> Screen	50	Screen	<input checked="" type="checkbox"/> Description	120	Description	<input checked="" type="checkbox"/> Action	120	Action	<input checked="" type="checkbox"/> Address	120	Address	<input checked="" type="checkbox"/> Previous value	120	Pre Value	<input checked="" type="checkbox"/> New value	120	Change Value	
<input checked="" type="checkbox"/> Time	120	Time																														
<input checked="" type="checkbox"/> Date	120	Date																														
<input checked="" type="checkbox"/> User Account	120	User																														
<input checked="" type="checkbox"/> Level	50	Level																														
<input checked="" type="checkbox"/> Screen	50	Screen																														
<input checked="" type="checkbox"/> Description	120	Description																														
<input checked="" type="checkbox"/> Action	120	Action																														
<input checked="" type="checkbox"/> Address	120	Address																														
<input checked="" type="checkbox"/> Previous value	120	Pre Value																														
<input checked="" type="checkbox"/> New value	120	Change Value																														

15

No.	Property	Function description
(3)	Title Settings	<p>Adjust the alignment of the titles.</p>  <p>Title Text Alignment</p> <p>Title Background</p> <p>Title Text Color</p>  <p>The following figure is an example of setting the Title Text Alignment to Center.</p> 
		<p>Set the title background color.</p> 
		<p>Set the display title text color.</p> 
(4)	Date and time settings	<p>Set the date display format.</p>  <p>Date Format:</p> <p>Time Format:</p> <p>Color</p>
		<p>Set the time display format.</p>  <p>Date Format:</p> <p>Time Format:</p> <p>Color</p>
		<p>Set the display color for the date and time.</p> 

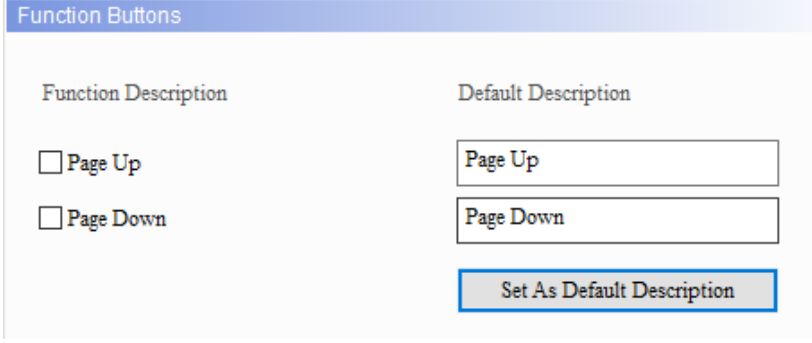
■ Function Buttons



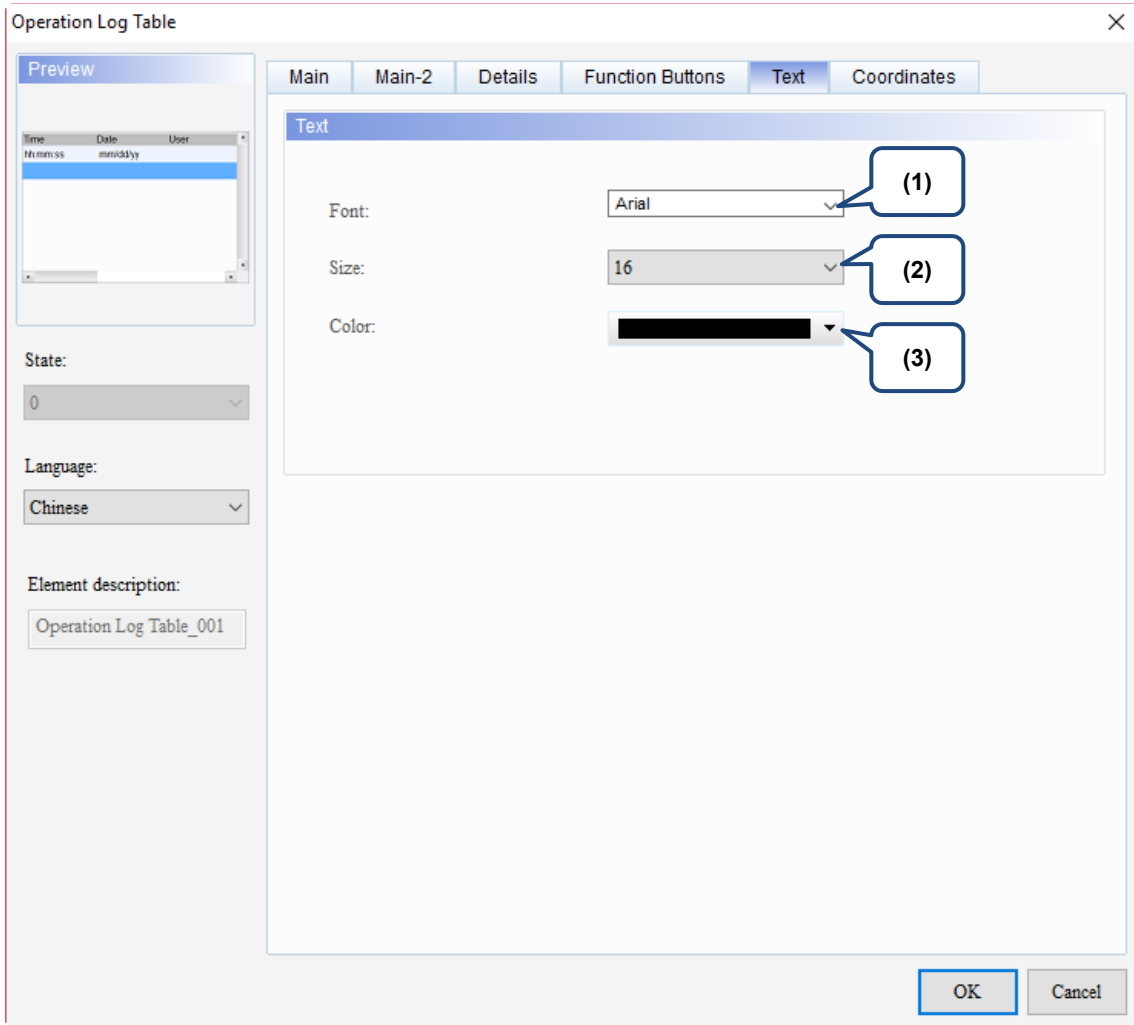
15

Figure 15.6.5 Function Buttons property page for the Operation Log Table element

15

No.	Property	Function description				
(1)	Function description	<ul style="list-style-type: none"> Check the Function Buttons you want to display on the Operation Log Table element. <table border="1" style="margin-left: 20px;"> <tr> <td>Page Up</td> <td>Go to the previous page of the Operation Log Table.</td> </tr> <tr> <td>Page Down</td> <td>Go to the next page of the Operation Log Table.</td> </tr> </table> You can use Page Up and Page Down to change the page only when there are more than 10,000 sets of data in the Operation Log Table. That is, one CSV file has 10,000 operation log data and Page Up and Page Down are for switching between files of Operation Log Tables. 	Page Up	Go to the previous page of the Operation Log Table.	Page Down	Go to the next page of the Operation Log Table.
Page Up	Go to the previous page of the Operation Log Table.					
Page Down	Go to the next page of the Operation Log Table.					
(2)	Set As Default Description	<p>If you press Set As Default Description, the texts are automatically set as default.</p> 				
(3)	Default Button Width / Height	You can adjust the button height and width.				

■ Text



15

Figure 15.6.6 Text property page for the Operation Log Table element

No.	Property	Function description
(1)	Font	Set the display text font of the Operation Log Table.
(2)	Size	Set the display text size of the Operation Log Table.
(3)	Color	Set the display text color of the Operation Log Table.

Coordinates

15

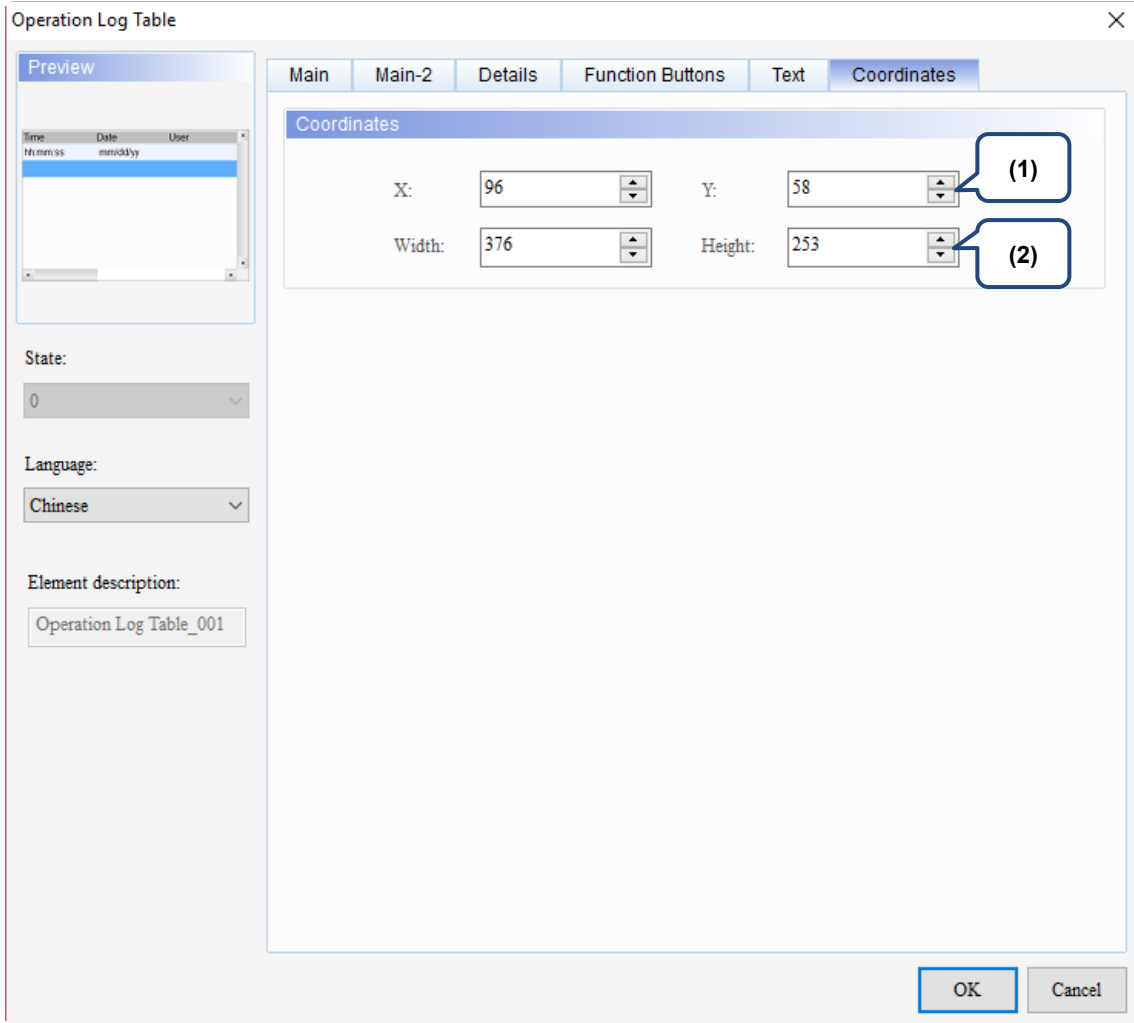


Figure 15.6.7 Coordinates property page for the Operation Log Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

Alarm

16

This chapter provides the usage and setting details for the Alarm elements.

16.1	Alarm Settings	16-2
16.2	Alarm History Table	16-29
16.3	Active Alarm List	16-45
16.4	Alarm Frequency Table	16-61
16.5	Alarm Moving Sign	16-77

16

16.1 Alarm Settings

The Alarm Settings page is for setting the read address, sampling cycle, maximum savable data, non-volatile memory, alarm moving sign, exporting the data to a CSV file, editing the display alarm message, and other relevant properties for the alarm elements to display.

Different from the setting methods for the DOP-B and DOP-H series HMIs that use continuous Word addresses, DOP-W and DOP-100 series use non-continuous addresses. Thus, alarms can be triggered with either Bit or Word addresses, which is more flexible and user-friendly. In addition, alarm messages now support dynamic modification. In the previous version, the displayed temperatures on the alarm messages were fixed, e.g. 100 degrees; now you can add %d1 to the alarm message and use the monitoring address in Alarm Settings to input the value, so the HMI displays the modified value when the alarm is triggered next time.

Alarm message supports up to 4,096 data entries. DOPSoft also provides a batch tasks tool for you to quickly complete the alarm group settings, allowing you to input the alarm group number easily. The display of the alarm on the Alarm History Table can be sorted, filtered, and so on, so that the alarm messages are displayed in a way that is easier for the user to view.

The formula provided by the software computes all the alarm relevant data edited by the users. Then, the set non-volatile memory saves these computation results. If the data is saved in the HMI, the alarm data size is subject to change based on the HMI model. Please refer to the specifications for non-volatile memory in the HMI installation manual. For data saved in the USB Disk or SD Card, the alarm data size is determined by the external storage devices.

The alarm formulas are applicable to the alarm log file and Alarm Frequency Table, but since the CSV file size is determined by the message (length) input by the user, there is no formula for the CSV file.

The following are the formulas for the alarm log file and Alarm Frequency Table:

- Alarm log file

$$\{[6 \text{ Bytes}(a) + 2 \text{ Bytes}(b)] \times N(c)\} + 6 \text{ Bytes}(d) = \text{Actual file size Bytes}$$

a	time / date data
b	Alarm data
c	Sampling number
d	Data file header

- Alarm Frequency Table

$$2 \text{ Bytes}(a) \times N(b) = \text{Actual file size Bytes}$$

a	Alarm frequency data
b	Alarm records

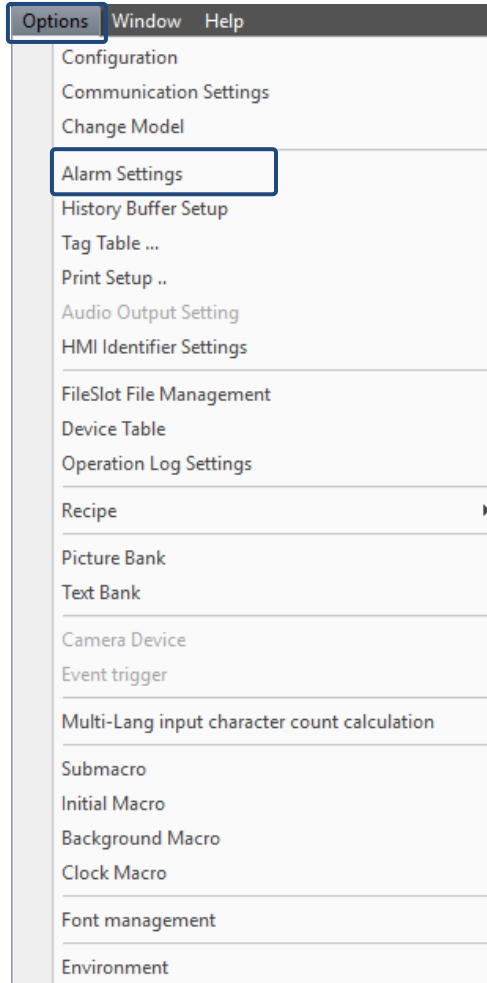
The following section provides an example for non-continuous addresses settings. Please see Table 16.1.1 below.

Table 16.1.1 Alarm Settings example

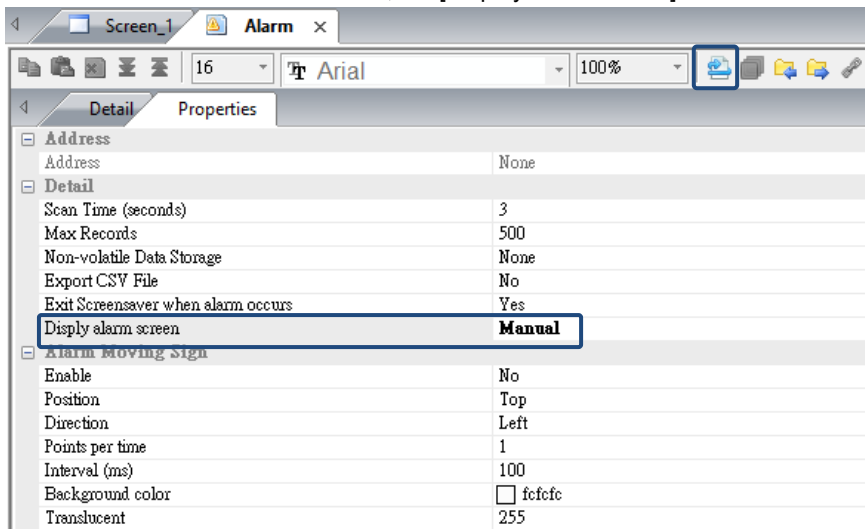
Alarm setting steps

Alarm Settings

Step 1: go to [Options] > [Alarm Settings] to set the alarm message display properties.



Step 2: switch to non-continuous address; set [Display alarm screen] to Manual.



16

Alarm setting steps

Alarm Settings

Set ten alarms as follows:

No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	\$500	RGB(0, 0, 0)	2 - Screen_2	
2*	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	\$501	RGB(0, 0, 0)	None	
3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	\$502	RGB(0, 0, 0)	None	
4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	\$503	RGB(0, 0, 0)	None	
5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	\$504	RGB(0, 0, 0)	None	
6*	Alarm 6	5	Word	\$100	\$100 = \$200	None	RGB(0, 0, 0)	2 - Screen_2	
7*	Alarm 7	5	Word	\$110	\$110 < \$210	None	RGB(0, 0, 0)	None	
8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <=	None	RGB(0, 0, 0)	None	
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	None	RGB(0, 0, 0)	None	
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 1	None	RGB(0, 0, 0)	None	

■ Set the Main page as below:

Alarm History Table

Preview

State: 0

Language: Language1

Element description: Alarm History Table_001

Main Main-2 Details Details-2 Function Buttons Coordinates

Style

Background Color: [dropdown]

Border Color: [dropdown]

Gridline Color: [dropdown]

Row Color: [dropdown]

Alternating Row Color: [dropdown]

Select Row Color: [dropdown]

Show Gridlines: Yes [dropdown]

■ Set the Details page as below:

Alarm History Table

Preview

State: 0

Language: Language1

Element description: Alarm History Table_001

Main Main-2 Details Details-2 Function Buttons Coordinates

Event

Action Control Addr. \$1 [dropdown]

Sort

Use header controls to sort

Sorting Control Addr. \$2 [dropdown]

Sorting Order Address None [dropdown]

Filter

Filter control address \$3 [dropdown]

Alarm counter display \$4 [dropdown]

Alarm category start addr. \$5 [dropdown]

Alarm category end addr. \$6 [dropdown]

Create Alarm History Table element

Alarm Settings

■ Set the Details-2 page as below:

Create Alarm History Table element

Create Maintained buttons and Numeric Entry elements.

Create Numeric Entry elements and Maintained buttons for Alarm Settings and Alarm History Table addresses

16

Create Alarm Screens

Alarm Settings

After you create an alarm screen and define it as a sub-screen, please go to [Options] > [Alarms Settings] to specify Alarm 1 and Alarm 6 screens as Screen_2.

The screenshot shows a window titled 'Warning' with the word 'Warning' in large red text. Below it is a table with columns: No., Message Content, Category, Type, Address, Trigger Condition, Monitor Address, Text Color, Alarm Screen, and Mail. Rows 1 through 10 are listed, with rows 1 and 6 highlighted to show they are linked to 'Screen_2'.

No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	\$500	RGB(0, 0, 0)	2 - Screen_2	
2*	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	\$501	RGB(0, 0, 0)	None	
3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	\$502	RGB(0, 0, 0)	None	
4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	\$503	RGB(0, 0, 0)	None	
5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	\$504	RGB(0, 0, 0)	None	
6*	Alarm 6	5	Word	\$100	\$100 = \$200	None	RGB(0, 0, 0)	2 - Screen_2	
7*	Alarm 7	5	Word	\$110	\$110 < \$210	None	RGB(0, 0, 0)	None	
8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300	None	RGB(0, 0, 0)	None	
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	None	RGB(0, 0, 0)	None	
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100	None	RGB(0, 0, 0)	None	

Go to [&Initial Macro] to edit the commands as shown below. The action is set to "when the HMI screen is turned on", Alarms 6 - 10 are on because the trigger conditions are met.

6*	Alarm 6	5	Word	\$100	\$100 = \$200
7*	Alarm 7	5	Word	\$110	\$110 < \$210
8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100

Write Macro Commands

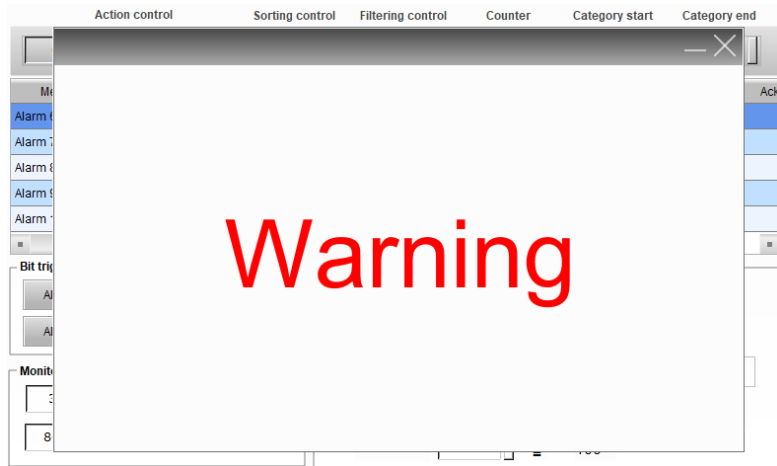
```
[&Initial Macro]
1 #Word Control
2 #Condition1 $100 = $200
3 $100 = 5
4 $200 = 5
5
6 #Word Control
7 #Condition2 $110 < $210
8 $110 = 66
9 $210 = 100
10
11 #Word Control
12 #Condition3 {Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300
13 ({Link2}1@D200) = 888
14 ({Link2}1@D100) = 999
15 ({Link2}1@D300) = 1111
16
17 #Word Control
18 #Condition4 0 <= $120 <= 10
19 $120 = 8
20
21 #Word Control
22 #Condition5 {Link2}1@M16 >= 100
23 ({Link2}1@M16) = 101
24
25 #Monitor Address
26 $500 = 30
27 $501 = 10
28 $502 = 250
29 $503 = 800
30 $504 = 3
```

Alarm Settings

Please compile and download all screen data to the HMI. The actions are illustrated as follows:

Display alarm screen action

- The setting conditions for this example: select Manual for [Display alarm screen] and set Action Control Addr. to 2, then the HMI displays the alarm screen.
- If you select Auto for [Display alarm screen] and the trigger condition for Alarm 6 is met thus it switches to on, then the HMI automatically displays the set alarm screen.

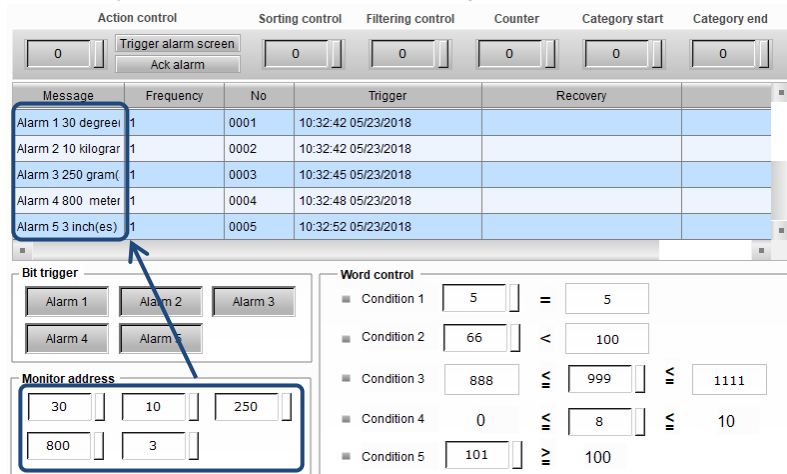


- Please close the alarm display window.

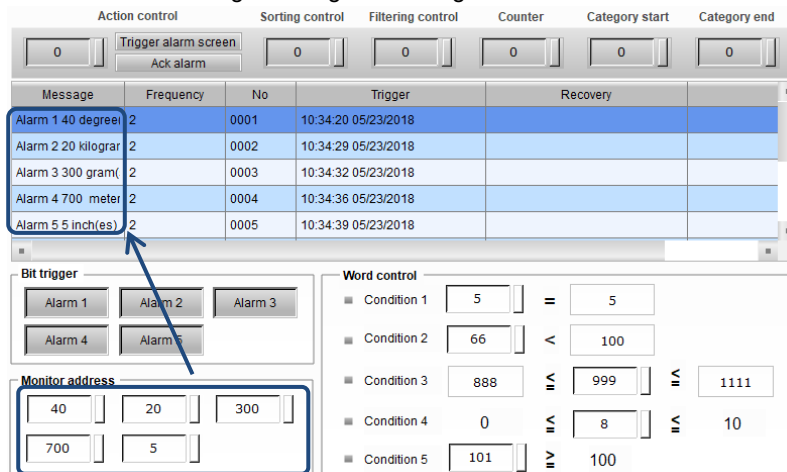
Execution results

Trigger Alarms 1 - 5 with Bit Control

- Use Bit addresses to trigger Alarms 1- 5 and the Alarm History Table displays the user-defined alarm messages.



- If you change the values of Monitor address and trigger Alarms 1 - 5, the alarm messages change according to the modified values.



16

Alarm Settings																																
Execution results	Trigger Time	<p>When you use Bit or Word address to trigger the alarm and the trigger conditions are met, the Alarm History Table shows the trigger date and time.</p> <table border="1"> <thead> <tr> <th>Message</th> <th>Frequency</th> <th>No</th> <th>Trigger</th> <th>Recovery</th> </tr> </thead> <tbody> <tr> <td>Alarm 1 40 degree</td> <td>2</td> <td>0001</td> <td>10:34:20 05/23/2018</td> <td></td> </tr> <tr> <td>Alarm 2 20 kilograr</td> <td>2</td> <td>0002</td> <td>10:34:29 05/23/2018</td> <td></td> </tr> <tr> <td>Alarm 3 300 gram(</td> <td>2</td> <td>0003</td> <td>10:34:32 05/23/2018</td> <td></td> </tr> <tr> <td>Alarm 4 700 meter</td> <td>2</td> <td>0004</td> <td>10:34:36 05/23/2018</td> <td></td> </tr> <tr> <td>Alarm 5 5 inch(es)</td> <td>2</td> <td>0005</td> <td>10:34:39 05/23/2018</td> <td></td> </tr> </tbody> </table>	Message	Frequency	No	Trigger	Recovery	Alarm 1 40 degree	2	0001	10:34:20 05/23/2018		Alarm 2 20 kilograr	2	0002	10:34:29 05/23/2018		Alarm 3 300 gram(2	0003	10:34:32 05/23/2018		Alarm 4 700 meter	2	0004	10:34:36 05/23/2018		Alarm 5 5 inch(es)	2	0005	10:34:39 05/23/2018	
	Message	Frequency	No	Trigger	Recovery																											
	Alarm 1 40 degree	2	0001	10:34:20 05/23/2018																												
	Alarm 2 20 kilograr	2	0002	10:34:29 05/23/2018																												
Alarm 3 300 gram(2	0003	10:34:32 05/23/2018																													
Alarm 4 700 meter	2	0004	10:34:36 05/23/2018																													
Alarm 5 5 inch(es)	2	0005	10:34:39 05/23/2018																													
Acknowledge Time	<p>Alarm acknowledge time displays according to the specified alarm with the setting of Action control address as 1.</p> <table border="1"> <thead> <tr> <th>Frequency</th> <th>No</th> <th>Trigger</th> <th>Recovery</th> <th>Ack</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>0001</td> <td>10:34:20 05/23/2018</td> <td></td> <td>10:37:47 05/23/2018</td> </tr> <tr> <td>2</td> <td>0002</td> <td>10:34:29 05/23/2018</td> <td></td> <td>10:37:50 05/23/2018</td> </tr> <tr> <td>2</td> <td>0003</td> <td>10:34:32 05/23/2018</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>0004</td> <td>10:34:36 05/23/2018</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>0005</td> <td>10:34:39 05/23/2018</td> <td></td> <td></td> </tr> </tbody> </table>	Frequency	No	Trigger	Recovery	Ack	2	0001	10:34:20 05/23/2018		10:37:47 05/23/2018	2	0002	10:34:29 05/23/2018		10:37:50 05/23/2018	2	0003	10:34:32 05/23/2018			2	0004	10:34:36 05/23/2018			2	0005	10:34:39 05/23/2018			
Frequency	No	Trigger	Recovery	Ack																												
2	0001	10:34:20 05/23/2018		10:37:47 05/23/2018																												
2	0002	10:34:29 05/23/2018		10:37:50 05/23/2018																												
2	0003	10:34:32 05/23/2018																														
2	0004	10:34:36 05/23/2018																														
2	0005	10:34:39 05/23/2018																														
Recovery Time	<p>When you use Bit address to cancel the alarm-triggering action or the Word trigger conditions are not met (such as Condition 1 and Condition 2), the Alarm History Table will show the recovery time.</p> <table border="1"> <thead> <tr> <th>Frequency</th> <th>No</th> <th>Trigger</th> <th>Recovery</th> <th>Ack</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0001</td> <td>10:32:42 05/23/2018</td> <td>10:34:10 05/23/2018</td> <td></td> </tr> <tr> <td>1</td> <td>0002</td> <td>10:32:42 05/23/2018</td> <td>10:34:10 05/23/2018</td> <td></td> </tr> <tr> <td>1</td> <td>0003</td> <td>10:32:45 05/23/2018</td> <td>10:34:14 05/23/2018</td> <td></td> </tr> <tr> <td>1</td> <td>0004</td> <td>10:32:48 05/23/2018</td> <td>10:34:14 05/23/2018</td> <td></td> </tr> <tr> <td>1</td> <td>0005</td> <td>10:32:52 05/23/2018</td> <td>10:34:17 05/23/2018</td> <td></td> </tr> </tbody> </table>	Frequency	No	Trigger	Recovery	Ack	1	0001	10:32:42 05/23/2018	10:34:10 05/23/2018		1	0002	10:32:42 05/23/2018	10:34:10 05/23/2018		1	0003	10:32:45 05/23/2018	10:34:14 05/23/2018		1	0004	10:32:48 05/23/2018	10:34:14 05/23/2018		1	0005	10:32:52 05/23/2018	10:34:17 05/23/2018		
Frequency	No	Trigger	Recovery	Ack																												
1	0001	10:32:42 05/23/2018	10:34:10 05/23/2018																													
1	0002	10:32:42 05/23/2018	10:34:10 05/23/2018																													
1	0003	10:32:45 05/23/2018	10:34:14 05/23/2018																													
1	0004	10:32:48 05/23/2018	10:34:14 05/23/2018																													
1	0005	10:32:52 05/23/2018	10:34:17 05/23/2018																													
Action Control Addr.	<ul style="list-style-type: none"> ■ If Action Control Addr. is 0, the Alarm History Table has no action. ■ If Action Control Addr. is 1, the Alarm History Table shows the acknowledge time. ■ If Action Control Addr. is 2 and [Display alarm screen] is set to Manual, the HMI displays the alarm screen. 																															

Alarm Settings

- If Sorting Control Addr. is 0, the Alarm History Table has no action.
- If Sorting Control Addr. is 1, the alarms are sorted based on the trigger time.

Action control: Trigger alarm screen (0), Ack alarm (0), **Sorting control (1)**, Filtering control (0), Counter (0), Category start (0), Category end (0)

Message	Frequency	No	Trigger	Recovery
Alarm 1 30 degree	1	0001	10:53:35 05/23/2018	10:53:51 05/23/2018
Alarm 2 10 kilograr	1	0002	10:53:38 05/23/2018	10:53:54 05/23/2018
Alarm 3 250 gram(	1	0003	10:53:41 05/23/2018	10:53:54 05/23/2018
Alarm 4 800 meter	1	0004	10:53:44 05/23/2018	10:53:57 05/23/2018
Alarm 5 3 inch(es)	1	0005	10:53:47 05/23/2018	10:53:57 05/23/2018

- If Sorting Control Addr. is 2, the alarms are sorted based on the acknowledge time.

Action control: Trigger alarm screen (0), Ack alarm (0), **Sorting control (2)**, Filtering control (0), Counter (0), Category start (0), Category end (0)

Frequency	No	Trigger	Recovery	Ack
1	0005	10:53:47 05/23/2018	10:53:57 05/23/2018	
2	0001	10:54:18 05/23/2018		10:55:44 05/23/2018
2	0004	10:54:31 05/23/2018		10:55:46 05/23/2018
2	0002	10:54:24 05/23/2018		10:55:48 05/23/2018
1	0001	10:53:35 05/23/2018	10:53:51 05/23/2018	10:55:50 05/23/2018

- If Sorting Control Addr. is 3, the alarms are sorted based on the recovery time.

Action control: Trigger alarm screen (0), Ack alarm (0), **Sorting control (3)**, Filtering control (0), Counter (0), Category start (0), Category end (0)

Message	Frequency	No	Trigger	Recovery
Alarm 1 30 degree	1	0001	10:53:35 05/23/2018	10:53:51 05/23/2018
Alarm 2 10 kilograr	1	0002	10:53:38 05/23/2018	10:53:54 05/23/2018
Alarm 3 250 gram(	1	0003	10:53:41 05/23/2018	10:53:54 05/23/2018
Alarm 4 800 meter	1	0004	10:53:44 05/23/2018	10:53:57 05/23/2018
Alarm 5 3 inch(es)	1	0005	10:53:47 05/23/2018	10:53:57 05/23/2018

- If Sorting Control Addr. is 4, the alarms are sorted based on the alarm frequencies from low to high.

Action control: Trigger alarm screen (0), Ack alarm (0), **Sorting control (4)**, Filtering control (0), Counter (0), Category start (0), Category end (0)

Message	Frequency	No	Trigger	Recovery
Alarm 1 30 degree	1	0001	10:53:35 05/23/2018	10:53:51 05/23/2018
Alarm 2 10 kilograr	1	0002	10:53:38 05/23/2018	10:53:54 05/23/2018
Alarm 3 250 gram(	1	0003	10:53:41 05/23/2018	10:53:54 05/23/2018
Alarm 4 800 meter	1	0004	10:53:44 05/23/2018	10:53:57 05/23/2018
Alarm 5 3 inch(es)	1	0005	10:53:47 05/23/2018	10:53:57 05/23/2018

Execution results

Sorting Control Addr.

16

Alarm Settings

Sorting Control Addr.

- If Sorting Control Addr. is 5, the alarms are sorted based on the alarm category numbers in ascending order.

Action control		Sorting control	Filtering control	Counter	Category start	Category end
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="5"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Trigger alarm screen Ack alarm						
Message	Frequency	No	Trigger	Recovery		
Alarm 1 140 degree	2	0001	10:54:18 05/23/2018		10:55:44 05/23/2018	
Alarm 2 20 kilograr	2	0002	10:54:24 05/23/2018		10:55:48 05/23/2018	
Alarm 3 300 gram	2	0003	10:54:27 05/23/2018			
Alarm 4 700 meter	2	0004	10:54:31 05/23/2018		10:55:46 05/23/2018	
Alarm 5 5 inch(es)	2	0005	10:54:34 05/23/2018			

No.	Message Content	Category
1*	Alarm 1 %d1 degree(s)	1
2*	Alarm 2 %d1 kilogram(s)	1
3*	Alarm 3 %d1 gram(s)	1
4*	Alarm 4 %d1 meter(s)	1
5*	Alarm 5 %d1 inch(es)	1
6*	Alarm 6	5
7*	Alarm 7	5
8*	Alarm 8	5
9*	Alarm 9	5
10*	Alarm 10	5

- If Sorting Control Addr. is 6, the alarms are sorted based on the alarm numbers in ascending order.

Action control		Sorting control	Filtering control	Counter	Category start	Category end
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="6"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Trigger alarm screen Ack alarm						
Message	Frequency	No	Trigger	Recovery		
Alarm 1 140 degree	2	0001	10:54:18 05/23/2018		10:55:44 05/23/2018	
Alarm 1 30 degree	1	0001	10:53:35 05/23/2018	10:53:51 05/23/2018	10:55:50 05/23/2018	
Alarm 2 20 kilograr	2	0002	10:54:24 05/23/2018		10:55:48 05/23/2018	
Alarm 2 10 kilograr	1	0002	10:53:38 05/23/2018	10:53:54 05/23/2018		
Alarm 3 300 gram	2	0003	10:54:27 05/23/2018			

Execution results

- If Filtering Control Addr. is 0, the Alarm History Table displays all the triggered alarms.
- If Filtering Control Addr. is 1, the Alarm History Table hides alarms with both the recovery time and acknowledge time.

Filtering Control Addr.

Not hidden

Action control		Sorting control	Filtering control	Counter	Category start	Category end
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Trigger alarm screen Ack alarm						
Frequency	No	Trigger	Recovery	Ack		
2	0001	10:54:18 05/23/2018	11:08:56 05/23/2018	10:55:44 05/23/2018		
2	0002	10:54:24 05/23/2018	11:09:06 05/23/2018	10:55:48 05/23/2018		
2	0003	10:54:27 05/23/2018				
2	0004	10:54:31 05/23/2018		10:55:46 05/23/2018		
2	0005	10:54:34 05/23/2018				

Hidden

Action control		Sorting control	Filtering control	Counter	Category start	Category end
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Trigger alarm screen Ack alarm						
Frequency	No	Trigger	Recovery	Ack		
3	0001	11:09:00 05/23/2018	11:09:03 05/23/2018			
1	0002	10:53:38 05/23/2018	10:53:54 05/23/2018			
1	0003	10:53:41 05/23/2018	10:53:54 05/23/2018			
1	0004	10:53:44 05/23/2018	10:53:57 05/23/2018			
1	0005	10:53:47 05/23/2018	10:53:57 05/23/2018			

Alarm Settings

- If Filtering Control Addr. is 2, the Alarm History Table hides the alarms with recovery time.

Action control		Sorting control		Filtering control		Counter		Category start		Category end	
0		Trigger alarm screen Ack alarm		0		0		0		0	
Message	Frequency	No	Trigger	Recovery							
Alarm 1 40 degree	2	0001	10:54:18 05/23/2018	11:08:56 05/23/2018		10:55:44 05/23/2018					
Alarm 2 20 kilogram	2	0002	10:54:24 05/23/2018	11:09:06 05/23/2018		10:55:48 05/23/2018					
Alarm 3 300 gram	2	0003	10:54:27 05/23/2018								
Alarm 4 700 meter	2	0004	10:54:31 05/23/2018							10:55:46 05/23/2018	
Alarm 5 5 inch(es)	2	0005	10:54:34 05/23/2018								

Action control		Sorting control		Filtering control		Counter		Category start		Category end	
0		Trigger alarm screen Ack alarm		0		2		0		0	
Message	Frequency	No	Trigger	Recovery		Ack					
Alarm 3 300 gram	2	0003	10:54:27 05/23/2018								
Alarm 4 700 meter	2	0004	10:54:31 05/23/2018							10:55:46 05/23/2018	
Alarm 5 5 inch(es)	2	0005	10:54:34 05/23/2018								

- If Filtering Control Addr. is 3, the Alarm History Table hides the alarms with recovery time and acknowledge time.

Action control		Sorting control		Filtering control		Counter		Category start		Category end	
0		Trigger alarm screen Ack alarm		0		0		0		0	
Message	Frequency	No	Trigger	Recovery							
Alarm 1 40 degree	2	0001	10:54:18 05/23/2018	11:08:56 05/23/2018		10:55:44 05/23/2018					
Alarm 2 20 kilogram	2	0002	10:54:24 05/23/2018	11:09:06 05/23/2018		10:55:48 05/23/2018					
Alarm 3 300 gram	2	0003	10:54:27 05/23/2018								
Alarm 4 700 meter	2	0004	10:54:31 05/23/2018							10:55:46 05/23/2018	
Alarm 5 5 inch(es)	2	0005	10:54:34 05/23/2018								

Action control		Sorting control		Filtering control		Counter		Category start		Category end	
0		Trigger alarm screen Ack alarm		0		3		0		0	
Message	Frequency	No	Trigger	Recovery		Ack					
Alarm 3 300 gram	2	0003	10:54:27 05/23/2018								
Alarm 5 5 inch(es)	2	0005	10:54:34 05/23/2018								

- If Filtering Control Addr. is 4, the Alarm History Table hides the alarms with acknowledge time.

Action control		Sorting control		Filtering control		Counter		Category start		Category end	
0		Trigger alarm screen Ack alarm		0		0		0		0	
Frequency	No	Trigger	Recovery		Ack						
2	0001	10:54:18 05/23/2018	11:08:56 05/23/2018		10:55:44 05/23/2018						
2	0002	10:54:24 05/23/2018	11:09:06 05/23/2018		10:55:48 05/23/2018						
2	0003	10:54:27 05/23/2018									
2	0004	10:54:31 05/23/2018			10:55:46 05/23/2018						
2	0005	10:54:34 05/23/2018									

Action control		Sorting control		Filtering control		Counter		Category start		Category end	
0		Trigger alarm screen Ack alarm		0		4		0		0	
Frequency	No	Trigger	Recovery		Ack						
2	0003	10:54:27 05/23/2018									
2	0005	10:54:34 05/23/2018									
3	0001	11:09:00 05/23/2018	11:09:03 05/23/2018								
1	0002	10:53:38 05/23/2018	10:53:54 05/23/2018								
1	0003	10:53:41 05/23/2018	10:53:54 05/23/2018								

- Filtering Control Addr. is 5 and [Alarm counter display] is set to 1.

Filtering control Counter

5

1

Execution results

Filtering Control Addr.

16

Alarm Settings


Execution results

- The Alarm History Table hides the data with alarm counter value that is less than 1. In this example, since there is no alarm count that is less than 1, all alarms are displayed.

Action control		Sorting control	Filtering control	Counter	Category start	Category end
0	Trigger alarm screen Ack alarm	0	0	0	0	0
Message	Frequency	No	Trigger	Recovery		
Alarm 1 140 degree	2	0001	10:54:18 05/23/2018	11:08:56 05/23/2018	10:55:44 05/23/2018	
Alarm 2 20 kilogram	2	0002	10:54:24 05/23/2018	11:09:06 05/23/2018	10:55:48 05/23/2018	
Alarm 3 300 gram	2	0003	10:54:27 05/23/2018			
Alarm 4 700 meter	2	0004	10:54:31 05/23/2018	10:55:46 05/23/2018		
Alarm 5 5 inch(es)	2	0005	10:54:34 05/23/2018			

- Filtering Control Addr. is 5 and [Alarm counter display] is set to 2.

Filtering control Counter




- The Alarm History Table hides the data with alarm counter value that is less than 2. In this example, all the alarms occurred only once, so all alarms are hidden.

Action control		Sorting control	Filtering control	Counter	Category start	Category end
0	Trigger alarm screen Ack alarm	0	5	1	0	0
Message	Frequency	No	Trigger	Recovery		
Alarm 1 140 degree	2	0001	10:54:18 05/23/2018	11:08:56 05/23/2018	10:55:44 05/23/2018	
Alarm 2 20 kilogram	2	0002	10:54:24 05/23/2018	11:09:06 05/23/2018	10:55:48 05/23/2018	
Alarm 3 300 gram	2	0003	10:54:27 05/23/2018			
Alarm 4 700 meter	2	0004	10:54:31 05/23/2018	10:55:46 05/23/2018		
Alarm 5 5 inch(es)	2	0005	10:54:34 05/23/2018			

- Filtering Control Addr. is 6 with the alarm category display start address [Category start] as 1 and the end address [Category end] as 3.

Filtering control Counter Category start Category end



16-12

November, 2018

Alarm Settings

- The alarm category numbers that are out of the range specified by [Category start] and [Category end] will be hidden.

No.	Message Content	Category
1*	Alarm 1 %d1 degree(s)	1
2*	Alarm 2 %d1 kilogram(s)	1
3*	Alarm 3 %d1 gram(s)	1
4*	Alarm 4 %d1 meter(s)	1
5*	Alarm 5 %d1 inch(es)	1
6*	Alarm 6	5
7*	Alarm 7	5
8*	Alarm 8	5
9*	Alarm 9	5
10*	Alarm 10	5

Not hidden	Action control Sorting control Filtering control Counter Category start Category end					
	0		Trigger alarm screen Ack alarm		0	
	0		0		0	
	Message	Frequency	No	Trigger	Recovery	
	Alarm 1 40 degree	2	0001	11:22:30 05/23/2018	11:23:04 05/23/2018	11:22:59 05/23/2018

Hidden	Action control Sorting control Filtering control Counter Category start Category end					
	0		Trigger alarm screen Ack alarm		6	
	0		6		1	
	0		0		3	
	Message	Frequency	No	Trigger	Recovery	
Alarm 1 40 degree	2	0001	11:22:30 05/23/2018	11:23:04 05/23/2018	11:22:59 05/23/2018	

- Filtering Control Addr. is 6 with the alarm category display start address [Category start] as 3 and the end address [Category end] as 5.

Filtering control	Counter	Category start	Category end
6	0	3	5

- The alarm category numbers that are out of the range specified by [Category start] and [Category end] will be hidden.

No.	Message Content	Category
1*	Alarm 1 %d1 degree(s)	1
2*	Alarm 2 %d1 kilogram(s)	1
3*	Alarm 3 %d1 gram(s)	1
4*	Alarm 4 %d1 meter(s)	1
5*	Alarm 5 %d1 inch(es)	1
6*	Alarm 6	5
7*	Alarm 7	5
8*	Alarm 8	5
9*	Alarm 9	5
10*	Alarm 10	5

Execution results

Filtering Control Addr.

16

Alarm Settings									
Execution results	Filtering Control Addr.	Not hidden	Action control		Sorting control	Filtering control	Counter	Category start	Category end
			0	Trigger alarm screen Ack alarm	0	0	0	0	0
			Message	Frequency	No	Trigger	Recovery		
			Alarm 1 40 degree	2	0001	11:22:30 05/23/2018	11:23:04 05/23/2018	11:22:59 05/23/2018	
			Alarm 2 20 kilogram	2	0002	11:22:33 05/23/2018	11:23:07 05/23/2018	11:23:01 05/23/2018	
			Alarm 3 300 gram	2	0003	11:22:36 05/23/2018			
			Alarm 4 700 meter	2	0004	11:22:39 05/23/2018	11:23:22 05/23/2018		
			Alarm 5 5 inch(es)	2	0005	11:22:42 05/23/2018			
			»						
		Hidden	Action control		Sorting control	Filtering control	Counter	Category start	Category end
			0	Trigger alarm screen Ack alarm	0	6	0	3	5
			Message	Frequency	No	Trigger	Recovery		Ack
			Alarm 6	1	0006	11:27:59 05/23/2018			
			Alarm 7	1	0007	11:27:59 05/23/2018			
			Alarm 8	1	0008	11:27:59 05/23/2018			
			Alarm 9	1	0009	11:27:59 05/23/2018			
			Alarm 10	1	0010	11:27:59 05/23/2018			
			»						

The following introduces the detailed property functions for Alarm Settings.

Table 16.1.2 Properties of Alarm Settings

Properties of Alarm Settings	
<div style="border: 1px solid gray; padding: 5px;"> 16 Arial 100% </div>	
<div style="border: 1px solid gray; padding: 5px;"> Detail Properties </div>	
Address	None
Address	None
<div style="border: 1px solid gray; padding: 5px;"> Detail </div>	
Scan Time (seconds)	3
Max Records	500
Non-volatile Data Storage	None
Export CSV File	No
Exit Screensaver when alarm occurs	Yes
Display alarm screen	Auto
<div style="border: 1px solid gray; padding: 5px;"> Alarm Moving Sign </div>	
Enable	No
Position	Top
Direction	Left
Points per time	1
Interval (ms)	100
Background color	<input type="checkbox"/> fcfcf
Translucent	255

16


Alarm Settings

- The default is continuous address. Its usage is the same as that of the DOP-B models.

No.	Message Content	Category	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1		0	On	None	RGB(0, 0, 0)	None	
2		0	On	None	RGB(0, 0, 0)	None	
3		0	On	None	RGB(0, 0, 0)	None	
4		0	On	None	RGB(0, 0, 0)	None	
5		0	On	None	RGB(0, 0, 0)	None	
6		0	On	None	RGB(0, 0, 0)	None	
7		0	On	None	RGB(0, 0, 0)	None	
8		0	On	None	RGB(0, 0, 0)	None	
9		0	On	None	RGB(0, 0, 0)	None	
10		0	On	None	RGB(0, 0, 0)	None	
11		0	On	None	RGB(0, 0, 0)	None	
12		0	On	None	RGB(0, 0, 0)	None	
13		0	On	None	RGB(0, 0, 0)	None	
14		0	On	None	RGB(0, 0, 0)	None	
15		0	On	None	RGB(0, 0, 0)	None	

Switch between continuous and non-continuous addresses



- Press  once, the setting changes to non-continuous address. When the setting is non-continuous address, you can use Bit or Word addresses for alarm triggering.

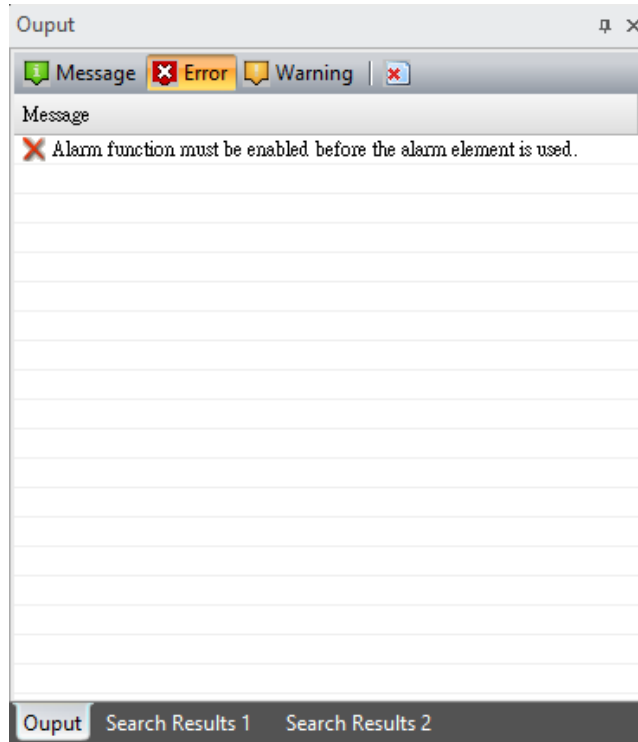
No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1		0	Bit	None	On	None	RGB(0, 0, 0)	None	
2		0	Bit	None	On	None	RGB(0, 0, 0)	None	
3		0	Bit	None	On	None	RGB(0, 0, 0)	None	
4		0	Bit	None	On	None	RGB(0, 0, 0)	None	
5		0	Bit	None	On	None	RGB(0, 0, 0)	None	
6		0	Bit	None	On	None	RGB(0, 0, 0)	None	
7		0	Bit	None	On	None	RGB(0, 0, 0)	None	
8		0	Bit	None	On	None	RGB(0, 0, 0)	None	
9		0	Bit	None	On	None	RGB(0, 0, 0)	None	
10		0	Bit	None	On	None	RGB(0, 0, 0)	None	
11		0	Bit	None	On	None	RGB(0, 0, 0)	None	
12		0	Bit	None	On	None	RGB(0, 0, 0)	None	
13		0	Bit	None	On	None	RGB(0, 0, 0)	None	
14		0	Bit	None	On	None	RGB(0, 0, 0)	None	
15		0	Bit	None	On	None	RGB(0, 0, 0)	None	

16

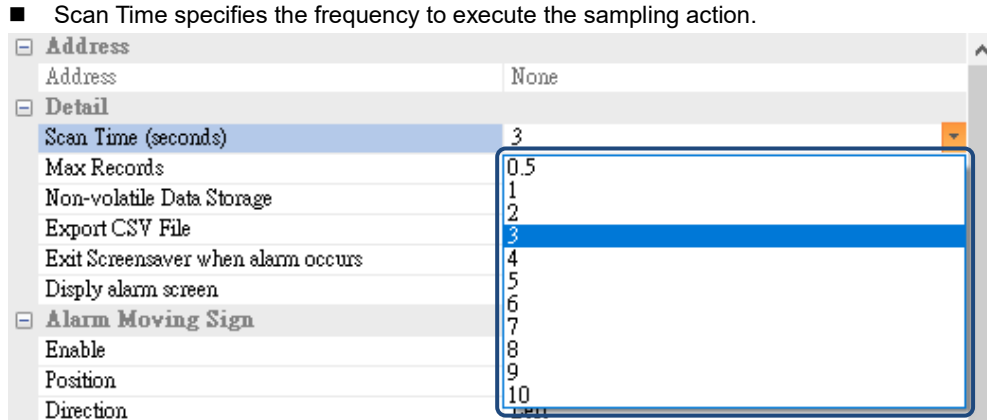
Properties of Alarm Settings

- Only applicable to continuous addresses.
 - You can select the internal memory or the controller register address.
 - Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
- Note: if you have created an alarm related element without setting the alarm read address, the software prompts a warning as shown below when data compiling.

Read Address

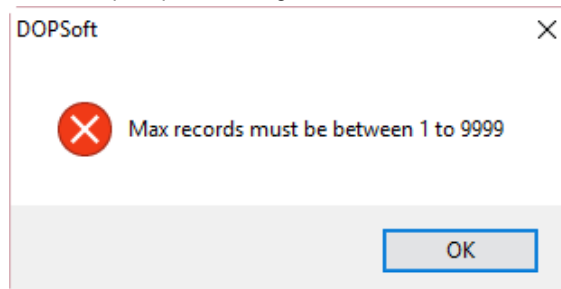


Scan Time (seconds)



Max Records

- Max Records is the recorded data. When the number of the recorded sampling number reaches the maximum, the record starts from 1 and overwrites the previous data.
 - The maximum savable data entry is 9,999.
- Note:
1. The maximum record must not be 0.
 2. If you enter 0, the software prompts a warning as shown below.



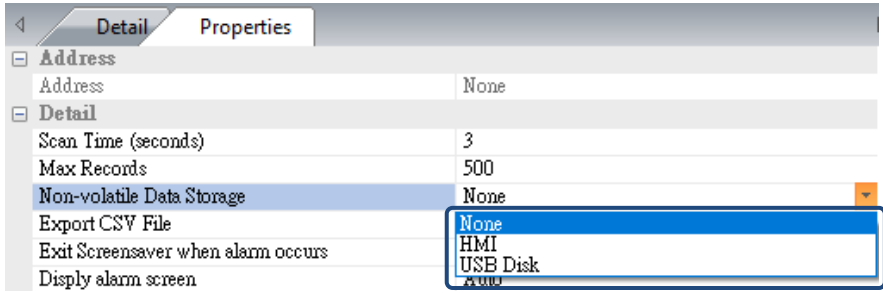
Properties of Alarm Settings

Non-volatile

Export CSV File

Exit Screensaver when alarm occurs

- Options for the storage location include None, HMI, USB Disk, and SD Card.
- If you cannot use an SD Card on the model, it only shows the supported items, HMI and USB Disk; on the other hand, if you cannot use a USB Disk on the model, it only shows the supported items, HMI and SD Card.



- When you choose to store the data in the HMI, it means when the power is cut off, the data is saved in the HMI SRAM.
- If Export CSV File is checked, please set the non-volatile memory to USB Disk or SD Card.

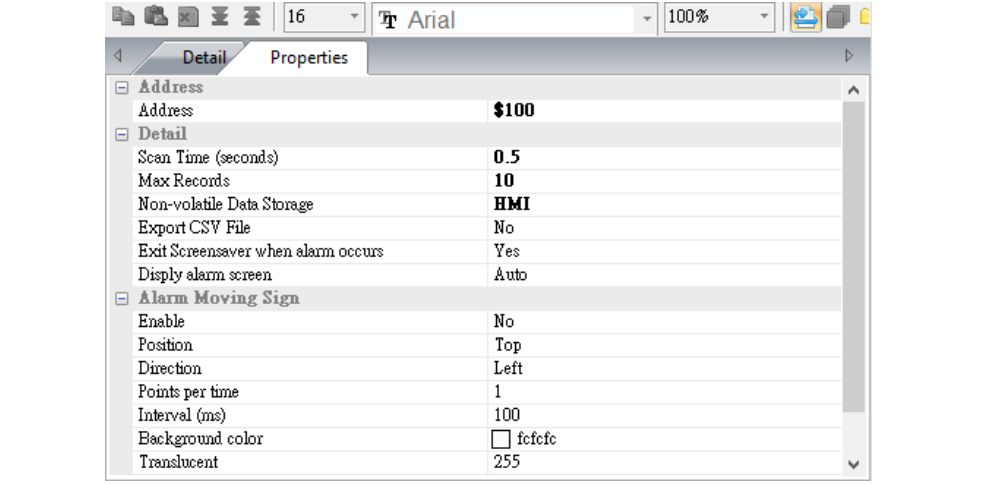
Checking Export CSV File means you can save the alarm data as CSV files in the external storage devices, USB Disks or SD Cards.

	A	B	C	D	E	F	G	H
1	Group No.	Trigger Time		ACK Time		Recovery Time		Message
2	5	5/23/2018 13:30:09	13:30:09	5/23/2018 13:31:16				Alarm 6
3	5	5/23/2018 13:30:09	13:30:09	5/23/2018 13:31:19				Alarm 7
4	5	5/23/2018 13:30:09	13:30:09					Alarm 8
5	5	5/23/2018 13:30:09	13:30:09	5/23/2018 13:31:20				Alarm 9
6	5	5/23/2018 13:30:09	13:30:09					Alarm 10
7	1	5/23/2018 13:30:18	13:30:18			5/23/2018 13:31:04	13:31:04	Alarm 1 30 degree(s)
8	1	5/23/2018 13:30:21	13:30:21			5/23/2018 13:31:04	13:31:04	Alarm 2 10 kilogram(s)
9	1	5/23/2018 13:30:24	13:30:24			5/23/2018 13:31:04	13:31:04	Alarm 3 250 gram(s)
10	1	5/23/2018 13:30:27	13:30:27			5/23/2018 13:31:07	13:31:07	Alarm 4 800 meter(s)
11	1	5/23/2018 13:30:27	13:30:27			5/23/2018 13:31:07	13:31:07	Alarm 5 3 inch(es)

- This function is used with the screensaver. The default is Enable.
- Assume that the screensaver is enabled and the screensaver image is set, the HMI does not show the screensaver image if alarm occurs; if the screensaver image is not set, the HMI does not enter the backlight mode.
- Disable the function for [Exit Screensaver when alarm occurs], then the HMI exits the screensaver when the alarm is triggered the first time. After that, whether the alarm is cleared or not, the HMI enters the screensaver mode according to the set time.

Example

- Create the alarm data.

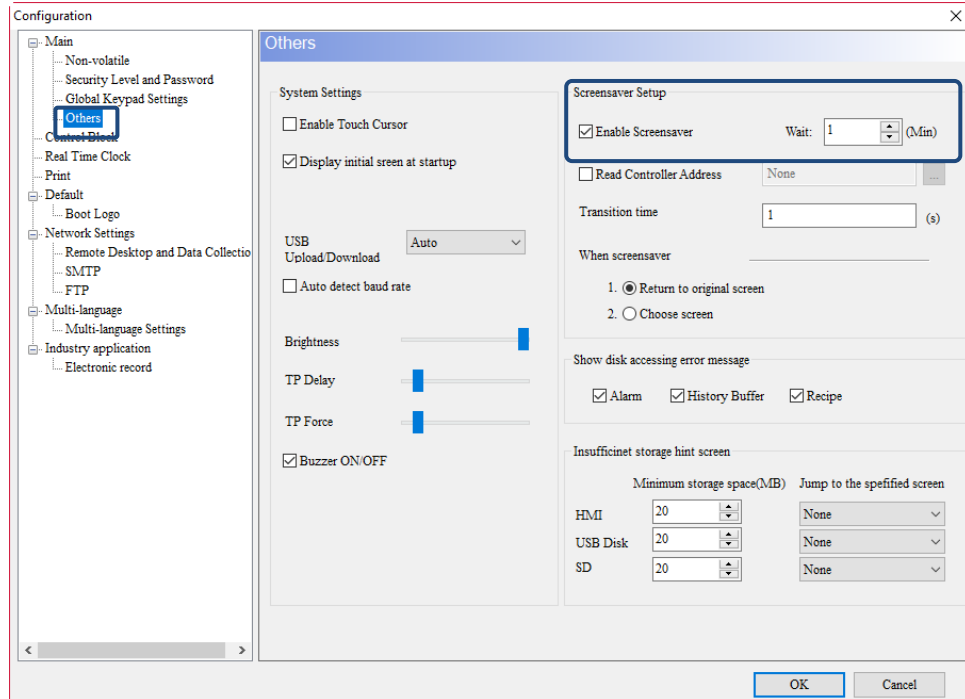


No.	Message Content	Category	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1*	111	0	On	None	RGB(0, 0, 0)	None	
2*	222	0	On	None	RGB(0, 0, 0)	None	
3*	333	0	On	None	RGB(0, 0, 0)	None	

Properties of Alarm Settings

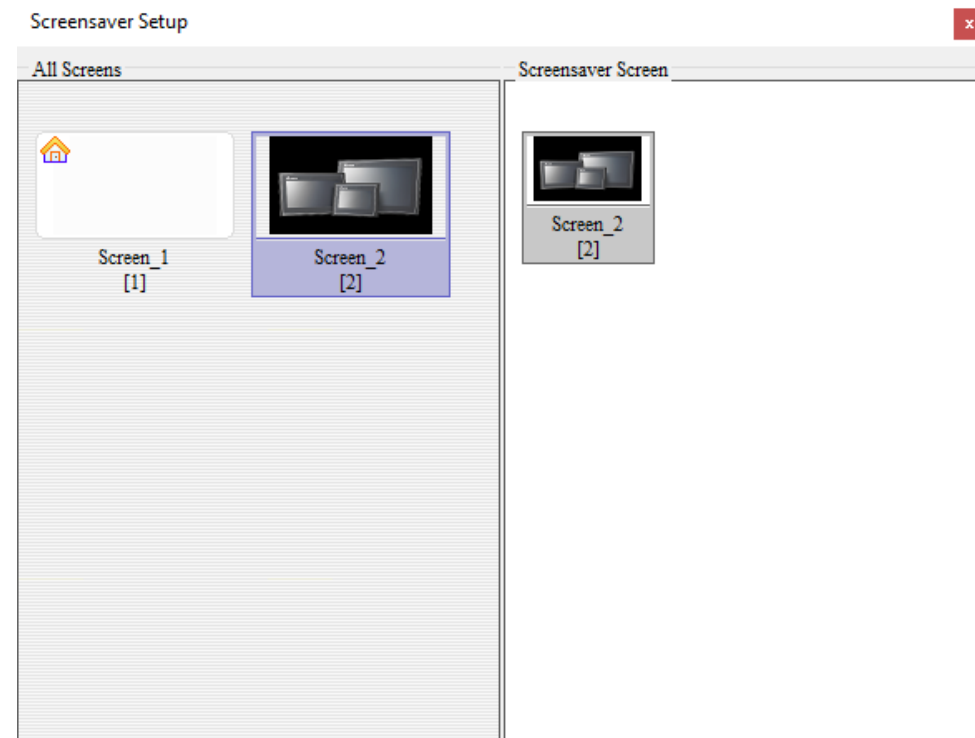
16

- Create a Numeric Entry element and set its address to \$100.
- Go to [Options] > [Configuration] > [Main] > [Others] to check Enable Screensaver and specify the waiting time as 1 minute.



Exit Screensaver when alarm occurs

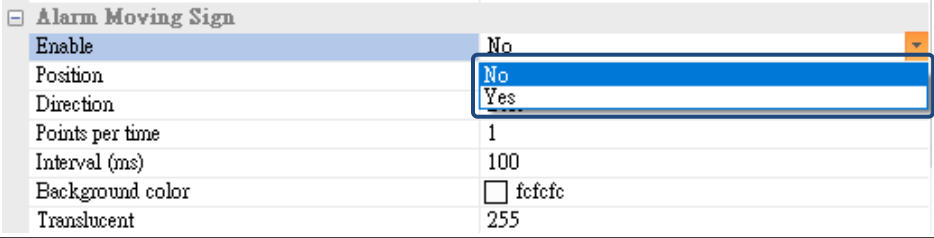
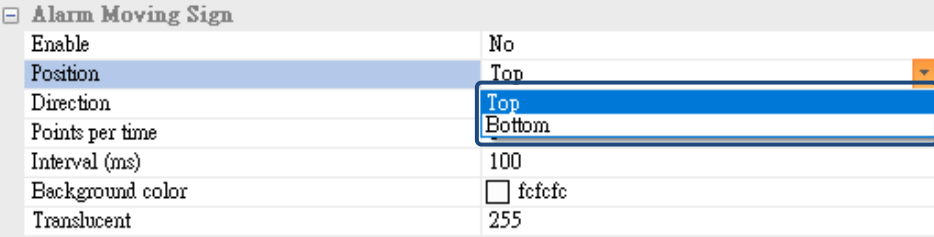


- Go to [Screen] > [Screensaver Setup] to specify the screensaver screen.



- Compile the project and download to the HMI. Enter 1 to the Numeric Entry element \$100 to trigger the alarm. Wait 1 minute for the screensaver to enable, and when the HMI detects an alarm, it automatically exits the screensaver mode.

Properties of Alarm Settings	
Display alarm screen	<ul style="list-style-type: none">■ It is categorized into Auto and Manual modes.■ Auto: the HMI displays the alarm screen as soon as the alarm with a set alarm screen is triggered.■ Manual: to have the HMI display the alarm screen, you must go to the Details page of the Alarm History Table element and enter 2 to Action Control Addr.; or go to the Function Buttons page of the Alarm History Table element and use the [Trigger alarm screen] button.

16

Properties of Alarm Settings	
Alarm Moving Sign	
Enable	<p>You can select Yes or No to enable or disable this function. When the alarm is triggered, selecting Yes means the alarm message will show at the specified position on the screen whereas No means not to show the alarm message.</p> 
	<p>Available display positions are Top and Bottom. If you select Top, once the alarm is triggered, the alarm message shows at the top of the HMI screen; if you select Bottom, the alarm message shows at the bottom of the HMI screen.</p> 
Position	<p>Top</p> 
	<p>Bottom</p> 

Properties of Alarm Settings

Available directions are Left, Right, Up, and Down.

Alarm Moving Sign

Enable	Yes
Position	Bottom
Direction	Left
Points per time	1
Interval (ms)	100
Background color	255
Translucent	

Direction

Direction	Alarm ID	Count	Time	Date	EN	CH
Left	0006	alarm 6	1	11:46:42	11/23/2016	
	0007	alarm 7	1	11:46:42	11/23/2016	
	0008	alarm 8	1	11:46:42	11/23/2016	
	0009	alarm 9	1	11:46:42	11/23/2016	
Right	0006	alarm 6	1	11:50:15	11/23/2016	1
	0007	alarm 7	1	11:50:15	11/23/2016	
	0008	alarm 8	1	11:50:15	11/23/2016	
Up	0006	alarm 6	1	16:55:27	01/26/2017	1
	0007	alarm 7	1	16:55:27	01/26/2017	
	0008	alarm 8	1	16:55:27	01/26/2017	
Down	0006	alarm 6	1	16:57:44	01/26/2017	1
	0007	alarm 7	1	16:57:44	01/26/2017	
	0008	alarm 8	1	16:57:44	01/26/2017	

Points per time

The greater the number of points, the greater the distance each time the text moves. The setting range is 1 - 50 pixels.

Interval (ms)

Interval is the time interval between motions of the Alarm Moving Sign. Unit: ms. The moving distance is determined by the setting of Points per time.

Alarm Moving Sign

Enable	Yes
Position	Bottom
Direction	Left
Points per time	1
Interval (ms)	100
Background color	50
Translucent	

Background color

This is the background color of the Alarm Moving Sign as shown in the figure below.

Alarm ID	Count	Time	Date
0006	alarm 6	1	17:03:36 01/26/2017
0007	alarm 7	1	17:03:36 01/26/2017
0008	alarm 8	1	17:03:36 01/26/2017
0009	alarm 9	1	17:03:36 01/26/2017
0010	alarm 10	1	17:03:36 01/26/2017

The default is white. Background color Default

16

Translucent


Properties of Alarm Settings

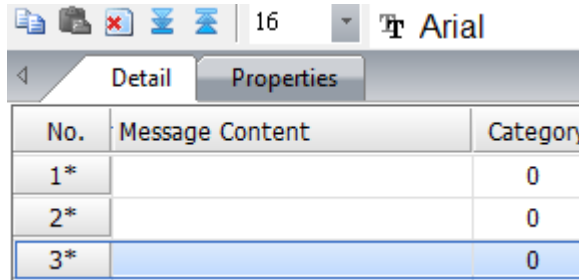
Set the transparency level for the message of the Alarm Moving Sign. The default is 255. The minimum is 0.

Set the value to 255	alarm 9 alarm 10					
	No	Message	Frequency	Trigger	Ack	Recovery
	0006	alarm 6	1	14:55:57 02/09/2017		
	0007	alarm 7	1	14:55:57 02/09/2017		
	0008	alarm 8	1	14:55:57 02/09/2017		
	0009	alarm 9	1	14:55:57 02/09/2017		
	0010	alarm 10	1	14:55:57 02/09/2017		

Set the value to 100	alarm 10 alarm 6					
	No	Message	Frequency	Trigger	Ack	Recovery
	0006	alarm 6	1	15:15:25 02/09/2017		
	0007	alarm 7	1	15:15:25 02/09/2017		
	0008	alarm 8	1	15:15:25 02/09/2017		
	0009	alarm 9	1	15:15:25 02/09/2017		
	0010	alarm 10	1	15:15:25 02/09/2017		

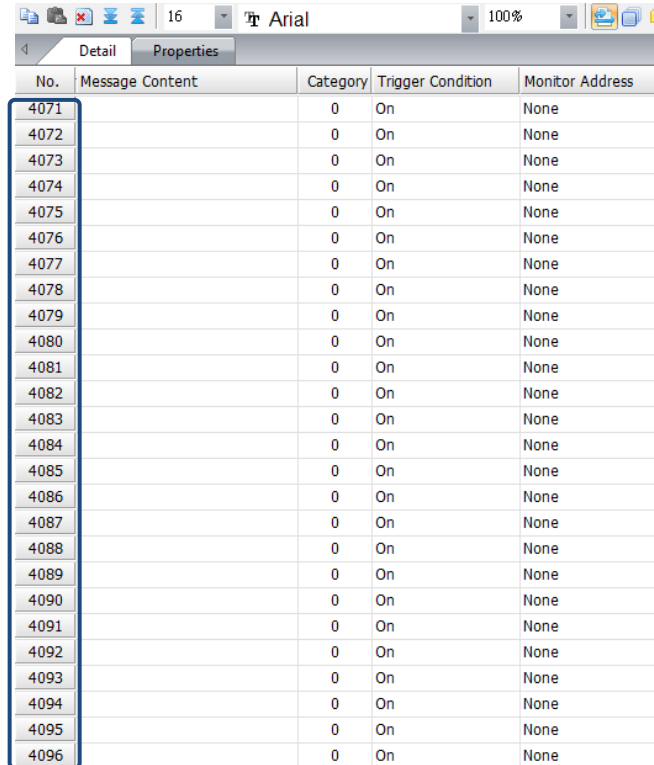
Alarm Message Display Content

- When you use the **Backspace** or **Delete** key to delete the message content or leave the content blank, the No. is marked with an asterisk (*), reminding you that this alarm message still exists unless you use  to delete the alarm message.



No.	Message Content	Category
1*		0
2*		0
3*		0

- No. stands for the alarm message number, which maximum is 4,096.



No.	Message Content	Category	Trigger Condition	Monitor Address
4071		0	On	None
4072		0	On	None
4073		0	On	None
4074		0	On	None
4075		0	On	None
4076		0	On	None
4077		0	On	None
4078		0	On	None
4079		0	On	None
4080		0	On	None
4081		0	On	None
4082		0	On	None
4083		0	On	None
4084		0	On	None
4085		0	On	None
4086		0	On	None
4087		0	On	None
4088		0	On	None
4089		0	On	None
4090		0	On	None
4091		0	On	None
4092		0	On	None
4093		0	On	None
4094		0	On	None
4095		0	On	None
4096		0	On	None

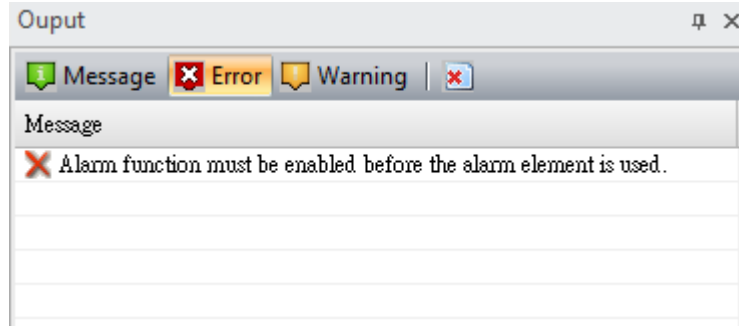
No.


Properties of Alarm Settings

Message Content

- You can edit the alarm messages to display in the message field.
- If you want to modify the message, you can modify it directly in the field.
- You can add the "%d1" formatted string to the message content, e.g. Alarm%d1. This string must be used with monitoring addresses.

Note: if you have created an alarm related element with alarm read address, but left the message content blank, the software prompts a warning as shown below when data compiling.

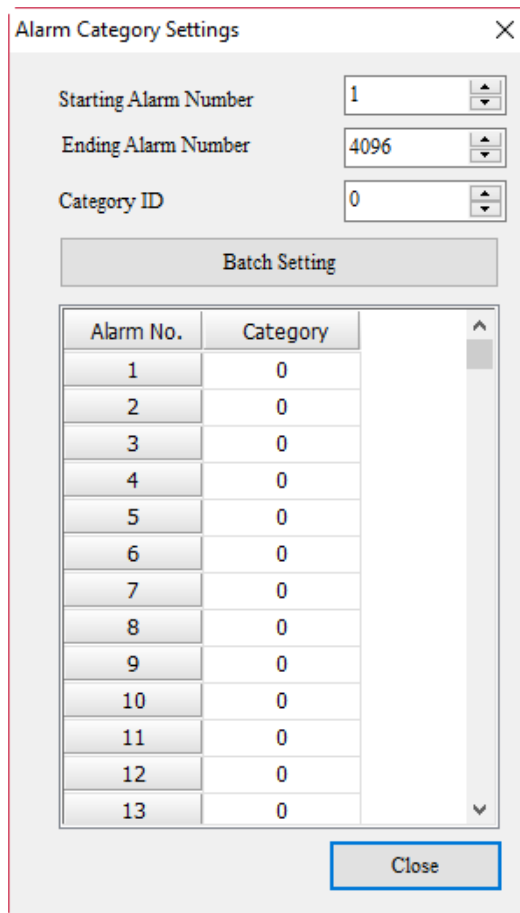


- The category of the alarm number, which idea is similar to groups.
- The supported range is 1 - 255.
- You can use the batch tasks tool  to quickly set the category numbers.



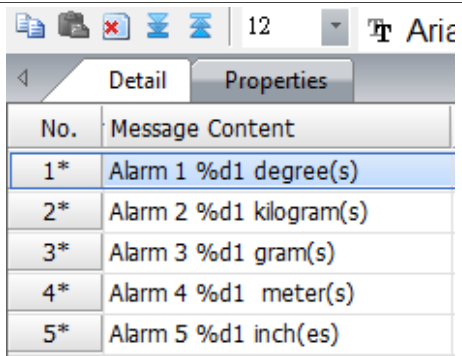
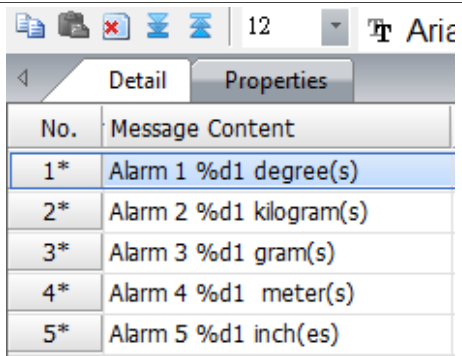
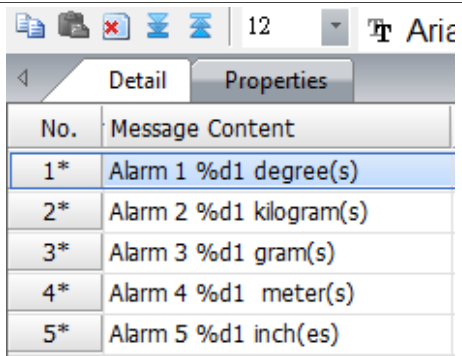


- If you specify 1 as the Starting Alarm Number and 10 as the Ending Alarm Number, set Category ID to 5, and press **Batch Setting**, then Alarm No. 1 - 10 are defined as Group 5.

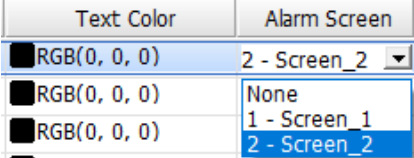
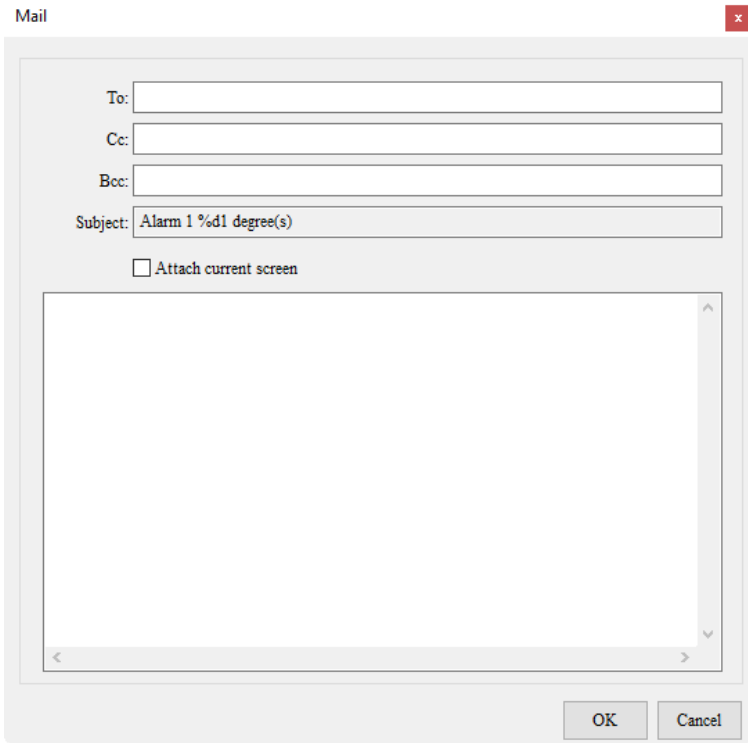
Category



16

Properties of Alarm Settings																																										
Type	<ul style="list-style-type: none"> When the alarm continuous address button  is canceled, this field shows up and the alarm read address is disabled. You can trigger the alarms individually depending on the alarm address type setting which is Bit or Word. Available types are Bit and Word. Bit address: user-defined Bit address for alarm triggering. Word address: user-defined Word address for alarm triggering. 																																									
Address	<ul style="list-style-type: none"> When the alarm continuous address button  is canceled, this field shows up and the alarm read address is disabled. You can trigger the alarms individually depending on the alarm address type setting which is Bit or Word. You can set the corresponding addresses to trigger the alarms according to the setting types (Bit or Word). If you select Bit, please enter the Bit address for alarm triggering. If you select Word, please provide statements for determining whether to trigger the alarm. <table border="1"> <thead> <tr> <th>Statement</th> <th>Trigger timing</th> </tr> </thead> <tbody> <tr> <td>=</td> <td>Equal to</td> </tr> <tr> <td>></td> <td>Greater than</td> </tr> <tr> <td><</td> <td>Less than</td> </tr> <tr> <td>>=</td> <td>Greater than or equal to</td> </tr> <tr> <td><=</td> <td>Less than or equal to</td> </tr> <tr> <td>>, <</td> <td>Out of the range</td> </tr> <tr> <td><=, >=</td> <td>Within the range</td> </tr> </tbody> </table>	Statement	Trigger timing	=	Equal to	>	Greater than	<	Less than	>=	Greater than or equal to	<=	Less than or equal to	>, <	Out of the range	<=, >=	Within the range																									
Statement	Trigger timing																																									
=	Equal to																																									
>	Greater than																																									
<	Less than																																									
>=	Greater than or equal to																																									
<=	Less than or equal to																																									
>, <	Out of the range																																									
<=, >=	Within the range																																									
Trigger condition	The trigger conditions are on and off. If you select on, it means the alarm is triggered when the bit is on; if you select off, it means the alarm is triggered when the bit is off.																																									
Monitor Address	<ul style="list-style-type: none"> Monitoring Address is for displaying the user-defined alarm messages. Add the "%d1" string to the input message in the message field. Take message "Alarm" as an example, when the monitoring address is 10, the Alarm History Table displays "Alarm 10". <table border="1"> <tr> <td rowspan="6">Alarm message setting</td> <td colspan="3">  </td> </tr> <tr> <td colspan="3"> <table border="1"> <thead> <tr> <th>No.</th> <th>Message Content</th> </tr> </thead> <tbody> <tr> <td>1*</td> <td>Alarm 1 %d1 degree(s)</td> </tr> <tr> <td>2*</td> <td>Alarm 2 %d1 kilogram(s)</td> </tr> <tr> <td>3*</td> <td>Alarm 3 %d1 gram(s)</td> </tr> <tr> <td>4*</td> <td>Alarm 4 %d1 meter(s)</td> </tr> <tr> <td>5*</td> <td>Alarm 5 %d1 inch(es)</td> </tr> </tbody> </table> </td> </tr> <tr> <td rowspan="5">Execution results</td> <td colspan="3"> <table border="1"> <thead> <tr> <th>Message</th> <th>Frequency</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>Alarm 1 30 degree</td> <td>1</td> <td>0001</td> </tr> <tr> <td>Alarm 2 10 kilograr</td> <td>1</td> <td>0002</td> </tr> <tr> <td>Alarm 3 250 gram(</td> <td>1</td> <td>0003</td> </tr> <tr> <td>Alarm 4 800 meter</td> <td>1</td> <td>0004</td> </tr> <tr> <td>Alarm 5 3 inch(es)</td> <td>1</td> <td>0005</td> </tr> </tbody> </table> </td> </tr> </table>	Alarm message setting				<table border="1"> <thead> <tr> <th>No.</th> <th>Message Content</th> </tr> </thead> <tbody> <tr> <td>1*</td> <td>Alarm 1 %d1 degree(s)</td> </tr> <tr> <td>2*</td> <td>Alarm 2 %d1 kilogram(s)</td> </tr> <tr> <td>3*</td> <td>Alarm 3 %d1 gram(s)</td> </tr> <tr> <td>4*</td> <td>Alarm 4 %d1 meter(s)</td> </tr> <tr> <td>5*</td> <td>Alarm 5 %d1 inch(es)</td> </tr> </tbody> </table>			No.	Message Content	1*	Alarm 1 %d1 degree(s)	2*	Alarm 2 %d1 kilogram(s)	3*	Alarm 3 %d1 gram(s)	4*	Alarm 4 %d1 meter(s)	5*	Alarm 5 %d1 inch(es)	Execution results	<table border="1"> <thead> <tr> <th>Message</th> <th>Frequency</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>Alarm 1 30 degree</td> <td>1</td> <td>0001</td> </tr> <tr> <td>Alarm 2 10 kilograr</td> <td>1</td> <td>0002</td> </tr> <tr> <td>Alarm 3 250 gram(</td> <td>1</td> <td>0003</td> </tr> <tr> <td>Alarm 4 800 meter</td> <td>1</td> <td>0004</td> </tr> <tr> <td>Alarm 5 3 inch(es)</td> <td>1</td> <td>0005</td> </tr> </tbody> </table>			Message	Frequency	No	Alarm 1 30 degree	1	0001	Alarm 2 10 kilograr	1	0002	Alarm 3 250 gram(1	0003	Alarm 4 800 meter	1	0004	Alarm 5 3 inch(es)	1	0005
Alarm message setting																																										
	<table border="1"> <thead> <tr> <th>No.</th> <th>Message Content</th> </tr> </thead> <tbody> <tr> <td>1*</td> <td>Alarm 1 %d1 degree(s)</td> </tr> <tr> <td>2*</td> <td>Alarm 2 %d1 kilogram(s)</td> </tr> <tr> <td>3*</td> <td>Alarm 3 %d1 gram(s)</td> </tr> <tr> <td>4*</td> <td>Alarm 4 %d1 meter(s)</td> </tr> <tr> <td>5*</td> <td>Alarm 5 %d1 inch(es)</td> </tr> </tbody> </table>			No.	Message Content	1*	Alarm 1 %d1 degree(s)	2*	Alarm 2 %d1 kilogram(s)	3*	Alarm 3 %d1 gram(s)	4*	Alarm 4 %d1 meter(s)	5*	Alarm 5 %d1 inch(es)																											
	No.		Message Content																																							
	1*		Alarm 1 %d1 degree(s)																																							
	2*		Alarm 2 %d1 kilogram(s)																																							
	3*	Alarm 3 %d1 gram(s)																																								
4*	Alarm 4 %d1 meter(s)																																									
5*	Alarm 5 %d1 inch(es)																																									
Execution results	<table border="1"> <thead> <tr> <th>Message</th> <th>Frequency</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>Alarm 1 30 degree</td> <td>1</td> <td>0001</td> </tr> <tr> <td>Alarm 2 10 kilograr</td> <td>1</td> <td>0002</td> </tr> <tr> <td>Alarm 3 250 gram(</td> <td>1</td> <td>0003</td> </tr> <tr> <td>Alarm 4 800 meter</td> <td>1</td> <td>0004</td> </tr> <tr> <td>Alarm 5 3 inch(es)</td> <td>1</td> <td>0005</td> </tr> </tbody> </table>			Message	Frequency	No	Alarm 1 30 degree	1	0001	Alarm 2 10 kilograr	1	0002	Alarm 3 250 gram(1	0003	Alarm 4 800 meter	1	0004	Alarm 5 3 inch(es)	1	0005																					
	Message	Frequency	No																																							
	Alarm 1 30 degree	1	0001																																							
	Alarm 2 10 kilograr	1	0002																																							
	Alarm 3 250 gram(1	0003																																							
Alarm 4 800 meter	1	0004																																								
Alarm 5 3 inch(es)	1	0005																																								

| Text Color | The text color of the displaying alarm message. The default is black. |

Properties of Alarm Settings													
Alarm Screen	<p>Set whether to show the specified alarm screen when the alarm is triggered. If you have created other screens, use the drop-down list to select the screen number to display.</p> 												
Mail	<ul style="list-style-type: none"> When an alarm occurs, the [Mail] function sends a mail to relevant recipients. Please note that you must go to [Options] > [Configuration] > [Network Settings] to enable the [SMTP] function to have the mail work. After the SMTP function is enabled, you can enter the mail content in the Mail data fields.  <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 15%;">To:</td> <td>Please fill in the recipient's email address for receiving the notification when an alarm occurs. Same as regular email systems, you can fill in multiple recipients by using semi-columns (;) to separate the recipients' email addresses.</td> </tr> <tr> <td>Cc:</td> <td>Apart from the main recipients, you can also send alarm notifications to other recipients by entering their email addresses in this field. Please note that main recipients can see those who are in the Cc: field.</td> </tr> <tr> <td>Bcc:</td> <td>Send blind copies to the recipients. The main and Cc: recipients cannot see those who are in the Bcc: field in the alarm notification.</td> </tr> <tr> <td>Subject:</td> <td>The content in Subject is not editable in the Mail screen. The subject is generated based on the alarm message content. To modify the subject, please go to the message field to change the display message.</td> </tr> <tr> <td>Attach current screen</td> <td>If you check this option, the current alarm screen is attached in this mail and sent to the recipients. The attachment is in .bmp format.</td> </tr> <tr> <td>Content</td> <td> <ul style="list-style-type: none"> You can enter the mail content. This content supports the "%d1" formatted string, which must be used with monitoring addresses. </td> </tr> </table>	To:	Please fill in the recipient's email address for receiving the notification when an alarm occurs. Same as regular email systems, you can fill in multiple recipients by using semi-columns (;) to separate the recipients' email addresses.	Cc:	Apart from the main recipients, you can also send alarm notifications to other recipients by entering their email addresses in this field. Please note that main recipients can see those who are in the Cc: field.	Bcc:	Send blind copies to the recipients. The main and Cc: recipients cannot see those who are in the Bcc: field in the alarm notification.	Subject:	The content in Subject is not editable in the Mail screen. The subject is generated based on the alarm message content. To modify the subject, please go to the message field to change the display message.	Attach current screen	If you check this option, the current alarm screen is attached in this mail and sent to the recipients. The attachment is in .bmp format.	Content	<ul style="list-style-type: none"> You can enter the mail content. This content supports the "%d1" formatted string, which must be used with monitoring addresses.
To:	Please fill in the recipient's email address for receiving the notification when an alarm occurs. Same as regular email systems, you can fill in multiple recipients by using semi-columns (;) to separate the recipients' email addresses.												
Cc:	Apart from the main recipients, you can also send alarm notifications to other recipients by entering their email addresses in this field. Please note that main recipients can see those who are in the Cc: field.												
Bcc:	Send blind copies to the recipients. The main and Cc: recipients cannot see those who are in the Bcc: field in the alarm notification.												
Subject:	The content in Subject is not editable in the Mail screen. The subject is generated based on the alarm message content. To modify the subject, please go to the message field to change the display message.												
Attach current screen	If you check this option, the current alarm screen is attached in this mail and sent to the recipients. The attachment is in .bmp format.												
Content	<ul style="list-style-type: none"> You can enter the mail content. This content supports the "%d1" formatted string, which must be used with monitoring addresses. 												

16

Properties of Alarm Settings

Alarm Message Text Properties

12

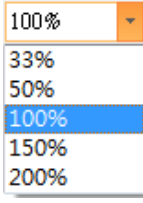
 Arial

100%



Copy 	<ul style="list-style-type: none"> ■ Support single and multiple copy functions. ■ Use the Ctrl key to select the alarm number to copy and use the Shift key to select a range of alarm numbers to copy. 												
Paste 	becomes available after you press . It supports single and multiple paste functions.												
Delete 	<p>After you created the alarm message, you can select the message to be deleted and press to complete the deletion.</p> <p>Note: if you enter the message in the message field and then move on to the next row, it means you have created a new alarm message. Next, if you delete this alarm message with the Delete or Backspace key on your keyboard instead of , the HMI shows the blank alarm at the specified position after you exit Alarm Settings and download the screens to the HMI.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #cccccc;"> <th>Message</th> <th>Frequen</th> <th>No</th> <th>Trigger</th> <th>Recovery</th> <th>Ack</th> </tr> </thead> <tbody> <tr> <td style="background-color: #e0e0ff;"> </td> <td style="text-align: center;">1</td> <td style="text-align: center;">000</td> <td style="text-align: center;">16:24:32 02/09/2017</td> <td style="background-color: #e0e0ff;"> </td> <td style="background-color: #e0e0ff;"> </td> </tr> </tbody> </table>	Message	Frequen	No	Trigger	Recovery	Ack		1	000	16:24:32 02/09/2017		
Message	Frequen	No	Trigger	Recovery	Ack								
	1	000	16:24:32 02/09/2017										
Font	<p>The font for the displaying alarm message. This is user-defined.</p> <div style="text-align: center; border: 1px solid gray; padding: 2px; display: inline-block;"> Arial </div>												
Size	<p>The size for the displaying alarm message.</p> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> 12 ▼ </div> <ul style="list-style-type: none"> 8 10 <li style="background-color: #e0e0ff;">12 14 16 18 20 22 24 28 32 36 40 48 64 72 96 128 160 192 224 </div>												



Properties of Alarm Settings



If you have set the zooming function, you can see the zooming effect on the title and text. The default is 100%.

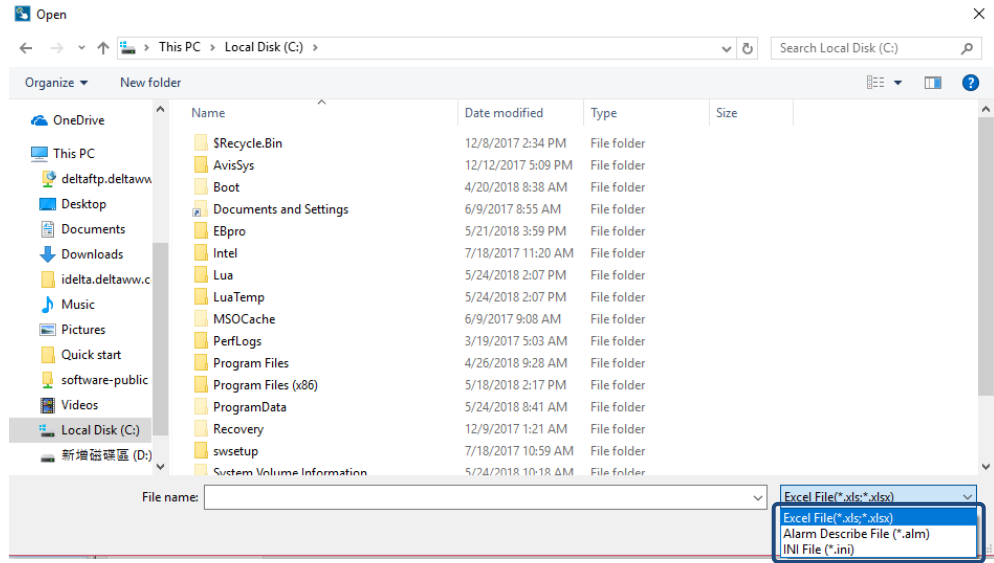


Zoom in / out	100%	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Message</th> <th style="background-color: #cccccc;">Trigger</th> <th style="background-color: #cccccc;">No</th> </tr> </thead> <tbody> <tr> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> <td>1</td> </tr> </tbody> </table>	Message	Trigger	No	####	hh:mm:ss mm/dd/yy	1
Message	Trigger	No						
####	hh:mm:ss mm/dd/yy	1						
	150%	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Message</th> <th style="background-color: #cccccc;">Trigger</th> <th style="background-color: #cccccc;">No</th> </tr> </thead> <tbody> <tr> <td>####</td> <td>hh:mm:ss m...</td> <td>1</td> </tr> </tbody> </table>	Message	Trigger	No	####	hh:mm:ss m...	1
Message	Trigger	No						
####	hh:mm:ss m...	1						

Next 2,048 entries
 When you press , it shows Alarm No. 2049 - 4096.

Previous 2,048 entries
 When you press , it shows Alarm No. 1 - 2048.

Import
 You can press  to import the alarm data. Supported file formats are .xls, .xlsx, .alm, and .ini.



16.2 Alarm History Table

The Alarm History Table is different from the previous alarm record method. For easier viewing of the table, alarm trigger time, alarm acknowledge time, and alarm recovery time are added, so that the alarm triggered and recovered times are listed in the same table.

No	Message	Frequency	Trigger	Ack	Recovery
0006	alarm 6	1	18:00:57 02/09/2017		18:01:02 02/09/2017
0007	alarm 7	1	18:00:57 02/09/2017		
0008	alarm 8	1	18:00:57 02/09/2017	18:01:16 02/09/2017	
0009	alarm 9	1	18:00:57 02/09/2017	18:01:18 02/09/2017	18:01:24 02/09/2017
0010	alarm 10	1	18:00:57 02/09/2017		

You can also sort the alarms, set filter conditions, and use other functions to determine the displayed alarms. To enhance the readability of the data, you can filter the information you want to see and sort in ascending or descending order.

Please refer to Table 16.1.1 Alarm Settings example for the Alarm History Table setting example.

16

When you double-click the Alarm History Table, the property page is shown as follows.

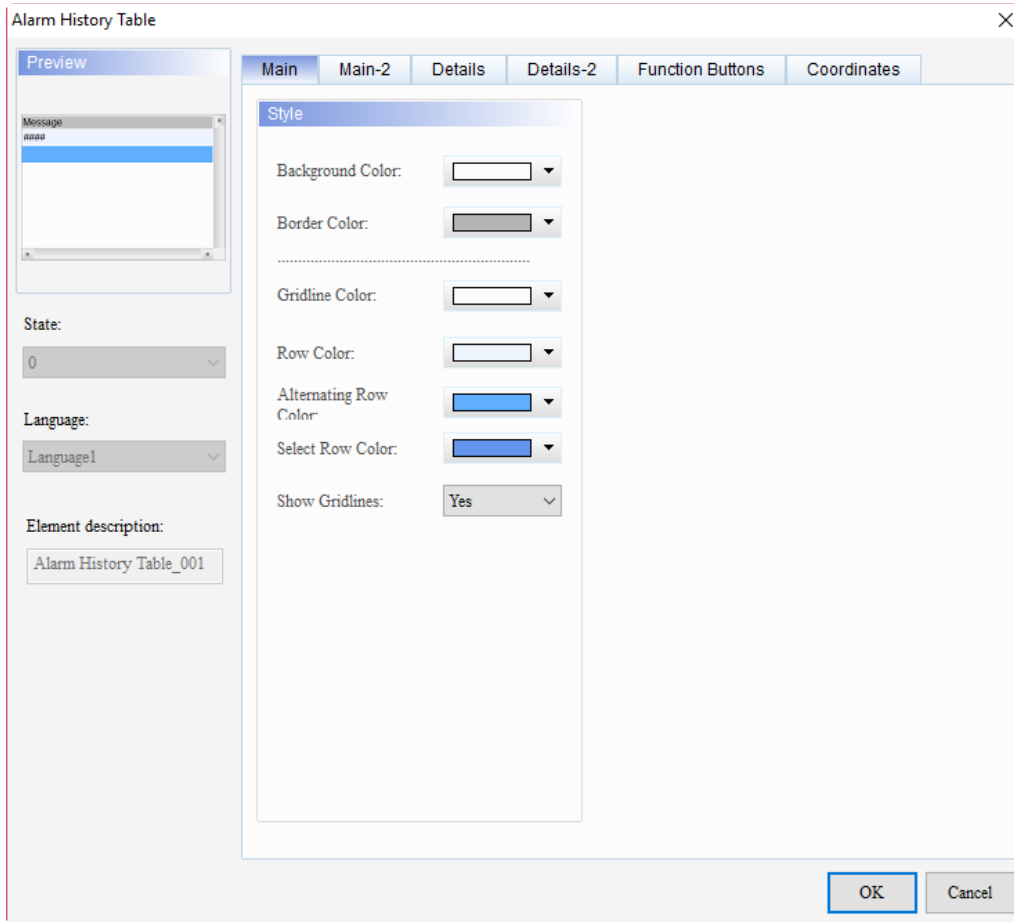
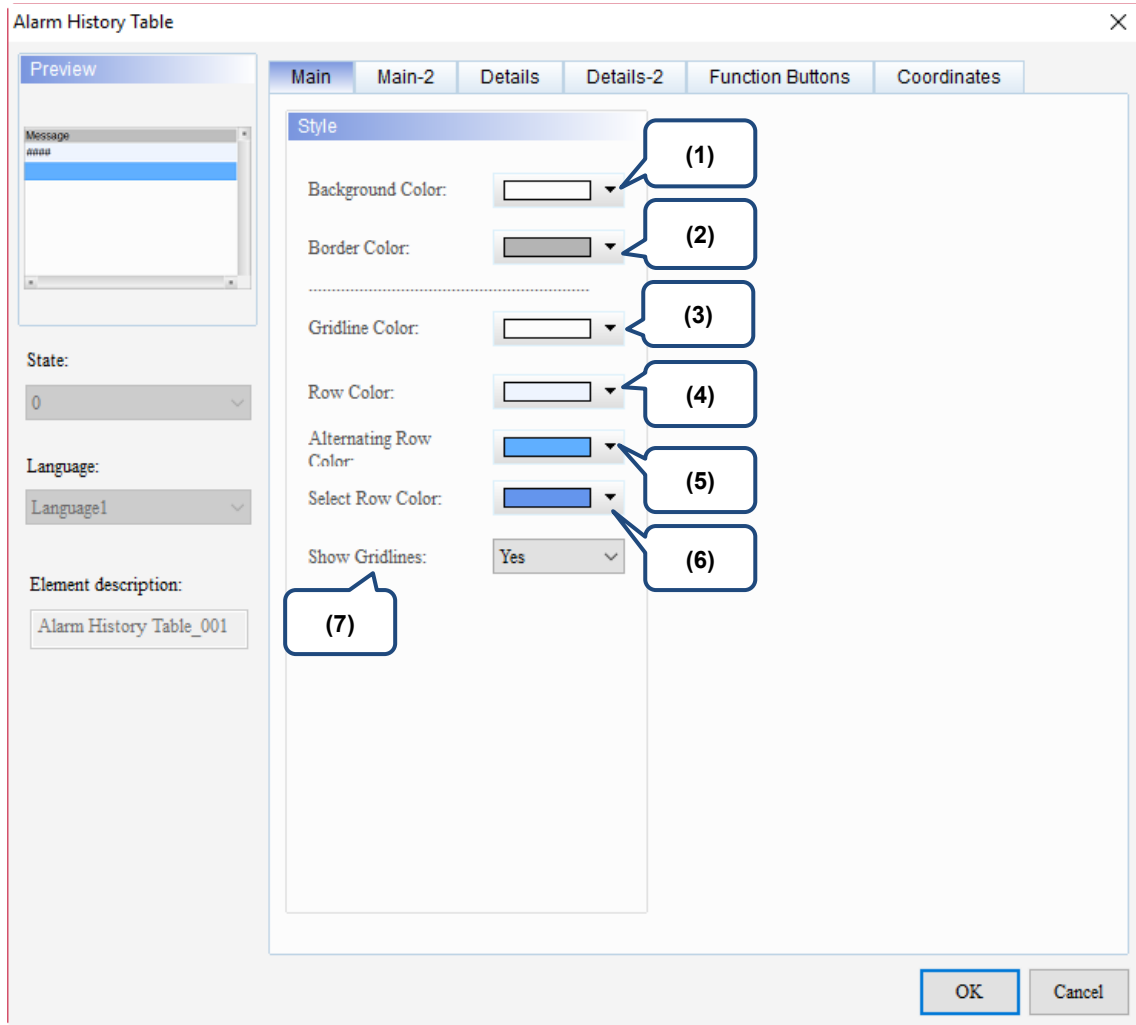


Figure 16.2.1 Properties of Alarm History Table

Table 16.2.1 Function page of Alarm History Table

Alarm History Table	
Function page	Description
Preview	The Alarm History Table elements do not support multiple status values and multi-language data display.
Main	Set Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, and Show Gridlines of the elements.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Details	Set Action Control Addr. of the event; check Use header controls to sort, set Sorting Control Addr. and sort in ascending or descending order; set Filter control address, Alarm counter display address, Alarm category start addr., and Alarm category end addr.
Details-2	Set the displaying alarm columns, width, description, and the order of the columns. Set Title Text Alignment, Title Background, Title Text Color, and format / color of the date / time.
Function Buttons	Set the Action Control function button by checking Trigger alarm screen and Ack alarm; set the displaying texts and default width / height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

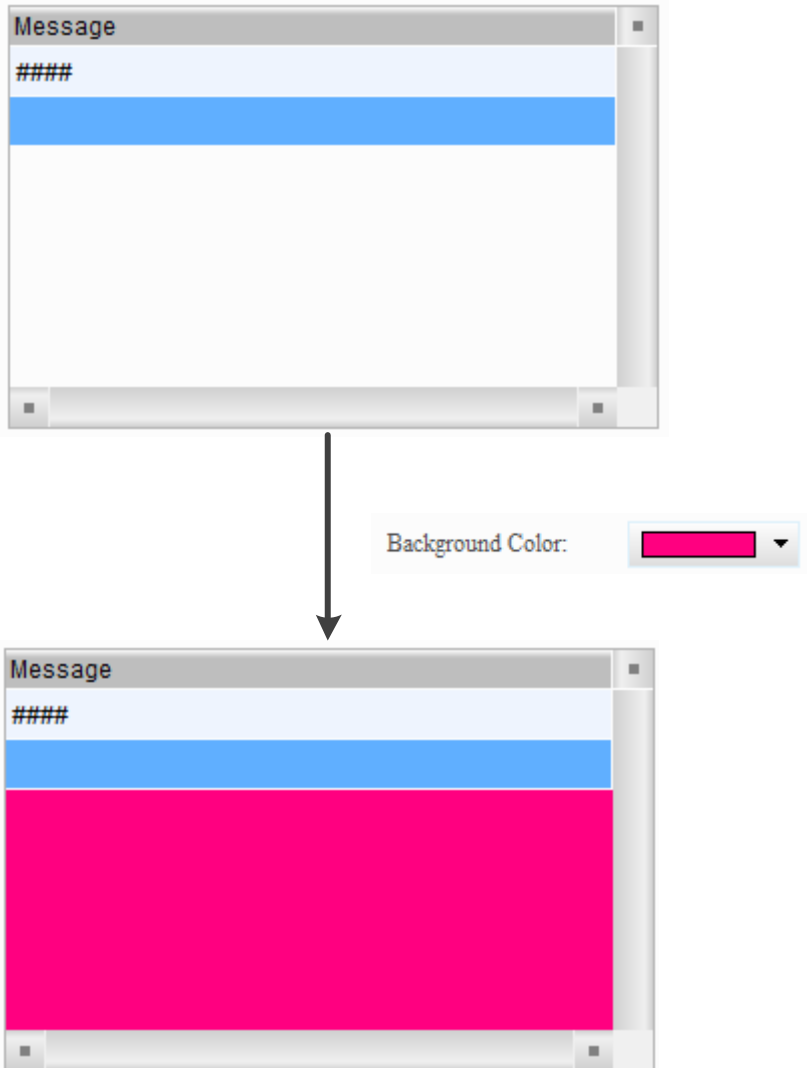
■ Main

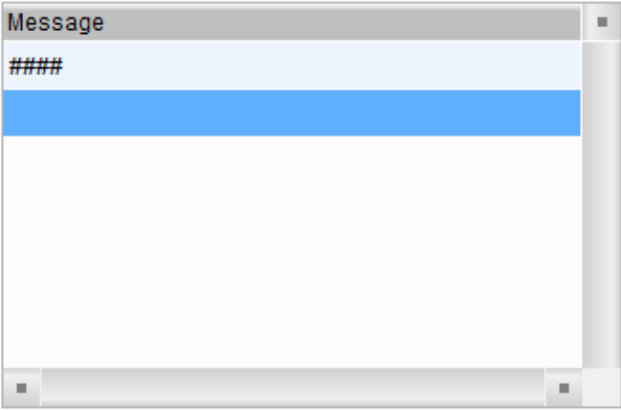

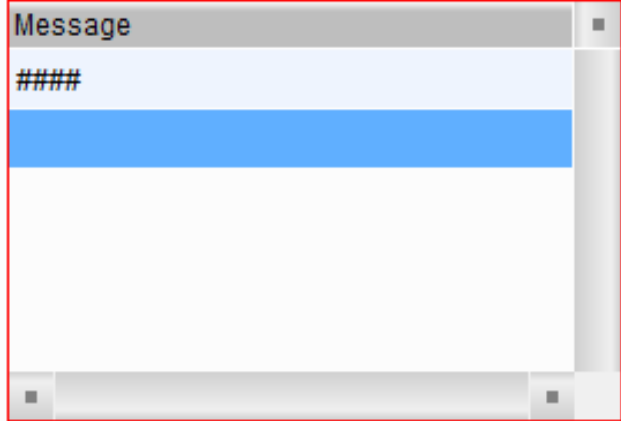


16

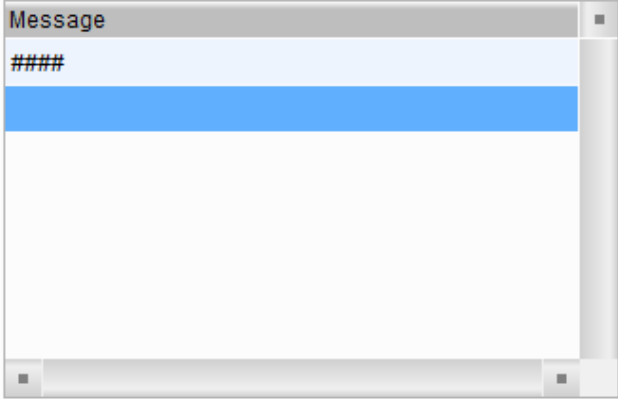

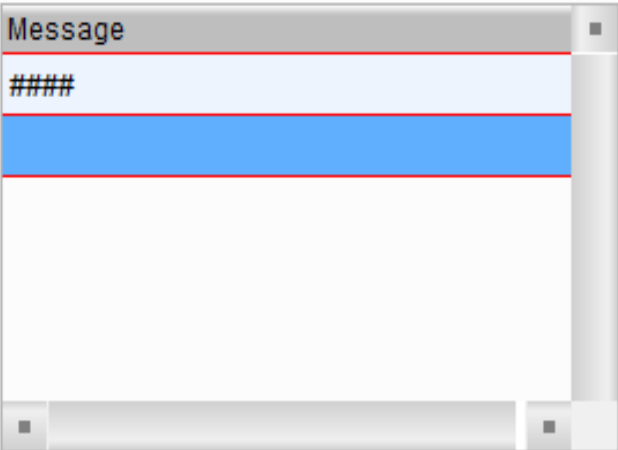
Figure 16.2.2 Main property page for the Alarm History Table element

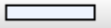
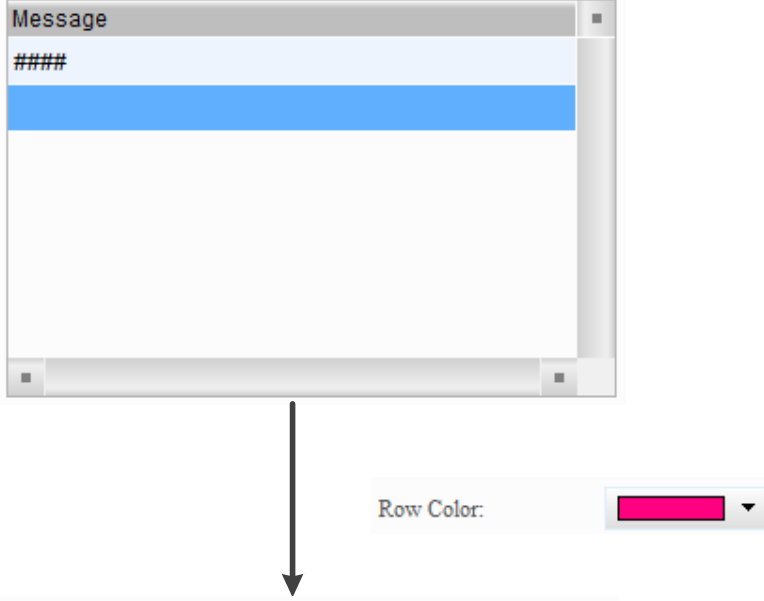
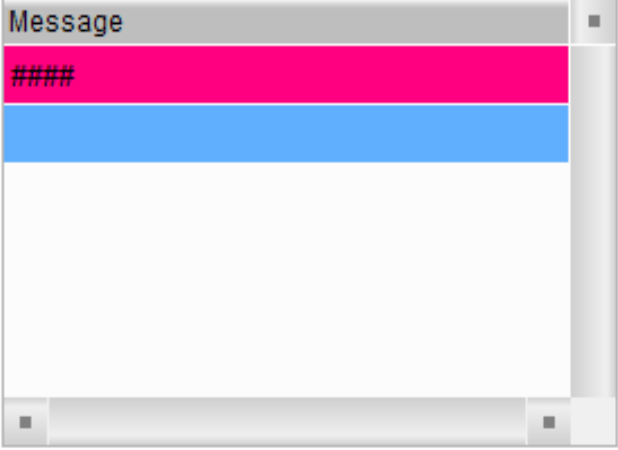
16

No.	Property	Function description
(1)	Background Color	<p>Set the background color of the element. The default is white.</p>  <p>The diagram illustrates the application of the 'Background Color' property. It shows a 'Message' window with a blue header bar and a white background. An arrow points to a 'Background Color' color picker set to pink. A second arrow points to the same 'Message' window, now with a pink background.</p>

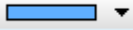
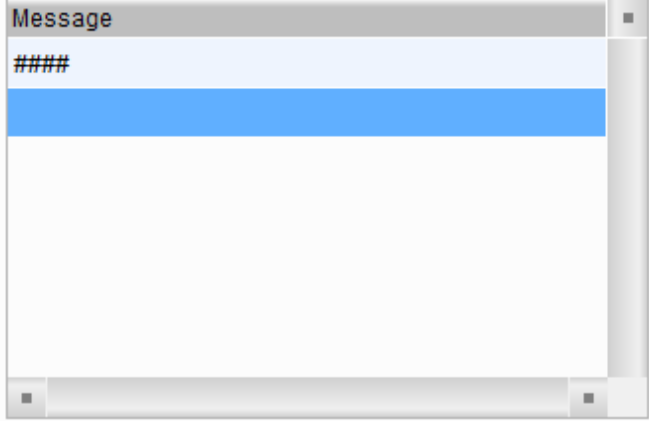


No.	Property	Function description
(2)	Border Color	<p>Set the Border Color of the element. The default is gray.</p>  <p>↓</p> <p>Border Color: </p> 

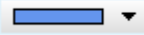
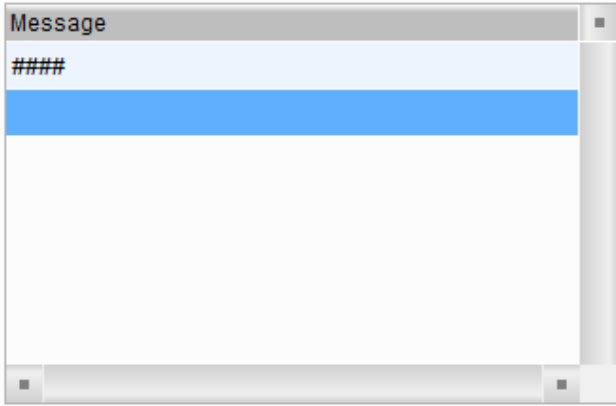
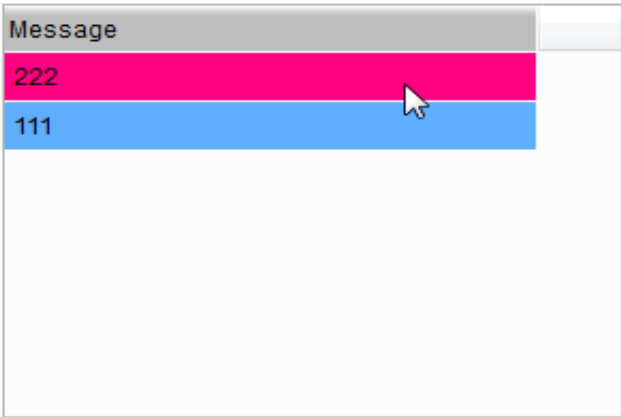
16

No.	Property	Function description
(3)	Gridline Color	<ul style="list-style-type: none"> ■ The Gridline Color setting is valid only when you select Yes for Show Gridlines. ■ Set the Gridline Color of the element. The default is white. <div style="text-align: center; margin: 10px 0;">  <p style="font-size: 2em; margin: 0;">↓</p>  </div> <div style="text-align: center; margin: 10px 0;">  </div>

No.	Property	Function description
(4)	Row Color	<p>Set the color for each row of the alarm. The default is .</p>  <p></p>

16

No.	Property	Function description
(5)	Alternating Row Color	<p>Set the color for the alternating row of the alarm. The default is .</p>  <p style="text-align: center;">↓</p> <p>Alternating Row Color </p> 

No.	Property	Function description
(6)	Select Row Color	<ul style="list-style-type: none"> ■ The row color when you select an alarm history data. ■ Set the color of the selected row. The default is .  <p style="text-align: center;">↓</p> 
(7)	Show Gridlines	<ul style="list-style-type: none"> ■ The default is Yes. ■ When you select No, the Gridline Color setting is invalid.

■ Main-2

16

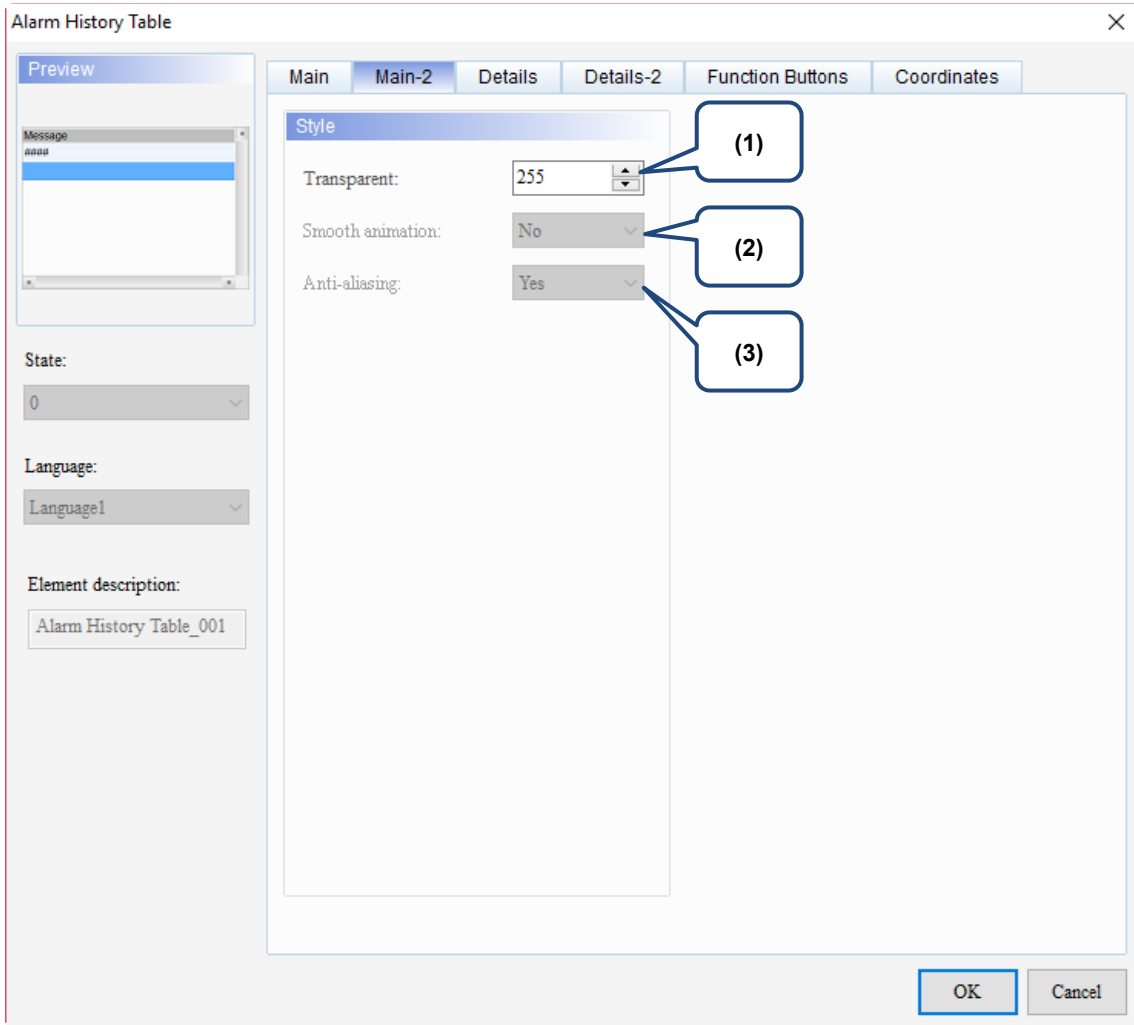
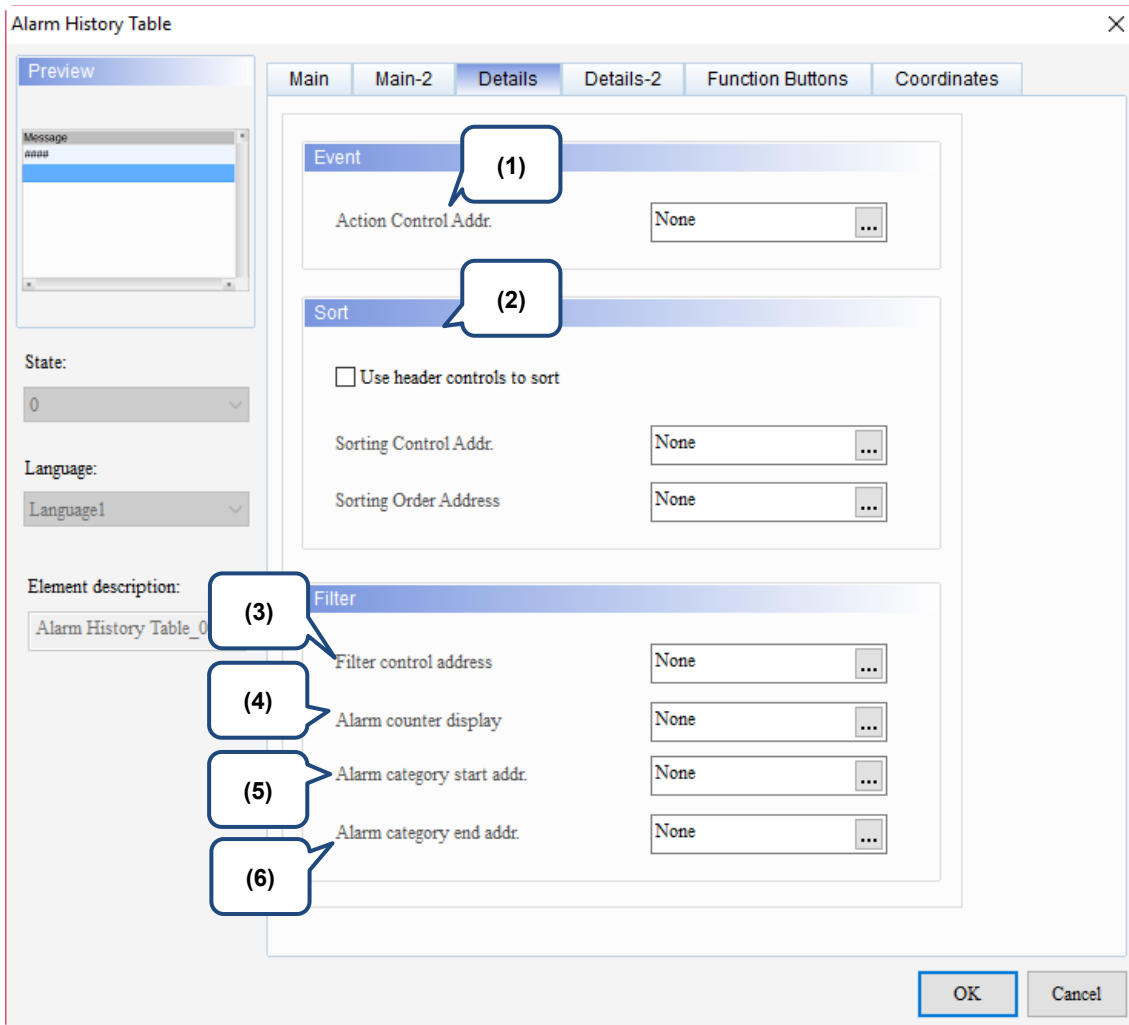


Figure 16.2.3 Main-2 property page for the Alarm History Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Details



16

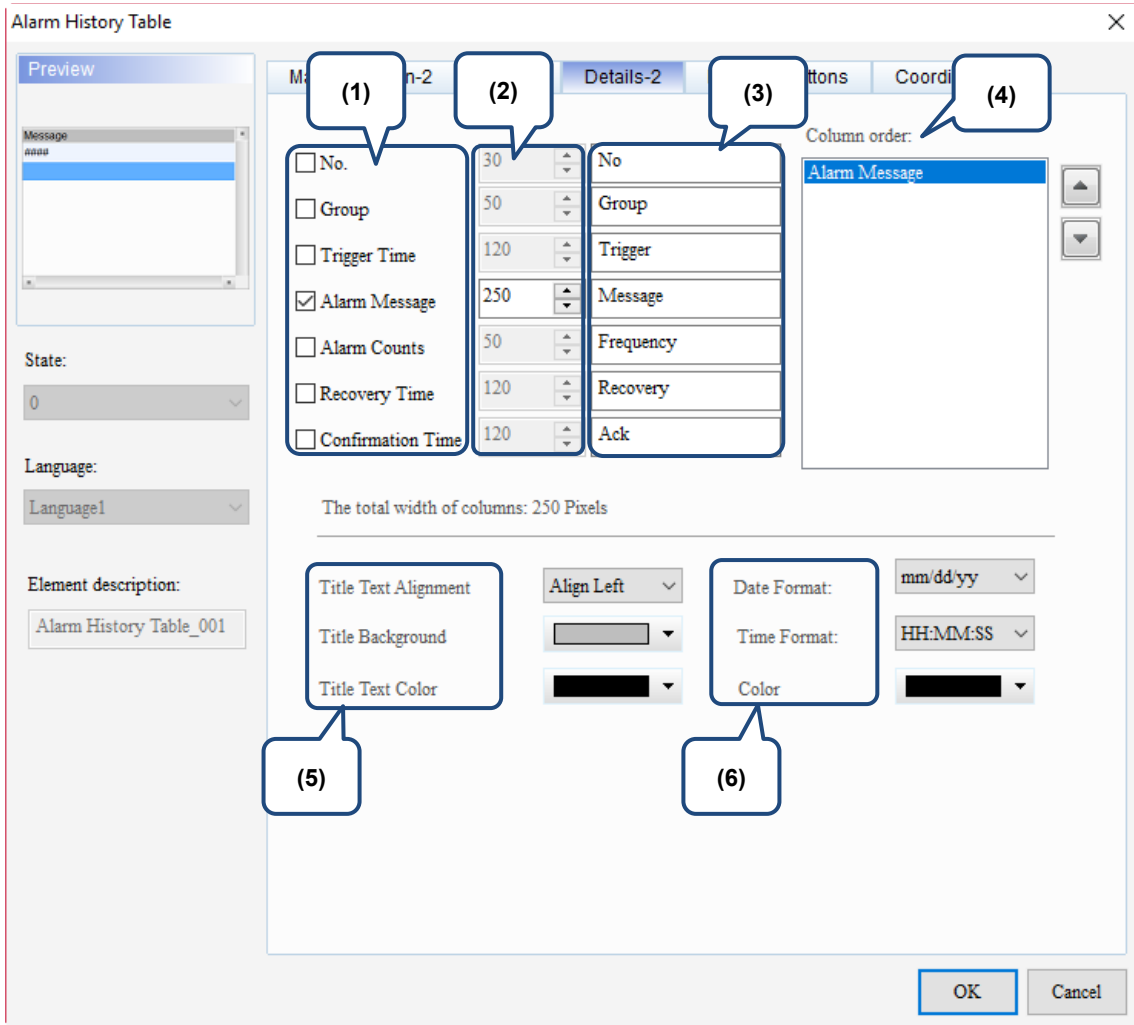
Figure 16.2.4 Details property page for the Alarm History Table element

No.	Property	Function description																																																
(1)	Action Control Addr.	<p>You can specify the alarms to change screens or acknowledge the alarms with Action Control Addr.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default; no actions.</td> </tr> <tr> <td>1</td> <td>Acknowledge the selected alarms in the Alarm History Table.</td> </tr> <tr> <td>2</td> <td>If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.</td> </tr> </tbody> </table>	Value	Description	0	Default; no actions.	1	Acknowledge the selected alarms in the Alarm History Table.	2	If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.																																								
Value	Description																																																	
0	Default; no actions.																																																	
1	Acknowledge the selected alarms in the Alarm History Table.																																																	
2	If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.																																																	
(2)	Sorting Control Addr.	<p>■ When you check [Use header controls to sort], you can press the Alarm History Table header to sort the alarms in ascending or descending order. Once you check this function, you cannot set Sorting Control Addr. and Sorting Order Address.</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Frequency</th> <th>Trigger</th> <th>Ack</th> <th>Recovery</th> </tr> </thead> <tbody> <tr> <td>0001</td> <td>alarm 1 30 度</td> <td>2</td> <td>14:36:55 02/19/2017</td> <td></td> <td></td> </tr> <tr> <td>0002</td> <td>alarm 2 10 斤</td> <td>2</td> <td>14:36:55 02/19/2017</td> <td></td> <td></td> </tr> <tr> <td>0003</td> <td>alarm 3 250 克</td> <td>2</td> <td>14:36:55 02/19/2017</td> <td></td> <td></td> </tr> <tr> <td>0004</td> <td>alarm 4 800 尺</td> <td>2</td> <td>14:36:56 02/19/2017</td> <td></td> <td></td> </tr> <tr> <td>0005</td> <td>alarm 5 3 时</td> <td>2</td> <td>14:36:56 02/19/2017</td> <td></td> <td></td> </tr> <tr> <td>0007</td> <td>alarm 7</td> <td>1</td> <td>14:36:49 02/19/2017</td> <td>14:37:01 02/19/2017</td> <td></td> </tr> <tr> <td>0010</td> <td>alarm 10</td> <td>1</td> <td>14:36:49 02/19/2017</td> <td>14:37:02 02/19/2017</td> <td></td> </tr> </tbody> </table>	No	Message	Frequency	Trigger	Ack	Recovery	0001	alarm 1 30 度	2	14:36:55 02/19/2017			0002	alarm 2 10 斤	2	14:36:55 02/19/2017			0003	alarm 3 250 克	2	14:36:55 02/19/2017			0004	alarm 4 800 尺	2	14:36:56 02/19/2017			0005	alarm 5 3 时	2	14:36:56 02/19/2017			0007	alarm 7	1	14:36:49 02/19/2017	14:37:01 02/19/2017		0010	alarm 10	1	14:36:49 02/19/2017	14:37:02 02/19/2017	
No	Message	Frequency	Trigger	Ack	Recovery																																													
0001	alarm 1 30 度	2	14:36:55 02/19/2017																																															
0002	alarm 2 10 斤	2	14:36:55 02/19/2017																																															
0003	alarm 3 250 克	2	14:36:55 02/19/2017																																															
0004	alarm 4 800 尺	2	14:36:56 02/19/2017																																															
0005	alarm 5 3 时	2	14:36:56 02/19/2017																																															
0007	alarm 7	1	14:36:49 02/19/2017	14:37:01 02/19/2017																																														
0010	alarm 10	1	14:36:49 02/19/2017	14:37:02 02/19/2017																																														

16



No.	Property	Function description																						
(2)	Sorting Control Addr.	<ul style="list-style-type: none"> [Use header controls to sort] does not support the sorting of the Message column. You can specify the item for sorting with Sorting Control Addr. <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default; no sorting.</td> </tr> <tr> <td>1</td> <td>Sort by Trigger Time.</td> </tr> <tr> <td>2</td> <td>Sort by Acknowledge Time.</td> </tr> <tr> <td>3</td> <td>Sort by Recovery Time.</td> </tr> <tr> <td>4</td> <td>Sort by the alarm count.</td> </tr> <tr> <td>5</td> <td>Sort by the alarm category.</td> </tr> <tr> <td>6</td> <td>Sort by the alarm No.</td> </tr> </tbody> </table> Sorting Order Address determines the ascending or descending order of the item specified in Sorting Control Addr. For example, if you set Sorting Control Addr. to 1 and Sorting Order Address to 0, the trigger time is sorted in ascending order. <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Sort in ascending order.</td> </tr> <tr> <td>1</td> <td>Sort in descending order.</td> </tr> </tbody> </table> 	Value	Description	0	Default; no sorting.	1	Sort by Trigger Time.	2	Sort by Acknowledge Time.	3	Sort by Recovery Time.	4	Sort by the alarm count.	5	Sort by the alarm category.	6	Sort by the alarm No.	Value	Description	0	Sort in ascending order.	1	Sort in descending order.
Value	Description																							
0	Default; no sorting.																							
1	Sort by Trigger Time.																							
2	Sort by Acknowledge Time.																							
3	Sort by Recovery Time.																							
4	Sort by the alarm count.																							
5	Sort by the alarm category.																							
6	Sort by the alarm No.																							
Value	Description																							
0	Sort in ascending order.																							
1	Sort in descending order.																							
(3)	Filter control address	<p>You can filter the specified item with Filter control address.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default; display all triggered alarms.</td> </tr> <tr> <td>1</td> <td>Hide the alarms with Recovery Time and Acknowledge Time.</td> </tr> <tr> <td>2</td> <td>Hide the alarms with Recovery Time.</td> </tr> <tr> <td>3</td> <td>Hide the alarms with Recovery Time or Acknowledge Time.</td> </tr> <tr> <td>4</td> <td>Hide the alarms with Acknowledge Time.</td> </tr> <tr> <td>5</td> <td>This setting must be used with Alarm counter display. When the displayed alarm count is smaller than the value set in Alarm counter display, the alarm is hidden.</td> </tr> <tr> <td>6</td> <td>This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.</td> </tr> </tbody> </table>	Value	Description	0	Default; display all triggered alarms.	1	Hide the alarms with Recovery Time and Acknowledge Time.	2	Hide the alarms with Recovery Time.	3	Hide the alarms with Recovery Time or Acknowledge Time.	4	Hide the alarms with Acknowledge Time.	5	This setting must be used with Alarm counter display. When the displayed alarm count is smaller than the value set in Alarm counter display, the alarm is hidden.	6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.						
Value	Description																							
0	Default; display all triggered alarms.																							
1	Hide the alarms with Recovery Time and Acknowledge Time.																							
2	Hide the alarms with Recovery Time.																							
3	Hide the alarms with Recovery Time or Acknowledge Time.																							
4	Hide the alarms with Acknowledge Time.																							
5	This setting must be used with Alarm counter display. When the displayed alarm count is smaller than the value set in Alarm counter display, the alarm is hidden.																							
6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.																							
(4)	Alarm counter display	<ul style="list-style-type: none"> This setting must be used with Filter control address. When Filter control address is set to 5, input the value of the alarm count. <table border="1"> <thead> <tr> <th>Example</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Triggered alarms with alarm counts of 1, 2, and 3 times</td> <td>If you input 1, the Alarm History Table displays the triggered alarms with 1 or more alarm counts; if you input 2, the Table displays the triggered alarms with 2 or more alarm counts; if you input 3, the Table displays the triggered alarms with 3 or more alarm counts.</td> </tr> </tbody> </table> 	Example	Description	Triggered alarms with alarm counts of 1, 2, and 3 times	If you input 1, the Alarm History Table displays the triggered alarms with 1 or more alarm counts; if you input 2, the Table displays the triggered alarms with 2 or more alarm counts; if you input 3, the Table displays the triggered alarms with 3 or more alarm counts.																		
Example	Description																							
Triggered alarms with alarm counts of 1, 2, and 3 times	If you input 1, the Alarm History Table displays the triggered alarms with 1 or more alarm counts; if you input 2, the Table displays the triggered alarms with 2 or more alarm counts; if you input 3, the Table displays the triggered alarms with 3 or more alarm counts.																							
(5)	Alarm group start addr.	<ul style="list-style-type: none"> This setting must be used with Filter control address. When Filter control address is set to 6, input the alarm category number. <table border="1"> <thead> <tr> <th>Example</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Alarms with alarm category number 1 and 5</td> <td>When you input 1 to Alarm group start addr. and 3 to Alarm group end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm group start addr. and 5 to Alarm group end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</td> </tr> </tbody> </table> 	Example	Description	Alarms with alarm category number 1 and 5	When you input 1 to Alarm group start addr. and 3 to Alarm group end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm group start addr. and 5 to Alarm group end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																		
Example	Description																							
Alarms with alarm category number 1 and 5	When you input 1 to Alarm group start addr. and 3 to Alarm group end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm group start addr. and 5 to Alarm group end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																							
(6)	Alarm group end addr.																							

■ Details-2



16

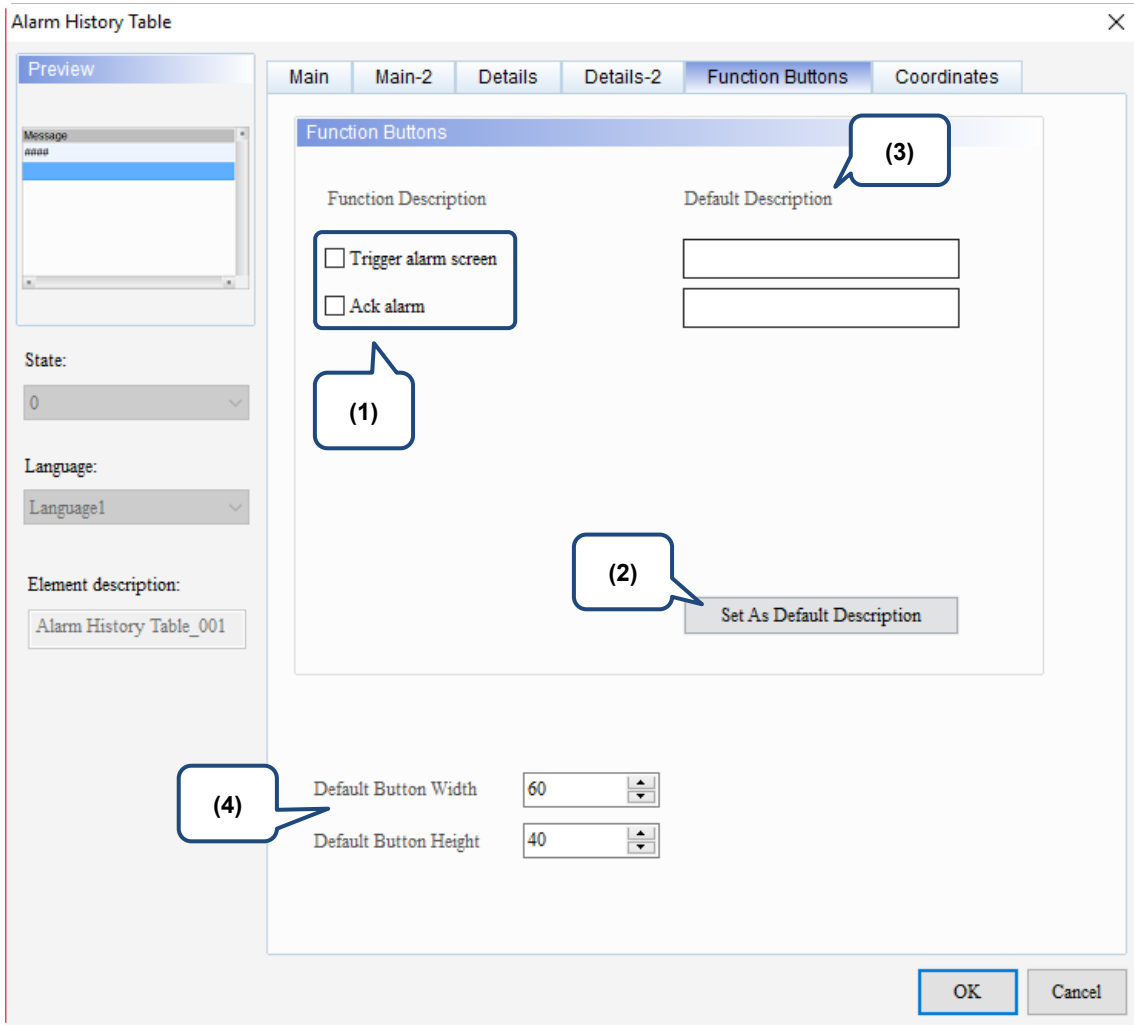
Figure 16.2.5 Details-2 property page for the Alarm History Table element

No.	Property	Function description
(1)	Column display	Check the columns you want to display in the element.
(2)	Column width	You can adjust the width for each column.
(3)	Column title	You can define the titles for each column.
(4)	Column order	After checking the columns you want to display, you can use  and  to adjust the column displaying order.

16

No.	Property	Function description						
(5)	Title	<p>Set the column title to align left, center, or right.</p> <table border="1"> <tr> <td>Align Left</td> <td> </td> </tr> <tr> <td>Center</td> <td> </td> </tr> <tr> <td>Align Right</td> <td> </td> </tr> </table>	Align Left		Center		Align Right	
		Align Left						
		Center						
	Align Right							
	Title Background	<p>Set the background color of the column title.</p> <table border="1"> <tr> <td>Default</td> <td> </td> </tr> <tr> <td>After change</td> <td> </td> </tr> </table>	Default		After change			
		Default						
After change								
Title Text Color	<p>Set the text color of the column title.</p> <table border="1"> <tr> <td>Default</td> <td> </td> </tr> <tr> <td>After change</td> <td> </td> </tr> </table>	Default		After change				
Default								
After change								
(6)	Date and time	<p>Select the display format for the date from the following options.</p> <table border="1"> <tr> <td>Date Format:</td> <td> </td> </tr> <tr> <td>Time Format:</td> <td> </td> </tr> <tr> <td>Color</td> <td></td> </tr> </table>	Date Format:		Time Format:		Color	
		Date Format:						
	Time Format:							
Color								
Time Format	<p>Select the display format for the time from the following options.</p> <table border="1"> <tr> <td>Date Format:</td> <td> </td> </tr> <tr> <td>Time Format:</td> <td> </td> </tr> <tr> <td>Color</td> <td></td> </tr> </table>	Date Format:		Time Format:		Color		
Date Format:								
Time Format:								
Color								
Color	<p>Set the displaying color of the date and time.</p> <table border="1"> <tr> <td>Default</td> <td> </td> </tr> <tr> <td>After change</td> <td> </td> </tr> </table>	Default		After change				
Default								
After change								

■ Function Buttons



16

Figure 16.2.6 Function Buttons property page for the Alarm History Table element

No.	Property	Function description												
(1)	Function Buttons	<ul style="list-style-type: none"> Two button options are provided for the Action Control function button: Trigger alarm screen and Ack alarm. By triggering with the function buttons, it is easier to edit the screen. You can use the functions provided by Action Control Addr. without setting the address and value. <table border="1"> <thead> <tr> <th>Value</th> <th>Function Buttons</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default; no actions.</td> <td></td> </tr> <tr> <td>1</td> <td>Ack alarm</td> <td>Acknowledge the selected alarms in the Alarm History Table.</td> </tr> <tr> <td>2</td> <td>Trigger alarm screen</td> <td>If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.</td> </tr> </tbody> </table>	Value	Function Buttons	Description	0	Default; no actions.		1	Ack alarm	Acknowledge the selected alarms in the Alarm History Table.	2	Trigger alarm screen	If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.
Value	Function Buttons	Description												
0	Default; no actions.													
1	Ack alarm	Acknowledge the selected alarms in the Alarm History Table.												
2	Trigger alarm screen	If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.												
(2)	Set As Default Description	Press this button to insert the default texts to the spaces above.												
(3)	Default Description	Press Set As Default Description to insert the default texts to the spaces. You can also enter user-defined texts.												
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.												

Coordinates

16

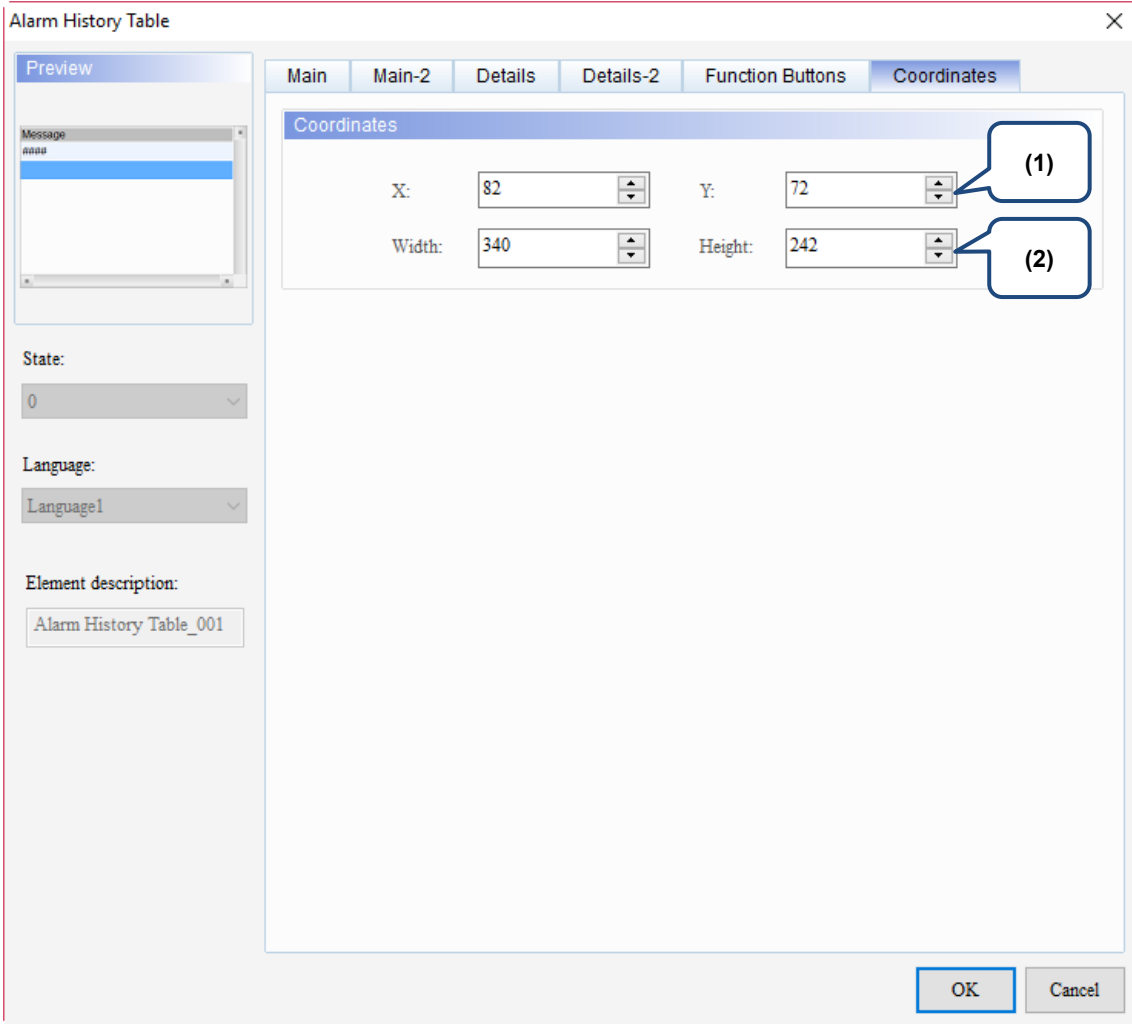


Figure 16.2.7 Coordinates property page for the Alarm History Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

16.3 Active Alarm List

The Active Alarm List element displays the information of the current alarms. Please refer to Table 16.3.1 for the Active Alarm List example.

Table 16.3.1 Active Alarm List example

Active Alarm List

This example uses the alarm parameters in Table 16.1.1 Alarm Settings example.

<
Detail
Properties
>

Address

Address: None

Detail

Scan Time (seconds): **0.5**
 Max Records: **9999**
 Non-volatile Data Storage: **HMI**
 Export CSV File: No
 Exit Screensaver when alarm occurs: Yes
 Display alarm screen: Manual

Alarm Moving Sign

Enable: No
 Position: Top
 Direction: Left
 Points per time: 1
 Interval (ms): 100
 Background color: fcfcf
 Translucent: 255

No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen
1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	\$500	RGB(0, 0, 0)	2 - Screen_2
2*	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	\$501	RGB(0, 0, 0)	None
3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	\$502	RGB(0, 0, 0)	None
4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	\$503	RGB(0, 0, 0)	None
5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	\$504	RGB(0, 0, 0)	None
6*	Alarm 6	5	Word	\$100	\$100 = \$200	None	RGB(0, 0, 0)	2 - Screen_2
7*	Alarm 7	5	Word	\$110	\$110 < \$210	None	RGB(0, 0, 0)	None
8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300	None	RGB(0, 0, 0)	None
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	None	RGB(0, 0, 0)	None
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100	None	RGB(0, 0, 0)	None

Action control
Sorting control
Filtering control
Counter
Category start
Category end

1234

Trigger alarm screen

1234

1234

1234

1234

1234

Message
Frequency
No
Trigger
Recovery

####
#
1
hh:mm:ss mm/dd/yy
hh:mm:ss mm/dd/yy
hh:mm:ss mm/

Bit trigger

Alarm 1

Alarm 2

Alarm 3

Alarm 4

Alarm 5

Monitor address

1234

1234

1234

1234

1234

Word control

■ Condition 1

=

■ Condition 2

<

■ Condition 3

>=

>=

■ Condition 4

>=

>=

■ Condition 5

>=

16

Create Active Alarm List element

Active Alarm List

Step 1: create an Active Alarm List element.

No	Trigger	Message
1	hh:mm:ss mm/dd/yy	####

Step 2: check No. and Trigger Time. Alarm Message is checked by default. Then, the Active Alarm List will display the number of the alarm, the time the alarm is triggered, and the alarm message.

Active Alarm List

Preview

Main Main-2 Details Details-2 Coordinates

No. 30 No

Group 50 Group

Trigger Time 120 Trigger

Alarm Message 250 Message

Column order:
Alarm Message
No.
Trigger Time

The total width of columns: 400 Pixels

Title Text Alignment: Align Left Date Format: mm/dd/yy

Title Background: [Color Picker] Time Format: HH:MM:SS

Title Text Color: [Color Picker] Color: [Color Picker]

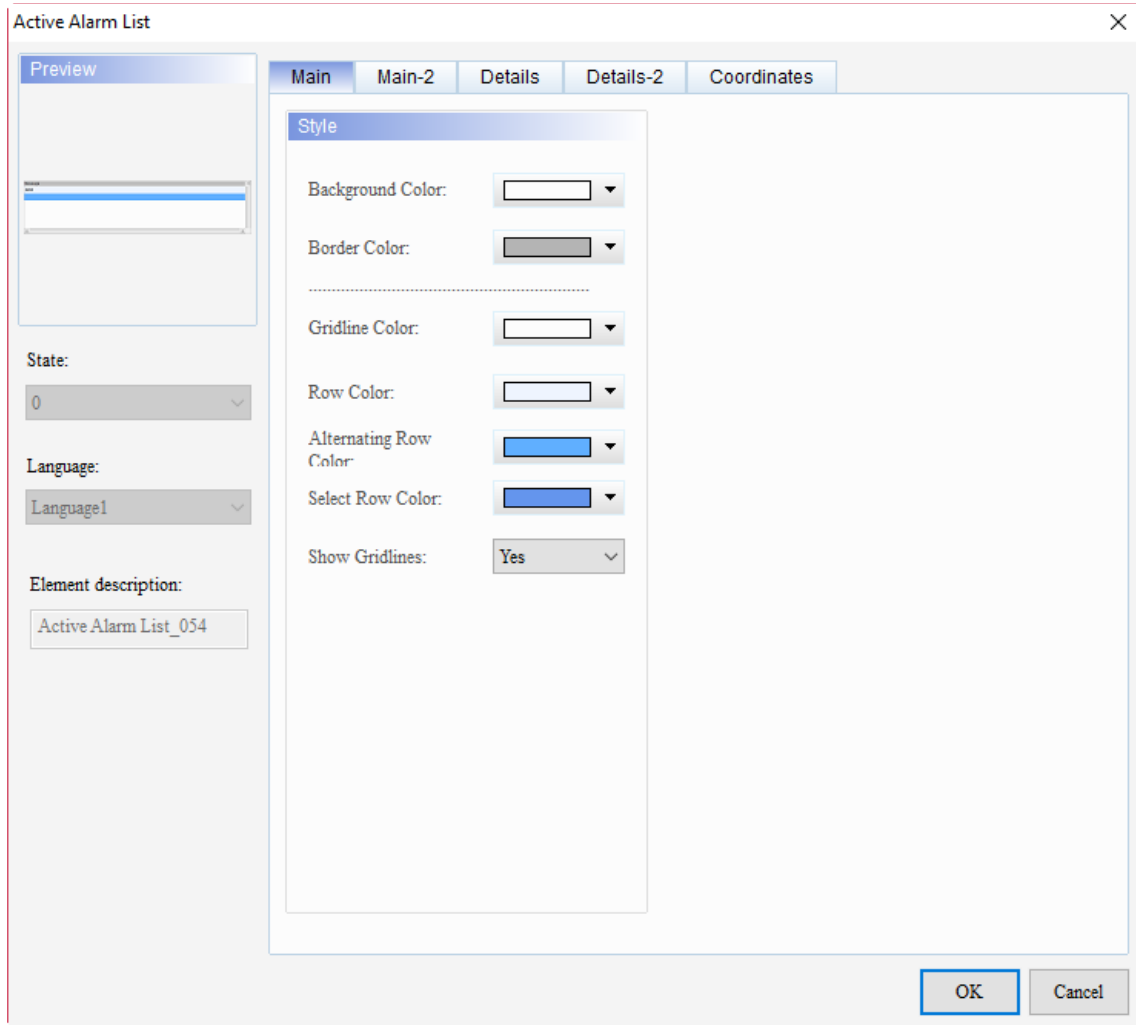
After creating the Active Alarm List element, please compile and download the element to the HMI. When the conditions are met for Alarms 6 - 10, the Active Alarm List shows the current alarm time and date, alarm No., and alarm message. No items are displayed on the Active Alarm List when the alarms are cleared.

Execution results

No	Trigger	Message
0006	17:36:08 03/06/2017	alarm 6
0007	17:36:08 03/06/2017	alarm 7
0008	17:36:08 03/06/2017	alarm 8
0009	17:36:08 03/06/2017	alarm 9
0010	17:36:08 03/06/2017	alarm 10

No	Trigger	Message

When you double-click the Active Alarm List, the property page is shown as follows.



16

Figure 16.3.1 Properties of Active Alarm List

Table 16.3.2 Function page of Active Alarm List

Active Alarm List	
Function page	Description
Preview	The Active Alarm List elements do not support multiple status values and multi-language data display.
Main	Set Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, and Show Gridlines of the elements.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Details	Set Filter control address, Alarm category start addr., and Alarm category end addr.
Details-2	Set the displaying alarm columns, width, description, and the order of the columns. Set Title Text Alignment, Title Background, Title Text Color, and format / color of the date / time.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

16

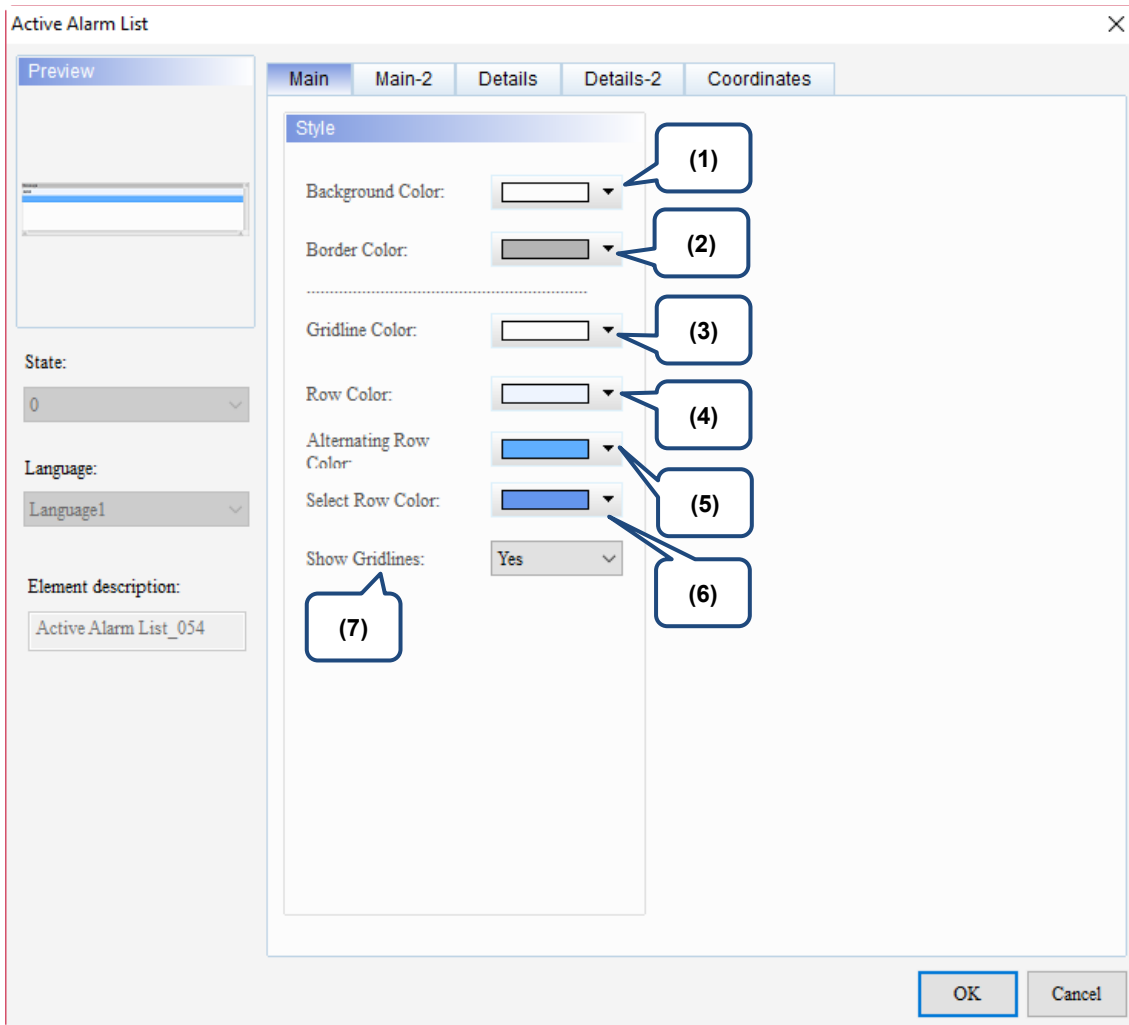
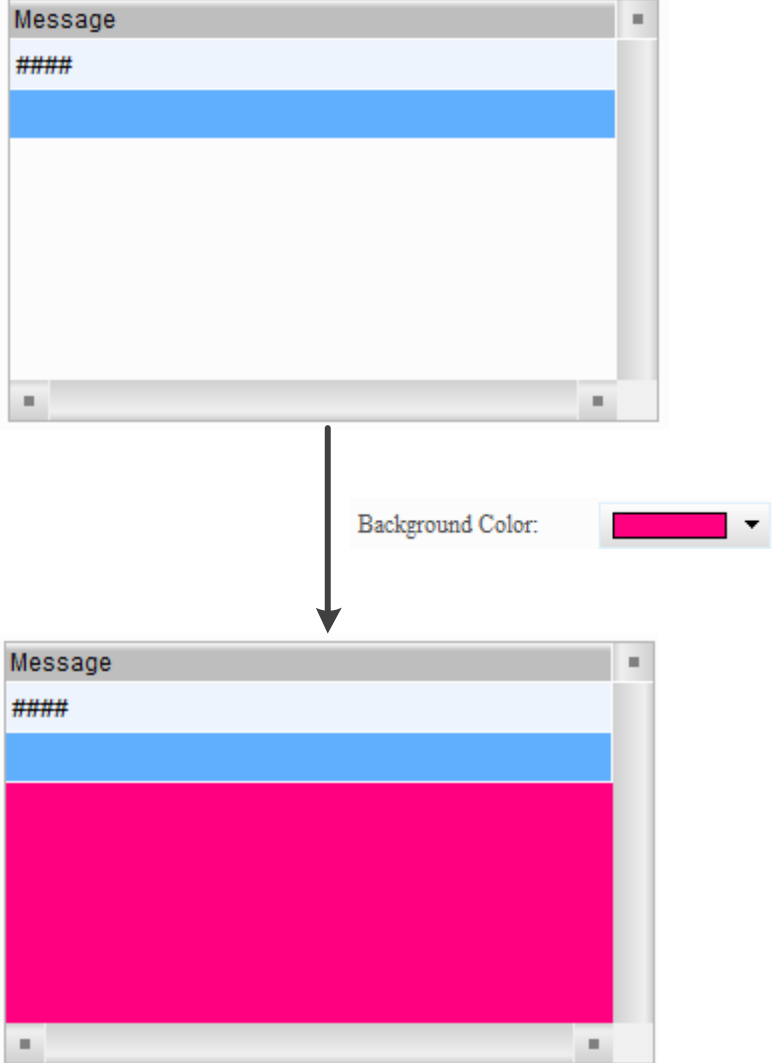
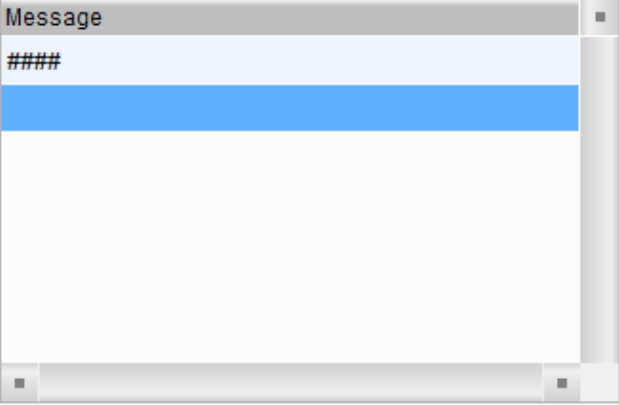

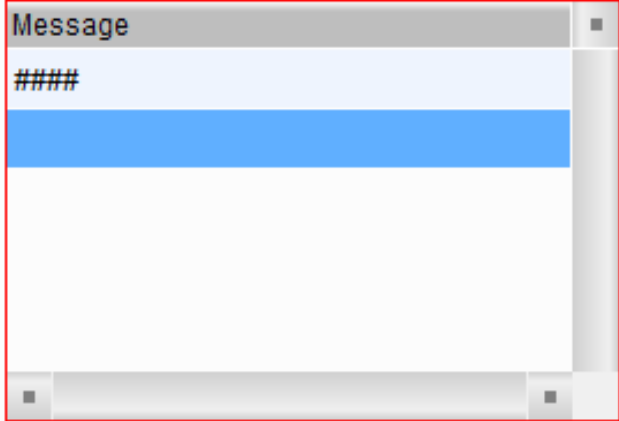
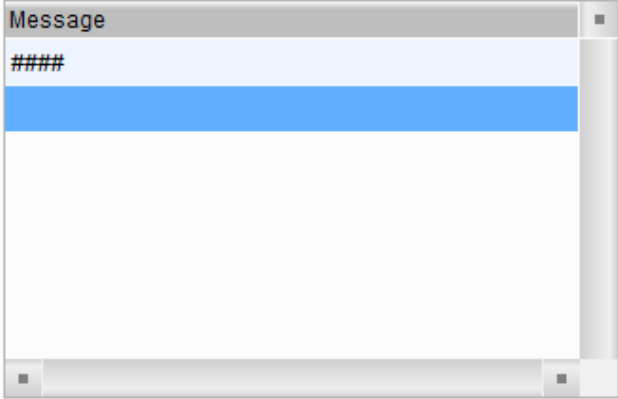
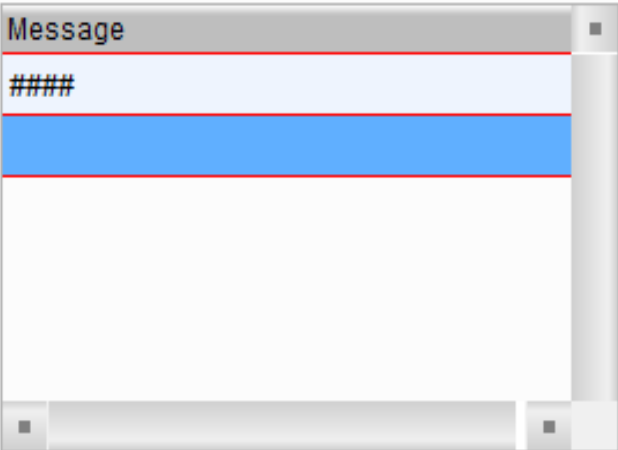


Figure 16.3.2 Main property page for the Active Alarm List element

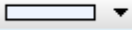
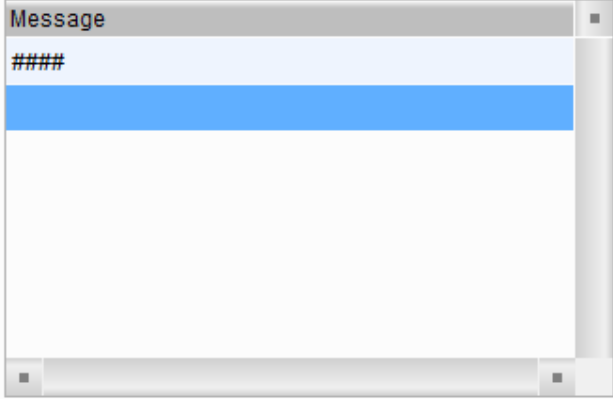

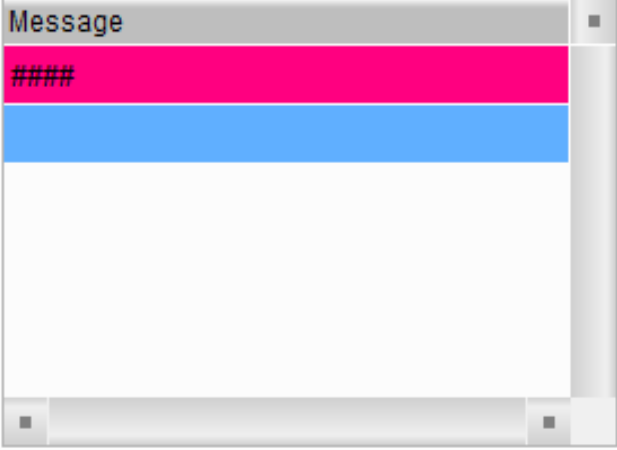
No.	Property	Function description
(1)	Background Color	<p>Set the background color of the element. The default is white.</p>  <p>The diagram illustrates the application of the 'Background Color' property. It shows a 'Message' window with a white background and a blue bar. An arrow points to a 'Background Color' color picker showing a red color. The bottom part shows the same 'Message' window with the background color changed to red.</p>


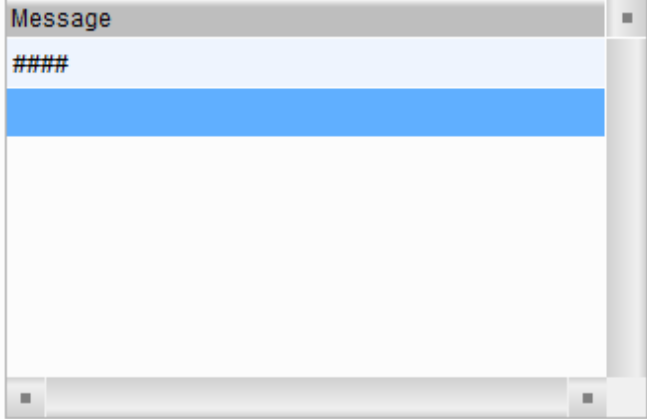

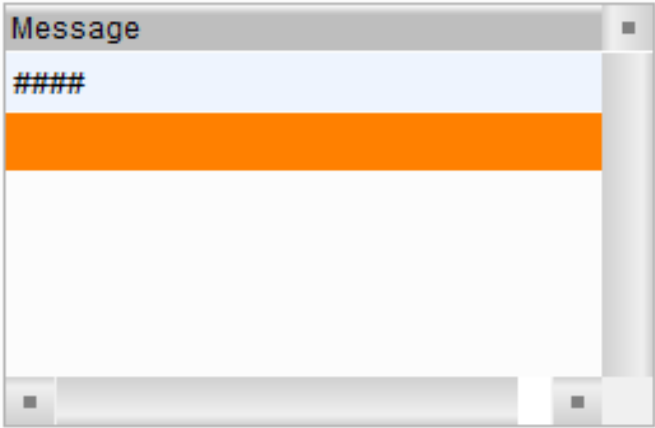
16

No.	Property	Function description
(2)	Border Color	<p>Set the Border Color of the element. The default is gray.</p>  <p>↓</p> <p>Border Color: </p> 

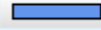
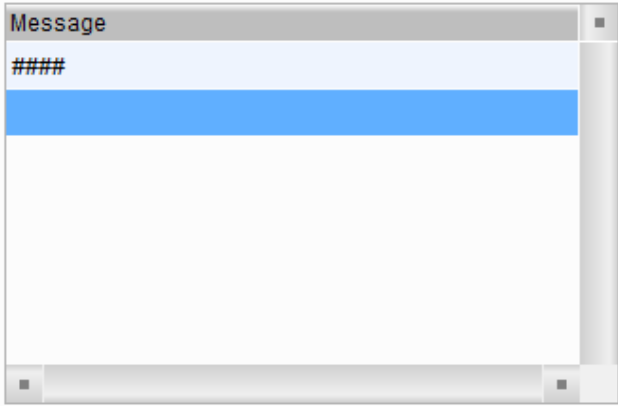
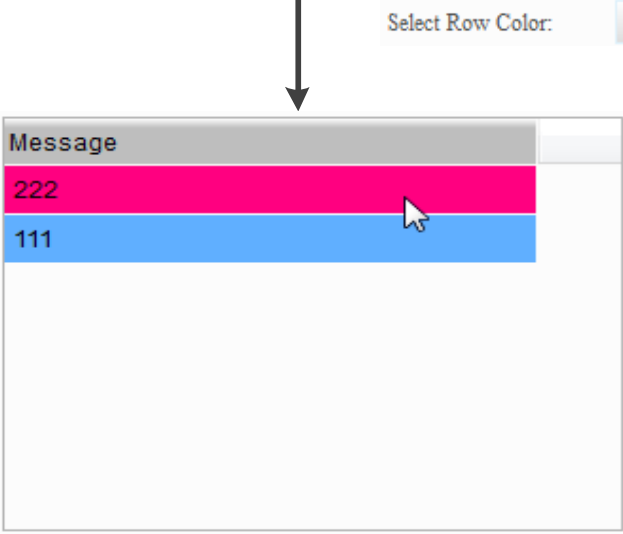
No.	Property	Function description
(3)	Gridline Color	<ul style="list-style-type: none"> ■ The Gridline Color setting is valid only when you select Yes for Show Gridlines. ■ Set the Gridline Color of the element. The default is white. <div style="text-align: center; margin: 10px 0;">  <p style="font-size: 2em; margin: 0;">↓</p>  </div>
		<p>Gridline Color: </p>

16

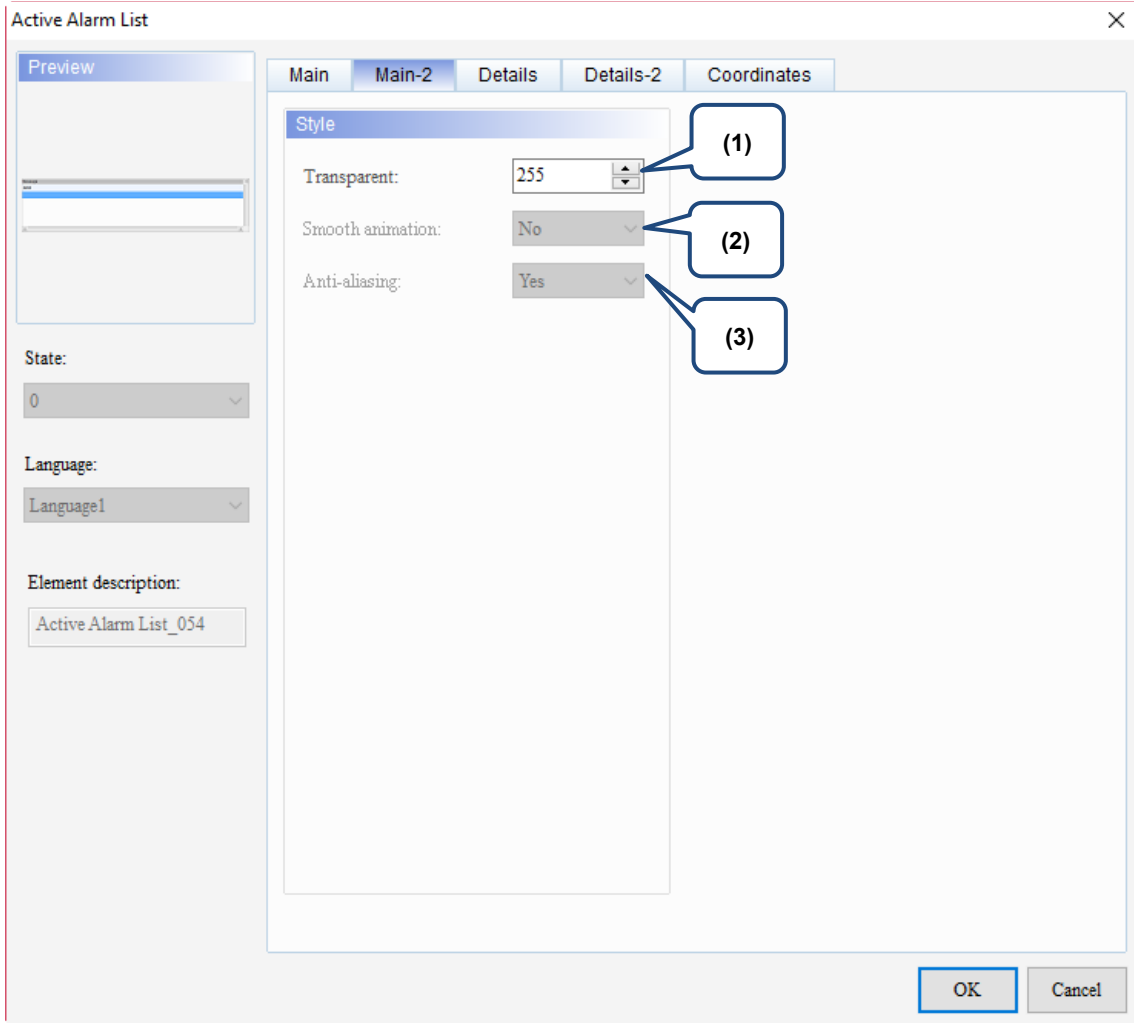
No.	Property	Function description
(4)	Row Color	<p>Set the color for each row of the alarm. The default is .</p>  <p style="text-align: center;">↓</p> <p style="text-align: center;">Row Color: </p> 

No.	Property	Function description
(5)	Alternating Row Color	<p>Set the color for the alternating row of the alarm. The default is .</p>  <p>↓</p>  <p>↓</p> 

16

No.	Property	Function description
(6)	Select Row Color	<ul style="list-style-type: none"> ■ The row color when you select an alarm history data. ■ Set the color of the selected row. The default is   <p style="text-align: center;">↓</p> 
(7)	Show Gridlines	<ul style="list-style-type: none"> ■ The default is Yes. ■ When you select No, the Gridline Color setting is invalid.

■ Main-2



16

Figure 16.3.3 Main-2 property page for the Active Alarm List element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

16

■ Details

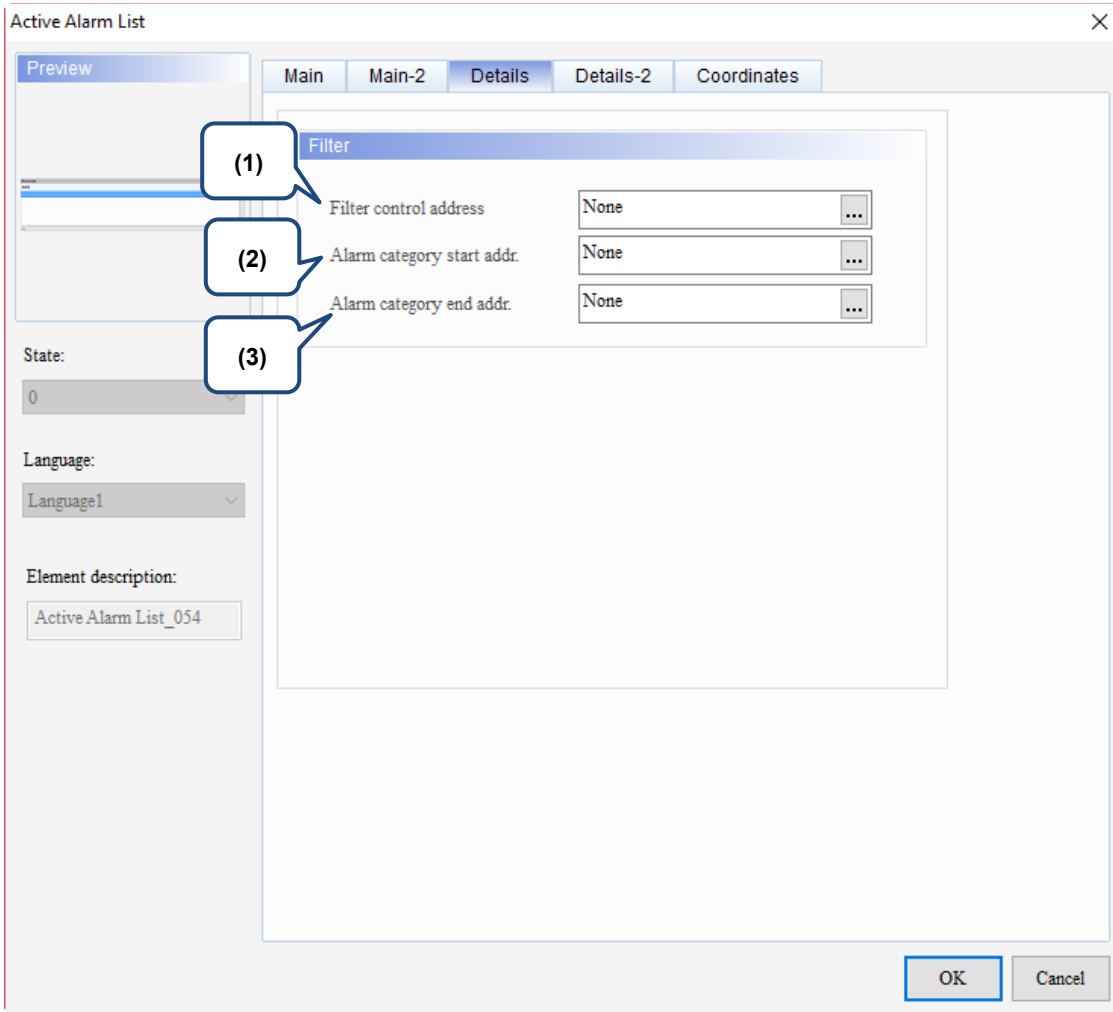
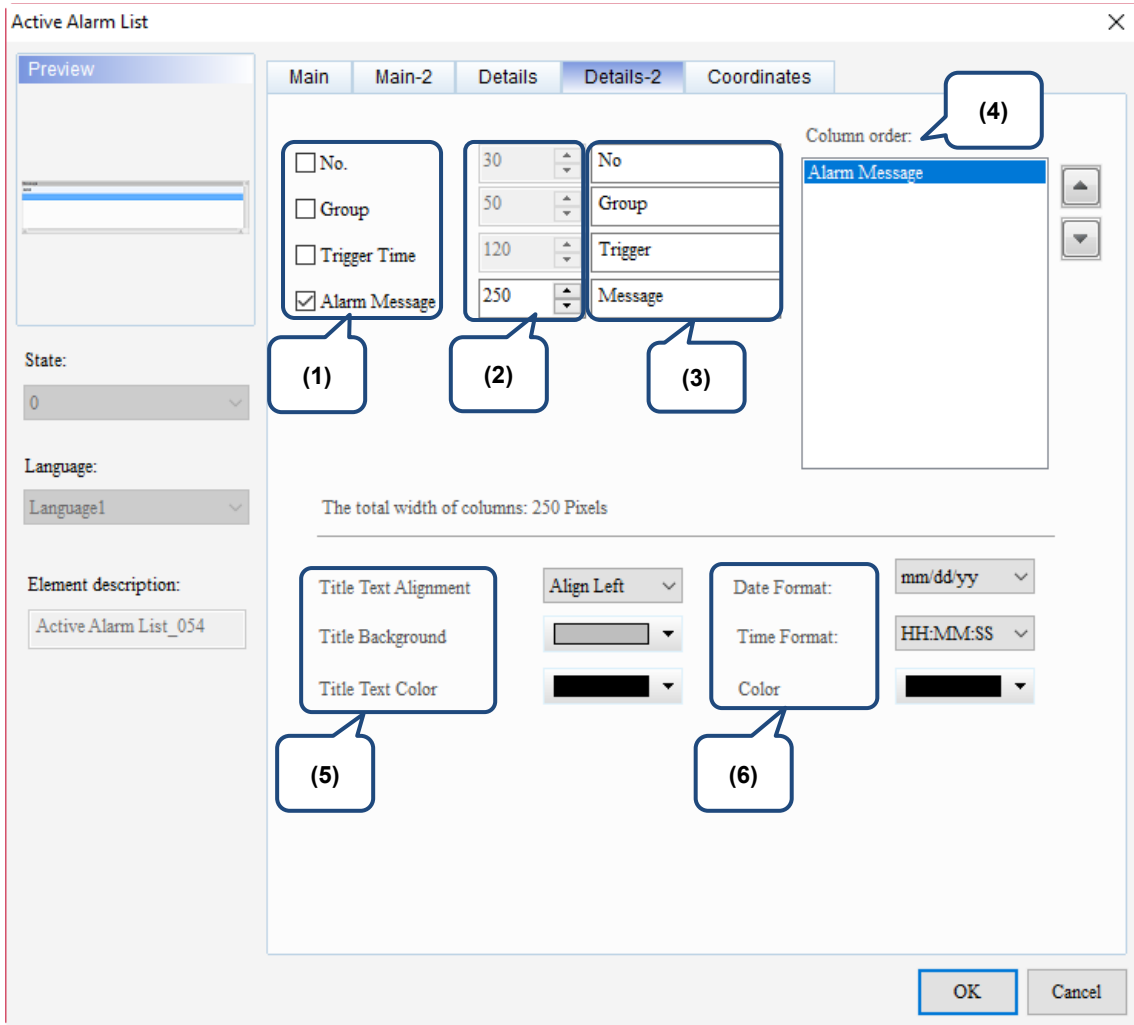


Figure 16.3.4 Details property page for the Active Alarm List element



No.	Property	Function description																
(1)	Filter control address	<ul style="list-style-type: none"> [Use header controls to sort] does not support the sorting of the Message column. You can specify the item for sorting with the Filter control address. <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default; no sorting.</td> </tr> <tr> <td>1</td> <td>Sort by Trigger Time.</td> </tr> <tr> <td>2</td> <td>Sort by Acknowledge Time.</td> </tr> <tr> <td>3</td> <td>Sort by Recovery Time.</td> </tr> <tr> <td>4</td> <td>Sort by the alarm count.</td> </tr> <tr> <td>5</td> <td>Sort by the alarm category.</td> </tr> <tr> <td>6</td> <td>Sort by the alarm No.</td> </tr> </tbody> </table>	Value	Description	0	Default; no sorting.	1	Sort by Trigger Time.	2	Sort by Acknowledge Time.	3	Sort by Recovery Time.	4	Sort by the alarm count.	5	Sort by the alarm category.	6	Sort by the alarm No.
Value	Description																	
0	Default; no sorting.																	
1	Sort by Trigger Time.																	
2	Sort by Acknowledge Time.																	
3	Sort by Recovery Time.																	
4	Sort by the alarm count.																	
5	Sort by the alarm category.																	
6	Sort by the alarm No.																	
(2)	Alarm category start addr.	<ul style="list-style-type: none"> This setting must be used with Filter control address. When Filter control address is set to 6, input the alarm category number. 																
(3)	Alarm category end addr.	<table border="1"> <thead> <tr> <th>Example</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Alarms with alarm category number 1 and 5</td> <td>When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</td> </tr> </tbody> </table>	Example	Description	Alarms with alarm category number 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.												
Example	Description																	
Alarms with alarm category number 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																	

■ Details-2

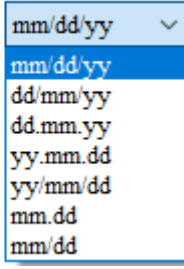
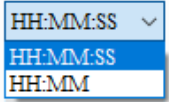


16

Figure 16.3.5 Details-2 property page for the Active Alarm List element

No.	Property	Function description
(1)	Column display	Check the columns you want to display in the element.
(2)	Column width	You can adjust the width for each column.
(3)	Column title	You can define the titles for each column.
(4)	Column order	After checking the columns you want to display, you can use  and  to adjust the column displaying order.

16

No.	Property	Function description							
(5)	Title	<p>Set the column title to align left, center, or right.</p> <table border="1"> <tr> <td rowspan="2">Align Left</td> <td>No</td> <td>Message</td> <td>Trigger</td> </tr> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </table>	Align Left	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy
		Align Left		No	Message	Trigger			
			1	####	hh:mm:ss mm/dd/yy				
	<table border="1"> <tr> <td rowspan="2">Center</td> <td>No</td> <td>Message</td> <td>Trigger</td> </tr> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </table>	Center	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy	
	Center		No	Message	Trigger				
		1	####	hh:mm:ss mm/dd/yy					
<table border="1"> <tr> <td rowspan="2">Align Right</td> <td>No</td> <td>Message</td> <td>Trigger</td> </tr> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </table>	Align Right	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy		
Align Right		No	Message	Trigger					
	1	####	hh:mm:ss mm/dd/yy						
Title Background	<p>Set the background color of the column title.</p> <table border="1"> <tr> <td rowspan="2">Default</td> <td>No</td> <td>Message</td> <td>Trigger</td> </tr> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </table>	Default	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy	
	Default		No	Message	Trigger				
1		####	hh:mm:ss mm/dd/yy						
<table border="1"> <tr> <td rowspan="2">After change</td> <td>No</td> <td>Message</td> <td>Trigger</td> </tr> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </table>	After change	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy		
After change		No	Message	Trigger					
	1	####	hh:mm:ss mm/dd/yy						
Title Text Color	<p>Set the text color of the column title.</p> <table border="1"> <tr> <td rowspan="2">Default</td> <td>No</td> <td>Message</td> <td>Trigger</td> </tr> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </table>	Default	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy	
	Default		No	Message	Trigger				
1		####	hh:mm:ss mm/dd/yy						
<table border="1"> <tr> <td rowspan="2">After change</td> <td>No</td> <td>Message</td> <td>Trigger</td> </tr> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </table>	After change	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy		
After change		No	Message	Trigger					
	1	####	hh:mm:ss mm/dd/yy						
(6)	Date and time	<p>Select the display format for the date from the following options.</p> <p>Date Format: <input type="text" value="mm/dd/yy"/></p> <p>Time Format: <input type="text" value="dd/mm/yy"/></p> <p>Color: <input type="text" value=""/></p> 							
		<p>Select the display format for the time from the following options.</p> <p>Date Format: <input type="text" value="mm/dd/yy"/></p> <p>Time Format: <input type="text" value="HH:MM:SS"/></p> <p>Color: <input type="text" value=""/></p> 							

No.	Property	Function description							
(6)	Date and time	Color	Set the displaying color of the date and time.						
			<table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy
No	Message	Trigger							
1	####	hh:mm:ss mm/dd/yy							
			<table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy
No	Message	Trigger							
1	####	hh:mm:ss mm/dd/yy							

Coordinates

16

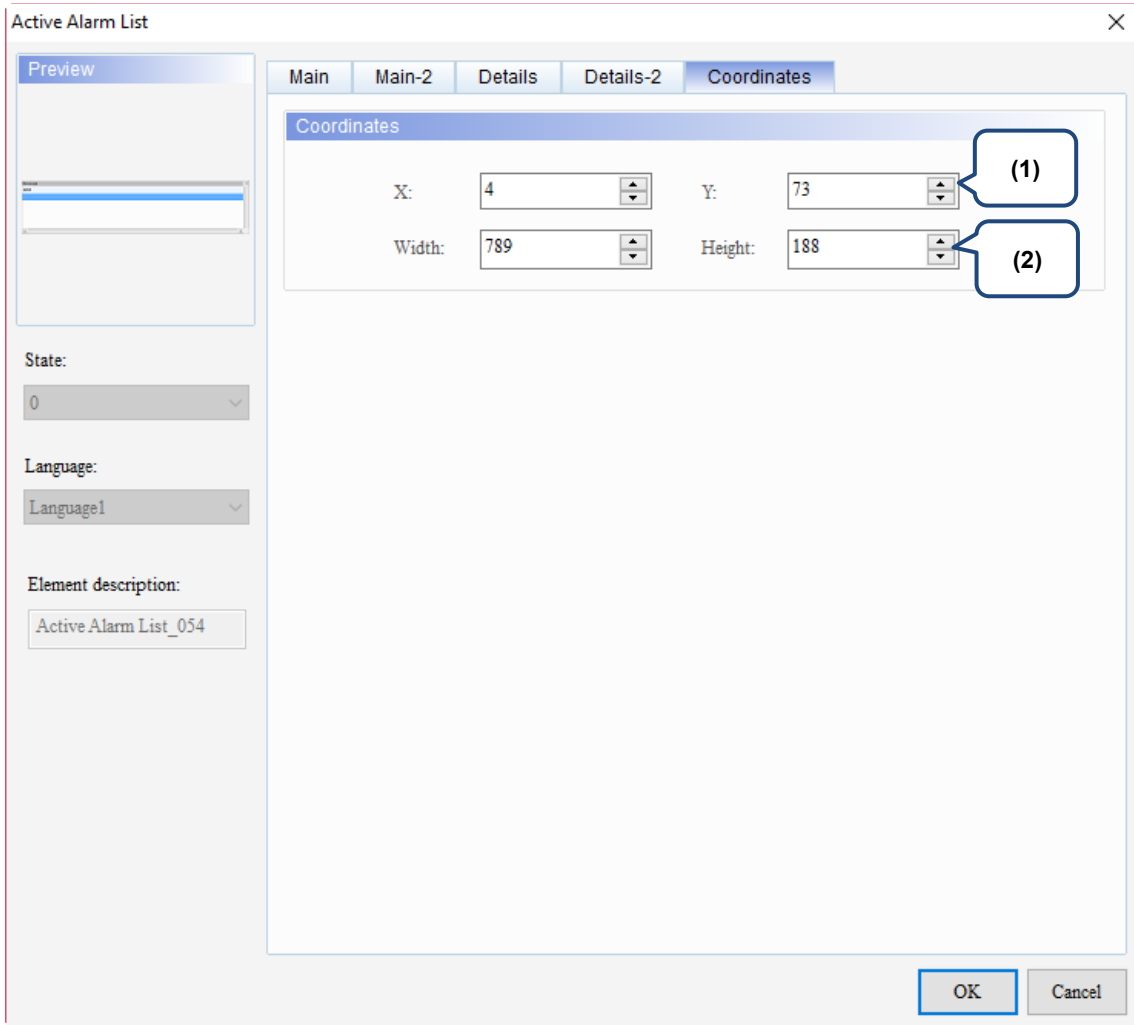


Figure 16.3.6 Coordinates property page for the Active Alarm List element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

16.4 Alarm Frequency Table

The Alarm Frequency Table element records and displays the occurrence times of each alarm. Please refer to Table 16.4.1 for the Alarm Frequency Table example.

Table 16.4.1 Alarm Frequency Table example

Alarm Frequency Table

This example uses the alarm parameters in Table 16.1.1 Alarm Settings example.

Detail
Properties

Address

Address: None

Detail

Scan Time (seconds): 0.5

Max Records: 9999

Non-volatile Data Storage: HMI

Export CSV File: No

Exit Screensaver when alarm occurs: Yes

Disply alarm screen: Manual

Alarm Moving Sign

Enable: No

Position: Top

Direction: Left

Points per time: 1

Interval (ms): 100

Background color: fcfcfc

Translucent: 255

No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen
1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	\$500	RGB(0, 0, 0)	2 - Screen_2
2*	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	\$501	RGB(0, 0, 0)	None
3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	\$502	RGB(0, 0, 0)	None
4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	\$503	RGB(0, 0, 0)	None
5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	\$504	RGB(0, 0, 0)	None
6*	Alarm 6	5	Word	\$100	\$100 = \$200	None	RGB(0, 0, 0)	2 - Screen_2
7*	Alarm 7	5	Word	\$110	\$110 < \$210	None	RGB(0, 0, 0)	None
8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= 1	None	RGB(0, 0, 0)	None
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	None	RGB(0, 0, 0)	None
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 1	None	RGB(0, 0, 0)	None

Action control
Sorting control
Filtering control
Counter
Category start
Category end

1234

Trigger alarm screen

Ack alarm

1234

1234

1234

1234

1234

Message	Frequency
####	#

Bit trigger

Alarm 1
Alarm 2
Alarm 3

Alarm 4
Alarm 5

Word control

- Condition 1: 1234 = 1234
- Condition 2: 1234 < 1234
- Condition 3: 1234 >= 1234 >= 1234
- Condition 4: 0 >= 1234 >= 10
- Condition 5: 1234 >= 100

Monitor address

1234

1234

1234

1234

1234

16

Alarm Frequency Table

Step 1: create an Alarm Frequency Table element.

No	Trigger	Message	Frequency
1	hh:mm:ss mm/dd/yy	####	#

Step 2: check No. and Trigger Time. Alarm Message and Alarm Counts are checked by default. Then, the Alarm Frequency Table will display the number of the alarm, the time the alarm is triggered, alarm message, and will also record the occurrence times of each alarm. Display for counting zero is also checked by default.

Create Alarm Frequency Table element

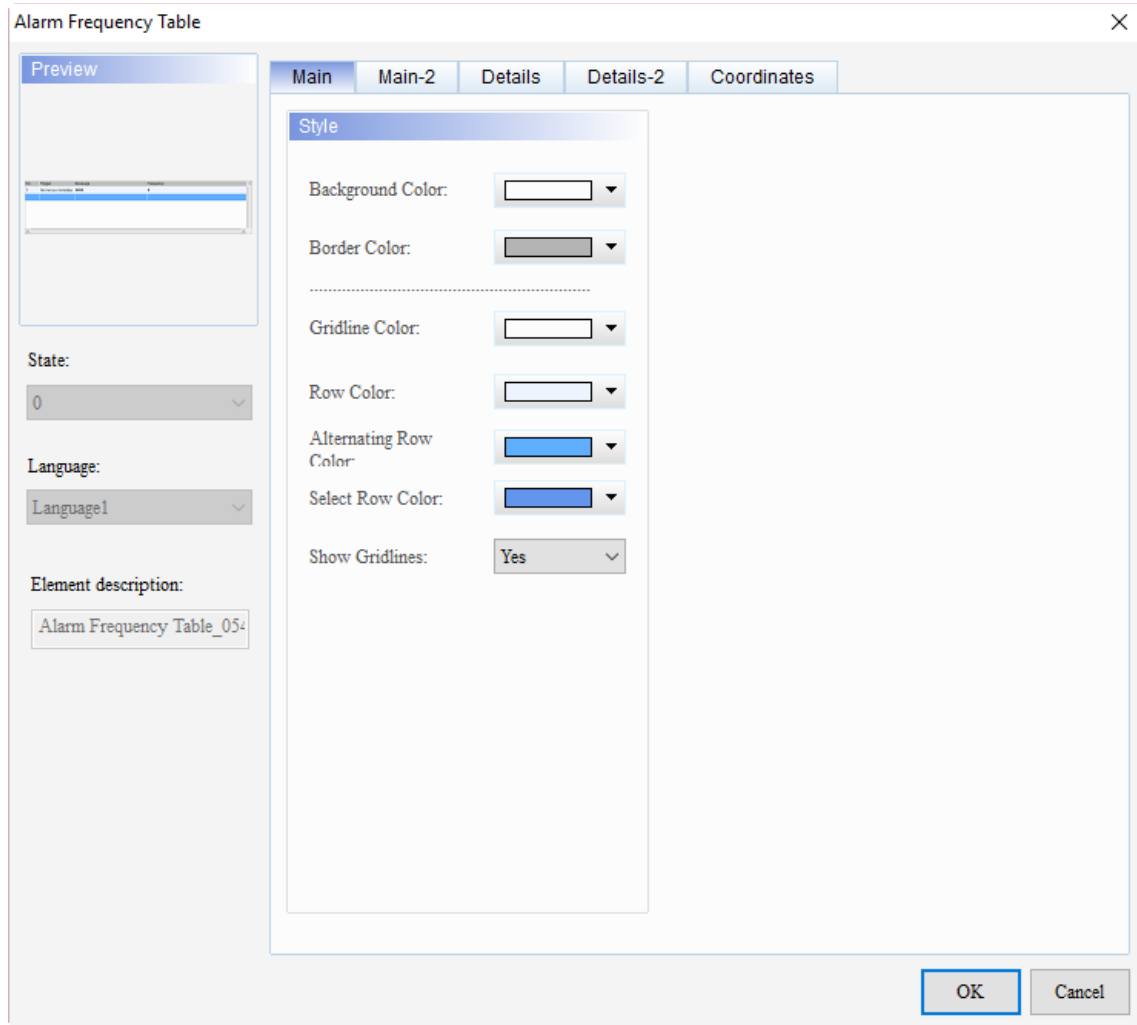
- After creating the Alarm Frequency Table element, please compile and download the element to the HMI. When the conditions are met for Alarms 6 - 10, the Alarm Frequency Table shows the current alarm time and date, alarm number, alarm message, and alarm counts. When Display for counting zero is checked, the Alarm Frequency Table displays 0 in the Frequency column when Alarms 1 - 5 are not triggered.
- After the alarm is cleared, the recorded alarm counts in the Alarm Frequency Table will not be cleared.

Execution results

No	Trigger	Message	Frequency
0001	00:00:00 00/00/0000	Alarm 1 %d1 degree(s)	0
0002	00:00:00 00/00/0000	Alarm 2 %d1 kilogram(s)	0
0003	00:00:00 00/00/0000	Alarm 3 %d1 gram(s)	0
0004	00:00:00 00/00/0000	Alarm 4 %d1 meter(s)	0
0005	00:00:00 00/00/0000	Alarm 5 %d1 inch(es)	0
0006	14:52:07 05/25/201E	Alarm 6	1

No	Trigger	Message	Frequency
0001	00:00:00 00/00/0000	Alarm 1 %d1 degree(s)	0
0002	00:00:00 00/00/0000	Alarm 2 %d1 kilogram(s)	0
0003	00:00:00 00/00/0000	Alarm 3 %d1 gram(s)	0
0004	00:00:00 00/00/0000	Alarm 4 %d1 meter(s)	0
0005	00:00:00 00/00/0000	Alarm 5 %d1 inch(es)	0
0006	14:52:07 05/25/201E	Alarm 6	1

When you double-click the Alarm Frequency Table, the property page is shown as follows.



16

Figure 16.4.1 Properties of Alarm Frequency Table

Table 16.4.2 Function page of Alarm Frequency Table

Alarm Frequency Table	
Function page	Description
Preview	The Alarm Frequency Table elements do not support multiple status values and multi-language data display.
Main	Set Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, and Show Gridlines of the elements.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Details	Set Filter control address, Alarm category start addr., and Alarm category end addr.
Details-2	Set the displaying alarm columns, width, description, and the order of the columns. Set Title Text Alignment, Title Background, Title Text Color, and format / color of the date / time.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

16

■ Main

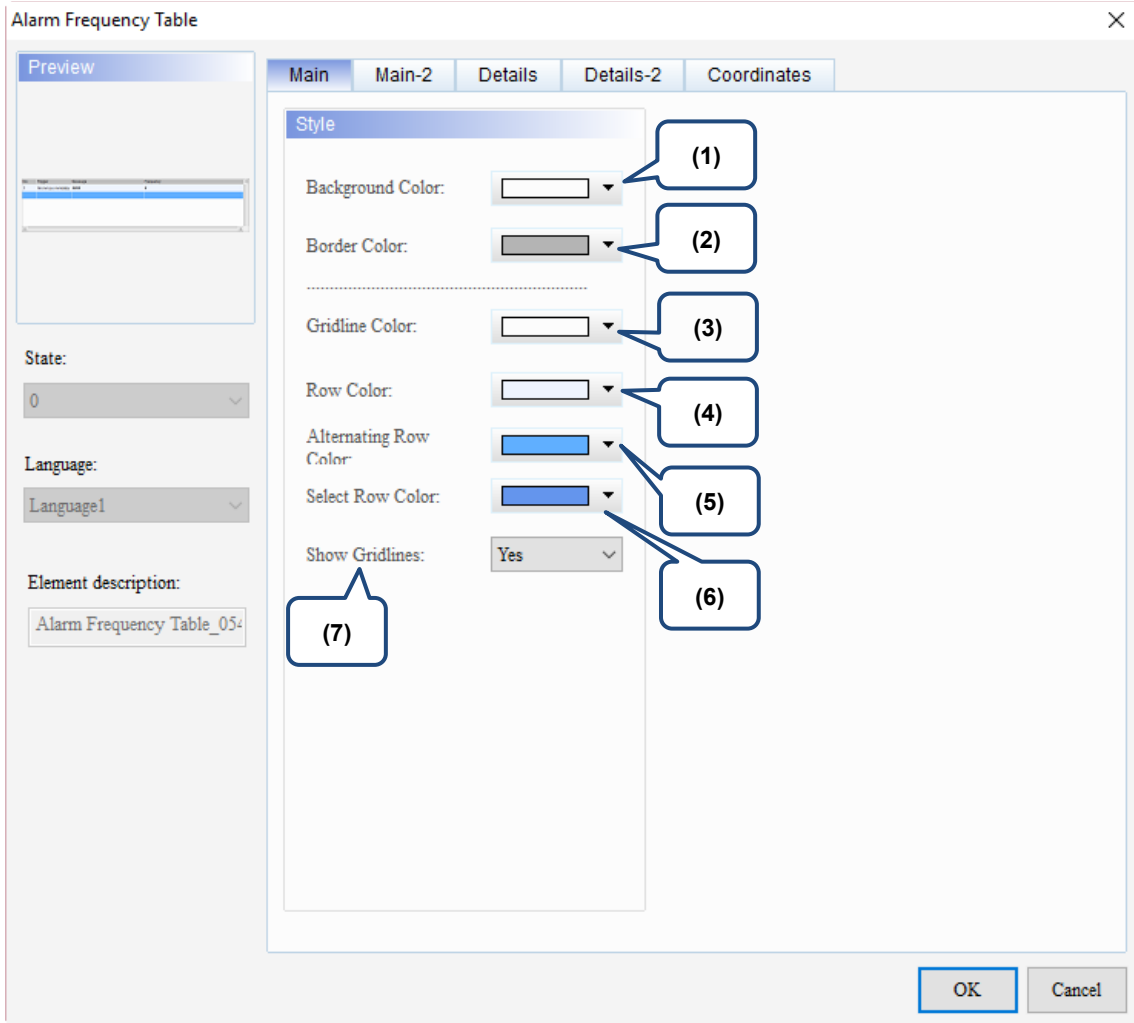
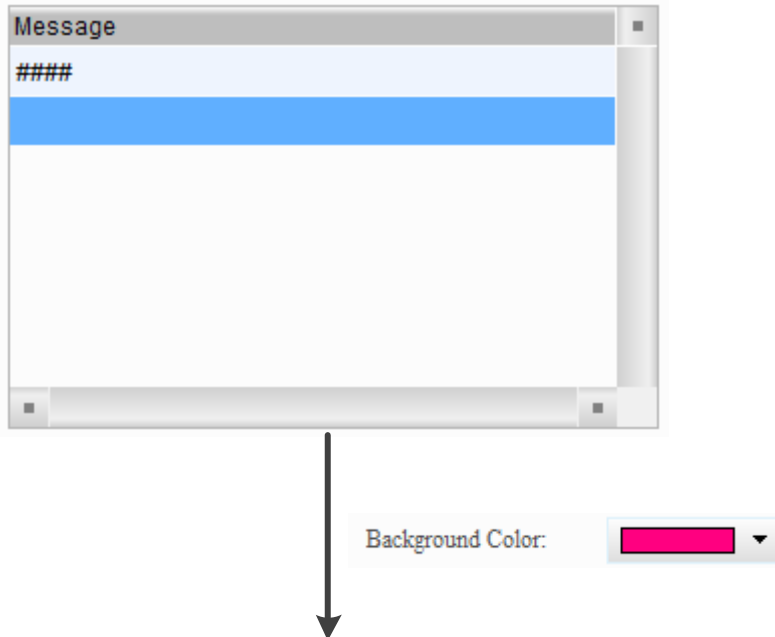
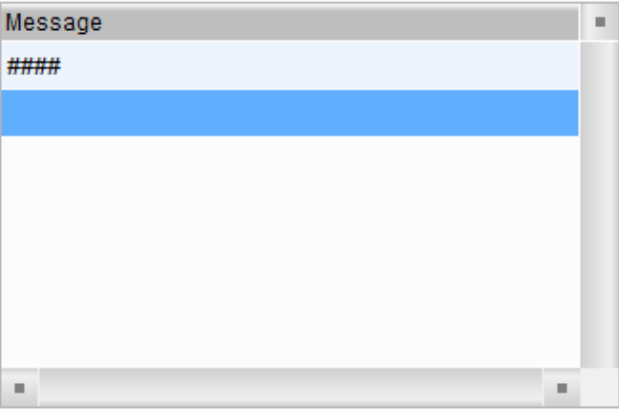

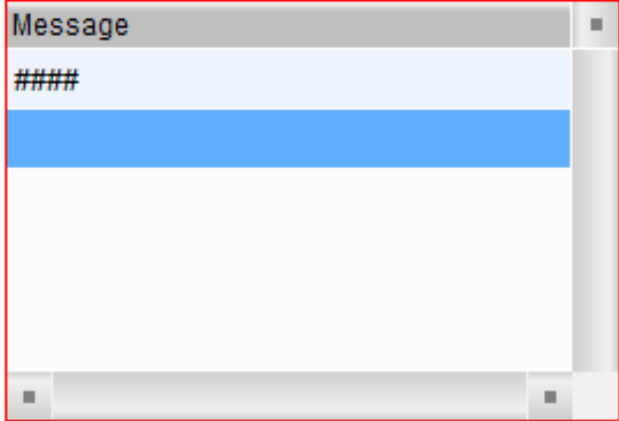
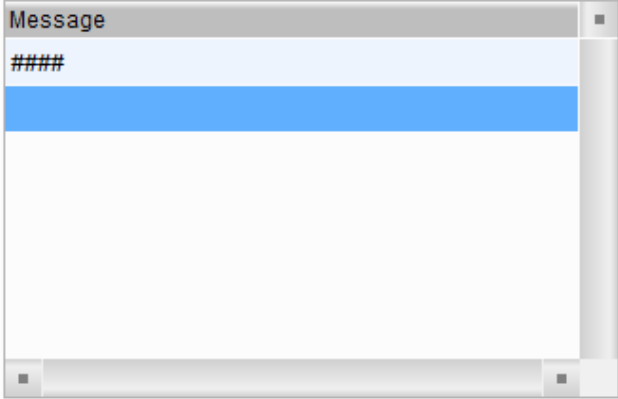

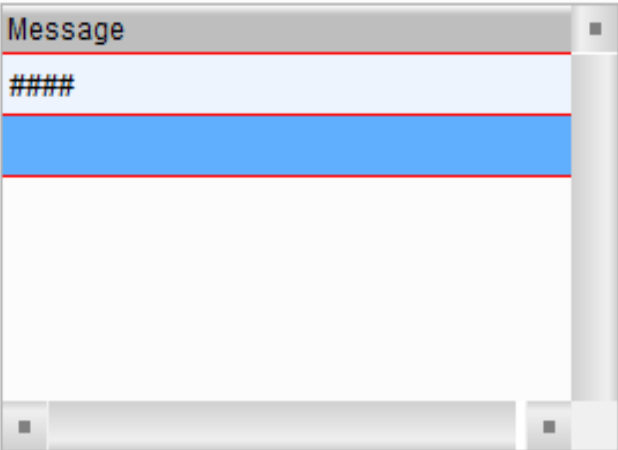


Figure 16.4.2 Main property page for the Alarm Frequency Table element


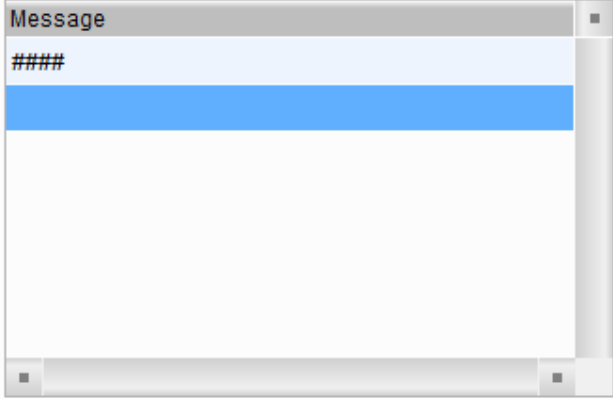
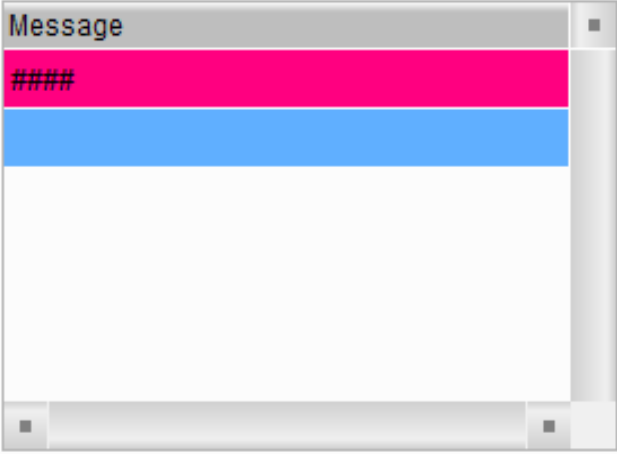
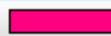
No.	Property	Function description
(1)	Background Color	<p>Set the background color of the element. The default is white.</p>  <p>The image shows a sequence of two screenshots of a 'Message' dialog box. The top screenshot shows the dialog with a blue header bar containing '####' and a white body. An arrow points from this screenshot to a 'Background Color' property editor, which shows a red color selection. Below the editor is a second screenshot of the 'Message' dialog box, where the body area is now filled with red, while the header bar remains blue.</p>

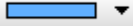
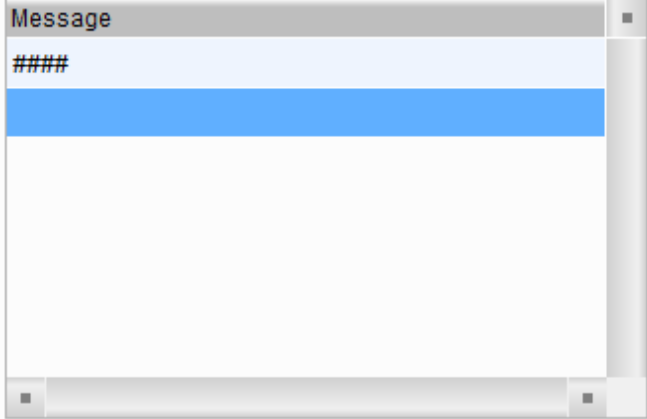
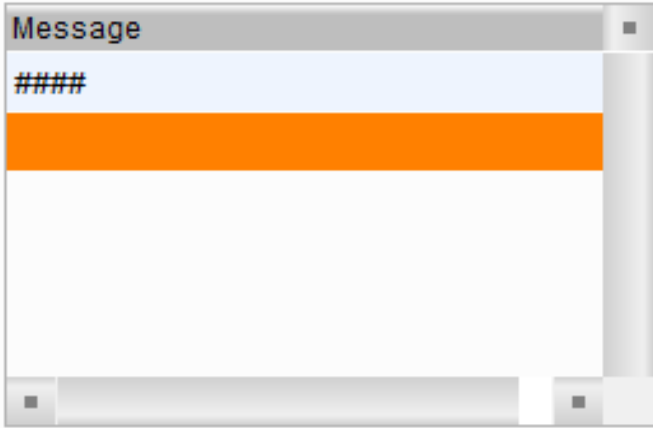
16

No.	Property	Function description
(2)	Border Color	<p>Set the Border Color of the element. The default is gray.</p>  <p>↓</p>  <p>↓</p> 

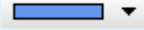
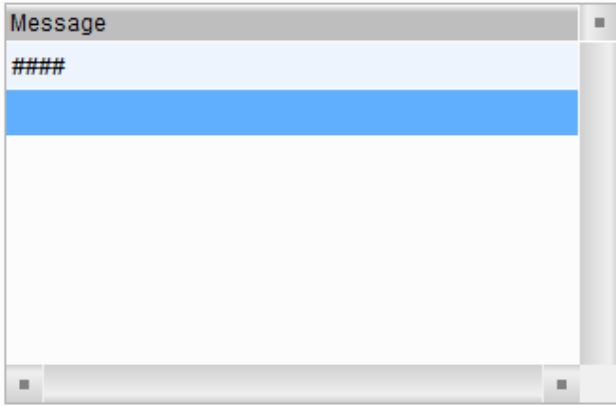
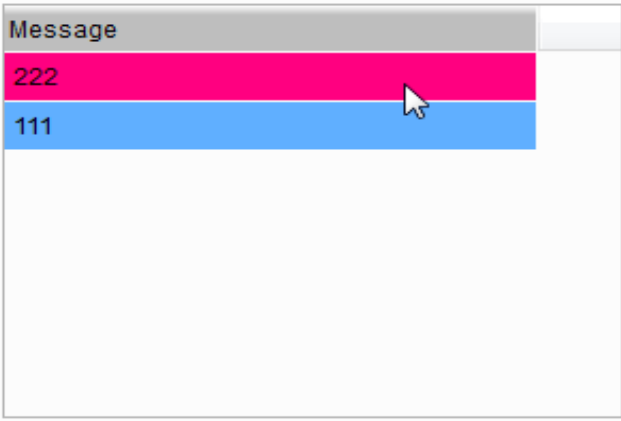
No.	Property	Function description
(3)	Gridline Color	<ul style="list-style-type: none"> ■ The Gridline Color setting is valid only when you select Yes for Show Gridlines. ■ Set the Gridline Color of the element. The default is white. <div style="text-align: center; margin: 10px 0;">  <p style="font-size: 2em; margin: 0;">↓</p>  </div> <div style="text-align: center; margin: 10px 0;">  </div>

16

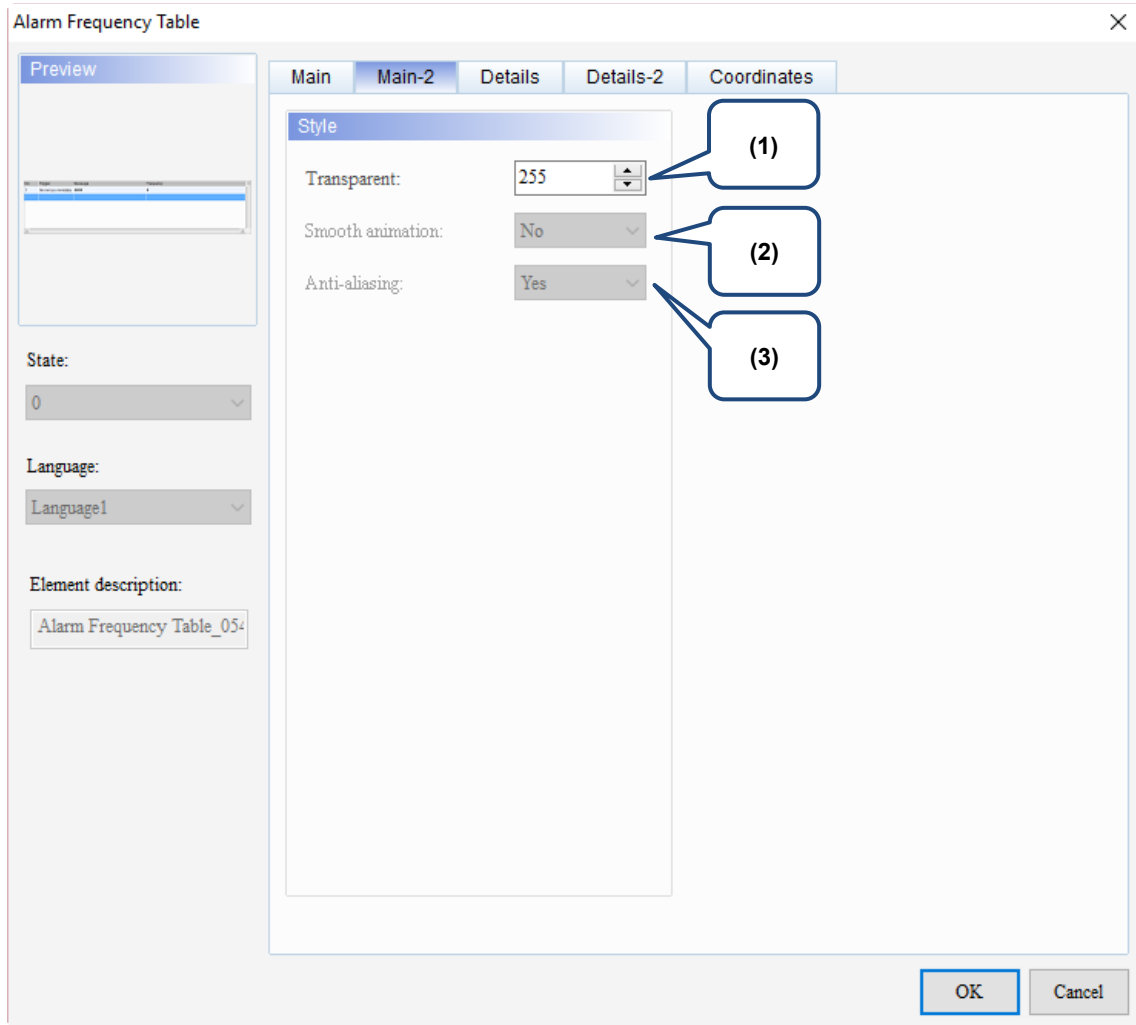
No.	Property	Function description
(4)	Row Color	<p>Set the color for each row of the alarm. The default is .</p>  <p style="text-align: center;">↓</p>  <p style="text-align: center;">Row Color: </p>

No.	Property	Function description
(5)	Alternating Row Color	<p>Set the color for the alternating row of the alarm. The default is .</p>  <p>↓</p> <p>Alternating Row Color </p> 

16

No.	Property	Function description
(6)	Select Row Color	<ul style="list-style-type: none"> ■ The row color when you select an alarm history data. ■ Set the color of the selected row. The default is   <p style="text-align: center;">↓</p> 
(7)	Show Gridlines	<ul style="list-style-type: none"> ■ The default is Yes. ■ When you select No, the Gridline Color setting is invalid.

■ Main-2



16

Figure 16.4.3 Main-2 property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

16

■ Details

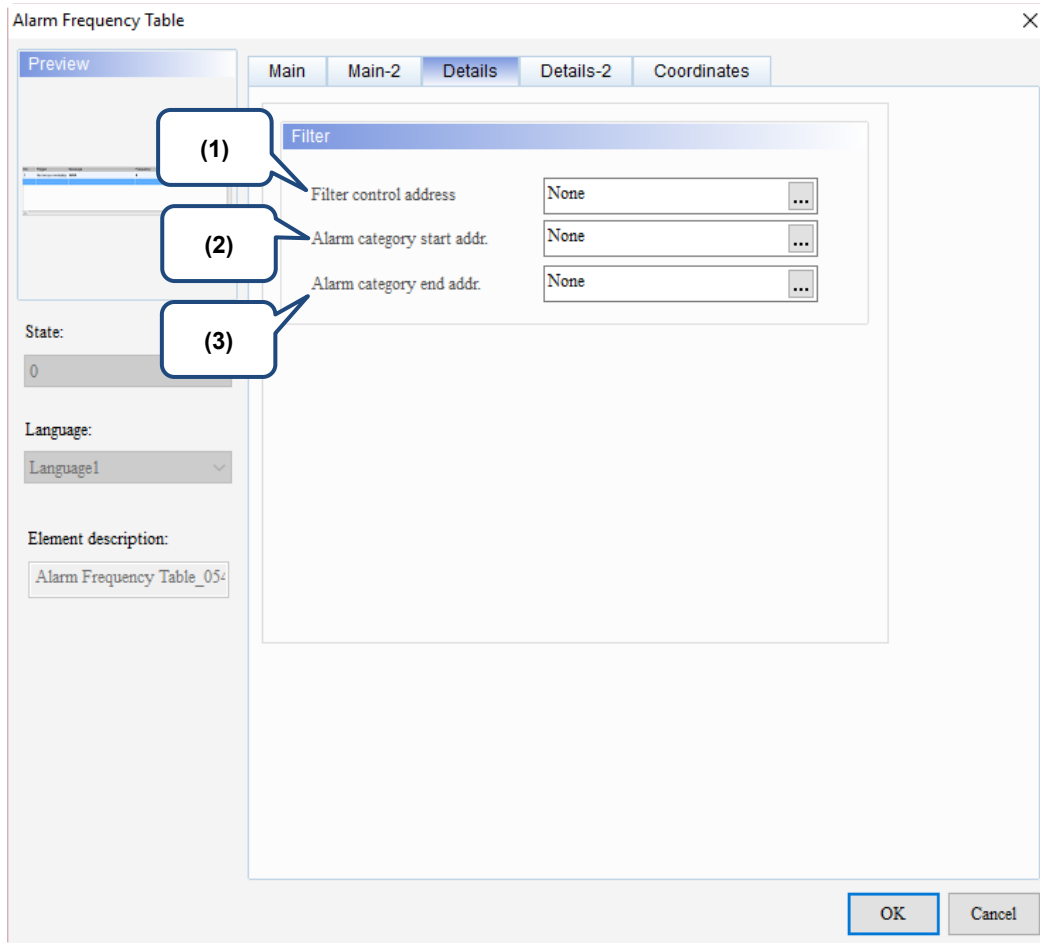
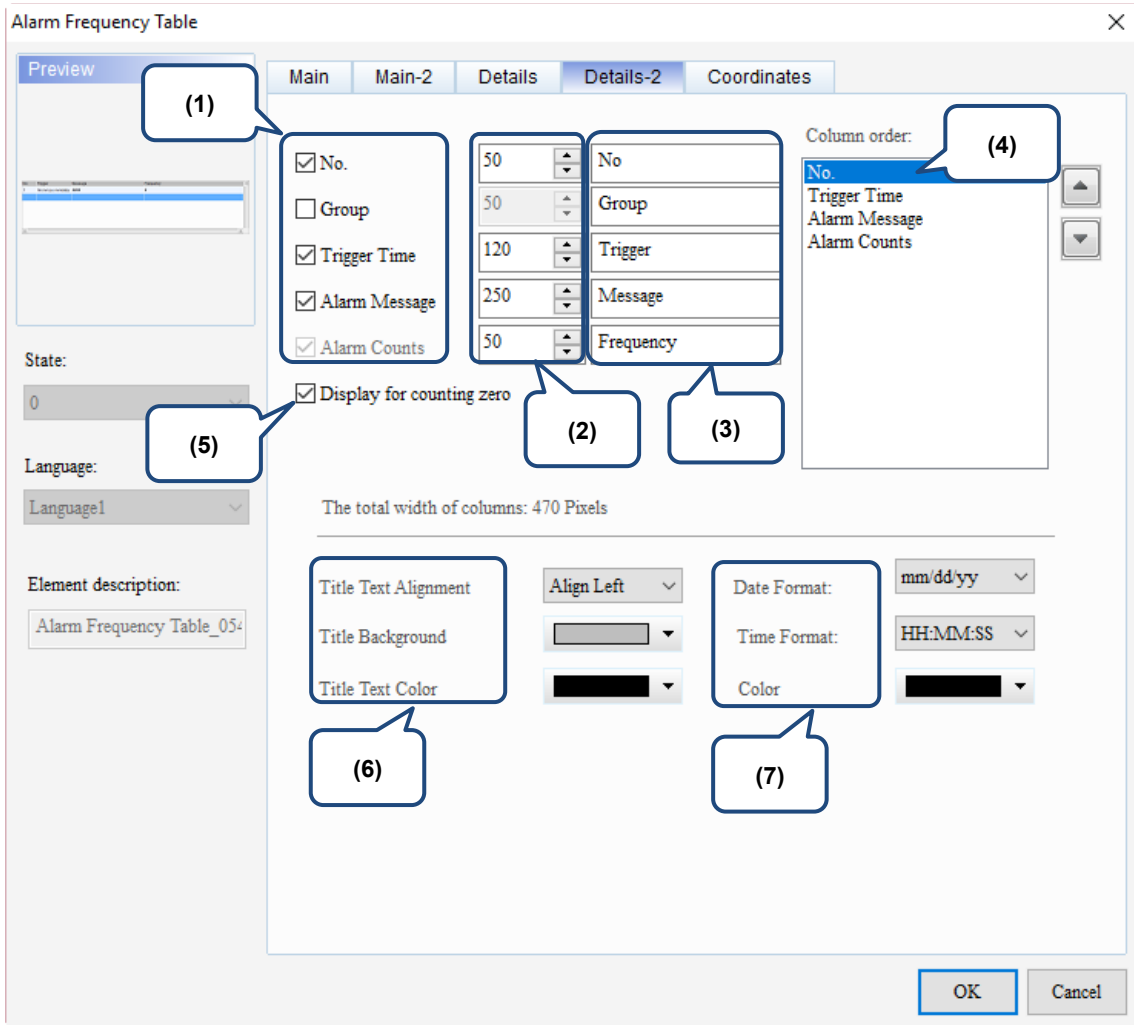


Figure 16.4.4 Details property page for the Alarm Frequency Table element



No.	Property	Function description																
(1)	Filter control address	<ul style="list-style-type: none"> [Use header controls to sort] does not support the sorting of the Message column. You can specify the item for sorting with Filter control address. <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default; no sorting.</td> </tr> <tr> <td>1</td> <td>Sort by Trigger Time.</td> </tr> <tr> <td>2</td> <td>Sort by Acknowledge Time.</td> </tr> <tr> <td>3</td> <td>Sort by Recovery Time.</td> </tr> <tr> <td>4</td> <td>Sort by the alarm count.</td> </tr> <tr> <td>5</td> <td>Sort by the alarm category.</td> </tr> <tr> <td>6</td> <td>Sort by the alarm No.</td> </tr> </tbody> </table>	Value	Description	0	Default; no sorting.	1	Sort by Trigger Time.	2	Sort by Acknowledge Time.	3	Sort by Recovery Time.	4	Sort by the alarm count.	5	Sort by the alarm category.	6	Sort by the alarm No.
Value	Description																	
0	Default; no sorting.																	
1	Sort by Trigger Time.																	
2	Sort by Acknowledge Time.																	
3	Sort by Recovery Time.																	
4	Sort by the alarm count.																	
5	Sort by the alarm category.																	
6	Sort by the alarm No.																	
(2)	Alarm category start addr.	<ul style="list-style-type: none"> This setting must be used with Filter control address. When Filter control address is set to 6, input the alarm category number. <table border="1"> <thead> <tr> <th>Example</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Alarms with alarm category number 1 and 5</td> <td>When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</td> </tr> </tbody> </table>	Example	Description	Alarms with alarm category number 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.												
Example	Description																	
Alarms with alarm category number 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																	
(3)	Alarm category end addr.																	

■ Details-2



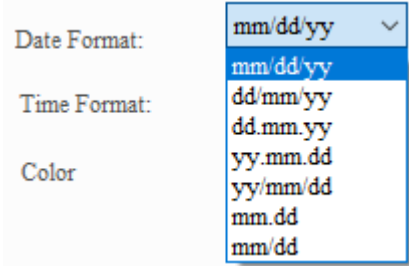
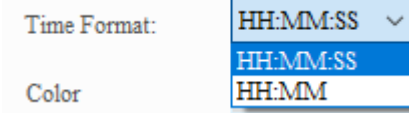
16

Figure 16.4.5 Details-2 property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	Column display	Check the columns you want to display in the element.
(2)	Column width	You can adjust the width for each column.
(3)	Column title	You can define the titles for each column.
(4)	Column order	After checking the columns you want to display, you can use  and  to adjust the column displaying order.

16

No.	Property	Function description																												
(5)	Display for counting zero	<p>If you check this option, 0 is displayed on the Alarm Frequency Table when the alarm is not triggered; otherwise, the alarm message is not displayed when the occurrence time of the alarm is zero.</p> <table border="1"> <thead> <tr> <th>No</th> <th>Trigger</th> <th>Message</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>0001</td> <td>00:00:00 00/00/0000</td> <td>Alarm 1 %d1 degree(s)</td> <td>0</td> </tr> <tr> <td>0002</td> <td>00:00:00 00/00/0000</td> <td>Alarm 2 %d1 kilogram(s)</td> <td>0</td> </tr> <tr> <td>0003</td> <td>00:00:00 00/00/0000</td> <td>Alarm 3 %d1 gram(s)</td> <td>0</td> </tr> <tr> <td>0004</td> <td>00:00:00 00/00/0000</td> <td>Alarm 4 %d1 meter(s)</td> <td>0</td> </tr> <tr> <td>0005</td> <td>00:00:00 00/00/0000</td> <td>Alarm 5 %d1 inch(es)</td> <td>0</td> </tr> <tr> <td>0006</td> <td>14:53:32 05/25/2018</td> <td>Alarm 6</td> <td>2</td> </tr> </tbody> </table>	No	Trigger	Message	Frequency	0001	00:00:00 00/00/0000	Alarm 1 %d1 degree(s)	0	0002	00:00:00 00/00/0000	Alarm 2 %d1 kilogram(s)	0	0003	00:00:00 00/00/0000	Alarm 3 %d1 gram(s)	0	0004	00:00:00 00/00/0000	Alarm 4 %d1 meter(s)	0	0005	00:00:00 00/00/0000	Alarm 5 %d1 inch(es)	0	0006	14:53:32 05/25/2018	Alarm 6	2
		No	Trigger	Message	Frequency																									
0001	00:00:00 00/00/0000	Alarm 1 %d1 degree(s)	0																											
0002	00:00:00 00/00/0000	Alarm 2 %d1 kilogram(s)	0																											
0003	00:00:00 00/00/0000	Alarm 3 %d1 gram(s)	0																											
0004	00:00:00 00/00/0000	Alarm 4 %d1 meter(s)	0																											
0005	00:00:00 00/00/0000	Alarm 5 %d1 inch(es)	0																											
0006	14:53:32 05/25/2018	Alarm 6	2																											
<table border="1"> <thead> <tr> <th>No</th> <th>Trigger</th> <th>Message</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>0006</td> <td>15:03:44 05/25/2018</td> <td>Alarm 6</td> <td>1</td> </tr> <tr> <td>0007</td> <td>15:03:44 05/25/2018</td> <td>Alarm 7</td> <td>1</td> </tr> <tr> <td>0008</td> <td>15:03:44 05/25/2018</td> <td>Alarm 8</td> <td>1</td> </tr> <tr> <td>0009</td> <td>15:03:44 05/25/2018</td> <td>Alarm 9</td> <td>1</td> </tr> <tr> <td>0010</td> <td>15:03:44 05/25/2018</td> <td>Alarm 10</td> <td>1</td> </tr> </tbody> </table>	No	Trigger	Message	Frequency	0006	15:03:44 05/25/2018	Alarm 6	1	0007	15:03:44 05/25/2018	Alarm 7	1	0008	15:03:44 05/25/2018	Alarm 8	1	0009	15:03:44 05/25/2018	Alarm 9	1	0010	15:03:44 05/25/2018	Alarm 10	1						
No	Trigger	Message	Frequency																											
0006	15:03:44 05/25/2018	Alarm 6	1																											
0007	15:03:44 05/25/2018	Alarm 7	1																											
0008	15:03:44 05/25/2018	Alarm 8	1																											
0009	15:03:44 05/25/2018	Alarm 9	1																											
0010	15:03:44 05/25/2018	Alarm 10	1																											
(6)	Title	<p>Set the column title to align left, center, or right.</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																						
		No	Message	Trigger																										
		1	####	hh:mm:ss mm/dd/yy																										
		<p>Align Left</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																						
		No	Message	Trigger																										
		1	####	hh:mm:ss mm/dd/yy																										
<p>Title Text Alignment</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												
<p>Center</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												
<p>Align Right</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												
<p>Set the background color of the column title.</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												
<p>Title Background</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												
<p>After change</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												
<p>Set the text color of the column title.</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												
<p>Title Text Color</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												
<p>After change</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy																								
No	Message	Trigger																												
1	####	hh:mm:ss mm/dd/yy																												

No.	Property	Function description														
(7)	Date and time	Date Format	Select the display format for the date from the following options. 													
		Time Format	Select the display format for the time from the following options. 													
		Color	Set the displaying color of the date and time. <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> <tr> <td colspan="3">Default</td> </tr> <tr> <td>1</td> <td>####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> <tr> <td colspan="3">After change</td> </tr> </tbody> </table>	No	Message	Trigger	1	####	hh:mm:ss mm/dd/yy	Default			1	####	hh:mm:ss mm/dd/yy	After change
No	Message	Trigger														
1	####	hh:mm:ss mm/dd/yy														
Default																
1	####	hh:mm:ss mm/dd/yy														
After change																

Coordinates

16

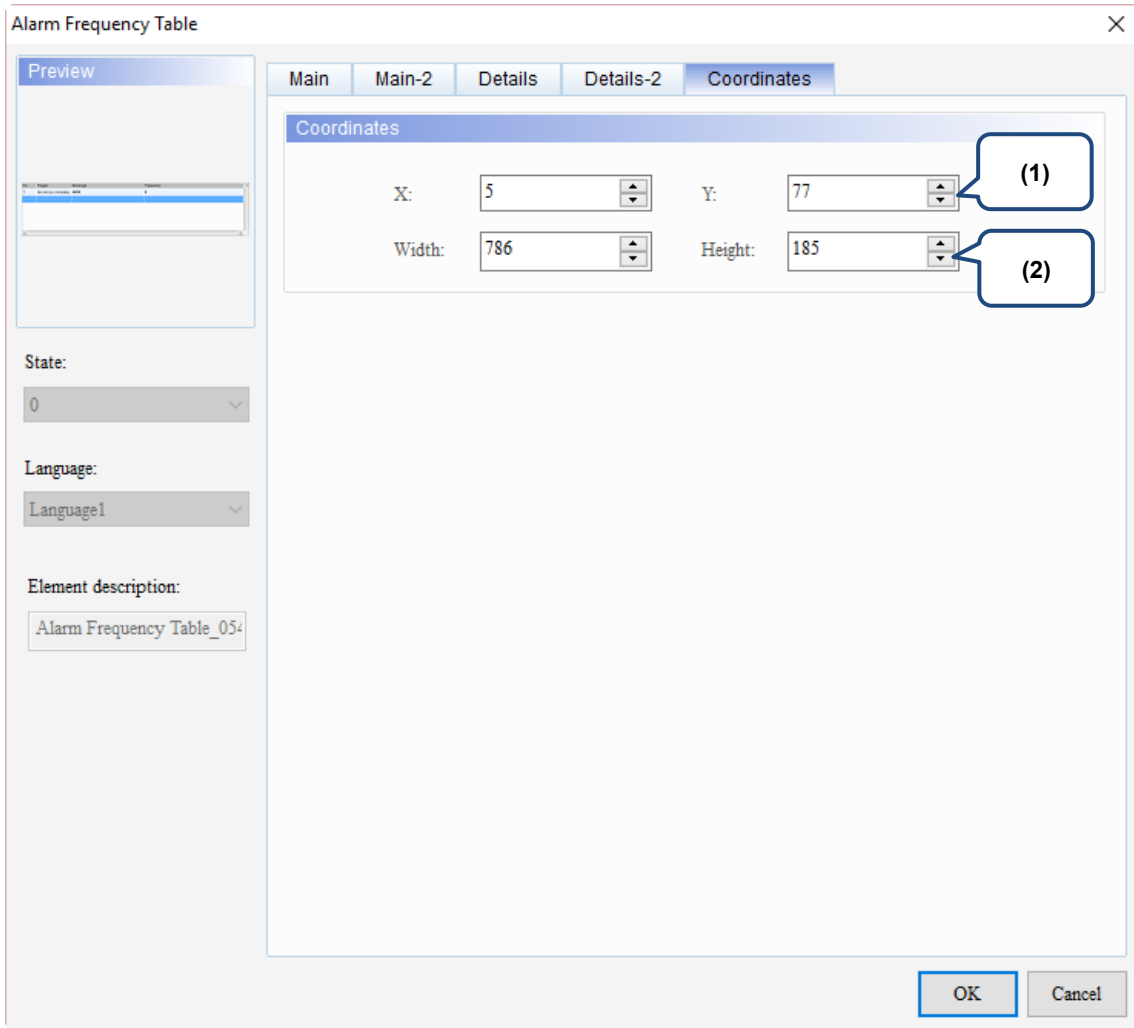


Figure 16.4.5 Coordinates property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

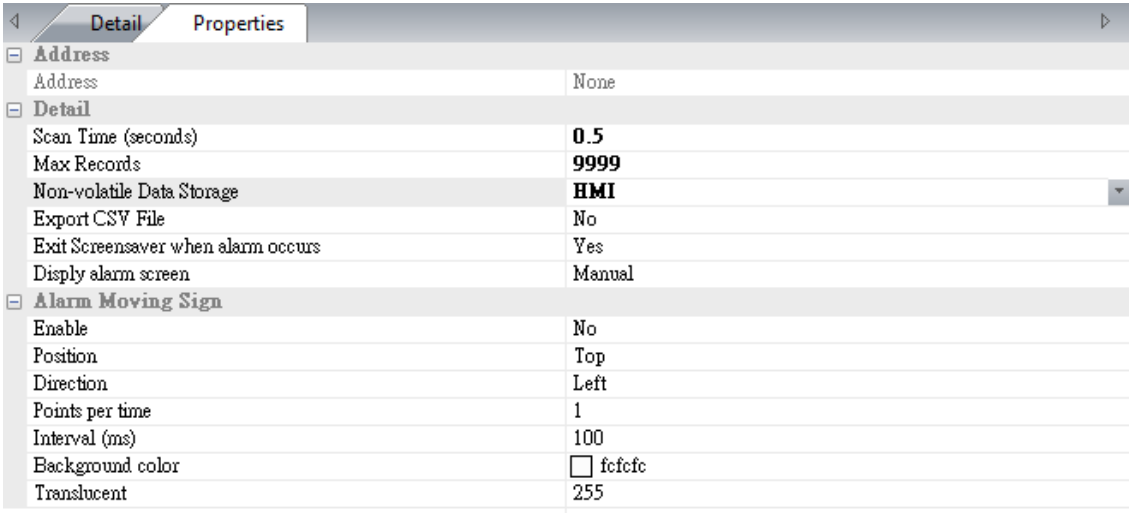
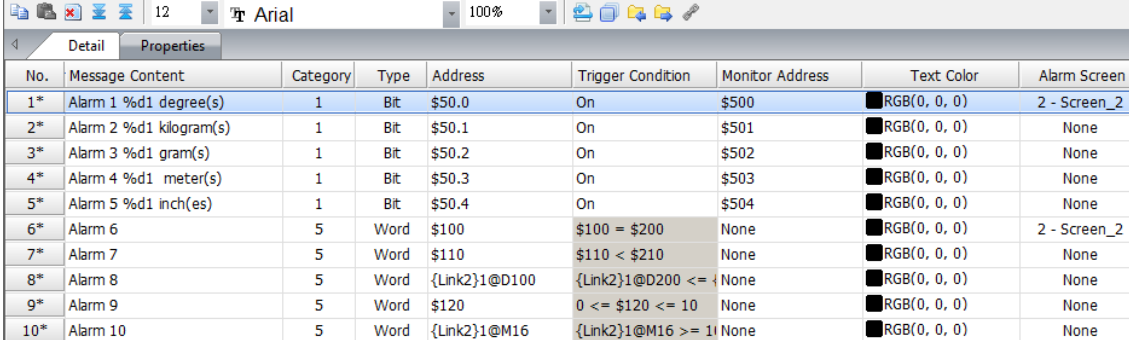
16.5 Alarm Moving Sign

The Alarm Moving Sign element records the alarm number, the time and date the alarm is triggered. You can also define the interval and moving distance of the Alarm Moving Sign.

The settings of this element are the same as the Alarm Moving Sign parameter settings in [Options] > [Alarm Settings]. You can use this Alarm Moving Sign element and the Alarm Moving Sign in the Alarm Settings at the same time, but the main difference is the Alarm Moving Sign mentioned in this section generates a moving sign message when an alarm is triggered regardless of the operating page you are on. In addition, both settings are independent and do not cross reference.

Please refer to Table 16.5.1 for the Alarm Moving Sign example.

Table 16.5.1 Alarm Moving Sign example

Alarm Moving Sign																																																																																																											
This example uses the alarm parameters in Table 16.1.1 Alarm Settings example.																																																																																																											
																																																																																																											
 <table border="1"> <thead> <tr> <th>No.</th> <th>Message Content</th> <th>Category</th> <th>Type</th> <th>Address</th> <th>Trigger Condition</th> <th>Monitor Address</th> <th>Text Color</th> <th>Alarm Screen</th> </tr> </thead> <tbody> <tr> <td>1*</td> <td>Alarm 1 %d1 degree(s)</td> <td>1</td> <td>Bit</td> <td>\$50.0</td> <td>On</td> <td>\$500</td> <td>RGB(0, 0, 0)</td> <td>2 - Screen_2</td> </tr> <tr> <td>2*</td> <td>Alarm 2 %d1 kilogram(s)</td> <td>1</td> <td>Bit</td> <td>\$50.1</td> <td>On</td> <td>\$501</td> <td>RGB(0, 0, 0)</td> <td>None</td> </tr> <tr> <td>3*</td> <td>Alarm 3 %d1 gram(s)</td> <td>1</td> <td>Bit</td> <td>\$50.2</td> <td>On</td> <td>\$502</td> <td>RGB(0, 0, 0)</td> <td>None</td> </tr> <tr> <td>4*</td> <td>Alarm 4 %d1 meter(s)</td> <td>1</td> <td>Bit</td> <td>\$50.3</td> <td>On</td> <td>\$503</td> <td>RGB(0, 0, 0)</td> <td>None</td> </tr> <tr> <td>5*</td> <td>Alarm 5 %d1 inch(es)</td> <td>1</td> <td>Bit</td> <td>\$50.4</td> <td>On</td> <td>\$504</td> <td>RGB(0, 0, 0)</td> <td>None</td> </tr> <tr> <td>6*</td> <td>Alarm 6</td> <td>5</td> <td>Word</td> <td>\$100</td> <td>\$100 = \$200</td> <td>None</td> <td>RGB(0, 0, 0)</td> <td>2 - Screen_2</td> </tr> <tr> <td>7*</td> <td>Alarm 7</td> <td>5</td> <td>Word</td> <td>\$110</td> <td>\$110 < \$210</td> <td>None</td> <td>RGB(0, 0, 0)</td> <td>None</td> </tr> <tr> <td>8*</td> <td>Alarm 8</td> <td>5</td> <td>Word</td> <td>{Link2}1@D100</td> <td>{Link2}1@D200 <= 4</td> <td>None</td> <td>RGB(0, 0, 0)</td> <td>None</td> </tr> <tr> <td>9*</td> <td>Alarm 9</td> <td>5</td> <td>Word</td> <td>\$120</td> <td>0 <= \$120 <= 10</td> <td>None</td> <td>RGB(0, 0, 0)</td> <td>None</td> </tr> <tr> <td>10*</td> <td>Alarm 10</td> <td>5</td> <td>Word</td> <td>{Link2}1@M16</td> <td>{Link2}1@M16 >= 1</td> <td>None</td> <td>RGB(0, 0, 0)</td> <td>None</td> </tr> </tbody> </table>									No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen	1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	\$500	RGB(0, 0, 0)	2 - Screen_2	2*	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	\$501	RGB(0, 0, 0)	None	3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	\$502	RGB(0, 0, 0)	None	4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	\$503	RGB(0, 0, 0)	None	5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	\$504	RGB(0, 0, 0)	None	6*	Alarm 6	5	Word	\$100	\$100 = \$200	None	RGB(0, 0, 0)	2 - Screen_2	7*	Alarm 7	5	Word	\$110	\$110 < \$210	None	RGB(0, 0, 0)	None	8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= 4	None	RGB(0, 0, 0)	None	9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	None	RGB(0, 0, 0)	None	10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 1	None	RGB(0, 0, 0)	None
No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen																																																																																																			
1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	\$500	RGB(0, 0, 0)	2 - Screen_2																																																																																																			
2*	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	\$501	RGB(0, 0, 0)	None																																																																																																			
3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	\$502	RGB(0, 0, 0)	None																																																																																																			
4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	\$503	RGB(0, 0, 0)	None																																																																																																			
5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	\$504	RGB(0, 0, 0)	None																																																																																																			
6*	Alarm 6	5	Word	\$100	\$100 = \$200	None	RGB(0, 0, 0)	2 - Screen_2																																																																																																			
7*	Alarm 7	5	Word	\$110	\$110 < \$210	None	RGB(0, 0, 0)	None																																																																																																			
8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= 4	None	RGB(0, 0, 0)	None																																																																																																			
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	None	RGB(0, 0, 0)	None																																																																																																			
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 1	None	RGB(0, 0, 0)	None																																																																																																			

16

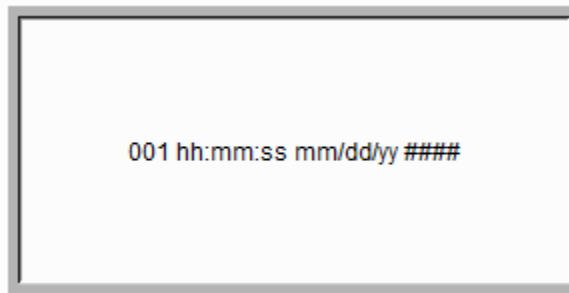
Alarm Moving Sign

Action control	Sorting control	Filtering control	Counter	Category start	Category end
1234	Trigger alarm screen Ack alarm	1234	1234	1234	1234

####

Bit trigger <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">Alarm 1</div> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">Alarm 2</div> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">Alarm 3</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">Alarm 4</div> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">Alarm 5</div> </div>	Word control <ul style="list-style-type: none"> ■ Condition 1 1234 = 1234 ■ Condition 2 1234 < 1234 ■ Condition 3 1234 >= 1234 >= 1234 ■ Condition 4 0 >= 1234 >= 10 ■ Condition 5 1234 >= 100
Monitor address <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">1234</div> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">1234</div> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">1234</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">1234</div> <div style="border: 1px solid gray; padding: 2px; width: 30px; text-align: center;">1234</div> </div>	

Step 1: create an Alarm Moving Sign element.









Step 2: check Time Format, Date Format, and Alarm No. Then, the Alarm Moving Sign will display the number of the alarm, the time and date the alarm is triggered, and alarm message.

Create Alarm Moving Sign element

Alarm Moving Sign
✕

<div style="border: 1px solid gray; padding: 2px; margin-bottom: 5px;">Preview</div> <div style="border: 1px solid gray; height: 40px; margin-bottom: 5px;"></div> <p>State: 0</p> <p>Language: Language1</p> <p>Element description: Alarm Moving Sign_054</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: 1px solid gray; padding: 5px;"> Style <p>Style: Sunken</p> <p>Border Color: </p> <p>Background Color: </p> </td> <td style="width: 50%; border: 1px solid gray; padding: 5px;"> Detail <p>Direction: Left</p> <p>Interval(ms): 100</p> <p>Points per time: 1</p> <p>Status Display</p> <p><input checked="" type="checkbox"/> Time Format hh:mm:ss</p> <p><input checked="" type="checkbox"/> Date Format mm/dd/yy</p> <p>Color: </p> <p>Others</p> <p><input checked="" type="checkbox"/> Alarm No.</p> <p><input type="checkbox"/> Alarm Group</p> </td> </tr> </table>	Style <p>Style: Sunken</p> <p>Border Color: </p> <p>Background Color: </p>	Detail <p>Direction: Left</p> <p>Interval(ms): 100</p> <p>Points per time: 1</p> <p>Status Display</p> <p><input checked="" type="checkbox"/> Time Format hh:mm:ss</p> <p><input checked="" type="checkbox"/> Date Format mm/dd/yy</p> <p>Color: </p> <p>Others</p> <p><input checked="" type="checkbox"/> Alarm No.</p> <p><input type="checkbox"/> Alarm Group</p>
Style <p>Style: Sunken</p> <p>Border Color: </p> <p>Background Color: </p>	Detail <p>Direction: Left</p> <p>Interval(ms): 100</p> <p>Points per time: 1</p> <p>Status Display</p> <p><input checked="" type="checkbox"/> Time Format hh:mm:ss</p> <p><input checked="" type="checkbox"/> Date Format mm/dd/yy</p> <p>Color: </p> <p>Others</p> <p><input checked="" type="checkbox"/> Alarm No.</p> <p><input type="checkbox"/> Alarm Group</p>		

Alarm Moving Sign					
<ul style="list-style-type: none"> ■ After creating the Alarm Moving Sign element, please compile and download the element to the HMI. When the conditions are met for Alarms 6 - 10, the Alarm Moving Sign shows the current alarm time and date, alarm number, and alarm message. ■ After the alarm is cleared, the Alarm Moving Sign will not show any alarm. 					
Execution results	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="background-color: #cccccc; width: 20%; text-align: center;">Alarm on</td> <td style="text-align: center;">  </td> </tr> <tr> <td style="background-color: #cccccc; text-align: center;">Alarm off</td> <td style="text-align: center;">  </td> </tr> </table>	Alarm on		Alarm off	
	Alarm on				
Alarm off					

16

When you double-click the Alarm Moving Sign, the property page is shown as follows.

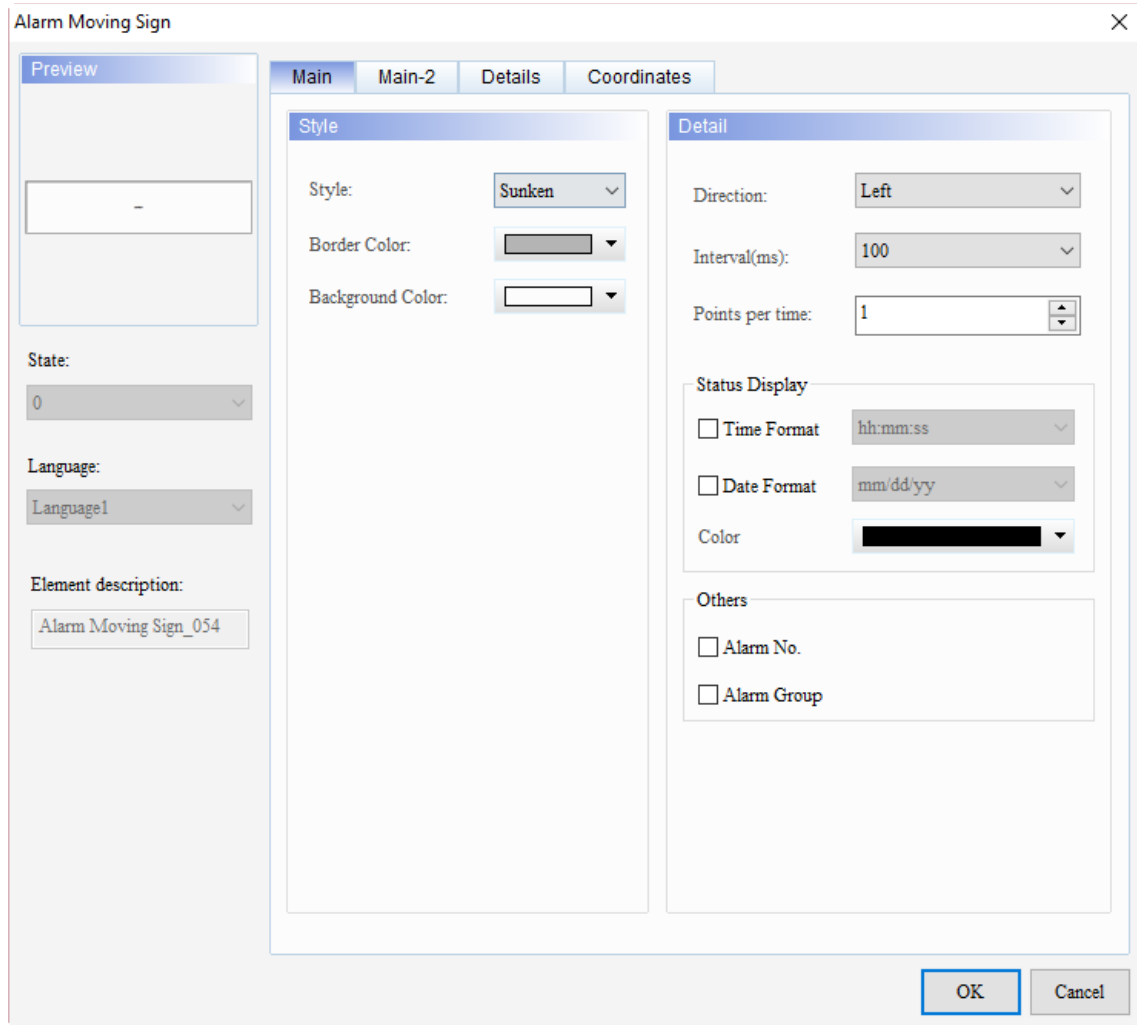


Figure 16.5.1 Properties of Alarm Moving Sign

Table 16.5.2 Function page of Alarm Moving Sign

Alarm Moving Sign	
Function Page	Description
Preview	The Alarm Moving Sign elements do not support multiple status values and multi-language data display.
Main	Set Style, Border Color, Background Color, Direction, Interval (ms), Points per time, Time Format, Date Format, Color, Alarm No., and Alarm Group.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

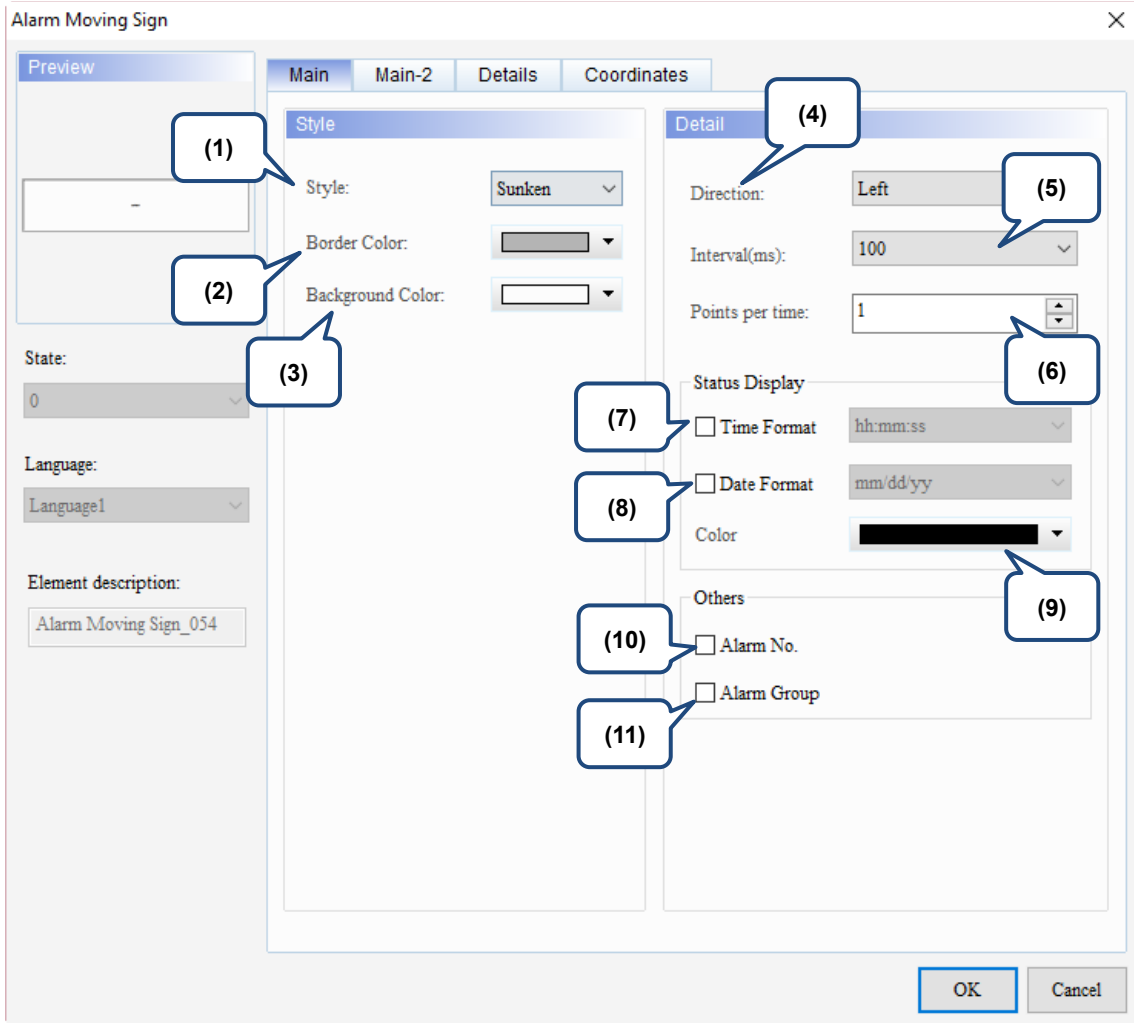
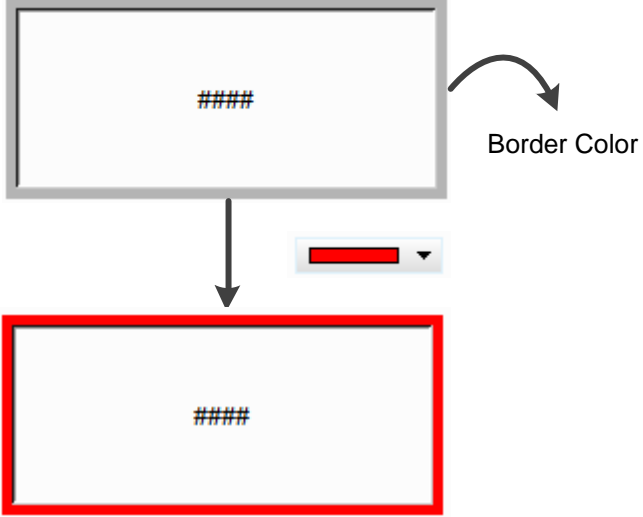
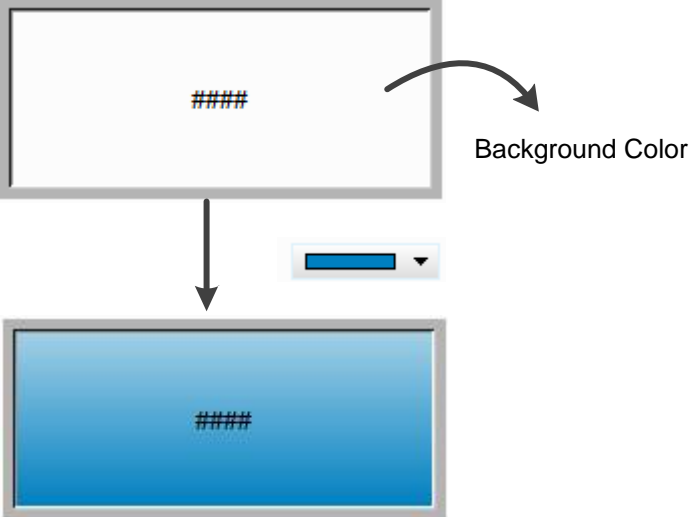
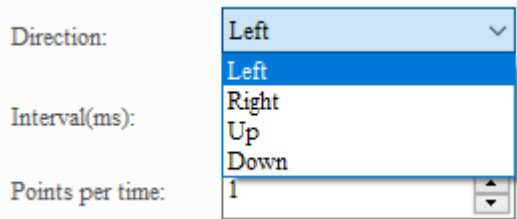
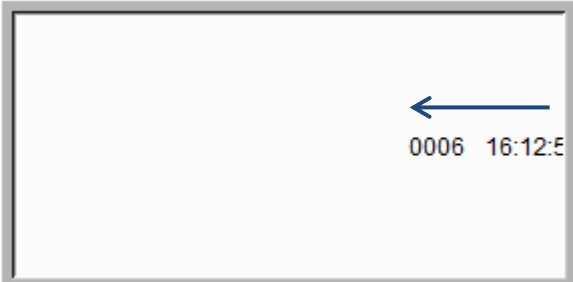
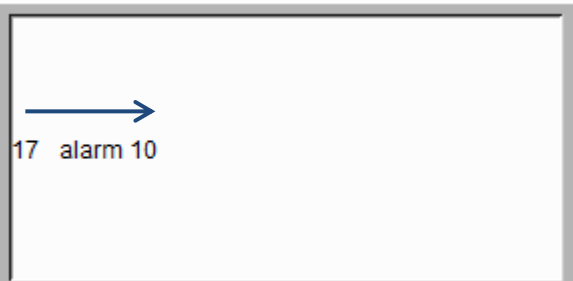
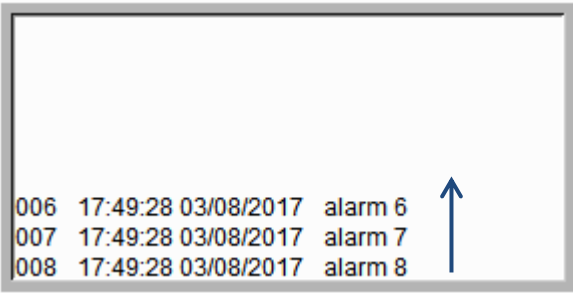
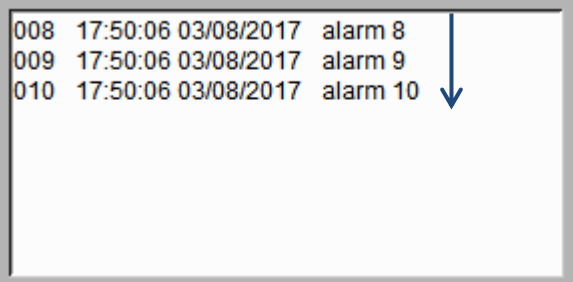


Figure 16.5.2 Main property page for the Alarm Moving Sign element

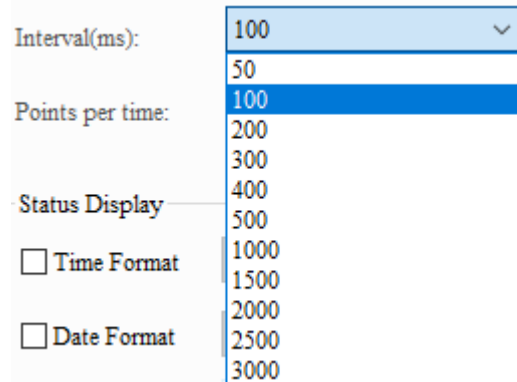
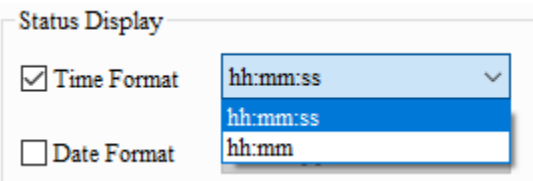
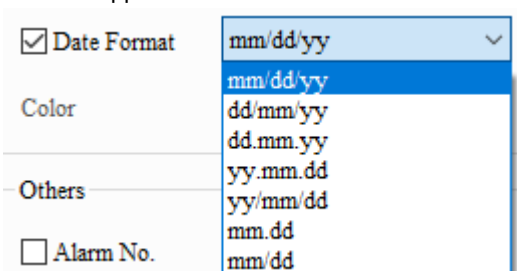
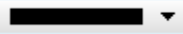

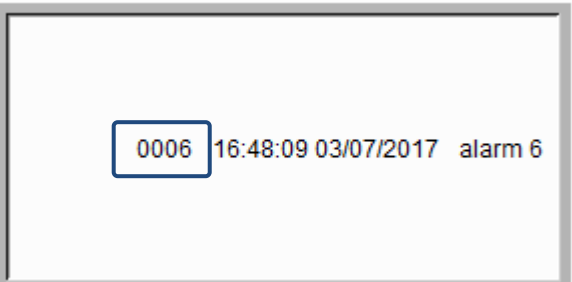
No.	Property	Function description								
(1)	Style	<p>There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">####</td> <td style="text-align: center;">####</td> <td style="text-align: center;">####</td> <td style="text-align: center;">####</td> </tr> </tbody> </table>	Standard	Raised	Sunken	Transparent	####	####	####	####
Standard	Raised	Sunken	Transparent							
####	####	####	####							

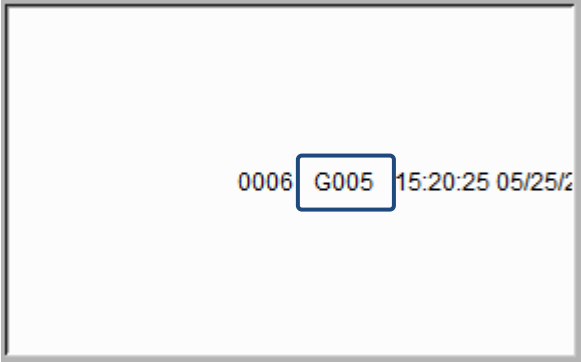
16

No.	Property	Function description
(2)	Border Color	<p>Set the Border Color of the element. The default is gray.</p> 
(3)	Background Color	<p>Set the background color of the element. The default is white.</p> 

No.	Property	Function description	
(4)	Direction	<p>There are four display directions to choose from: Left, Right, Up, and Down.</p> 	
		Left	
		Right	
		Up	
		Down	

16

No.	Property	Function description
(5)	Interval (ms)	<p>Interval is the time interval between motions of the Alarm Moving Sign. Unit: ms. The moving distance is determined by the setting of Points per time.</p> 
(6)	Points per time	<p>The greater the number of points, the greater the distance each time the text moves. The setting range is 1 - 50 pixels.</p>
(7)	Time Format	<p>Two time formats are supported.</p> 
(8)	Date Format	<p>Seven date formats are supported.</p> 
(9)	Color	<p>Set the displaying color of the date and time. The default is .</p> 
(10)	Alarm No.	<p>If you check Alarm No., the element shows the alarm number when an alarm is triggered.</p> 

No.	Property	Function description
(11)	Alarm Group	<p>If you check Alarm Group, the element shows the alarm group number when an alarm is triggered.</p> 

16

■ Main-2

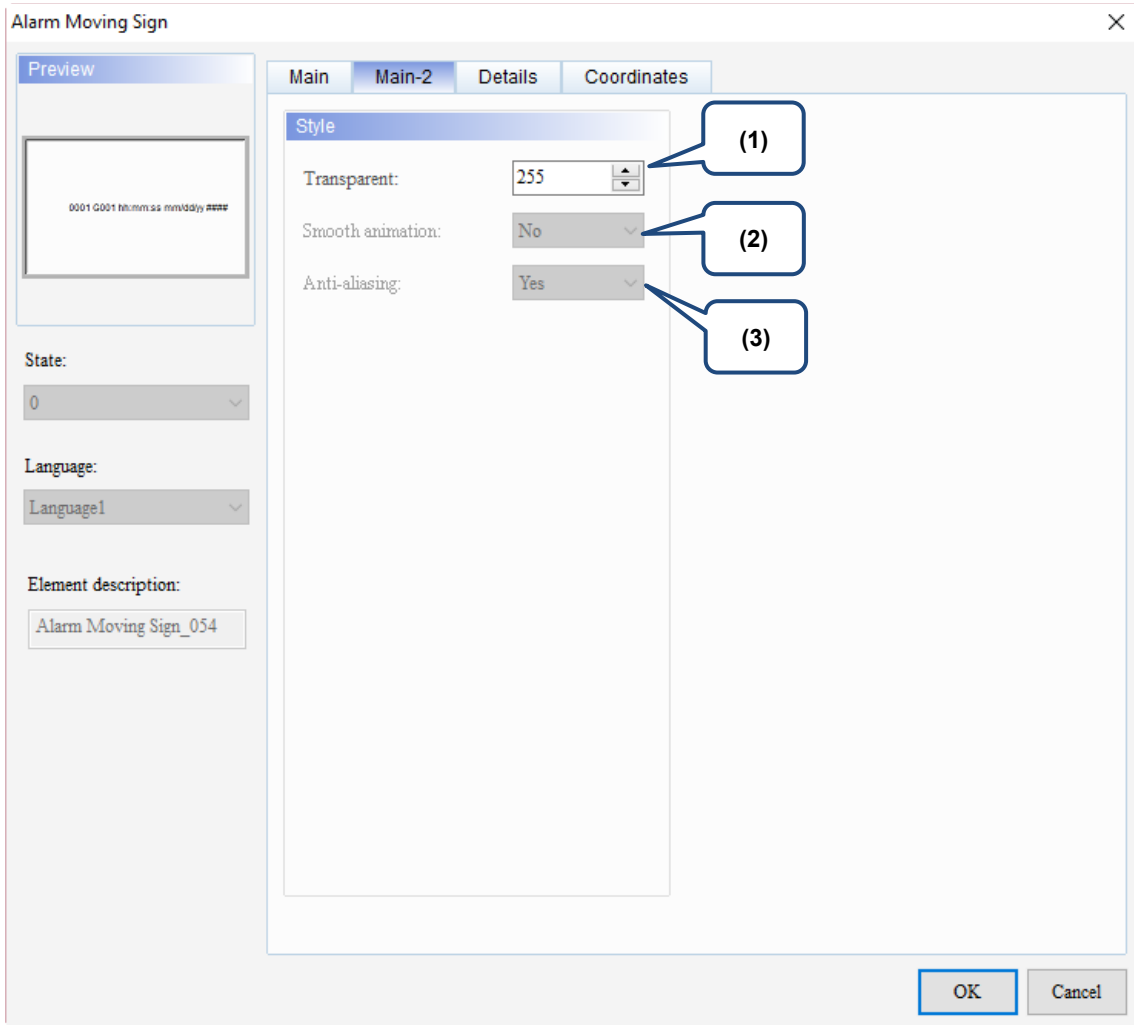
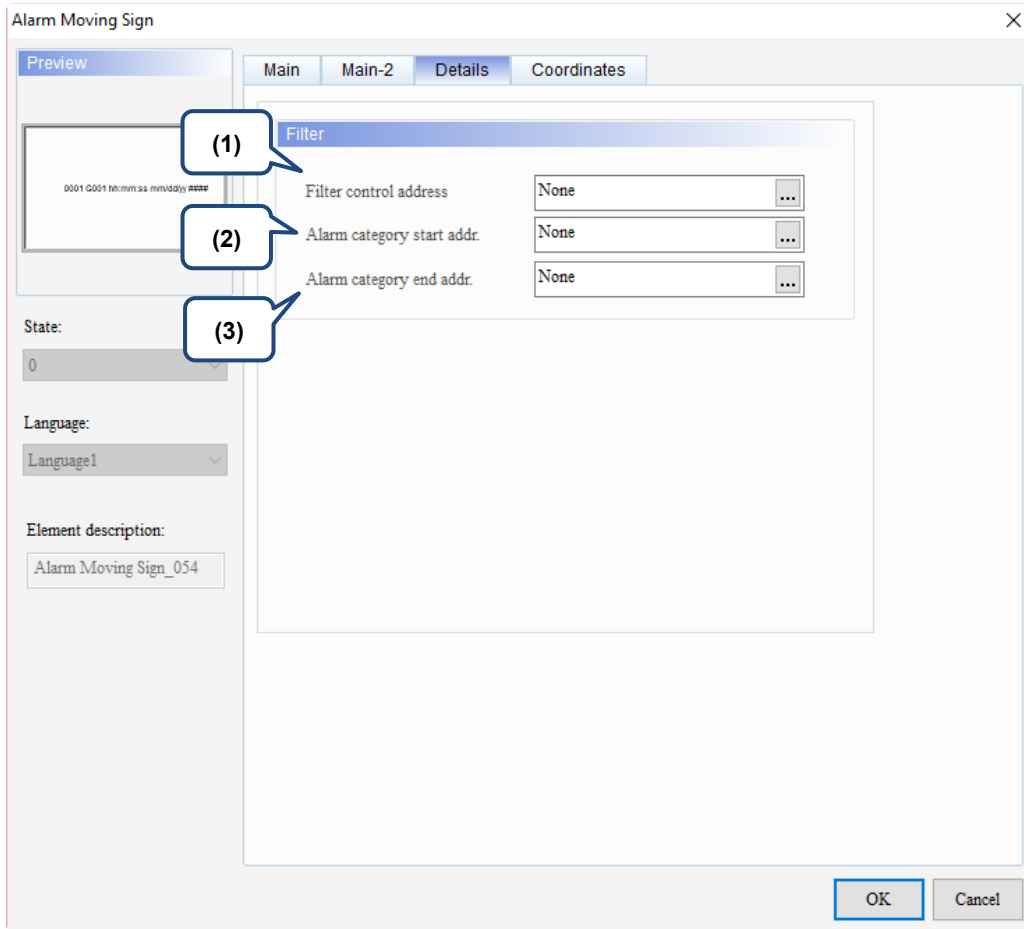


Figure 16.5.3 Main-2 property page for the Alarm Moving Sign element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Details



16

Figure 16.5.4 Details property page for the Alarm Moving Sign element

No.	Property	Function description																
(1)	Filter control address	<ul style="list-style-type: none"> [Use header controls to sort] does not support the sorting of the Message column. You can specify the item for sorting with Filter control address. <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default; no sorting.</td> </tr> <tr> <td>1</td> <td>Sort by Trigger Time.</td> </tr> <tr> <td>2</td> <td>Sort by Acknowledge Time.</td> </tr> <tr> <td>3</td> <td>Sort by Recovery Time.</td> </tr> <tr> <td>4</td> <td>Sort by the alarm count.</td> </tr> <tr> <td>5</td> <td>Sort by the alarm category.</td> </tr> <tr> <td>6</td> <td>Sort by the alarm No.</td> </tr> </tbody> </table>	Value	Description	0	Default; no sorting.	1	Sort by Trigger Time.	2	Sort by Acknowledge Time.	3	Sort by Recovery Time.	4	Sort by the alarm count.	5	Sort by the alarm category.	6	Sort by the alarm No.
Value	Description																	
0	Default; no sorting.																	
1	Sort by Trigger Time.																	
2	Sort by Acknowledge Time.																	
3	Sort by Recovery Time.																	
4	Sort by the alarm count.																	
5	Sort by the alarm category.																	
6	Sort by the alarm No.																	
(2)	Alarm category start addr.	<ul style="list-style-type: none"> This setting must be used with Filter control address. When Filter control address is set to 6, input the alarm category number. 																
(3)	Alarm category end addr.	<table border="1"> <thead> <tr> <th>Example</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Alarms with alarm category number 1 and 5</td> <td>When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</td> </tr> </tbody> </table>	Example	Description	Alarms with alarm category number 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.												
Example	Description																	
Alarms with alarm category number 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms; When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																	

Coordinates

16

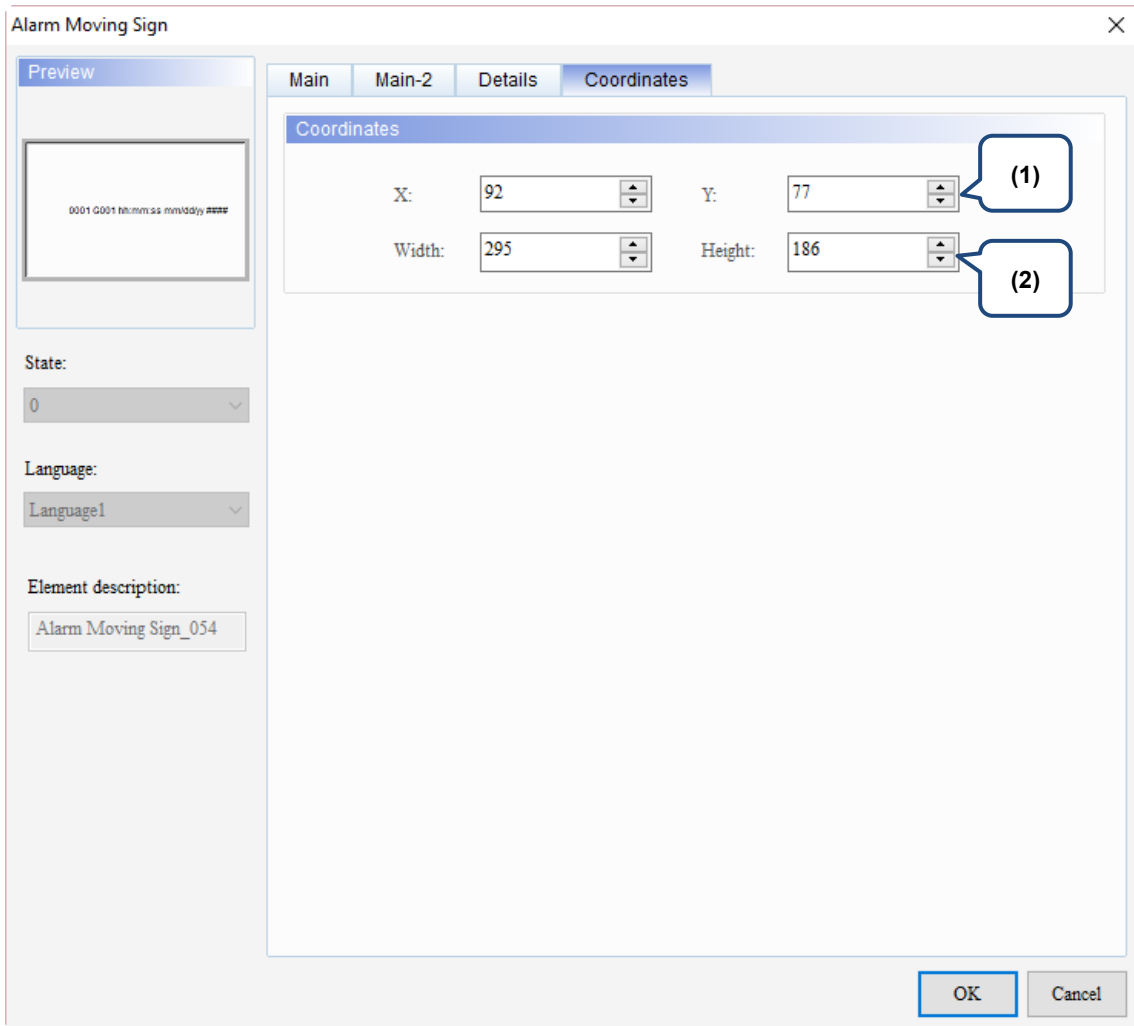


Figure 16.5.5 Coordinates property page for the Alarm Moving Sign element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

This chapter provides the usage and setting details for the Keypad elements.


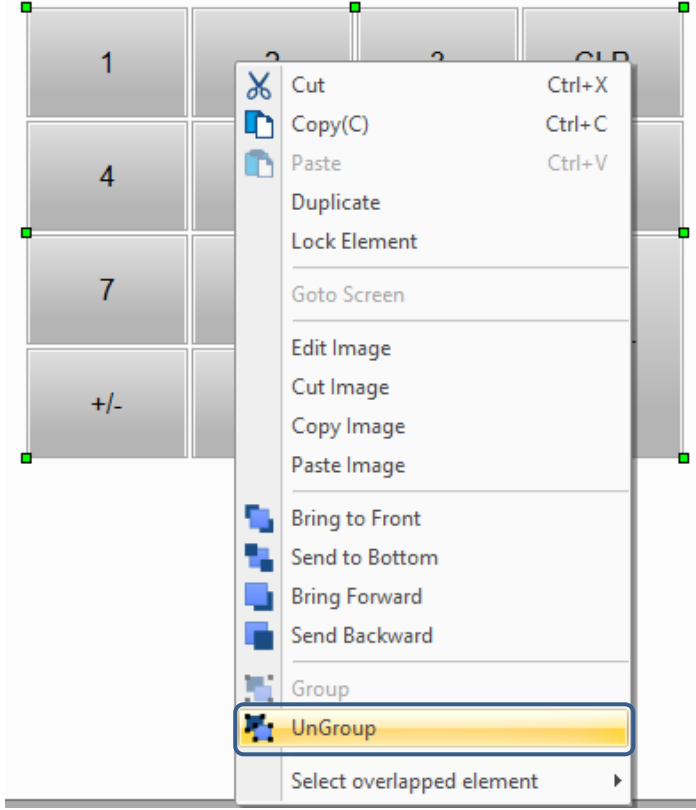
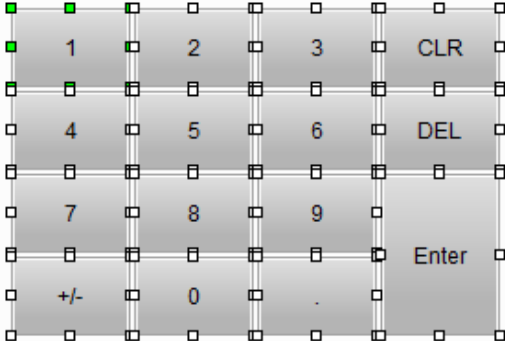
17.1 Keypad(1)	17-2
17.2 Keypad(2)	17-13
17.3 Keypad(3)	17-24

17

17.1 Keypad(1)

Three types of Keypad elements are provided to use with the Numeric Entry element, Character Entry element, and Barcode Input element. For Numeric Entry and Character Entry elements, the Input Mode must be selected as Active Non-Popup or Touch Non-Popup; while the Input Mode for the Barcode Input element must be selected as Active. The Interlock Addresses for these three elements must be set up at the same time, but if Touch Non-Popup is selected as the Input Mode, the Interlock Address setting is not required. Please refer to Chapter 13 Input for more setting details.

Keypad(1) is a decimal keypad, which you can customize the font, size, color, alignment, and etc. It also provides a variety of modes for selection, including ESC, ENT, CLR, DEL, and ASCII. Keypad(1) is a grouped element, but you can right-click on the element to ungroup the element and separate the buttons on the keypad. You can also double-click the buttons for editing and making changes.

Grouped	
	<p>Right-click on the grouped element and select UnGroup.</p> 
Not grouped	

When you double-click Keypad(1), the property page is shown as follows.

17

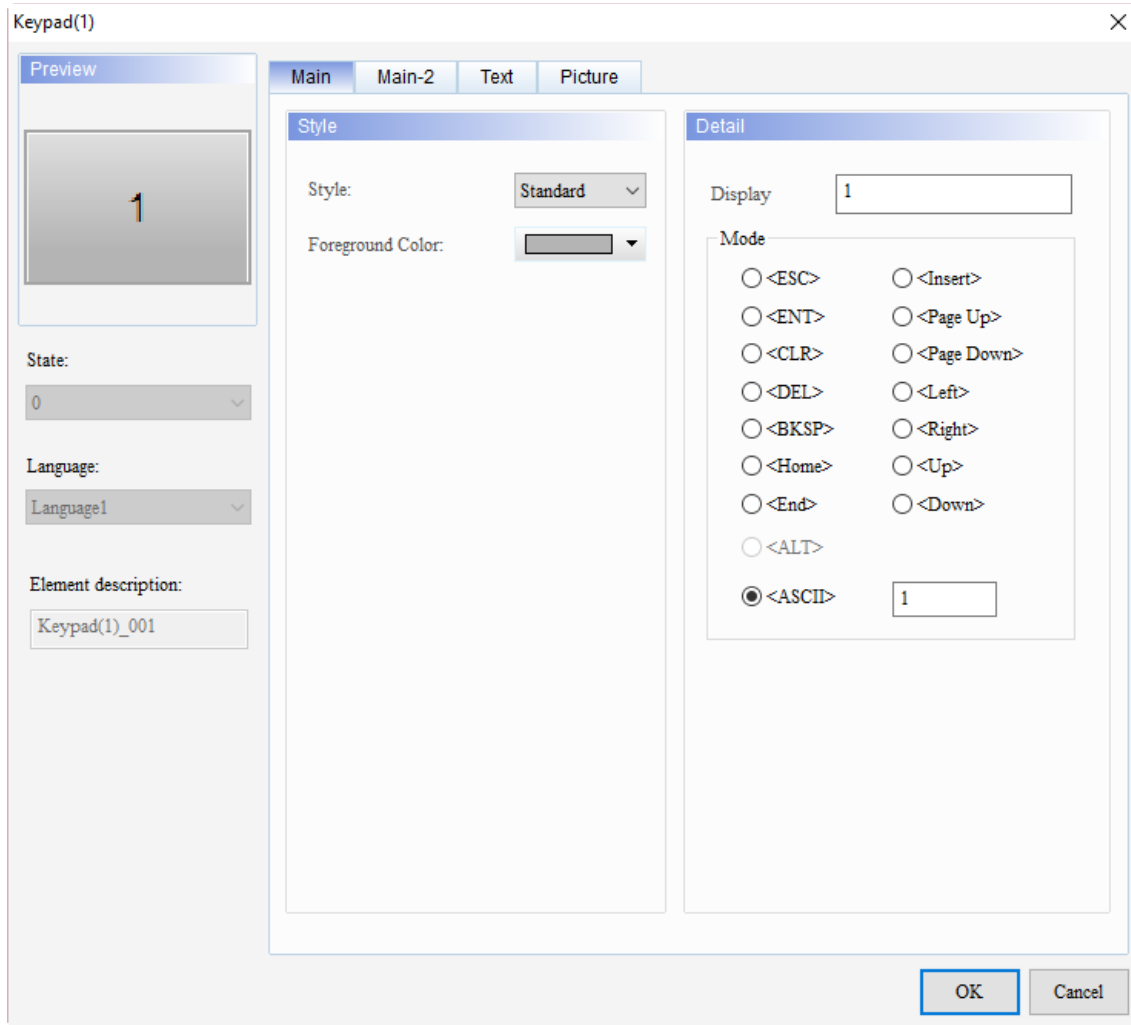
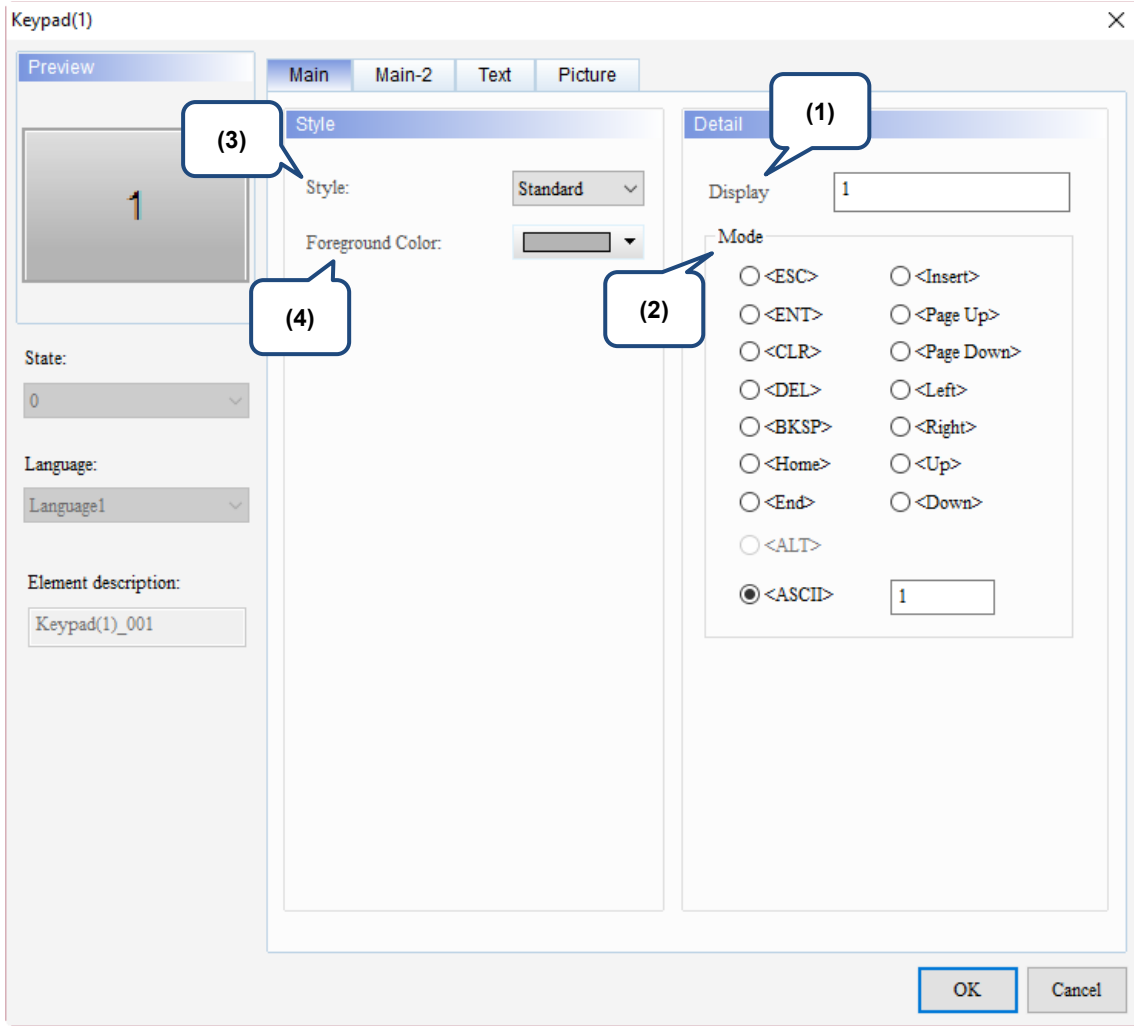


Figure 17.1.1 Properties of Keypad(1)

Table 17.1.1 Function page of Keypad(1)

Keypad(1)	
Function page	Description
Preview	Keypad(1) elements do not support multiple state values, but can edit multi-language data display.
Main	Set the Style, Foreground Color, Display, and Mode of the element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.

■ Main







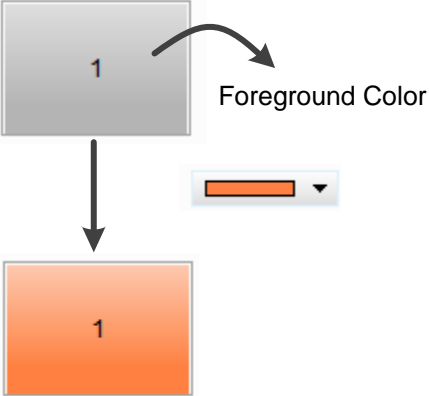


17

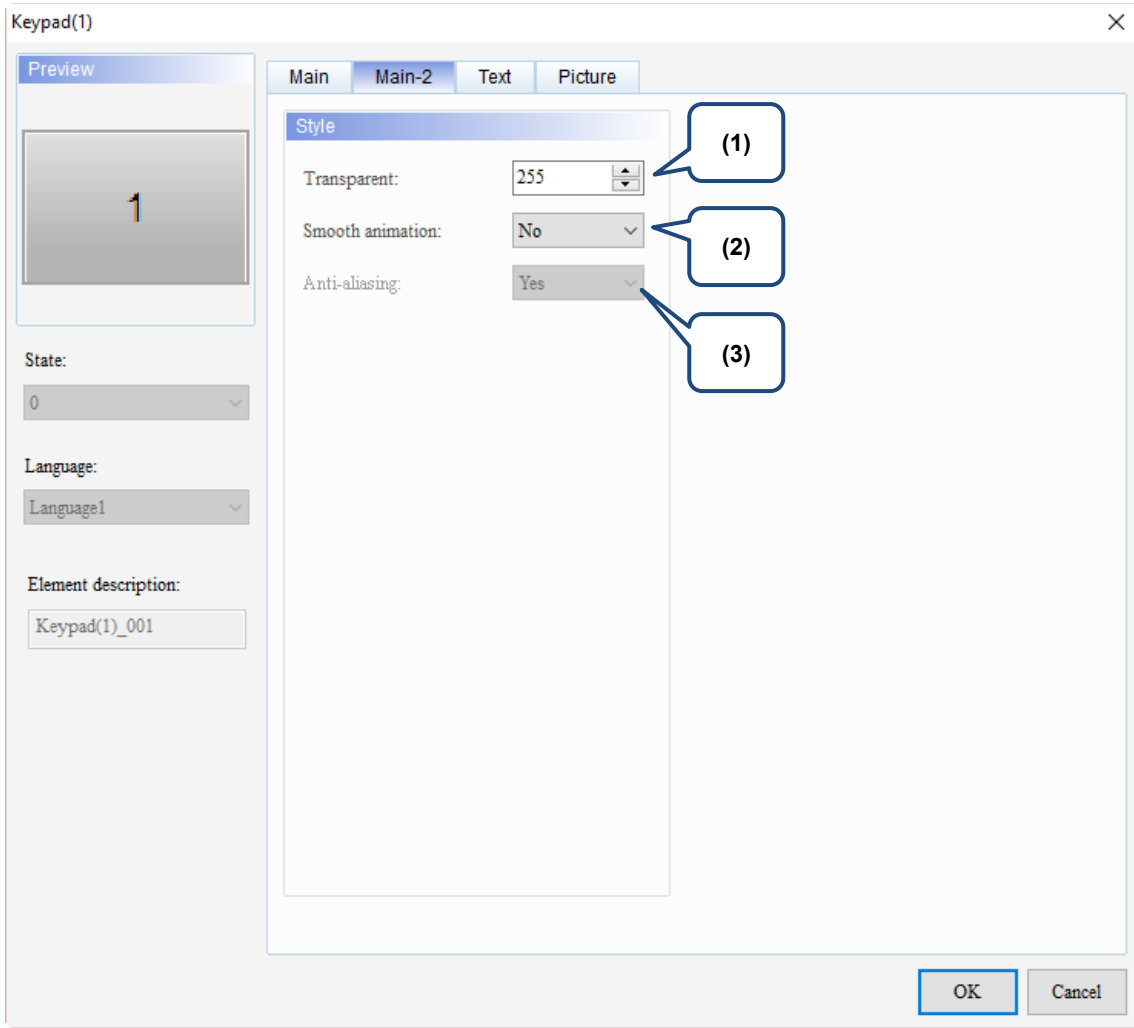
Figure 17.1.2 Main property page for the Keypad(1) element

No.	Property	Function description
(1)	Display	<p>When you press a button on Keypad(1), this will be the displaying value of that button.</p>

17

No.	Property	Function description				
(2)	Mode	<p>You can select a mode to define the action of a button. The 15 available modes include <ESC>, <ENT>, <CLR>, , <BKSP>, <Home>, <End>, <Insert>, <Page Up>, <Page Down>, <Left>, <Right>, <Up>, <Down>, and <ASCII>.</p> <ul style="list-style-type: none"> ■ <ESC>: cancel the entry. If the Keypad element is on a sub-screen, executing ESC will also close the sub-screen. ■ <ENT>: input the entry. ■ <CLR>: clear a string of characters. ■ : delete a single character. ■ <BKSP>: delete a single character. ■ <Home>: move the input cursor to the beginning of that line. ■ <End>: move the input cursor to the end of that line. ■ <Insert>: switch between insert and replace. ■ <Page Up>: switch the current page to the previous page. ■ <Page Down>: switch the current page to the next page. ■ <Left>: move the input cursor to the left by one character. ■ <Right>: move the input cursor to the right by one character. ■ <Up>: move the input cursor up a line. ■ <Down>: move the input cursor down a line. ■ <ASCII>: you can specify the input code. 				
(3)	Style	<p>There are two element styles to choose from: Standard and Raised. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Standard</th> <th>Raised</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </tbody> </table>	Standard	Raised		
Standard	Raised					
						
(4)	Foreground Color	<p>Set the foreground color of the element.</p> 				







■ Main-2



17

Figure 17.1.3 Main-2 property page for the Keypad(1) element

17

No.	Property	Function description							
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.							
(2)	Smooth animation	<ul style="list-style-type: none"> ■ The Smooth animation function is available for this element. ■ After ungrouping the Keypad elements, you can activate the Smooth animation function per button. When you activate the Smooth animation function, the buttons with this setting will enlarge when you press it. 							
		<table border="1" style="width: 100%; text-align: center;"> <tr> <td rowspan="2">Yes</td> <td colspan="4">  </td> </tr> <tr> <td colspan="4">  </td> </tr> </table>	Yes						
Yes									
									
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.							

■ Text

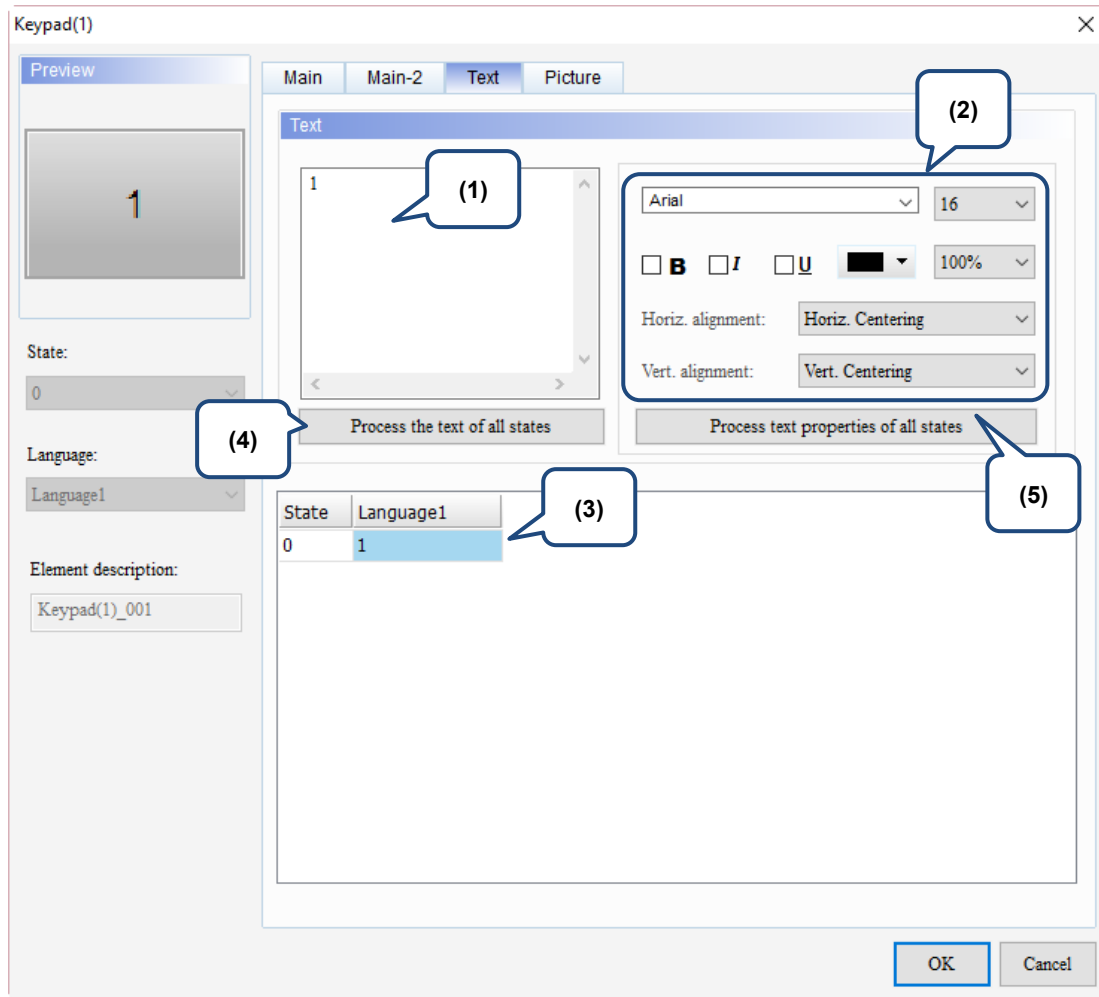
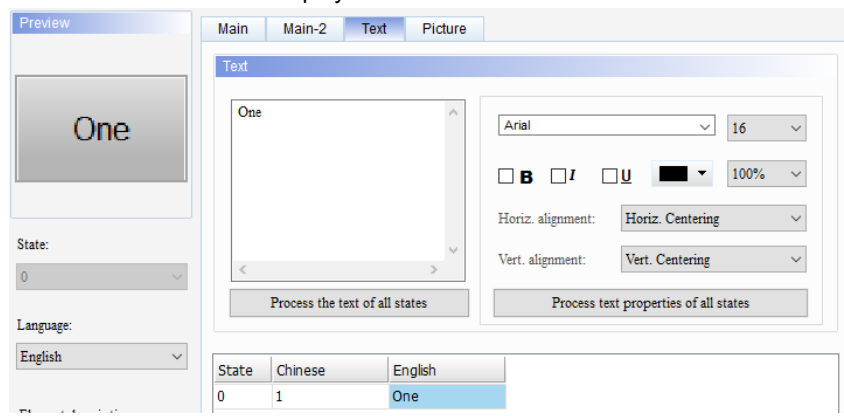


Figure 17.1.4 Text property page for the Keypad(1) element

No.	Property	Function description
(1)	Text	<p>You can enter the text to display in this box.</p> 
(2)	Text	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as the Keypad element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as the Keypad element does not have multiple states.

17

■ Picture

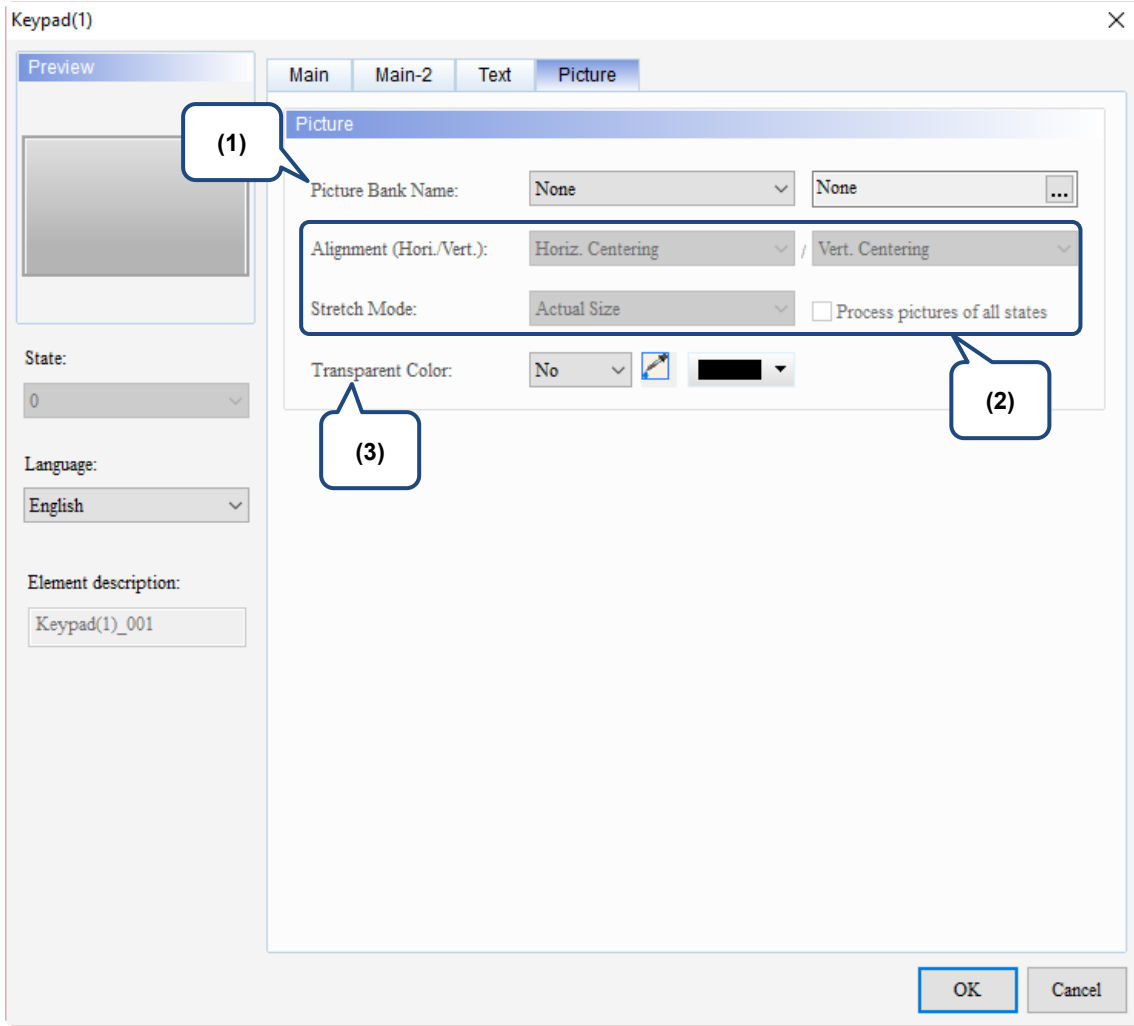
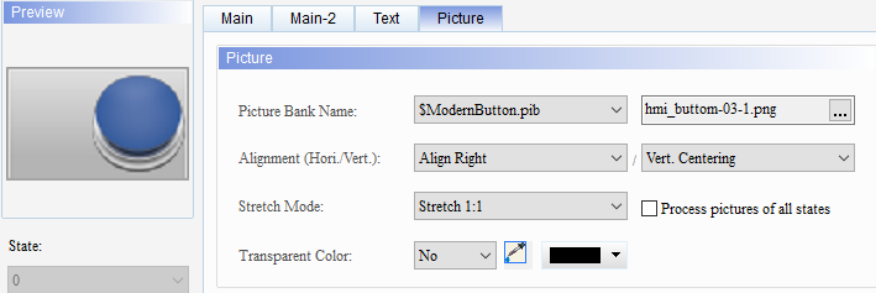













Figure 17.1.5 Picture property page for the Keypad(1) element

No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.</p>  <p>The 'Picture' dialog includes the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: A drop-down menu currently showing 'None' and a list of picture banks including \$3DButton.pib, \$3DCButton.pib, \$3DFan.pib, \$3DFineLamp2State.pib, \$3DFineLampNState.pib, \$3DFineSW2State.pib, \$3DFineSWNState.pib, \$3DLamp2State.pib, \$3DLamp3State.pib, \$3DLights.pib, \$3DPump.pib, \$3DSButton.pib, \$3DSign.pib, \$3DSW10State.pib, \$3DTank.pib, \$3DToggleSW.pib, \$3DTPipe.pib, \$IndustrySewing, \$IndustryWoodWorking, \$ModernButton.pib, \$ModernButton2.pib, \$ModernController.pib, \$ModernFan.pib, \$ModernFlowMeters.pib, \$ModernLamp2State.pib, \$ModernMotor.pib, \$ModernNdustrualMisc.pib, \$ModernOperatorInterface.pib, and \$ModernPipe.pib. Alignment (Hori./Vert.): A dropdown menu set to 'Vert. Centering'. Stretch Mode: A dropdown menu. Transparent Color: A text input field. Process pictures of all states: An unchecked checkbox. <p>The 'Select Picture' dialog displays a grid of 9 button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

17

No.	Property	Function description								
(2)	Alignment	<ul style="list-style-type: none"> You can use the alignment options to set how pictures are aligned. 								
	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> <div style="display: flex; justify-content: space-around;">   </div>								

17.2 Keypad(2)

Keypad(2) is a hexadecimal keypad, which you can customize the font, size, color, alignment, and etc. It also provides a variety of modes for selection, including ESC, ENT, CLR, DEL, and ASCII. Keypad(2) is a grouped element, but you can right-click on the element to ungroup the element and separate the buttons on the keypad. You can also double-click the buttons for editing and making changes.

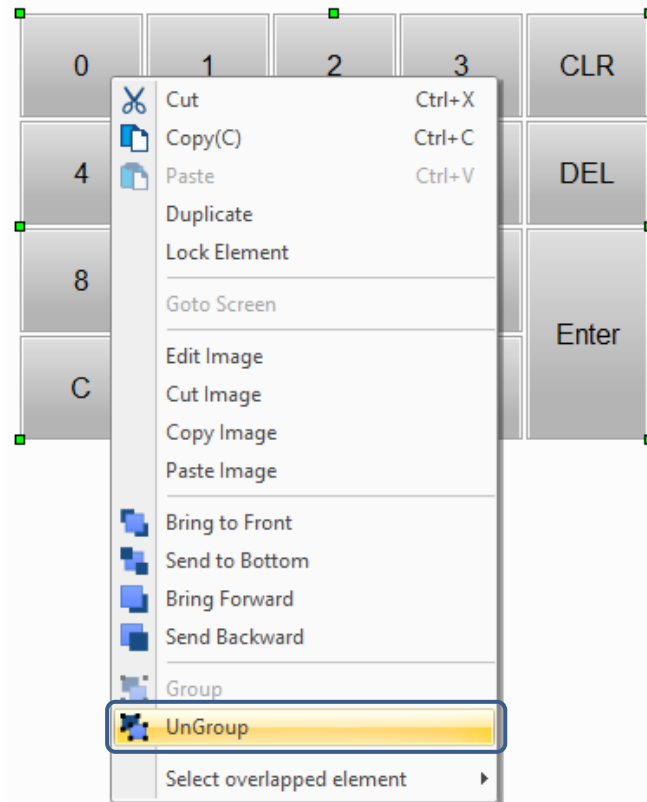
17

17

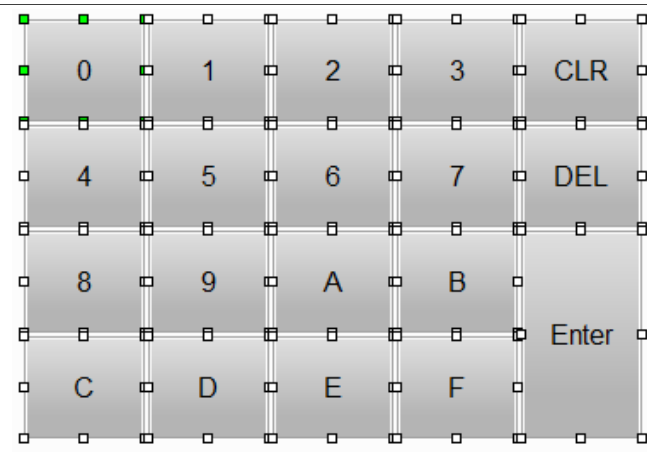


Grouped

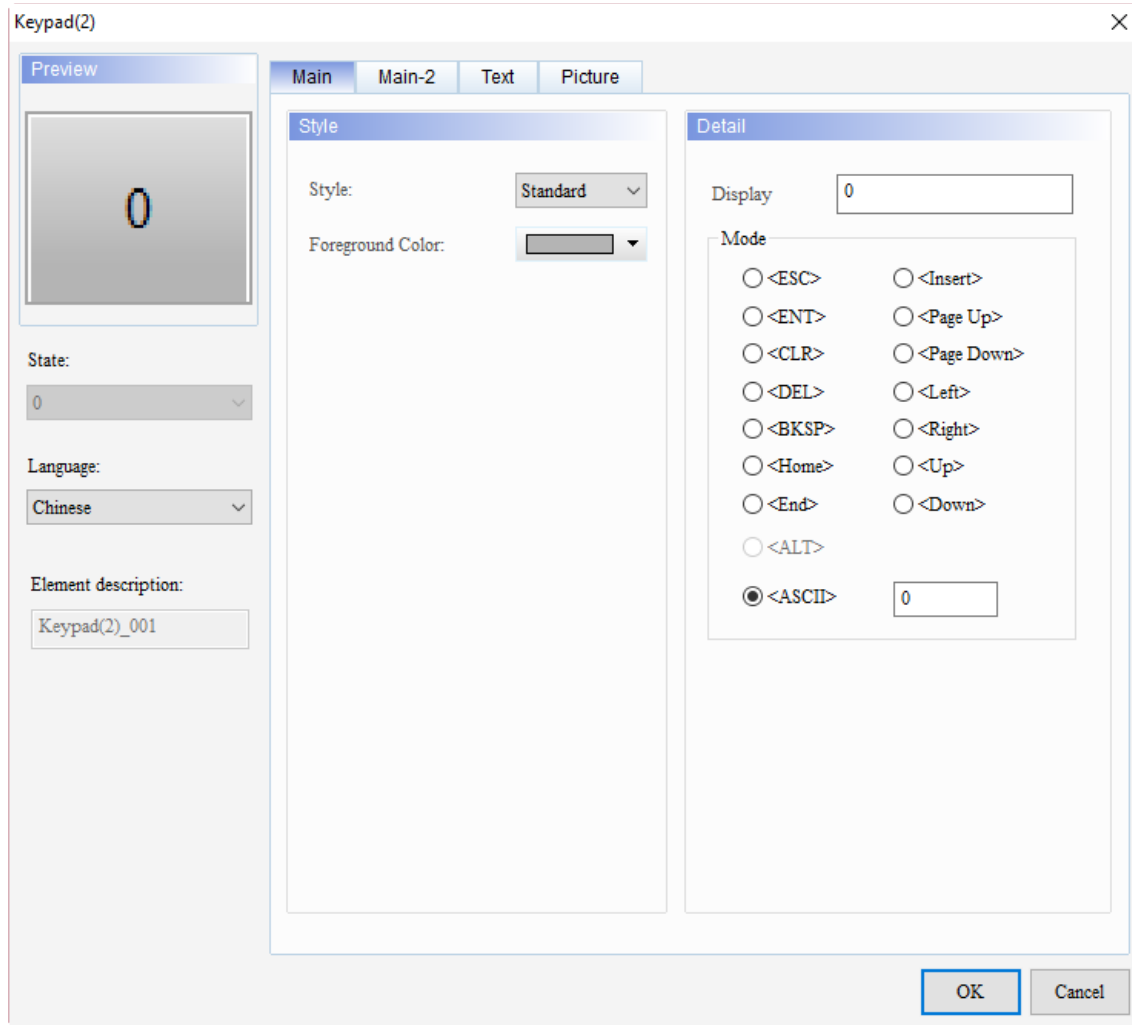
Right-click on the grouped element and select UnGroup.



Not grouped



When you double-click Keypad(2), the property page is shown as follows.



17

Figure 17.2.1 Properties of Keypad(2)

Table 17.2.1 Function page of Keypad(2)

Keypad(2)	
Function page	Description
Preview	Keypad(2) elements do not support multiple state values, but can edit multi-language data display.
Main	Set the Style, Foreground Color, Display, and Mode of the element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.

17

■ Main

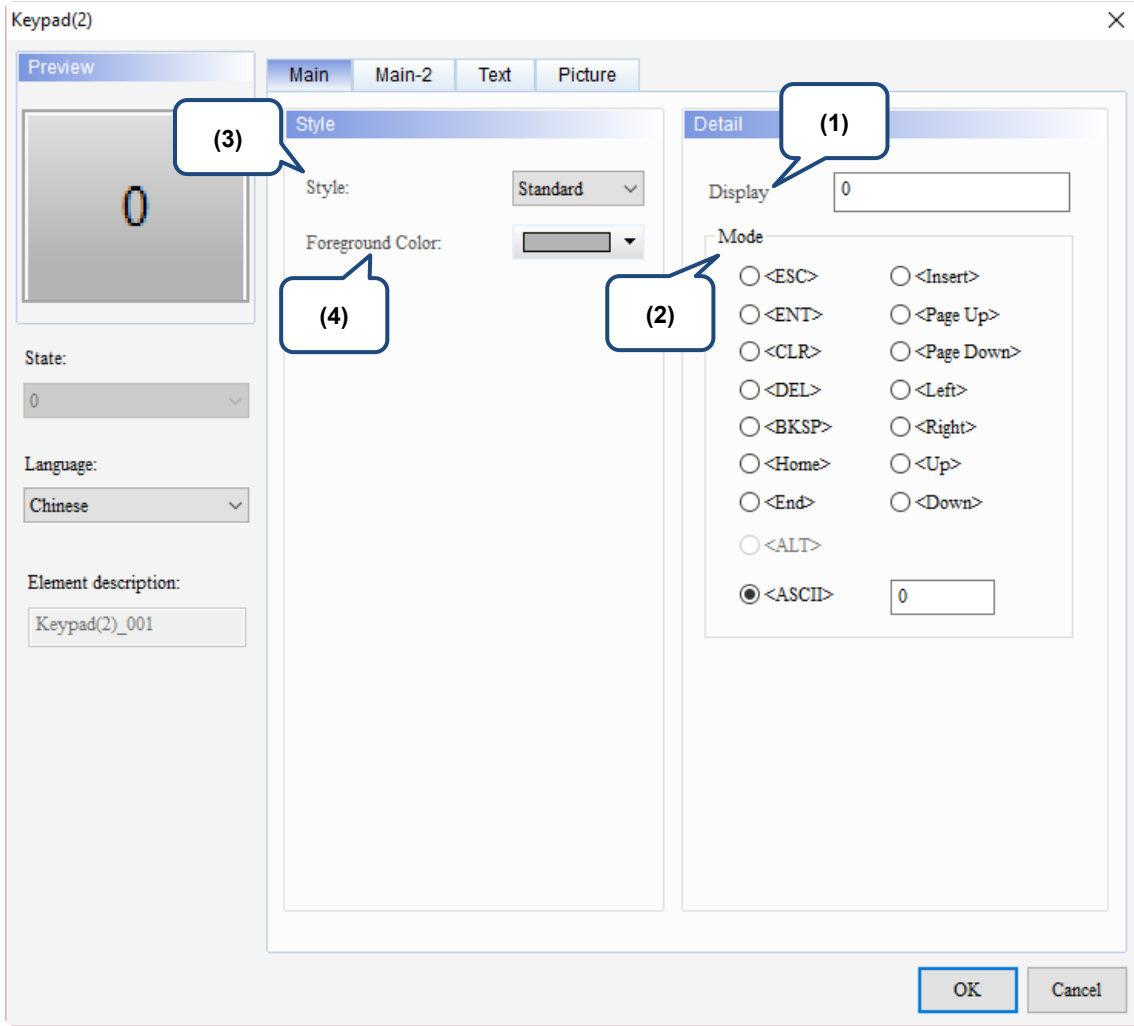
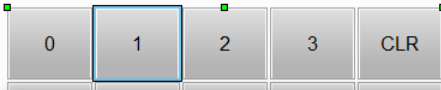
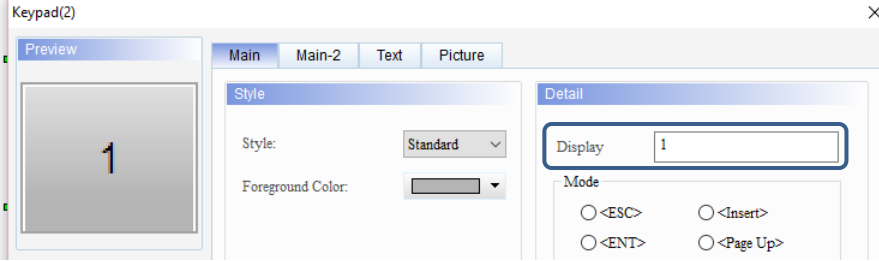






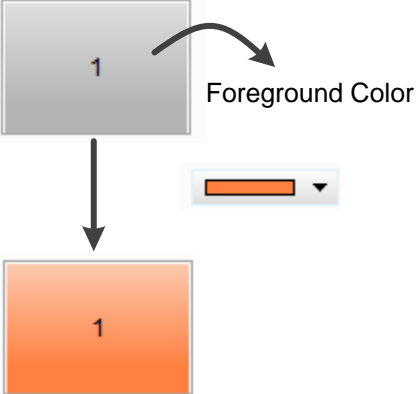


Figure 17.2.2 Main property page for the Keypad(2) element

No.	Property	Function description
(1)	Display	<p>When you press a button on Keypad(2), this will be the displaying value of that button.</p>  

No.	Property	Function description				
(2)	Mode	<p>You can select a mode to define the action of a button. The 15 available modes include <ESC>, <ENT>, <CLR>, , <BKSP>, <Home>, <End>, <Insert>, <Page Up>, <Page Down>, <Left>, <Right>, <Up>, <Down>, and <ASCII>.</p> <ul style="list-style-type: none"> ■ <ESC>: cancel the entry. If the Keypad element is on a sub-screen, executing ESC will also close the sub-screen. ■ <ENT>: input the entry. ■ <CLR>: clear a string of characters. ■ : delete a single character. ■ <BKSP>: delete a single character. ■ <Home>: move the input cursor to the beginning of that line. ■ <End>: move the input cursor to the end of that line. ■ <Insert>: switch between insert and replace. ■ <Page Up>: switch the current page to the previous page. ■ <Page Down>: switch the current page to the next page. ■ <Left>: move the input cursor to the left by one character. ■ <Right>: move the input cursor to the right by one character. ■ <Up>: move the input cursor up a line. ■ <Down>: move the input cursor down a line. ■ <ASCII>: you can specify the input code. 				
(3)	Style	<p>There are two element styles to choose from: Standard and Raised. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Standard</th> <th>Raised</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </tbody> </table>	Standard	Raised		
Standard	Raised					
						
(4)	Foreground Color	<p>Set the foreground color of the element.</p> 				

■ Main-2

17

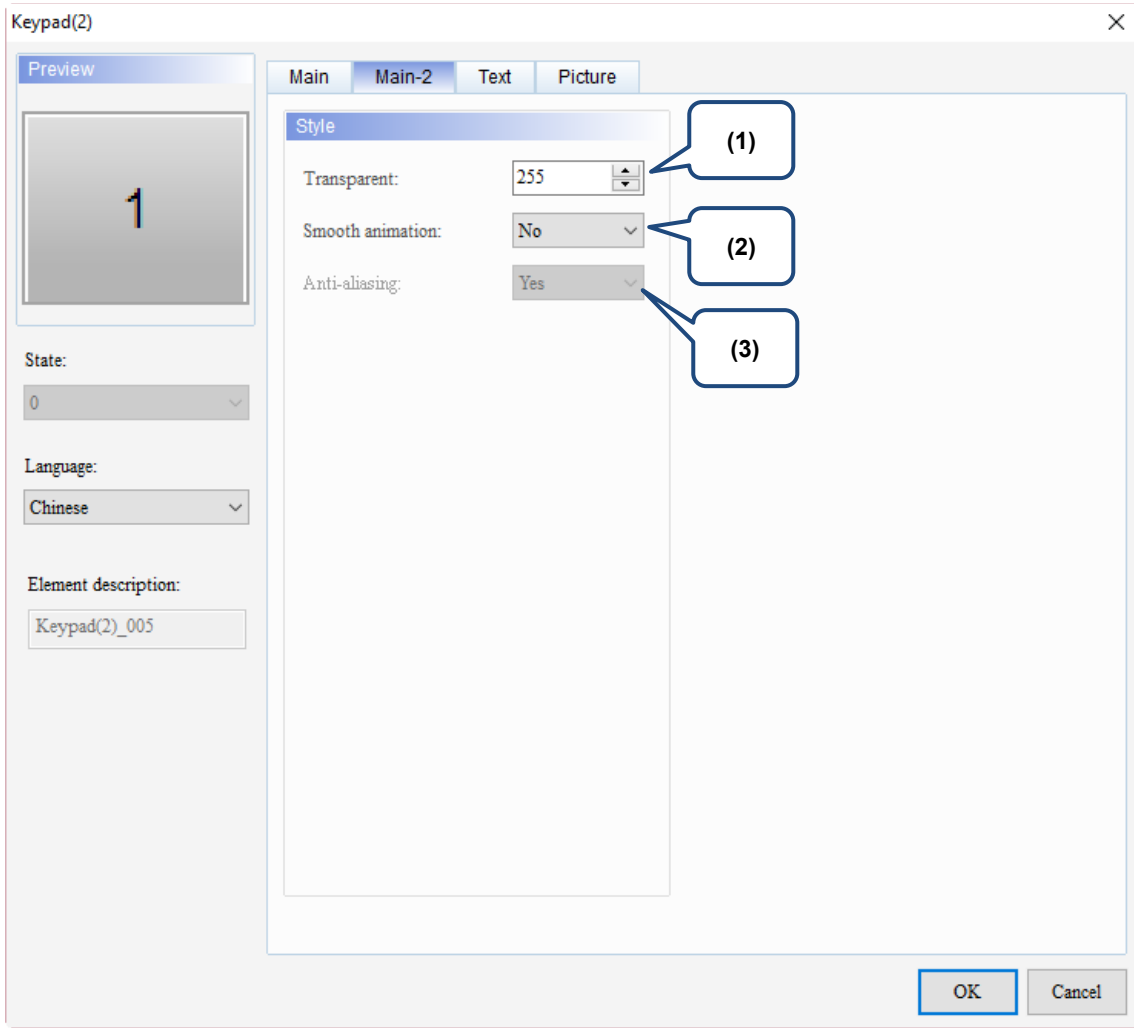
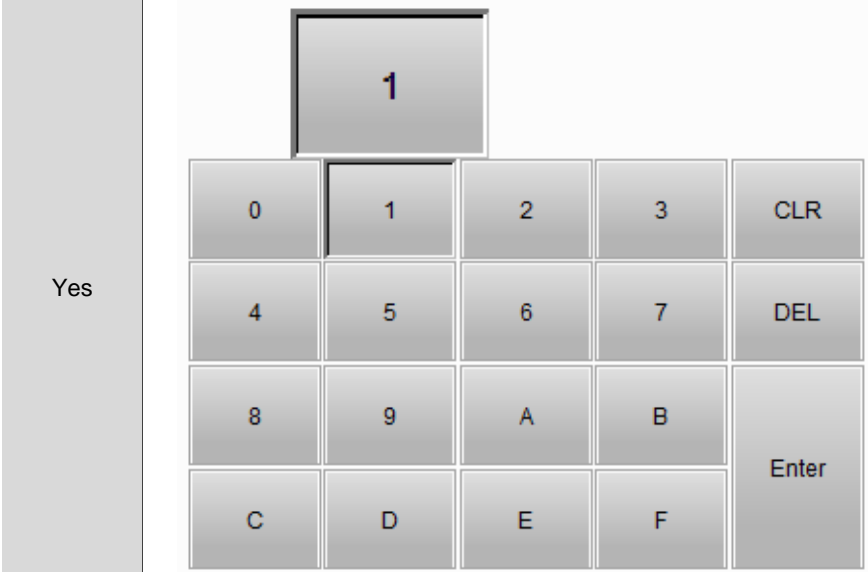



Figure 17.2.3 Main-2 property page for the Keypad(2) element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	<ul style="list-style-type: none"> ■ The Smooth animation function is available for this element. ■ After ungrouping the Keypad elements, you can activate the Smooth animation function per button. When you activate the Smooth animation function, the buttons with this setting will enlarge when you press it. <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 20px;">Yes</div>  </div> <div style="display: flex; align-items: center; justify-content: center; margin-top: 20px;"> <div style="margin-right: 20px;">No</div>  </div>
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

17

■ Text

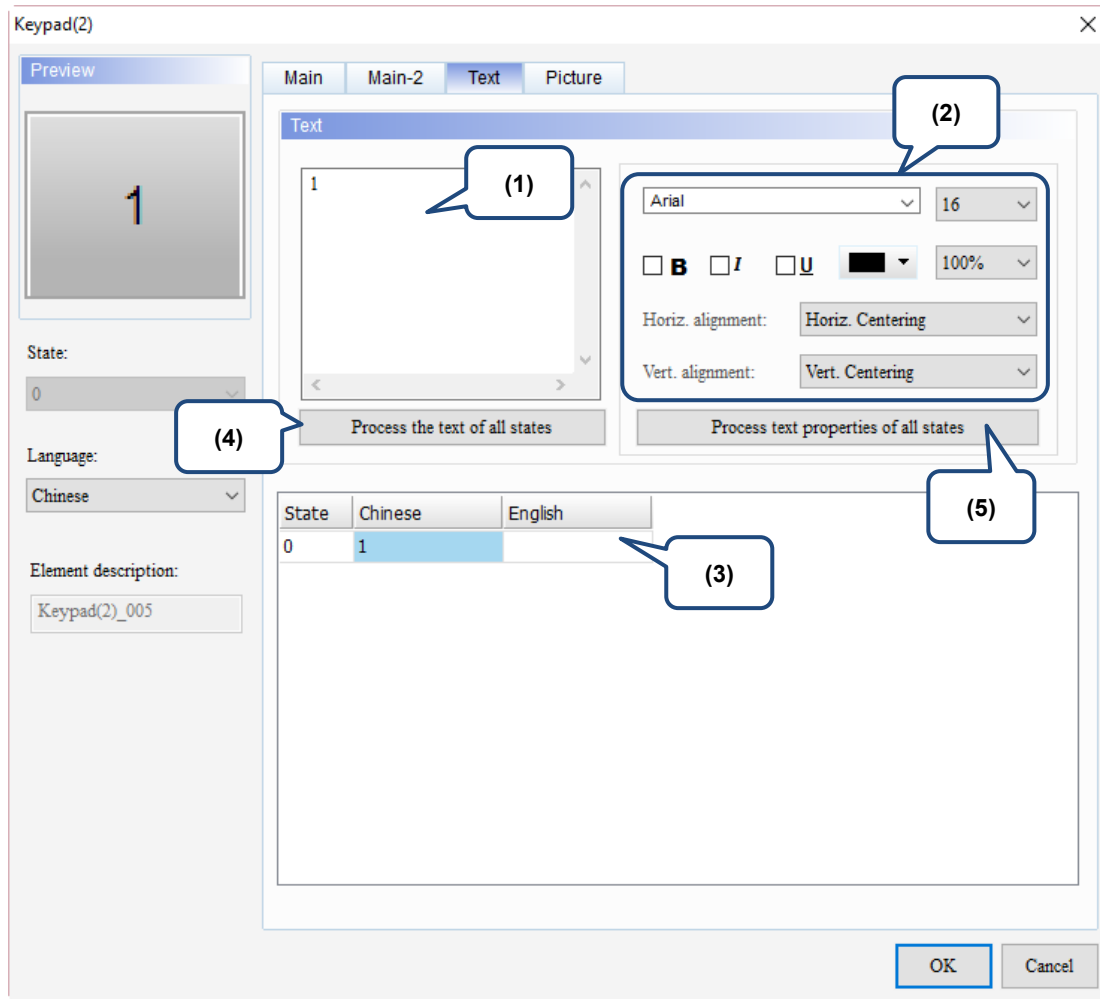
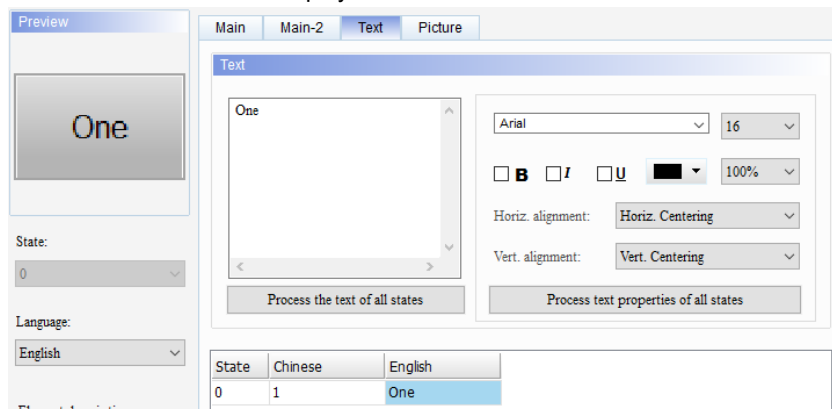
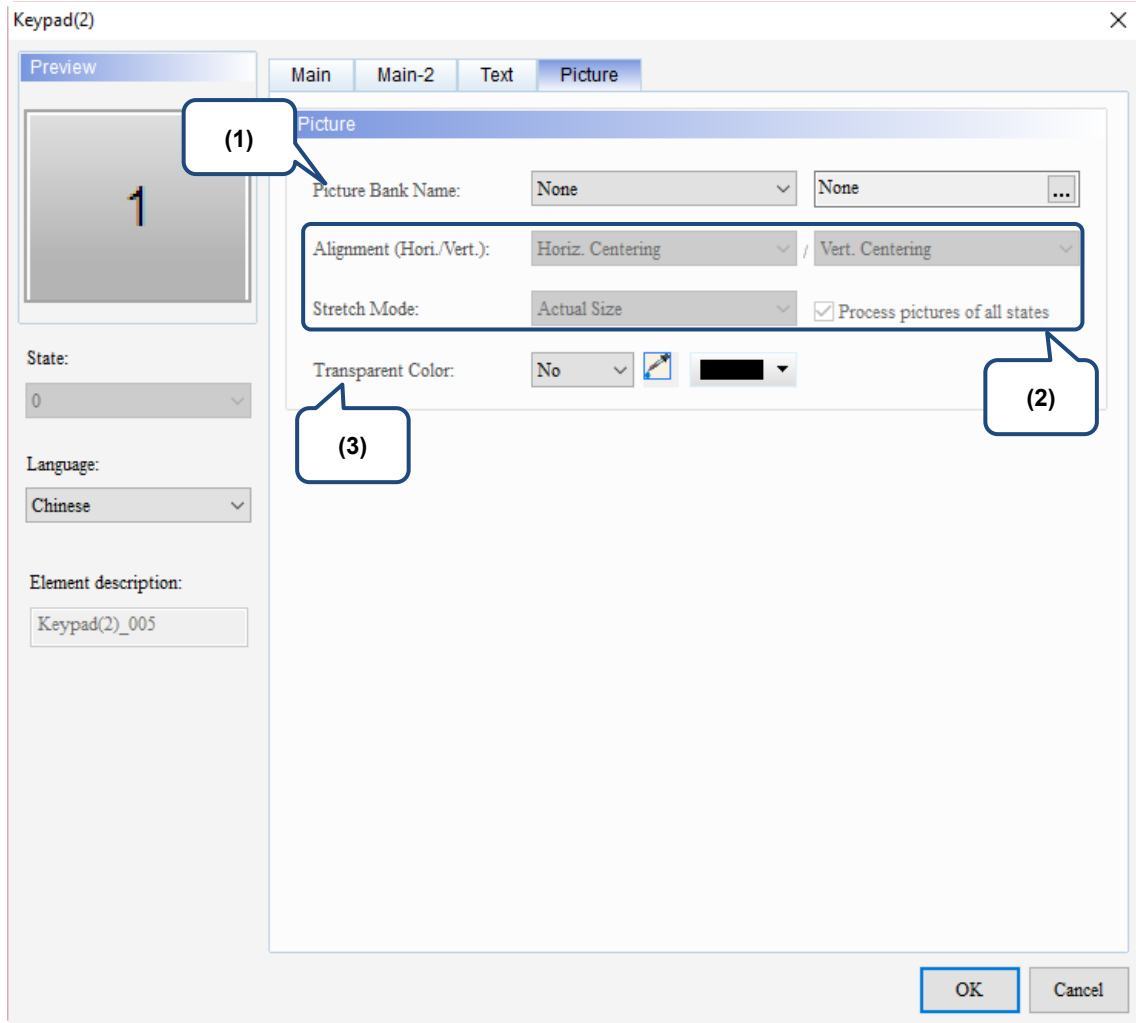


Figure 17.2.4 Text property page for the Keypad(2) element

No.	Property	Function description
(1)	Text	<p>You can enter the text to display in this box.</p> 
(2)	Text Property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as the Keypad element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as the Keypad element does not have multiple states.

■ Picture

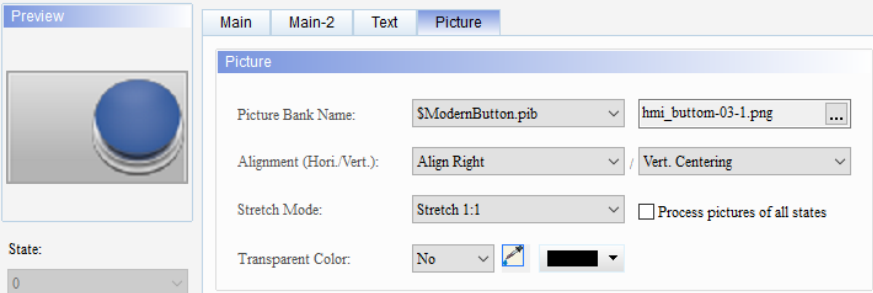













17

Figure 17.2.5 Picture property page for the Keypad(2) element

17

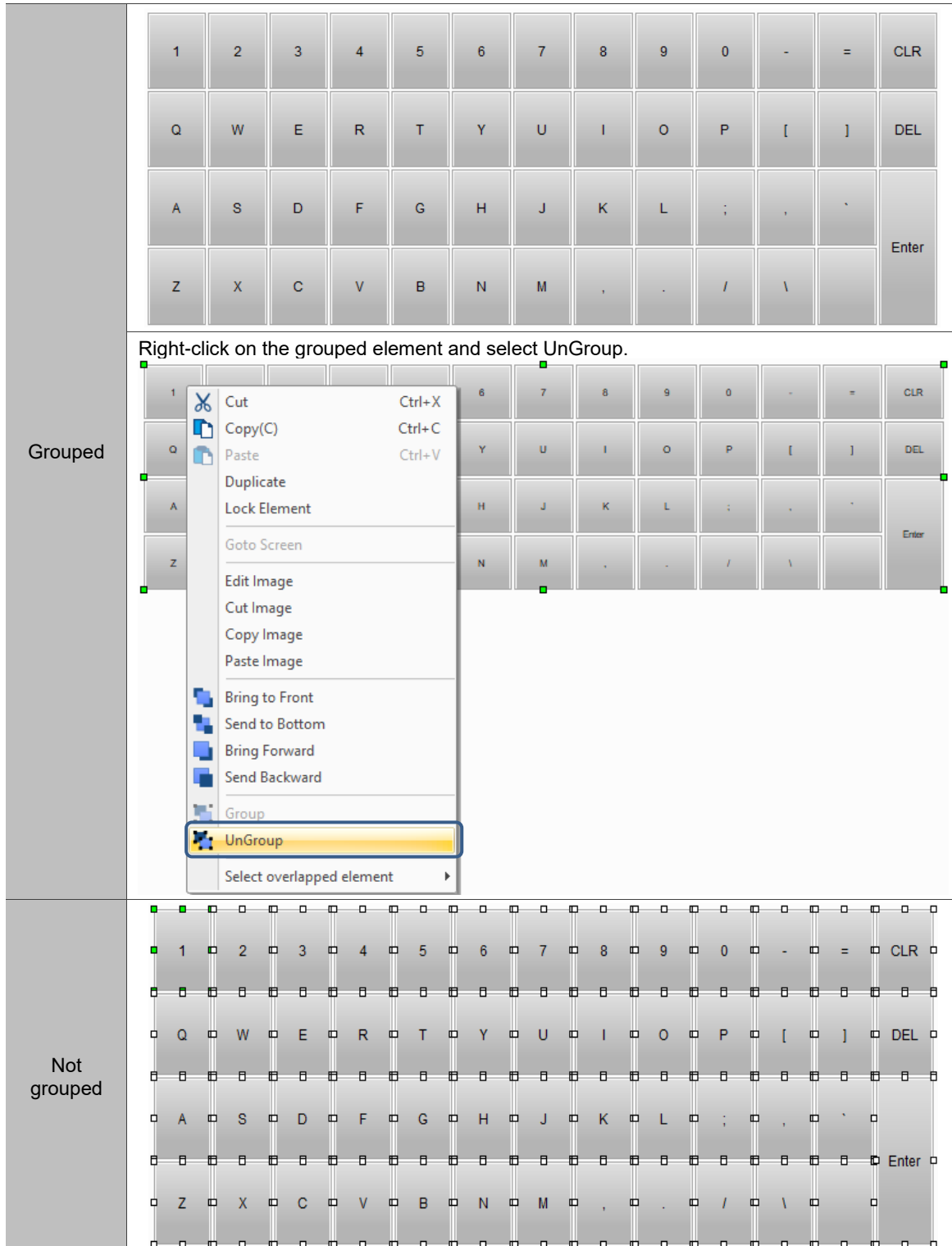
No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.</p>  <p>The 'Picture' dialog box contains the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: A dropdown menu currently showing 'None' and a list of picture banks including \$3DButton.pib, \$3DCButton.pib, \$3DFan.pib, \$3DFineLamp2State.pib, \$3DFineLampNState.pib, \$3DFineSW2State.pib, \$3DFineSWNState.pib, \$3DLamp2State.pib, \$3DLamp3State.pib, \$3DLights.pib, \$3DPump.pib, \$3DSButton.pib, \$3DSign.pib, \$3DSW10State.pib, \$3DTank.pib, \$3DToggleSW.pib, \$3DTPipe.pib, \$IndustrySewing, \$IndustryWoodWorking, \$ModernButton.pib, \$ModernButton2.pib, \$ModernController.pib, \$ModernFan.pib, \$ModernFlowMeters.pib, \$ModernLamp2State.pib, \$ModernMotor.pib, \$ModernNdustrualMisc.pib, \$ModernOperatorInterface.pib, and \$ModernPipe.pib. Alignment (Hori./Vert.): A dropdown menu showing 'Vert. Centering'. Stretch Mode: A dropdown menu. Transparent Color: A text input field. Process pictures of all states: A checkbox. <p>The 'Select Picture' dialog box displays a grid of 9 button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

No.	Property	Function description								
(2)	Alignment	<ul style="list-style-type: none"> You can use the alignment options to set how pictures are aligned. 								
	Stretch Mode	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time. <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> <div style="display: flex; justify-content: space-around;">   </div>								

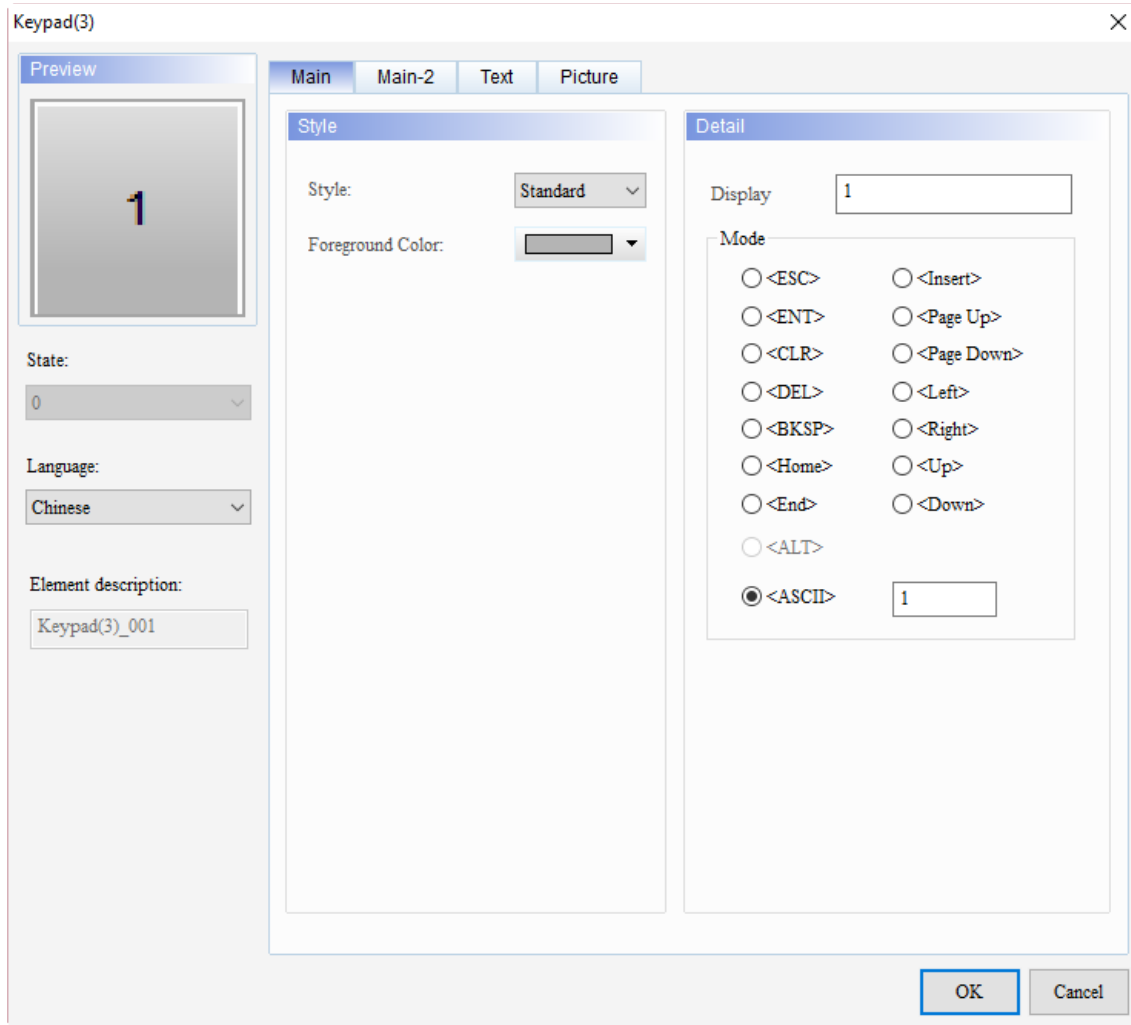
17

17.3 Keypad(3)

Keypad(3) is an alphanumeric input keypad, which you can customize the font, size, color, alignment, and etc. It also provides a variety of modes for selection, including ESC, ENT, CLR, DEL, and ASCII. Keypad(3) is a grouped element, but you can right-click on the element to ungroup the element and separate the buttons on the keypad. You can also double-click the buttons for editing and making changes.



When you double-click Keypad(3), the property page is shown as follows.



17

Figure 17.3.1 Properties of Keypad(3)

Table 17.3.1 Function page of Keypad(3)

Keypad(3)	
Function page	Description
Preview	Keypad(3) elements do not support multiple state values, but can edit multi-language data display.
Main	Set the Style, Foreground Color, Display, and Mode of the element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.

17

■ Main

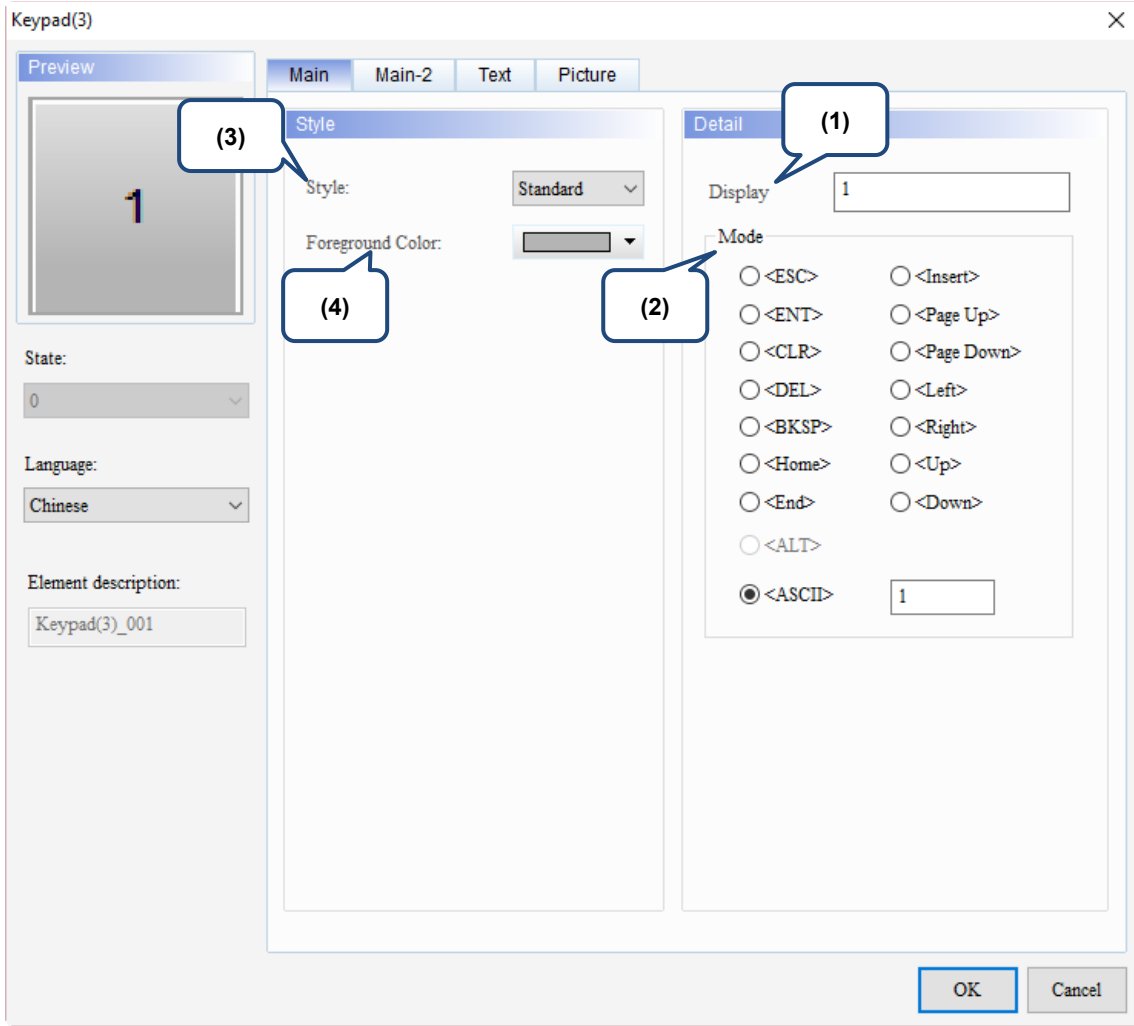






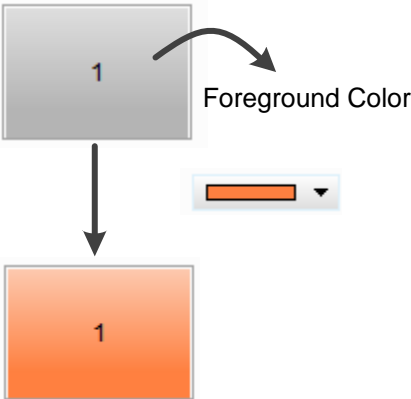


Figure 17.3.2 Main property page for the Keypad(3) element

No.	Property	Function description
(1)	Display	<p>When you press a button on Keypad(3), this will be the displaying value of that button.</p>

No.	Property	Function description				
(2)	Mode	<p>You can select a mode to define the action of a button. The 15 available modes include <ESC>, <ENT>, <CLR>, , <BKSP>, <Home>, <End>, <Insert>, <Page Up>, <Page Down>, <Left>, <Right>, <Up>, <Down>, and <ASCII>.</p> <ul style="list-style-type: none"> ■ <ESC>: cancel the entry. If the Keypad element is on a sub-screen, executing ESC will also close the sub-screen. ■ <ENT>: input the entry. ■ <CLR>: clear a string of characters. ■ : delete a single character. ■ <BKSP>: delete a single character. ■ <Home>: move the input cursor to the beginning of that line. ■ <End>: move the input cursor to the end of that line. ■ <Insert>: switch between insert and replace. ■ <Page Up>: switch the current page to the previous page. ■ <Page Down>: switch the current page to the next page. ■ <Left>: move the input cursor to the left by one character. ■ <Right>: move the input cursor to the right by one character. ■ <Up>: move the input cursor up a line. ■ <Down>: move the input cursor down a line. ■ <ASCII>: you can specify the input code. 				
(3)	Style	<p>There are two element styles to choose from: Standard and Raised. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Standard</th> <th>Raised</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </tbody> </table>	Standard	Raised		
Standard	Raised					
						
(4)	Foreground Color	<p>Set the foreground color of the element.</p> 				

■ Main-2

17

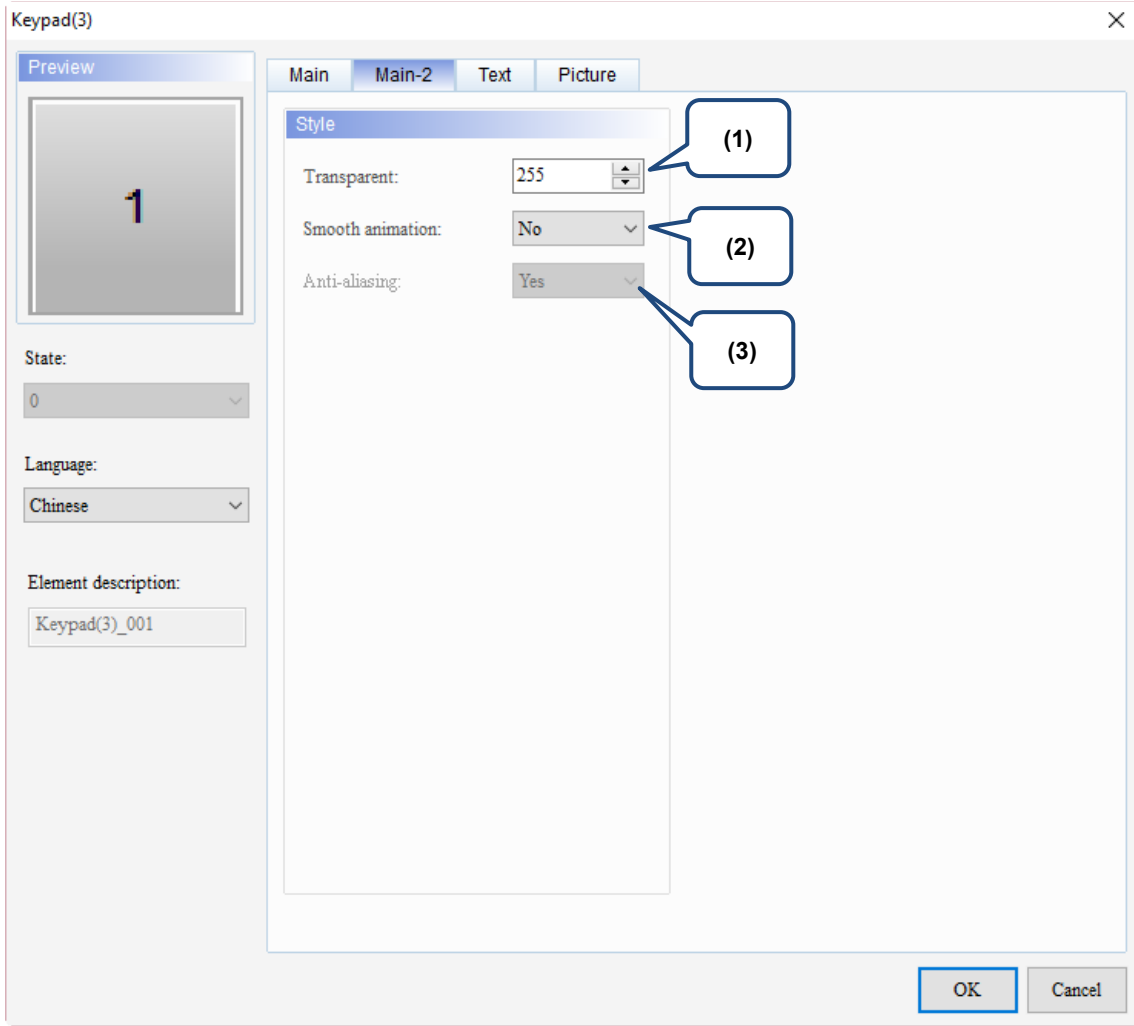


Figure 17.3.3 Main-2 property page for the Keypad(3) element

No.	Property	Function description																																																																																																																								
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.																																																																																																																								
(2)	Smooth animation	<ul style="list-style-type: none"> ■ The Smooth animation function is available for this element. ■ After ungrouping the Keypad elements, you can activate the Smooth animation function per button. When you activate the Smooth animation function, the buttons with this setting will enlarge when you press it. 																																																																																																																								
		<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 50px; vertical-align: middle;">Yes</td> <td style="border: 2px solid black; padding: 2px;">1</td> <td colspan="12"></td> </tr> <tr> <td></td> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>0</td><td>-</td><td>=</td><td>CLR</td> </tr> <tr> <td></td> <td>Q</td><td>W</td><td>E</td><td>R</td><td>T</td><td>Y</td><td>U</td><td>I</td><td>O</td><td>P</td><td>[</td><td>]</td><td>DEL</td> </tr> <tr> <td></td> <td>A</td><td>S</td><td>D</td><td>F</td><td>G</td><td>H</td><td>J</td><td>K</td><td>L</td><td>;</td><td>,</td><td>'</td><td rowspan="2">Enter</td> </tr> <tr> <td></td> <td>Z</td><td>X</td><td>C</td><td>V</td><td>B</td><td>N</td><td>M</td><td>.</td><td>.</td><td>/</td><td>\</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 50px; vertical-align: middle;">No</td> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>0</td><td>-</td><td>=</td><td>CLR</td> </tr> <tr> <td></td> <td>Q</td><td>W</td><td>E</td><td>R</td><td>T</td><td>Y</td><td>U</td><td>I</td><td>O</td><td>P</td><td>[</td><td>]</td><td>DEL</td> </tr> <tr> <td></td> <td>A</td><td>S</td><td>D</td><td>F</td><td>G</td><td>H</td><td>J</td><td>K</td><td>L</td><td>;</td><td>,</td><td>'</td><td rowspan="2">Enter</td> </tr> <tr> <td></td> <td>Z</td><td>X</td><td>C</td><td>V</td><td>B</td><td>N</td><td>M</td><td>.</td><td>.</td><td>/</td><td>\</td> </tr> </table>	Yes	1														1	2	3	4	5	6	7	8	9	0	-	=	CLR		Q	W	E	R	T	Y	U	I	O	P	[]	DEL		A	S	D	F	G	H	J	K	L	;	,	'	Enter		Z	X	C	V	B	N	M	.	.	/	\	No	1	2	3	4	5	6	7	8	9	0	-	=	CLR		Q	W	E	R	T	Y	U	I	O	P	[]	DEL		A	S	D	F	G	H	J	K	L	;	,	'	Enter		Z	X	C	V	B	N	M	.	.
Yes	1																																																																																																																									
	1	2	3	4	5	6	7	8	9	0	-	=	CLR																																																																																																													
	Q	W	E	R	T	Y	U	I	O	P	[]	DEL																																																																																																													
	A	S	D	F	G	H	J	K	L	;	,	'	Enter																																																																																																													
	Z	X	C	V	B	N	M	.	.	/	\																																																																																																															
No	1	2	3	4	5	6	7	8	9	0	-	=	CLR																																																																																																													
	Q	W	E	R	T	Y	U	I	O	P	[]	DEL																																																																																																													
	A	S	D	F	G	H	J	K	L	;	,	'	Enter																																																																																																													
	Z	X	C	V	B	N	M	.	.	/	\																																																																																																															
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.																																																																																																																								

17

■ Text

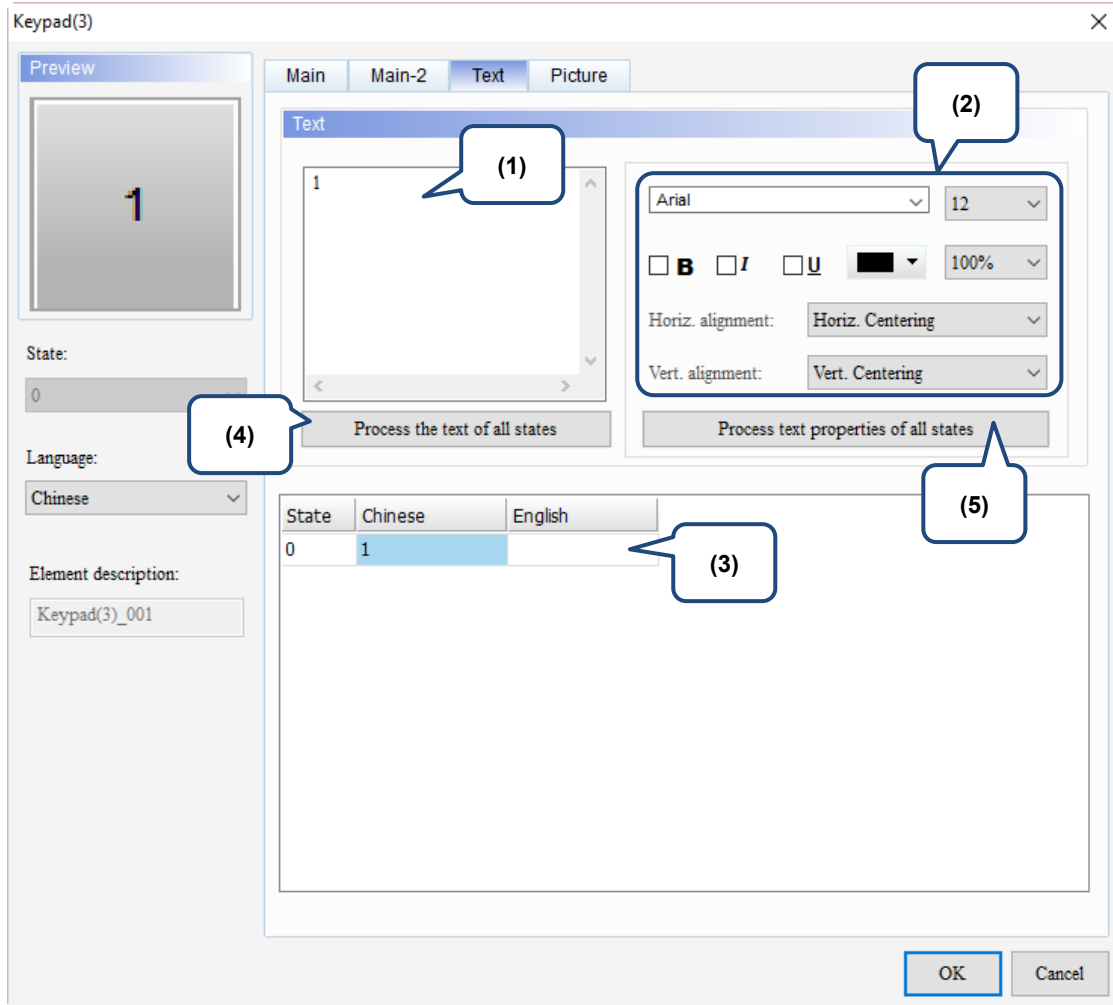
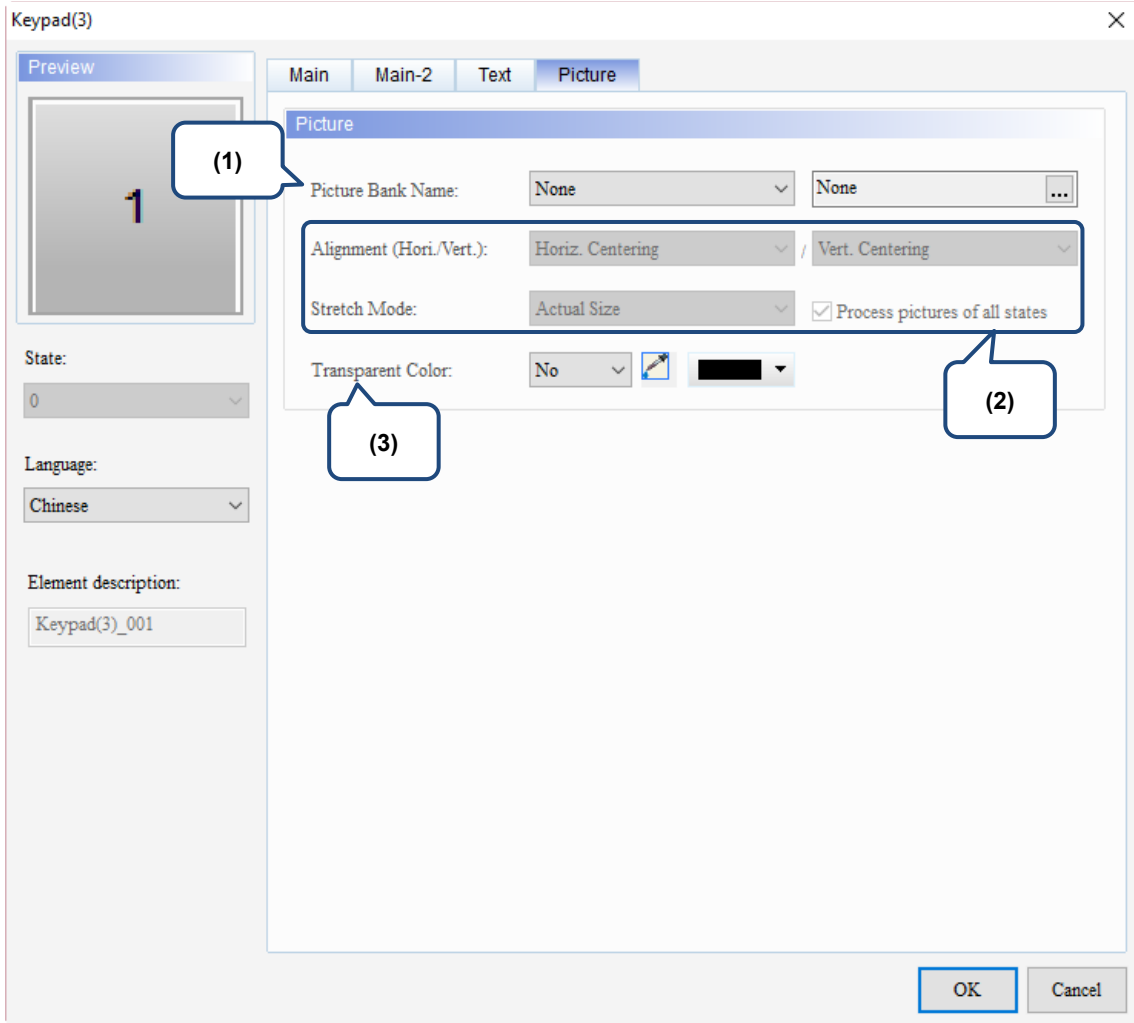


Figure 17.3.4 Text property page for the Keypad(3) element

No.	Property	Function description
(1)	Text	<p>You can enter the text to display in this box.</p>
(2)	Text Property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as the Keypad element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as the Keypad element does not have multiple states.

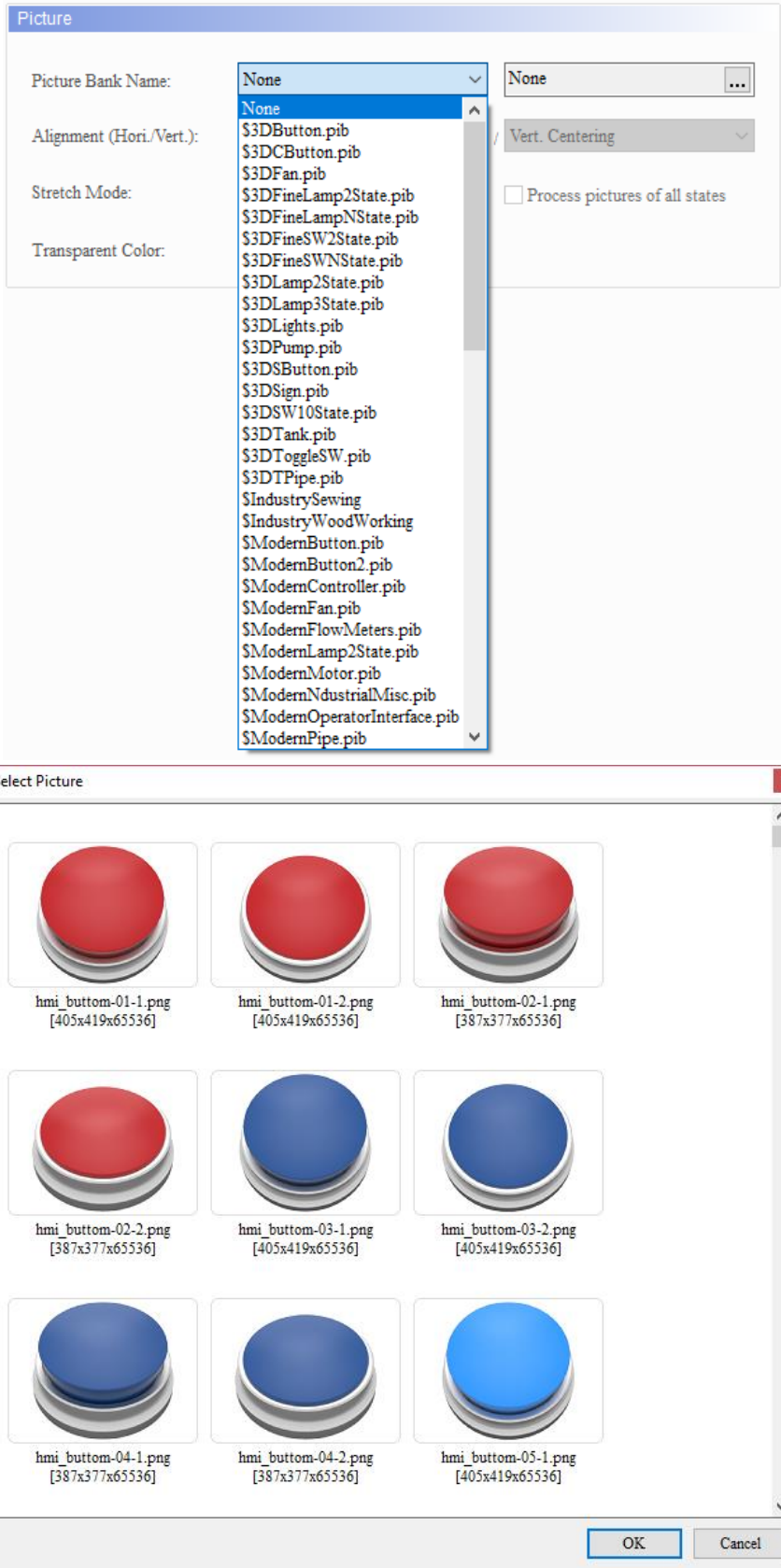
■ Picture

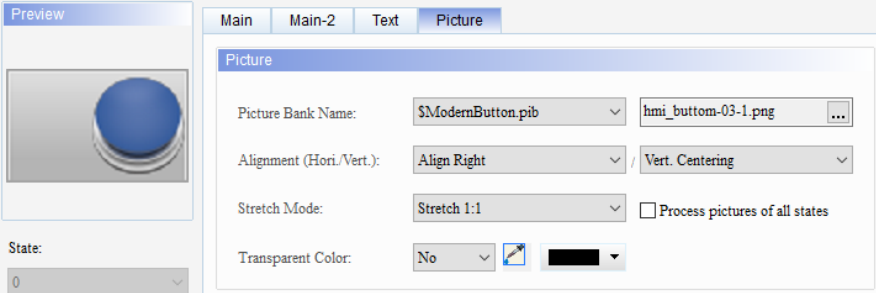













17

Figure 17.3.5 Picture property page for the Keypad(3) element

17

No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.</p>  <p>The 'Picture' dialog box includes the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: A dropdown menu currently showing 'None' and a list of picture banks including \$3DButton.pib, \$3DCButton.pib, \$3DFan.pib, \$3DFineLamp2State.pib, \$3DFineLampNState.pib, \$3DFineSW2State.pib, \$3DFineSWNState.pib, \$3DLamp2State.pib, \$3DLamp3State.pib, \$3DLights.pib, \$3DPump.pib, \$3DSButton.pib, \$3DSign.pib, \$3DSW10State.pib, \$3DTank.pib, \$3DToggleSW.pib, \$3DTPipe.pib, \$IndustrySewing, \$IndustryWoodWorking, \$ModernButton.pib, \$ModernButton2.pib, \$ModernController.pib, \$ModernFan.pib, \$ModernFlowMeters.pib, \$ModernLamp2State.pib, \$ModernMotor.pib, \$ModernNdustrialMisc.pib, and \$ModernOperatorInterface.pib. Alignment (Hori./Vert.): A dropdown menu showing 'Vert. Centering'. Stretch Mode: A dropdown menu. Transparent Color: A text input field. Process pictures of all states: A checkbox. <p>The 'Select Picture' dialog box displays a grid of nine button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

No.	Property	Function description								
(2)	Alignment	<p>■ You can use the alignment options to set how pictures are aligned.</p> 								
	Stretch Mode	<p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>■ If you check [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specifies a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 								

(This page is intentionally left blank.)

17

This chapter provides the usage and setting details for the Slider elements.



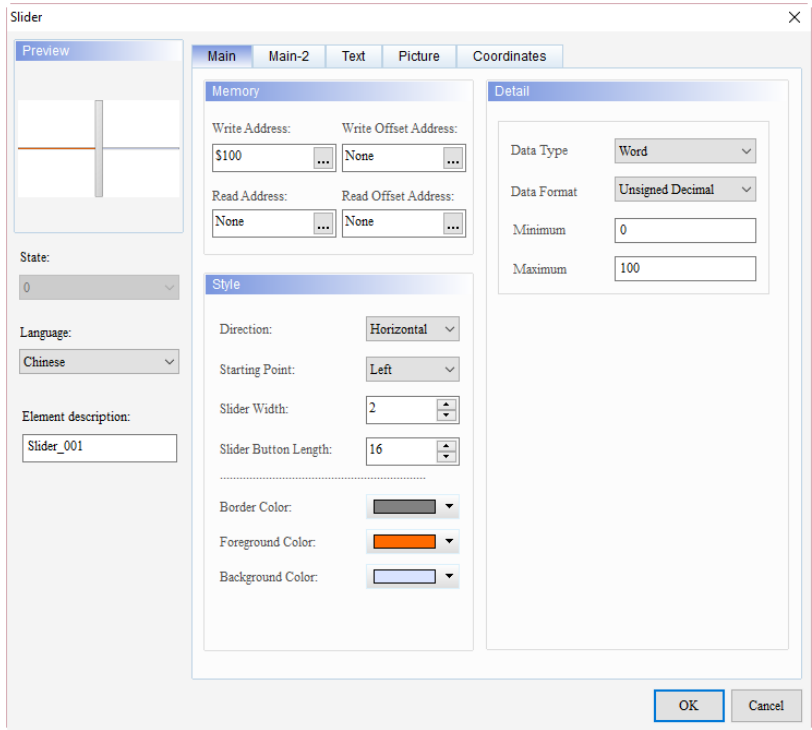
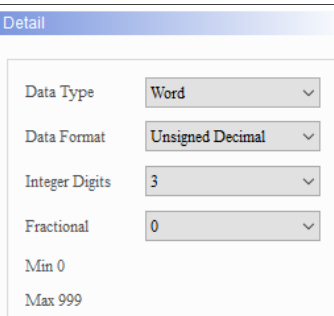
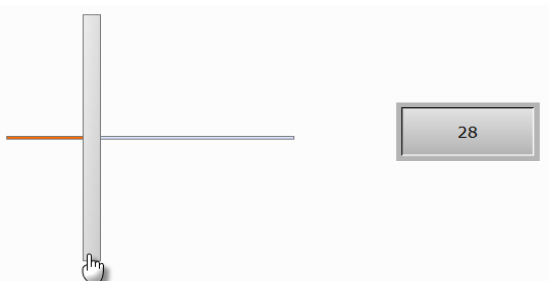
18.1	Slider	18-2
------	--------------	------

18

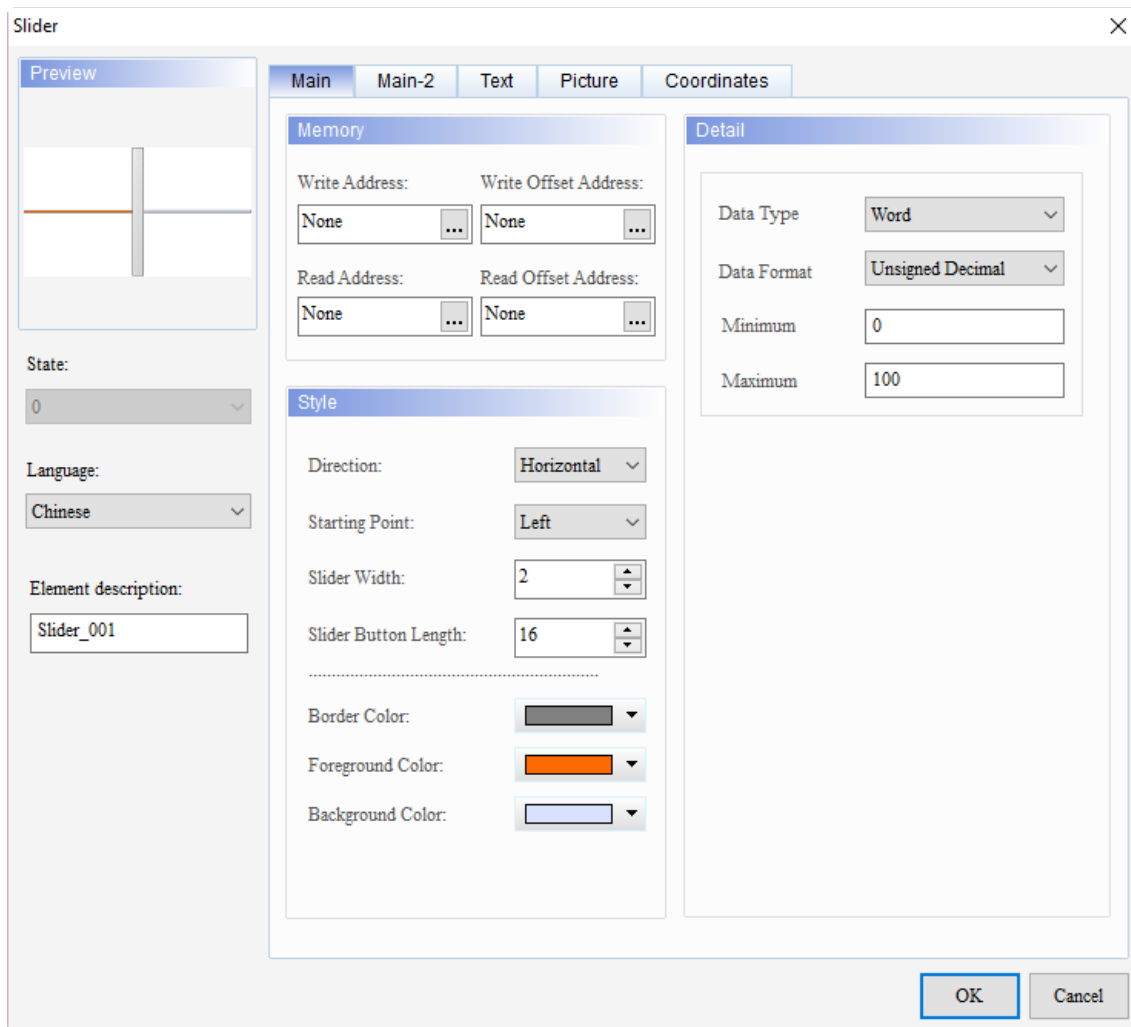
18.1 Slider

You can use the Slider element to drag and adjust the value easily. Please refer to Table 18.1.1 for the Slider element example.

Table 18.1.1 Slider element example

Slider		
<p>Create Slider element</p>	<p>Step 1: create a Slider element with its Write Address as \$100, then set the Minimum and Maximum as 0 and 100 respectively.</p> 	
<p>Create Numeric Display element</p>	<p>Numeric Display element</p>	<p>Step 2: create a Numeric Display element with its Read Address as \$1357.</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">Read Address</div> <div style="border: 1px solid gray; padding: 2px;">R:\$100</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="border: 1px solid gray; padding: 2px; width: 40px; text-align: center;">123</div> </div> <div style="margin-top: 10px;"> <p>Settings</p>  </div>
<p>Execution results</p>	<p>After creating the elements, please compile and download the elements to the HMI. When you move the Slider element, the Numeric Display element will show the value corresponding to the movement of the Slider element.</p> 	

When you double-click the Slider element, the property page is shown as follows.



18

Figure 18.1.1 Properties of the Slider element

Table 18.1.2 Function page of the Slider element

Slider	
Function page	Description
Preview	Slider elements do not support multiple state values, but can edit multi-language data display.
Main	Set the Write Address, Read Address, Write Offset Address, Read Offset Address, Data Type, Data Format, Minimum, and Maximum. Set the Direction, Starting Point, Slider Width, Slider Button Length, Border Color, Foreground Color, and Background Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

18

■ Main

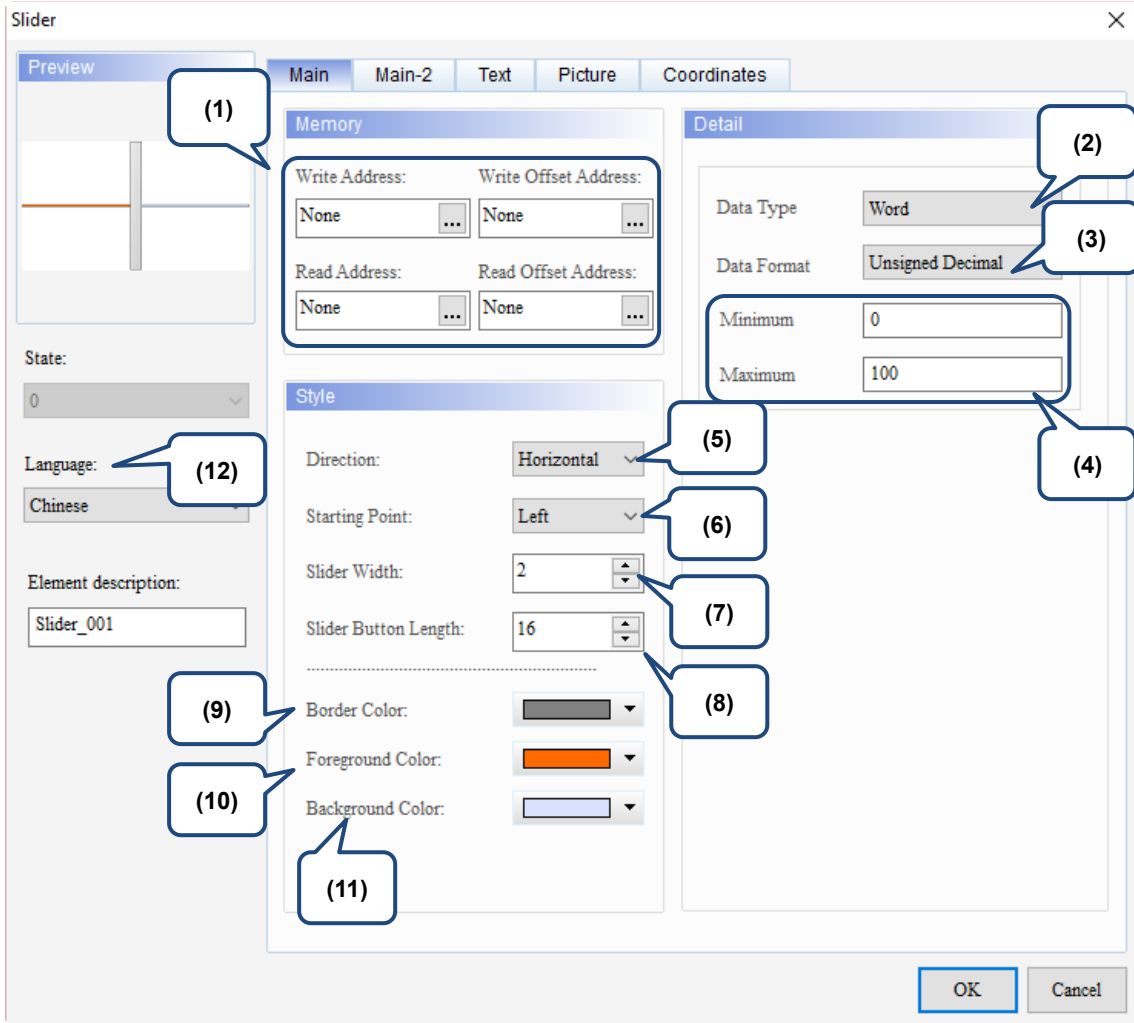
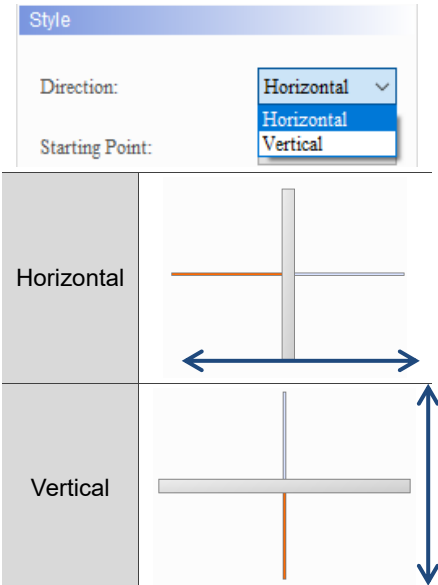
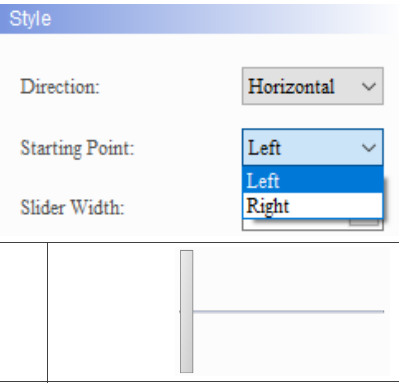

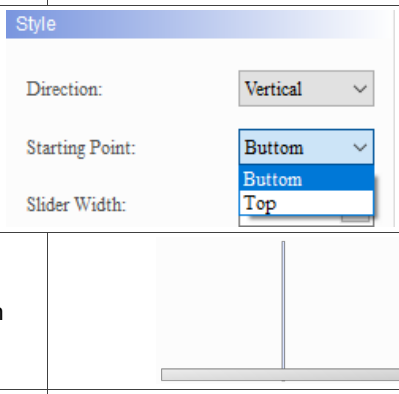
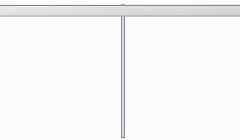
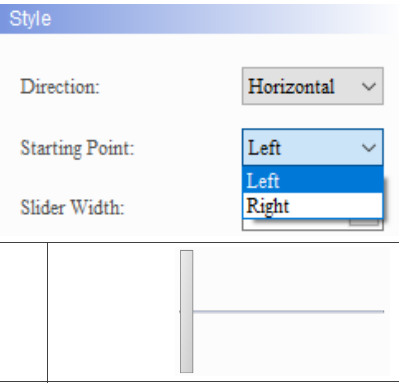

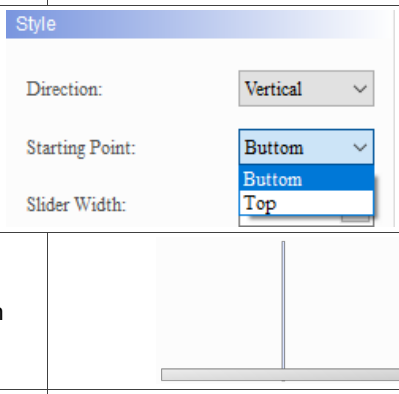
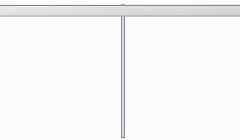
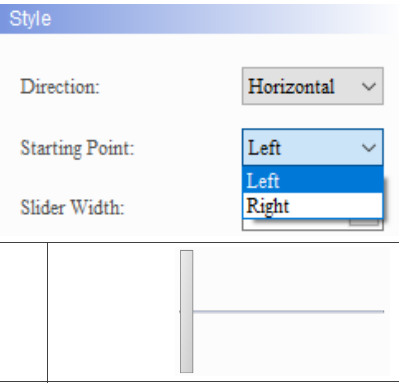

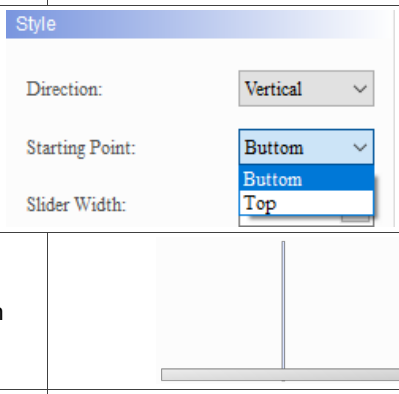
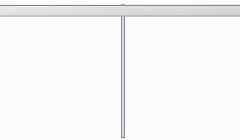


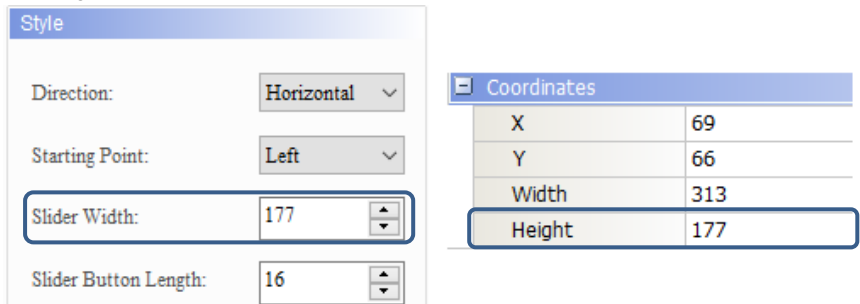
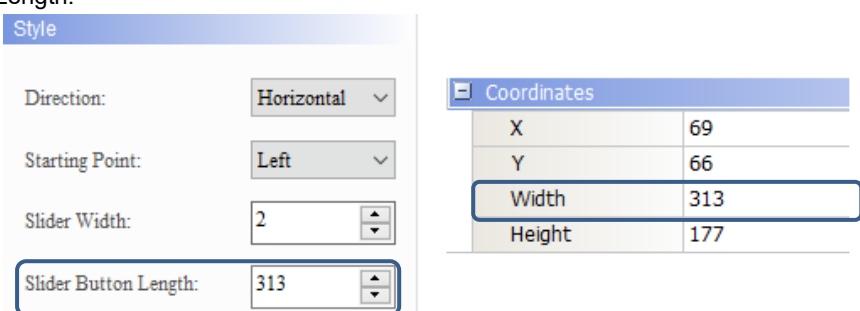
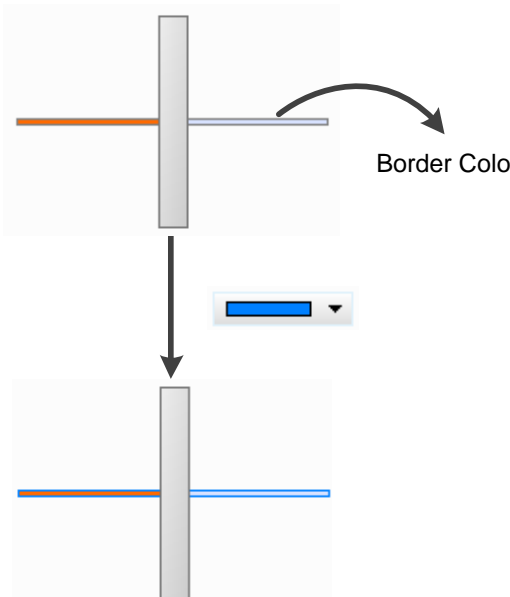
Figure 18.1.2 Main property page for the Slider element

No.	Property	Function description								
(1)	Write Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. The input memory type has to be Word. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details. 								
	Read Address									
	Write Offset Address									
	Read Offset Address									
		Please refer to Appendix D for instructions on writing and reading the offset address.								
(2)	Data Type	Data Type includes Word and Double Word. <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p style="text-align: center; background-color: #e0e0e0; margin: 0;">Detail</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Data Type</td> <td style="border: 1px solid gray;">Word v</td> </tr> <tr> <td>Data Format</td> <td style="border: 1px solid gray;">Word Double Word</td> </tr> <tr> <td>Minimum</td> <td style="border: 1px solid gray;">0</td> </tr> <tr> <td>Maximum</td> <td style="border: 1px solid gray;">100</td> </tr> </table> </div>	Data Type	Word v	Data Format	Word Double Word	Minimum	0	Maximum	100
Data Type	Word v									
Data Format	Word Double Word									
Minimum	0									
Maximum	100									

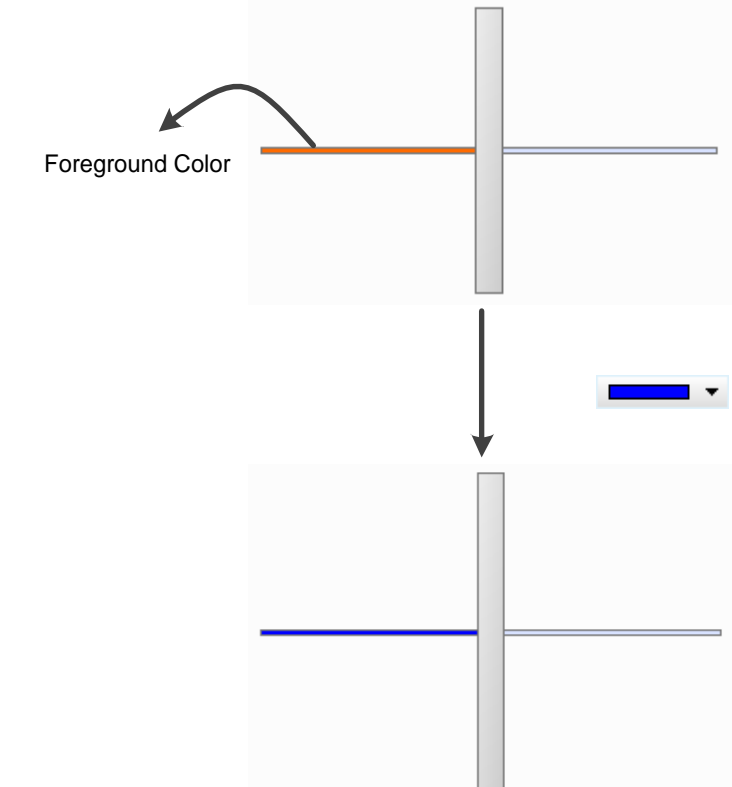
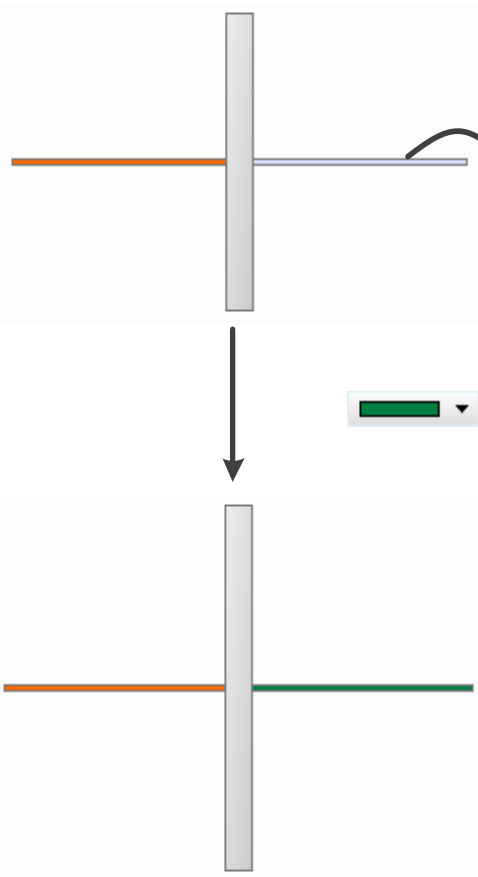
No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> ■ When the Data Type is Word, the supported data formats are as follows: <div style="border: 1px solid gray; padding: 5px; margin: 5px 0;"> Detail <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Data Type</td> <td>Word</td> </tr> <tr> <td>Data Format</td> <td>Unsigned Decimal</td> </tr> <tr> <td>Minimum</td> <td>BCD Signed BCD Signed Decimal</td> </tr> <tr> <td>Maximum</td> <td>Unsigned Decimal Hexadecimal</td> </tr> </table> </div> ■ When the Data Type is Double Word, the supported data formats are as follows: <div style="border: 1px solid gray; padding: 5px; margin: 5px 0;"> Detail <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Data Type</td> <td>Double Word</td> </tr> <tr> <td>Data Format</td> <td>Unsigned Decimal</td> </tr> <tr> <td>Minimum</td> <td>BCD Signed BCD Signed Decimal</td> </tr> <tr> <td>Maximum</td> <td>Unsigned Decimal Hexadecimal</td> </tr> </table> </div> 	Data Type	Word	Data Format	Unsigned Decimal	Minimum	BCD Signed BCD Signed Decimal	Maximum	Unsigned Decimal Hexadecimal	Data Type	Double Word	Data Format	Unsigned Decimal	Minimum	BCD Signed BCD Signed Decimal	Maximum	Unsigned Decimal Hexadecimal									
Data Type	Word																										
Data Format	Unsigned Decimal																										
Minimum	BCD Signed BCD Signed Decimal																										
Maximum	Unsigned Decimal Hexadecimal																										
Data Type	Double Word																										
Data Format	Unsigned Decimal																										
Minimum	BCD Signed BCD Signed Decimal																										
Maximum	Unsigned Decimal Hexadecimal																										
(4)	Minimum / Maximum	<p>The allowable ranges for the minimum and maximum values vary based on the selected data type, integer digits, and fractional digits. In the following example, no fractional digit is set.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Data Type</th> <th style="width: 30%;">Data Format</th> <th style="width: 50%;">Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5" style="text-align: center;">Word</td> <td style="text-align: center;">BCD</td> <td style="text-align: center;">0 to 9999</td> </tr> <tr> <td style="text-align: center;">Signed BCD</td> <td style="text-align: center;">-999 to 9999</td> </tr> <tr> <td style="text-align: center;">Signed Decimal</td> <td style="text-align: center;">-32768 to 32767</td> </tr> <tr> <td style="text-align: center;">Unsigned Decimal</td> <td style="text-align: center;">0 to 65535</td> </tr> <tr> <td style="text-align: center;">Hex</td> <td style="text-align: center;">0 to 0xFFFF</td> </tr> <tr> <td rowspan="5" style="text-align: center;">Double Word</td> <td style="text-align: center;">BCD</td> <td style="text-align: center;">0 to 99999999</td> </tr> <tr> <td style="text-align: center;">Signed BCD</td> <td style="text-align: center;">-99999999 to 99999999</td> </tr> <tr> <td style="text-align: center;">Signed Decimal</td> <td style="text-align: center;">-2147483648 to 2147483647</td> </tr> <tr> <td style="text-align: center;">Unsigned Decimal</td> <td style="text-align: center;">0 to 4294967295</td> </tr> <tr> <td style="text-align: center;">Hex</td> <td style="text-align: center;">0 to 0xFFFFFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to 9999	Signed Decimal	-32768 to 32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-99999999 to 99999999	Signed Decimal	-2147483648 to 2147483647	Unsigned Decimal	0 to 4294967295	Hex	0 to 0xFFFFFFFF
Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																									
	Signed BCD	-999 to 9999																									
	Signed Decimal	-32768 to 32767																									
	Unsigned Decimal	0 to 65535																									
	Hex	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-99999999 to 99999999																									
	Signed Decimal	-2147483648 to 2147483647																									
	Unsigned Decimal	0 to 4294967295																									
	Hex	0 to 0xFFFFFFFF																									

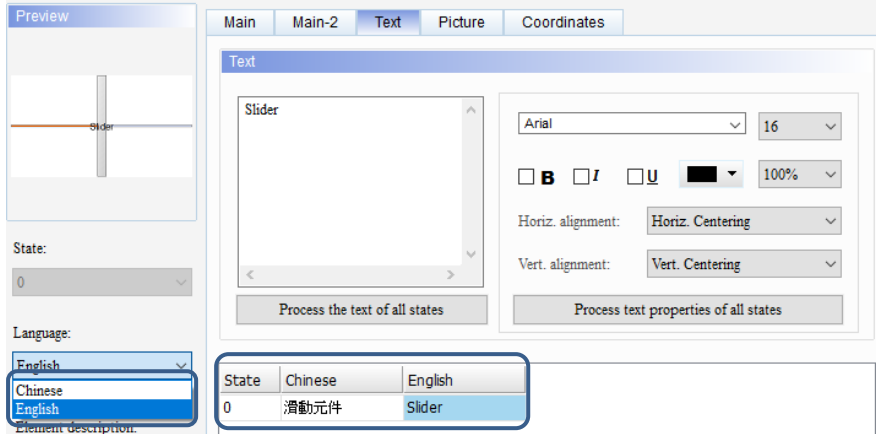
18

No.	Property	Function description										
(5)	Direction	<p>The options for Direction include Horizontal and Vertical. Horizontal means the Slider button moves horizontally (left and right); Vertical means the Slider button moves vertically (up and down).</p> 										
(6)	Starting Point	<ul style="list-style-type: none"> Starting Point varies depending on the selected Direction. This is the starting point position of the Slider button after the Slider element is loaded. The Starting Point is Left or Right when the Direction is Horizontal; the Starting Point is Bottom or Top when the Direction is Vertical. <table border="1"> <tbody> <tr> <td rowspan="2">Horizontal</td> <td>Left</td> <td>  </td> </tr> <tr> <td>Right</td> <td>  </td> </tr> <tr> <td rowspan="2">Vertical</td> <td>Bottom</td> <td>  </td> </tr> <tr> <td>Top</td> <td>  </td> </tr> </tbody> </table>	Horizontal	Left		Right		Vertical	Bottom		Top	
Horizontal	Left											
	Right											
Vertical	Bottom											
	Top											

No.	Property	Function description
(7)	Slider Width	<p>The height of the Slider element determines the maximum value of the Slider Width.</p> 
(8)	Slider Button Length	<p>The width of the Slider element determines the maximum value of the Slider Button Length.</p> 
(9)	Border Color	<p>Set the element border color.</p> 

18

No.	Property	Function description
(10)	Foreground Color	<p>Set the foreground color of the element.</p> 
(11)	Background Color	<p>Set the background color of the element.</p> 

No.	Property	Function description						
(12)	Language	<p>If you have set the language data, you can use the language used for the element to edit the displaying text property, etc.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>滑動元件</td> <td>Slider</td> </tr> </tbody> </table>	State	Chinese	English	0	滑動元件	Slider
State	Chinese	English						
0	滑動元件	Slider						

18

■ Main-2

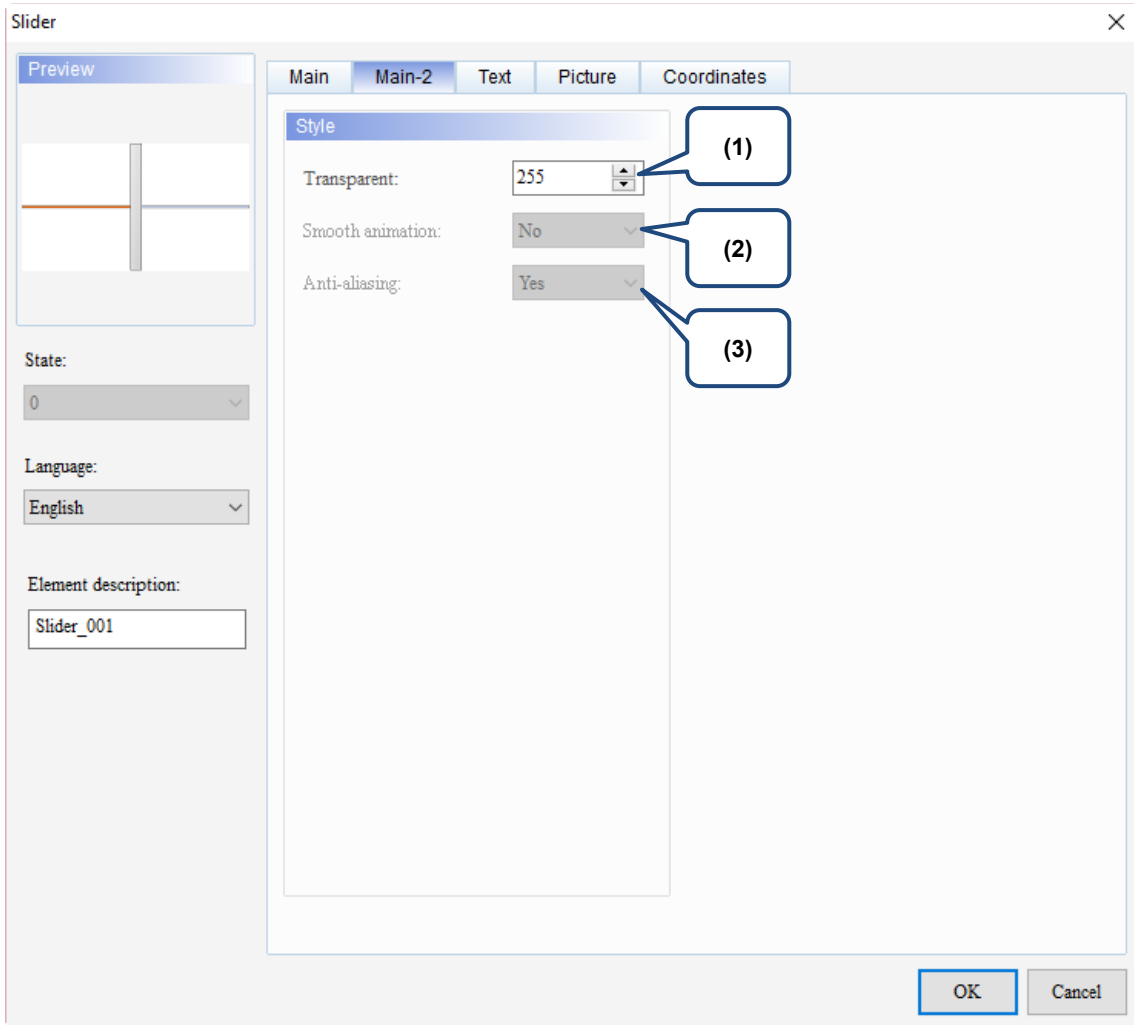


Figure 18.1.3 Main-2 property page for the Slider element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

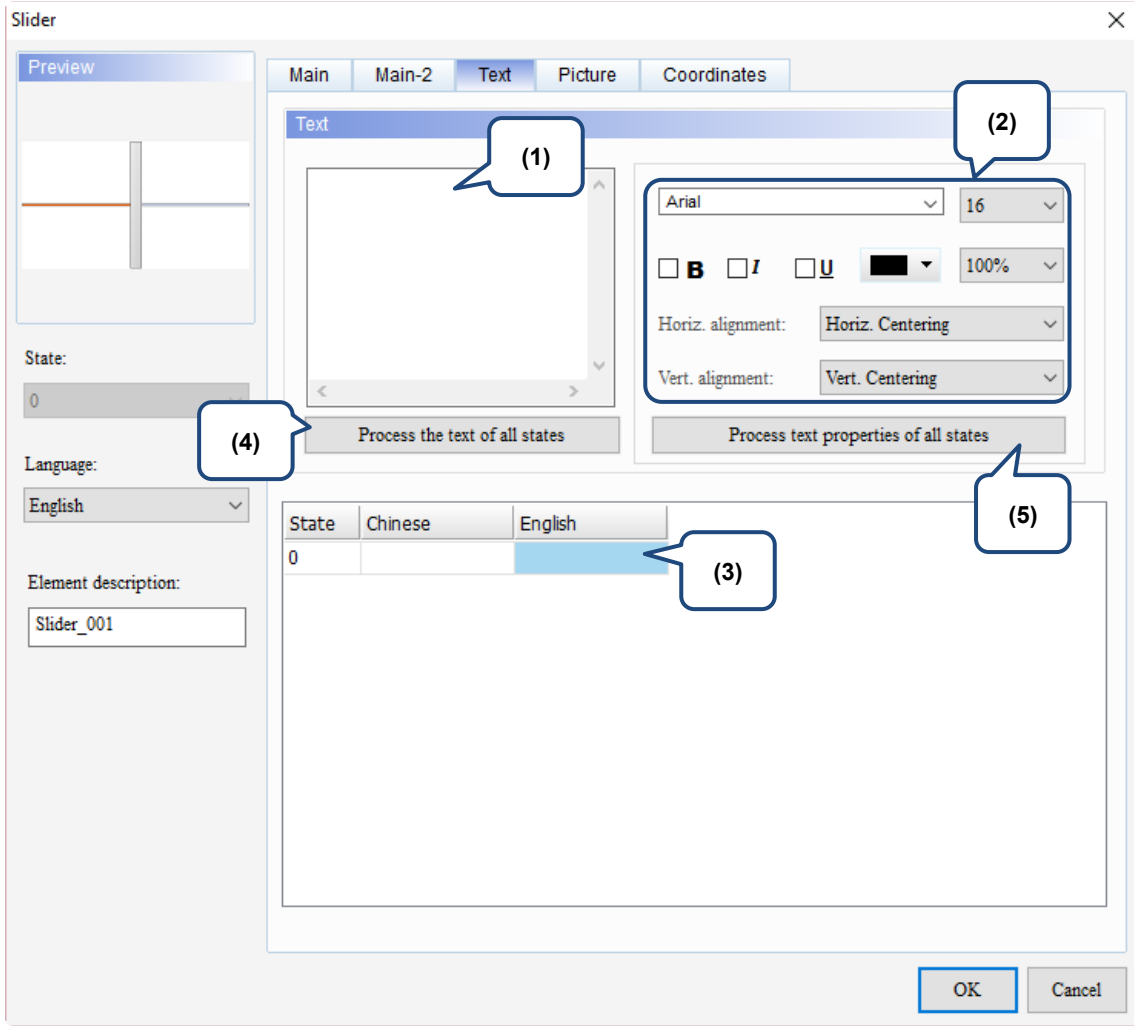
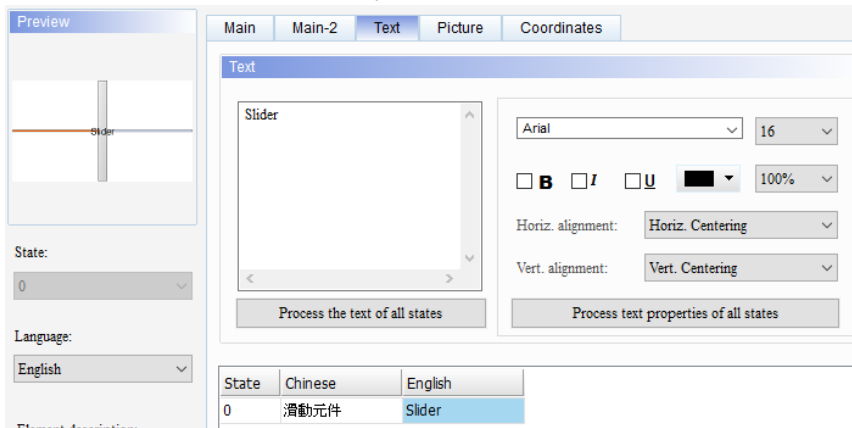


Figure 18.1.4 Text property page for the Slider element

No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p>  <p>■ As long as the element allows text input, you can click the element and press the space key to start editing the text immediately.</p>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text.
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.

No.	Property	Function description
(4)	Process the text of all states	This function is not supported as the Slider element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as the Slider element does not have multiple states.

18

■ Picture

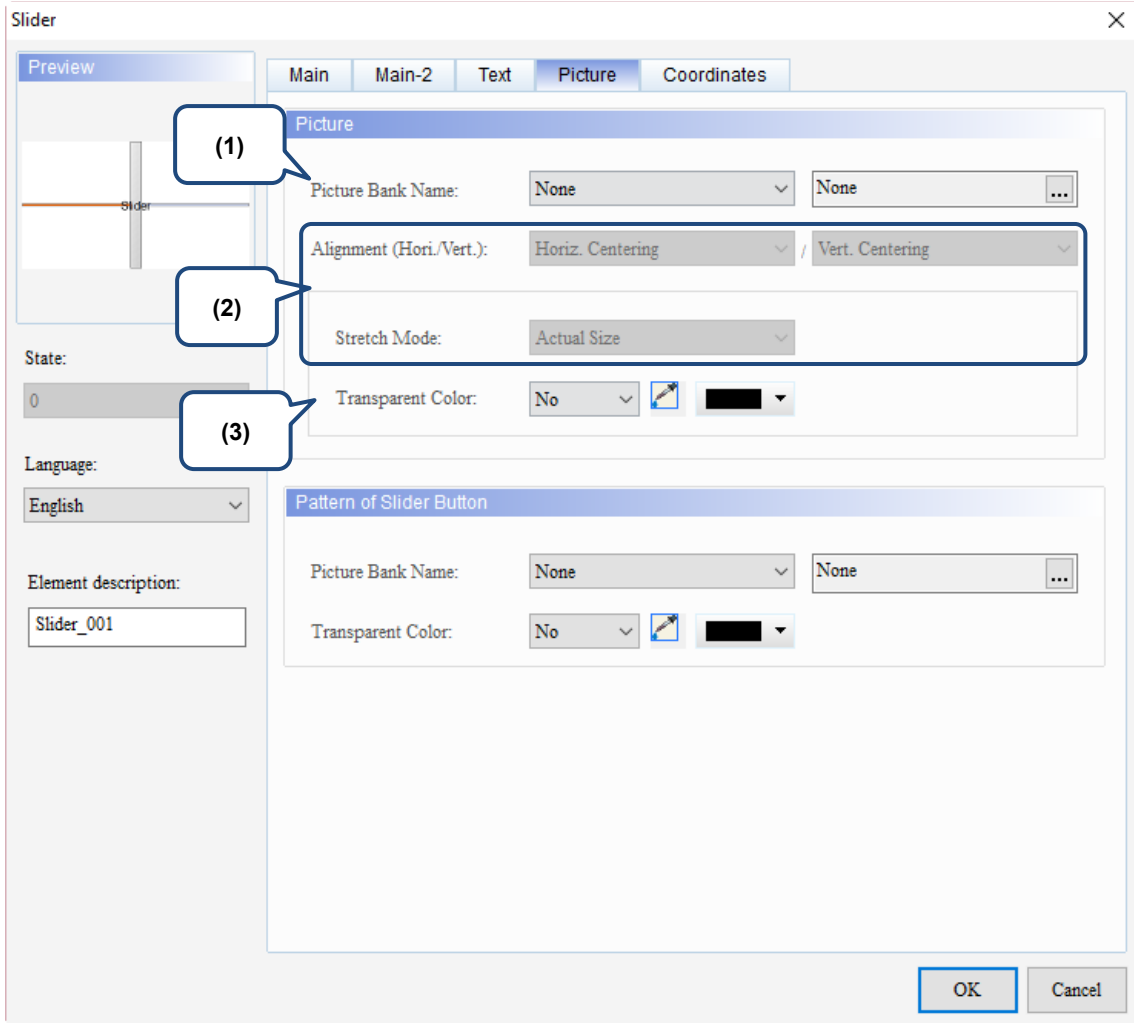
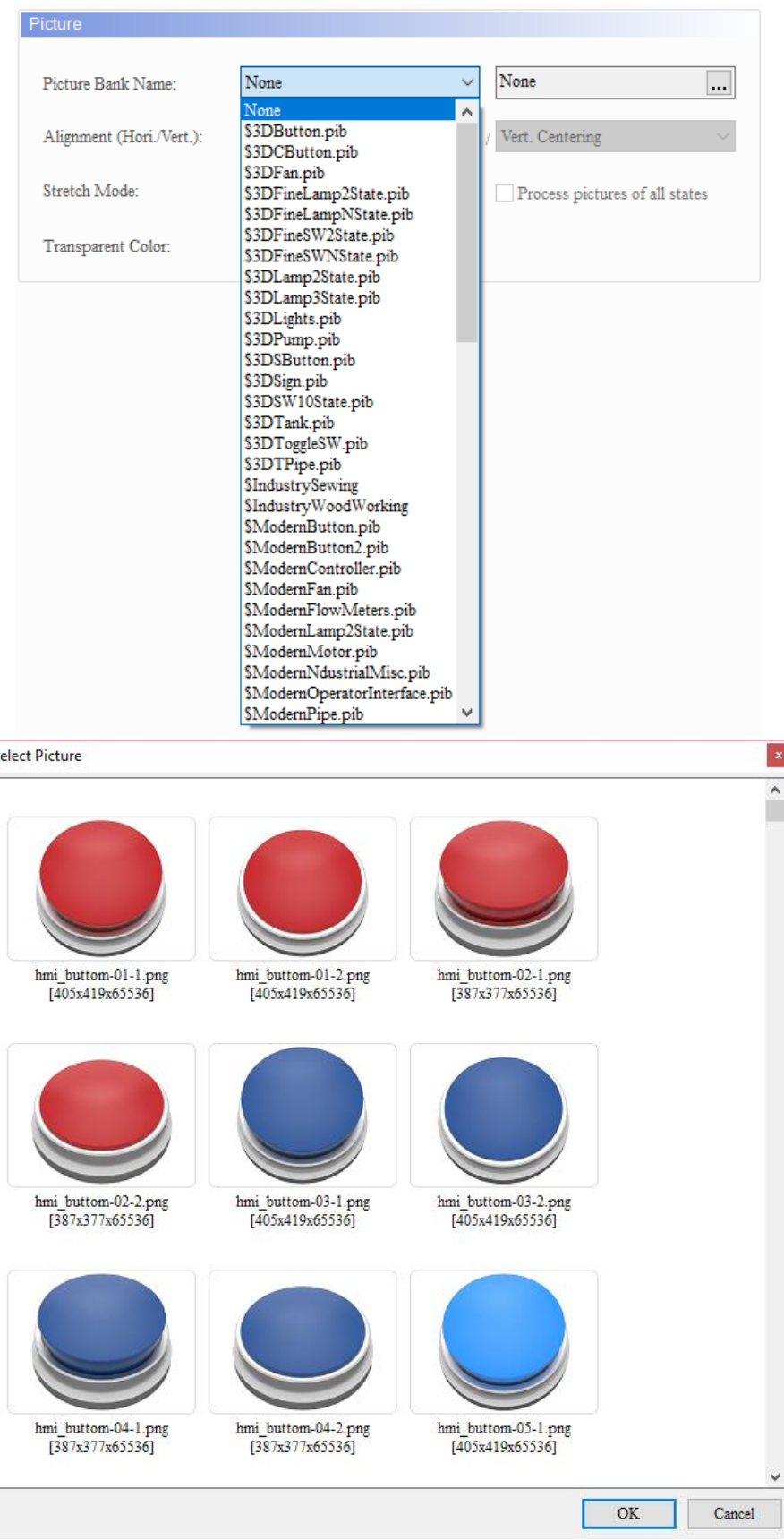
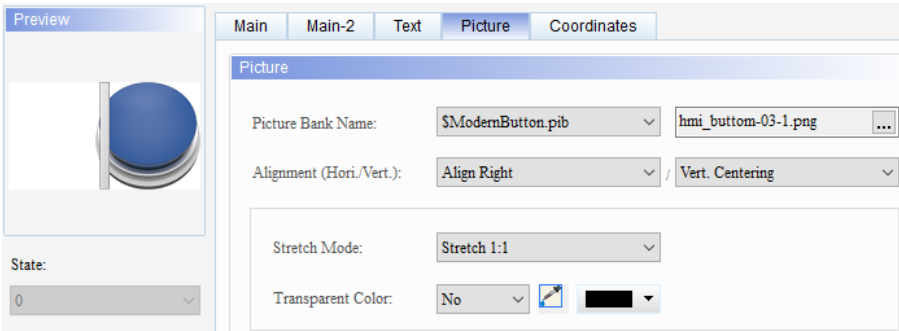














Figure 18.1.5 Picture property page for the Slider element

18

No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.</p>  <p>The 'Picture' dialog box includes the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: A dropdown menu currently showing 'None' and a list of banks including \$3DButton.pib, \$3DCButton.pib, \$3DFan.pib, \$3DFineLamp2State.pib, \$3DFineLampNState.pib, \$3DFineSW2State.pib, \$3DFineSWNState.pib, \$3DLamp2State.pib, \$3DLamp3State.pib, \$3DLights.pib, \$3DPump.pib, \$3DSButton.pib, \$3DSign.pib, \$3DSW10State.pib, \$3DTank.pib, \$3DToggleSW.pib, \$3DTPipe.pib, \$IndustrySewing, \$IndustryWoodWorking, \$ModernButton.pib, \$ModernButton2.pib, \$ModernController.pib, \$ModernFan.pib, \$ModernFlowMeters.pib, \$ModernLamp2State.pib, \$ModernMotor.pib, \$ModernNdustrialMisc.pib, and \$ModernOperatorInterface.pib. Alignment (Hori./Vert.): A dropdown menu showing 'Vert. Centering'. Stretch Mode: A dropdown menu. Transparent Color: A text input field. Process pictures of all states: A checkbox. <p>The 'Select Picture' dialog box displays a grid of 9 button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

No.	Property	Function description									
(2)	Alignment	<p>■ You can use the alignment options to set how pictures are aligned.</p>  <p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td> <p>If you select Stretch All, the picture fills the full element display area.</p> </td> <td> <p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p> </td> <td> <p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p> </td> </tr> <tr> <td>  </td> <td>  </td> <td>  </td> </tr> </tbody> </table>	Stretch All	Stretch 1:1	Actual Size	<p>If you select Stretch All, the picture fills the full element display area.</p>	<p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p>	<p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p>			
	Stretch All	Stretch 1:1	Actual Size								
<p>If you select Stretch All, the picture fills the full element display area.</p>	<p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p>	<p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p>									
											
Stretch Mode	<p>■ If you check [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p><input checked="" type="checkbox"/> Process pictures of all states</p>										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 									

■ Coordinates

18

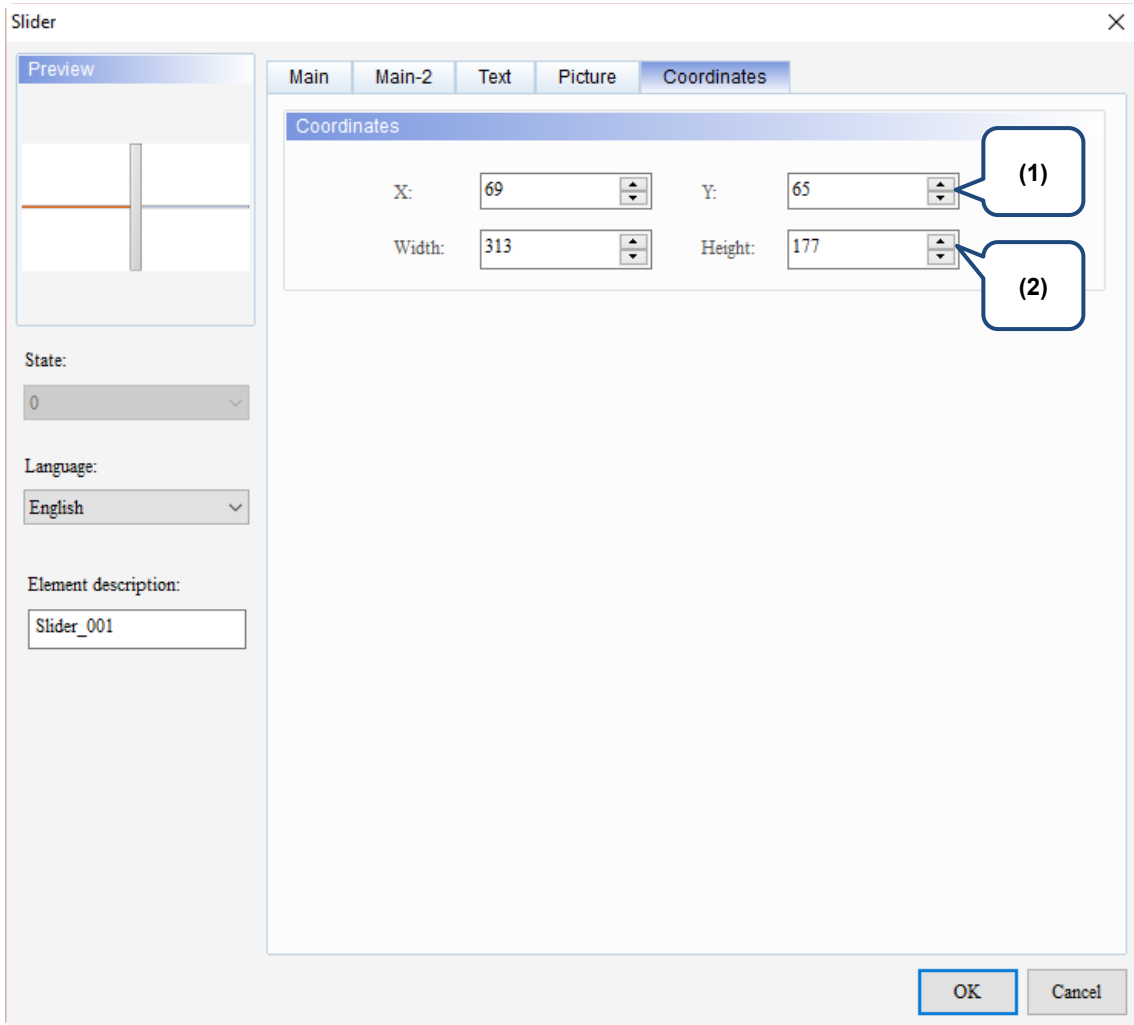


Figure 18.1.6 Coordinates property page for the Slider element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

This chapter provides the usage and setting details for the List elements.



19.1	ComboBox	19-2
19.2	ListBox	19-23
19.3	GridBox	19-42
19.4	PDF Viewer	19-86

19

19.1 ComboBox

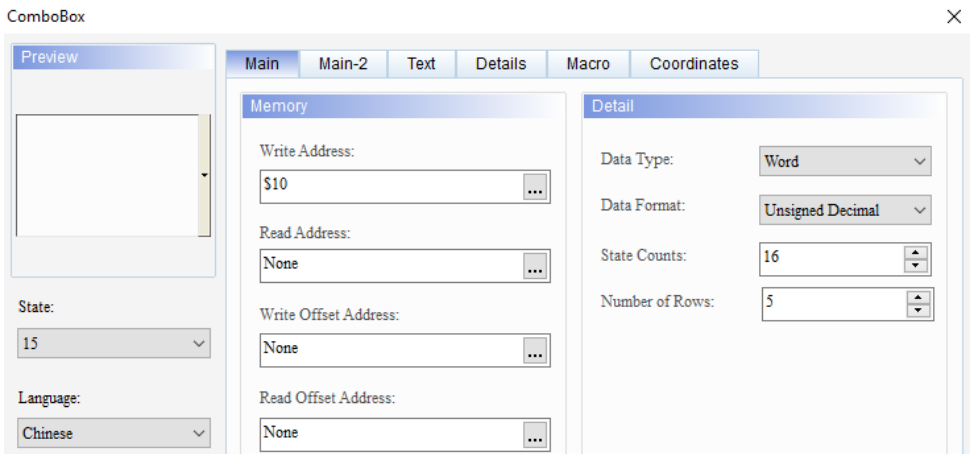
ComboBox provides display messages in multiple states allowing users to select the options for execution with the drop-down function. The functions of the same type are grouped in the same drop-down list, so only the currently selected items are displayed in the ComboBox

Please refer to Table 19.1.1 for the ComboBox example.

Table 19.1.1 ComboBox example

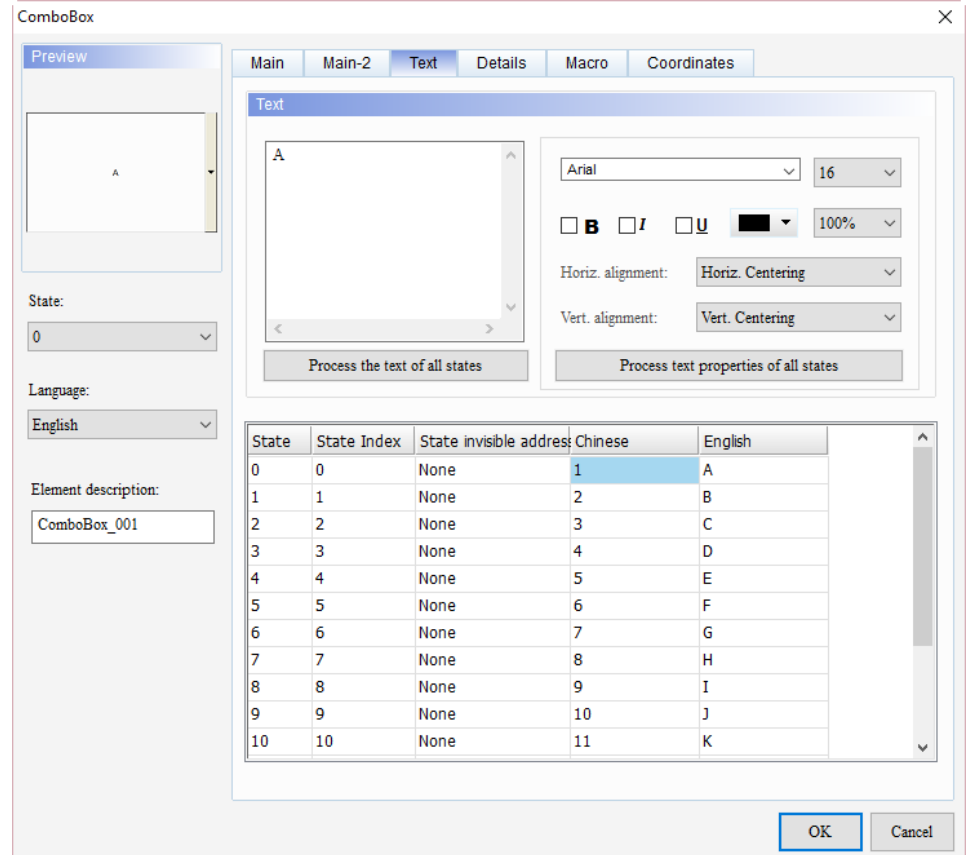
ComboBox

- Create a ComboBox with its Write Address as \$10 and select Word for Data Type, then set the State Counts to 16 and Number of Rows to 5.

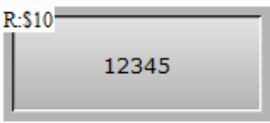
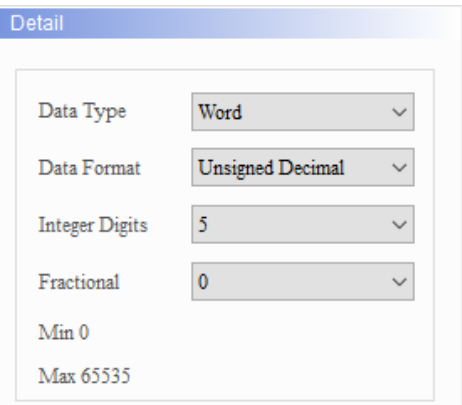
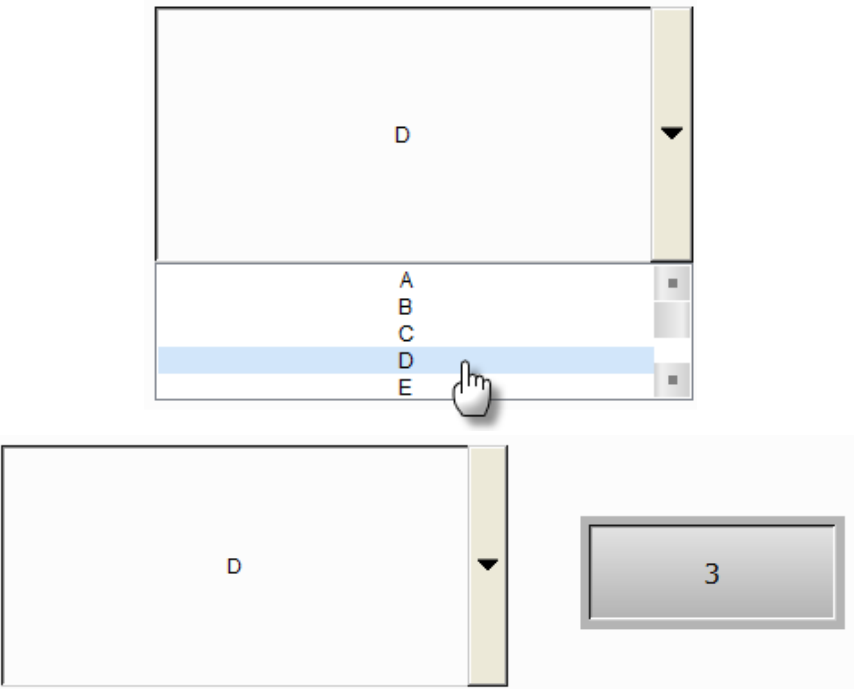


- On the Text page, edit the text messages to be displayed for the 16 states which are the values of A to P respectively.

Create
ComboBox
element



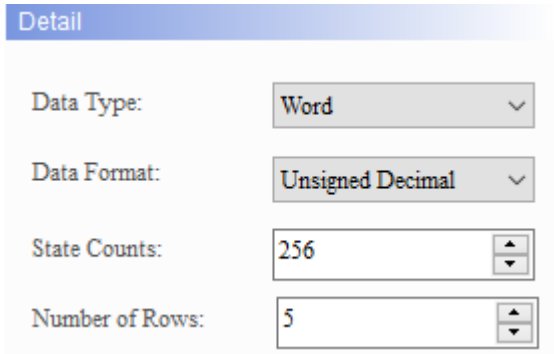
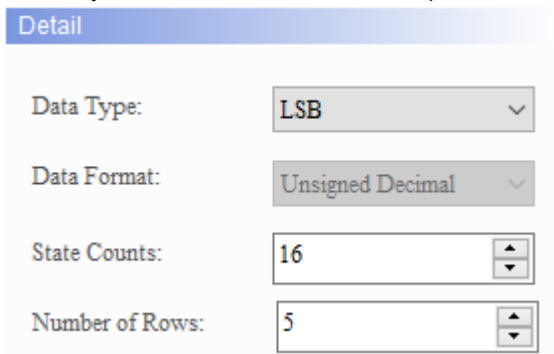
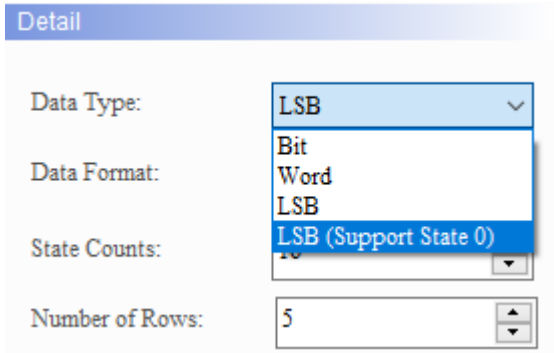

State	State Index	State invisible address	Chinese	English
0	0	None	1	A
1	1	None	2	B
2	2	None	3	C
3	3	None	4	D
4	4	None	5	E
5	5	None	6	F
6	6	None	7	G
7	7	None	8	H
8	8	None	9	I
9	9	None	10	J
10	10	None	11	K

ComboBox		
Create Numeric Display element	Write Address	
	Settings	
Execution results	<p>After creating the elements, please compile and download the elements to the HMI. When you press the drop-down list, the displaying number of rows corresponds to the set value of Number of Rows, which in this example is 5 rows, so A, B, C, D, and E are displayed. And the Numeric Display element will show the corresponding state value of the item you selected in the ComboBox.</p>	
		

ComboBox supports four data types as shown in Table 19.1.2. If you need to add or reduce the total number of states, you can simply add or reduce it from State Counts in the property page.

19

Table 19.1.2 Data Type of ComboBox

ComboBox	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> 
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> ■ LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object. ■ If the Data Type is LSB, you can set 1 to 16 states, except for State 0. 
	<ul style="list-style-type: none"> ■ To display State 0, please select LSB (Support State 0).  <ul style="list-style-type: none"> ■ If you selected LSB, the element is black when the state is 0.  ■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in Word as the unit.

ComboBox			
Data Type	State Counts		
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> The examples in the following table show how the state value is determined with the lowest non-zero bit after converting from decimal value to binary value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7. 		
	Decimal	Binary	State value
	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>
	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.
	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.
	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.
	<u>7</u>	<u>0000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	8	0000000000010000	The lowest non-zero bit is bit 3, State = 4.
	16	0000000000100000	The lowest non-zero bit is bit 4, State = 5.
	32	0000000001000000	The lowest non-zero bit is bit 5, State = 6.
	64	0000000010000000	The lowest non-zero bit is bit 6, State = 7.
	128	0000000100000000	The lowest non-zero bit is bit 7, State = 8.
	256	0000001000000000	The lowest non-zero bit is bit 8, State = 9.
	512	0000010000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	0000100000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.
4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	
8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.	
Bit	If the Data Type is Bit, only 2 states are available for the State Counts.		
	<div style="border: 1px solid #ccc; padding: 5px;"> <p style="background-color: #e6e6fa; margin: 0; padding: 2px;">Detail</p> <p>Data Type: Bit ▼</p> <p>Data Format: Unsigned Decimal ▼</p> <p>State Counts: 2 ▲▼</p> <p>Number of Rows: 5 ▲▼</p> </div>		

When you double-click ComboBox, the property page is shown as follows.

19

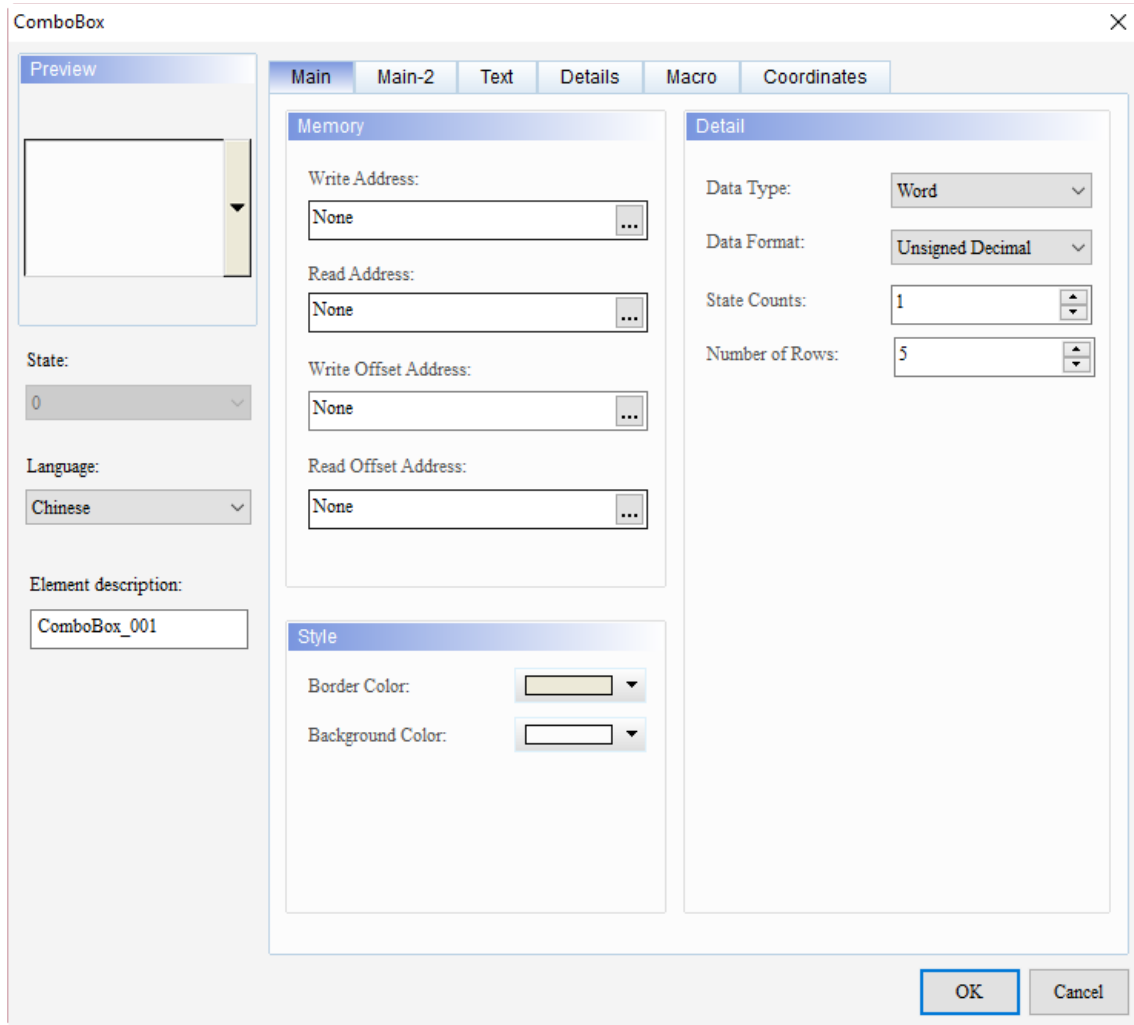
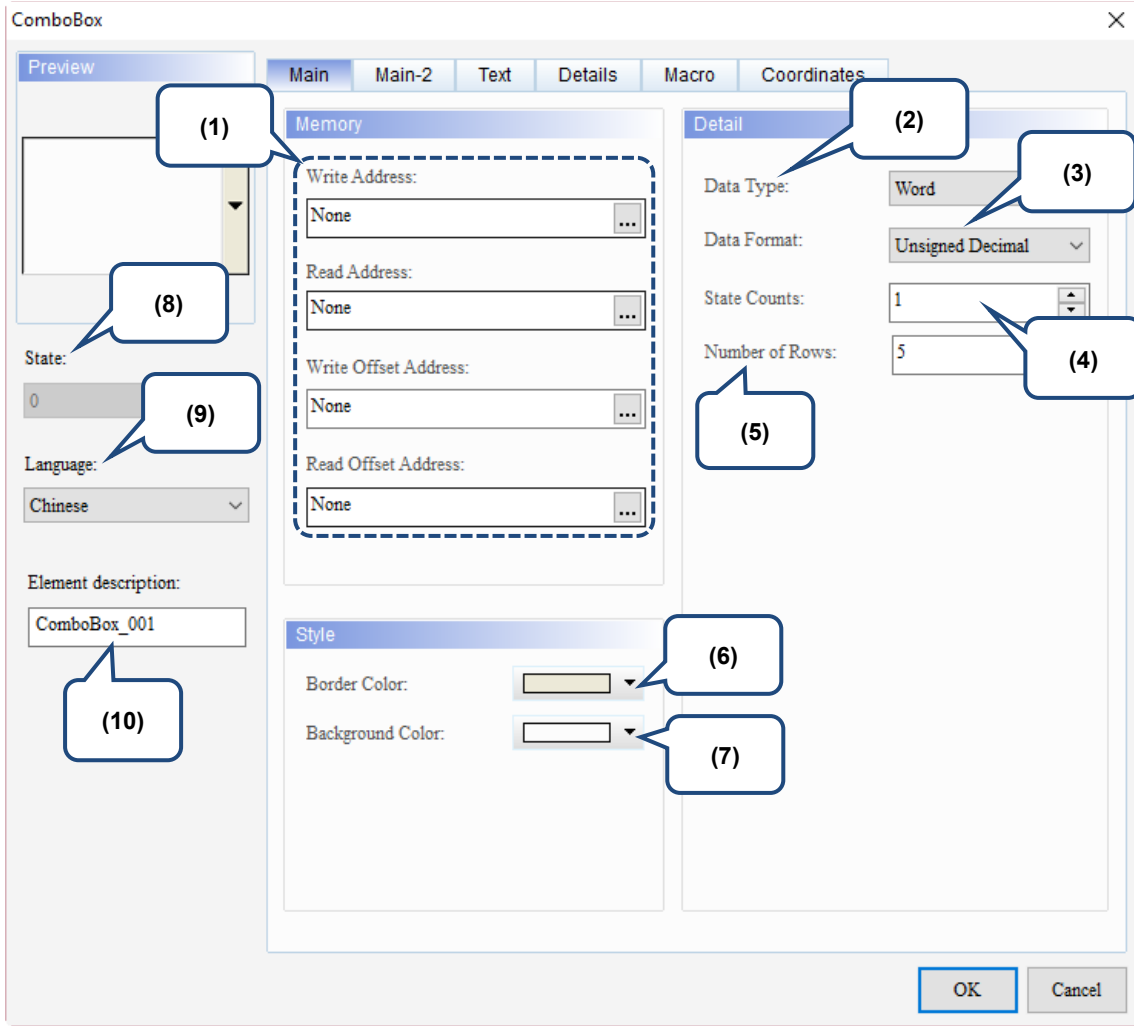


Figure 19.1.1 Properties of ComboBox

Table 19.1.3 Function page of the ComboBox element

ComboBox	
Function page	Description
Preview	ComboBox supports multiple state values and multi-language data display.
Main	Set the Write Address, Read Address, Write Offset Address, Read Offset Address, Data Type, Data Format, and State Counts. Set the Border Color, Background Color, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Details	Set the Interlock State, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, and Confirm Window.
Macro	Set Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

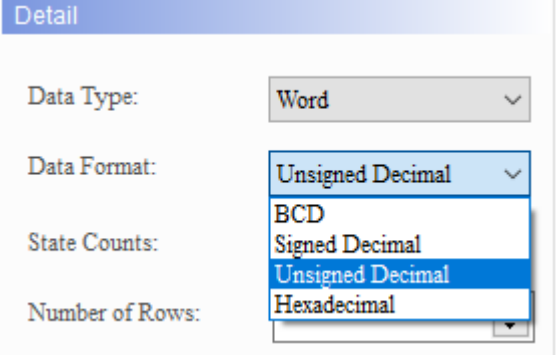
■ Main



19

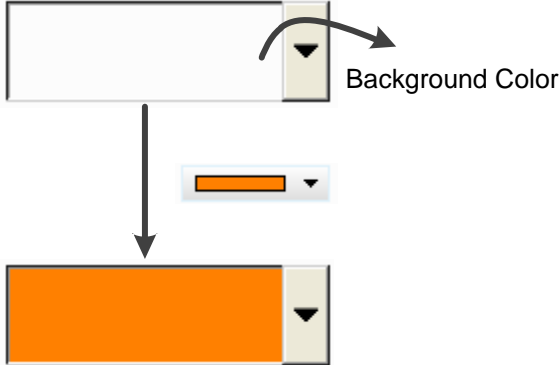
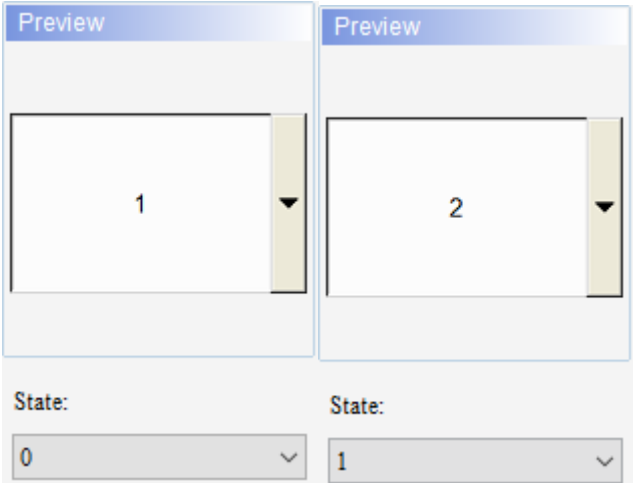
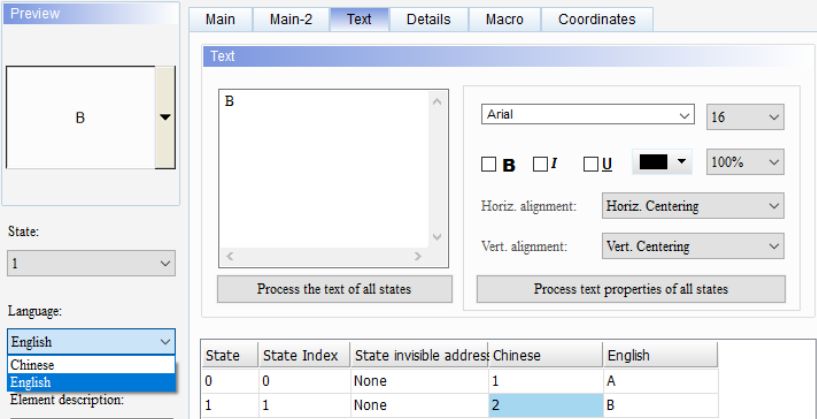
Figure 19.1.2 Main property page for the ComboBox element

19

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 19.1.2. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details.
	Read Address	
	Write Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	
(2)	Data Type	There are four data types available: Bit, Word, LSB, and LSB (Support State 0). Please refer to Table 19.1.2 for details.
(3)	Data Format	<ul style="list-style-type: none"> You can only select the Data Format when the Data Type is Word. There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal. 
(4)	State Counts	Set the State Counts for the ComboBox element. If the Data Type is Word, you can select 1 - 256 states; if the Data Type is LSB, you can select 16 states; if the Data Type is LSB (Support State 0), you can select 17 states; and if the Data Type is Bit, you can select 2 states. Please refer to Table 19.1.2 for details.

No.	Property	Function description
(5)	Number of Rows	<ul style="list-style-type: none"> ■ Set the displaying number of rows when you press the drop-down list. ■ The default is 5 and the maximum is 15 rows. <div style="display: flex; align-items: center;"> <div style="background-color: #cccccc; padding: 5px; margin-right: 10px;">Display 5 rows</div> <div style="border: 1px solid black; padding: 5px;"> <div style="text-align: center; padding: 10px;">D</div> <div style="border: 2px dashed blue; padding: 2px;"> <div style="text-align: center; padding: 2px;">A</div> <div style="text-align: center; padding: 2px;">B</div> <div style="text-align: center; padding: 2px;">C</div> <div style="text-align: center; padding: 2px; background-color: #e0f0ff;">D</div> <div style="text-align: center; padding: 2px;">E</div> </div> </div> </div>
		<div style="display: flex; align-items: center;"> <div style="background-color: #cccccc; padding: 5px; margin-right: 10px;">Display 15 rows</div> <div style="border: 1px solid black; padding: 5px;"> <div style="text-align: center; padding: 10px;">A</div> <div style="border: 2px dashed blue; padding: 2px;"> <div style="text-align: center; padding: 2px;">A</div> <div style="text-align: center; padding: 2px;">B</div> <div style="text-align: center; padding: 2px;">C</div> <div style="text-align: center; padding: 2px;">D</div> <div style="text-align: center; padding: 2px;">E</div> <div style="text-align: center; padding: 2px;">F</div> <div style="text-align: center; padding: 2px;">G</div> <div style="text-align: center; padding: 2px;">H</div> <div style="text-align: center; padding: 2px;">I</div> <div style="text-align: center; padding: 2px;">J</div> <div style="text-align: center; padding: 2px;">K</div> <div style="text-align: center; padding: 2px;">L</div> <div style="text-align: center; padding: 2px;">M</div> <div style="text-align: center; padding: 2px;">N</div> <div style="text-align: center; padding: 2px;">O</div> </div> </div> </div>
(6)	Border Color	<p>Set the element border color.</p> <div style="text-align: center;"> </div>

19

No.	Property	Function description															
(7)	Background Color	<p>Set the background color of the element.</p> 															
(8)	State	<p>By switching the State, you can preview or change the settings of each button element state.</p> 															
(9)	Language	<p>If you have set the language data, you can use the language used for the element to edit the displaying text property, etc.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>1</td> <td>None</td> <td>2</td> <td>B</td> </tr> </tbody> </table>	State	State Index	State invisible address	Chinese	English	0	0	None	1	A	1	1	None	2	B
State	State Index	State invisible address	Chinese	English													
0	0	None	1	A													
1	1	None	2	B													

No.	Property	Function description																																																																																
(10)	Element description	Record the button actions to be executed. The record is also written in the CSV file of the Operation Log Table so users can know what actions have been done.																																																																																
		<table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25
		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																									
		1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0																																																																									
		2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1																																																																									
		3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4																																																																									
		4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1																																																																									
		5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0																																																																									
		6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1																																																																									
		7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0																																																																									
8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8																																																																											
9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25																																																																											

■ Main-2

19

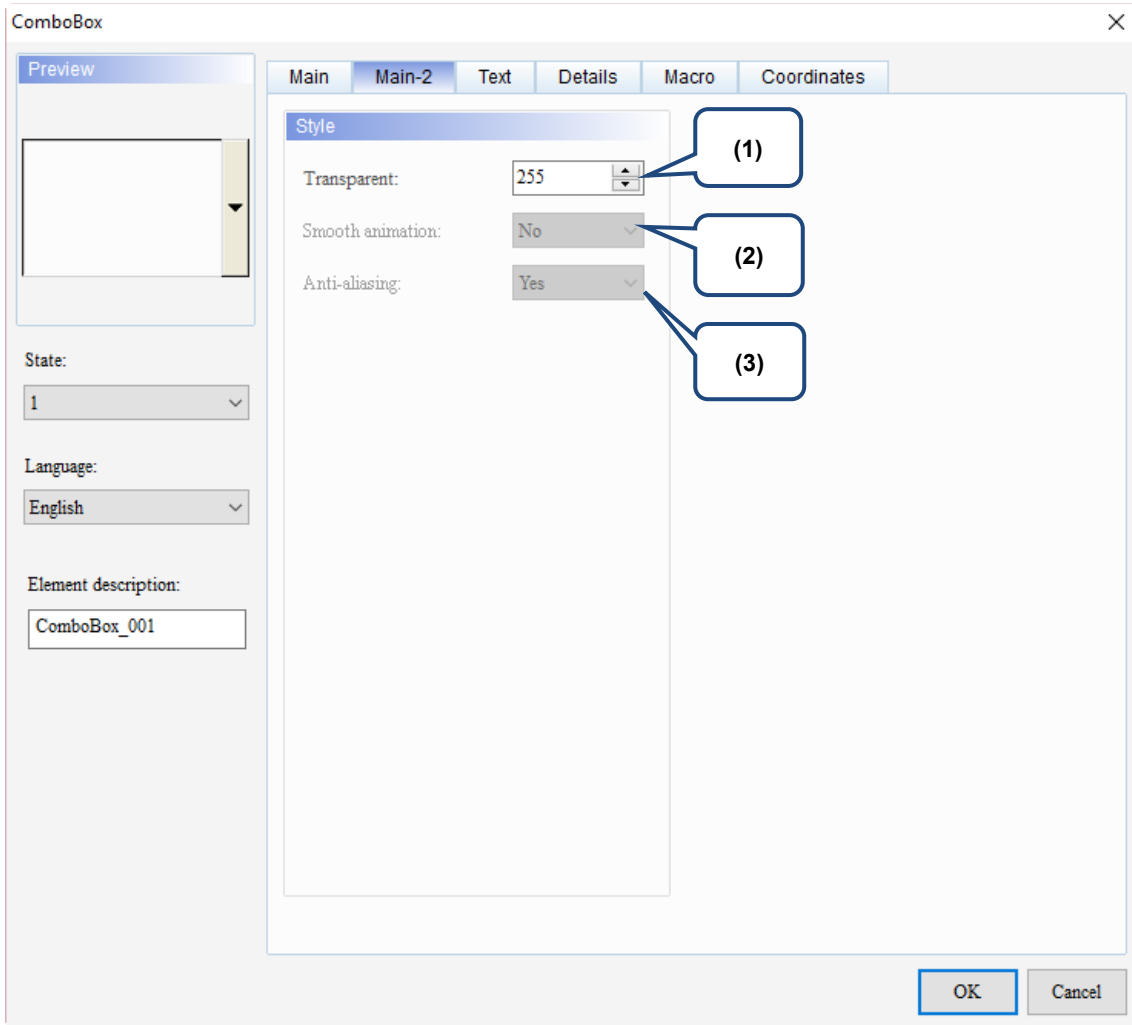


Figure 19.1.3 Main-2 property page for the ComboBox element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

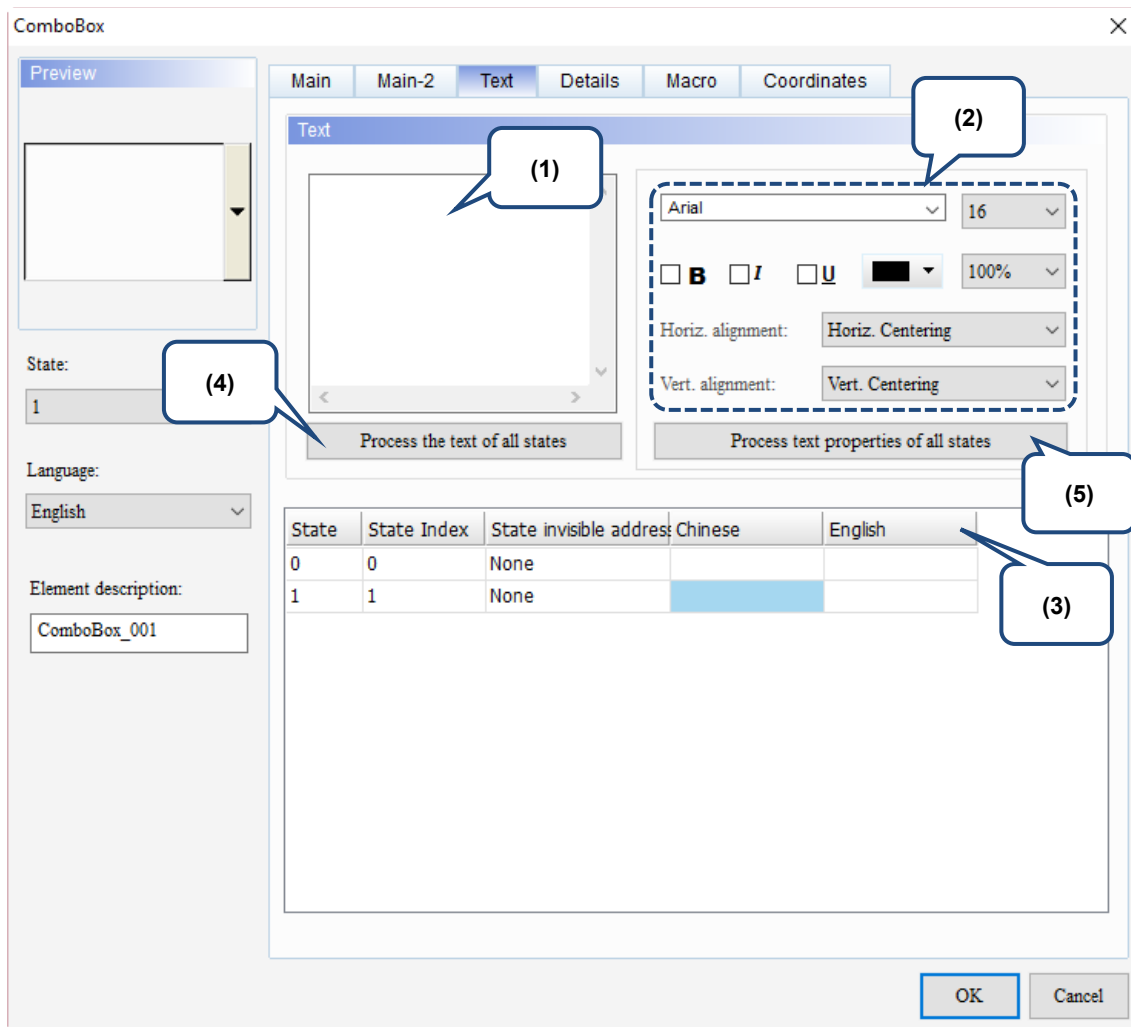
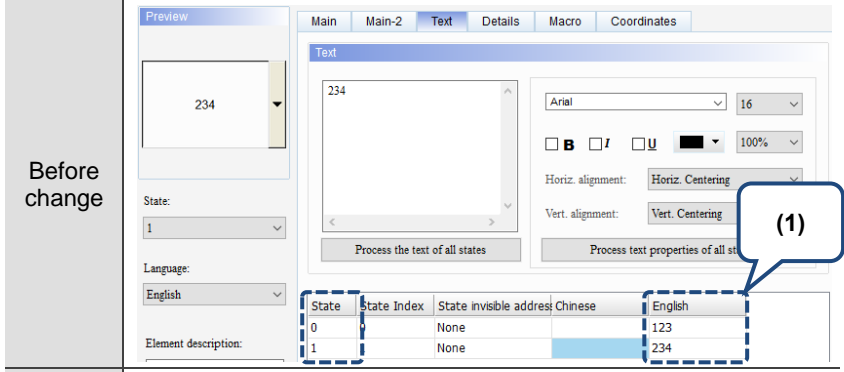
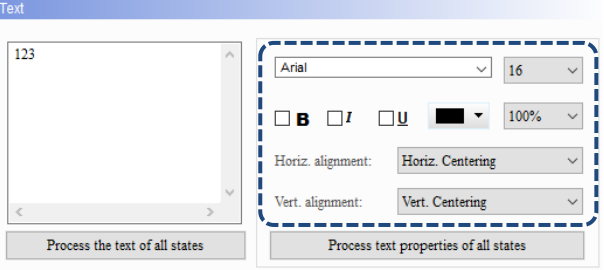
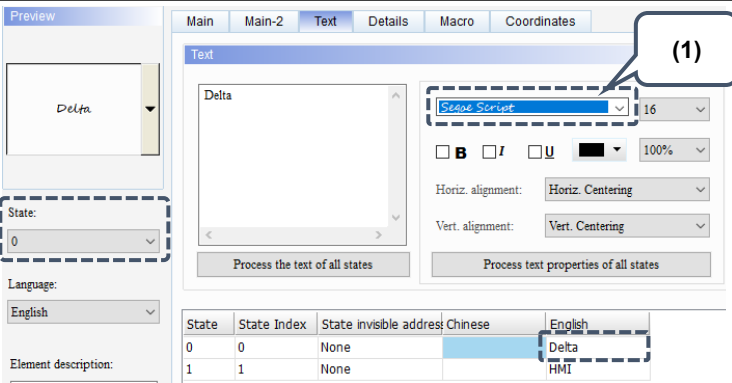
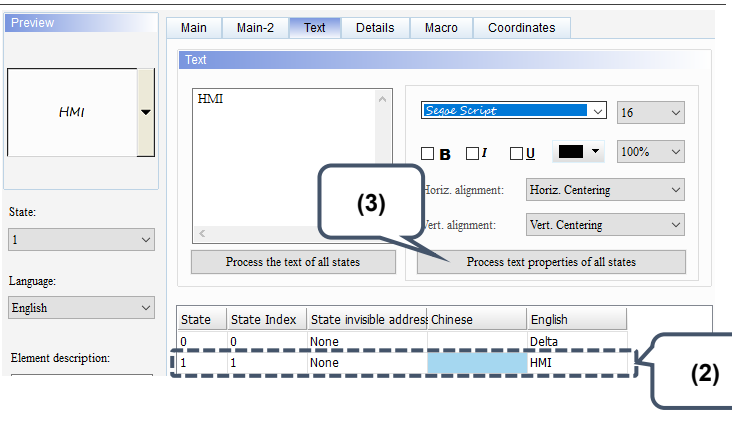


Figure 19.1.4 Text property page for the ComboBox element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can enter the text to display in this box.
(2)	Text property	<ul style="list-style-type: none"> As long as the element allows text input, you can click the element and press the space key to start editing the text immediately. <p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.</p>

19

No.	Property	Function description
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>This function batch changes the text of the specified state. Please see the following example:</p> <ol style="list-style-type: none"> 1. Enter the text "123" for State 0 and "234" for State 1. 2. Select State 0. 3. Execute Process the text of all states and the text of State 1 is changed to "123".  <p>Before change</p> <p>After change</p> <p>(1)</p> <p>(2)</p> <p>(3)</p>
(5)	Process text properties of all states	<p>This function batch changes the text properties of the specified state. Items included in the text property are shown in the figure below.</p>  <p>Process text properties of all states</p> <p>(1)</p> <p>(2)</p> <p>Please see the following example:</p> <ol style="list-style-type: none"> 1. Enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1. 2. Select State 0. 3. Execute Process text properties of all states and the text font of State 1 is changed to Segoe Script.

No.	Property	Function description															
(5)	Process text properties of all states	<p style="text-align: center;">Before change</p>  <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td>1</td> <td>None</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	State Index	State invisible address	Chinese	English	0	0	None		Delta	1	1	None		HMI
		State	State Index	State invisible address	Chinese	English											
		0	0	None		Delta											
1	1	None		HMI													
<p style="text-align: center;">After change</p>  <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td>1</td> <td>None</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	State Index	State invisible address	Chinese	English	0	0	None		Delta	1	1	None		HMI		
State	State Index	State invisible address	Chinese	English													
0	0	None		Delta													
1	1	None		HMI													

19

■ Details

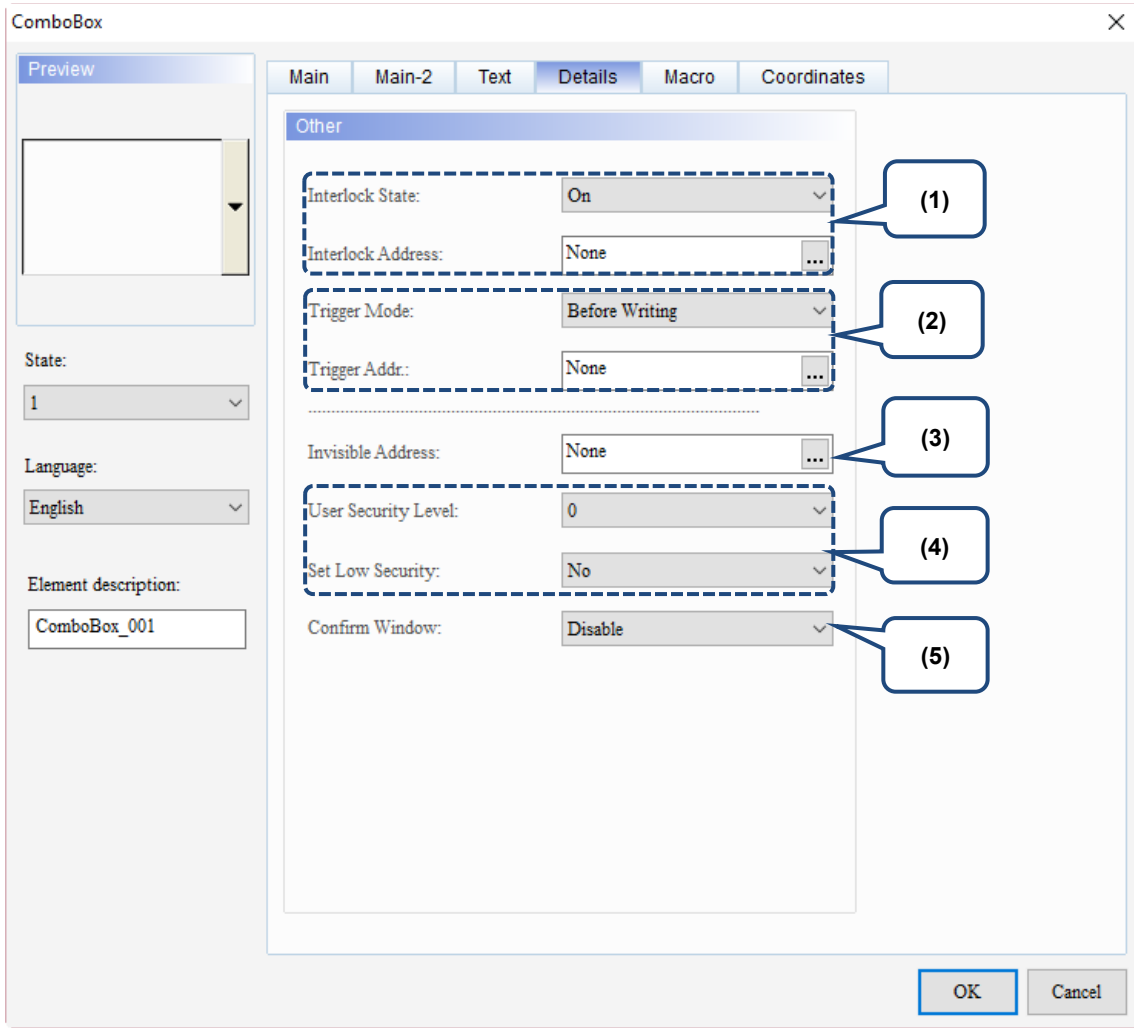
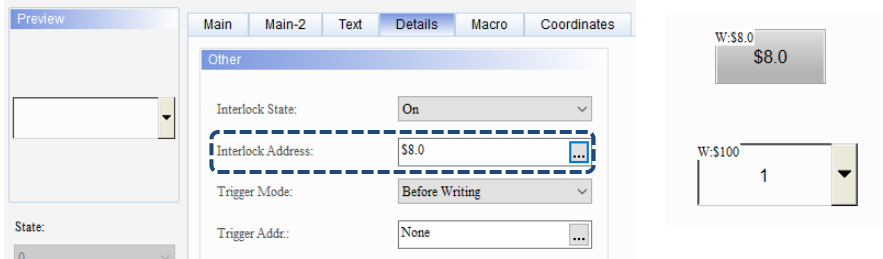
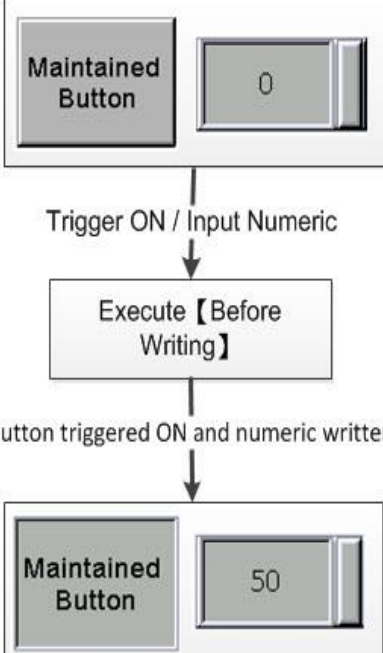
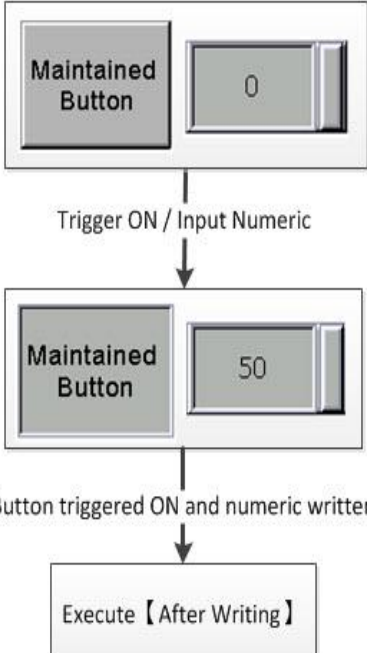


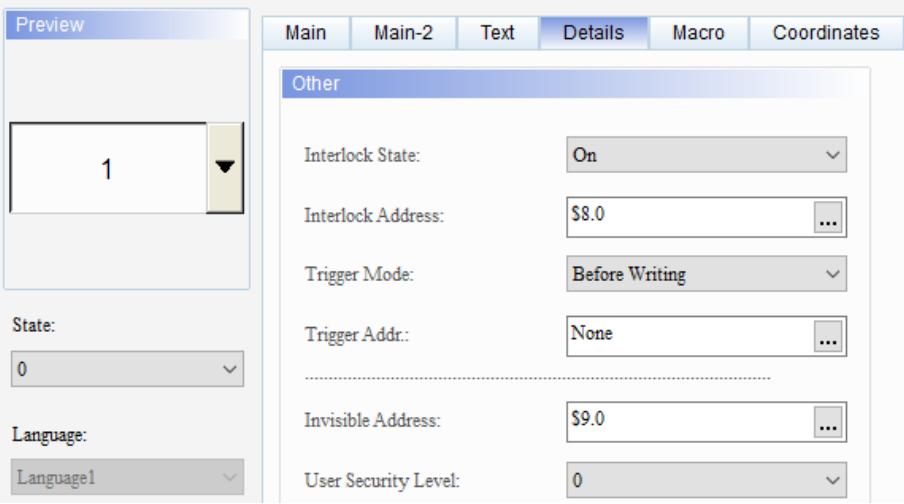




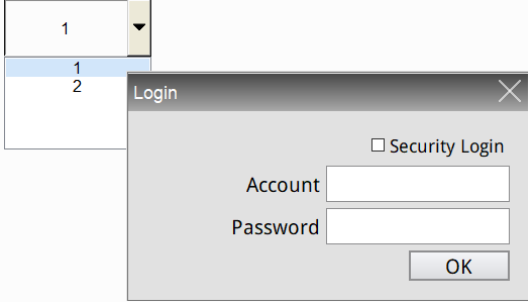
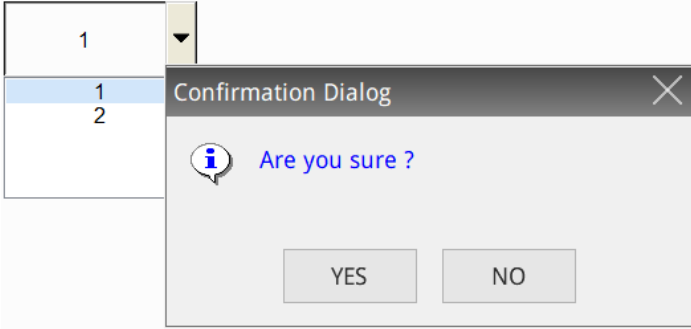


Figure 19.1.5 Details property page for the ComboBox element

No.	Property	Function description						
(1)	Interlock State	<p>Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on.</p> <ul style="list-style-type: none"> ■ Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the ComboBox which address is \$100. ■ In order for the ComboBox to obtain the correct state value after you press it, you must first press \$8.0 to enable the action of the ComboBox. 						
	Interlock Address	<p>ComboBox</p> 						
(2)	Trigger Mode	<ul style="list-style-type: none"> ■ Trigger Modes include Before Writing and After Writing. <table border="1"> <thead> <tr> <th rowspan="2">Triggering action</th> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td></td> <td>Trigger Addr. must be set to on before the value changes.</td> <td>Value is changed before the Trigger Addr. is set to on.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ■ The triggering function only switches the set Trigger Addr. to on, so if triggering again is required, you need to set the Trigger Addr. to off. <p>Flowchart of Before Writing:</p>  <p>Flowchart of After Writing:</p> 	Triggering action	Before Writing	After Writing		Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.
	Triggering action	Before Writing		After Writing				
		Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.					
Trigger Addr.								

19

No.	Property	Function description																		
(3)	Invisible Address	<p>When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td>  </td> </tr> <tr> <td>Invisible Address is on</td> <td>  </td> </tr> </table> <p>ComboBox</p> 	Invisible Address is off		Invisible Address is on															
Invisible Address is off																				
Invisible Address is on																				
(4)	User Security Level	<table border="1"> <tr> <td>User Security Level:</td> <td>0</td> </tr> <tr> <td>Set Low Security:</td> <td>0</td> </tr> <tr> <td>Confirm Window:</td> <td>1</td> </tr> <tr> <td></td> <td>2</td> </tr> <tr> <td></td> <td>3</td> </tr> <tr> <td></td> <td>4</td> </tr> <tr> <td></td> <td>5</td> </tr> <tr> <td></td> <td>6</td> </tr> <tr> <td></td> <td>7</td> </tr> </table> <ul style="list-style-type: none"> ■ You can use this function to set the permission level for pressing the element; this operation is only available to users with the same set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password with the Password Table element, please refer to Section 5.7.2 Password Table Setup). 	User Security Level:	0	Set Low Security:	0	Confirm Window:	1		2		3		4		5		6		7
User Security Level:	0																			
Set Low Security:	0																			
Confirm Window:	1																			
	2																			
	3																			
	4																			
	5																			
	6																			
	7																			

No.	Property	Function description
(4)	Set Low Security	 <p>■ If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.</p>
(5)	Confirm Window	<p>If Confirm Window is set to Yes, after you press the element, the following window will pop up to confirm if you want to execute the action of this button.</p> 

■ Macro

19

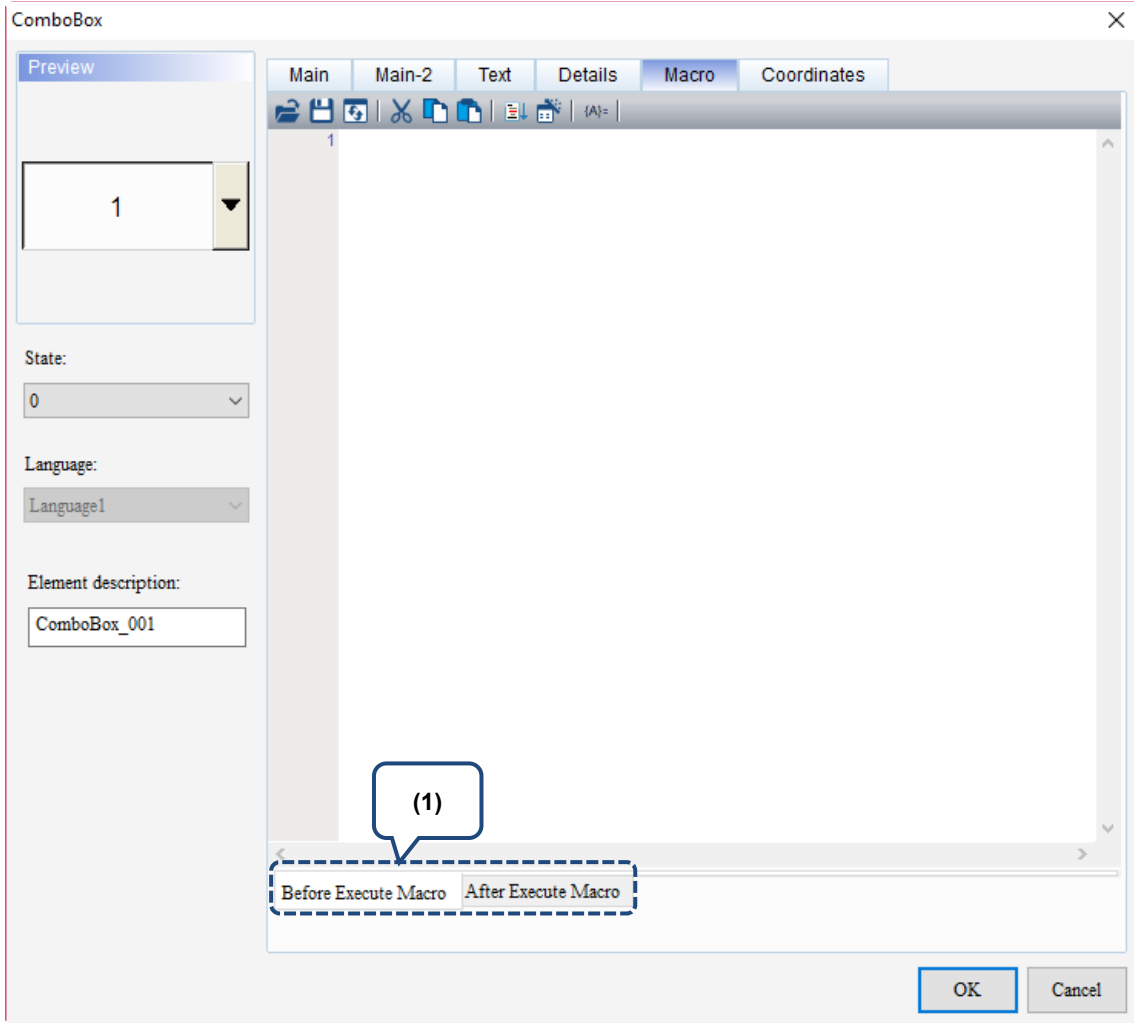
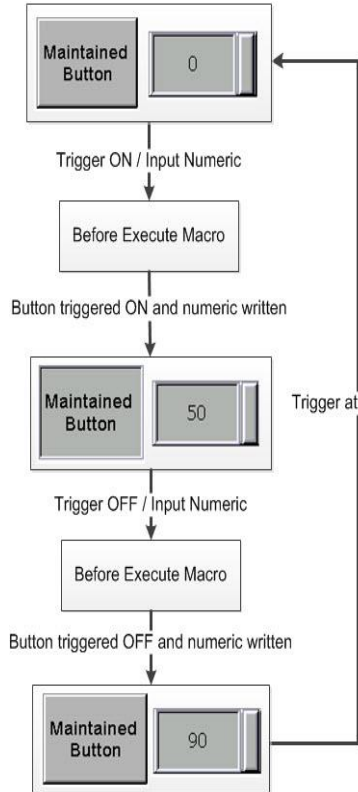


Figure 19.1.6 Macro property page for the ComboBox element

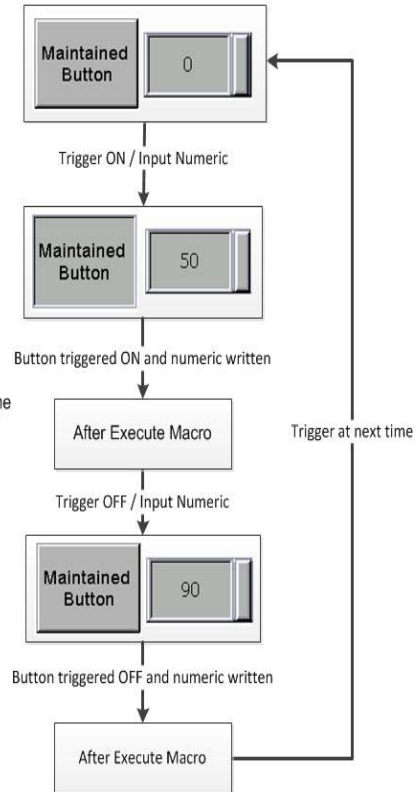
No.	Property	Function description
	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands, then execute the action of the button. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button, then execute the macro commands. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.

(1)

Flowchart of Before Execute Macro:



Flowchart of After Execute Macro:



Coordinates

19

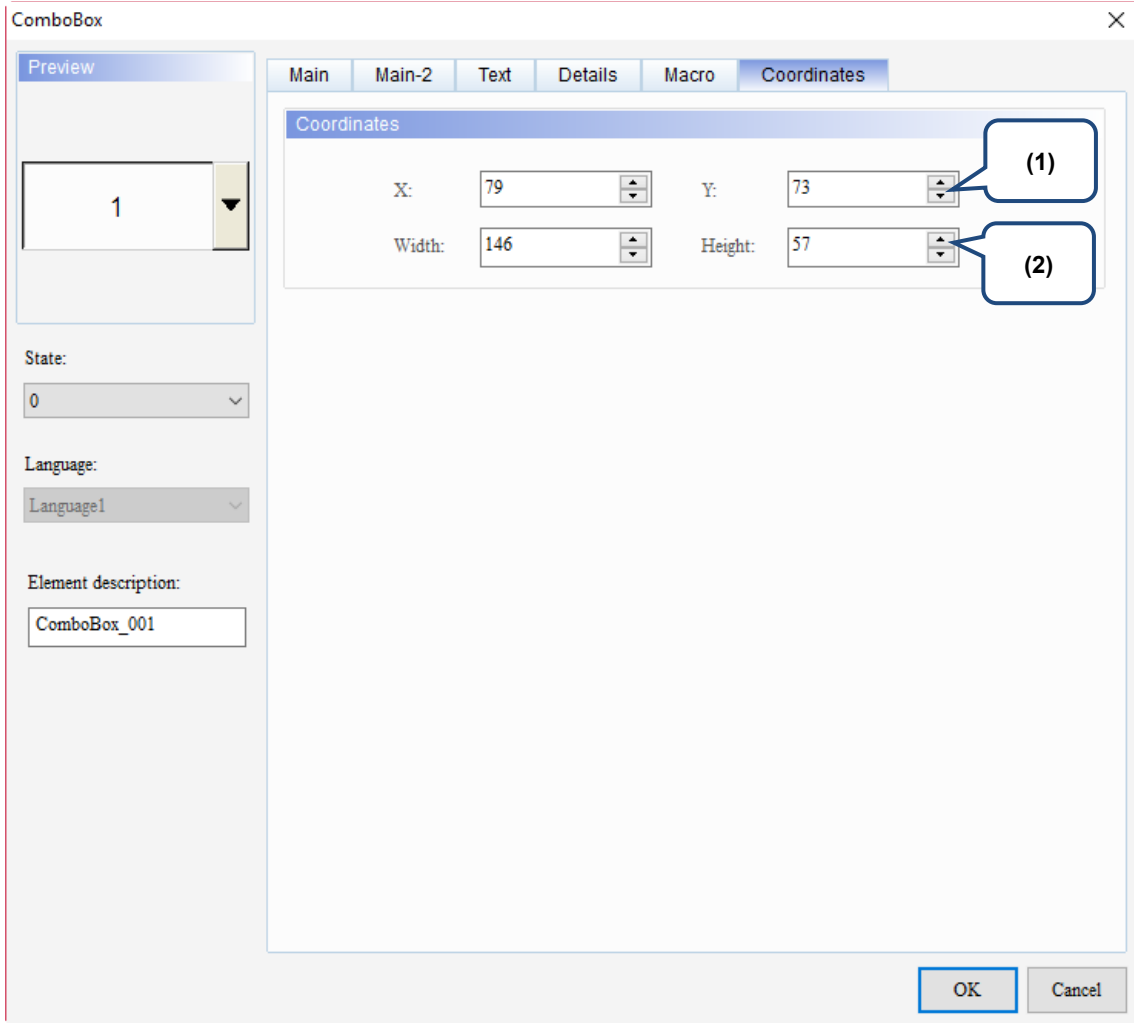


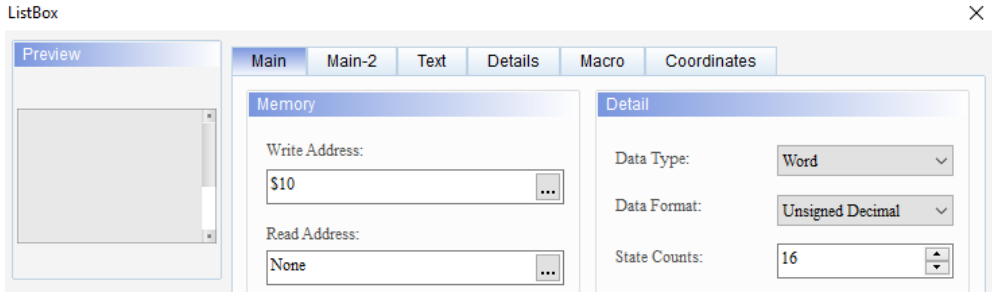
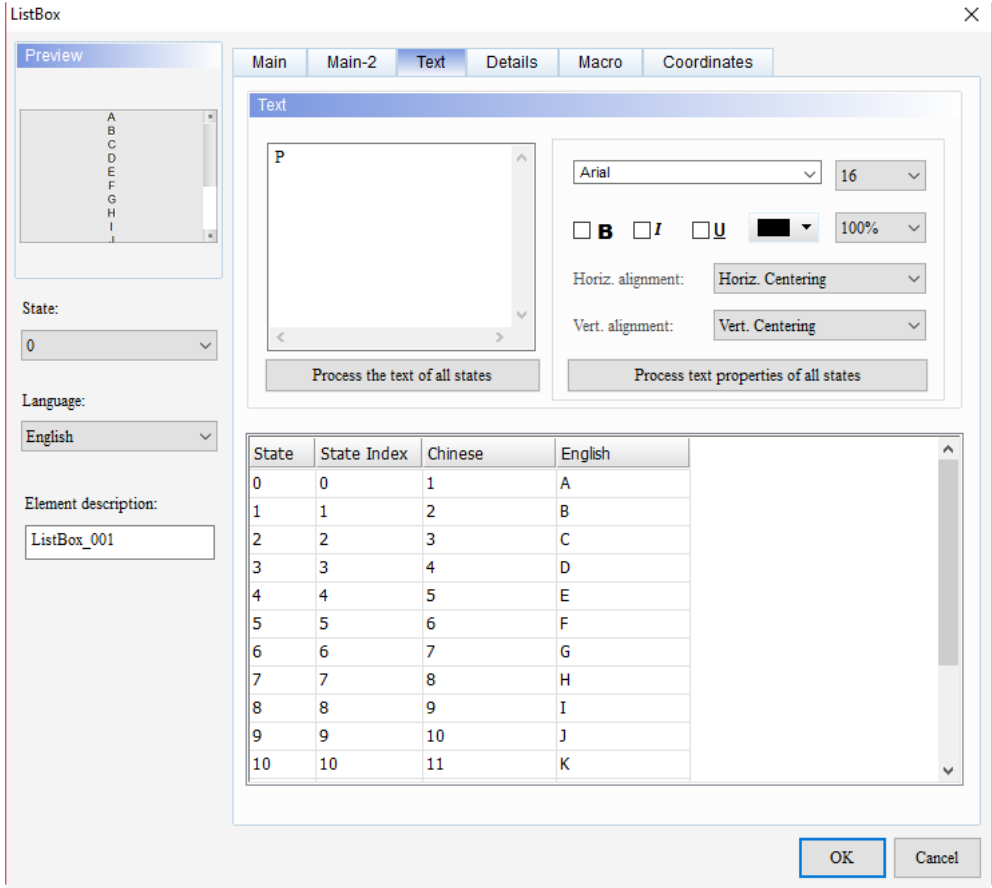
Figure 19.1.7 Coordinates property page for the ComboBox element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

19.2 ListBox

Same as the ComboBox, the ListBox provides display messages in multiple states, but the ListBox allows users to view and select the options in a more intuitive way. Please refer to Table 19.2.1 for the ListBox example.

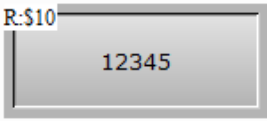
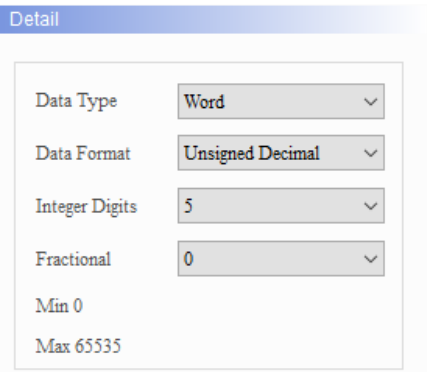
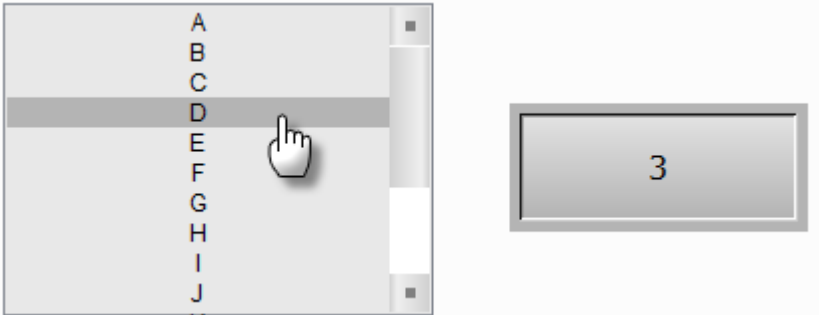
Table 19.2.1 ListBox example

ListBox	
<p>1. Create a ListBox element with its Write Address as \$10 and select Word for Data Type, then set the State Counts to 16.</p>	
<p>2. On the Text page, edit the text messages to be displayed for the 16 states which are the characters of A to P respectively.</p>	

Create
ListBox
element

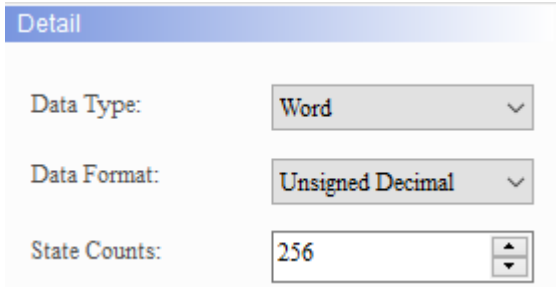
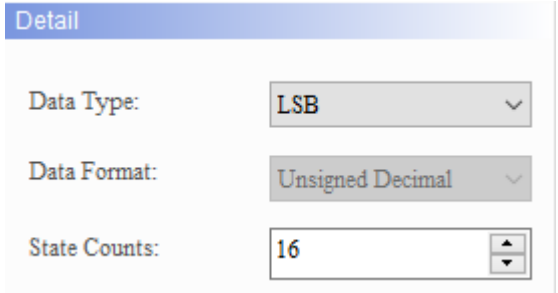
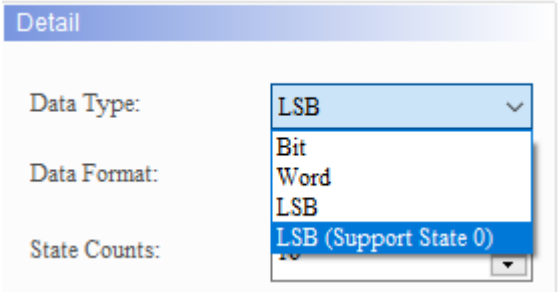

State	State Index	Chinese	English
0	0	1	A
1	1	2	B
2	2	3	C
3	3	4	D
4	4	5	E
5	5	6	F
6	6	7	G
7	7	8	H
8	8	9	I
9	9	10	J
10	10	11	K

19

ListBox			
Create Numeric Display element	Numeric Display Element	Read Address	
		Settings	
Execution results	<p>After creating the elements, please compile and download the elements to the HMI. And the Numeric Display element will show the corresponding state value of the item you selected in the ListBox element.</p> 		

ListBox supports four data types as shown in Table 19.2.2. If you need to add or reduce the total number of states, you can simply add or reduce it from State Counts in the property page.

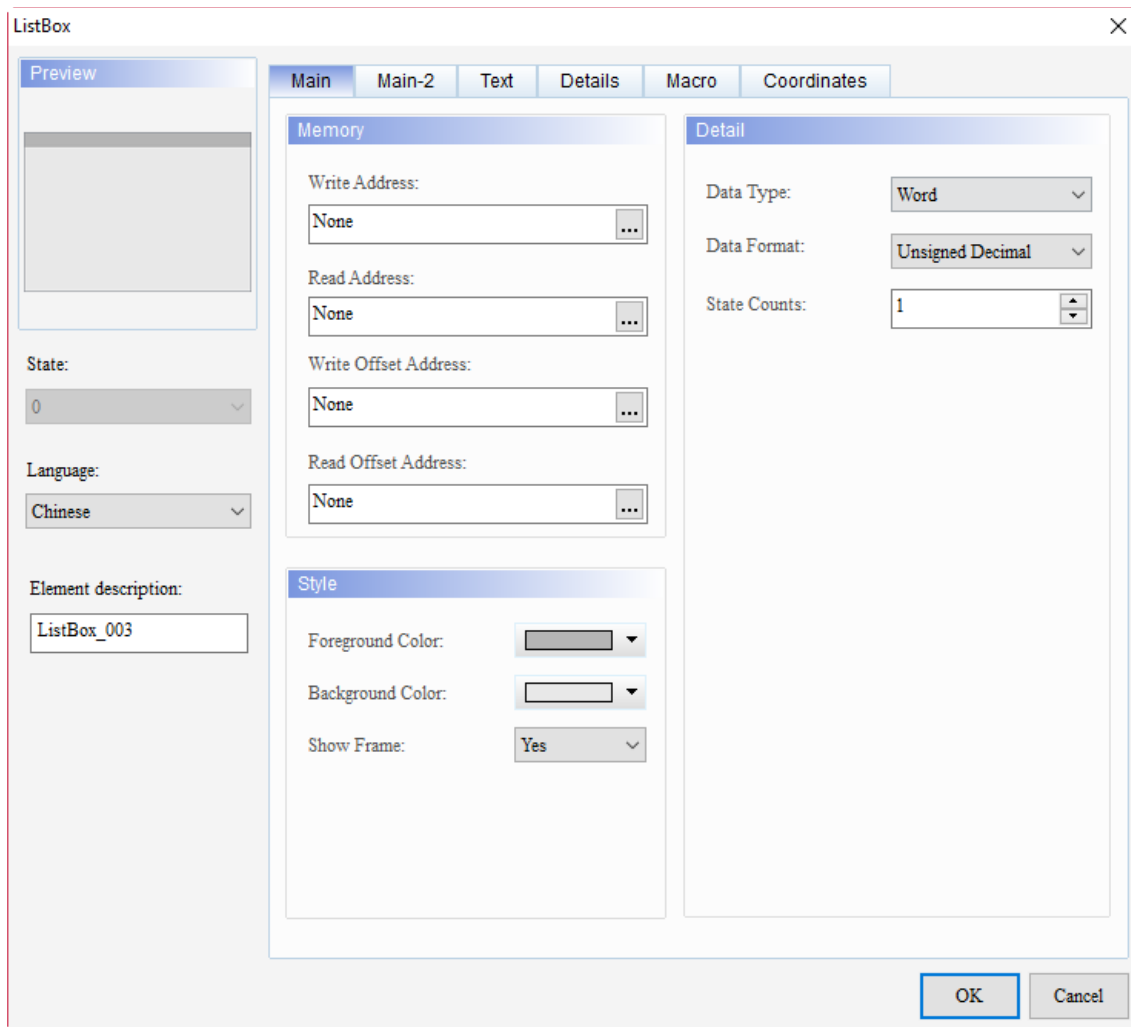
Table 19.2.2 Data Type of ListBox

ListBox	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> 
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> ■ LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object. ■ If the Data Type is LSB, you can set 1 to 16 states, except for State 0.  <ul style="list-style-type: none"> ■ To display State 0, please select LSB (Support State 0).  <ul style="list-style-type: none"> ■ If you selected LSB, the element is black when the state is 0.  ■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in Word as the unit.

19

ListBox			
Data Type	State Counts		
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> The examples in the following table show how the state value is determined with the lowest non-zero bit after converting from decimal value to binary value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7. 		
	Decimal	Binary	State value
	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>
	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.
	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.
	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	4	0000000000000100	The lowest non-zero bit is bit 2, State = 3.
	<u>7</u>	<u>0000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.
	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.
	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.
	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.
	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.
	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.
	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.
	4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.
	8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.	
Bit	If the Data Type is Bit, only 2 states are available for the State Counts.		

When you double-click ListBox, the property page is shown as follows.



19

Figure 19.2.1 Properties of ListBox

Table 19.2.3 Function page of the ListBox element

ListBox	
Function page	Description
Preview	ListBox supports multiple state values and multi-language data display.
Main	Set the Write Address, Read Address, Write Offset Address, Read Offset Address, Data Type, Data Format, and State Counts. Set the Background Color and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Details	Set the Interlock State, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, and Confirm Window.
Macro	Set Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

19

■ Main

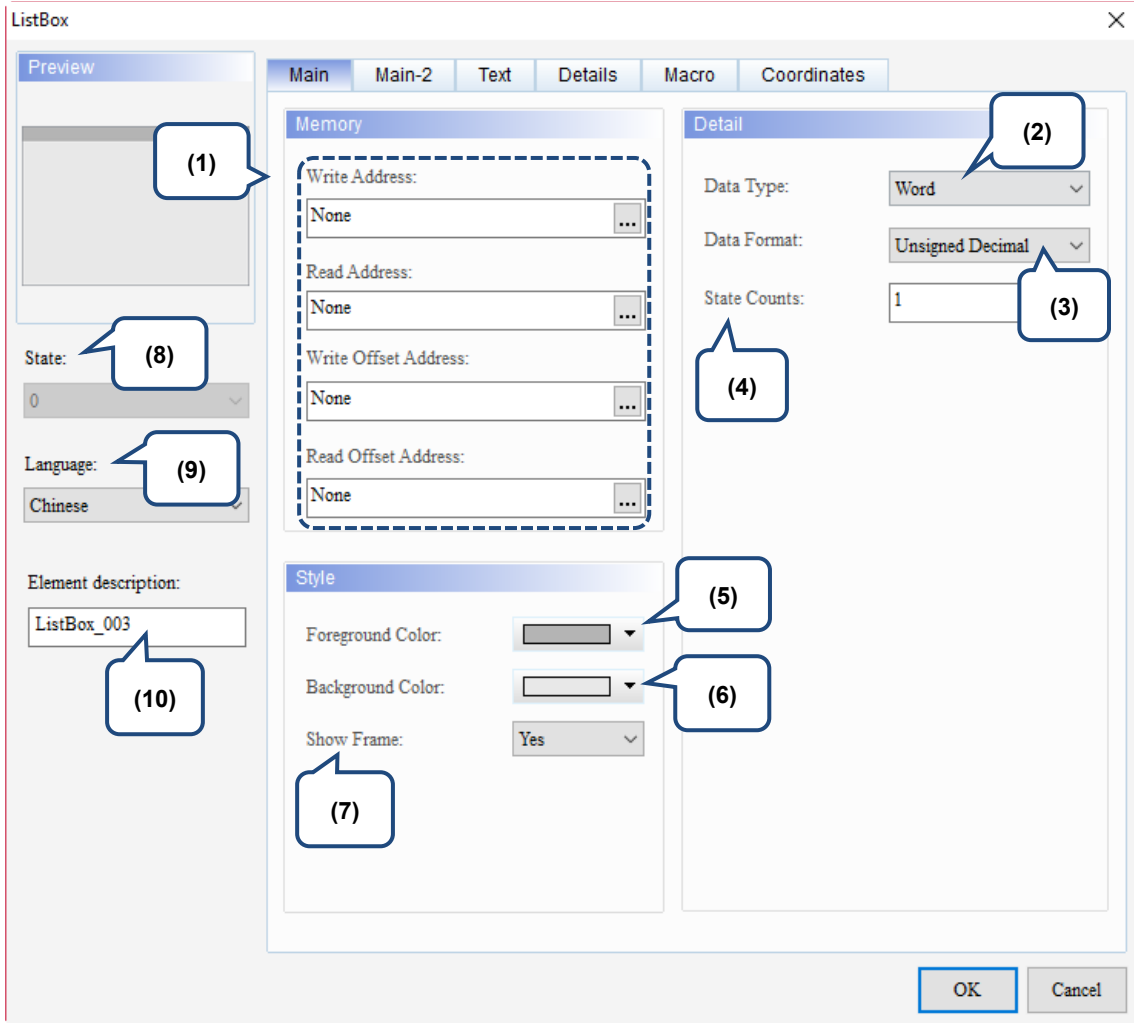
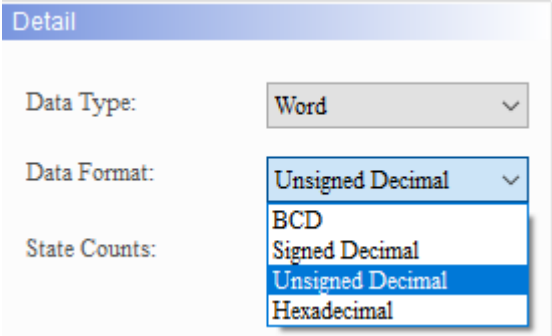
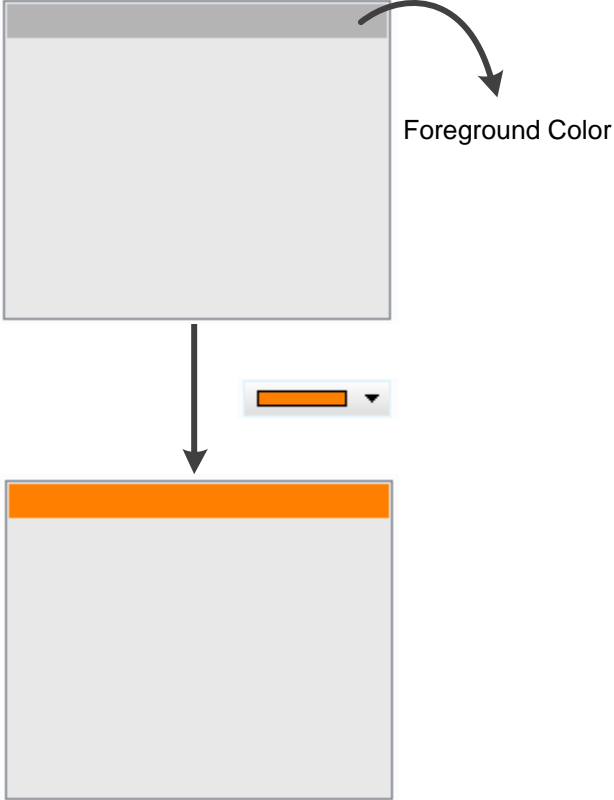
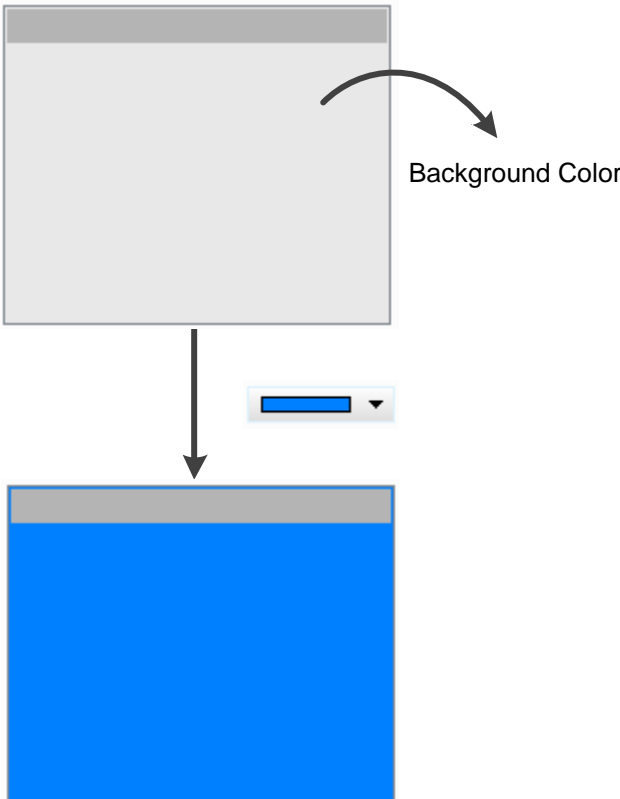
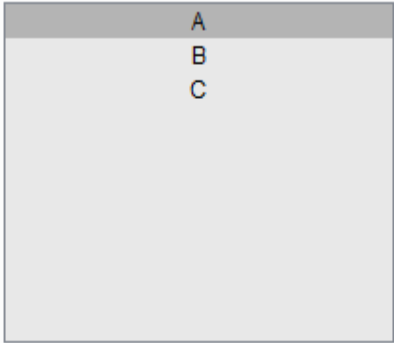
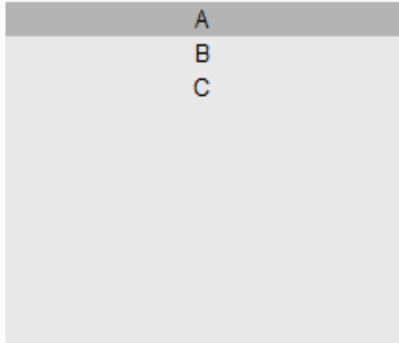
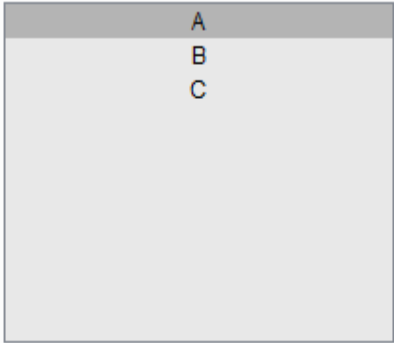
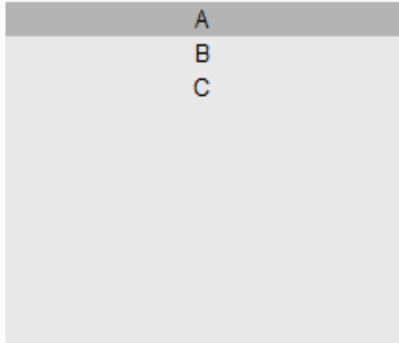
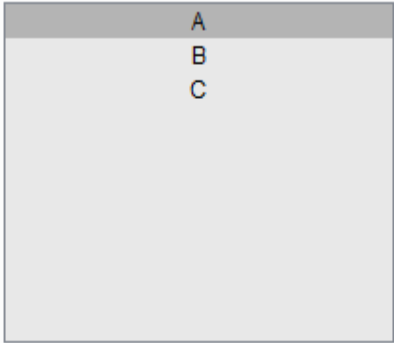
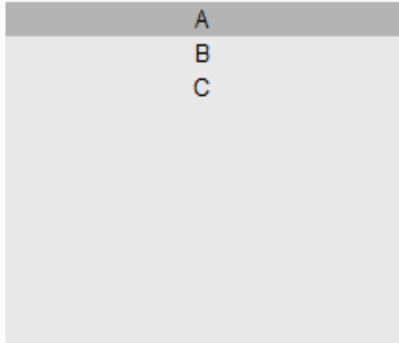


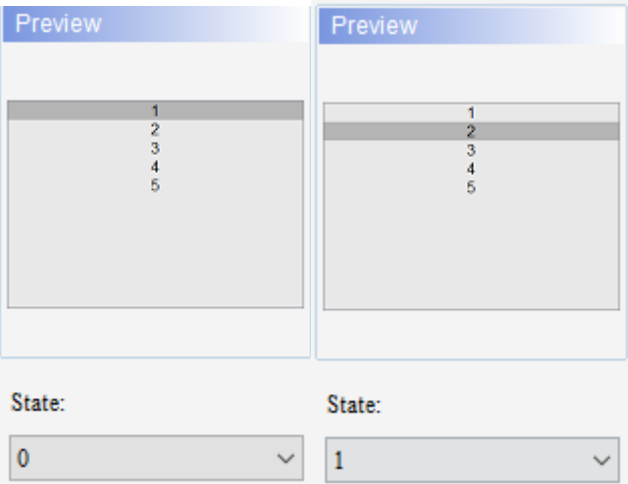
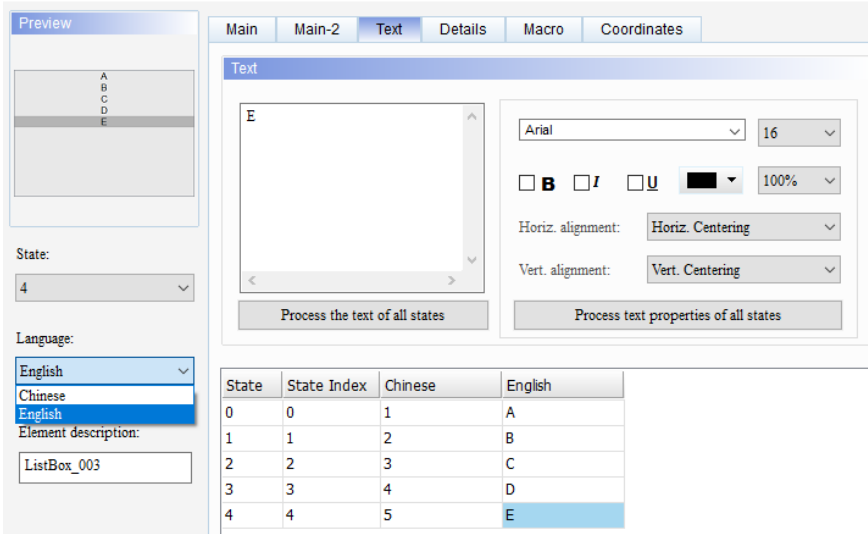
Figure 19.2.2 Main property page for the ListBox element

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 19.2.2.
	Read Address	
	Write Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	
(2)	Data Type	There are four data types available: Bit, Word, LSB, and LSB (Support State 0). Please refer to Table 19.2.2 for details.

No.	Property	Function description
(3)	Data Format	<ul style="list-style-type: none"> ■ You can only select the Data Format when the Data Type is Word. ■ There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal. 
(4)	State Counts	<p>Set the State Counts for the ListBox element. If the Data Type is Word, you can select 1 - 256 states; if the Data Type is LSB, you can select 16 states; if the Data Type is LSB (Support State 0), you can select 17 states; and if the Data Type is Bit, you can select 2 states. Please refer to Table 19.2.2 for details.</p>
(5)	Foreground Color	<p>Set the foreground color of the element.</p> 

19

No.	Property	Function description				
(6)	Background Color	<p>Set the background color of the element.</p> 				
(7)	Show Frame	<p>Set whether or not to display the border of the ListBox.</p> <table border="1"> <thead> <tr> <th>Show Frame set to Yes</th> <th>Show Frame set to No</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> </tr> </tbody> </table>	Show Frame set to Yes	Show Frame set to No		
Show Frame set to Yes	Show Frame set to No					
						

No.	Property	Function description																																																																																										
(8)	Status	<p>By switching the State, you can preview or change the settings of each button element state.</p> 																																																																																										
(9)	Language	<p>If you have set the language data, you can use the language used for the element to edit the displaying text property, etc.</p> <p>ListBox</p>  <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>1</td> <td>2</td> <td>B</td> </tr> <tr> <td>2</td> <td>2</td> <td>3</td> <td>C</td> </tr> <tr> <td>3</td> <td>3</td> <td>4</td> <td>D</td> </tr> <tr> <td>4</td> <td>4</td> <td>5</td> <td>E</td> </tr> </tbody> </table>	State	State Index	Chinese	English	0	0	1	A	1	1	2	B	2	2	3	C	3	3	4	D	4	4	5	E																																																																		
State	State Index	Chinese	English																																																																																									
0	0	1	A																																																																																									
1	1	2	B																																																																																									
2	2	3	C																																																																																									
3	3	4	D																																																																																									
4	4	5	E																																																																																									
(10)	Element Description	<p>Record the button actions to be executed. The record is also written in the CSV file of the Operation Log Table so users can know what actions have been done.</p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>		Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																																				
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																																				
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																																				
3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																																				
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																																				
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																																				
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																																				
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																																				
8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																																				
9	13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																																				

■ Main-2

19

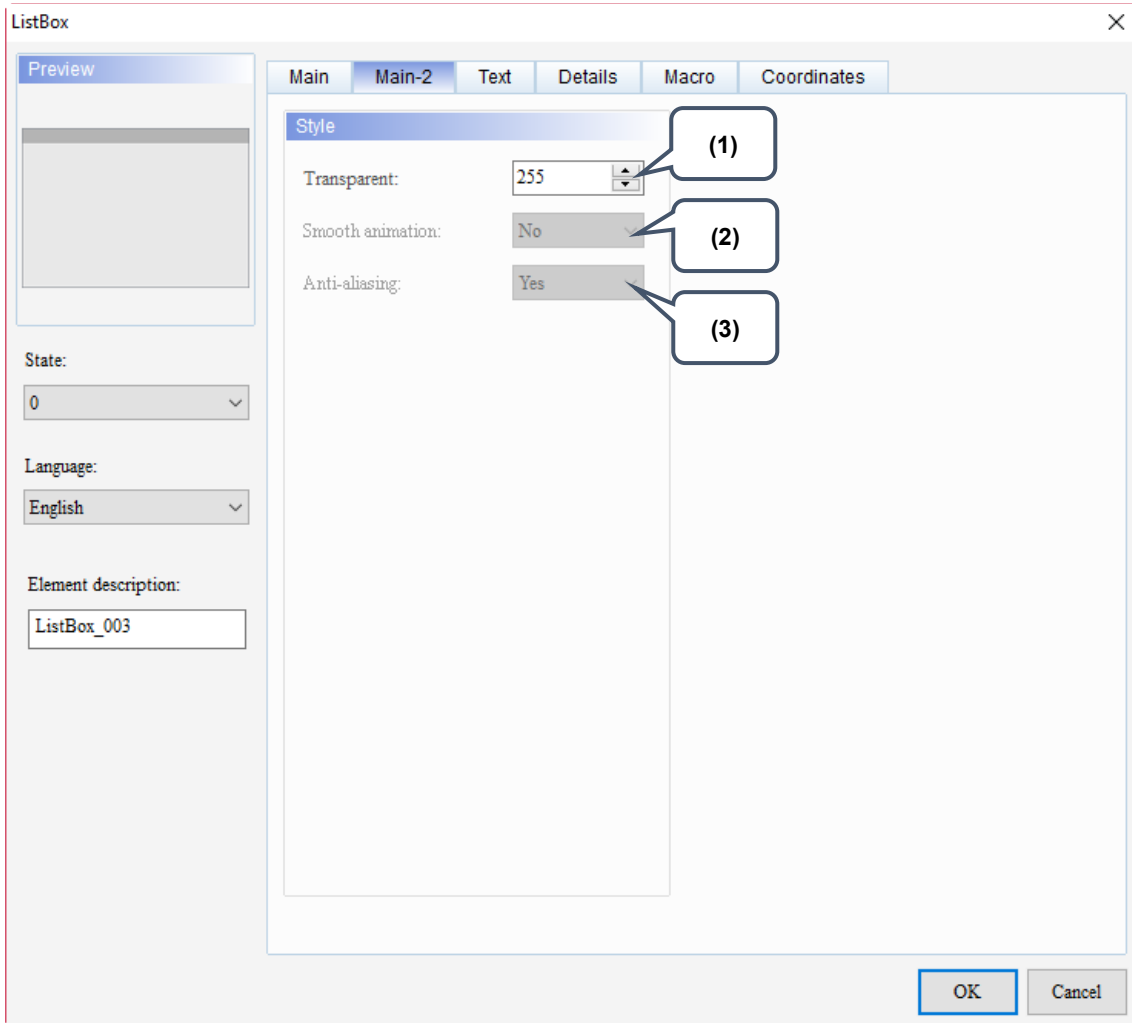
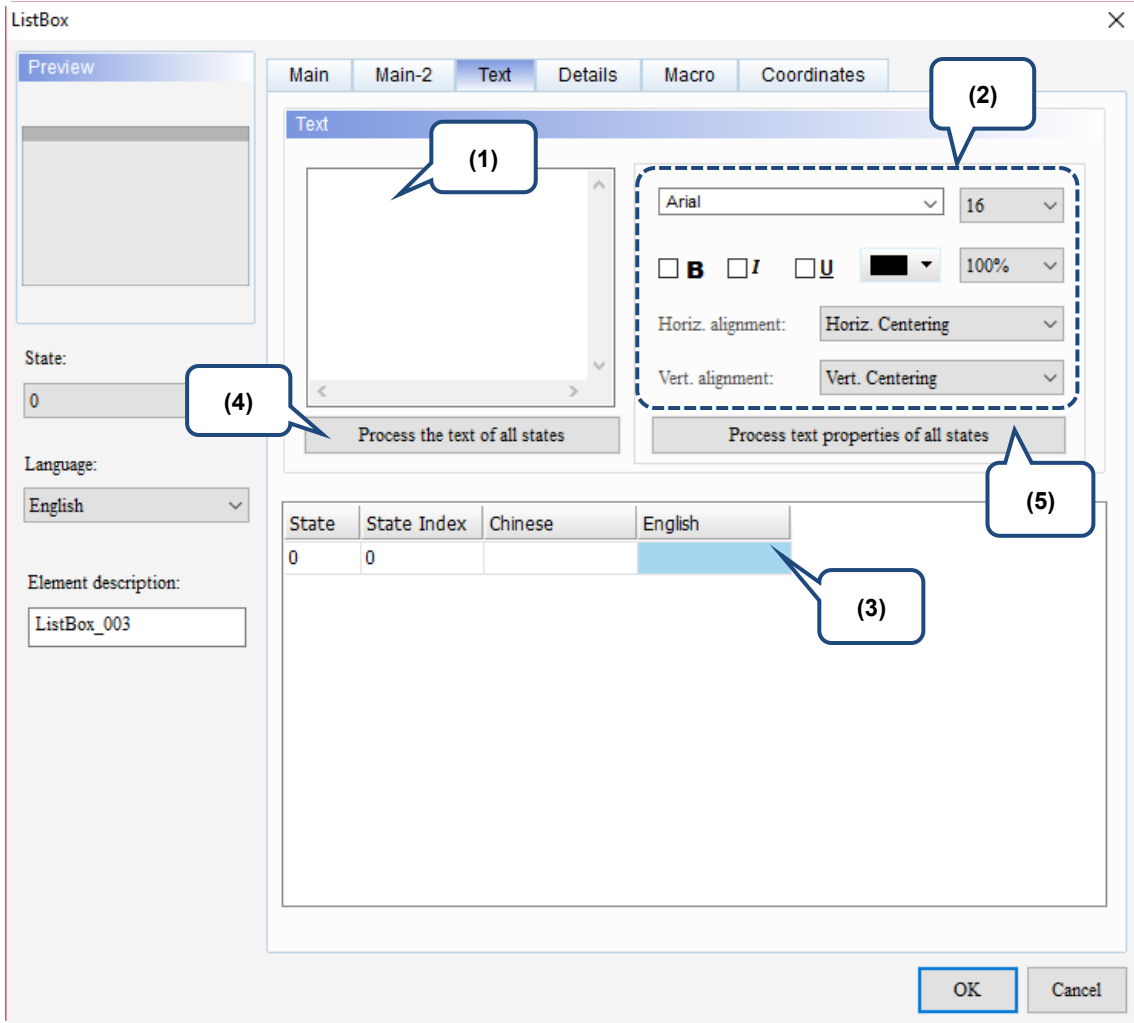


Figure 19.2.3 Main-2 property page for the ListBox element

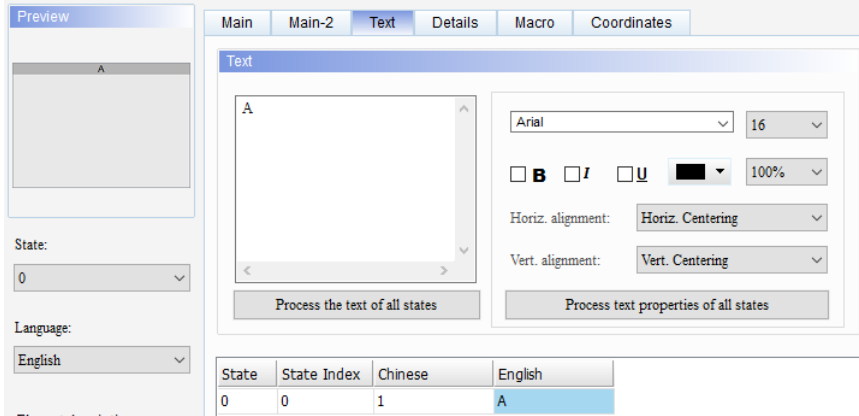
No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

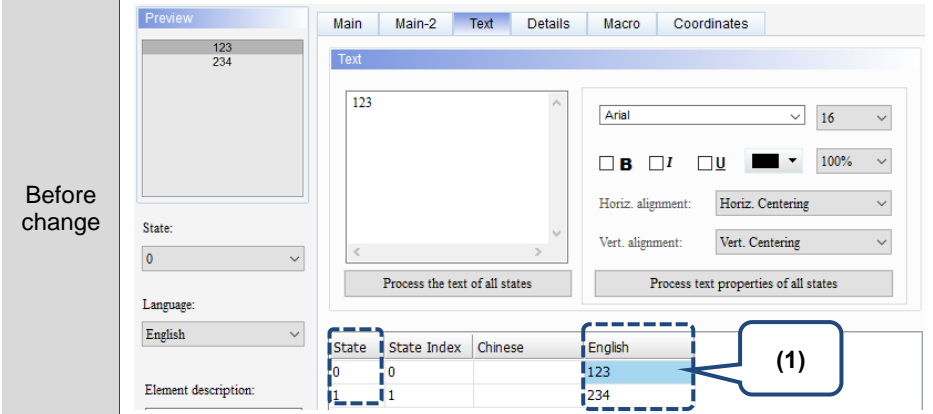
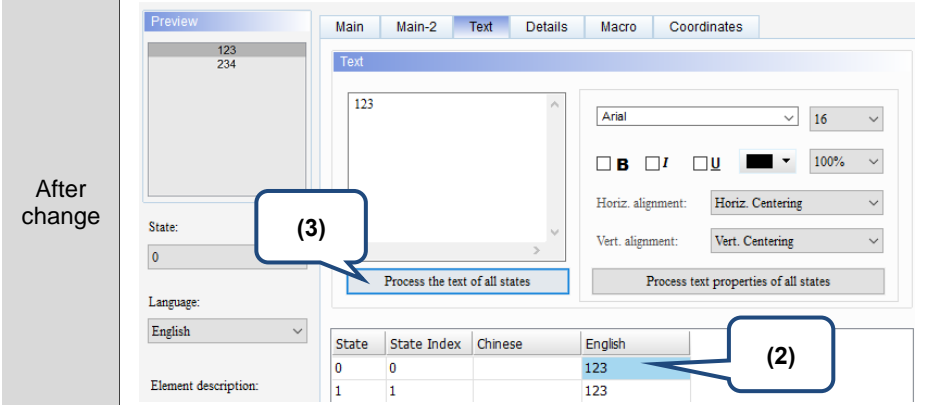
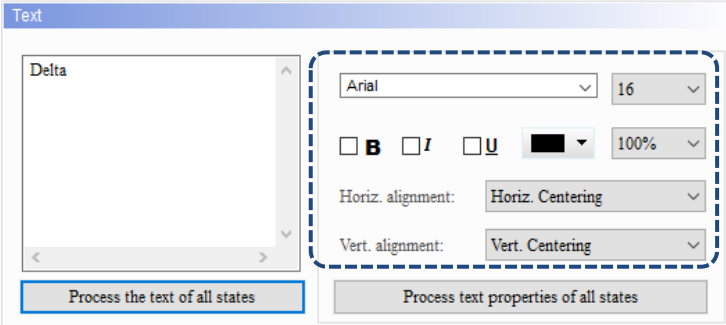


19

Figure 19.2.4 Text property page for the ListBox element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> You can enter the text to display in this box.  <ul style="list-style-type: none"> As long as the element allows text input, you can click the element and press the space key to start editing the text immediately.
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.

19

No.	Property	Function description
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>This function batch changes the text of the specified state. Please see the following example:</p> <ol style="list-style-type: none"> 1. Enter the text "123" for State 0 and "234" for State 1. 2. Select State 0. 3. Execute Process the text of all states and the text of State 1 is changed to "123".  
(5)	Process text properties of all states	<p>This function batch changes the text properties of the specified state. Items included in the text property are shown in the figure below.</p>  <p>Please see the following example:</p> <ol style="list-style-type: none"> 1. Enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1. 2. Select State 0. 3. Execute Process text properties of all states and the text font of State 1 is changed to Segoe Script.

No.	Property	Function description												
(5)	Process text properties of all states	<p style="text-align: center;">Before change</p>  <p>State: 0</p> <p>Language: English</p> <p>Element description: Delta</p> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	State Index	Chinese	English	0	0		Delta	1	1		HMI
		State	State Index	Chinese	English									
	0	0		Delta										
1	1		HMI											
<p style="text-align: center;">After change</p>  <p>State: 1</p> <p>Language: English</p> <p>Element description: HMI</p> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	State Index	Chinese	English	0	0		Delta	1	1		HMI		
State	State Index	Chinese	English											
0	0		Delta											
1	1		HMI											

19

■ Details

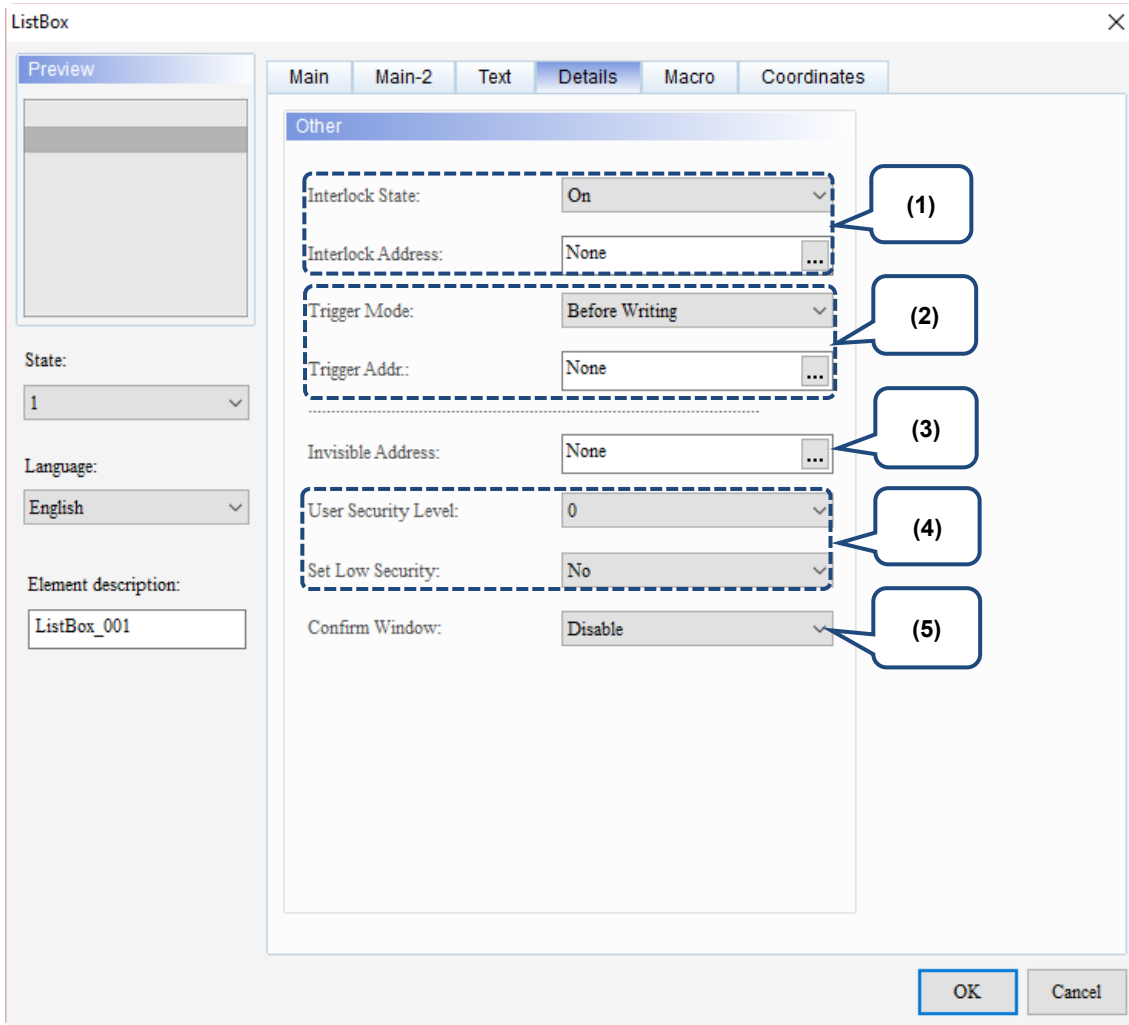
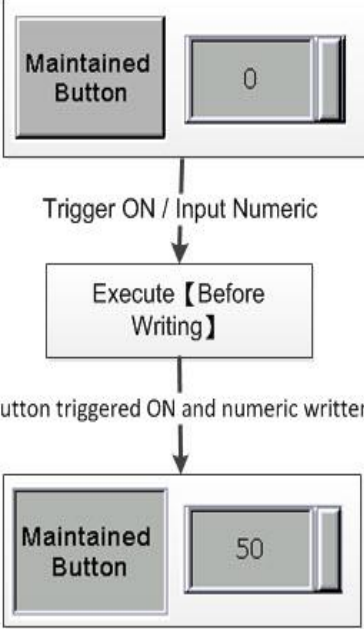
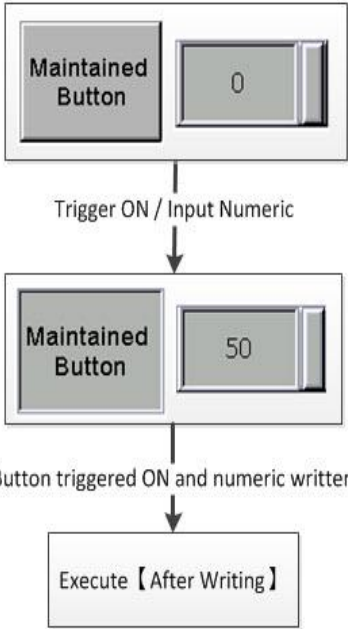
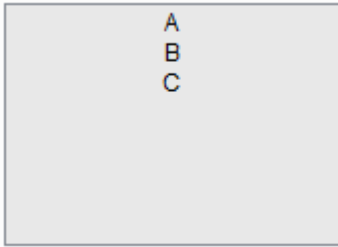
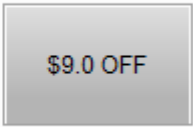
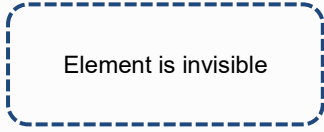
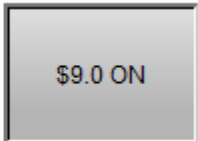
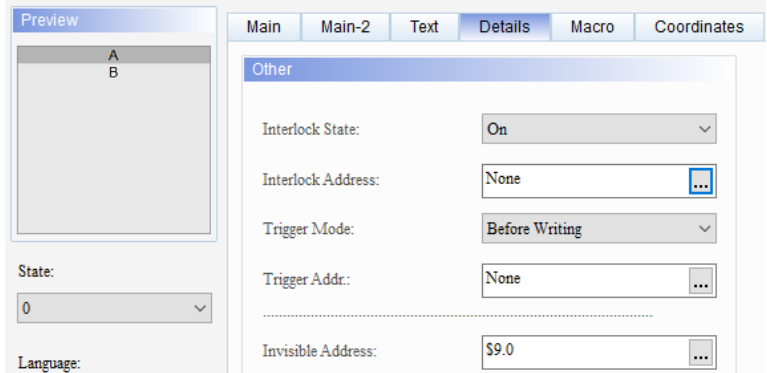
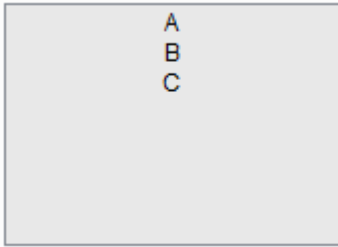
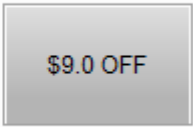
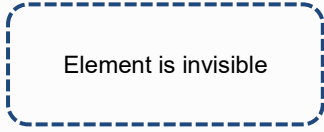
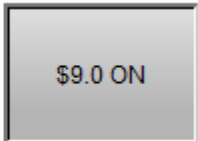
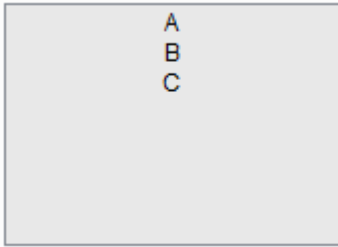
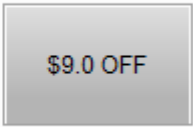
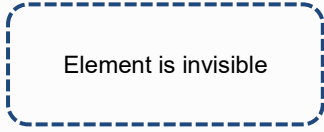
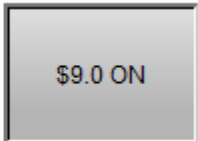
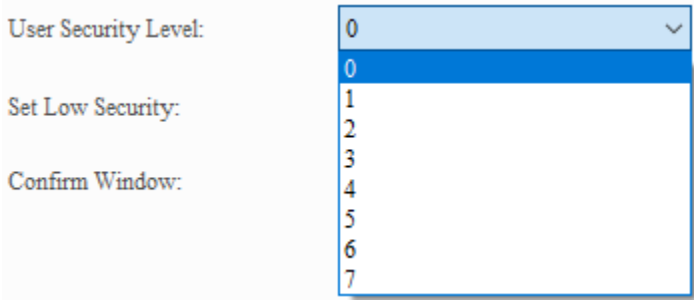
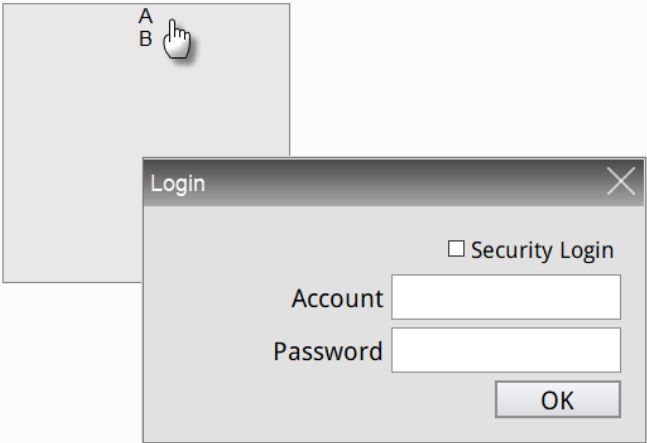
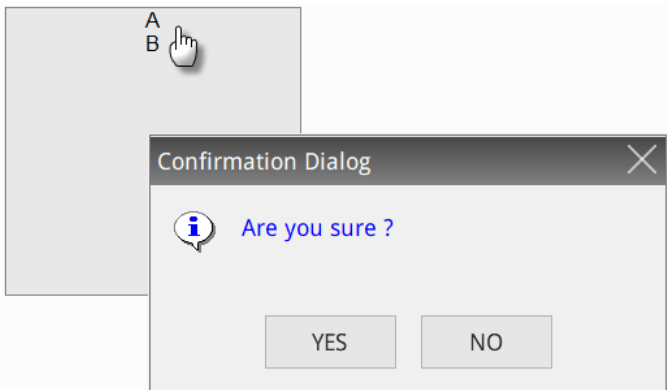


Figure 19.2.5 Details property page for the ListBox element

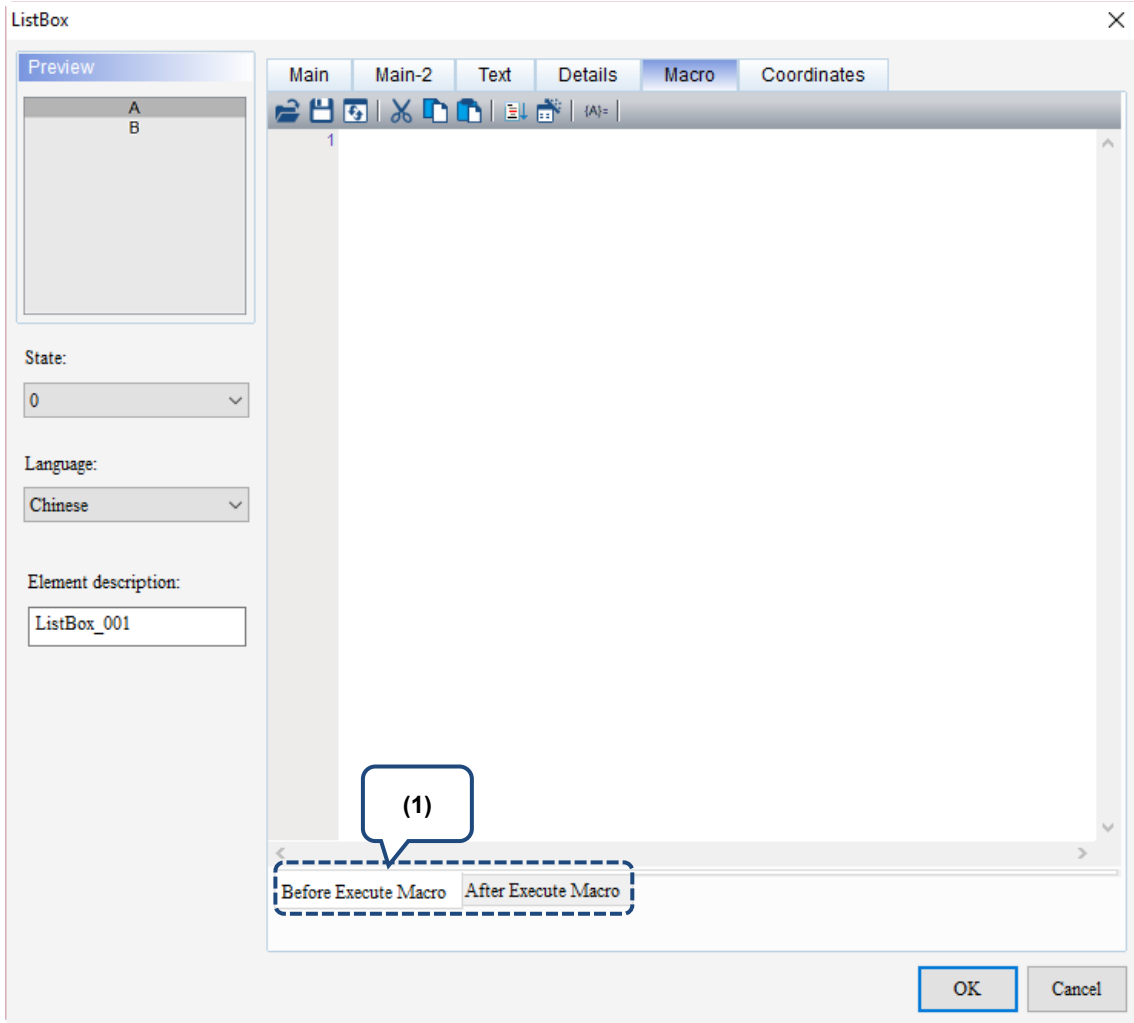
No.	Property	Function description
(1)	Interlock State	<p>Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on.</p> <ul style="list-style-type: none"> ■ Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the ListBox which address is \$100. ■ In order for the ListBox to obtain the correct state value after you press it, you must first press \$8.0 to enable the action of the ListBox.
	Interlock Address	

No.	Property	Function description						
(2)	Trigger Mode	<ul style="list-style-type: none"> Trigger Modes include Before Writing and After Writing. <table border="1"> <thead> <tr> <th></th> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td>Triggering action</td> <td>Trigger Addr. must be set to on before the value changes.</td> <td>Value is changed before the Trigger Addr. is set to on.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> The triggering function only switches the set Trigger Addr. to on, so if triggering again is required, you need to set the Trigger Addr. to off. <p>Flowchart of Before Writing:</p>  <p>Flowchart of After Writing:</p> 		Before Writing	After Writing	Triggering action	Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.
		Before Writing	After Writing					
Triggering action	Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.						
Trigger Addr.								
(3)	Invisible Address	<p>When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.</p> <table border="1"> <tbody> <tr> <td>Invisible Address is off</td> <td>  </td> <td>  </td> </tr> <tr> <td>Invisible Address is on</td> <td>  </td> <td>  </td> </tr> </tbody> </table> <p>ListBox</p> 	Invisible Address is off			Invisible Address is on		
Invisible Address is off								
Invisible Address is on								

19

No.	Property	Function description
(4)	User Security Level	 <ul style="list-style-type: none"> ■ You can use this function to set the permission level for pressing the element; this operation is only available to users with the same set security level or higher. ■ After you set the User Security Level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password with the Password Table element, please refer to Section 5.7.2 Password Table Setup).
	Set Low Security	 <ul style="list-style-type: none"> ■ If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.
(5)	Confirm Window	<p>If Confirm Window is set to Yes, after you press the element, the following window will pop up to confirm if you want to execute the action of this button.</p> 

■ Macro



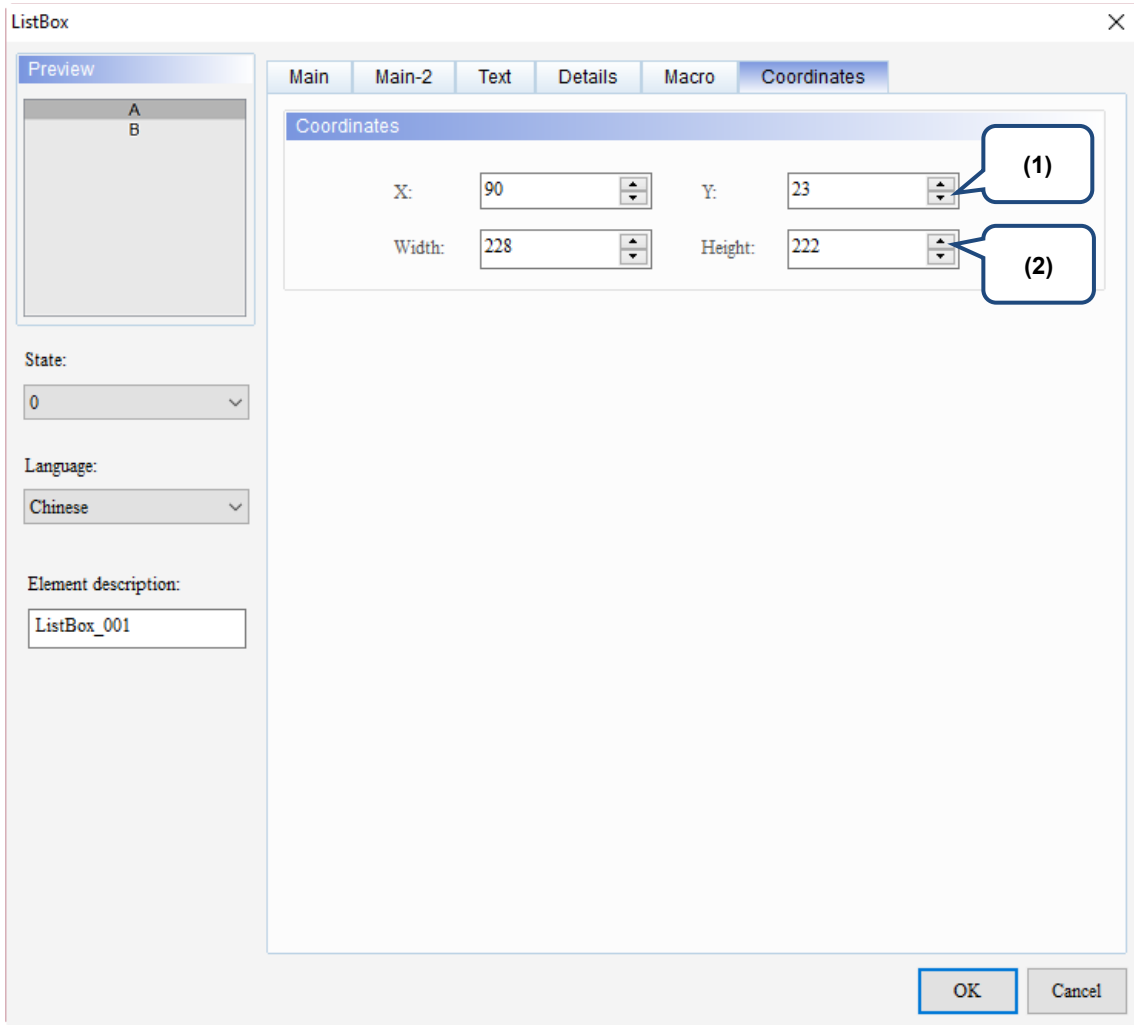
19

Figure 19.2.6 Macro property page for the ListBox element

19

No.	Property	Function description
(1)		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Flowchart of Before Execute Macro:</p> <pre> graph TD A["Maintained Button 0"] -- "Trigger ON / Input Numeric" --> B["Before Execute Macro"] B -- "Button triggered ON and numeric written" --> C["Maintained Button 50"] C -- "Trigger OFF / Input Numeric" --> D["Before Execute Macro"] D -- "Button triggered OFF and numeric written" --> E["Maintained Button 90"] </pre> </div> <div style="width: 45%;"> <p>Flowchart of After Execute Macro:</p> <pre> graph TD A["Maintained Button 0"] -- "Trigger ON / Input Numeric" --> B["After Execute Macro"] B -- "Button triggered ON and numeric written" --> C["Maintained Button 50"] C -- "Trigger OFF / Input Numeric" --> D["After Execute Macro"] D -- "Button triggered OFF and numeric written" --> E["After Execute Macro"] </pre> </div> </div>
	<p>Before Execute Macro</p>	<p>When you press the button element, the HMI will first execute the macro commands, then execute the action of the button. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.</p>
<p>After Execute Macro</p>	<p>When you press the button element, the HMI will first execute the action of the button, then execute the macro commands. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.</p>	

■ Coordinates



19

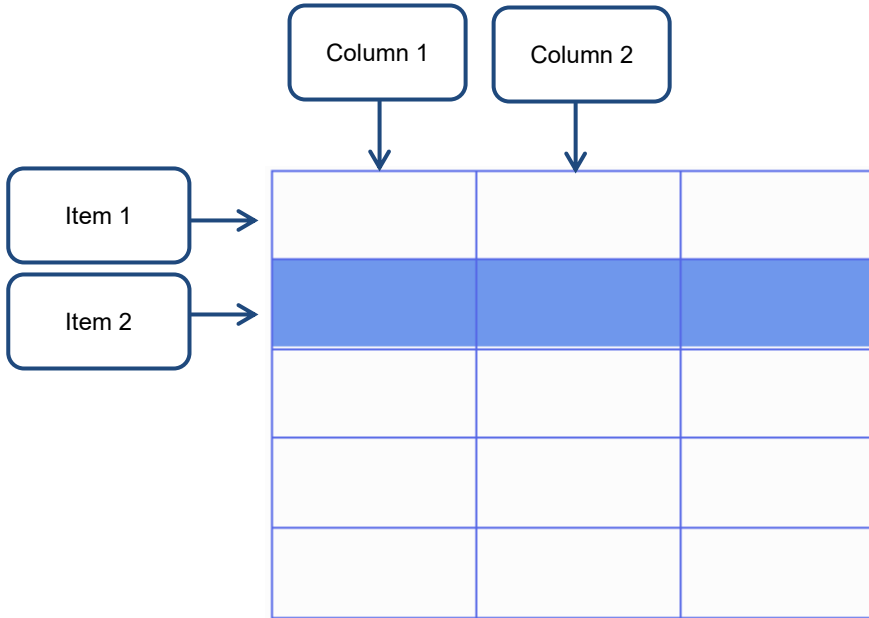
Figure 19.2.7 Coordinates property page for the ListBox element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

19

19.3 GridBox

This element displays the data set by users in a gridbox format providing an interface for easier selection and operation. Its functions include automatic page change, insert, delete, copy, paste, etc.

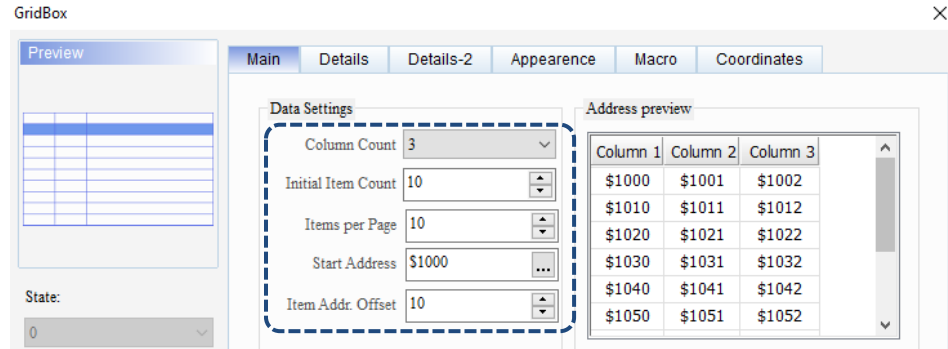


Please refer to Table 19.3.1 for the GridBox example.

Table 19.3.1 GridBox example

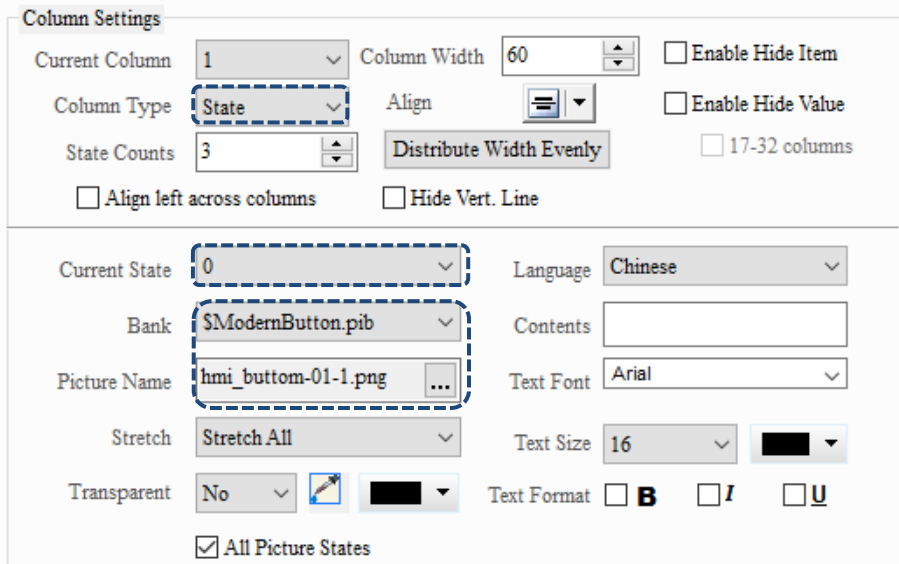
GridBox

1. Select [List] > [GridBox] in the element tool of the editing screen and create it on Screen 1. Set Column Count as 3, Start Address as \$1000, and Item Addr. Offset as 10 Words.

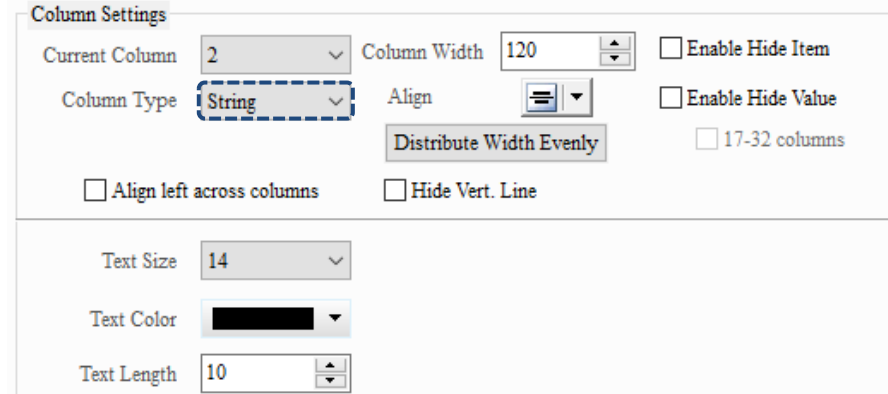


2. Set the Column Type of Column 1 as State and select the images for States 0 - 2 as shown below.

Create GridBox element



3. Set the Column Type of Column 2 as String and you can set the string length as shown below.



19

GridBox

- Set the Column Type of Column 3 as Numeric and the Data Type can be set as Word or DWord as shown below.

Column Settings

Current Column: Column Width: Enable Hide Item

Column Type: Align: Enable Hide Value

Align left across columns Hide Vert. Line 17-32 columns

Data Type: Fractional:

Data Format: Min: -2147483648

Text Size: Max: 2147483647

Text Color:

- The settings for the control address on the Details page are shown as below.

Main | **Details** | Details-2 | Appearance | Macro | Coordinates

State

Selected Item: ...

Actual Item Count: ...

Visible Item Count: ...

Current Page: ...

Total Page: ...

Auto Update Data: v

Update Data: ...

Custom Data

Data Start Addr.: ...

Data Offset: v

Data Length: v

Others

Max item count: v

Operation

Invisible Address: ...

Page Up Trigger Addr.: ...

Page Down Trigger: ...

Previous Item Addr.: ...

Next Item Addr.: ...

Copy Trigger Addr.: ...

Paste Trigger Addr.: ...

Replace Trigger Addr.: ...

Insert Trigger Addr.: ...

Cut Trigger Addr.: ...

Touch Protect Addr.: ...

Select Item Addr.: ...

Trigger Selected Item: ...

Item Count Addr.: ...

Trigger Item Count: ...

Create GridBox element

GridBox

6. The settings for the control address on the Details-2 page are shown as below.

The screenshot shows the 'Details-2' tab of the GridBox interface. Under the 'Operation-Buffer selection' section, there are six rows of settings, each with a text label, a numerical value in a text box, and a three-dot menu icon:

Buffer Start Addr.	\$500	...
Insert Selected Item Addr.	\$111.0	...
Add selected item Addr.	\$111.1	...
Add to Last Addr.	\$111.2	...
Read Address	\$111.3	...
Write Address	\$111.4	...

7. Set the Data Start Addr. of Custom Data as \$3000, Data Offset as 15 Words, and the Data Length for each data as 5 Words.

Create GridBox element


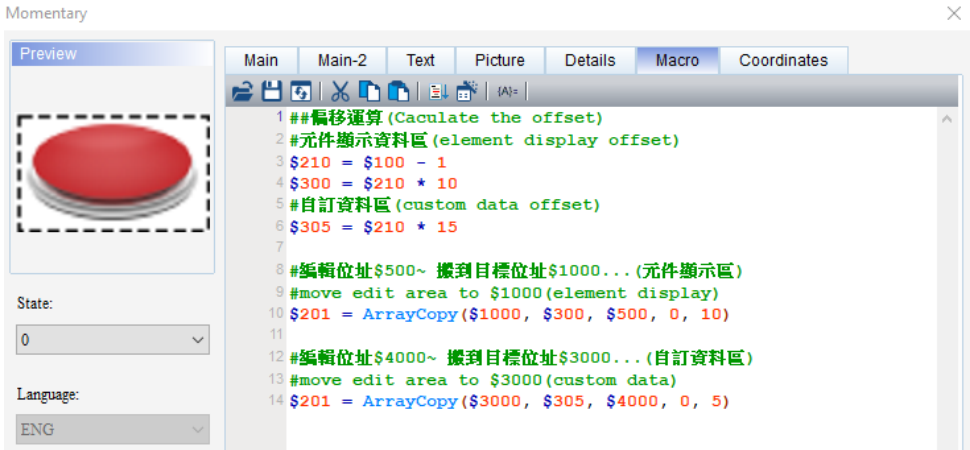
The screenshot shows the 'Details' tab of the GridBox interface. The 'Custom Data' section is highlighted with a dashed blue box and contains three settings:

Data Start Addr.	\$3000	...
Data Offset	15	▲▼
Data Length	5	▲▼

Other visible settings include:

- State**: Selected Item (\$100), Actual Item Count (\$101), Visible Item Count (\$102), Current Page (\$103), Total Page (\$104), Auto Update Data (Yes), Update Data (\$110.0).
- Others**: Max item count (1000).

19

GridBox	
<p>Create Numeric Entry and Character Entry elements</p>	<ol style="list-style-type: none"> 1. Create two Numeric Entry elements and set the addresses as \$500 and \$506. Create a Character Entry element and set its address as \$501. These three elements are registers and with the set control bit of the GridBox, the data in these registers can be written into the GridBox. 2. Create a Character Entry element with the address as \$4000. This element is an editing area with a user-defined address. Through the macro, the data in this editing area can be written into the user-defined data of the GridBox. 
<p>Create Momentary button element</p>	<p>Create a Momentary button and set its address as \$200.0. [On Macro] will copy the data from the editing area to the selected items in the GridBox element.</p> 

GridBox	
<p>Create Numeric Entry elements (\$100 - \$106) and Maintained button elements (\$110.0 - \$110.12)</p>	<p>Create the figure of the GridBox Details setting on the screen and place the corresponding elements and buttons on the figure for editing the element.</p> <div style="border: 1px solid #ccc; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>State</p> <p>Selected Item <input type="text" value="\$100"/> ...</p> <p>Actual Item Count <input type="text" value="\$101"/> ...</p> <p>Visible Item Count <input type="text" value="\$102"/> ...</p> <p>Current Page <input type="text" value="\$103"/> ...</p> <p>Total Page <input type="text" value="\$104"/> ...</p> <hr/> <p>Auto Update Data <input type="button" value="Yes"/> ▾</p> <p>Update Data <input type="text" value="\$110.0"/> ...</p> </div> <div style="width: 48%;"> <p>Operation</p> <p>Invisible Address: <input type="text" value="\$110.1"/> ...</p> <p>Page Up Trigger Addr. <input type="text" value="\$110.2"/> ...</p> <p>Page Down Trigger <input type="text" value="\$110.3"/> ...</p> <p>Previous Item Addr. <input type="text" value="\$110.4"/> ...</p> <p>Next Item Addr. <input type="text" value="\$110.5"/> ...</p> <p>Copy Trigger Addr. <input type="text" value="\$110.6"/> ...</p> <p>Paste Trigger Addr. <input type="text" value="\$110.7"/> ...</p> <p>Replace Trigger Addr. <input type="text" value="\$110.8"/> ...</p> <p>Insert Trigger Addr. <input type="text" value="\$110.9"/> ...</p> <p>Cut Trigger Addr. <input type="text" value="\$110.10"/> ...</p> <p>Touch Protect Addr. <input type="text" value="\$110.11"/> ...</p> <hr/> <p>Select Item Addr. <input type="text" value="\$105"/> ...</p> <p>Trigger Selected Item <input type="text" value="\$110.12"/> ...</p> <p>Item Count Addr. <input type="text" value="\$106"/> ...</p> <p>Trigger Item Count <input type="text" value="\$110.13"/> ...</p> </div> </div> <div style="margin-top: 10px; border: 1px solid #ccc; padding: 5px;"> <p>Custom Data</p> <p>Data Start Addr. <input type="text" value="\$3000"/> ...</p> <p>Data Offset <input type="text" value="15"/> ▾</p> <p>Data Length <input type="text" value="5"/> ▾</p> </div> <div style="margin-top: 10px; border: 1px solid #ccc; padding: 5px;"> <p>Others</p> <p>Max item count <input type="text" value="1000"/> ▾</p> </div> <div style="margin-top: 10px; border: 1px solid #ccc; padding: 5px;"> <p>Operation-Buffer selection</p> <p>Buffer Start Addr. <input type="text" value="\$500"/> ...</p> <p>Insert Selected Item Addr. <input type="text" value="\$111.0"/> ...</p> <p>Add selected item Addr. <input type="text" value="\$111.1"/> ...</p> <p>Add to Last Addr. <input type="text" value="\$111.2"/> ...</p> <p>Read Address <input type="text" value="\$111.3"/> ...</p> <p>Write Address <input type="text" value="\$111.4"/> ...</p> </div> </div>
<p>Create screen changing button</p>	<p>Create two buttons for screen changing and open Screen 2 and Screen 3 to view the actual data in the GridBox.</p> <div style="text-align: center; margin-top: 20px;"> <div style="border: 1px solid #ccc; background-color: #eee; padding: 5px; width: fit-content; margin: 0 auto;"> <p>Start Address Address \$1000 ~</p> </div> <div style="border: 1px solid #ccc; background-color: #eee; padding: 5px; width: fit-content; margin: 5px auto;"> <p>Custom Data Address \$3000 ~</p> </div> </div>

19

Create Numeric Entry elements (\$1000 - \$1169)

GridBox

Create Screen 2 and display the contents shown in GridBox (\$1000, \$1001...).

W:\$1000	W:\$1001	W:\$1002	W:\$1003	W:\$1004	W:\$1005	W:\$1006	W:\$1007	W:\$1008	W:\$1009
W:\$1010	W:\$1011	W:\$1012	W:\$1013	W:\$1014	W:\$1015	W:\$1016	W:\$1017	W:\$1018	W:\$1019
W:\$1020	W:\$1021	W:\$1022	W:\$1023	W:\$1024	W:\$1025	W:\$1026	W:\$1027	W:\$1028	W:\$1029
W:\$1030	W:\$1031	W:\$1032	W:\$1033	W:\$1034	W:\$1035	W:\$1036	W:\$1037	W:\$1038	W:\$1039
W:\$1040	W:\$1041	W:\$1042	W:\$1043	W:\$1044	W:\$1045	W:\$1046	W:\$1047	W:\$1048	W:\$1049
W:\$1050	W:\$1051	W:\$1052	W:\$1053	W:\$1054	W:\$1055	W:\$1056	W:\$1057	W:\$1058	W:\$1059
W:\$1060	W:\$1061	W:\$1062	W:\$1063	W:\$1064	W:\$1065	W:\$1066	W:\$1067	W:\$1068	W:\$1069
W:\$1070	W:\$1071	W:\$1072	W:\$1073	W:\$1074	W:\$1075	W:\$1076	W:\$1077	W:\$1078	W:\$1079
W:\$1080	W:\$1081	W:\$1082	W:\$1083	W:\$1084	W:\$1085	W:\$1086	W:\$1087	W:\$1088	W:\$1089
W:\$1090	W:\$1091	W:\$1092	W:\$1093	W:\$1094	W:\$1095	W:\$1096	W:\$1097	W:\$1098	W:\$1099
W:\$1100	W:\$1101	W:\$1102	W:\$1103	W:\$1104	W:\$1105	W:\$1106	W:\$1107	W:\$1108	W:\$1109
W:\$1110	W:\$1111	W:\$1112	W:\$1113	W:\$1114	W:\$1115	W:\$1116	W:\$1117	W:\$1118	W:\$1119
W:\$1120	W:\$1121	W:\$1122	W:\$1123	W:\$1124	W:\$1125	W:\$1126	W:\$1127	W:\$1128	W:\$1129
W:\$1130	W:\$1131	W:\$1132	W:\$1133	W:\$1134	W:\$1135	W:\$1136	W:\$1137	W:\$1138	W:\$1139
W:\$1140	W:\$1141	W:\$1142	W:\$1143	W:\$1144	W:\$1145	W:\$1146	W:\$1147	W:\$1148	W:\$1149
<div style="border: 1px dashed black; display: inline-block; padding: 2px;">\$1000~</div> <div style="float: right; border: 1px solid gray; padding: 2px;">Back</div>									

Create Numeric Entry elements (\$3000 - \$3254)

Create Screen 3 and display the user-defined data in GridBox (\$3000, \$3001...).

W:\$3000	W:\$3001	W:\$3002	W:\$3003	W:\$3004	W:\$3005	W:\$3006	W:\$3007	W:\$3008	W:\$3009
W:\$3010	W:\$3011	W:\$3012	W:\$3013	W:\$3014	W:\$3015	W:\$3016	W:\$3017	W:\$3018	W:\$3019
W:\$3020	W:\$3021	W:\$3022	W:\$3023	W:\$3024	W:\$3025	W:\$3026	W:\$3027	W:\$3028	W:\$3029
W:\$3030	W:\$3031	W:\$3032	W:\$3033	W:\$3034	W:\$3035	W:\$3036	W:\$3037	W:\$3038	W:\$3039
W:\$3040	W:\$3041	W:\$3042	W:\$3043	W:\$3044	W:\$3045	W:\$3046	W:\$3047	W:\$3048	W:\$3049
W:\$3050	W:\$3051	W:\$3052	W:\$3053	W:\$3054	W:\$3055	W:\$3056	W:\$3057	W:\$3058	W:\$3059
W:\$3060	W:\$3061	W:\$3062	W:\$3063	W:\$3064	W:\$3065	W:\$3066	W:\$3067	W:\$3068	W:\$3069
W:\$3070	W:\$3071	W:\$3072	W:\$3073	W:\$3074	W:\$3075	W:\$3076	W:\$3077	W:\$3078	W:\$3079
W:\$3080	W:\$3081	W:\$3082	W:\$3083	W:\$3084	W:\$3085	W:\$3086	W:\$3087	W:\$3088	W:\$3089
W:\$3090	W:\$3091	W:\$3092	W:\$3093	W:\$3094	W:\$3095	W:\$3096	W:\$3097	W:\$3098	W:\$3099
W:\$3100	W:\$3101	W:\$3102	W:\$3103	W:\$3104	W:\$3105	W:\$3106	W:\$3107	W:\$3108	W:\$3109
W:\$3110	W:\$3111	W:\$3112	W:\$3113	W:\$3114	W:\$3115	W:\$3116	W:\$3117	W:\$3118	W:\$3119
W:\$3120	W:\$3121	W:\$3122	W:\$3123	W:\$3124	W:\$3125	W:\$3126	W:\$3127	W:\$3128	W:\$3129
W:\$3130	W:\$3131	W:\$3132	W:\$3133	W:\$3134	W:\$3135	W:\$3136	W:\$3137	W:\$3138	W:\$3139
W:\$3140	W:\$3141	W:\$3142	W:\$3143	W:\$3144	W:\$3145	W:\$3146	W:\$3147	W:\$3148	W:\$3149
<div style="border: 1px dashed black; display: inline-block; padding: 2px;">\$3000~</div> <div style="float: right; border: 1px solid gray; padding: 2px;">Back</div>									

GridBox

- After creating the elements, please compile and download the screens to the HMI.

The screenshot shows the GridBox HMI interface. On the left is a table with 10 rows and 2 columns, both containing the value '0'. Below the table are two buttons: 'Start Address Address \$1000~' and 'Custom Data Address \$3000~'. A large red button is centered below these. To the right are three configuration panels: 'State' (Selected Item: \$100, 1; Actual Item Count: \$101, 10; Visible Item Count: \$102, 10; Current Page: \$103, 1; Total Page: \$104, 1; Auto Update Data: Yes; Update Data: \$110.0), 'Custom Data' (Data Start Addr: \$3000; Data Offset: 15; Data Length: 5), and 'Others' (Max item count: 1000). A 'Buffer setting' button is at the bottom right.

Execution results

- Select the item and edit the data editing area.

The screenshot shows the GridBox HMI interface with the second row of the table selected. The table now contains '1', 'ABC', and '123' in its columns. The data editing area below the table is highlighted with a dashed blue border and contains the value '12345'. The configuration panels on the right are identical to the previous screenshot, but the 'Selected Item' in the 'State' panel is now '2'.

19

GridBox

■ Press the red button and the data display on the element changes.

The screenshot shows the GridBox interface. On the left is a table with 10 rows. The second row is highlighted with a blue dashed border and contains 'ABC' and '123'. Below the table are three buttons: '1', 'ABC', and '123'. A red button is highlighted with a blue dashed border. Below the red button are two address labels: 'Start Address Address \$1000~' and 'Custom Data Address \$3000~'. To the right are several control panels: 'State' with 'Selected Item' set to 2, 'Actual Item Count' 10, 'Visible Item Count' 10, 'Current Page' 1, and 'Total Page' 1; 'Custom Data' with 'Data Start Addr.' \$3000, 'Data Offset' 15, and 'Data Length' 5; 'Others' with 'Max item count' 1000; and 'Operation' with various trigger addresses and item counts.

Execution results

■ Use the Write Address in the register to trigger and the data displayed on the element changes.

This screenshot shows the GridBox interface after a write operation. The table's second row now contains 'FFF' and '5555'. The '1', 'ABC', and '123' buttons are replaced by '2', 'FFF', and '5555'. The red button remains highlighted. The 'State' panel shows 'Selected Item' changed to 5. The 'Operation' panel is partially obscured by a dialog box titled 'Operation-Buffer selection'. This dialog box has fields for 'Buffer Start Addr.' (\$500), 'Insert Selected Item Addr.' (\$111.0), 'Add selected item Addr.' (\$111.1), 'Add to Last Addr.' (\$111.2), 'Read Address' (\$111.3), and 'Write Address' (\$111.4). The 'Write Address' field is highlighted with a blue dashed border.

GridBox

- Press **Start Address Address \$1000~** to switch the screen to Screen 2, and set the value of \$1019 (hidden value) to 1, then the content in the first field in the second column will be hidden.

0	0	0	0	0	0	0	0	0	0
1	16961	67	0	0	0	123	0	0	1
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
2	17990	70	0	0	0	5555	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Execution results

\$1000~

Back

		0
	ABC	123
		0
		0
	FFF	5555
		0
		0
		0
		0
		0

2 FFF 5555

12345

Start Address Address \$1000~ Custom Data Address \$3000~

State

Selected Item \$100 5

Actual Item Count \$101 10

Visible Item Count \$102 10

Current Page \$103 1

Total Page \$104 1

Auto Update Data Yes

Update Data \$110.0

Custom Data

Data Start Addr: \$3000

Data Offset: 15

Data Length: 5

Others

Max item count: 1000

Buffer setting

Operation

Invisible Address: \$110.1 \$110.1 OFF

Page Up Trigger Addr: \$110.2 \$110.2 OFF

Page Down Trigger: \$110.3 \$110.3 OFF

Previous Item Addr: \$110.4 \$110.4 OFF

Next Item Addr: \$110.5 \$110.5 OFF

Copy Trigger Addr: \$110.6 \$110.6 OFF

Paste Trigger Addr: \$110.7 \$110.7 OFF

Replace Trigger Addr: \$110.8 \$110.8 OFF

Insert Trigger Addr: \$110.9 \$110.9 OFF

Cut Trigger Addr: \$110.10 \$110.10 OFF

Touch Protect Addr: \$110.11 \$110.11 OFF

Select Item Addr: \$105 0

Trigger Selected Item \$110.12 \$110.12 OFF

Item Count Addr: \$106 0

Trigger Item Count \$110.13 \$110.13 OFF

19

GridBox

- Set \$1018 (hidden item) on Screen 2 to 1, then this item will not be displayed and the Actual Item Count will be more than the Visible Item Count.

0	0	0	0	0	0	0	0	0	0
1	16961	67	0	0	0	123	0	1	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
2	17990	70	0	0	0	5555	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Execution results

\$1000~
Back

		0
		0
		0
	FFF	5555
		0
		0
		0
		0
		0

2	FFF	5555
---	-----	------

12345

Start Address
Address \$1000~
Custom Data
Address \$3000~

State

Selected Item \$100

Actual Item Count \$101

Visible Item Count \$102

Current Page \$103

Total Page \$104

Auto Update Data Yes

Update Data \$110.0

Custom Data

Data Start Addr: \$3000

Data Offset: 15

Data Length: 5

Others

Max item count: 1000

Buffer setting

Operation

Invisible Address: \$110.1

Page Up Trigger Addr: \$110.2

Page Down Trigger: \$110.3

Previous Item Addr: \$110.4

Next Item Addr: \$110.5

Copy Trigger Addr: \$110.6

Paste Trigger Addr: \$110.7

Replace Trigger Addr: \$110.8

Insert Trigger Addr: \$110.9

Cut Trigger Addr: \$110.10

Touch Protect Addr: \$110.11

Select Item Addr: \$105

Trigger Selected Item: \$110.12

Item Count Addr: \$106

Trigger Item Count: \$110.13

GridBox

- Set Select Item Addr. to 6 and press **Trigger Selected Item**, then the selected element jumps to the 6th item.

		0
	ABC	123
		0
		0
	FFF	5555
		0
		0
		0
		0

2 FFF 5555

12345

Start Address Address \$1000~ Custom Data Address \$3000~

State

Selected Item \$100

Actual Item Count \$101

Visible Item Count \$102

Current Page \$103

Total Page \$104

Auto Update Data

Update Data \$110.0

Custom Data

Data Start Addr: \$3000

Data Offset: 15

Data Length: 5

Others

Max item count: 1000

Buffer setting

Operation

Invisible Address: \$110.1 \$110.1 OFF

Page Up Trigger Addr: \$110.2 \$110.2 OFF

Page Down Trigger: \$110.3 \$110.3 OFF

Previous Item Addr: \$110.4 \$110.4 OFF

Next Item Addr: \$110.5 \$110.5 OFF

Copy Trigger Addr: \$110.6 \$110.6 OFF

Paste Trigger Addr: \$110.7 \$110.7 OFF

Replace Trigger Addr: \$110.8 \$110.8 OFF

Insert Trigger Addr: \$110.9 \$110.9 OFF

Cut Trigger Addr: \$110.10 \$110.10 OFF

Touch Protect Addr: \$110.11 \$110.11 OFF

Select Item Addr: \$105

Trigger Selected Item: \$110.12 \$110.12 OFF

Item Count Addr: \$106

Trigger Item Count: \$110.13 \$110.13 OFF

Execution results

- Set Item Count Addr. to 5 and press **Trigger Item Count**, then the number of the displaying element item becomes 5 and the data exceeding 5 will not be shown.

		0
	ABC	123
		0
		0
	FFF	5555

2 FFF 5555

12345

Start Address Address \$1000~ Custom Data Address \$3000~

State

Selected Item \$100

Actual Item Count \$101

Visible Item Count \$102

Current Page \$103

Total Page \$104

Auto Update Data

Update Data \$110.0

Custom Data

Data Start Addr: \$3000

Data Offset: 15

Data Length: 5

Others

Max item count: 1000

Buffer setting

Operation

Invisible Address: \$110.1 \$110.1 OFF

Page Up Trigger Addr: \$110.2 \$110.2 OFF

Page Down Trigger: \$110.3 \$110.3 OFF

Previous Item Addr: \$110.4 \$110.4 OFF

Next Item Addr: \$110.5 \$110.5 OFF

Copy Trigger Addr: \$110.6 \$110.6 OFF

Paste Trigger Addr: \$110.7 \$110.7 OFF

Replace Trigger Addr: \$110.8 \$110.8 OFF

Insert Trigger Addr: \$110.9 \$110.9 OFF

Cut Trigger Addr: \$110.10 \$110.10 OFF

Touch Protect Addr: \$110.11 \$110.11 OFF

Select Item Addr: \$105

Trigger Selected Item: \$110.12 \$110.12 OFF

Item Count Addr: \$106

Trigger Item Count: \$110.13 \$110.13 OFF

19

GridBox

■ Select Item 2, press **Copy Trigger Addr.**, then select Item 4, press **Replace Trigger Addr.**, and the content of Item 2 will be pasted to Item 4.

Execution results

		0
	ABC	123
		0
		0
		0
		0
		0
		0
		0

0 | 0

12345



Start Address Address \$1000- Custom Data Address \$3000-

		0
	ABC	123
		0
	ABC	123
		0
		0
		0
		0
		0

0 | 0

12345



Start Address Address \$1000- Custom Data Address \$3000-

State

Selected Item \$100 2

Actual Item Count \$101 10

Visible Item Count \$102 10

Current Page \$103 1

Total Page \$104 1

Auto Update Data Yes

Update Data \$110.0

Custom Data

Data Start Addr: \$3000

Data Offset: 15

Data Length: 5

Others

Max item count: 1000

Buffer setting

Operation

Invisible Address: \$110.1 \$110.1 OFF

Page Up Trigger Addr: \$110.2 \$110.2 OFF

Page Down Trigger: \$110.3 \$110.3 OFF

Previous Item Addr: \$110.4 \$110.4 OFF

Next Item Addr: \$110.5 \$110.5 OFF

Copy Trigger Addr: \$110.6 \$110.6 OFF

Paste Trigger Addr: \$110.7 \$110.7 OFF

Replace Trigger Addr: \$110.8 \$110.8 OFF

Insert Trigger Addr: \$110.9 \$110.9 OFF

Cut Trigger Addr: \$110.10 \$110.10 OFF

Touch Protect Addr: \$110.11 \$110.11 OFF

Select Item Addr: \$105 6

Trigger Selected Item \$110.12 \$110.12 OFF

Item Count Addr: \$106 10

Trigger Item Count \$110.13 \$110.13 OFF

State

Selected Item \$100 4

Actual Item Count \$101 10

Visible Item Count \$102 10

Current Page \$103 1

Total Page \$104 1

Auto Update Data Yes

Update Data \$110.0

Custom Data

Data Start Addr: \$3000

Data Offset: 15

Data Length: 5

Others

Max item count: 1000

Buffer setting

Operation

Invisible Address: \$110.1 \$110.1 OFF

Page Up Trigger Addr: \$110.2 \$110.2 OFF

Page Down Trigger: \$110.3 \$110.3 OFF

Previous Item Addr: \$110.4 \$110.4 OFF

Next Item Addr: \$110.5 \$110.5 OFF

Copy Trigger Addr: \$110.6 \$110.6 OFF

Paste Trigger Addr: \$110.7 \$110.7 OFF

Replace Trigger Addr: \$110.8 \$110.8 OFF

Insert Trigger Addr: \$110.9 \$110.9 OFF

Cut Trigger Addr: \$110.10 \$110.10 OFF

Touch Protect Addr: \$110.11 \$110.11 OFF

Select Item Addr: \$105 6

Trigger Selected Item \$110.12 \$110.12 OFF

Item Count Addr: \$106 10

Trigger Item Count \$110.13 \$110.13 OFF

GridBox

- Press **Custom Data Address \$3000~** to switch the screen and you can see the custom data of Item 2 is also pasted to Item 4.

Execution results

0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	12849	13363	53	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	12849	13363	53	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

\$3000~

Back

When you double-click GridBox, the property page is shown as follows.

19

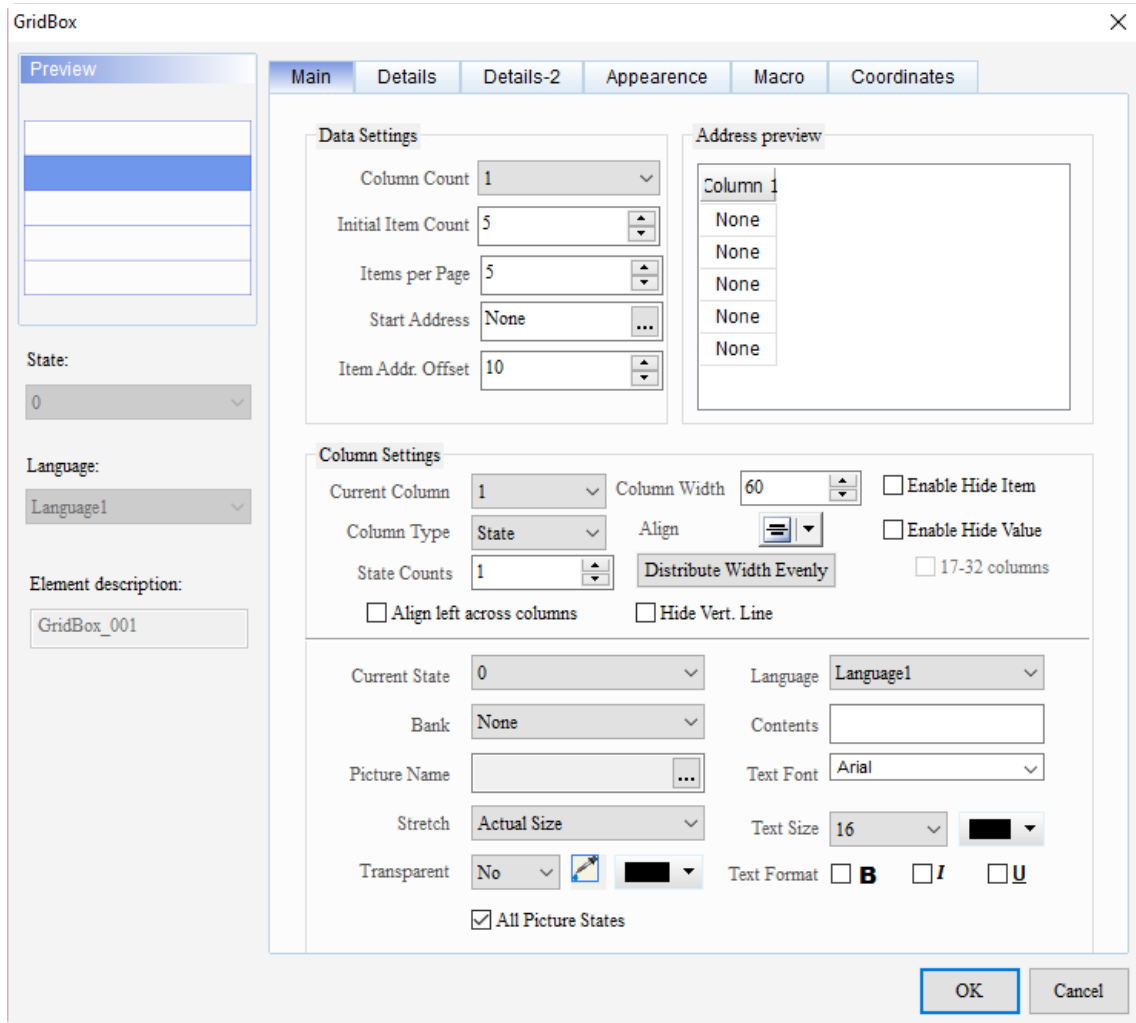


Figure 19.3.1 Properties of GridBox

Table 19.3.2 Function page of the GridBox element

GridBox	
Function page	Description
Main	It includes Data Settings and Column Settings. <ul style="list-style-type: none"> ■ Data Settings: set the Column Count, Initial Item Count, Items per Page, Start Address, and Item Addr. Offset. ■ Column Settings: set the Current Column, Column Width, Column Type, Align, State Counts, Distribute Width Evenly, Enable Hide Item, Enable Hide Value, Hide Vert. Line, Align left across columns, and 17-32 columns. ■ The required settings vary according to different Column Types. ■ Address preview can be used to preview the assigned address according to the set data.
Details	It includes State, Custom Data, Others, and Operation. <ul style="list-style-type: none"> ■ State: set the Selected Item, Actual Item Count, Visible Item Count, Current Page, Total Page, Auto Update Data, and Update Data. ■ Custom Data: set the Data Start Addr., Data Offset, and Data Length. ■ Others: set the Max item count. ■ Operation: set the Invisible Address, Page Up Trigger Addr., Page Down Trigger, Previous Item Addr., Next Item Addr., Copy Trigger Addr., Paste Trigger Addr., Replace Trigger Addr., Insert Trigger Addr., Cut Trigger Addr., Touch Protect Addr., Select Item Addr., Trigger Selected Item, Item Count Addr., and Trigger Item Count.
Details-2	Set the Operation-Buffer selection, including Buffer Start Addr., Insert Selected Item Addr., Add selected item Addr., Add to Last Addr., Read Address, and Write Address.
Appearance	It includes Column Settings and Style. <ul style="list-style-type: none"> ■ Column Settings: set the Enable auto numbering, Column Width, Font size, and Text Color. ■ Style: set the Gridline Color, Background Color, Select Color, and Show Gridlines.
Macro	Operate the After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

19

■ Main

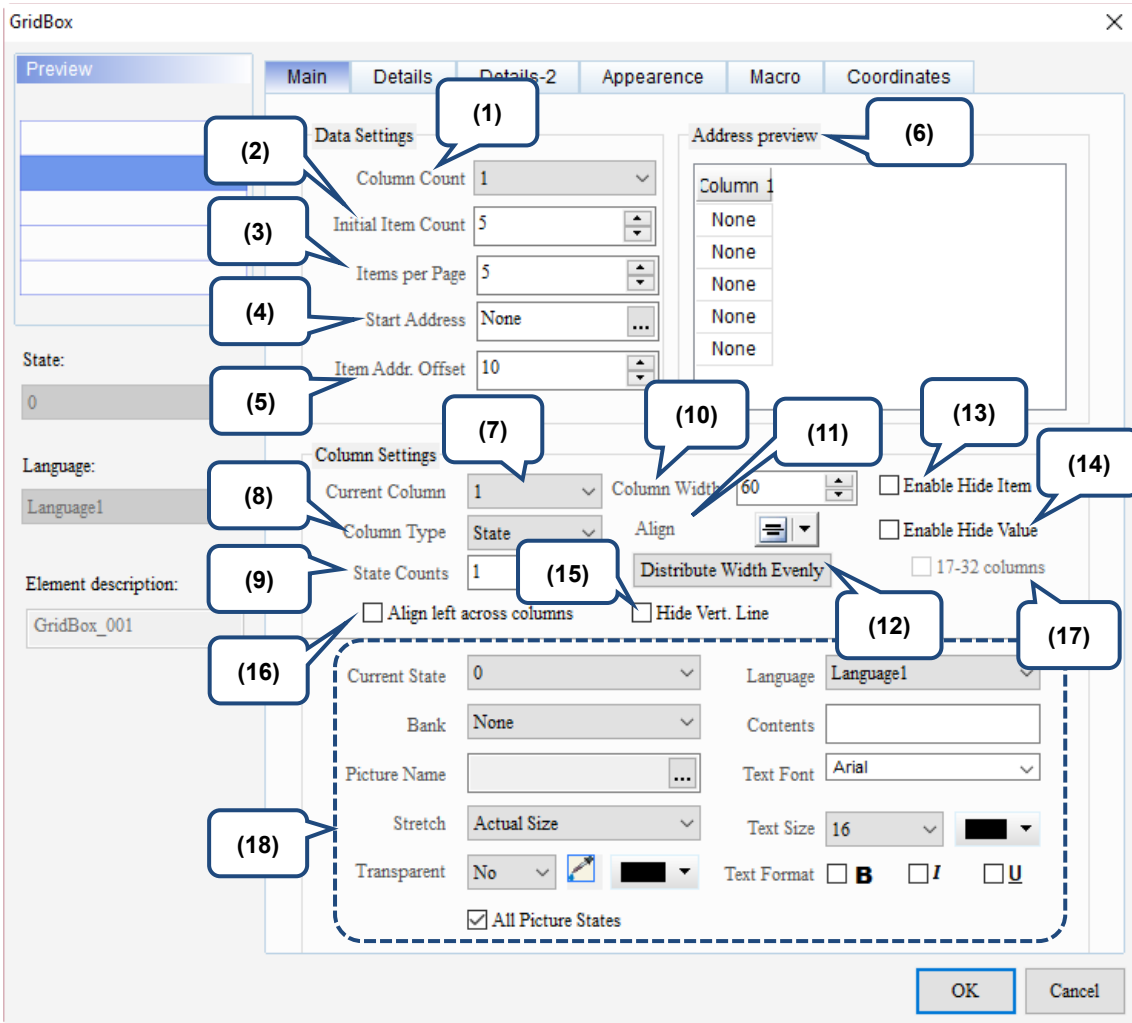
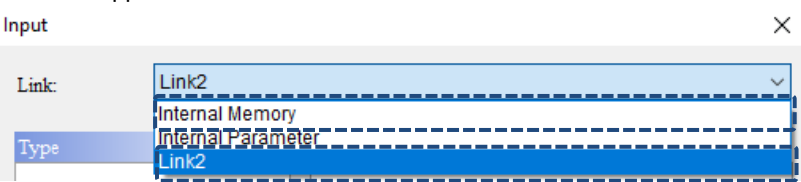
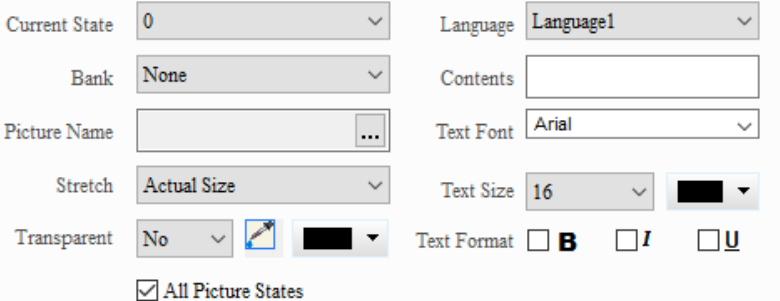
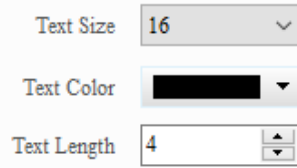
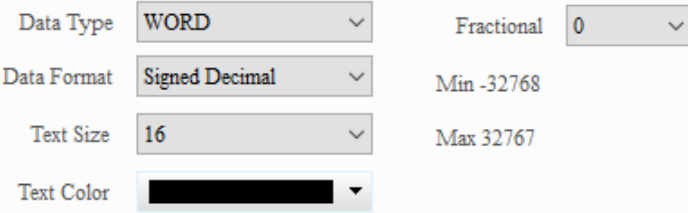
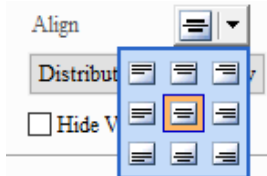


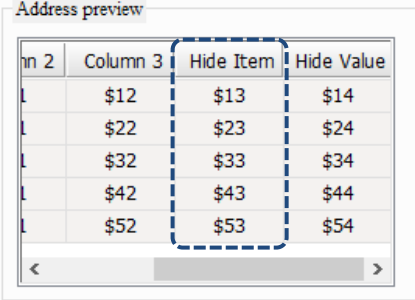
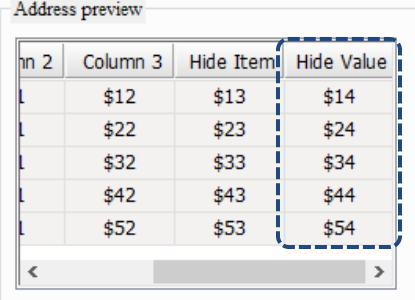
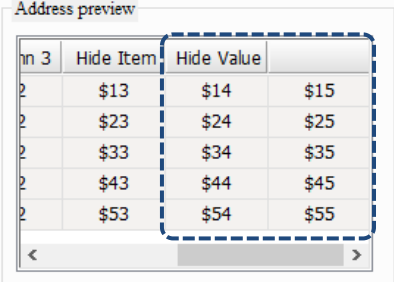
Figure 19.3.2 Main property page for the GridBox element

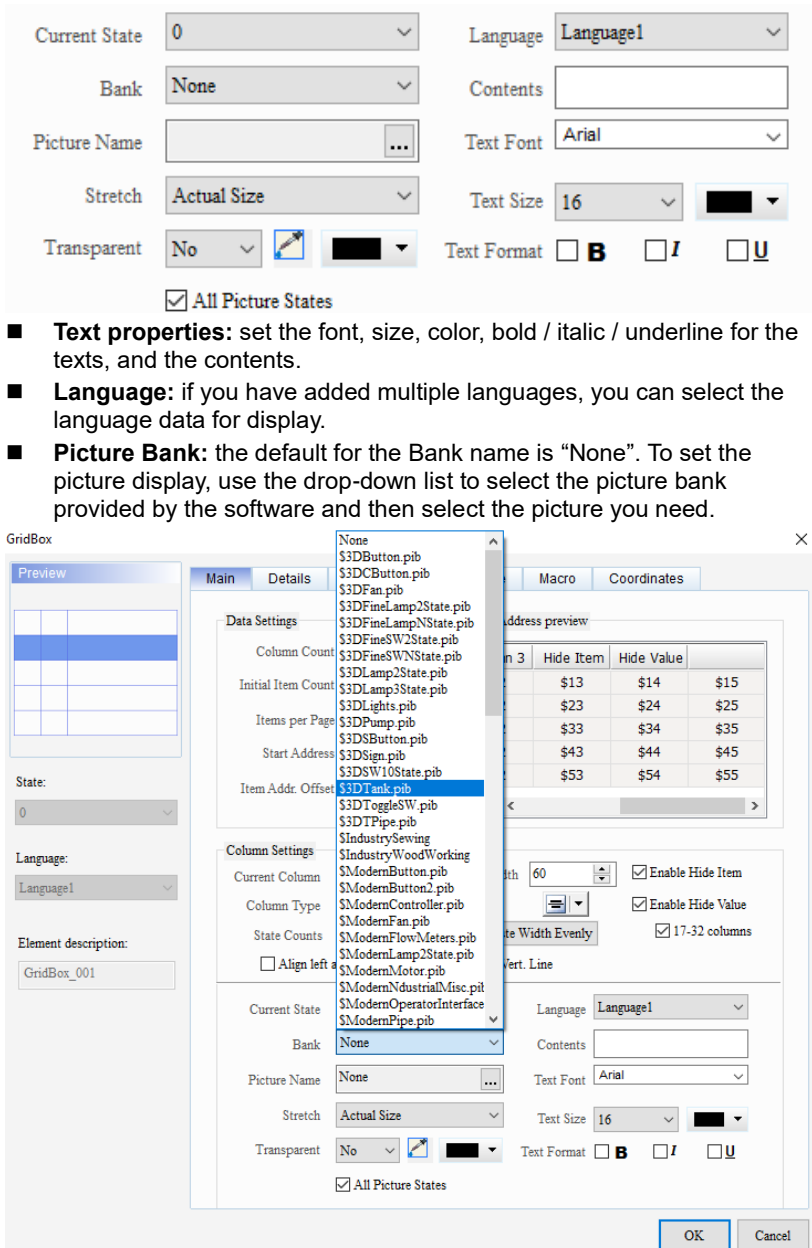
No.	Property	Function description
(1)	Column Count	<ul style="list-style-type: none"> Set the number of columns used by the GridBox element and the maximum setting is 32. If the Column Count is greater than the Item Addr. Offset, a warning message regarding the address overlap will pop up.
(2)	Initial Item Count	Set the Initial Item Count of the element and the maximum setting is 1,000.
(3)	Items per Page	Set the number of items that can be displayed on a single page of the element, and the maximum setting is 100.
(4)	Start Address	<ul style="list-style-type: none"> Set the address that the element starts to read. The controller address (Word) and the internal register address (Word) are supported. 
(5)	Item Addr. Offset	Set the interval address offset for the item and the maximum setting is 10,000. If the Item Addr. Offset is greater than the Column Count, a warning message regarding the address overlap will pop up.
(6)	Address preview	According to the property settings of the current element, it displays the start address of each unit.

No.	Property	Function description
(7)	Current Column	Select the column for editing. The largest column number should not exceed the setting of Column Count.
(8)	Column Type	<ul style="list-style-type: none"> The Column Types include State, String, and Numeric. State: status display; String: string display; Numeric: numeric display. If you select State, the setting of No. (18) is shown as below.  <ul style="list-style-type: none"> If you select String, the setting of No. (18) is shown as below.  <ul style="list-style-type: none"> If you select Numeric, the setting of No. (18) is shown as below. 
(9)	State Counts	<ul style="list-style-type: none"> The State Counts field is shown only when you select State for Column Type. The maximum setting is 256 states and mainly for displaying the state type. This setting will affect the displayed number of Current State. If State Counts is set to 3, then the numbers of Current State would be 0, 1, and 2.
(10)	Column Width	Set the width of the column and the maximum setting is 65535.
(11)	Align	Set the alignment style in the cell.
(12)	Distribute Width Evenly	Press this button to distribute the width of the columns evenly.













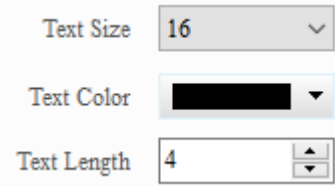
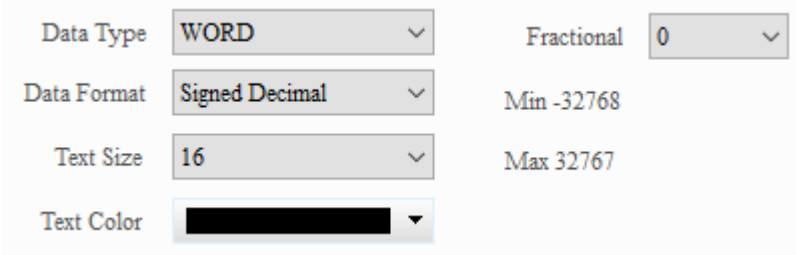
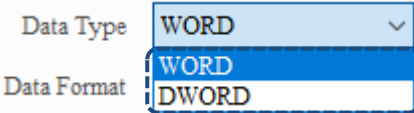
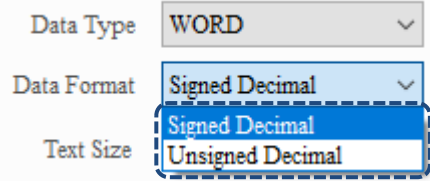
19

No.	Property	Function description																
(13)	Enable Hide Item	<p>When you check to enable this function, the corresponding address of the hidden item will be shown in the Address preview. When the Hide Item address value of an item is not 0, this item will not be displayed on the element.</p> 																
(14)	Enable Hide Value	<ul style="list-style-type: none"> When you check Enable Hide Value, the corresponding address of the hidden value will be shown in the Address preview.  <ul style="list-style-type: none"> If you check Enable Hide Value, only Columns 1 - 16 are hidden. If you want to hide Columns 17 - 32, you need to check 17-32 columns as well. Each bit of the address in [Hide Value] determines the display of the corresponding column. For example, when Bit 0 is on, it means the data in the first column of this item will not be shown; when Bit 1 is on, it means the data in the second column of this item will not be shown. 																
(15)	Hide Vert. Line	<p>If you enable this function, the right vertical line of the selected column will be hidden in the table.</p>																
(16)	Align left across columns	<ul style="list-style-type: none"> This function allows the data to merge left with the data in the left field. If this function is enabled, you can combine the data in the two fields. To merge data, you need to enable this function for the fields to be merged. For example, if you want to merge the data of Field 2 and Field 3, please check Align left across columns for both Field 2 and Field 3. <table border="1"> <thead> <tr> <th>Align left across columns not enabled</th> <th>Align left across columns enabled for Fields 2 and 3</th> </tr> </thead> <tbody> <tr> <td> <table border="1"> <tr><td><input checked="" type="checkbox"/></td><td>ABC</td><td>123</td></tr> <tr><td><input checked="" type="checkbox"/></td><td></td><td>0</td></tr> </table> </td> <td> <table border="1"> <tr><td><input checked="" type="checkbox"/></td><td>ABC123</td><td></td></tr> <tr><td><input checked="" type="checkbox"/></td><td>0</td><td></td></tr> </table> </td> </tr> </tbody> </table>	Align left across columns not enabled	Align left across columns enabled for Fields 2 and 3	<table border="1"> <tr><td><input checked="" type="checkbox"/></td><td>ABC</td><td>123</td></tr> <tr><td><input checked="" type="checkbox"/></td><td></td><td>0</td></tr> </table>	<input checked="" type="checkbox"/>	ABC	123	<input checked="" type="checkbox"/>		0	<table border="1"> <tr><td><input checked="" type="checkbox"/></td><td>ABC123</td><td></td></tr> <tr><td><input checked="" type="checkbox"/></td><td>0</td><td></td></tr> </table>	<input checked="" type="checkbox"/>	ABC123		<input checked="" type="checkbox"/>	0	
Align left across columns not enabled	Align left across columns enabled for Fields 2 and 3																	
<table border="1"> <tr><td><input checked="" type="checkbox"/></td><td>ABC</td><td>123</td></tr> <tr><td><input checked="" type="checkbox"/></td><td></td><td>0</td></tr> </table>	<input checked="" type="checkbox"/>	ABC	123	<input checked="" type="checkbox"/>		0	<table border="1"> <tr><td><input checked="" type="checkbox"/></td><td>ABC123</td><td></td></tr> <tr><td><input checked="" type="checkbox"/></td><td>0</td><td></td></tr> </table>	<input checked="" type="checkbox"/>	ABC123		<input checked="" type="checkbox"/>	0						
<input checked="" type="checkbox"/>	ABC	123																
<input checked="" type="checkbox"/>		0																
<input checked="" type="checkbox"/>	ABC123																	
<input checked="" type="checkbox"/>	0																	
(17)	17-32 columns	<ul style="list-style-type: none"> Previously the Enable Hide Value of the GridBox only supports hiding 1 - 16 fields, but now you can hide up to 32 fields. When you check 17-32 columns, there will be two addresses for the hidden values. The bits of the first address correspond to Columns 1 - 16; the bits of the second address correspond to Columns 17 - 32. 																

No.	Property	Function description
(18)	Column data settings	<p>■ Edit the detail settings of the selected field in Current Column.</p> <p>Current Column is State</p>  <p>■ Text properties: set the font, size, color, bold / italic / underline for the texts, and the contents.</p> <p>■ Language: if you have added multiple languages, you can select the language data for display.</p> <p>■ Picture Bank: the default for the Bank name is "None". To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.</p>

19

No.	Property	Function description								
(18)		<div style="border: 1px solid gray; padding: 5px;"> <p>Select Picture</p> </div>								
	Column data settings	<ul style="list-style-type: none"> The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size. <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you check All Picture States, assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time. <div style="text-align: center;"> <input checked="" type="checkbox"/> All Picture States </div> Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color. <div style="text-align: center; margin-top: 10px;"> <p>Foreground Color: </p>  </div> 	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										

No.	Property	Function description
(18)	Column data settings	<p>Current Column is String</p>  <ul style="list-style-type: none"> ■ Set the Text Size, Text Color, and Text Length. ■ Text Length supports up to a maximum of 60. <p>Current Column is Numeric</p>  <ul style="list-style-type: none"> ■ Data Type includes WORD and DWORD.  <ul style="list-style-type: none"> ■ Data Format supports only Signed Decimal and Unsigned Decimal regardless of your selection of WORD or DWORD as the Data Type.  <ul style="list-style-type: none"> ■ If Data Type is set to WORD, the setting range of the fractional digits is 0 - 5; if Data Type is DWORD, the setting range of the fractional digits is 0 - 10.

19

■ Details

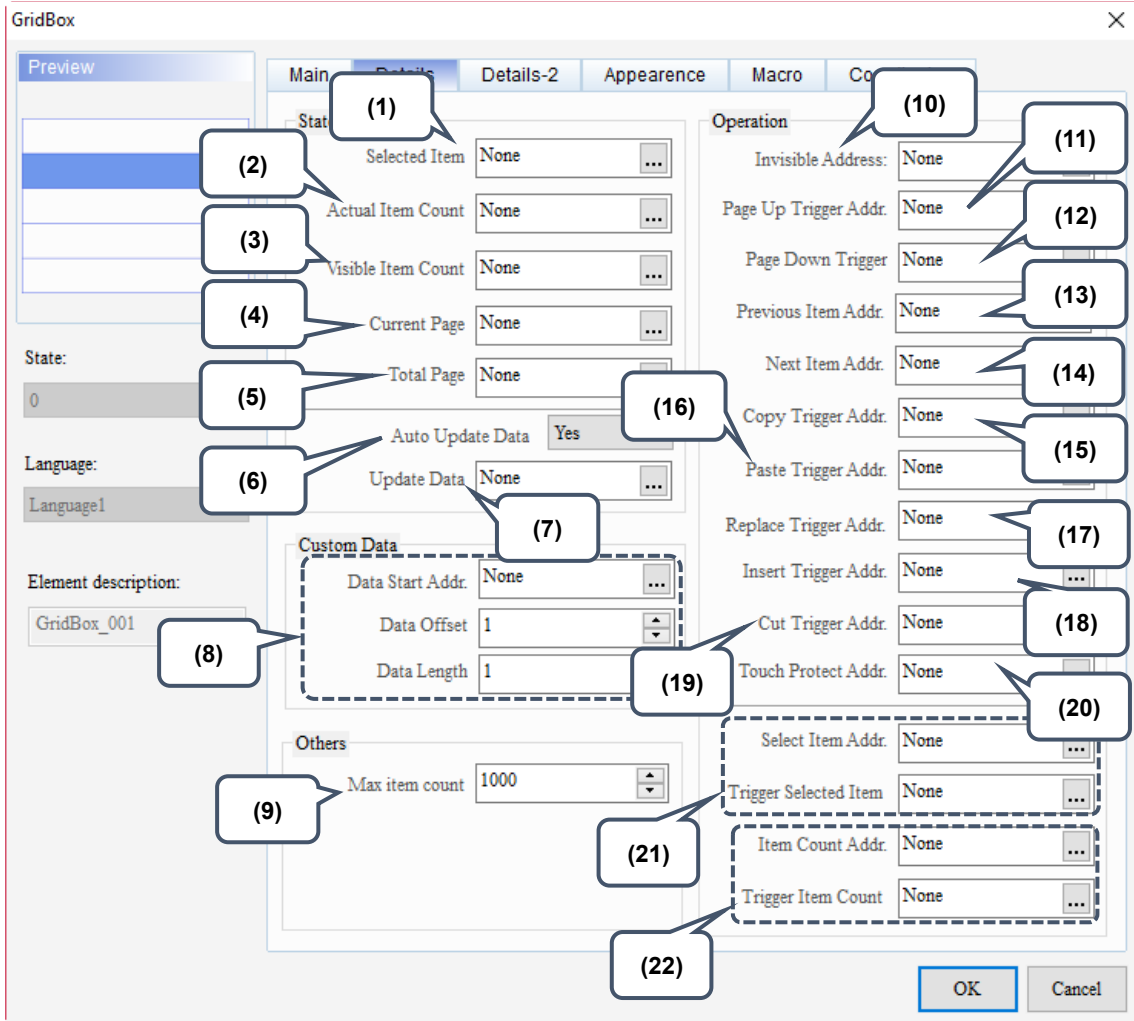
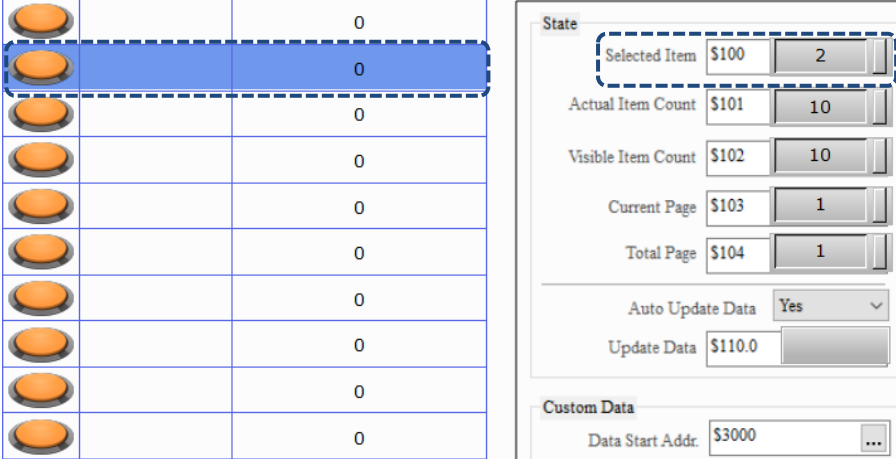
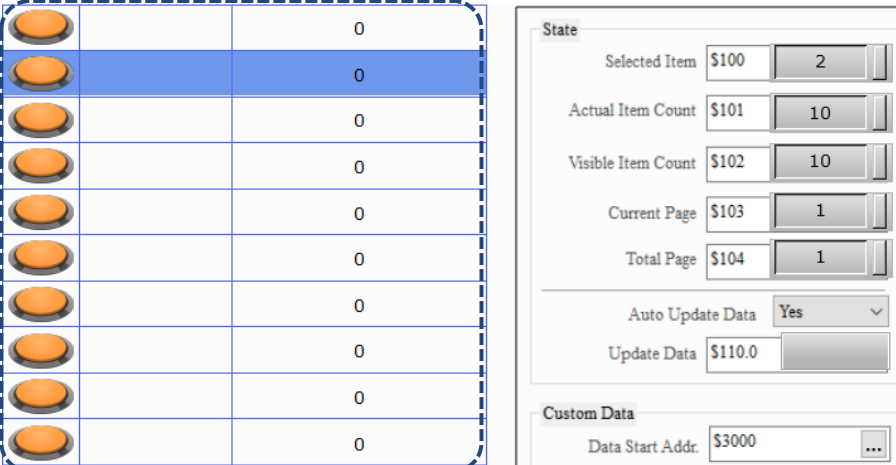
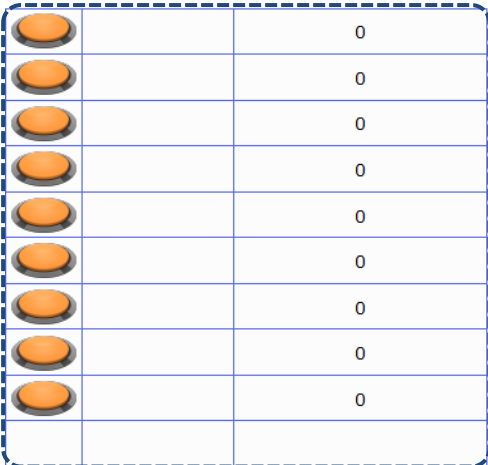
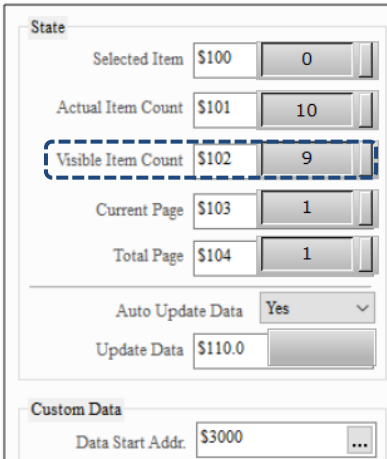

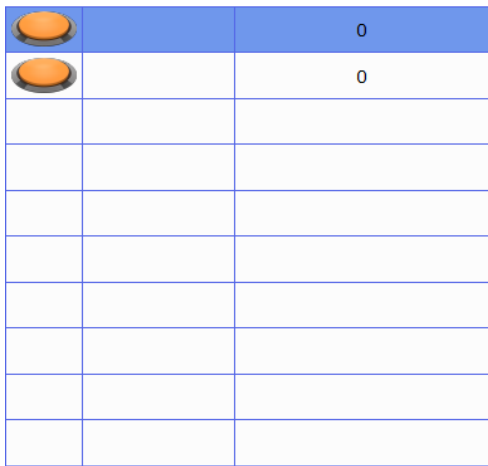
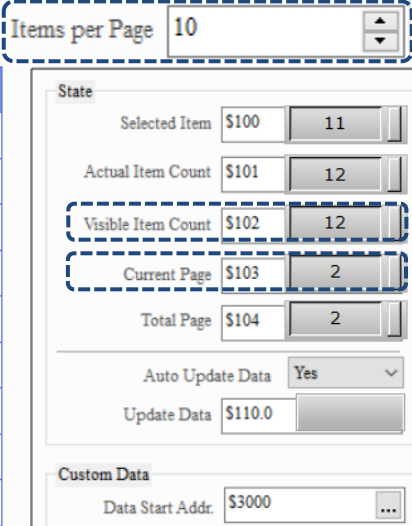

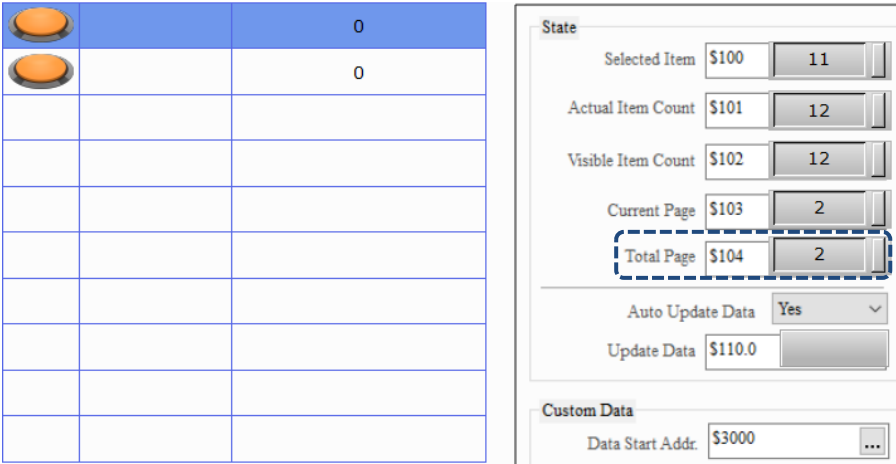
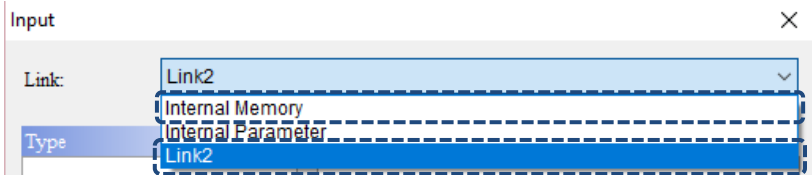
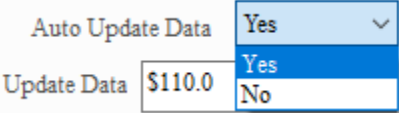
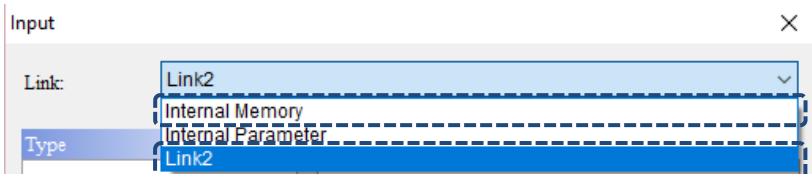
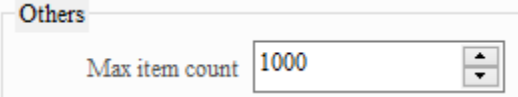


Figure 19.3.3 Details property page for the GridBox element

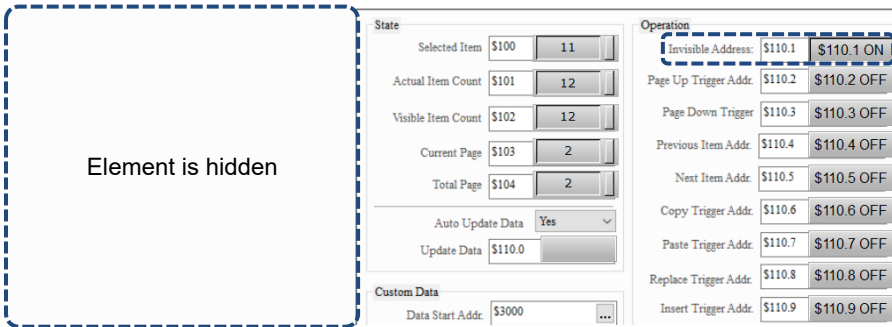
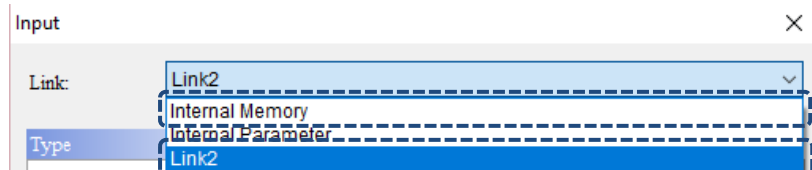
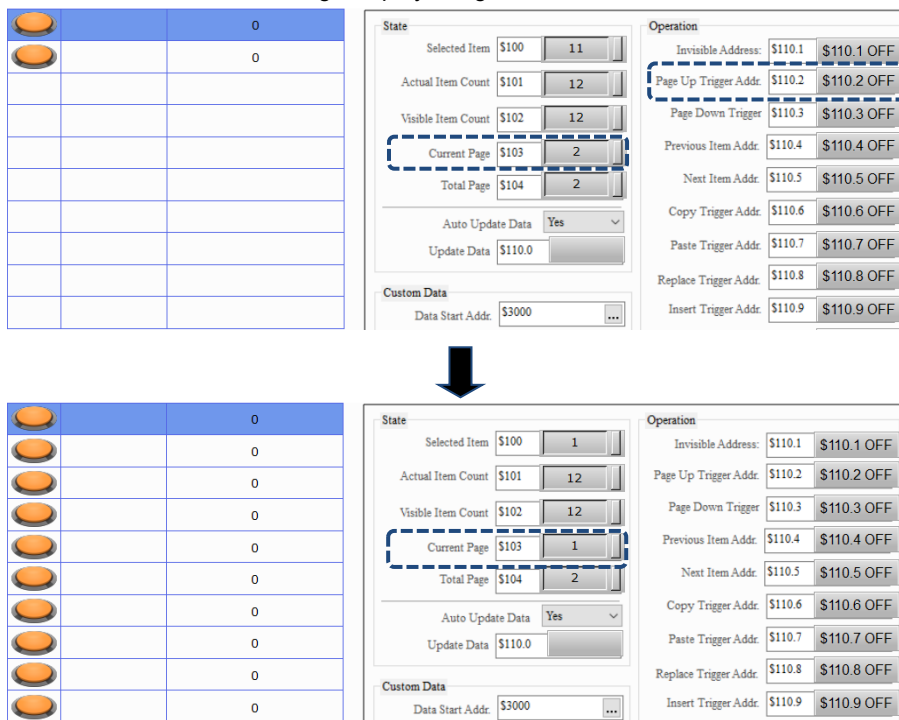

No.	Property	Function description
(1)	Selected Item	<ul style="list-style-type: none"> Select the element item number. When you select the item in the second row of the GridBox, the value shown in Selected Item is 2.  <ul style="list-style-type: none"> The controller address (Word) and the internal register address (Word) are supported.
(2)	Actual Item Count	<ul style="list-style-type: none"> Display the total number of actual items on the GridBox element.  <ul style="list-style-type: none"> The controller address (Word) and the internal register address (Word) are supported.

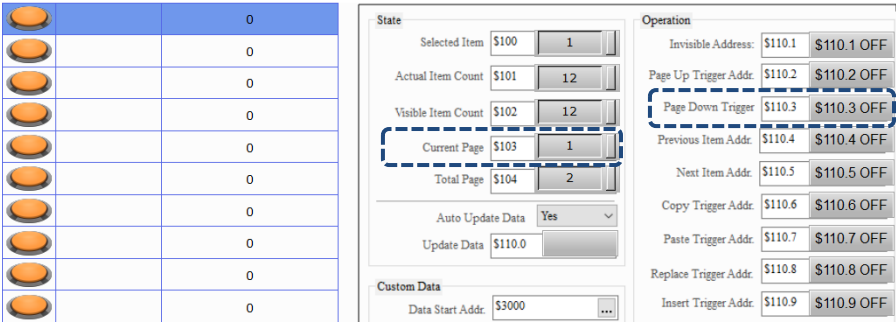
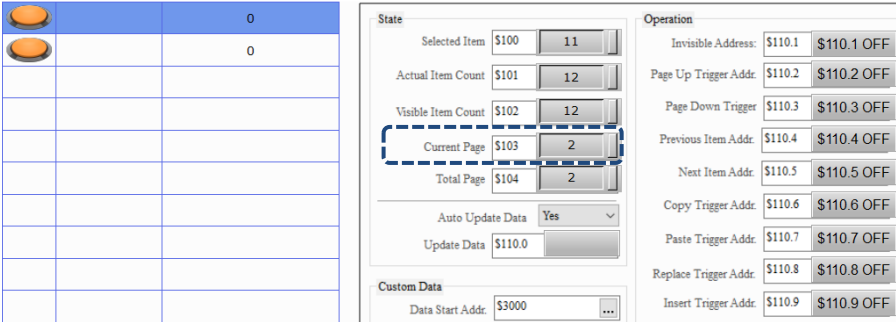

19

No.	Property	Function description
(3)	Visible Item Count	<ul style="list-style-type: none"> Visible Item Count is the value of the Actual Item Count minus the hidden item count.   <ul style="list-style-type: none"> The controller address (Word) and the internal register address (Word) are supported. 
(4)	Current Page	<ul style="list-style-type: none"> When the value of Visible Item Count is bigger than Items per Page, the data will be shown on different pages. And the value of Current Page is the currently displaying page of the element.   <ul style="list-style-type: none"> The controller address (Word) and the internal register address (Word) are supported. 

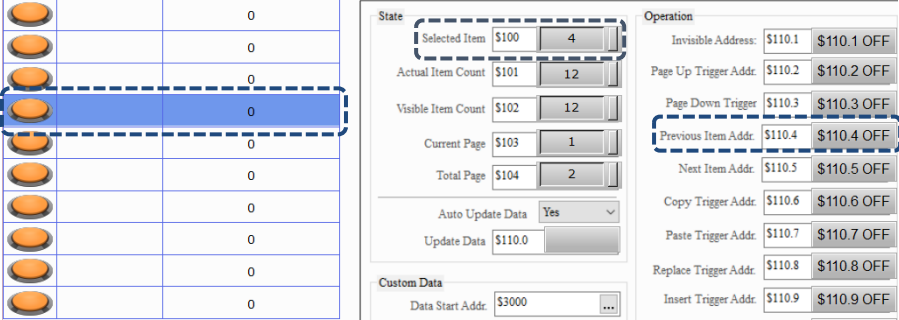
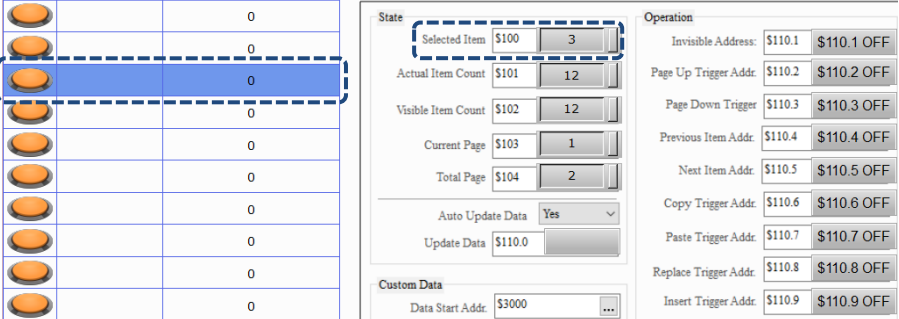
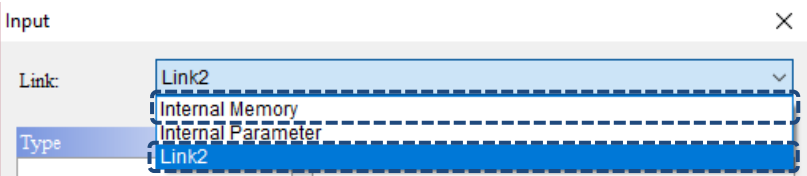
No.	Property	Function description
(5)	Total Page	<ul style="list-style-type: none"> This element displays the total page number used by visible items.  <ul style="list-style-type: none"> The controller address (Word) and the internal register address (Word) are supported. 
(6)	Auto Update Data	<p>If you select Yes, the element automatically updates the data; if you select No, you need to trigger the Update Data bit to update the element display.</p> 
(7)	Update Data	<p>When Auto Update Data is Yes and the Update Data bit is on, the currently displayed content of the element will be updated.</p>
(8)	Custom Data	<ul style="list-style-type: none"> Set the Data Start Addr., Data Offset, and Data Length. You can customize another data block and the data changes as you edit the element. Data Start Addr.: the controller address (Word) and the internal register address (Word) are supported. 
(9)	Max item count	<ul style="list-style-type: none"> Max item count is for setting the maximum number of items that can be added to the GridBox. Max item count supports up to a maximum of 1,000. 

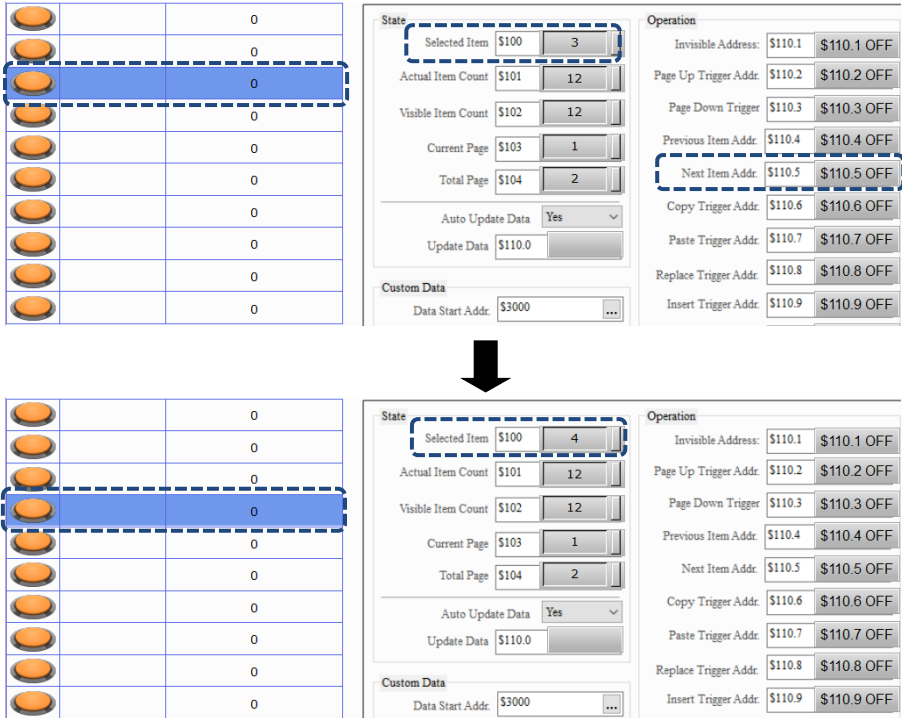

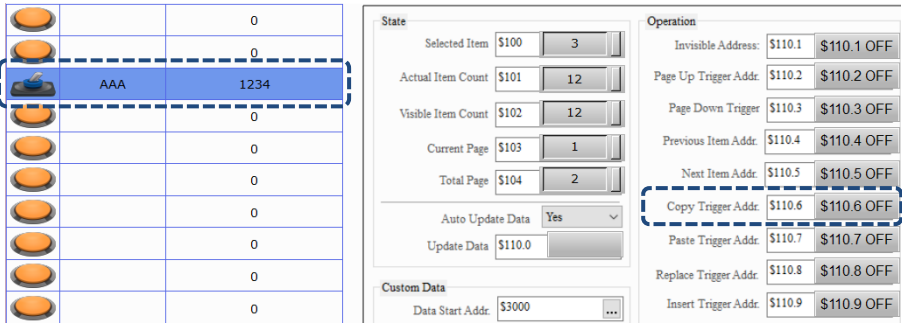

19

No.	Property	Function description
(10)	Invisible Address	<ul style="list-style-type: none"> When Invisible Address is on, the GridBox element is hidden.  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. 
(11)	Page Up Trigger Addr.	<ul style="list-style-type: none"> When the Page Up Trigger Addr. bit is on, the element display switches to the previous page and the bit is automatically cleared once completed. When the Page Up Trigger Addr. bit is not on, Current Page displays Page 2; when it is on, Current Page displays Page 1.  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. 

No.	Property	Function description
<p>(12)</p>	<p>Page Down Trigger</p>	<ul style="list-style-type: none"> When the Page Down Trigger bit is on, the element display switches to the next page and the bit is automatically cleared once completed. When the Page Down Trigger bit is not on, Current Page displays Page 1; when it is on, Current Page displays Page 2.  <p style="text-align: center;">↓</p>  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. 

19

No.	Property	Function description
(13)	Previous Item Addr.	<ul style="list-style-type: none"> When the Previous Item Addr. bit is on, the element selects the previous item and the bit is automatically cleared once completed. When the Previous Item Addr. bit is not on, Selected Item displays Item 4; when it is on, Selected Item displays Item 3.  <p style="text-align: center;">↓</p>  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. 


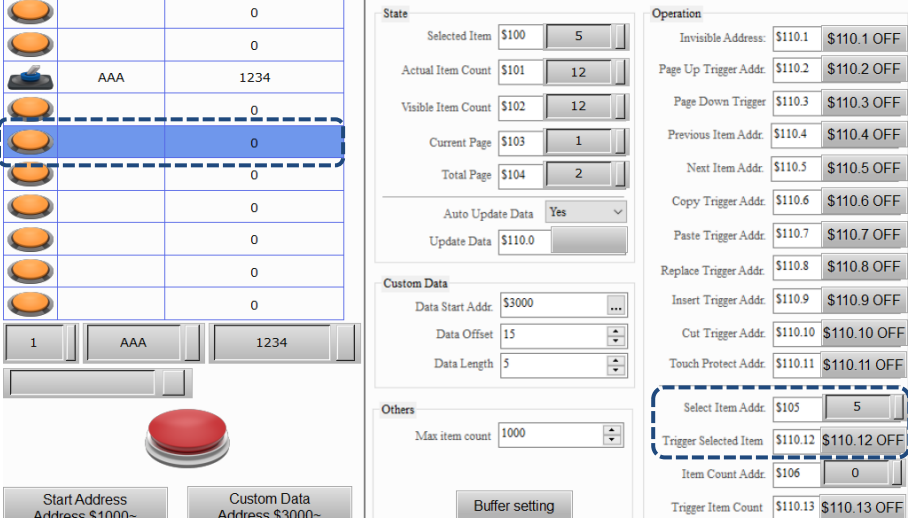


No.	Property	Function description
(14)	Next Item Addr.	<ul style="list-style-type: none"> When the Next Item Addr. bit is on, the element selects the next item and the bit is automatically cleared once completed. When the Next Item Addr. bit is not on, Selected Item displays Item 3; when it is on, Selected Item displays Item 4.  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. 
(15)	Copy Trigger Addr.	<ul style="list-style-type: none"> When the Copy Trigger Addr. bit is on, the current item is copied and the bit is automatically cleared once completed.  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. 

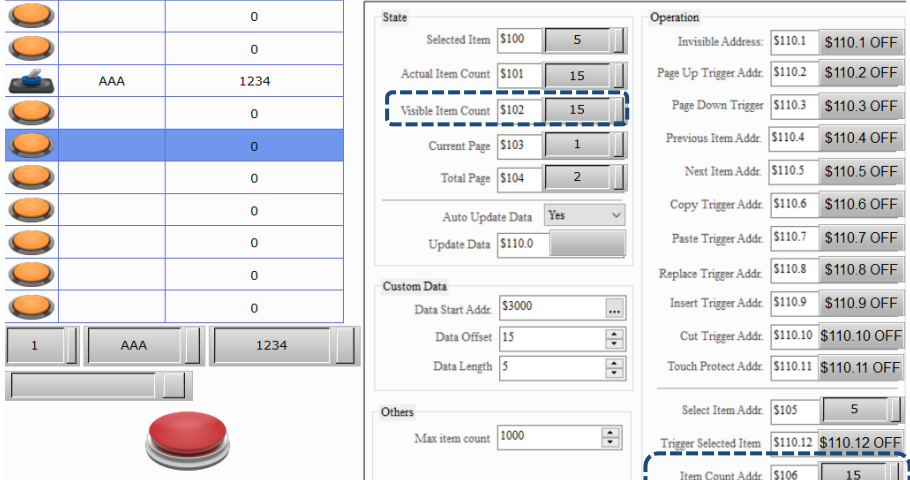
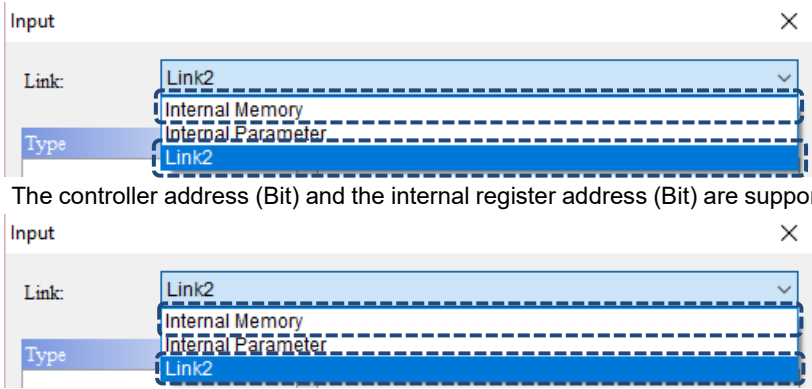
19

No.	Property	Function description																																																																														
(16)	Paste Trigger Addr.	<ul style="list-style-type: none"> When the Paste Trigger Addr. bit is on, the copied item is pasted and the bit is automatically cleared once completed. The copied item is pasted after the selected row. <table border="1"> <thead> <tr> <th colspan="3">Before pasting</th> <th colspan="3">After pasting</th> </tr> </thead> <tbody> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td>AAA</td><td>1234</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> </tbody> </table> <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. <div style="border: 1px solid gray; padding: 5px;"> <p>Input ×</p> <p>Link: Link2</p> <p>Type: Internal Memory Internal Parameter Link2</p> </div>	Before pasting			After pasting					0			0			0			0		AAA	1234		AAA	1234			0			0			0			0			0			0			0			0			0		AAA	1234			0			0			0			0			0			0			0			0
Before pasting			After pasting																																																																													
		0			0																																																																											
		0			0																																																																											
	AAA	1234		AAA	1234																																																																											
		0			0																																																																											
		0			0																																																																											
		0			0																																																																											
		0			0																																																																											
		0		AAA	1234																																																																											
		0			0																																																																											
		0			0																																																																											
		0			0																																																																											
		0			0																																																																											
(17)	Replace Trigger Addr.	<ul style="list-style-type: none"> When the Replace Trigger Addr. bit is on, the copied item replaces the selected row and the bit is automatically cleared once completed. The replacing data appears on the selected row. <table border="1"> <thead> <tr> <th colspan="3">Before replacing</th> <th colspan="3">After replacing</th> </tr> </thead> <tbody> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td>AAA</td><td>1234</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> </tbody> </table> <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. <div style="border: 1px solid gray; padding: 5px;"> <p>Input ×</p> <p>Link: Link2</p> <p>Type: Internal Memory Internal Parameter Link2</p> </div>	Before replacing			After replacing					0			0			0			0		AAA	1234		AAA	1234			0			0			0			0			0		AAA	1234			0			0			0			0			0			0			0			0			0			0						
Before replacing			After replacing																																																																													
		0			0																																																																											
		0			0																																																																											
	AAA	1234		AAA	1234																																																																											
		0			0																																																																											
		0			0																																																																											
		0		AAA	1234																																																																											
		0			0																																																																											
		0			0																																																																											
		0			0																																																																											
		0			0																																																																											
		0			0																																																																											

No.	Property	Function description																																																																		
(18)	Insert Trigger Addr.	<ul style="list-style-type: none"> When the Insert Trigger Addr. bit is on, a new item is inserted and the bit is automatically cleared once completed. <table border="1"> <thead> <tr> <th colspan="3">Before inserting</th> <th colspan="3">After inserting</th> </tr> </thead> <tbody> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td>AAA</td><td>1234</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> </tbody> </table> <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. <div> <p>Input ✕</p> <p>Link: Link2 ▼</p> <p style="margin-left: 20px;">Internal Memory</p> <p style="margin-left: 20px;">Internal Parameter</p> <p>Type: Link2</p> </div>	Before inserting			After inserting					0			0			0			0		AAA	1234		AAA	1234		AAA	1234		AAA	1234		AAA	1234			0			0		AAA	1234			0			0			0			0			0			0			0			0
Before inserting			After inserting																																																																	
		0			0																																																															
		0			0																																																															
	AAA	1234		AAA	1234																																																															
	AAA	1234		AAA	1234																																																															
	AAA	1234			0																																																															
		0		AAA	1234																																																															
		0			0																																																															
		0			0																																																															
		0			0																																																															
		0			0																																																															
(19)	Cut Trigger Addr.	<ul style="list-style-type: none"> When the Cut Trigger Addr. bit is on, the current item is deleted and the bit is automatically cleared once completed. <table border="1"> <thead> <tr> <th colspan="3">Before cutting</th> <th colspan="3">After cutting</th> </tr> </thead> <tbody> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td>AAA</td><td>1234</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> </tbody> </table> <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. <div> <p>Input ✕</p> <p>Link: Link2 ▼</p> <p style="margin-left: 20px;">Internal Memory</p> <p style="margin-left: 20px;">Internal Parameter</p> <p>Type: Link2</p> </div>	Before cutting			After cutting					0			0			0			0		AAA	1234		AAA	1234		AAA	1234		AAA	1234		AAA	1234			0			0			0			0			0			0			0			0			0			0			0
Before cutting			After cutting																																																																	
		0			0																																																															
		0			0																																																															
	AAA	1234		AAA	1234																																																															
	AAA	1234		AAA	1234																																																															
	AAA	1234			0																																																															
		0			0																																																															
		0			0																																																															
		0			0																																																															
		0			0																																																															
		0			0																																																															

19

No.	Property	Function description
(20)	Touch Protect Addr.	<ul style="list-style-type: none"> When the Touch Protect Addr. bit is on, you cannot press the GridBox element. The controller address (Bit) and the internal register address (Bit) are supported. 
(21)	Select Item Addr.	<ul style="list-style-type: none"> Use Select Item Addr. to specify the selected item. Then, set Trigger Selected Item to on, and the element will display the selected item. 
	Trigger Selected Item	<ul style="list-style-type: none"> The controller address (Word) and the internal register address (Word) are supported.  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. 

No.	Property	Function description
(22)	Item Count Addr.	<ul style="list-style-type: none"> Use Item Count Addr. to specify the visible items. Then, set Trigger Item Count to on, and the element will change the value of Visible Item Count. 
	Trigger Item Count	<ul style="list-style-type: none"> The controller address (Word) and the internal register address (Word) are supported.  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported.

19

■ Details-2

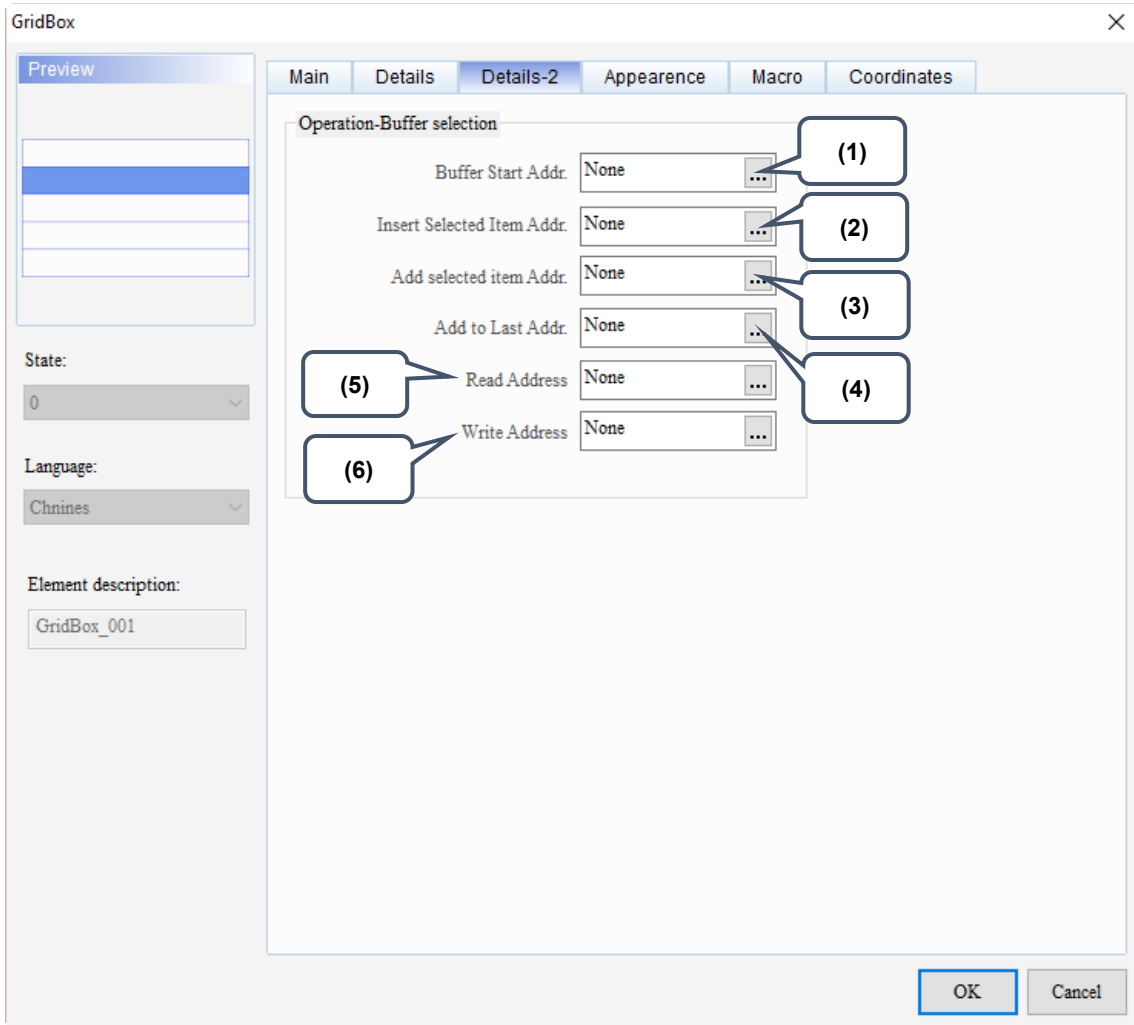


Figure 19.3.4 Details-2 property page for the GridBox element

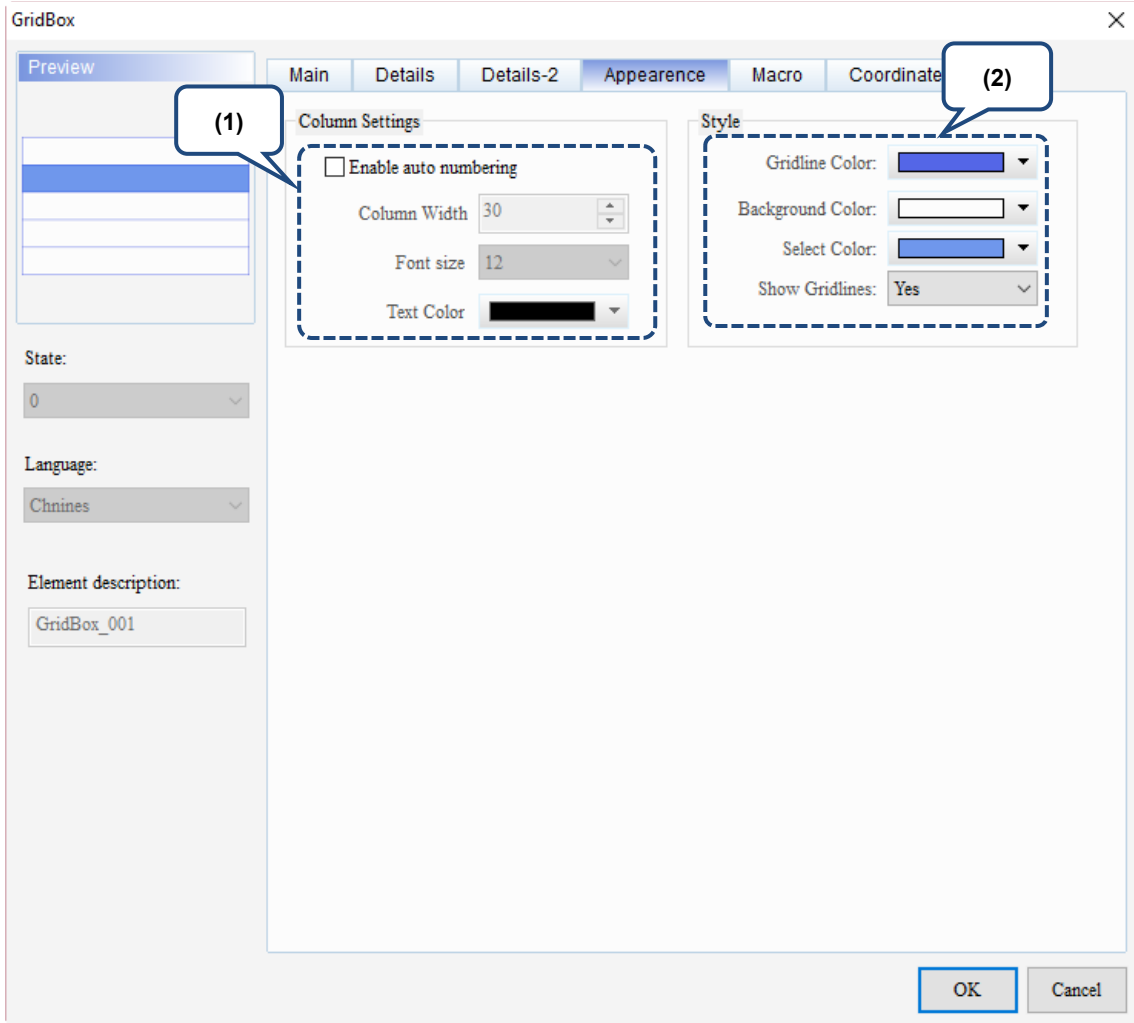
No.	Property	Function description
(1)	Buffer Start Addr.	<ul style="list-style-type: none"> This is the start address where the element temporarily stores data. The data in the buffer can be inserted, added, and written into the selected item, and the data in the selected item can also be read to the buffer. The controller address (Word) and the internal register address (Word) are supported.

No.	Property	Function description																																																																								
(2)	Insert Selected Item Addr.	<ul style="list-style-type: none"> When the Insert Selected Item Addr. bit is on, the selected item will be inserted after the Buffer Start Addr. plus the Item Addr. Offset. Then, the Actual Item Count adds 1. If Actual Item Count has reached Max item count, the selected item cannot be inserted. <table border="1"> <thead> <tr> <th colspan="3">Before inserting</th> <th colspan="3">After inserting</th> </tr> </thead> <tbody> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td>ABC</td><td>123456789</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> </tbody> </table> <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. <div> <p>Input ✕</p> <p>Link: Link2</p> <p style="margin-left: 20px;">Internal Memory</p> <p style="margin-left: 20px;">Internal Parameter</p> <p>Type Link2</p> </div>	Before inserting			After inserting					0			0			0			0			0		ABC	123456789			0			0			0			0			0			0			0			0			0			0			0			0			0			0			0			0
		Before inserting			After inserting																																																																					
		0			0																																																																					
		0			0																																																																					
		0		ABC	123456789																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					

19


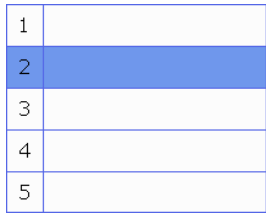

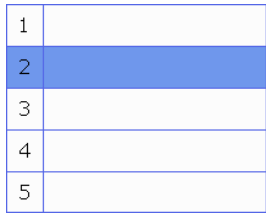

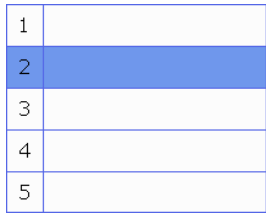
No.	Property	Function description																																																																								
(6)	Write Address	<ul style="list-style-type: none"> When the Write Address bit is on, the selected item will be written after the Buffer Start Addr. plus the Item Addr. Offset. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Before writing</th> <th colspan="3">After writing</th> </tr> </thead> <tbody> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr style="background-color: #e0e0ff;"><td></td><td></td><td>0</td><td></td><td>ABC</td><td>123456789</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td><td></td><td></td><td>0</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid gray; padding: 2px;">2</div> <div style="border: 1px solid gray; padding: 2px;">ABC</div> <div style="border: 1px solid gray; padding: 2px;">123456789</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid gray; padding: 2px;">2</div> <div style="border: 1px solid gray; padding: 2px;">ABC</div> <div style="border: 1px solid gray; padding: 2px;">123456789</div> </div>	Before writing			After writing					0			0			0			0			0		ABC	123456789			0			0			0			0			0			0			0			0			0			0			0			0			0			0			0			0
Before writing			After writing																																																																							
		0			0																																																																					
		0			0																																																																					
		0		ABC	123456789																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		0			0																																																																					
		<ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. <div style="border: 1px solid gray; padding: 5px; margin-top: 5px;"> <p>Input ×</p> <p>Link: Link2</p> <p style="margin-left: 20px;">Internal Memory</p> <p style="margin-left: 20px;">Internal Parameter</p> <p>Type: Link2</p> </div>																																																																								

■ Appearance

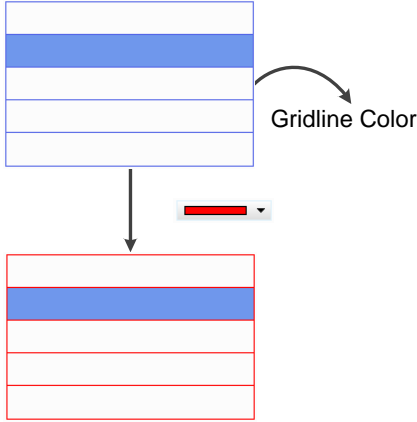
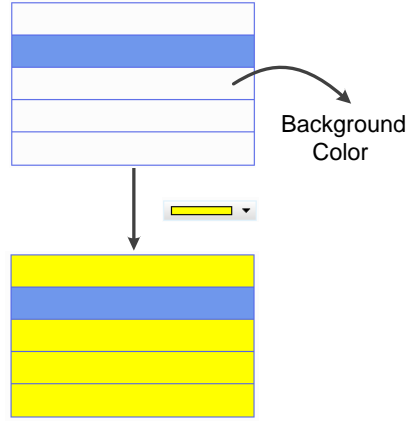
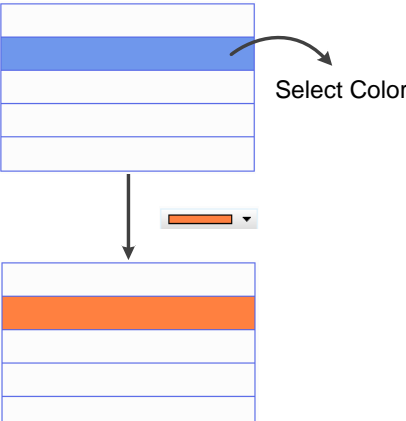








19

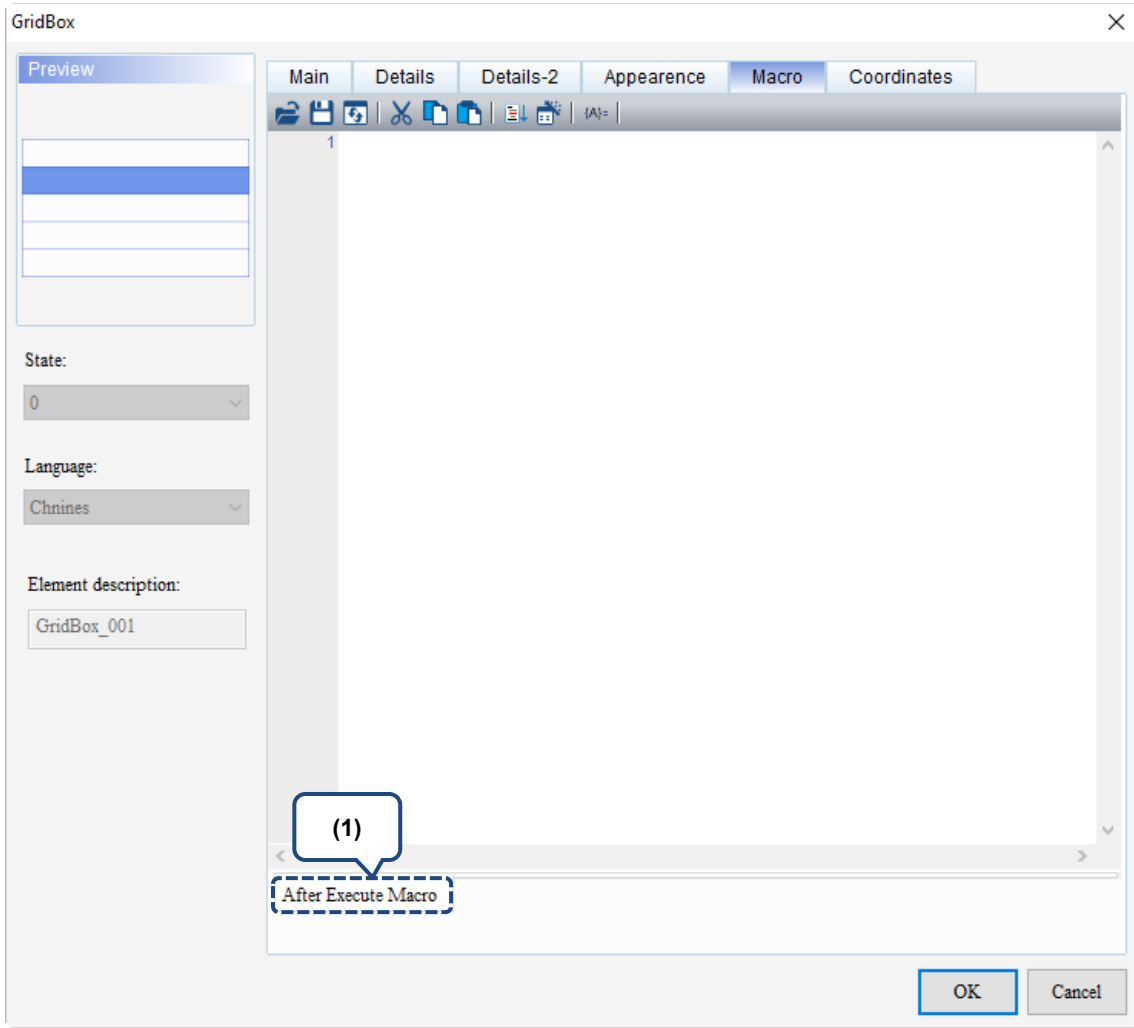
Figure 19.3.5 Appearance property page for the GridBox element

No.	Property	Function description				
(1)	Column Settings	<ul style="list-style-type: none"> Set the Enable auto numbering, Column Width, Font size, and Text Color. The Enable auto numbering function is for setting whether to display the auto numbering, the width of the auto numbering column, and the font color and size of the auto numbering. Display auto numbering <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Enable auto numbering not checked</td> <td style="width: 50%;">Enable auto numbering is checked</td> </tr> <tr> <td></td> <td></td> </tr> </table> <ul style="list-style-type: none"> Column width: set the width of the auto numbering column and the maximum setting is 65535. 	Enable auto numbering not checked	Enable auto numbering is checked		
Enable auto numbering not checked	Enable auto numbering is checked					
						

19

No.	Property	Function description				
(2)	Style	<p>The Style function is for setting the color and gridline of the element, which include the Gridline Color, Background Color, Select Color, and Show Gridlines.</p> <ul style="list-style-type: none"> <p>■ Gridline Color</p>  <p>■ Background Color</p>  <p>■ Select Color</p>  <p>■ Show Gridlines</p> <table border="1"> <thead> <tr> <th>Select Yes for Show Gridlines</th> <th>Select No for Show Gridlines</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> 	Select Yes for Show Gridlines	Select No for Show Gridlines		
Select Yes for Show Gridlines	Select No for Show Gridlines					
						

■ Macro



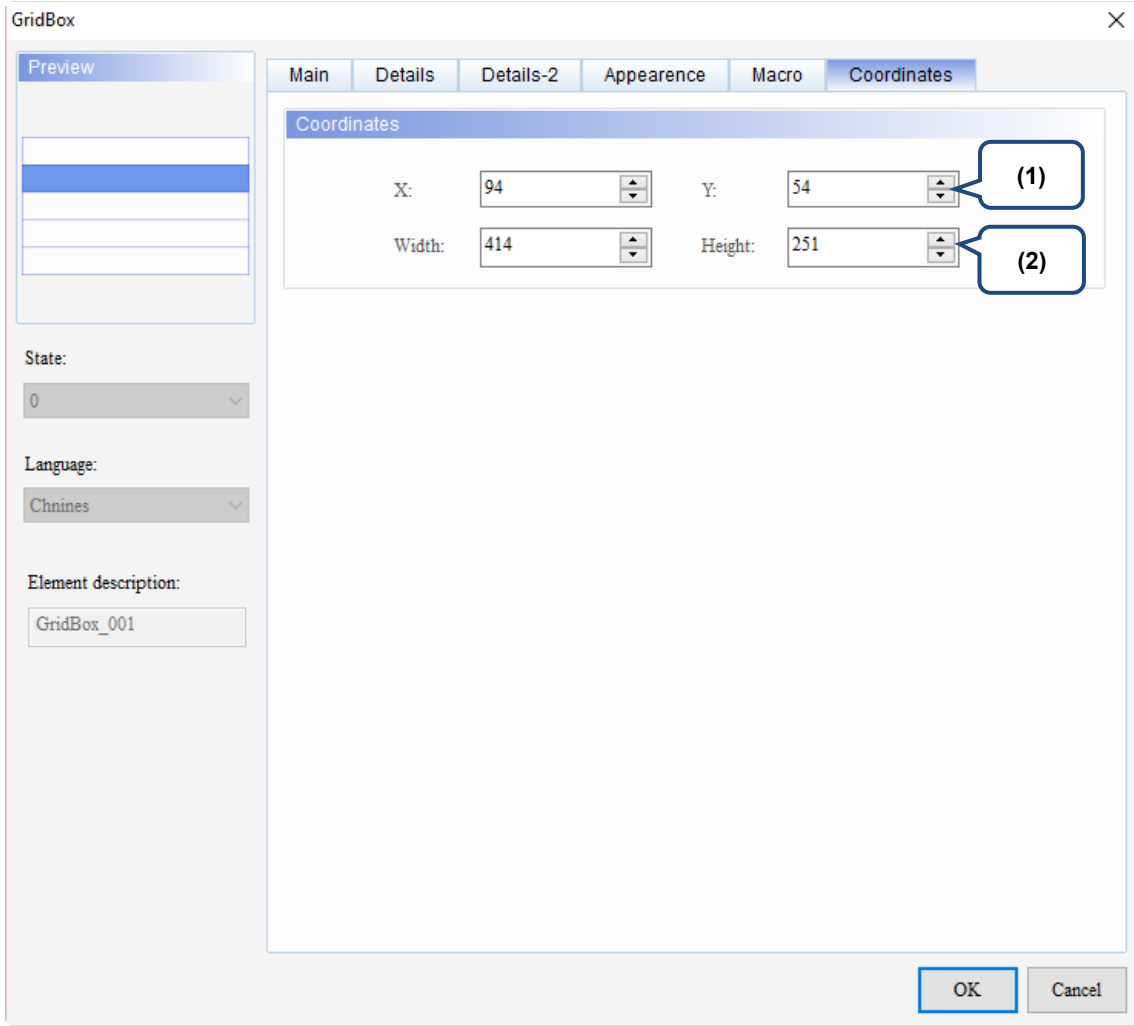
19

Figure 19.3.6 Macro property page for the GridBox element

19

No.	Property	Function description
(1)	After Execute Macro	When you press the button element, the HMI will first execute the action of the button, then execute the macro commands. However, if the state of the button is not changed by pressing it (using external controller commands or other macros instead), the HMI will not execute the macro commands.
		<p>Flowchart of After Execute Macro:</p> <pre> graph TD A["Maintained Button 0"] -- "Trigger ON / Input Numeric" --> B["Maintained Button 50"] B -- "Button triggered ON and numeric written" --> C["After Execute Macro"] C -- "Trigger OFF / Input Numeric" --> D["Maintained Button 90"] D -- "Button triggered OFF and numeric written" --> E["After Execute Macro"] E -- "Trigger at next time" --> A </pre>

■ Coordinates



19

Figure 19.3.7 Coordinates property page for the GridBox element

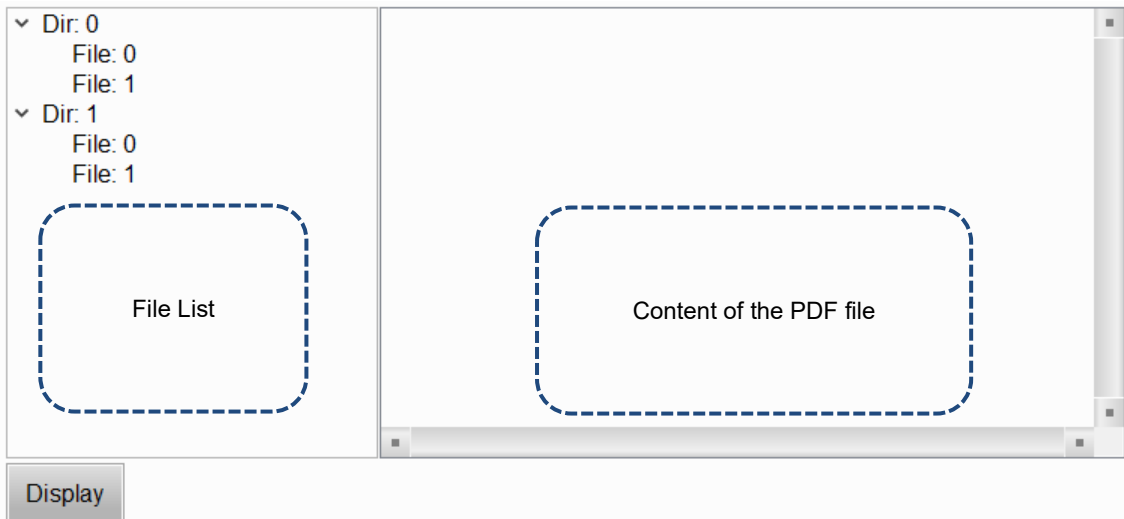
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

19

19.4 PDF Viewer

The PDF Viewer function allows you to read PDF files on the HMI by saving the PDF files in an external storage device and inserting it to the HMI. With this feature, you can view the operation steps without a PC or printouts, which can increase convenience and efficiency.

The PDF Viewer is divided into two sections: the file list is on the left and the content of the PDF file is displayed on the right.



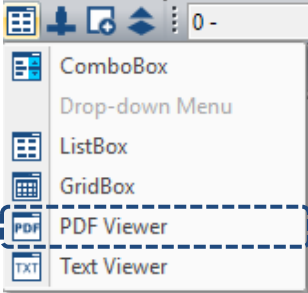
PDF files are displayed on the HMI from the external storage device, so if the USB Disk or SD Card read and write speed is too slow or the PDF file size is too big, the displaying speed of the PDF file will be affected.

Please refer to Table 19.4.1 for the PDF Viewer example.

Table 19.4.1 PDF Viewer example


PDF Viewer

Step 1: create a PDF Viewer element.



The screenshot shows a context menu with the following items: ComboBox, Drop-down Menu, ListBox, GridBox, PDF Viewer (highlighted with a dashed blue box), and Text Viewer. The PDF icon next to 'PDF Viewer' is also highlighted.

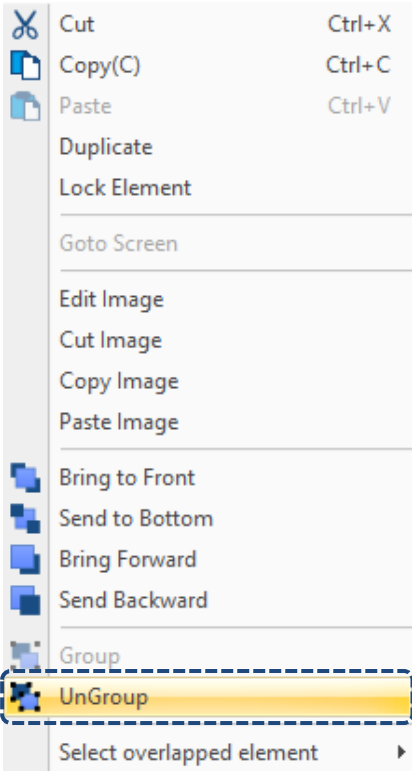
Screen_1 x



The screenshot shows a design tool interface with a file tree on the left containing 'Dir. 0' and 'Dir. 1', each with 'File: 0' and 'File: 1'. A 'Display' button is located at the bottom left of the main workspace.

Create PDF Viewer element

Step 2: click PDF Viewer, then right click and select UnGroup.

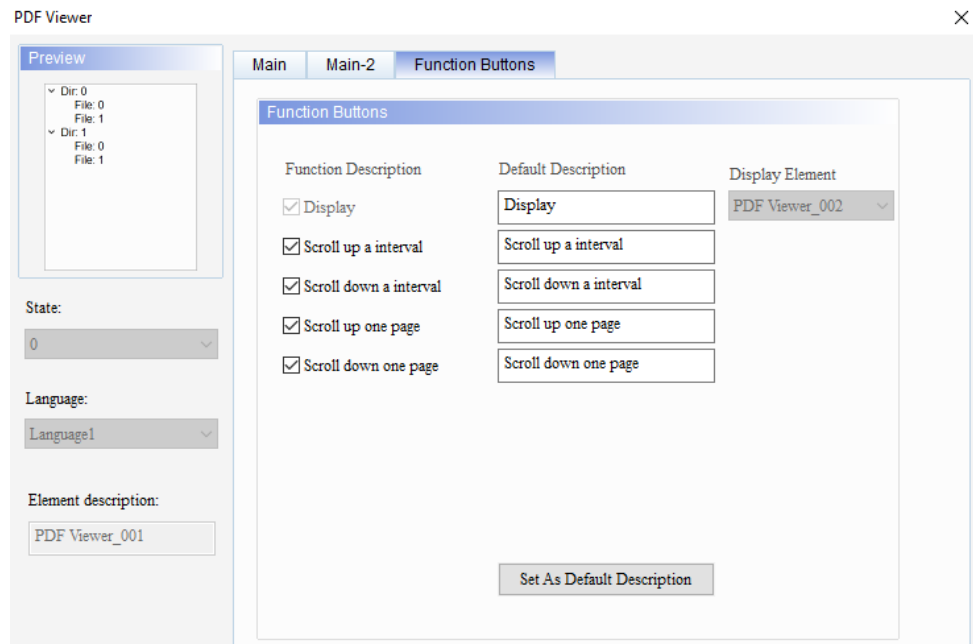


The screenshot shows a context menu with the following items: Cut (Ctrl+X), Copy(C) (Ctrl+C), Paste (Ctrl+V), Duplicate, Lock Element, Goto Screen, Edit Image, Cut Image, Copy Image, Paste Image, Bring to Front, Send to Bottom, Bring Forward, Send Backward, Group, UnGroup (highlighted with a dashed blue box), and Select overlapped element.

19

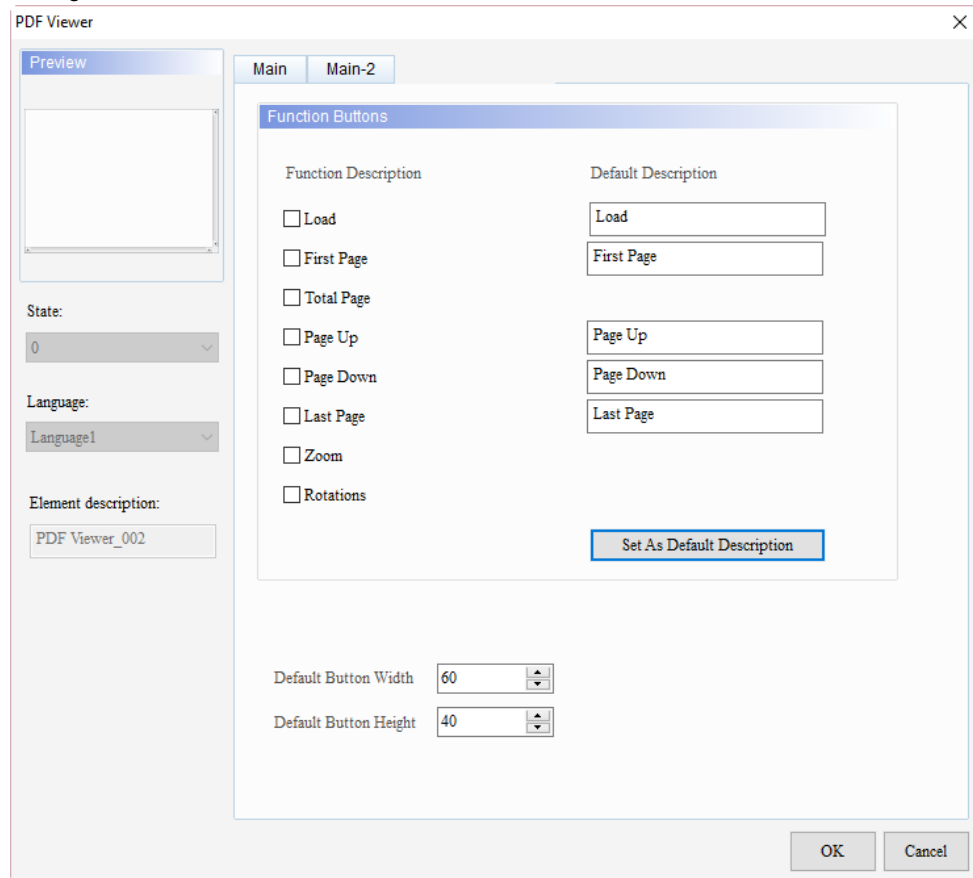
PDF Viewer

Step 3: click the File List on the left to go to the Function Buttons page and the setting is as follows.



Step 4: click the display content on the right to go to the Function Buttons page and the setting is as follows.

Create PDF Viewer element



PDF Viewer

Step 5: when the setting is complete, the PDF Viewer screen is as follows.

Step 6: please compile the screen prior to performing off-line simulation. Select the PDF file to display, press **Display**, then you can see the content of the PDF file displayed on the right.

Create PDF Viewer element

The following will explain the properties of the File List on the left and the display content on the right.

19

When you double-click the File List on the left, the property page is shown as follows.

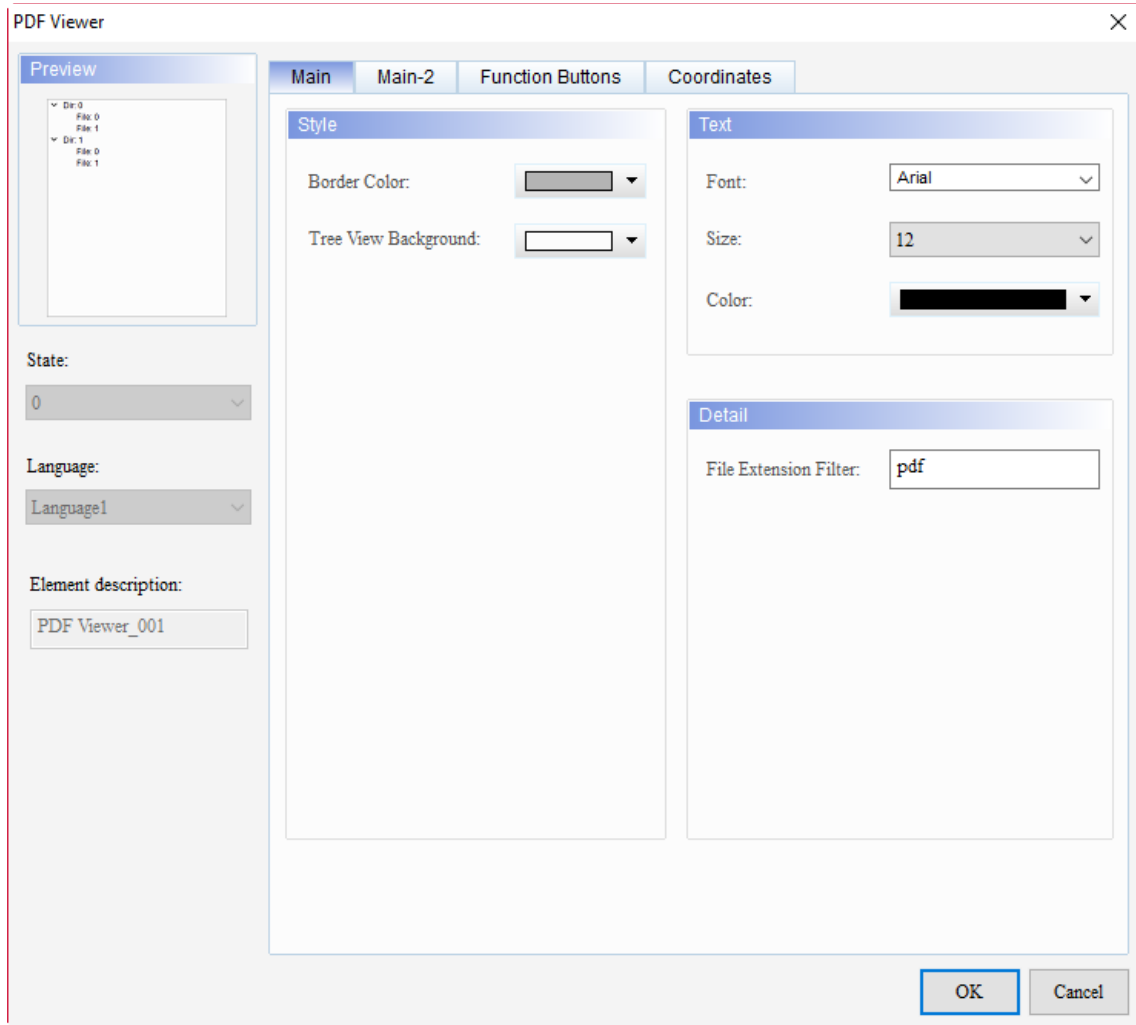
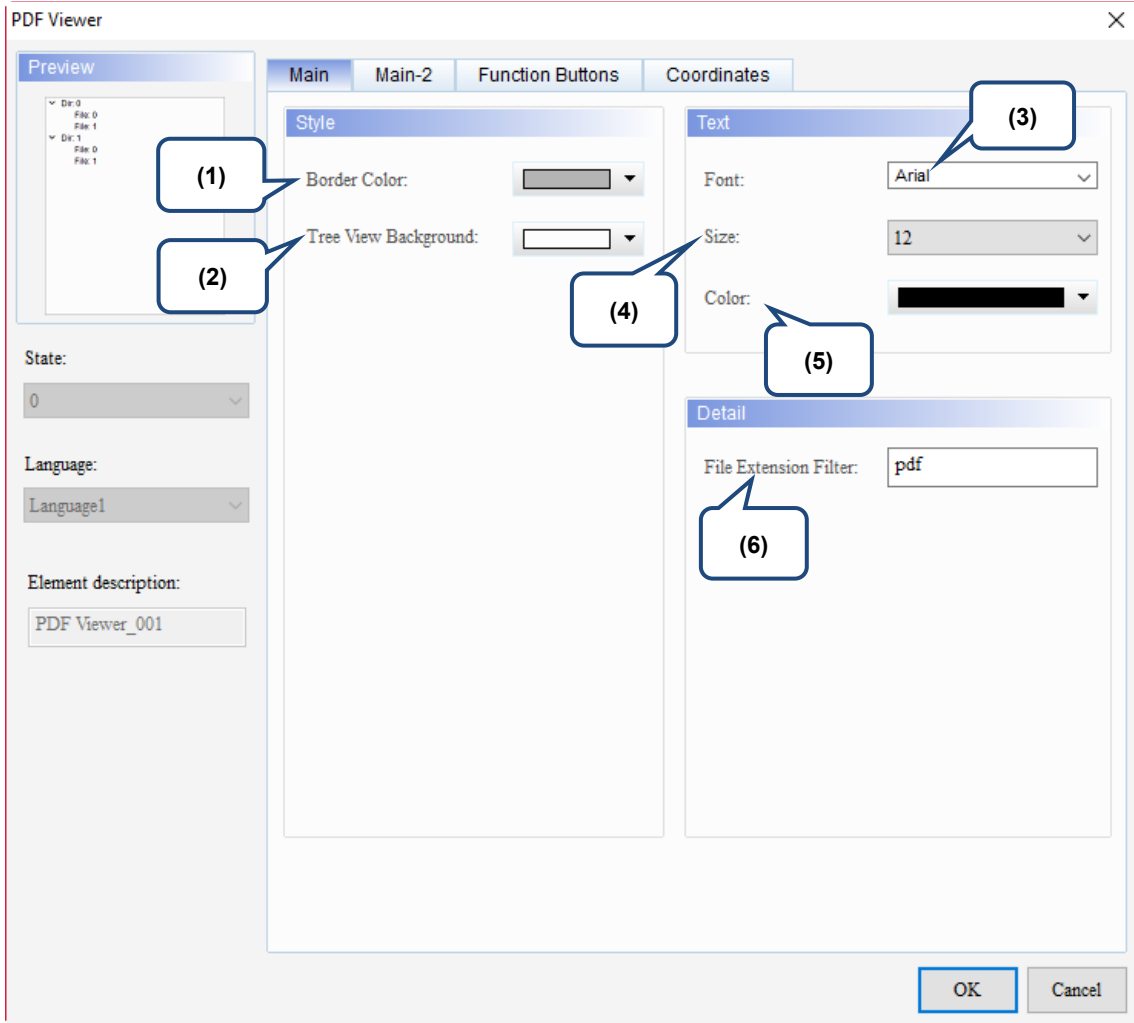


Figure 19.4.1 Properties of the PDF Viewer File List

Table 19.4.2 Function page of the PDF Viewer File List

PDF Viewer (File List on the left)	
Function Page	Description
Main	Set the Border Color, Tree View Background, Font, Size, and Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Function Buttons	Check Scroll up an interval, Scroll down an interval, Scroll up one page, Scroll down one page, and Set As Default Description. You can also set the width and height of the buttons.

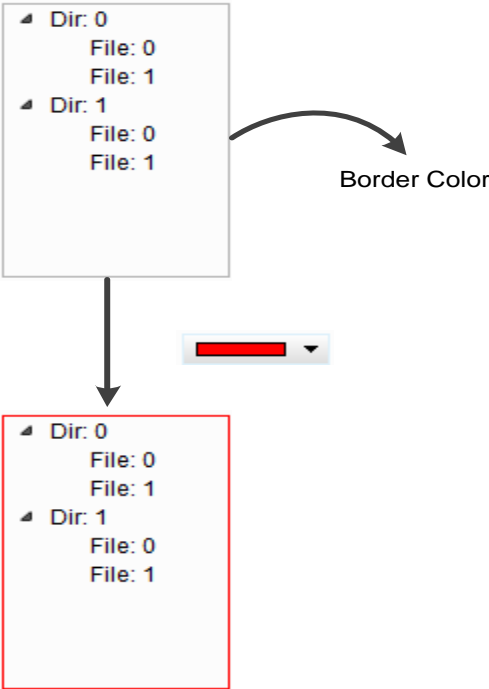
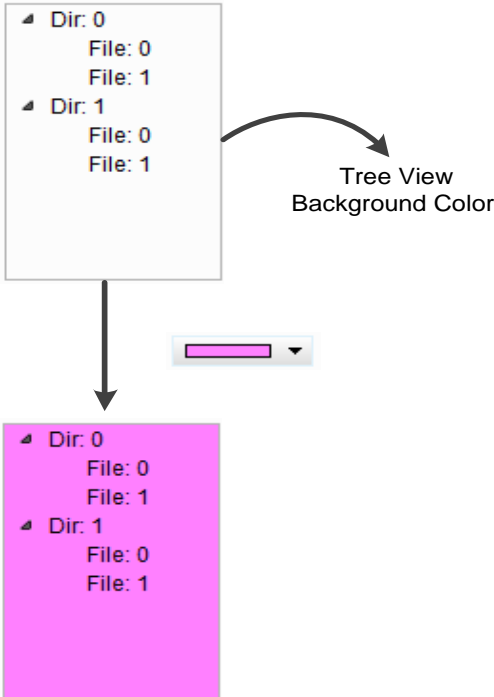
■ Main



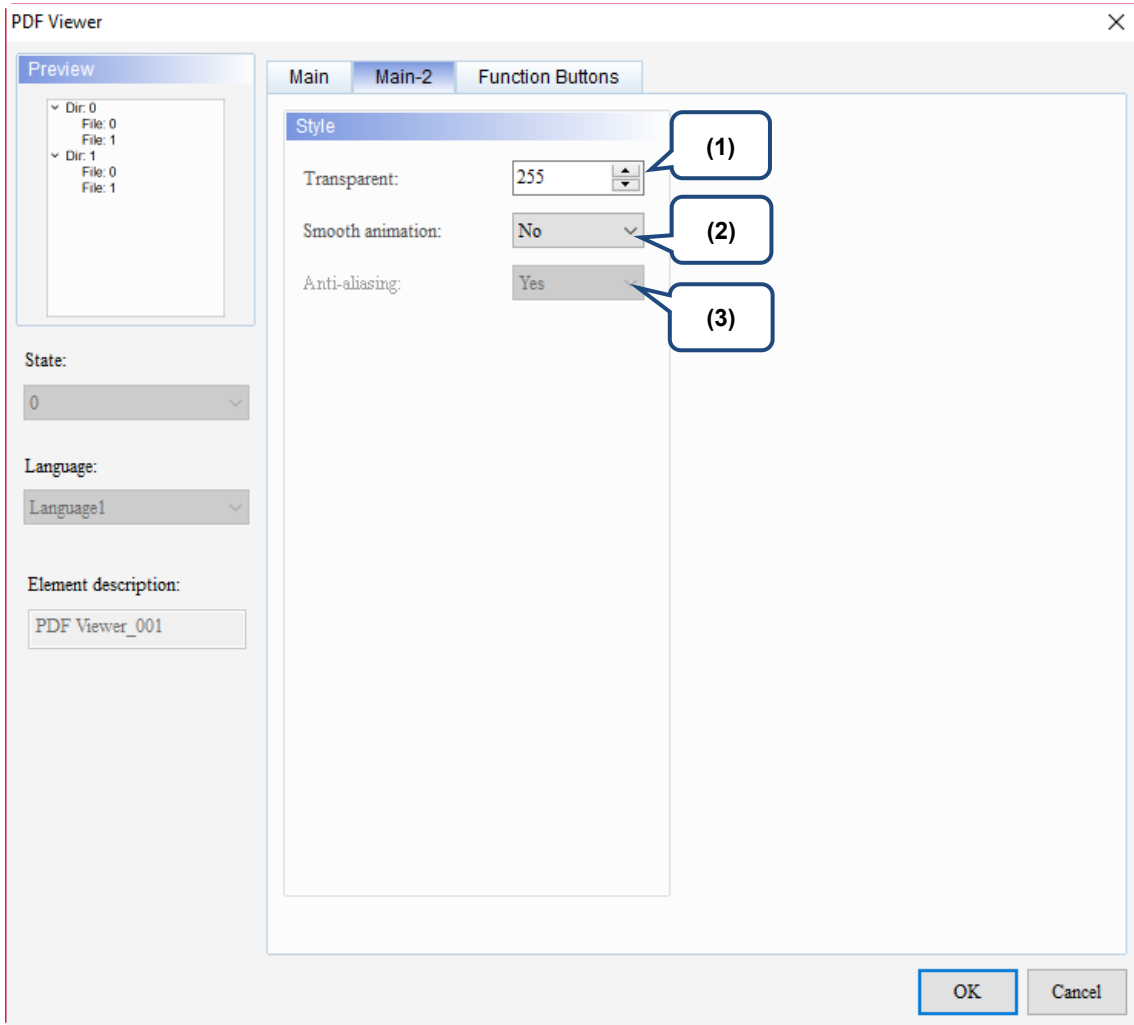
19

Figure 19.4.2 Main property page for the PDF Viewer File List element

19

No.	Property	Function description
(1)	Border Color	<p>Set the border color of the File List on the left.</p> 
(2)	Tree View Background	<p>Set the Tree View Background color of the File List on the left.</p> 
(3)	Font	Set the text font for the File List on the left.
(4)	Size	Set the text size for the File List on the left.
(5)	Color	Set the text color for the File List on the left.
(6)	File Extension Filter	<ul style="list-style-type: none"> ■ Set the file extension to be displayed in the File List. The default is PDF, meaning only the files with the PDF file extension will be displayed in the root directory of the external drive. ■ If you input * to File Extension Filter, all files in the root directory will be displayed.

■ Main-2



19

Figure 19.4.3 Main-2 property page for the PDF Viewer File List element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When you activate the Smooth animation function, there is a sliding effect when the File List expands or retracts.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Function Buttons

19

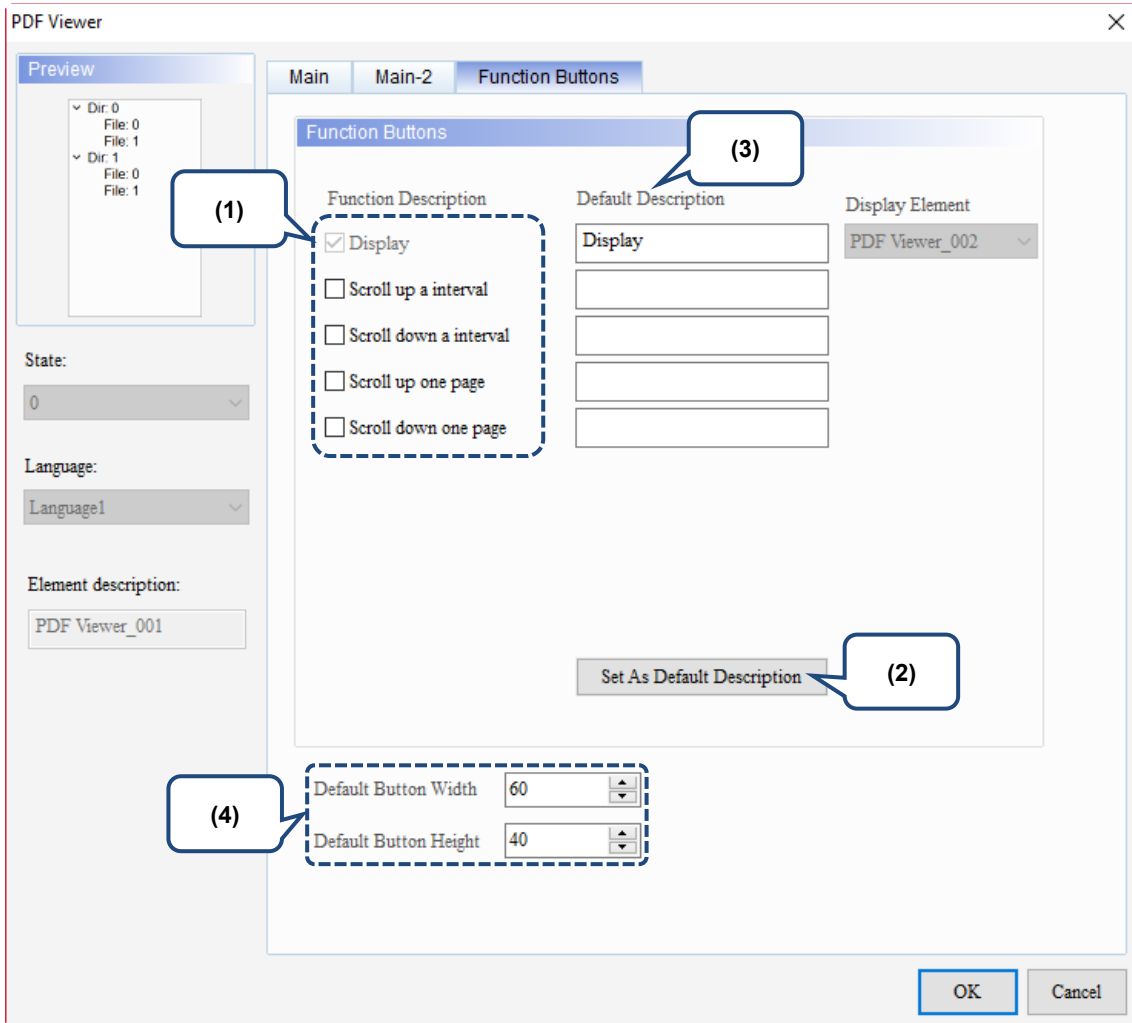


Figure 19.4.4 Function Buttons property page for the PDF Viewer File List element

No.	Property	Function description
(1)	Function Buttons	<ul style="list-style-type: none"> These are function buttons for the File List. Display is checked by default and cannot be unchecked. Other function buttons include Scroll up an interval, Scroll down an interval, Scroll up one page, and Scroll down one page, which are used to scroll the File List and determine the scrolling range.
(2)	Set As Default Description	Press this button to insert the default strings to the spaces above.
(3)	Default Description	Press Set As Default Description to insert the default strings to the spaces. You can also enter user-defined strings.
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.

When you double-click the display content on the right, the property page is shown as follows.

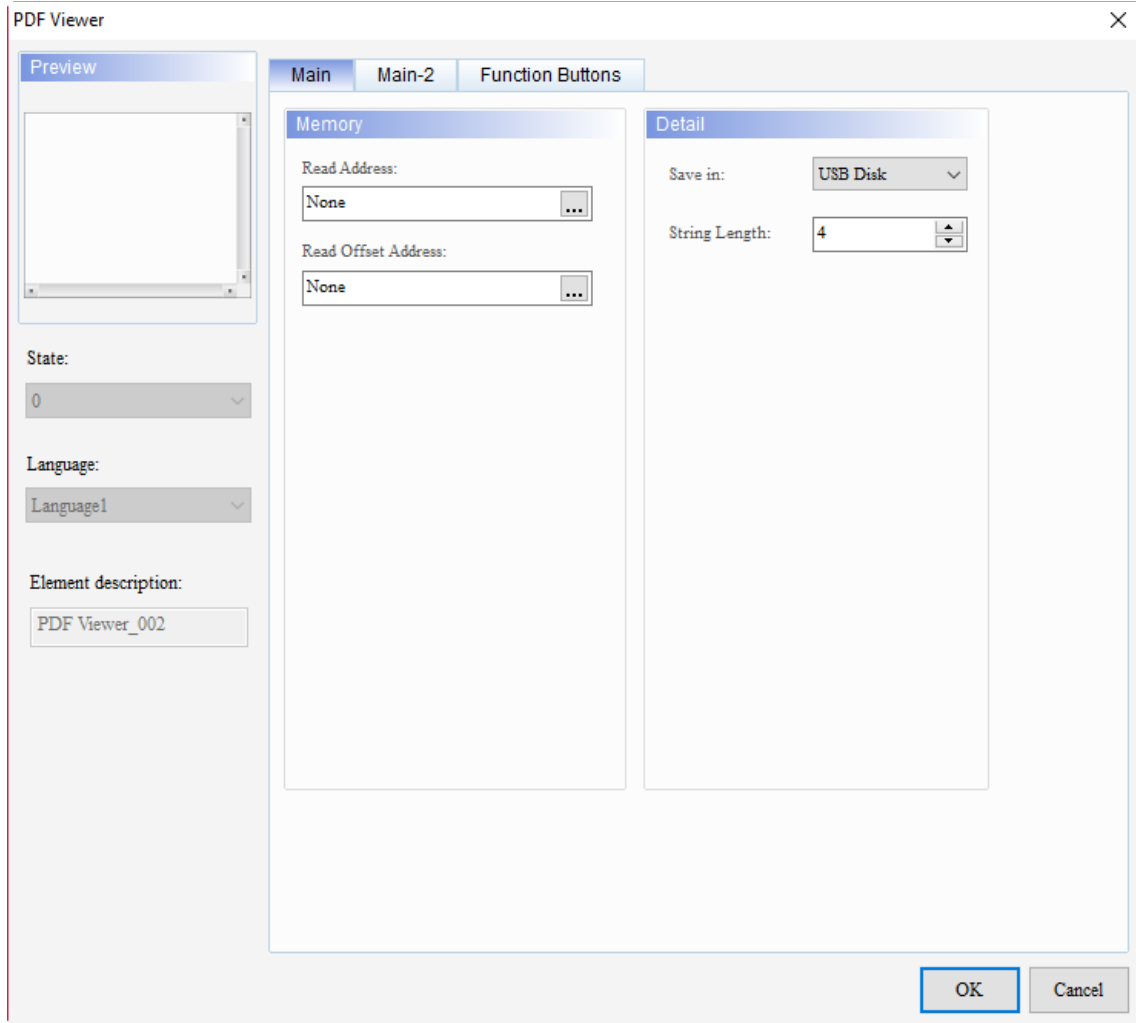


Figure 19.4.5 Properties of the PDF Viewer display content

Table 19.4.3 Function page of the PDF Viewer display content

PDF Viewer (display content on the right)	
Function page	Description
Main	Set the Read Address and Read Offset Address. You can also set the storage type and string length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Function Buttons	<ul style="list-style-type: none"> ■ Check Load, First Page, Total Page, Page Up, Page Down, Last Page, Zoom, Rotations, and Set As Default Description. ■ You can also set the width and height of the buttons.

19

■ Main

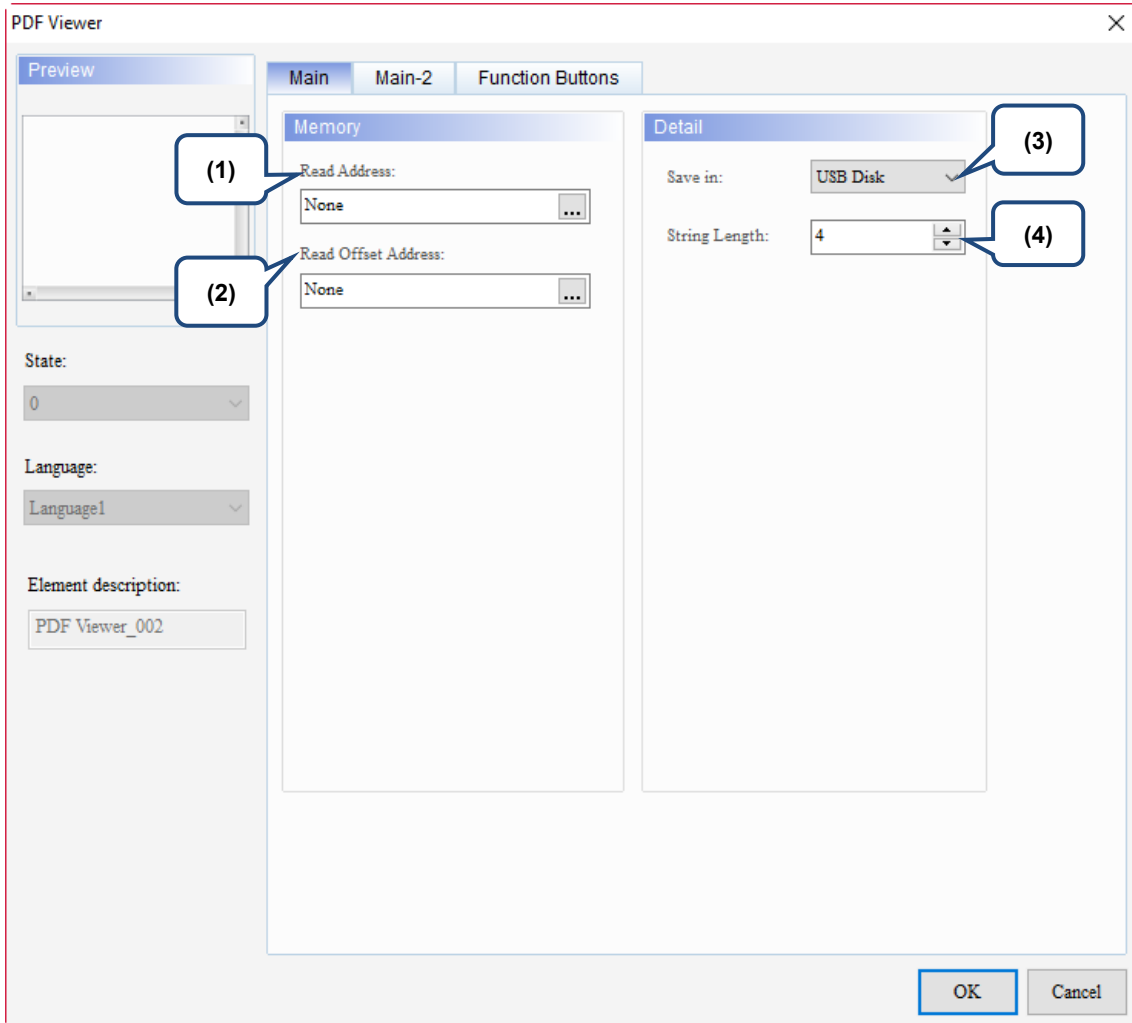
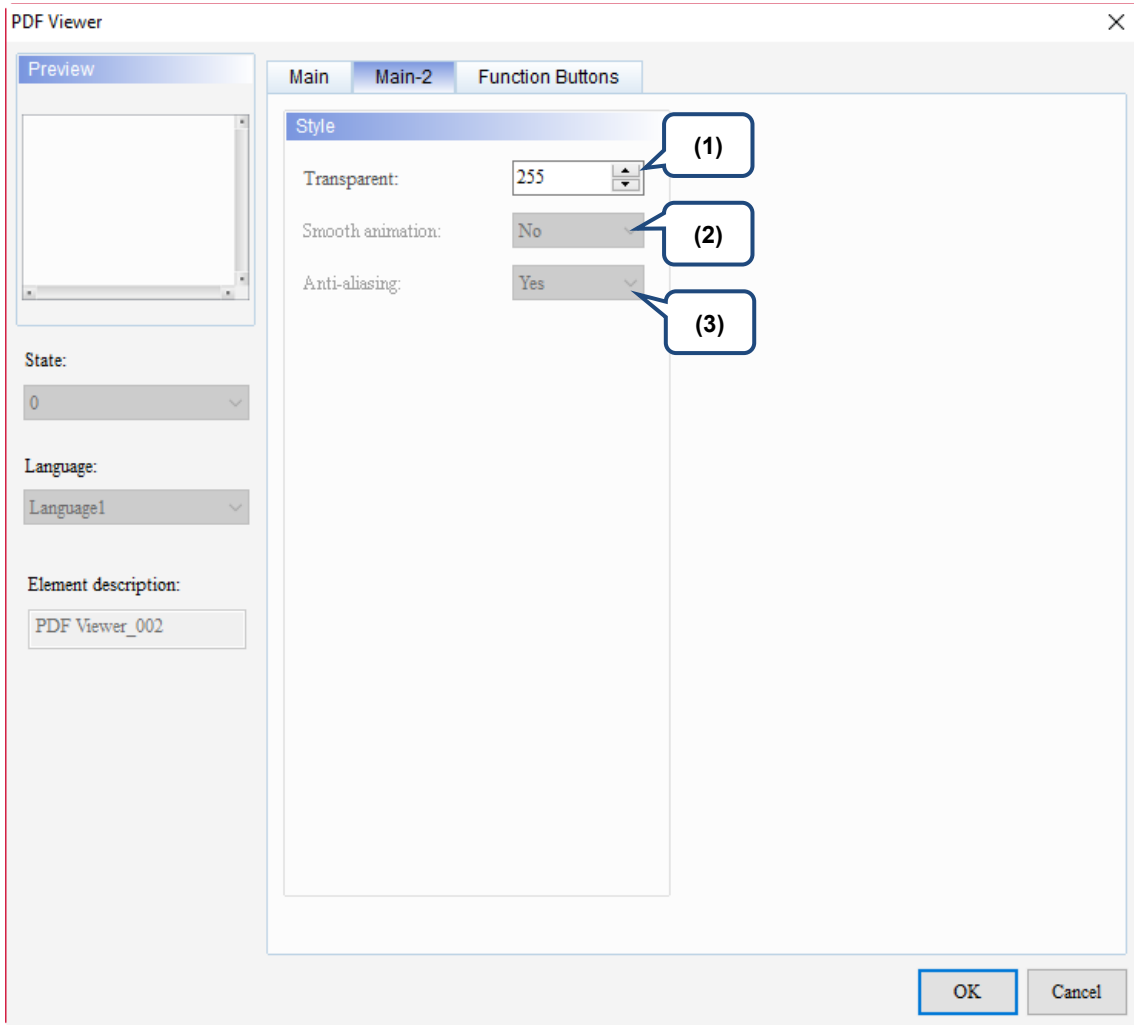


Figure 19.4.6 Main property page for the PDF Viewer display content element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> You can select the internal memory or the controller register address. Select Link Name or Element Style. Please refer to Chapter 5 Buttons for details. If you choose the Read Address setting, you need to create a Character Entry element and set the String Length for the PDF file to display on the HMI.
(2)	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(3)	Save in	<ul style="list-style-type: none"> You can select USB Disk or SD Card as the storage device. When you save the PDF file in the USB Disk or SD Card, the HMI can read the PDF file from the storage device.
(4)	String Length	<ul style="list-style-type: none"> The String Length setting is mainly used with the Character Entry element. The length of the string determines the input file name of the PDF.

■ Main-2



19

Figure 19.4.7 Main-2 property page for the PDF Viewer display content element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

19

■ Function Buttons

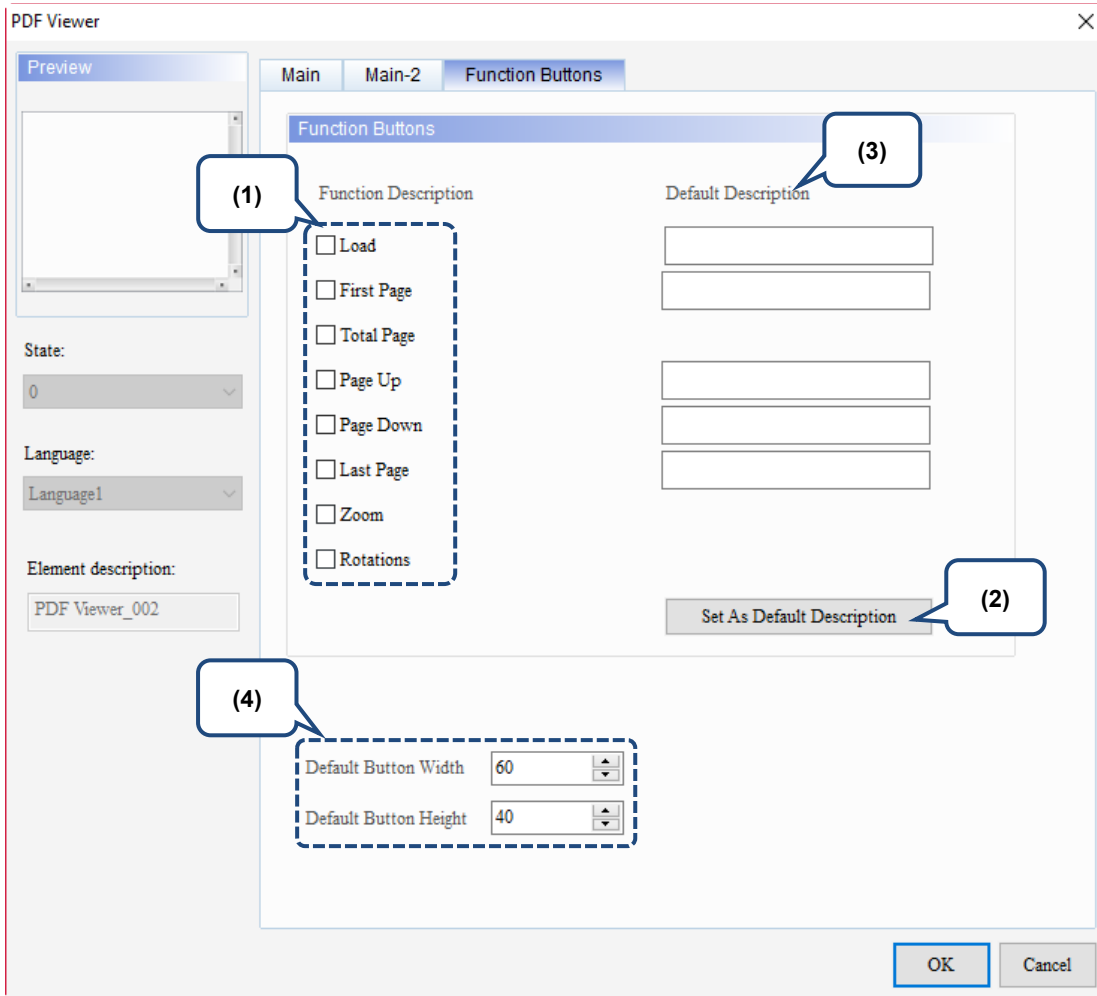



Figure 19.4.8 Function Buttons property page for the PDF Viewer display content element

No.	Property	Function description
(1)	Function Buttons	<ul style="list-style-type: none"> These are function buttons for the display content, including Load, First Page, Total Page, Page Up, Page Down, Last Page, Zoom, and Rotations. The Load function button and the Display function button for the File List are both used to read and display PDF files, but the way to use them are different. For the Load button, you need to manually enter the PDF file name and use the set Read Address to display the PDF file on the HMI. As for the Display button, you do not need to enter the PDF file name. To display the PDF file on the HMI, you only need to save the PDF file to a USB Disk or SD Card.
(2)	Set As Default Description	<ul style="list-style-type: none"> Press this button to insert the default strings to the spaces above. Total Page, Zoom, and Rotations do not have default descriptions.
(3)	Default Description	Press Set As Default Description to insert the default strings to the spaces. You can also enter user-defined strings.
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.

Frame

20

This chapter provides the usage and setting details for the Frame elements.



20.1 Embedded Subscreen	20-2
-------------------------------	------

20.1 Embedded Subscreen


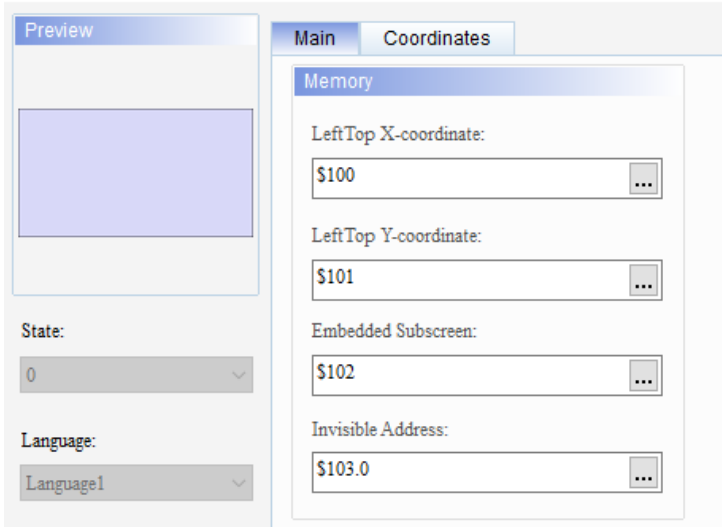
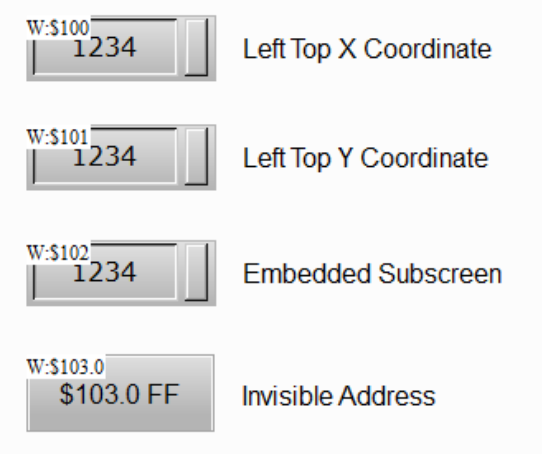
You can embed the subscreen into the main screen and switch between different subscreens to display on the main screen.

Note:

1. Embedded Subscreen elements cannot be placed on subscreens.
2. The size of the subscreen can be different from the Embedded Subscreen. Its size remains after embedding.
3. When the embedded Subscreen has the Screen Lock function enabled, this function is automatically disabled after embedding.

20

Table 20.1.1 Embedded Subscreen example

Embedded Subscreen example	
<p>Create Embedded Subscreen element</p>	<p>Select [Frame] > [Embedded SubScreen] in the element tool of the editing screen and create it on Screen 1.</p> 
<p>Set memory address</p>	<p>Set the memory addresses for the Embedded Subscreen element.</p> 
<p>Create Numeric Entry and Maintained button elements</p>	<p>Create three Numeric Entry elements (\$100, \$101, and \$102) and one Maintained button element (\$103.0).</p> 

20

Embedded Subscreen example

Create Subscreen 2 and Subscreen 3.

Screen Properties

Screen No. Screen:

Width
Height

Place at screen center
 Set position X Y

Show Border

Display Title Bar

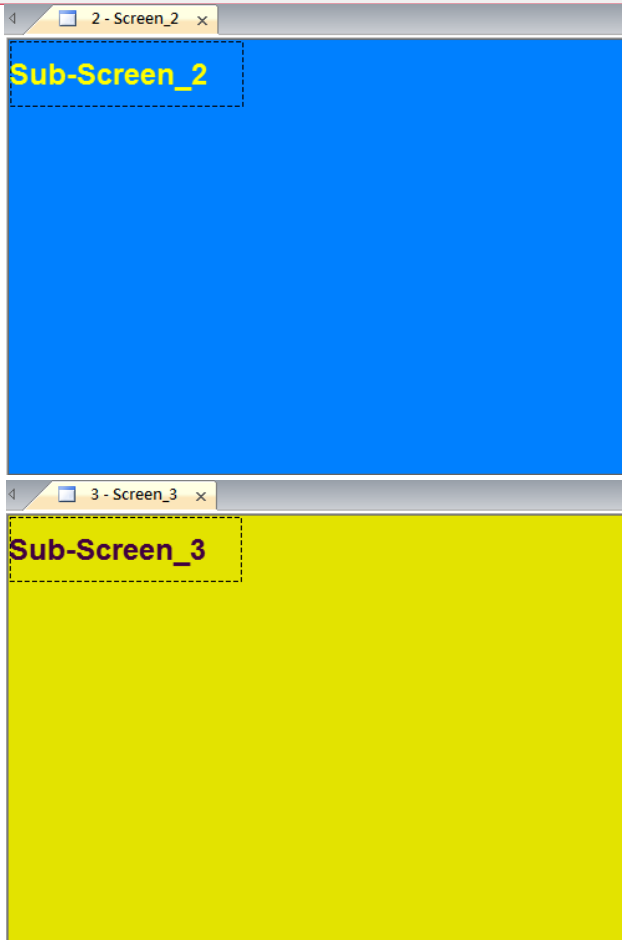
Language N	Caption
Language1	

Base Screen
 Single
 Multiple

Macro Cycle Delay ms
Screen Lock Bit

OK Cancel

Create subscreen



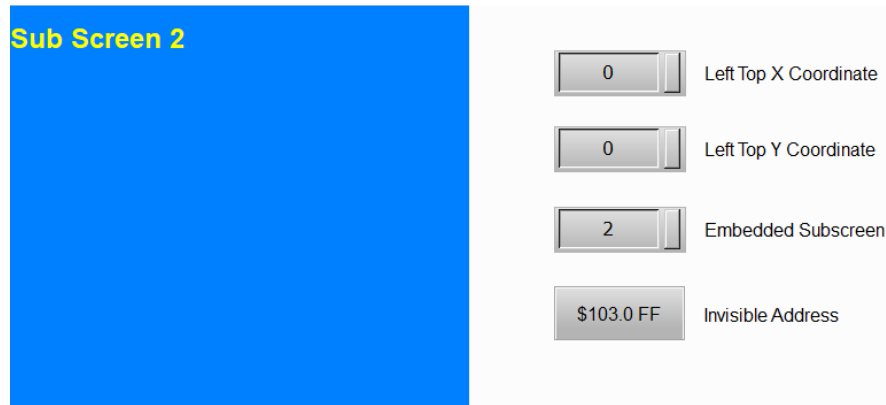
Embedded Subscreen example

- After the screens are downloaded to the HMI, the subscreens are not loaded on the HMI screen.



0 Left Top X Coordinate
0 Left Top Y Coordinate
0 Embedded Subscreen
\$103.0 FF Invisible Address

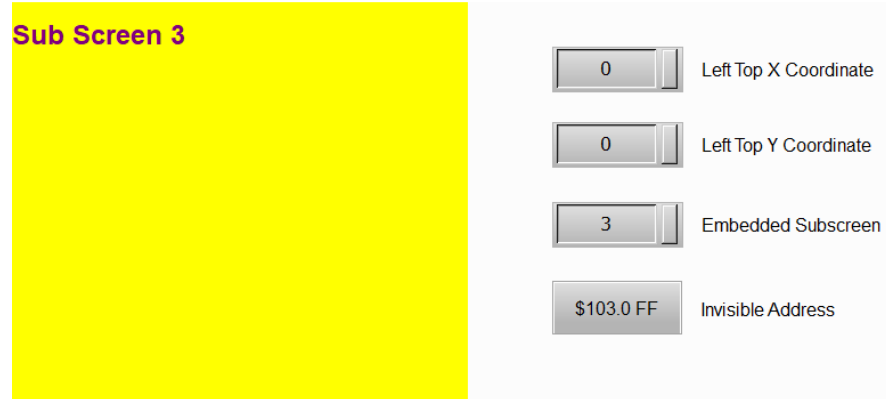
- Change the subscreen number \$102 to 2 and Subscreen 2 is embedded to the screen.



Sub Screen 2
0 Left Top X Coordinate
0 Left Top Y Coordinate
2 Embedded Subscreen
\$103.0 FF Invisible Address

Execution results

- Change the subscreen number \$102 to 3 and Subscreen 3 is embedded to the screen.



Sub Screen 3
0 Left Top X Coordinate
0 Left Top Y Coordinate
3 Embedded Subscreen
\$103.0 FF Invisible Address

- Change the element's position: set \$100 to 100 and \$101 to 50, then the subscreen moves according to the coordinate position.



Sub Screen 3
50 Left Top X Coordinate
50 Left Top Y Coordinate
3 Embedded Subscreen
\$103.0 FF Invisible Address

20

When you double-click Embedded Subscreen, the property page is shown as follows.

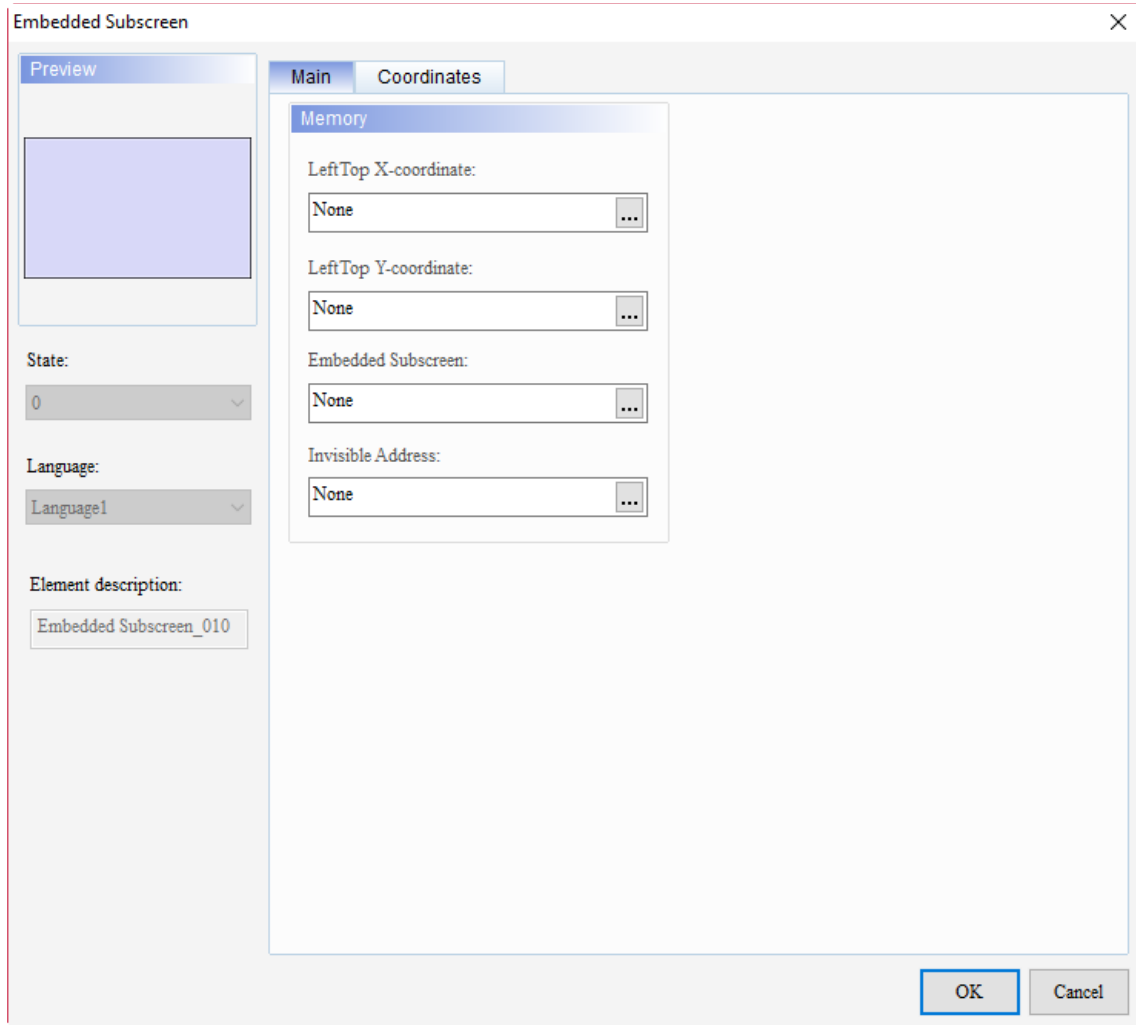
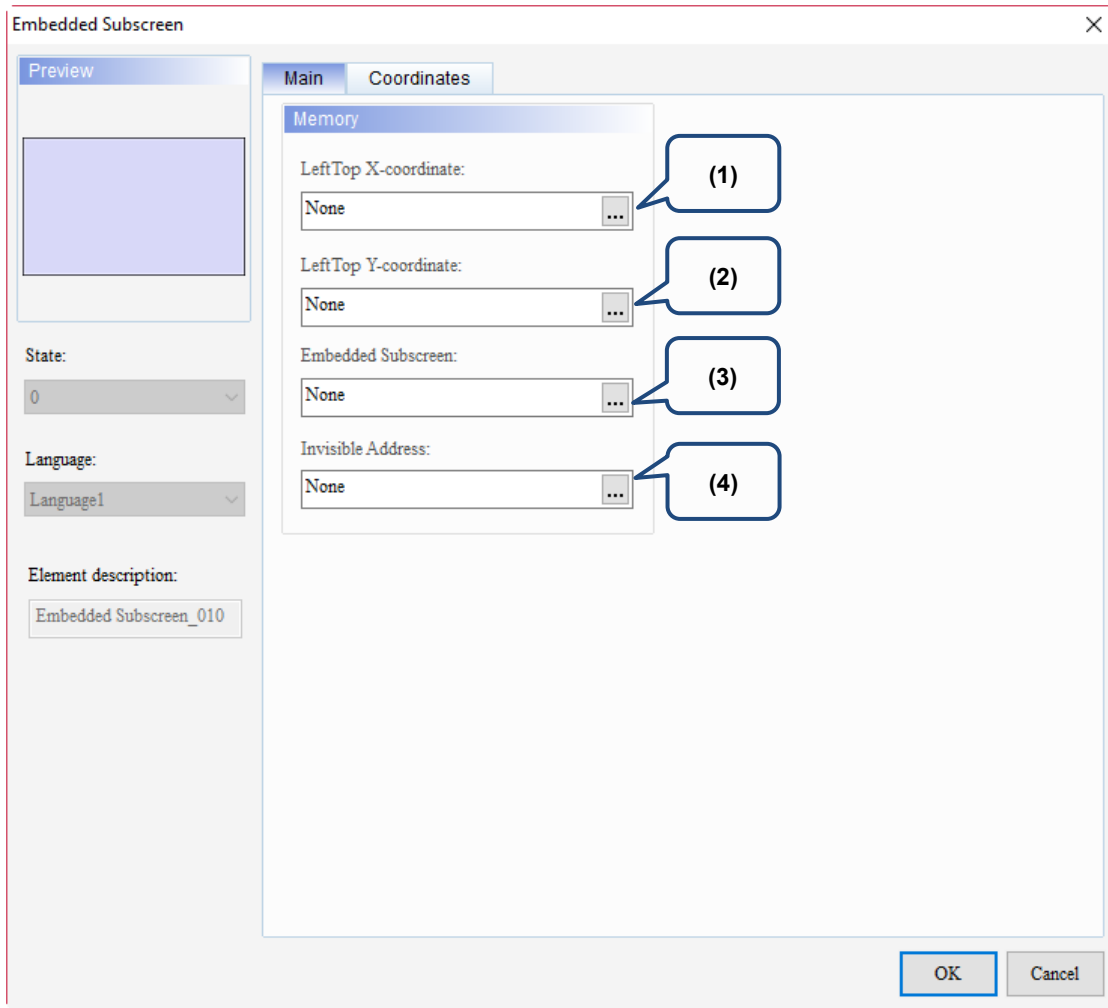


Figure 20.1.1 Properties of Embedded Subscreen

Table 20.1.2 Function page of the Embedded Subscreen element

Embedded Subscreen	
Function page	Description
Main	Set the LeftTop X-coordinate, LeftTop Y-coordinate, Embedded Subscreen, and Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

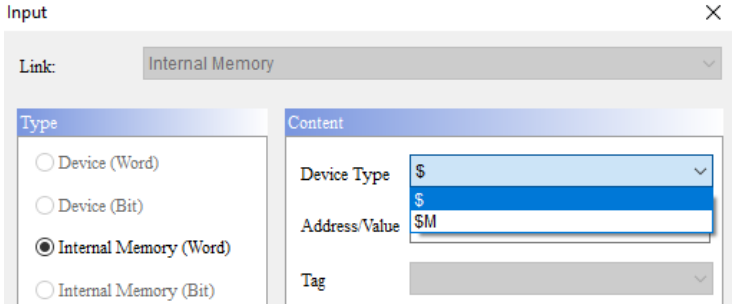
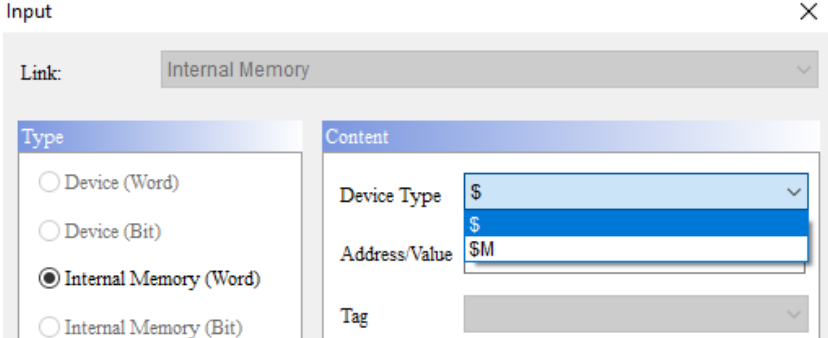
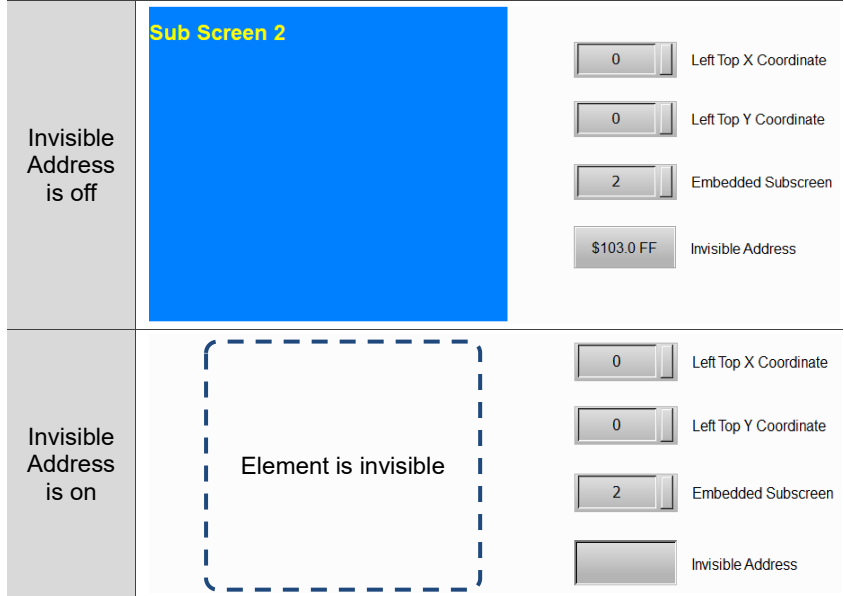
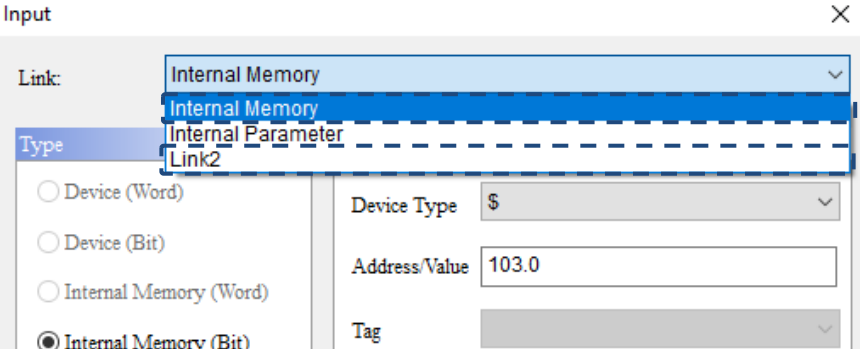


20

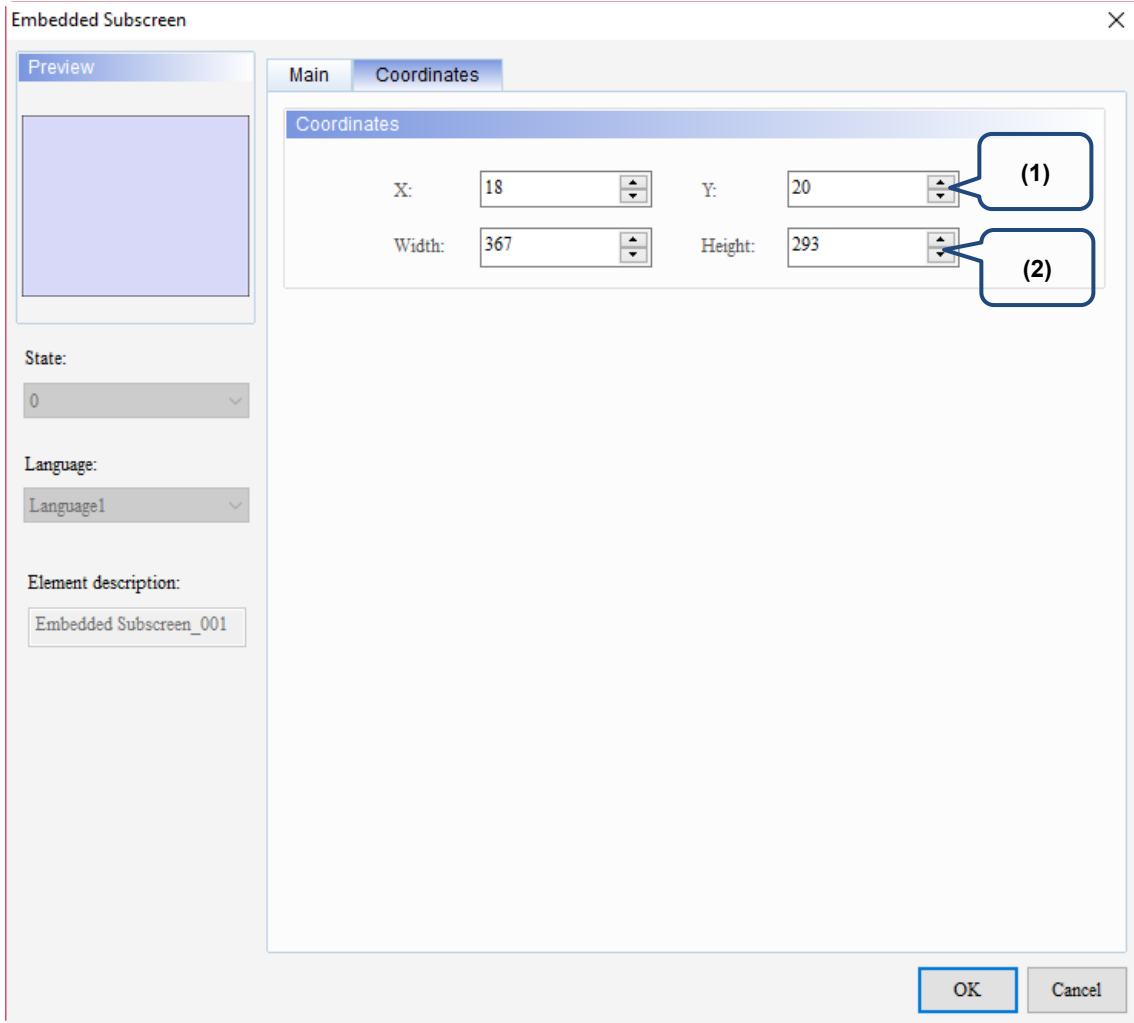
Figure 20.1.2 Main property page for the Embedded Subscreen element

No.	Property	Function description
(1)	LeftTop X-coordinate	<p>Set the element's X-axis position on the screen. Only internal memory address (Word) is supported.</p>

20

No.	Property	Function description
(2)	LeftTop Y-coordinate	<p>Set the element's Y-axis position on the screen. Only internal memory address (Word) is supported.</p> 
(3)	Embedded Subscreen	<p>Set the displaying subscreen number of the element. Only internal memory address (Word) is supported.</p> 
(4)	Invisible Address	<ul style="list-style-type: none"> When Invisible Address is set to On, the Embedded Subscreen element is invisible and you cannot execute its set functions.  <ul style="list-style-type: none"> The controller address (Bit) and the internal register address (Bit) are supported. 

■ Coordinates



20

Figure 20.1.3 Coordinates property page for the Embedded Subscreen element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	You can also set the width and height of the elements.

(This page is intentionally left blank.)

20













This chapter provides the usage and setting details for the Basic Shape elements.

21.1	Rhombus	21-3
21.2	Right Triangle	21-9
21.3	Pentagon	21-15
21.4	Pie Chart	21-21
21.5	Arc	21-27
21.6	Hexagon	21-33
21.7	Star Shape	21-39
21.8	Triangle	21-45
21.9	Hollow Circle	21-51
21.10	Stop Circle	21-57
21.11	1/4 Arc	21-63

DOPSoft provides you with the function to draw basic shapes. The following describes the properties of each Basic Shape element.

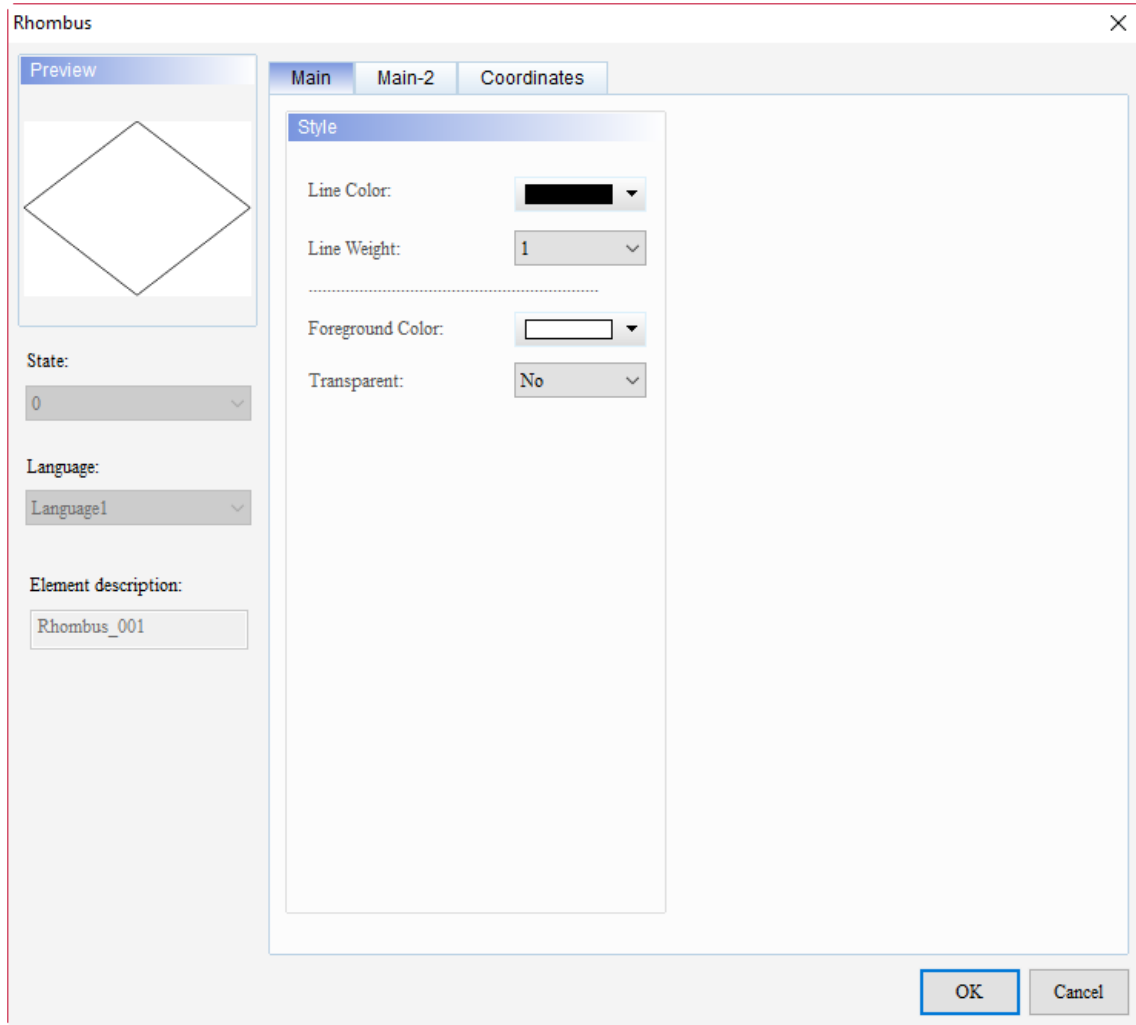
21

Basic Shape element classification:

Basic Shape 		Rhombus
		Right Triangle
		Pentagon
		Pie Chart
		Arc
		Hexagon
		Star Shape
		Triangle
		Hollow Circle
		Stop Circle
		1/4 Arc

21.1 Rhombus

When you double-click the Rhombus element, the property page is shown as follows.



21

Figure 21.1.1 Properties of Rhombus

Table 21.1.1 Function page of Rhombus

Rhombus	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

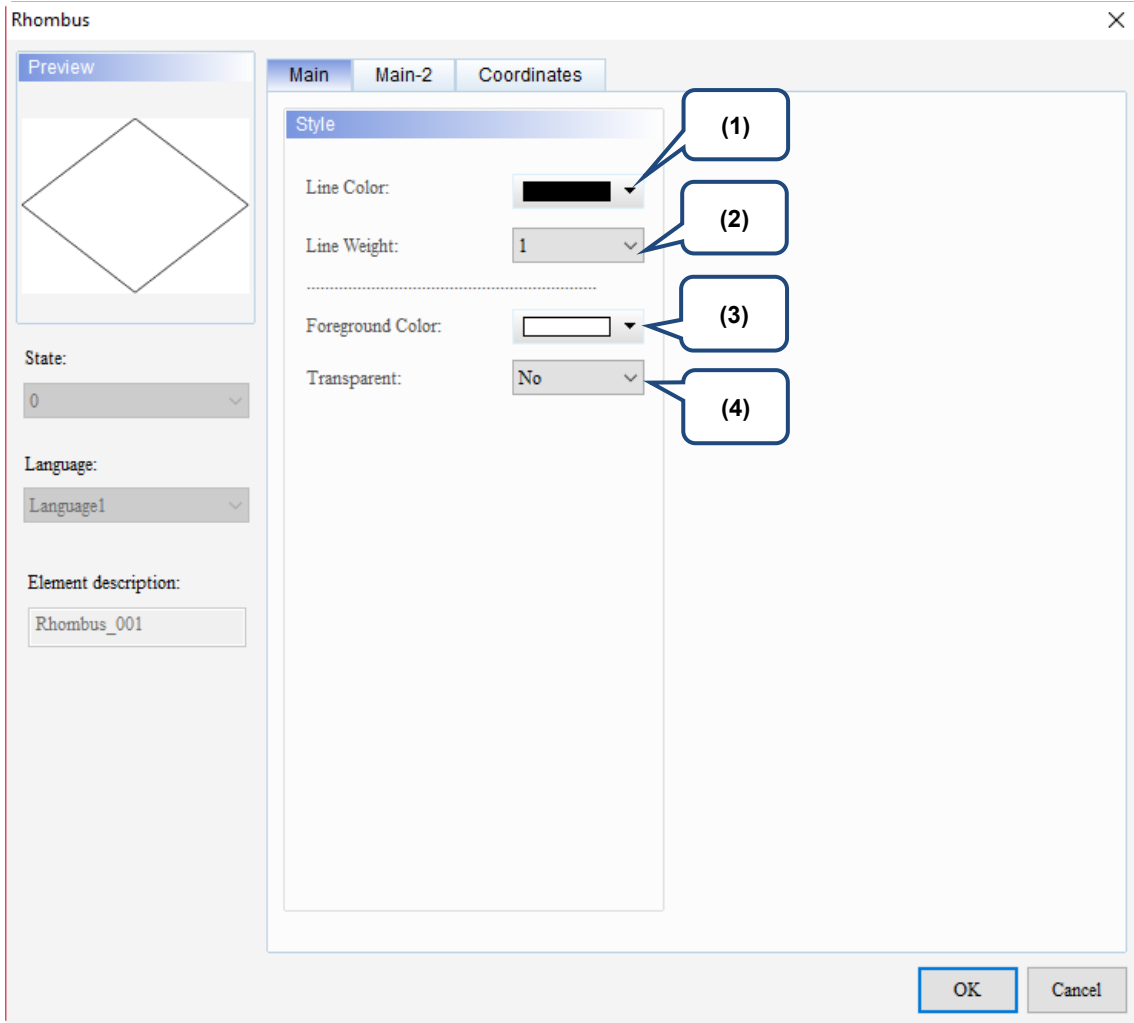
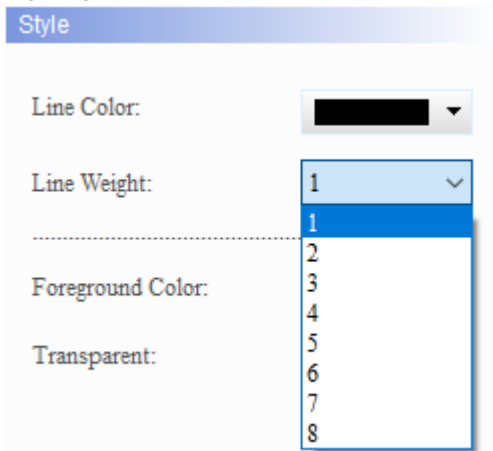
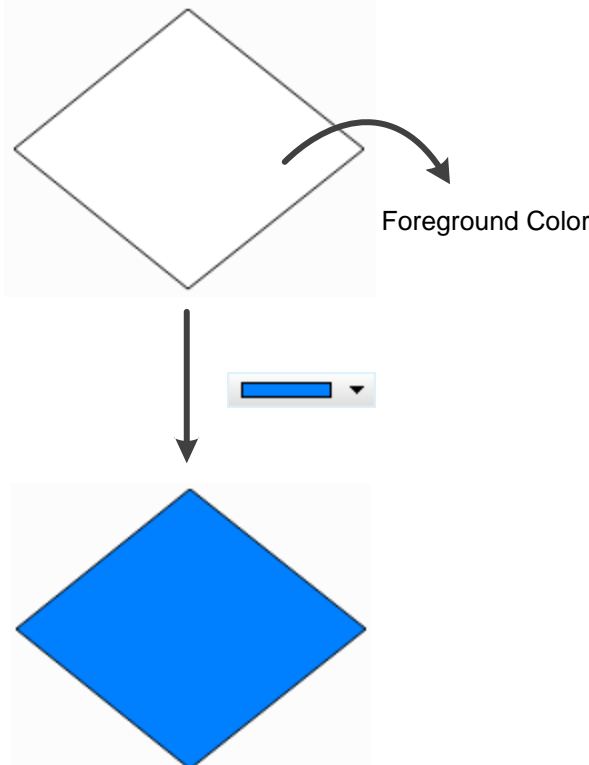
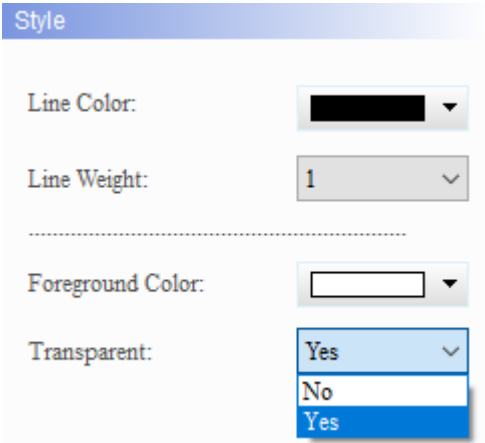
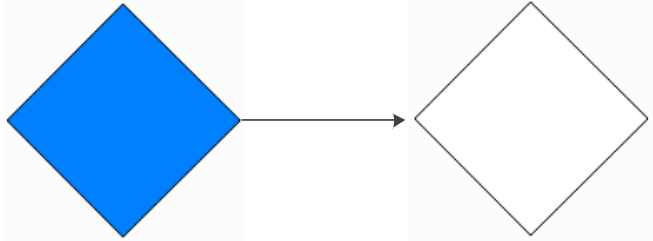
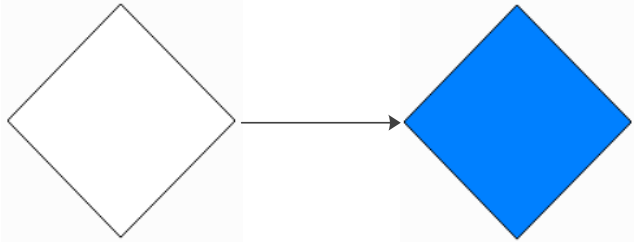
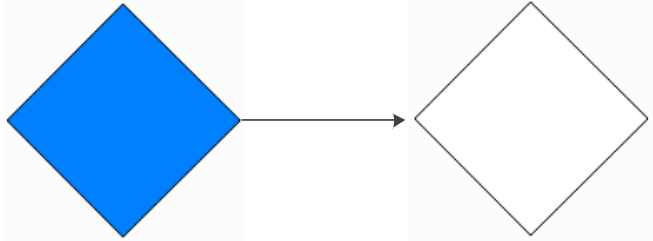
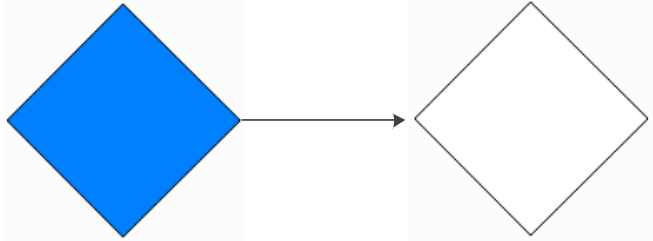
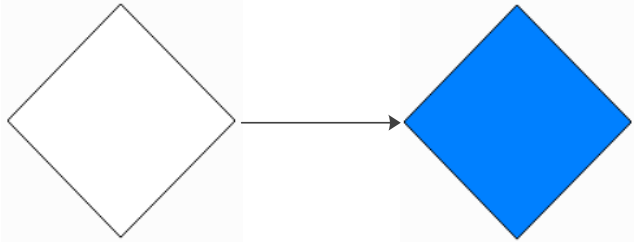


Figure 21.1.2 Main property page for the Rhombus element

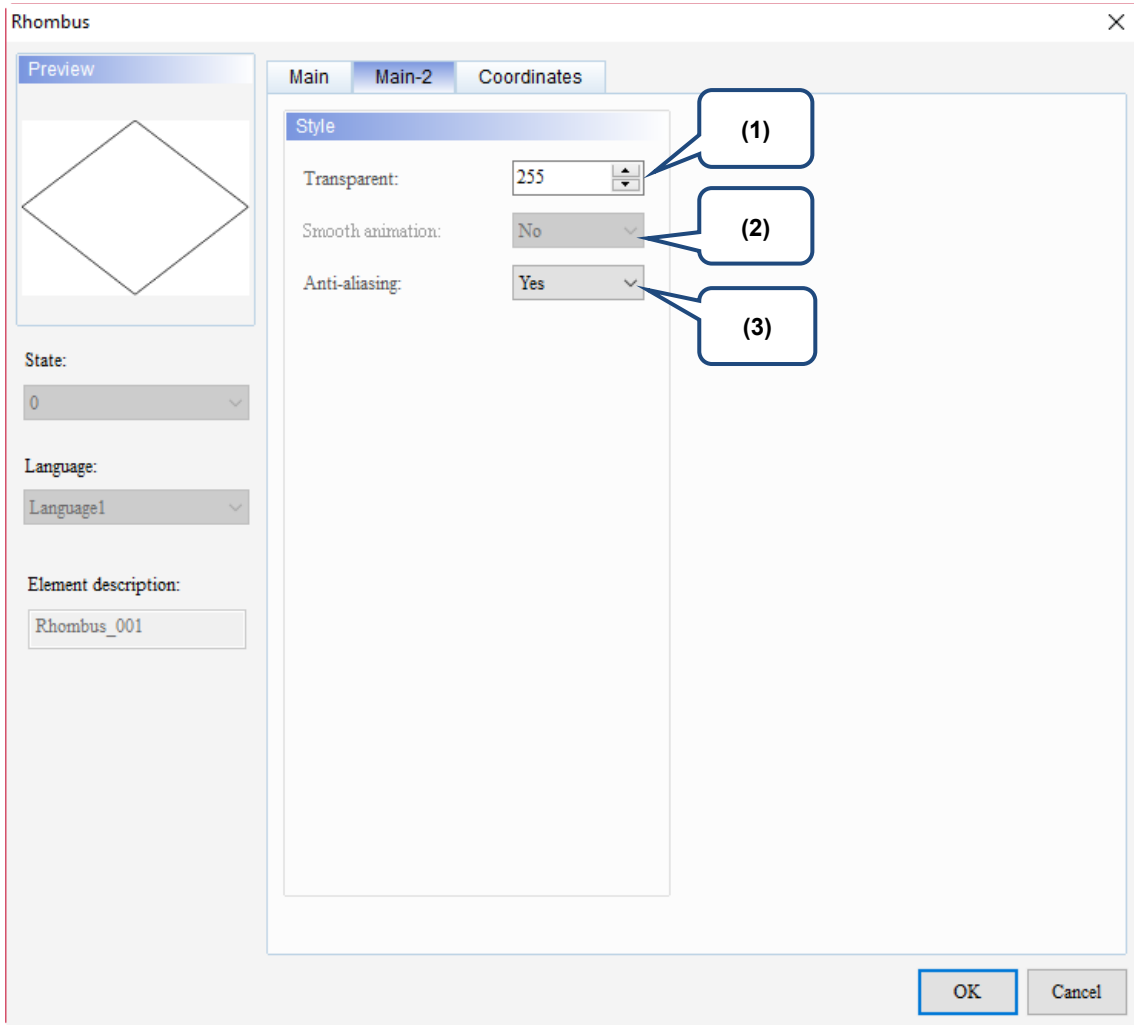
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p> <p>The 'Color' dialog box shows a grid of 'Basic colors(B)' with the black color selected. To the right is a color wheel and a vertical slider. Below the wheel are input fields for Hue(E): 160, Red(R): 0, Sat(S): 0, Green(G): 0, Lum(L): 0, and Blue(U): 0. There are also 'Color Solid(O)', 'Add Custom Colors(A)', 'OK', and 'Cancel' buttons.</p>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

21

No.	Property	Function description		
(4)	Transparent	<ul style="list-style-type: none"> You can select Yes or No for this function.  <ul style="list-style-type: none"> If you select Yes, the foreground color of the Rhombus element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed. 		
		<table border="1"> <tr> <td>Transparent is Yes</td> <td>  </td> </tr> <tr> <td>Transparent is No</td> <td>  </td> </tr> </table>	Transparent is Yes	
Transparent is Yes				
Transparent is No				

■ Main-2



21

Figure 21.1.3 Main-2 property page for the Rhombus element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates

21

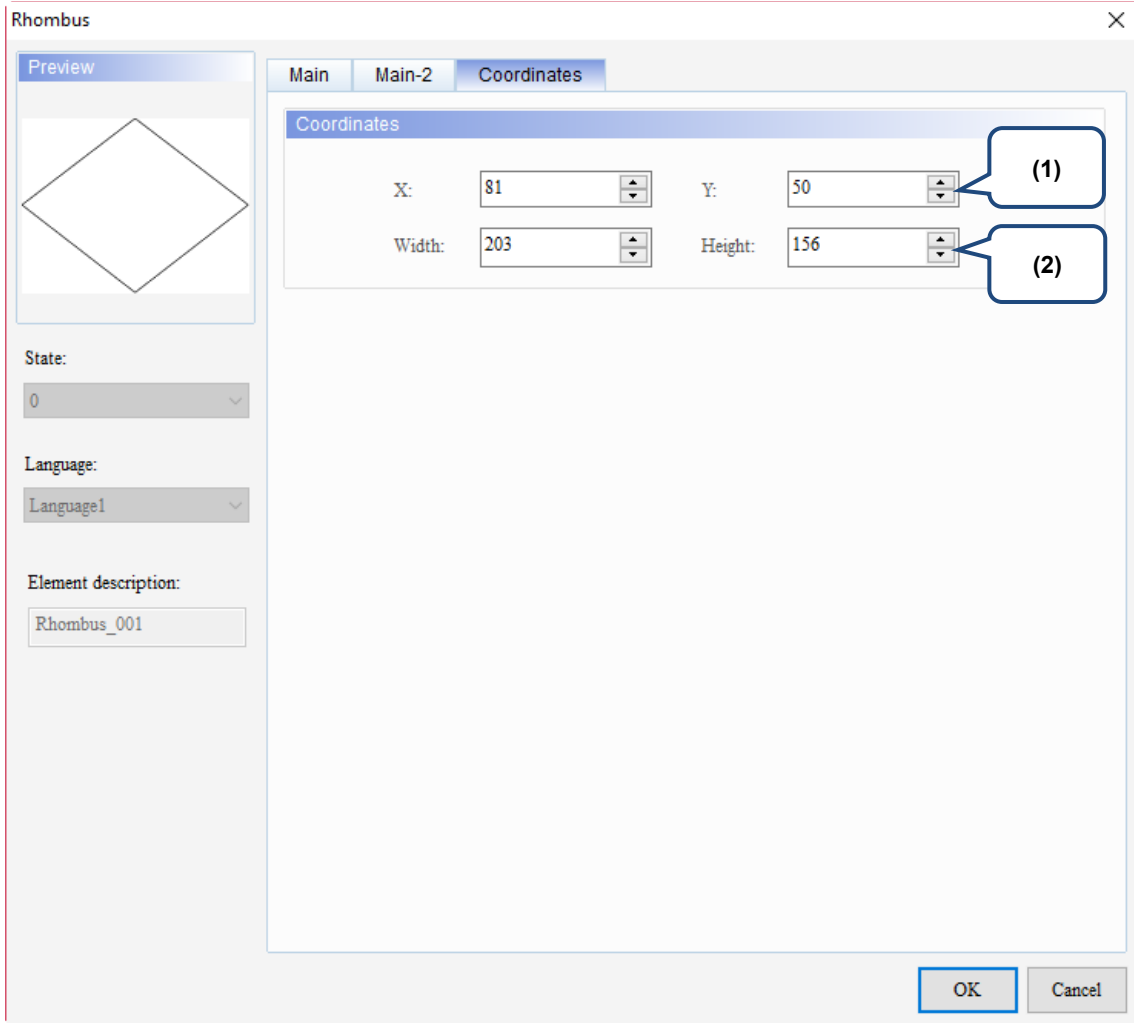
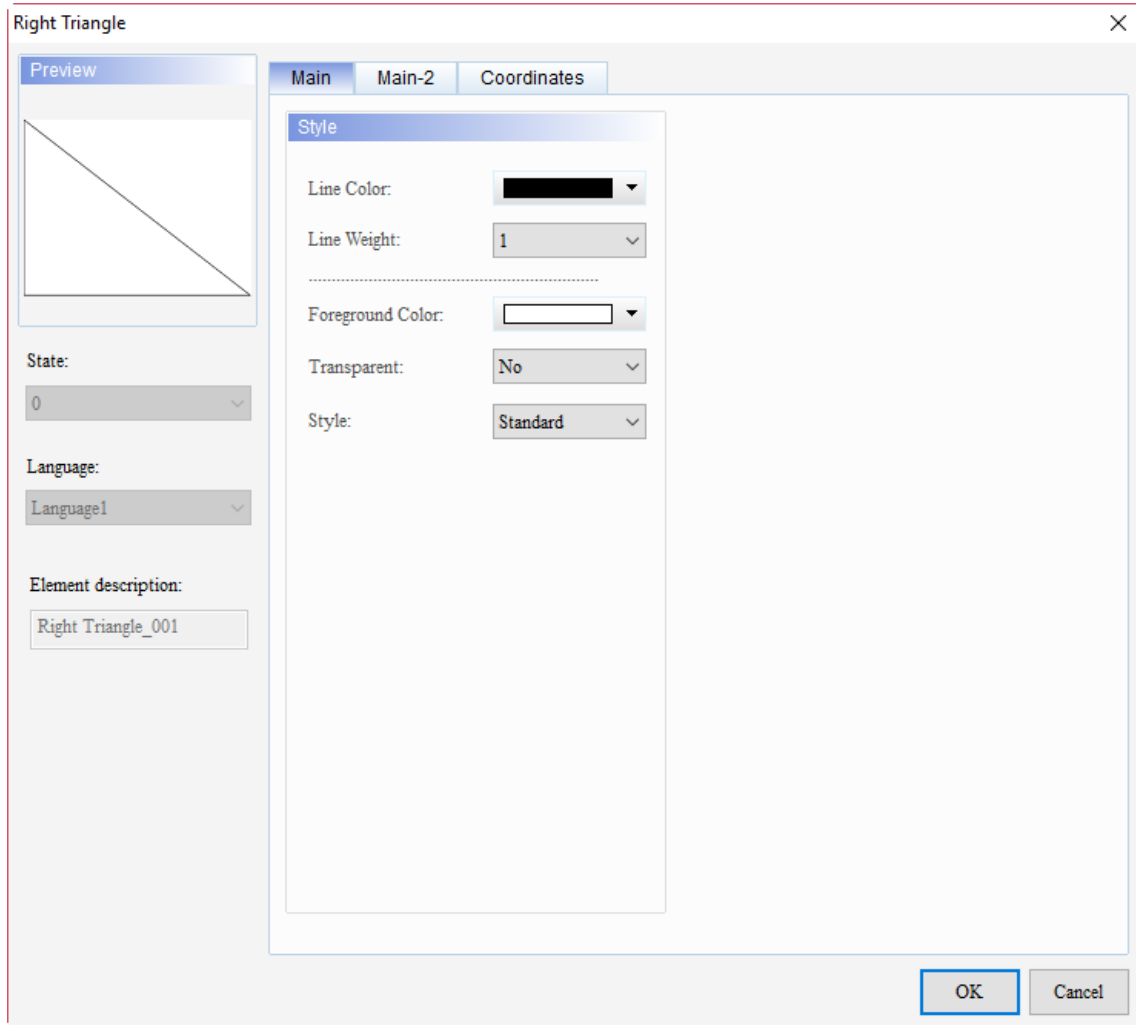


Figure 21.1.4 Coordinates property page for the Rhombus element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.2 Right Triangle

When you double-click the Right Triangle element, the property page is shown as follows.



21

Figure 21.2.1 Properties of Right Triangle

Table 21.2.1 Function page of Right Triangle

Right Triangle	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, Transparent, and Style.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

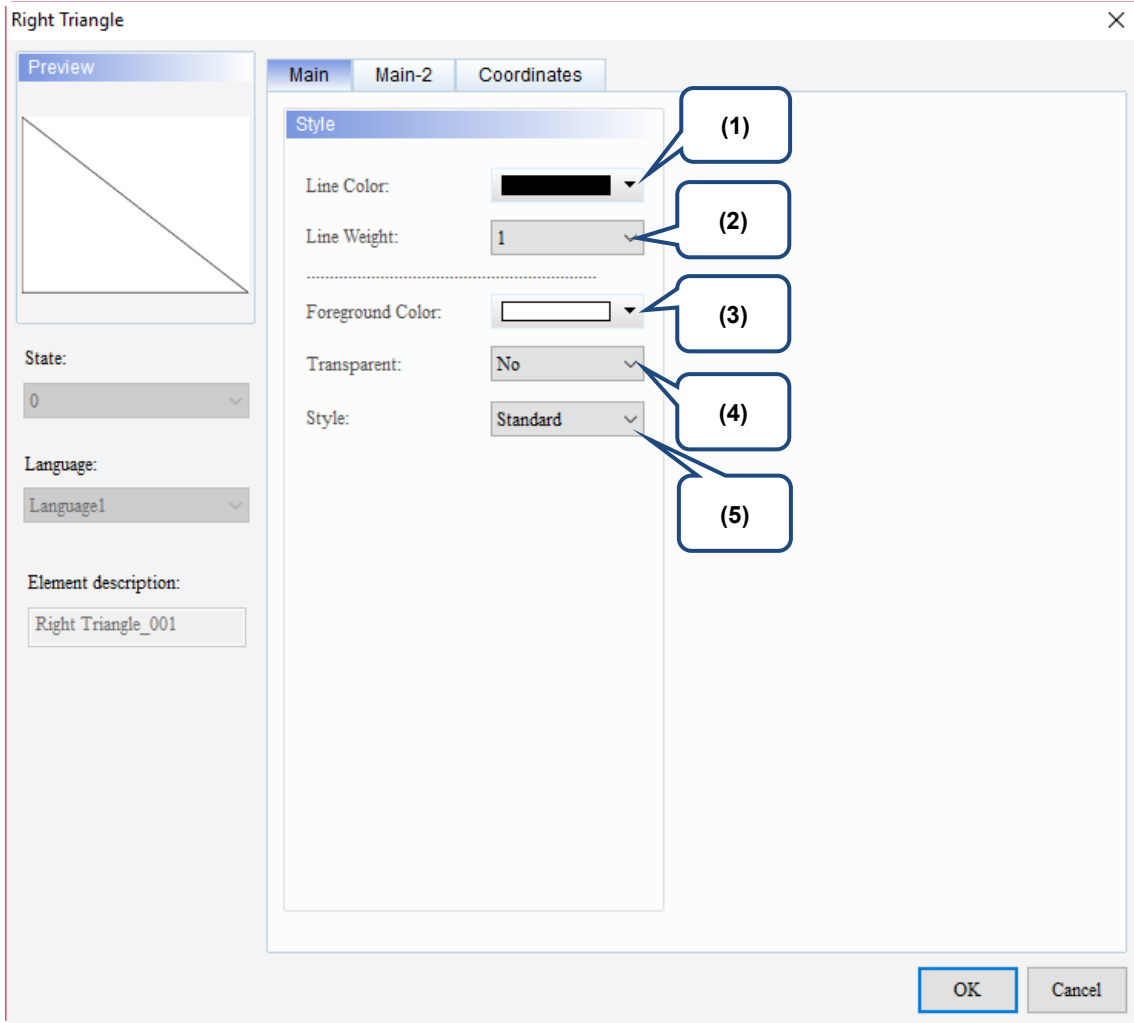
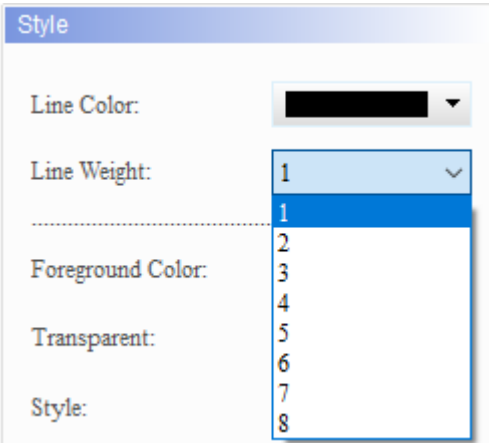
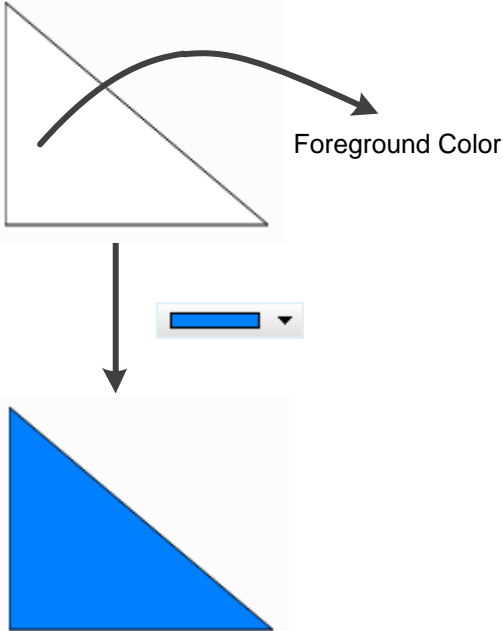
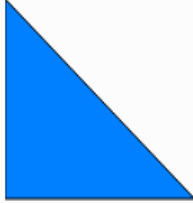

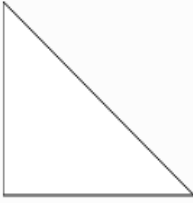
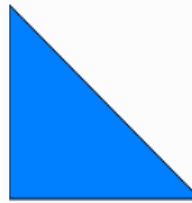
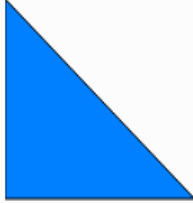

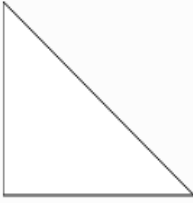
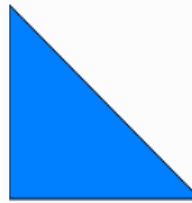
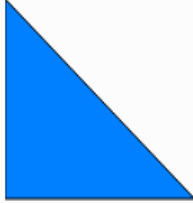

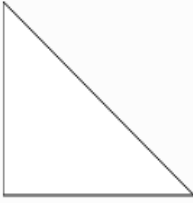
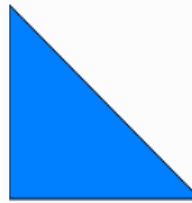
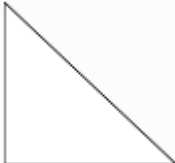
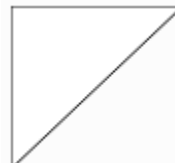


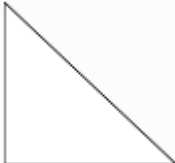
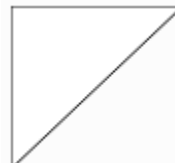


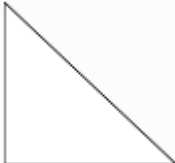
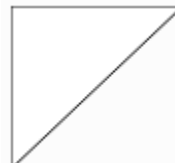




Figure 21.2.2 Main property page for the Right Triangle element

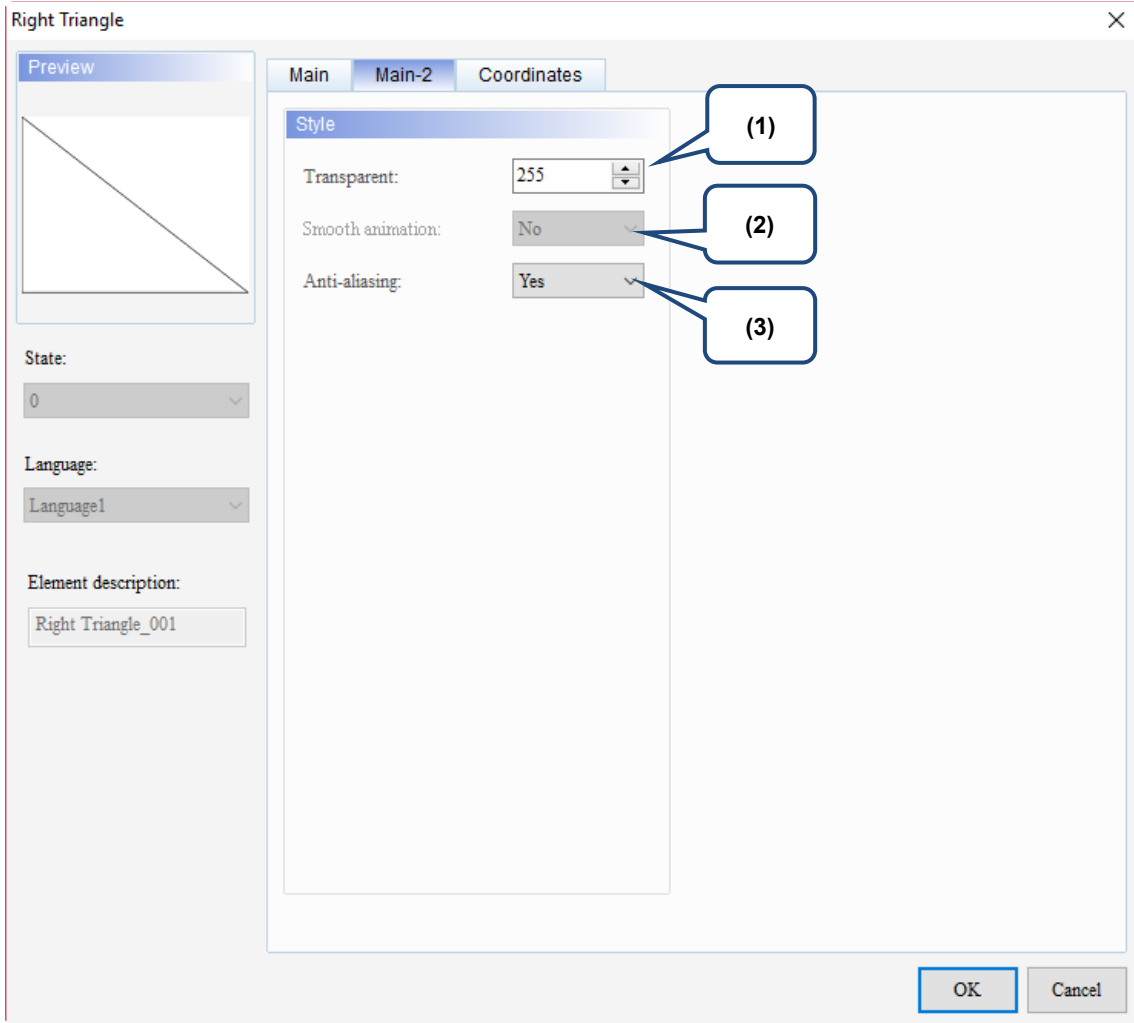
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p> <p>The 'Color' dialog box includes: <ul style="list-style-type: none"> Basic colors(B): A grid of 24 color swatches. Custom colors(C): A grid of 12 empty color swatches. HMI Colors(H): Radio buttons for 'Decimal' (selected) and 'Hexadecimal', with a value field set to '0'. A large color selection area with a rainbow gradient and a vertical grayscale bar. Color Solid(O) section with Hue(E) set to 160, Red(R) 0, Sat(S) 0, Green(G) 0, Lum(L) 0, and Blue(U) 0. An 'Add Custom Colors(A)' button. 'OK' and 'Cancel' buttons at the bottom. </p>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

21

No.	Property	Function description								
(4)	Transparent	<p>■ You can select Yes or No for this function.</p> <div style="border: 1px solid gray; padding: 5px;"> <p>Style</p> <p>Line Color: <input type="color" value="black"/></p> <p>Line Weight: <input type="text" value="1"/></p> <hr/> <p>Foreground Color: <input type="color" value="white"/></p> <p>Transparent: <input type="text" value="No"/></p> <p>Style: <input type="text" value="No"/></p> </div> <p>■ If you select Yes, the foreground color of the Right Triangle element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Transparent is Yes</td> <td></td> <td>→</td> <td></td> </tr> <tr> <td>Transparent is No</td> <td></td> <td>→</td> <td></td> </tr> </table>	Transparent is Yes		→		Transparent is No		→	
Transparent is Yes		→								
Transparent is No		→								
(5)	Style	<p>The available styles are Standard, Rotation 90, Rotation 180, and Rotation 270.</p> <div style="border: 1px solid gray; padding: 5px;"> <p>Style</p> <p>Line Color: <input type="color" value="black"/></p> <p>Line Weight: <input type="text" value="1"/></p> <hr/> <p>Foreground Color: <input type="color" value="white"/></p> <p>Transparent: <input type="text" value="No"/></p> <p>Style: <input type="text" value="Standard"/></p> </div> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Standard</th> <th>Rotation 90</th> <th>Rotation 180</th> <th>Rotation 270</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Rotation 90	Rotation 180	Rotation 270				
Standard	Rotation 90	Rotation 180	Rotation 270							
										

■ Main-2



21

Figure 21.2.3 Main-2 property page for the Right Triangle element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates

21

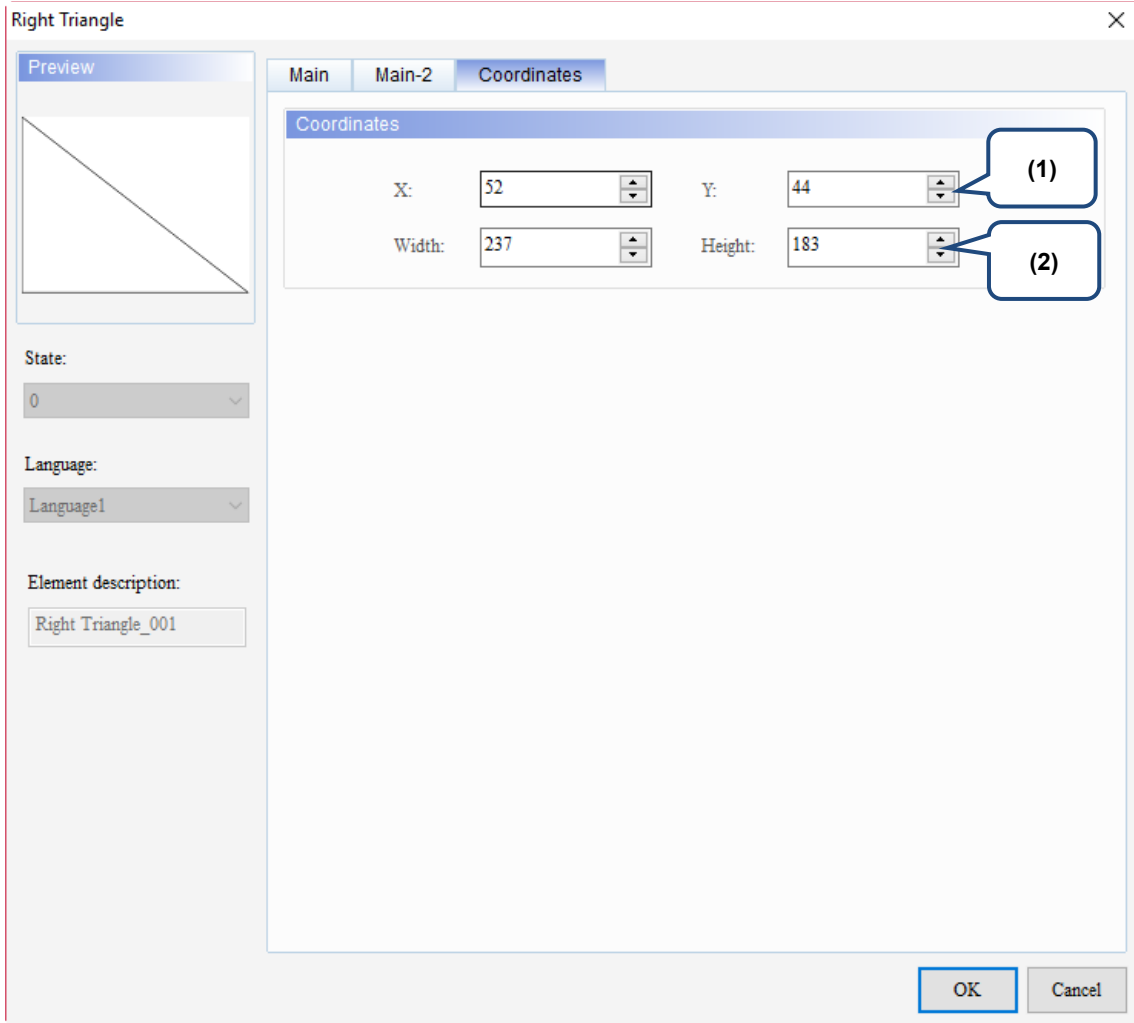
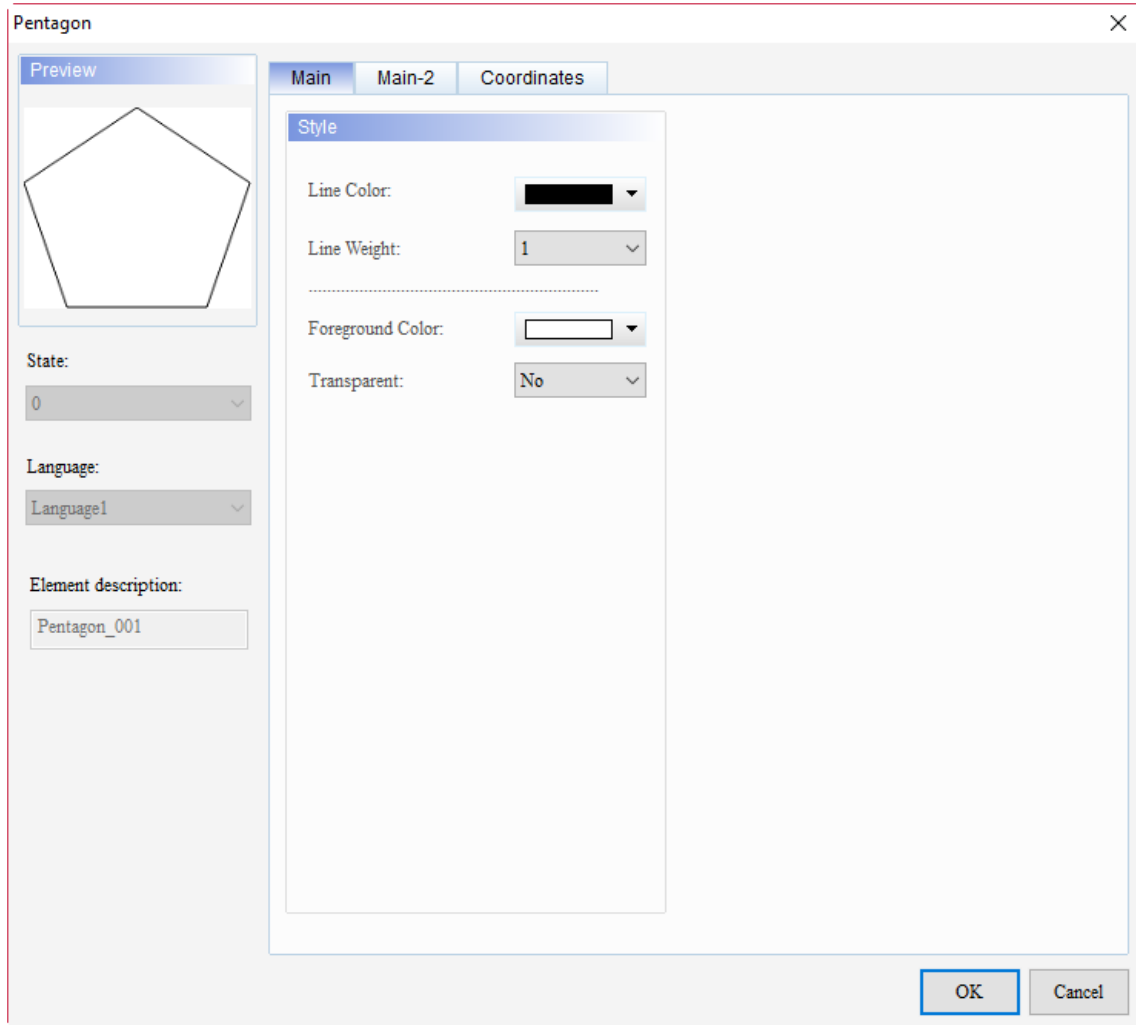


Figure 21.2.4 Coordinates property page for the Right Triangle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.3 Pentagon

When you double-click the Pentagon element, the property page is shown as follows.



21

Figure 21.3.1 Properties of Pentagon

Table 21.3.1 Function page of Pentagon

Pentagon	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

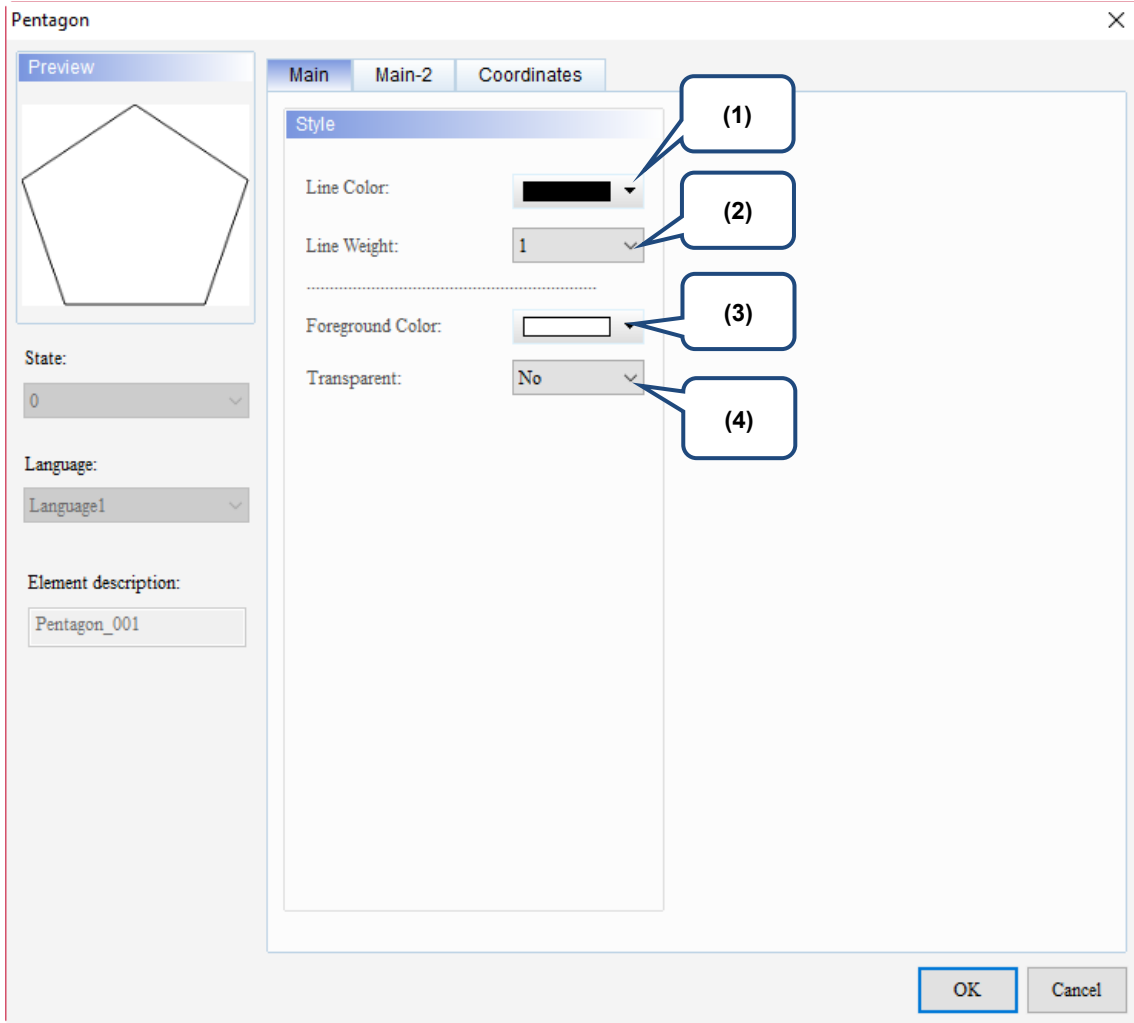
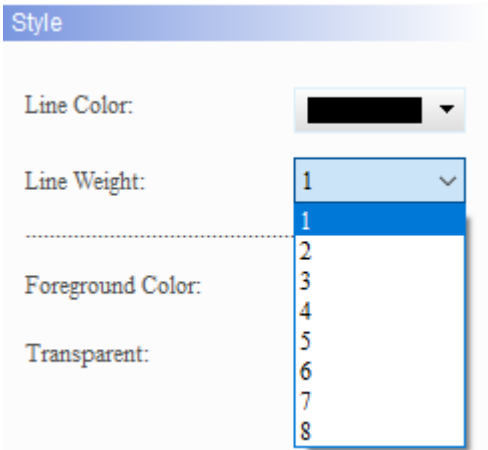
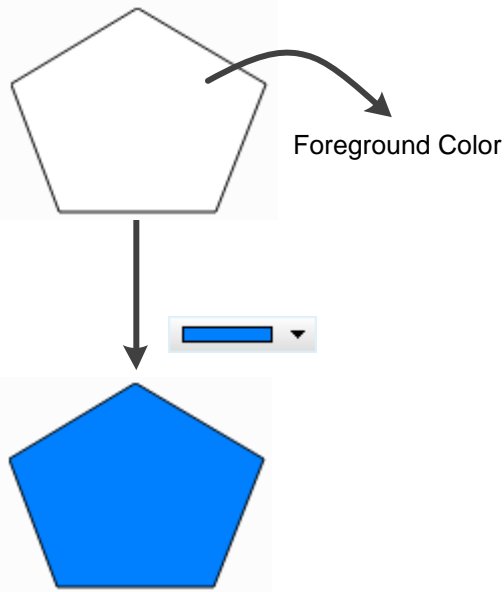
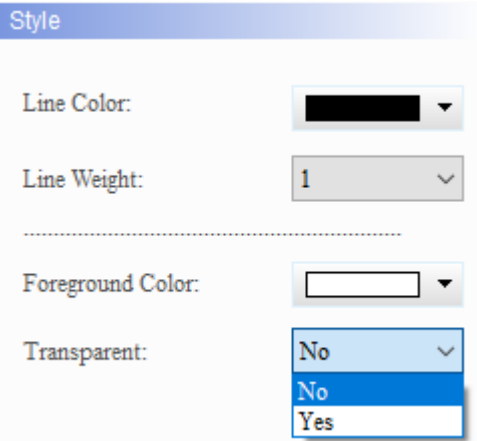
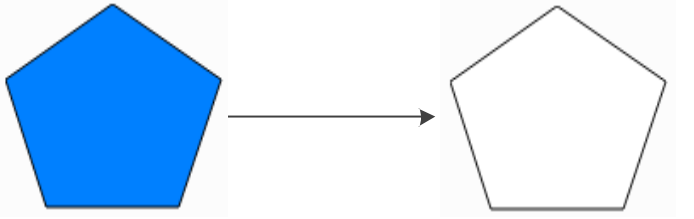
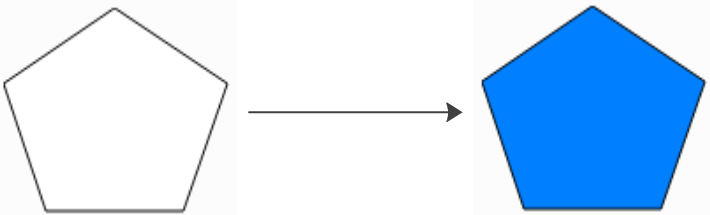
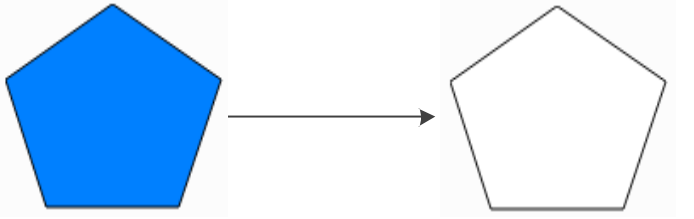
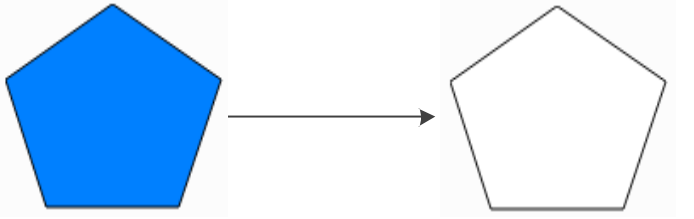
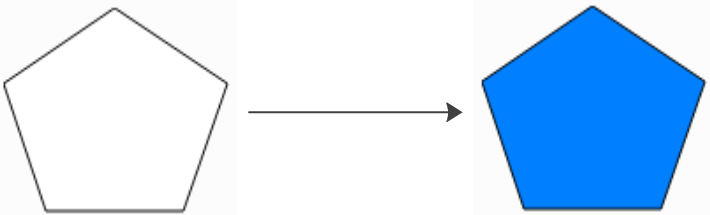


Figure 21.3.2 Main property page for the Pentagon element

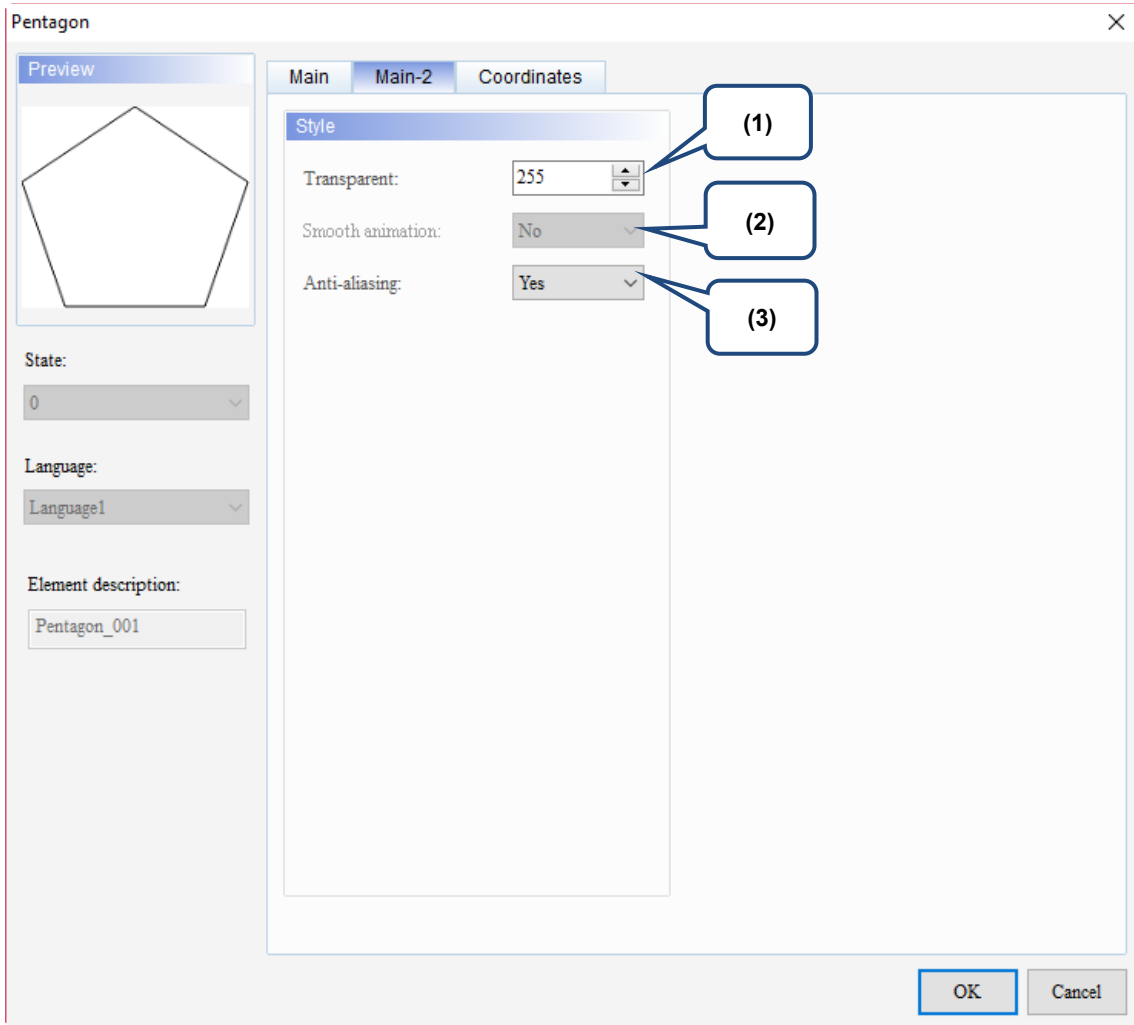
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

21

No.	Property	Function description		
(4)	Transparent	<p>■ You can select Yes or No for this function.</p>  <p>■ If you select Yes, the foreground color of the Pentagon element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p>		
		<table border="1"> <tr> <td>Transparent is Yes</td> <td>  </td> </tr> <tr> <td>Transparent is No</td> <td>  </td> </tr> </table>	Transparent is Yes	
Transparent is Yes				
Transparent is No				

■ Main-2



21

Figure 21.3.3 Main-2 property page for the Pentagon element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

21

Coordinates

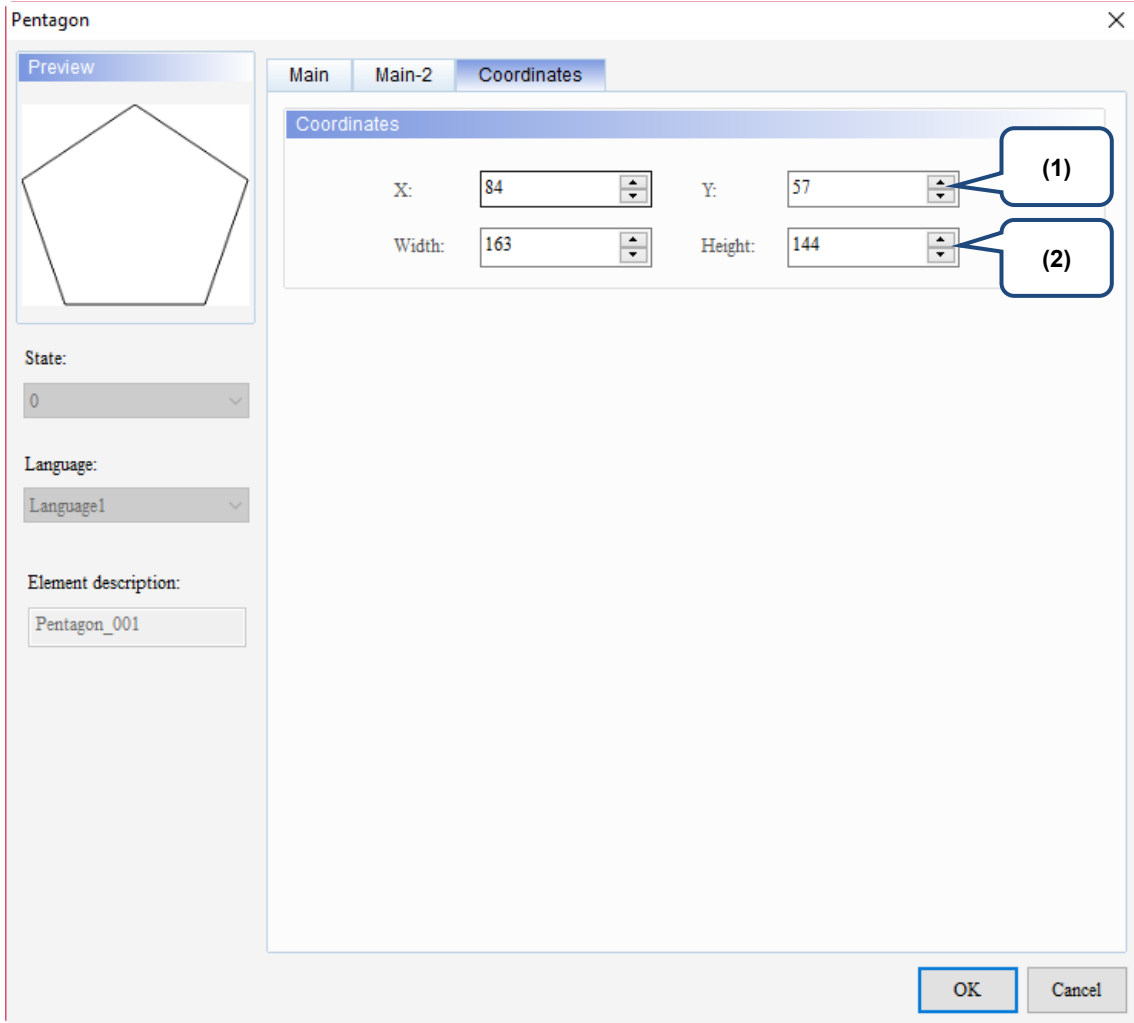
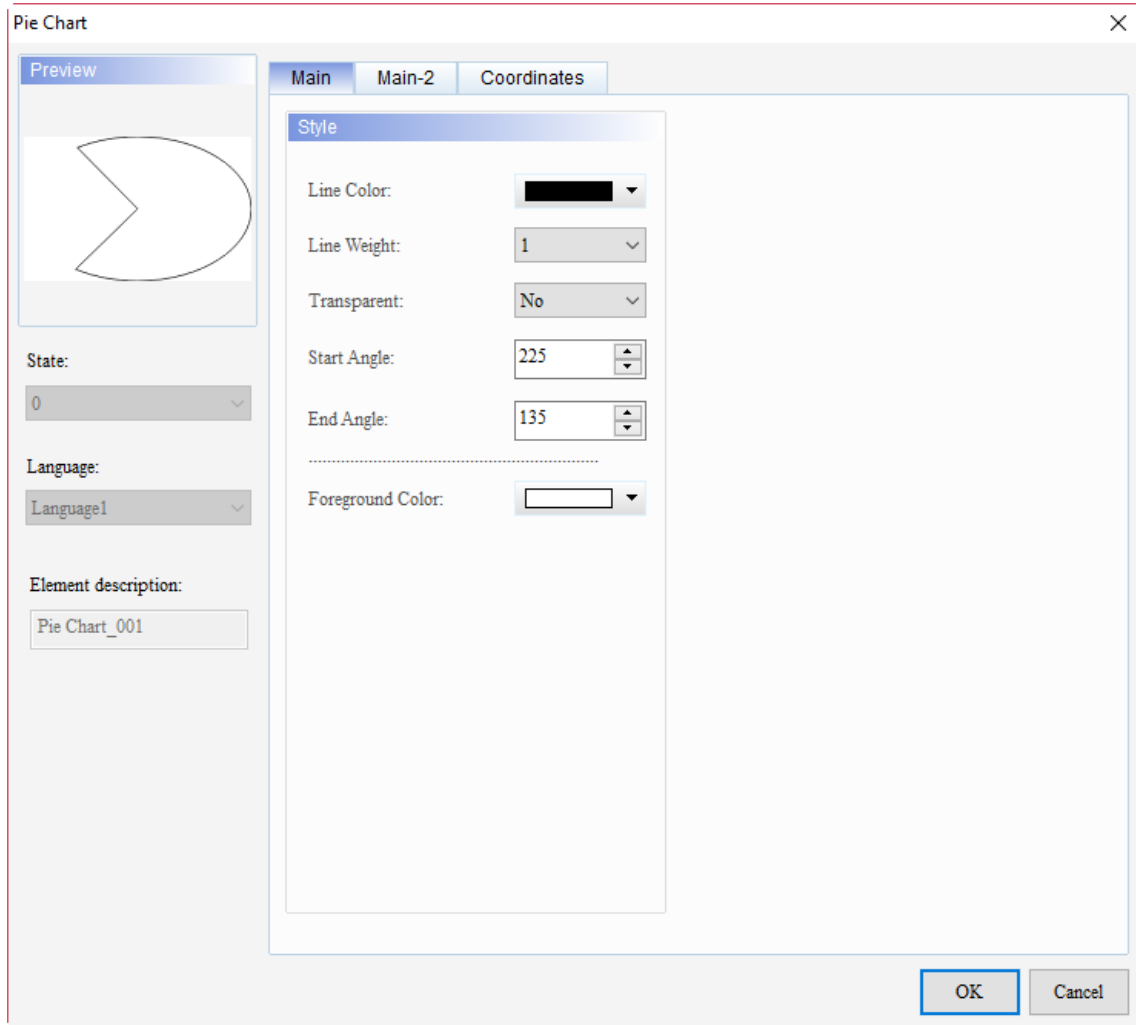


Figure 21.3.4 Coordinates property page for the Pentagon element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.4 Pie Chart

When you double-click the Pie Chart element, the property page is shown as follows.



21

Figure 21.4.1 Properties of Pie Chart

Table 21.4.1 Function page of Pie Chart

Pie Chart	
Function page	Description
Main	Set the Line Color, Line Weight, Transparent, Start Angle, End Angle, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

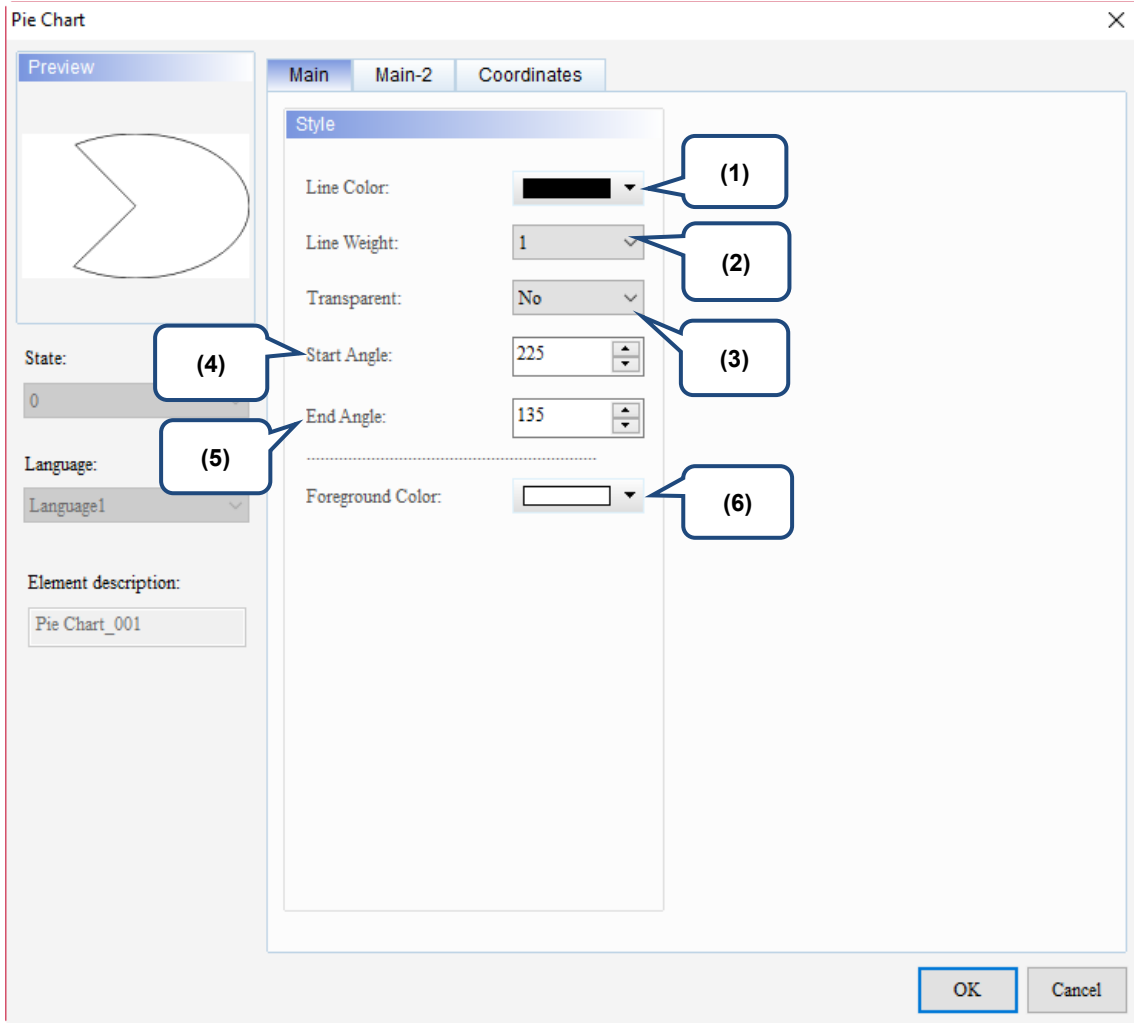
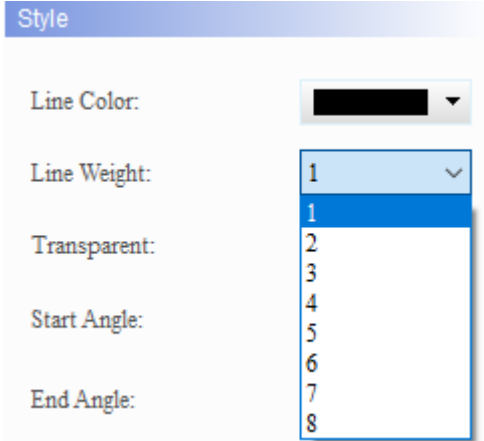
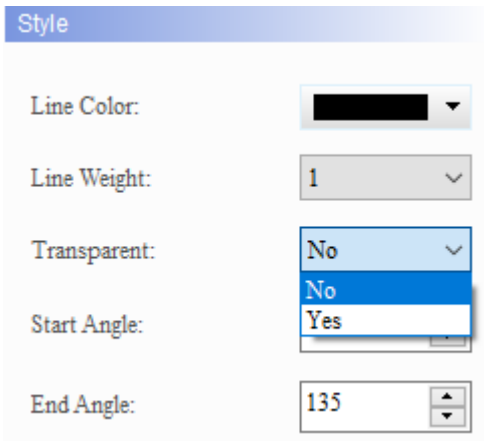
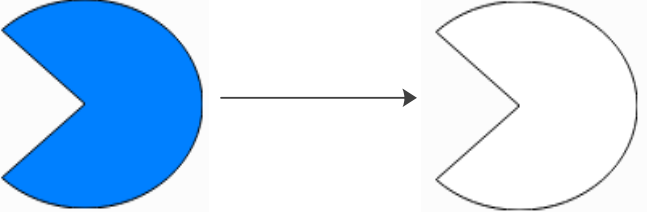
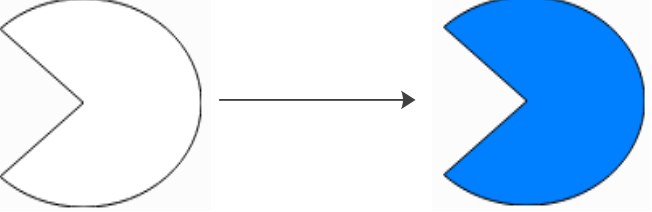
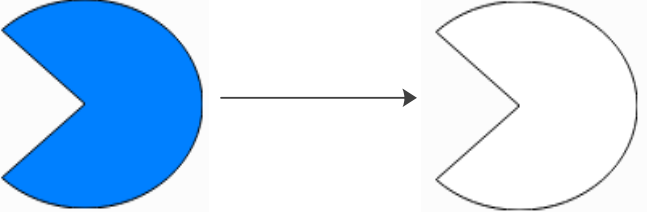
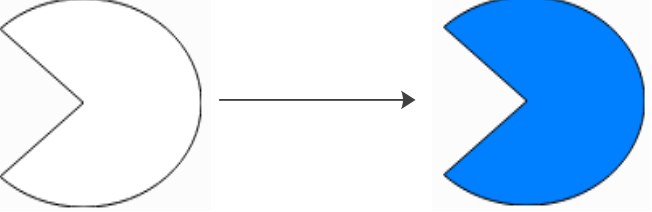
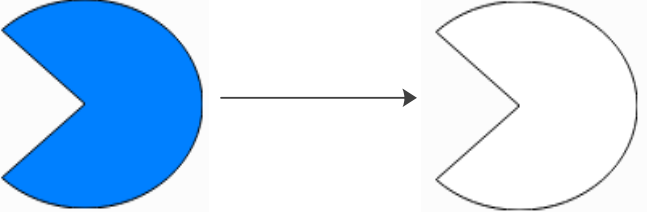
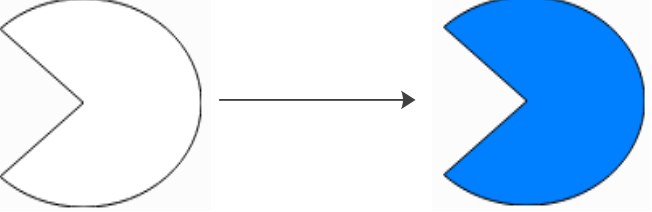
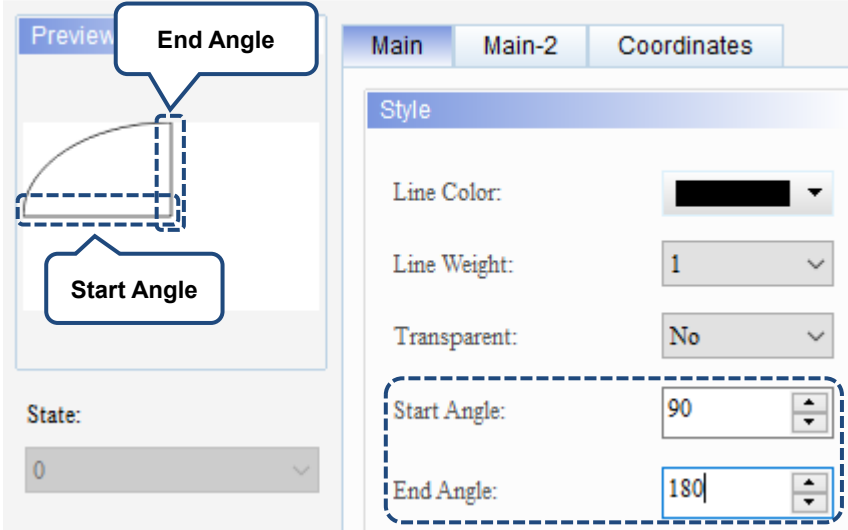
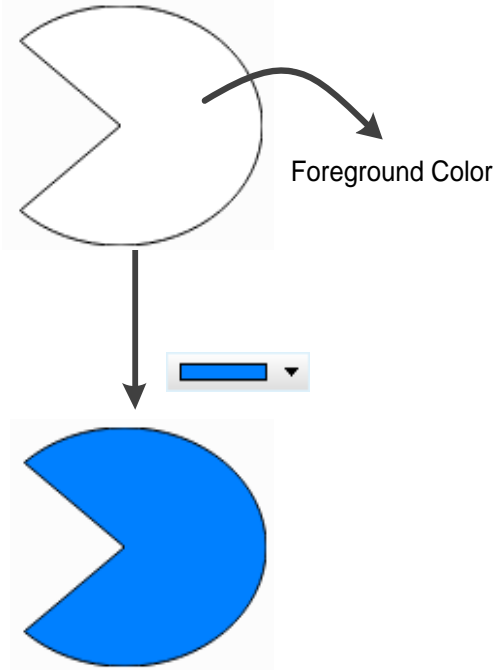


Figure 21.4.2 Main property page for the Pie Chart element

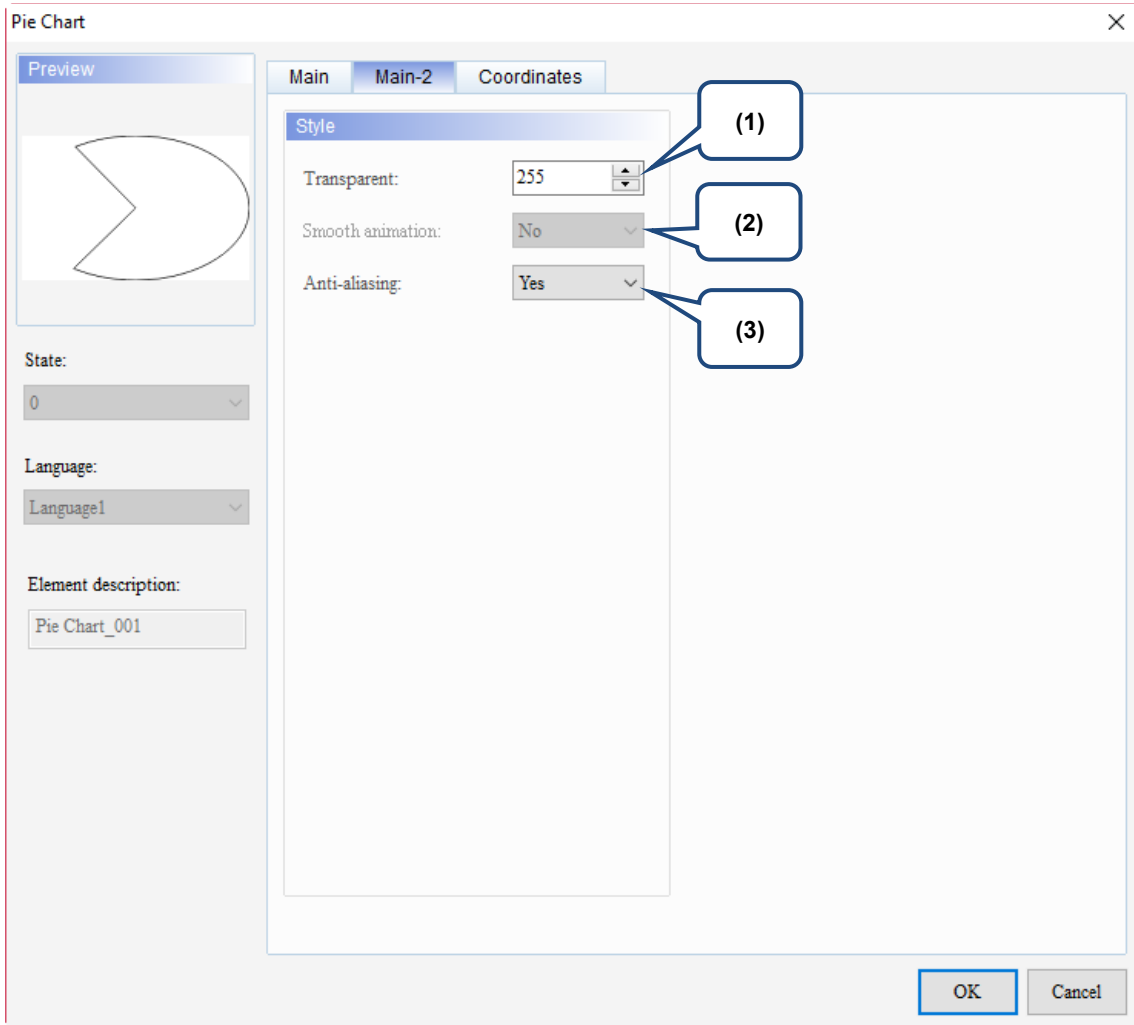
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description				
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 				
(3)	Transparent	<ul style="list-style-type: none"> You can select Yes or No for this function.  <ul style="list-style-type: none"> If you select Yes, the foreground color of the Pie Chart element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed. <table border="1"> <tr> <td>Transparent is Yes</td> <td>  </td> </tr> <tr> <td>Transparent is No</td> <td>  </td> </tr> </table>	Transparent is Yes		Transparent is No	
Transparent is Yes						
Transparent is No						

21

No.	Property	Function description
(4)	Start Angle	<p>You can set the opening angle for the Pie Chart with the Start Angle and End Angle settings.</p> <p>Pie Chart</p> 
(5)	End Angle	<p>Set the foreground color of the element.</p> 

■ Main-2



21

Figure 21.4.3 Main-2 property page for the Pie Chart element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates

21

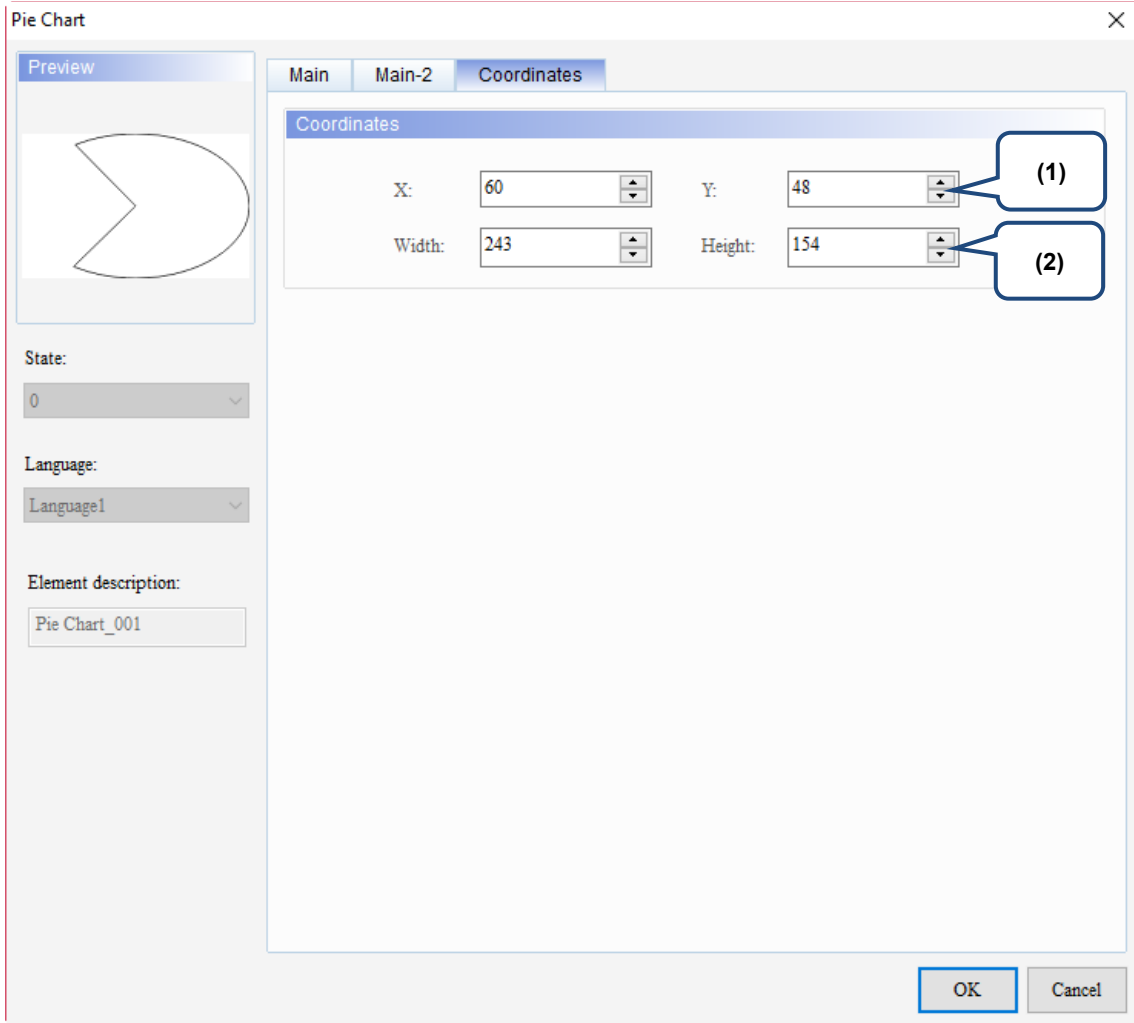
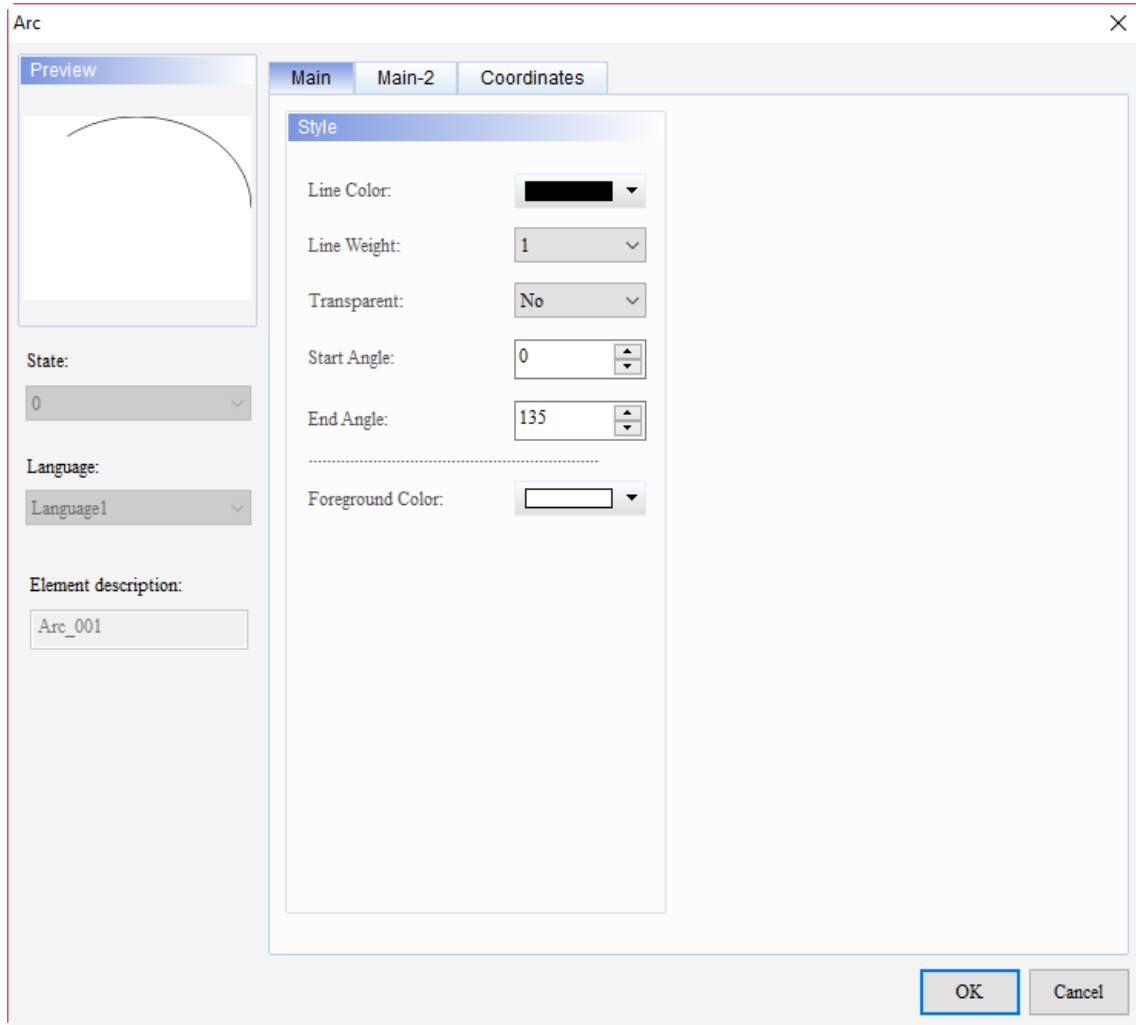


Figure 21.4.4 Coordinates property page for the Pie Chart element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.5 Arc

When you double-click the Arc element, the property page is shown as follows.



21

Figure 21.5.1 Properties of Arc

Table 21.5.1 Function page of Arc

Arc	
Function page	Description
Main	Set the Line Color, Line Weight, Transparent, Start Angle, End Angle, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

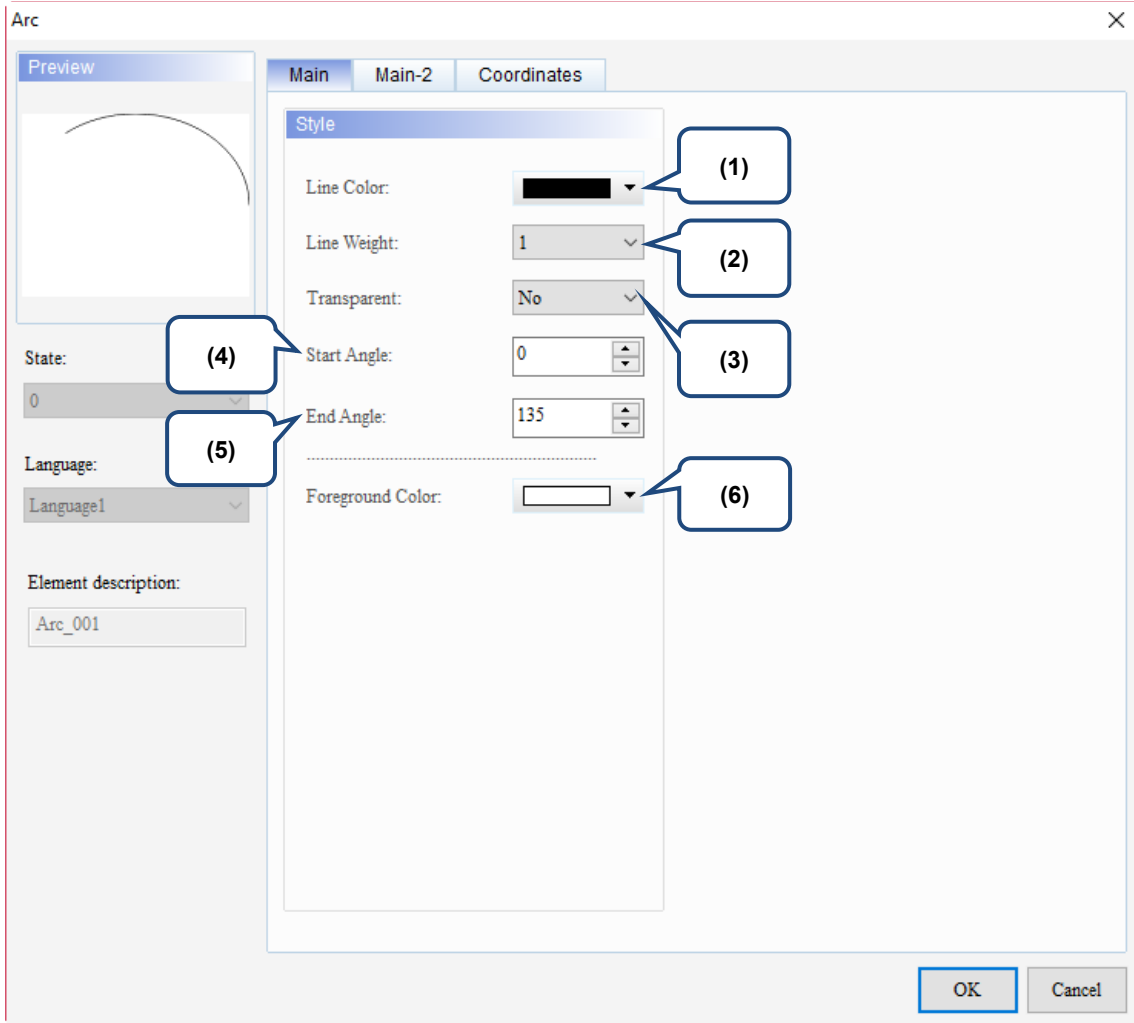
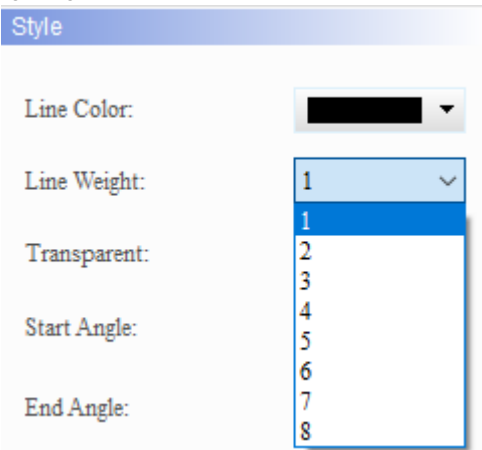
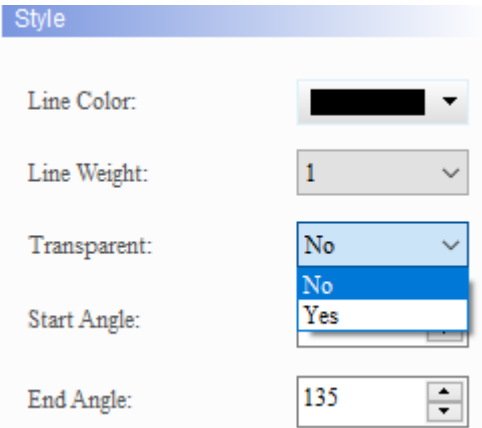
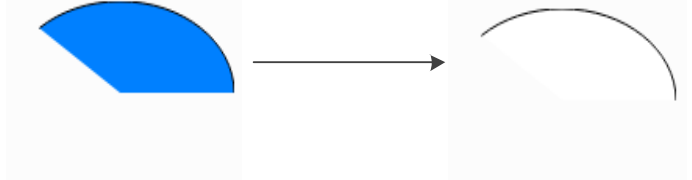
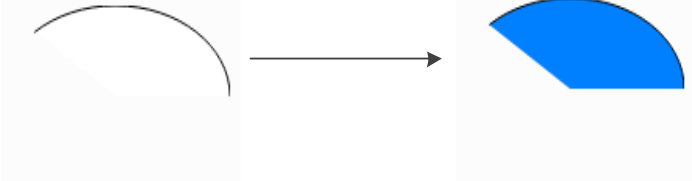
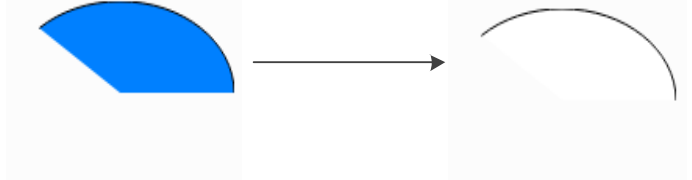
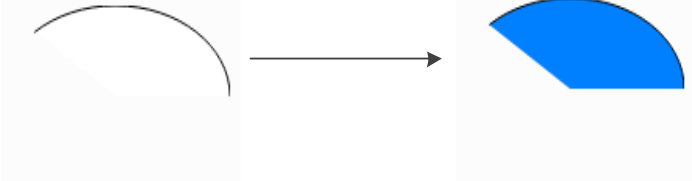
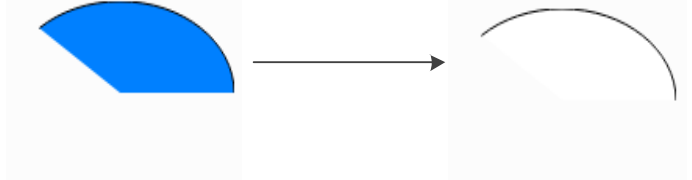
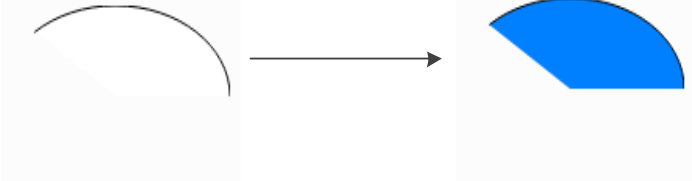
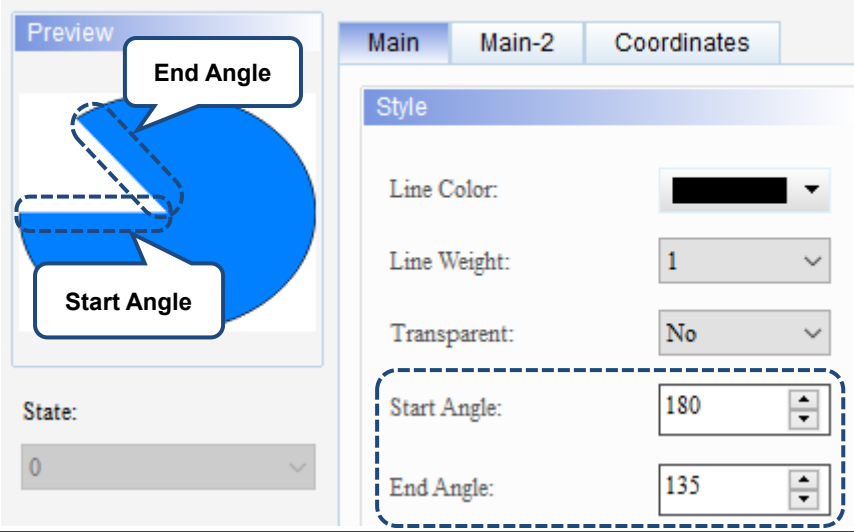
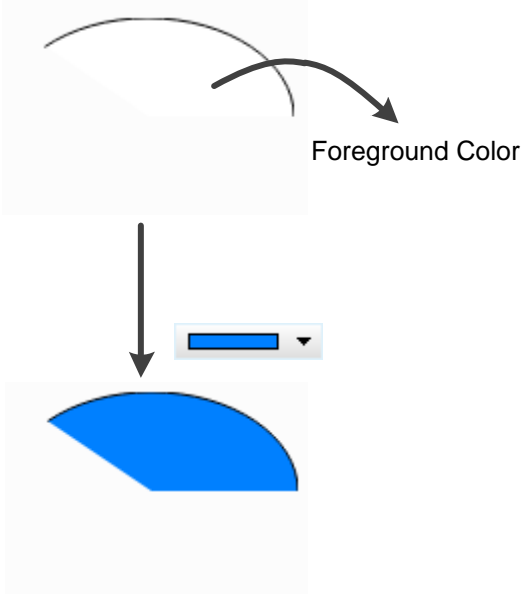


Figure 21.5.2 Main property page for the Arc element

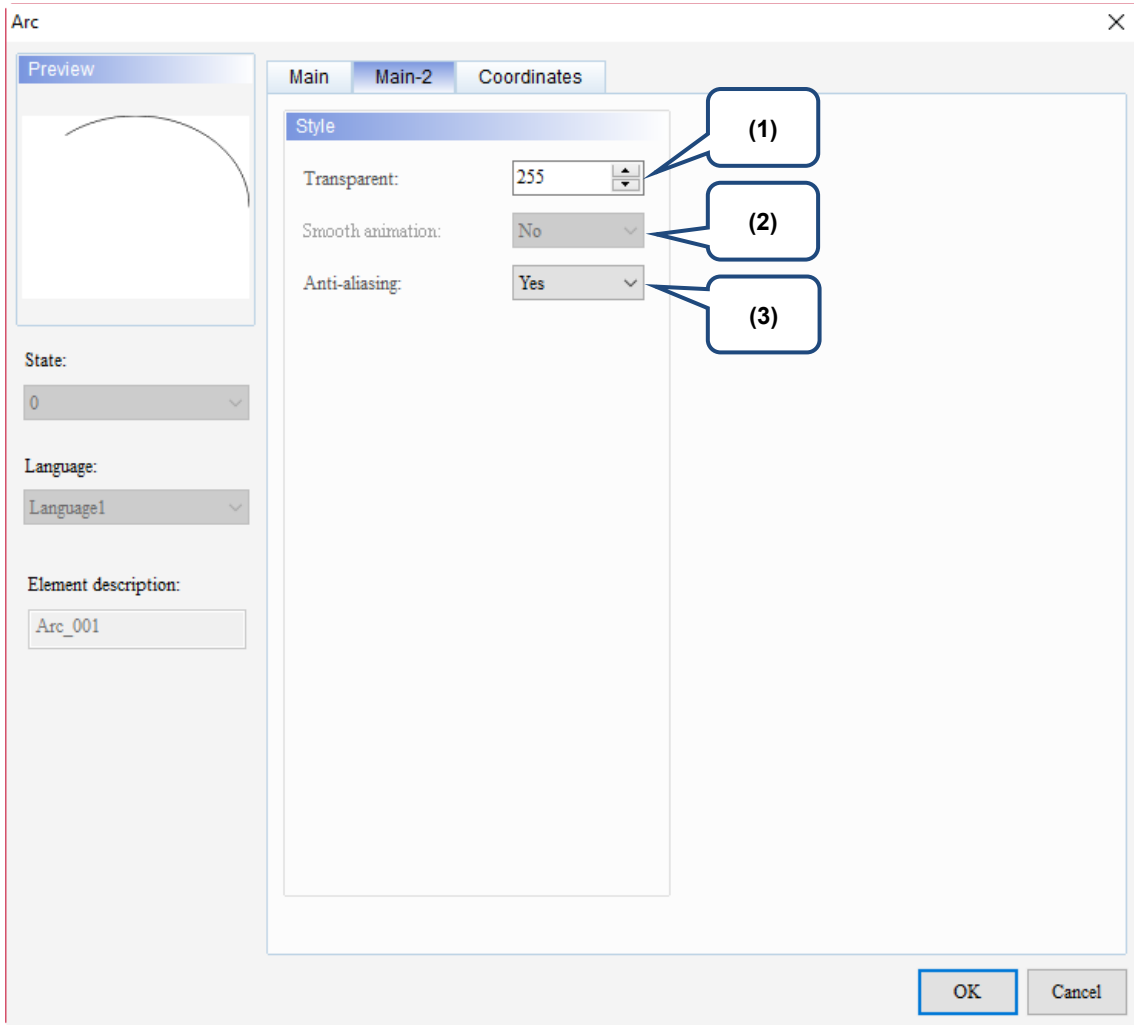
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description				
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 				
(3)	Transparent	<ul style="list-style-type: none"> You can select Yes or No for this function.  <ul style="list-style-type: none"> If you select Yes, the foreground color of the Arc element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed. <table border="1"> <tr> <td>Transparent is Yes</td> <td>  </td> </tr> <tr> <td>Transparent is No</td> <td>  </td> </tr> </table>	Transparent is Yes		Transparent is No	
Transparent is Yes						
Transparent is No						

21

No.	Property	Function description
(4)	Start Angle	<p>You can set the opening angle for the Arc with the Start Angle and End Angle settings.</p> <p>Arc</p>
(5)	End Angle	
(6)	Foreground Color	<p>Set the foreground color of the element.</p> 

■ Main-2



21

Figure 21.5.3 Main-2 property page for the Arc element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

21

Coordinates

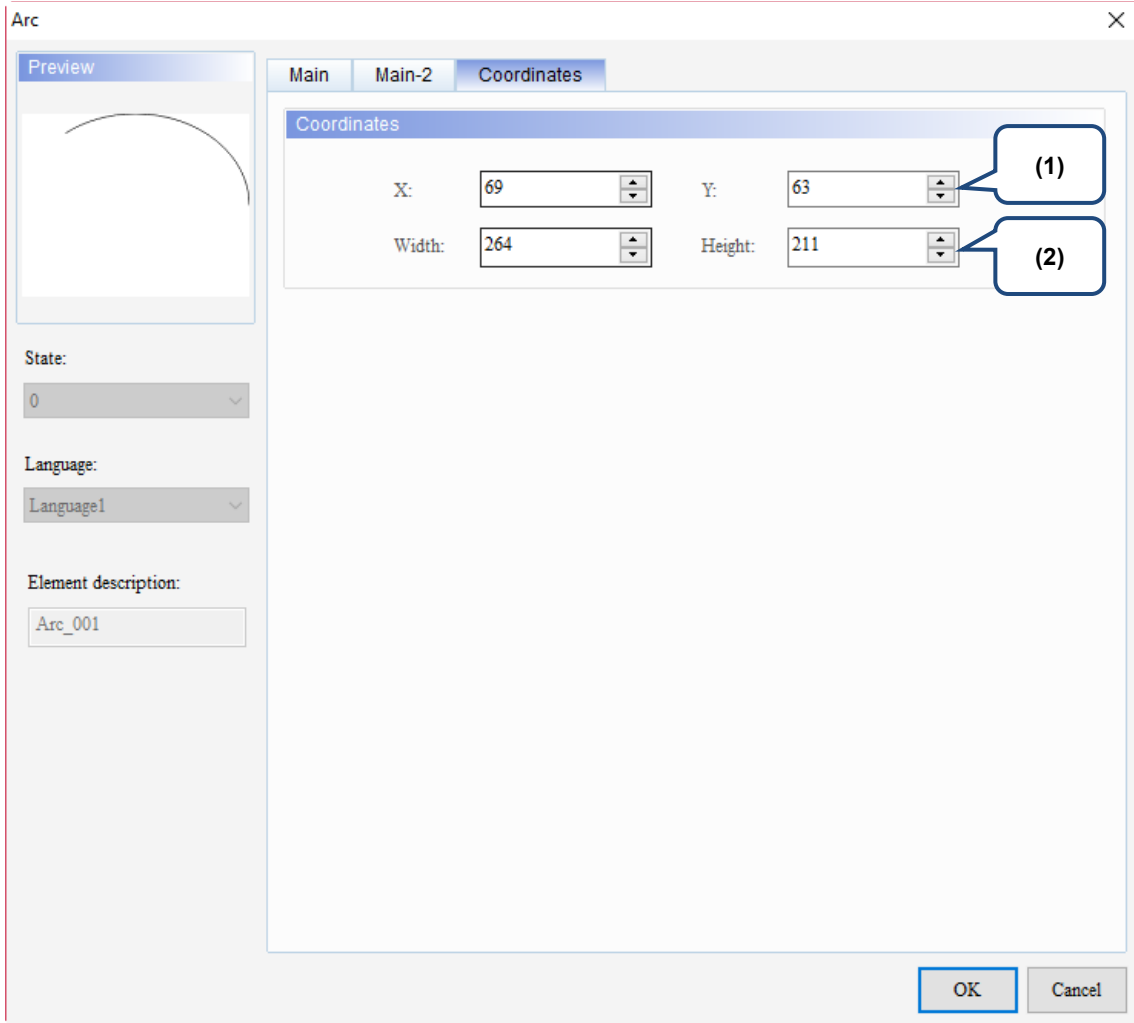
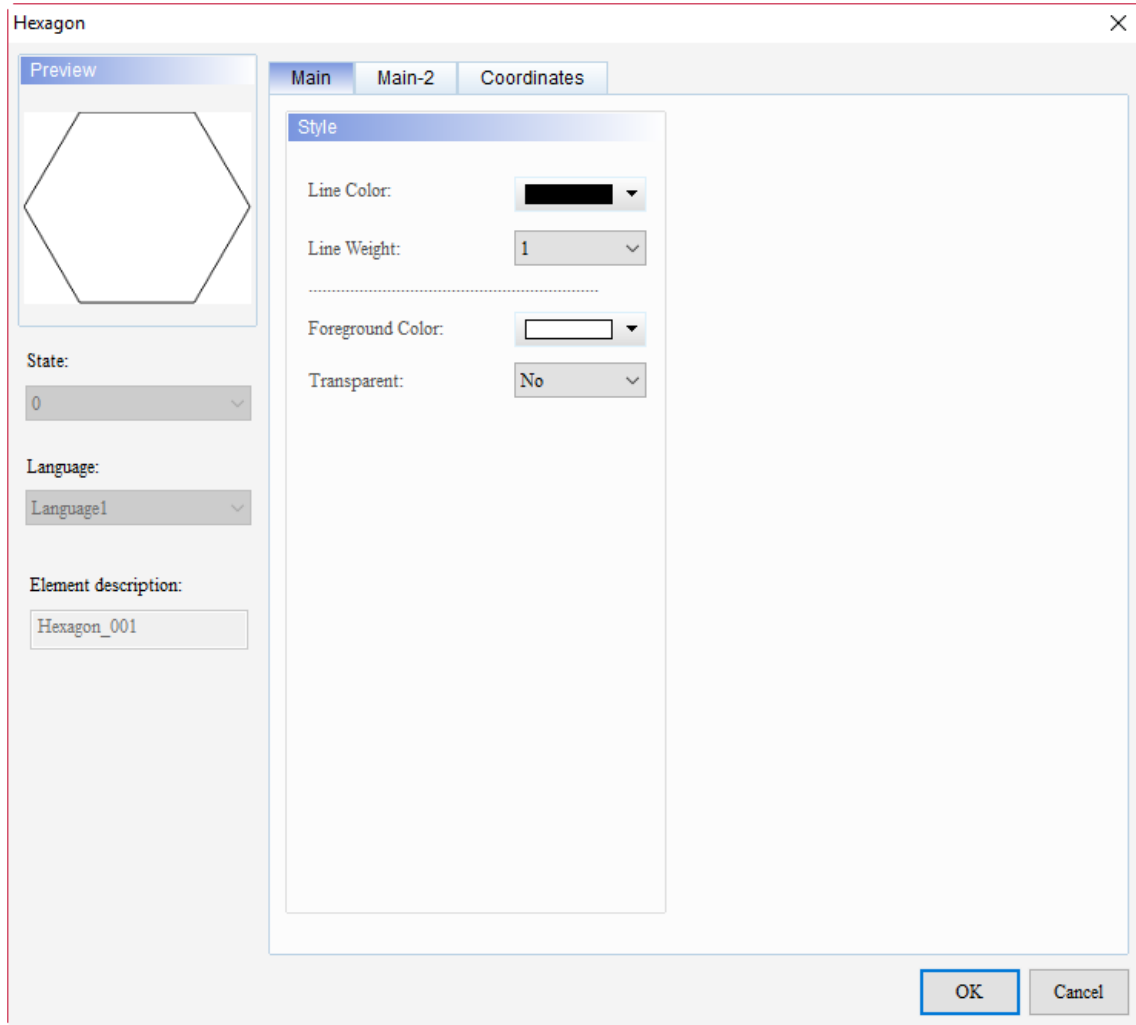


Figure 21.5.4 Coordinates property page for the Arc element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.6 Hexagon

When you double-click the Hexagon element, the property page is shown as follows.



21

Figure 21.6.1 Properties of Hexagon

Table 21.6.1 Function page of Hexagon

Hexagon	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

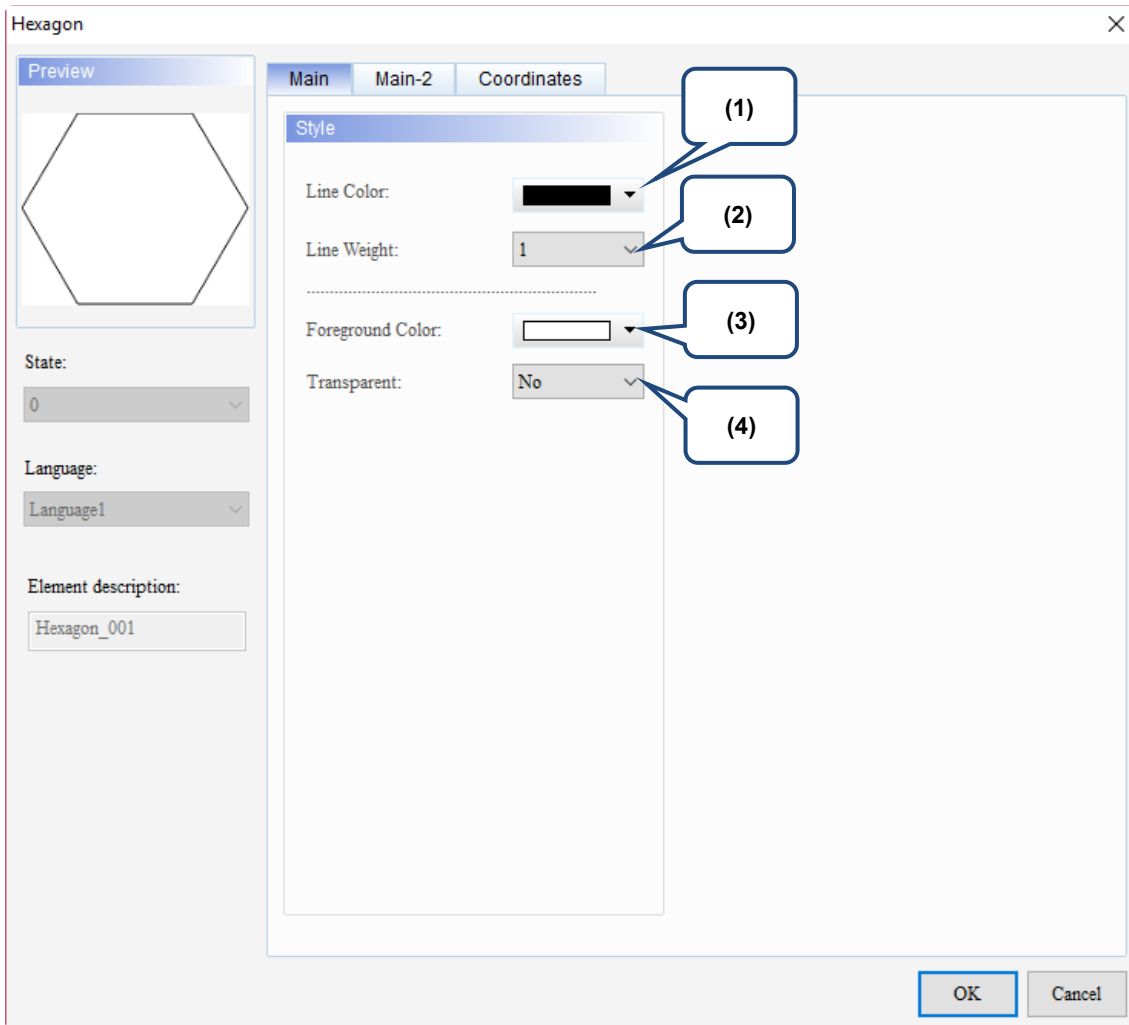
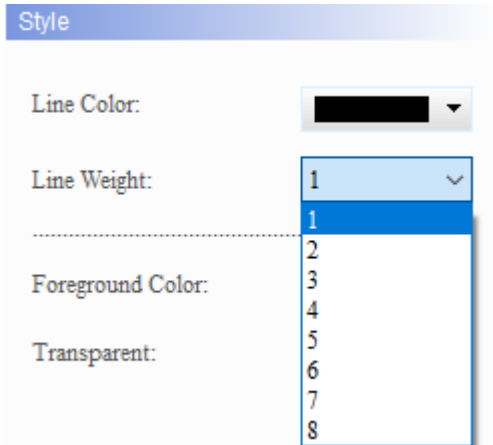
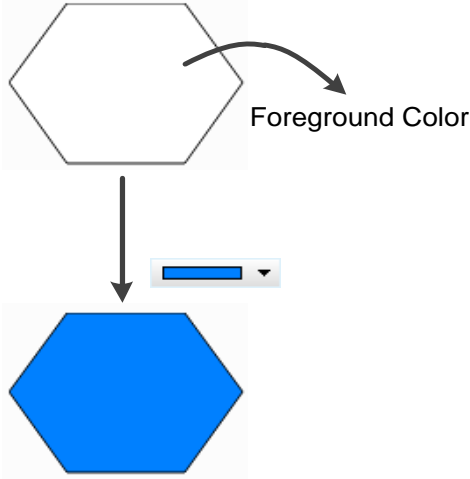
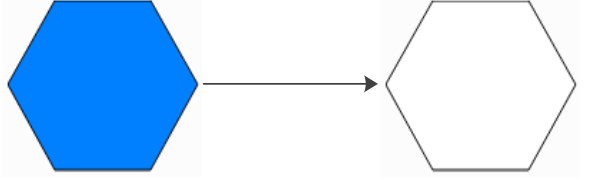
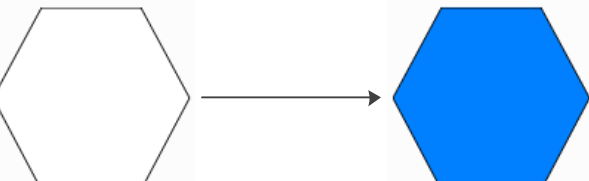
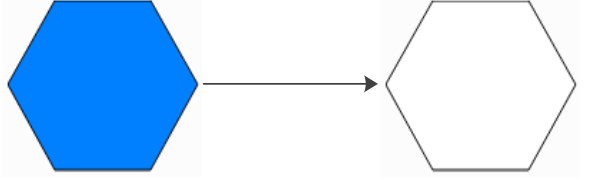
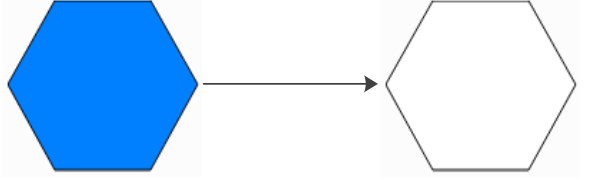
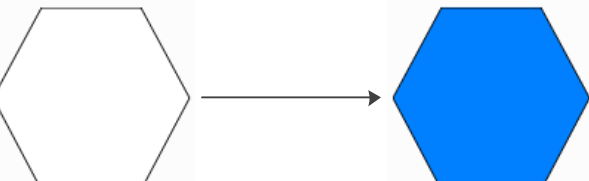


Figure 21.6.2 Main property page for the Hexagon element

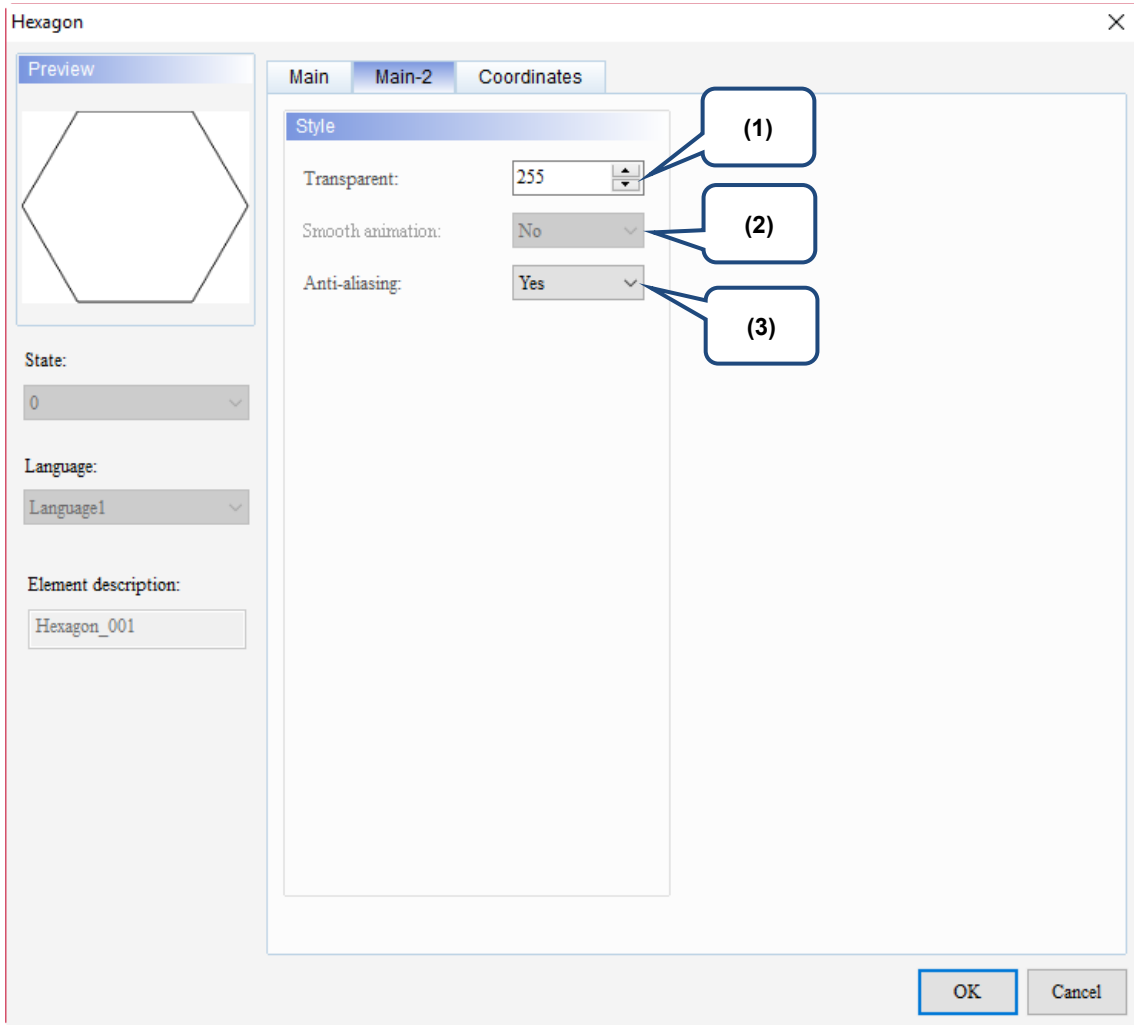
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

21

No.	Property	Function description		
(4)	Transparent	<p>■ You can select Yes or No for this function.</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p style="background-color: #e0e0e0; margin: -5px -5px 5px -5px;">Style</p> <p>Line Color: <input type="color" value="black"/></p> <p>Line Weight: <input type="text" value="1"/></p> <p>.....</p> <p>Foreground Color: <input type="color" value="white"/></p> <p>Transparent: <input type="list" value="No"/></p> <ul style="list-style-type: none"> No <li style="background-color: #0070c0; color: white;">No <li style="background-color: #0070c0; color: white;">Yes </div> <p>■ If you select Yes, the foreground color of the Hexagon element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p>		
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Transparent is Yes</td> <td style="text-align: center; padding: 5px;">  </td> </tr> <tr> <td style="padding: 5px;">Transparent is No</td> <td style="text-align: center; padding: 5px;">  </td> </tr> </table>	Transparent is Yes	
Transparent is Yes				
Transparent is No				

■ Main-2



21

Figure 21.6.3 Main-2 property page for the Hexagon element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates

21

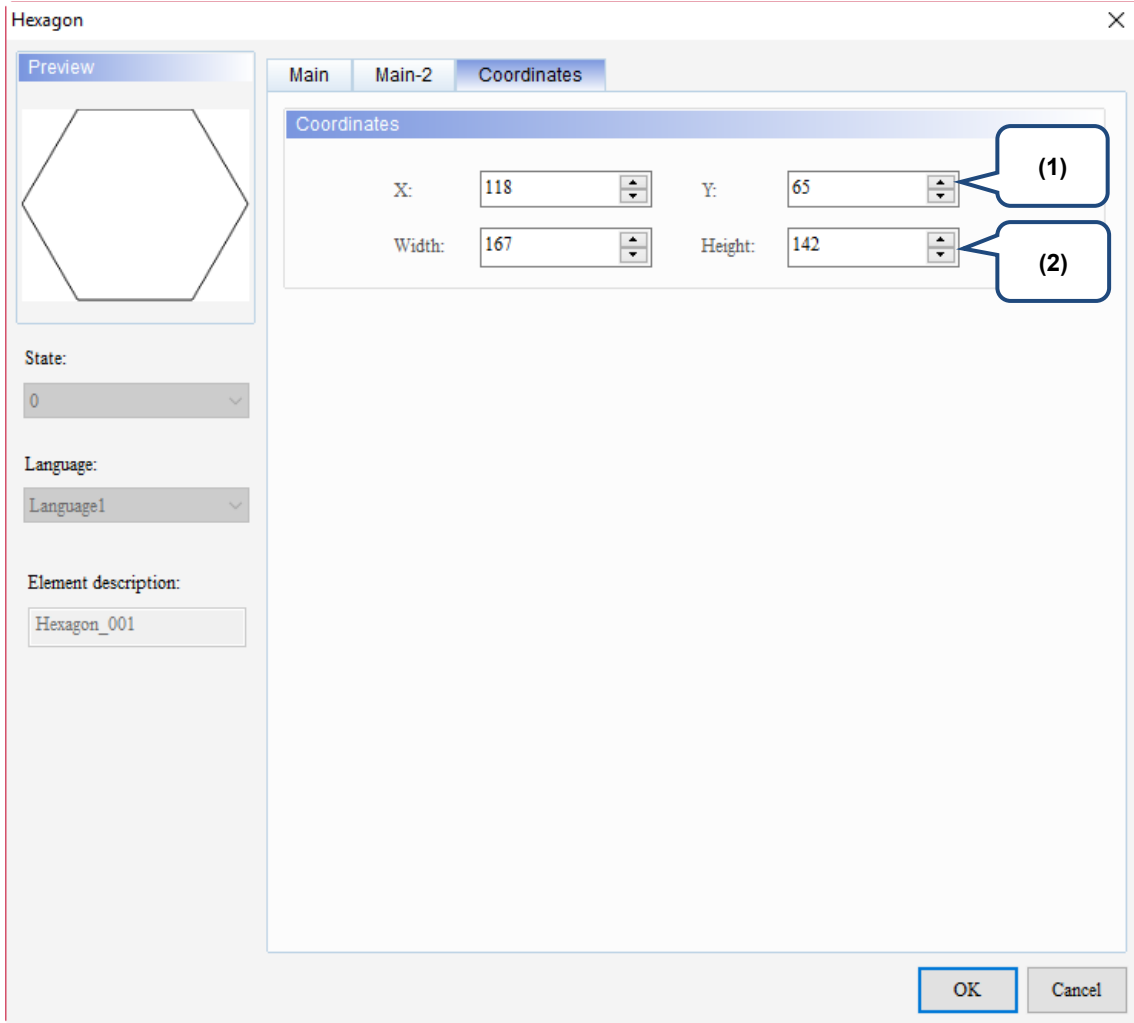
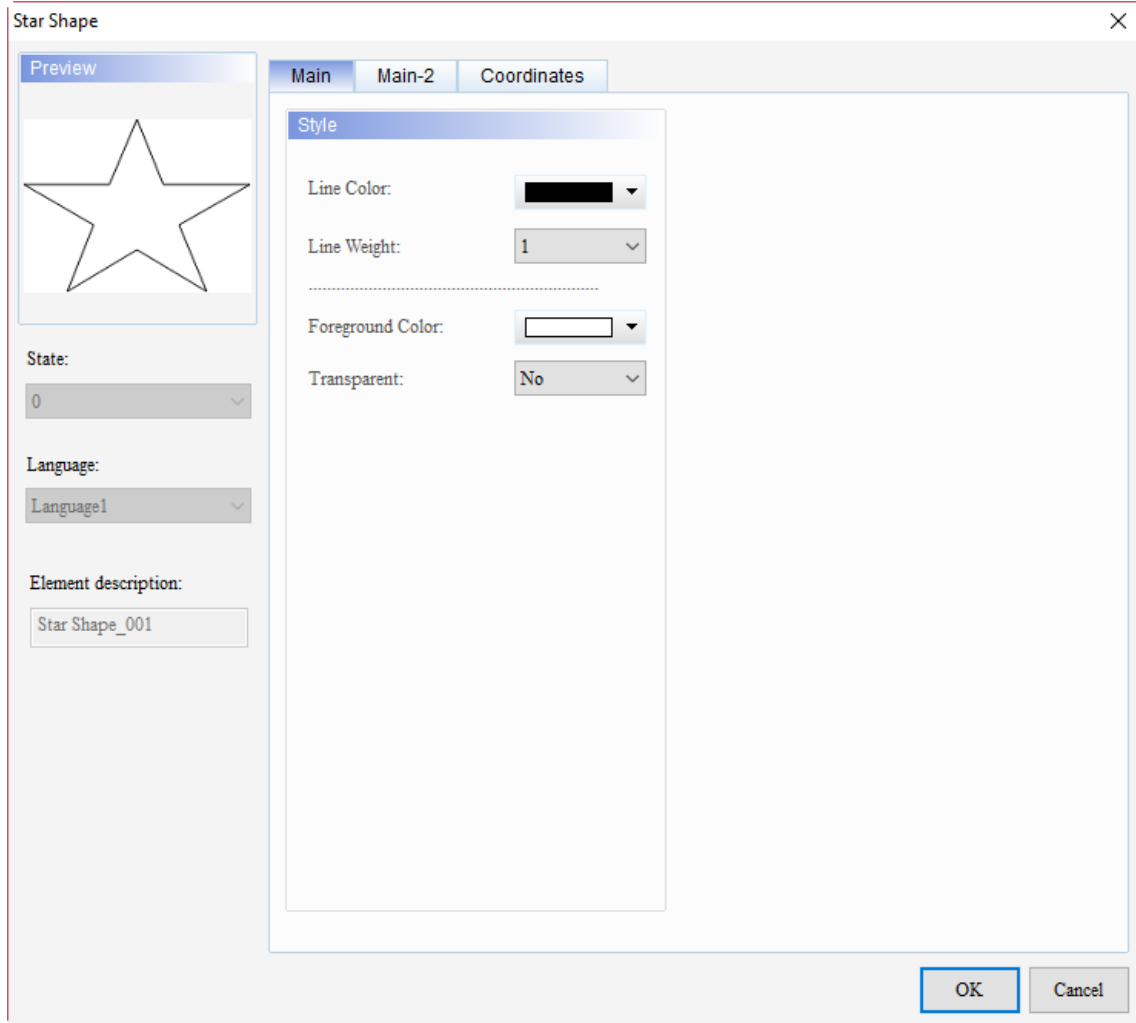


Figure 21.6.4 Coordinates property page for the Hexagon element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.7 Star Shape

When you double-click the Star Shape element, the property page is shown as follows.



21

Figure 21.7.1 Properties of Star Shape

Table 21.7.1 Function page of Star Shape

Star Shape	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

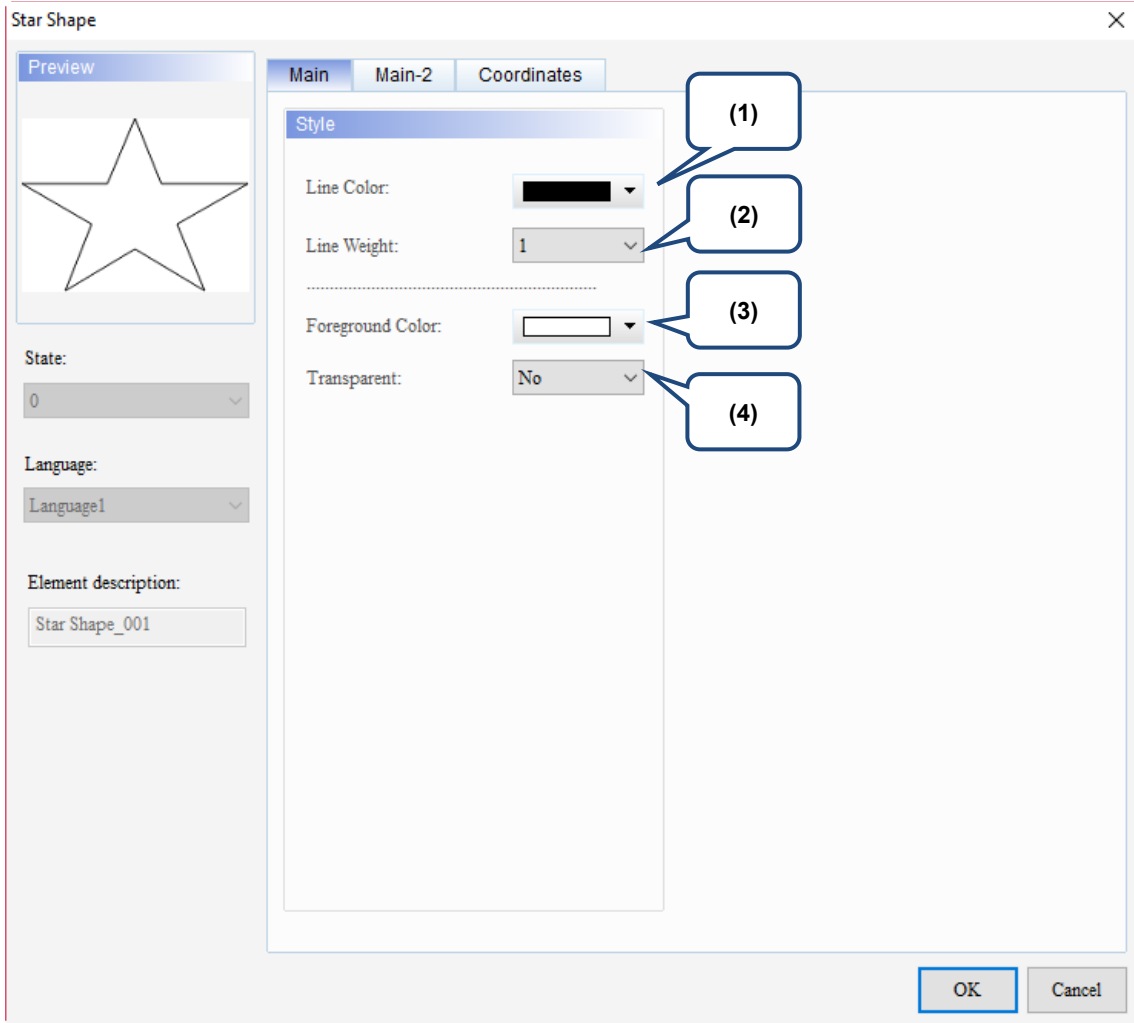
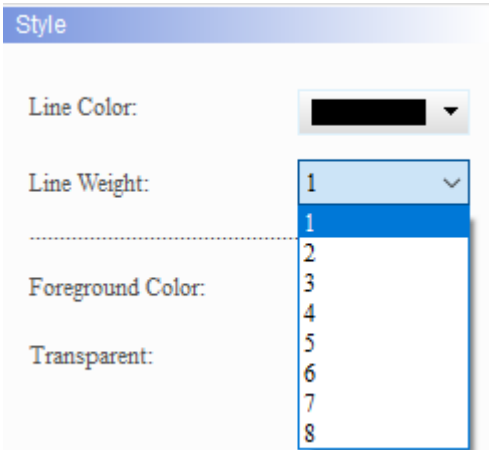
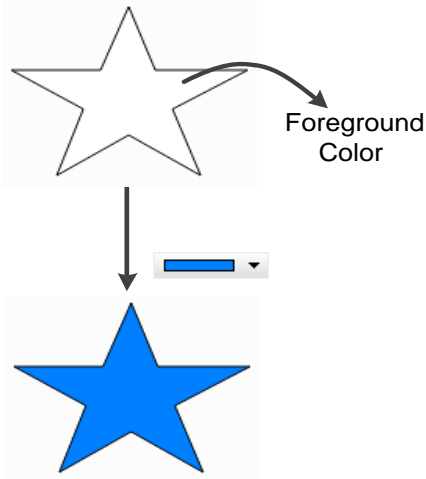
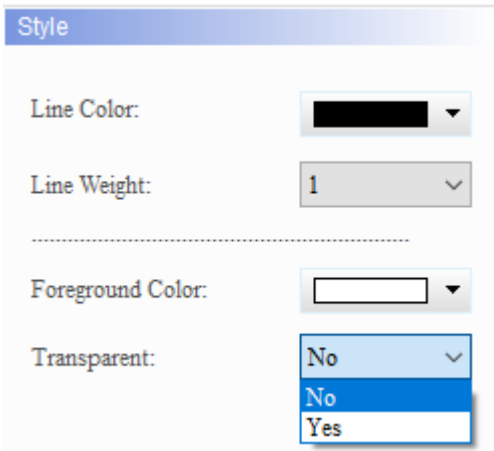
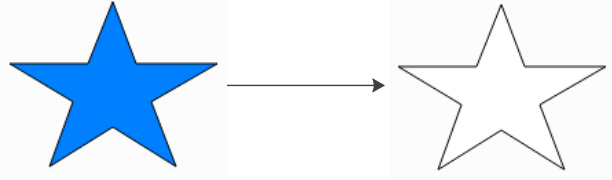
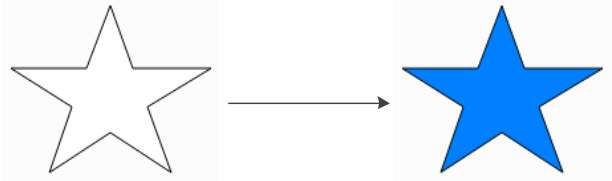
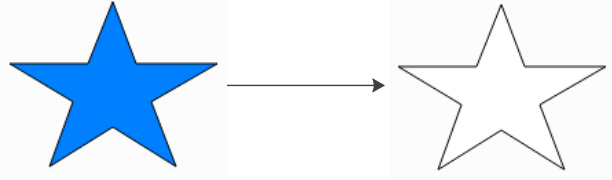
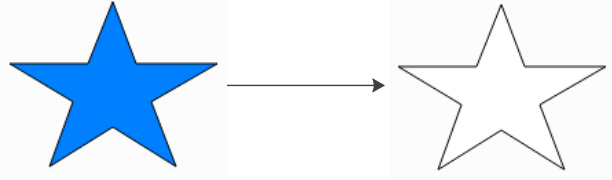
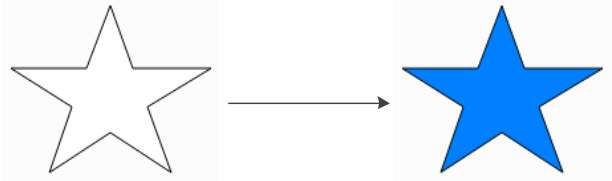


Figure 21.7.2 Main property page for the Star Shape element

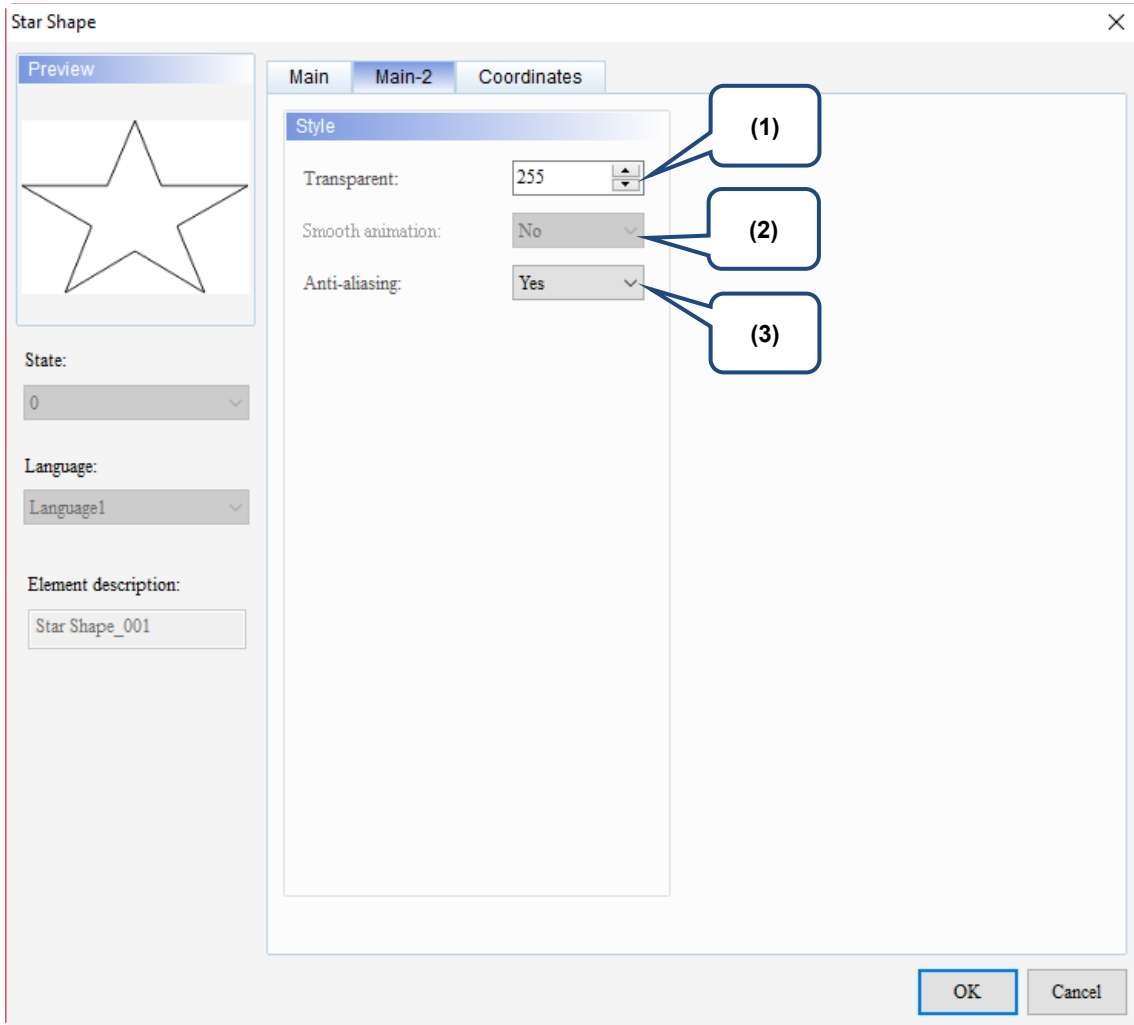
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

21

No.	Property	Function description		
(4)	Transparent	<p>■ You can select Yes or No for this function.</p>  <p>■ If you select Yes, the foreground color of the Star Shape element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p>		
		<table border="1"> <tr> <td>Transparent is Yes</td> <td>  </td> </tr> <tr> <td>Transparent is No</td> <td>  </td> </tr> </table>	Transparent is Yes	
Transparent is Yes				
Transparent is No				

■ Main-2



21

Figure 21.7.3 Main-2 property page for the Star Shape element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates

21

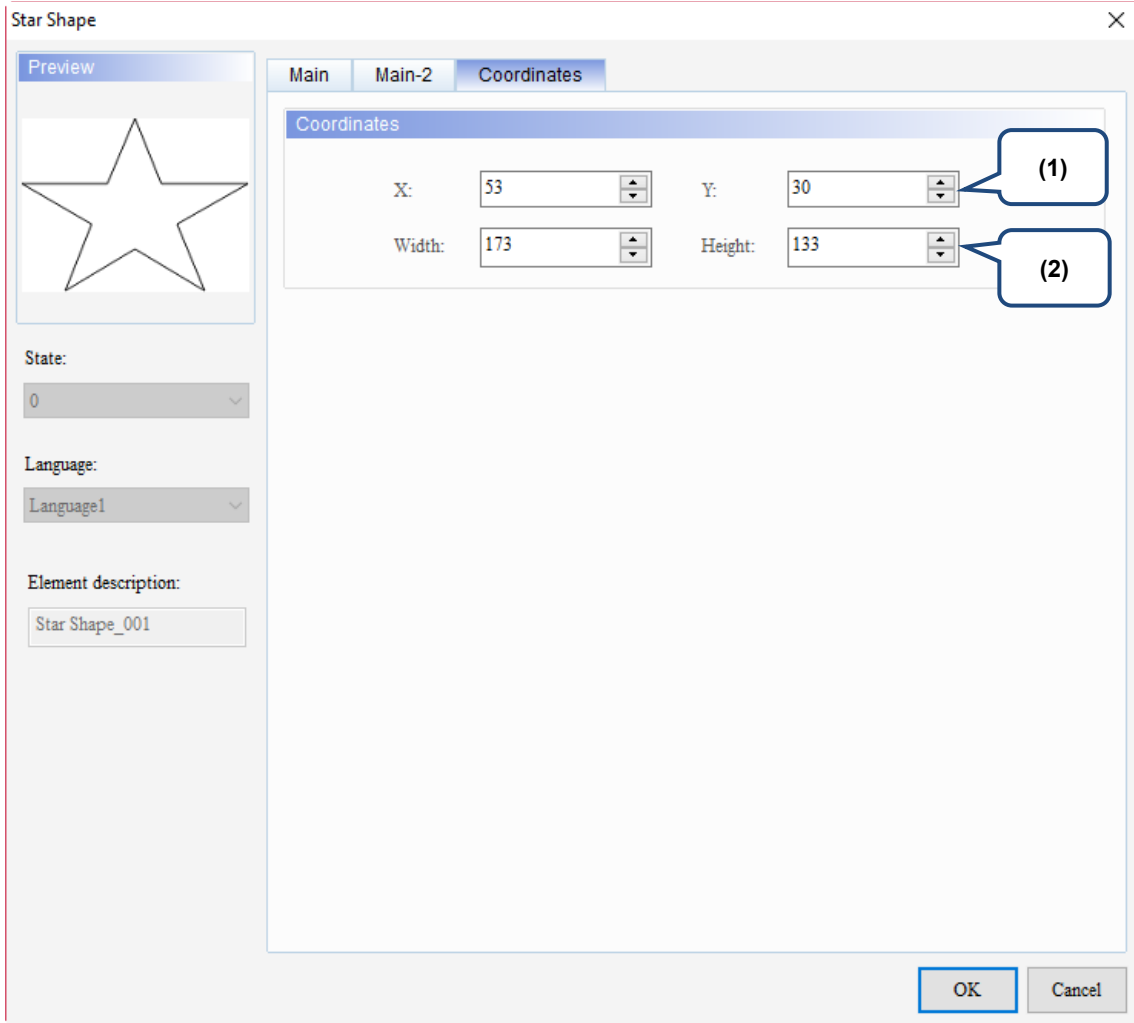
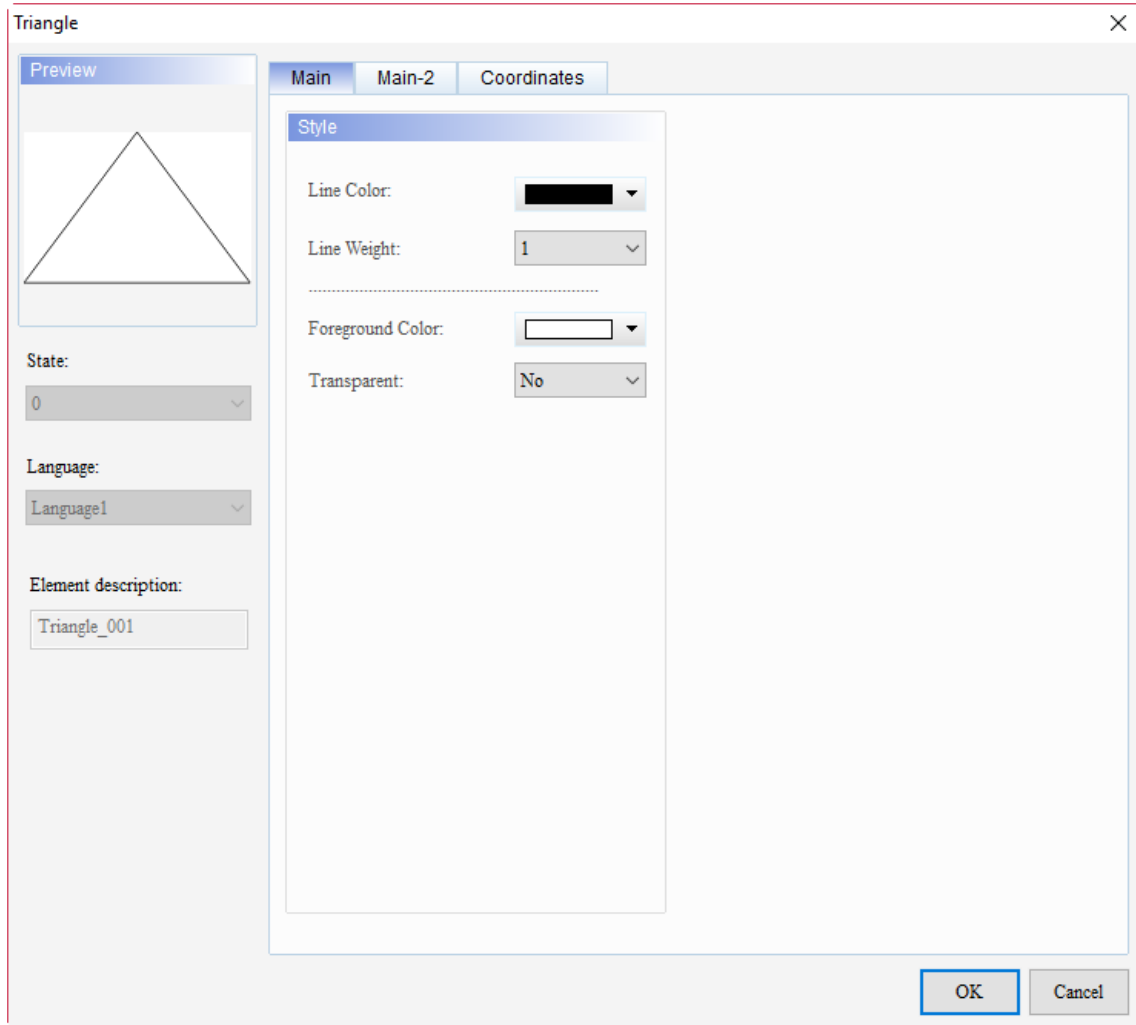


Figure 21.7.4 Coordinates property page for the Star Shape element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.8 Triangle

When you double-click the Triangle element, the property page is shown as follows.



21

Figure 21.8.1 Properties of Triangle

Table 21.8.1 Function page of Triangle

Triangle	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

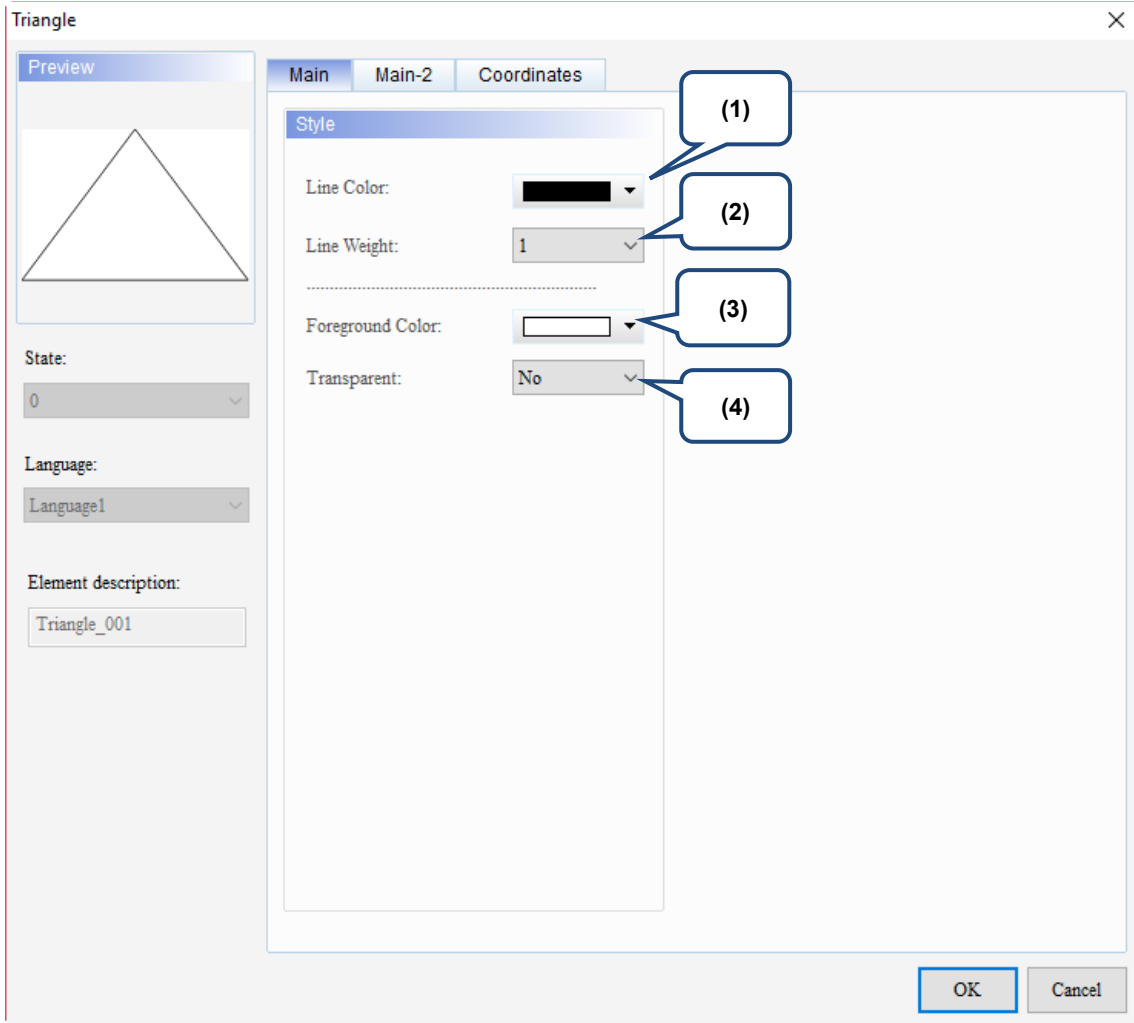
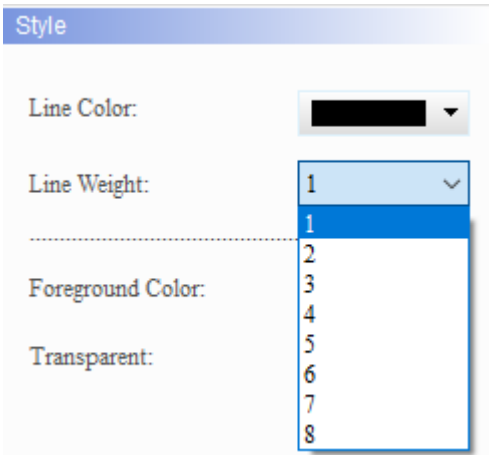
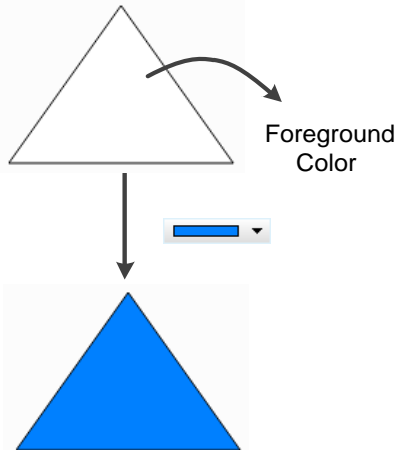
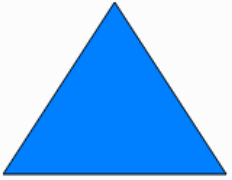
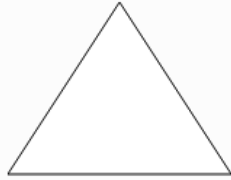

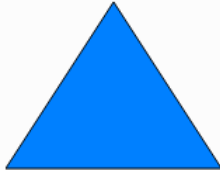
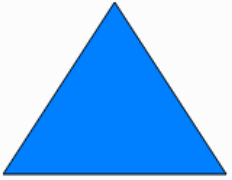
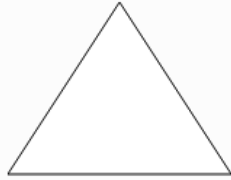

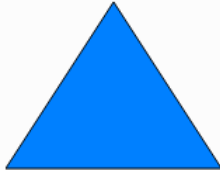
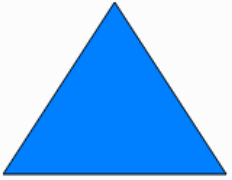
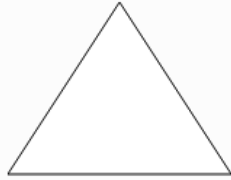

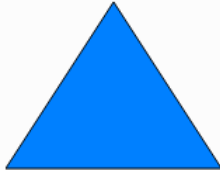


Figure 21.8.2 Main property page for the Triangle element

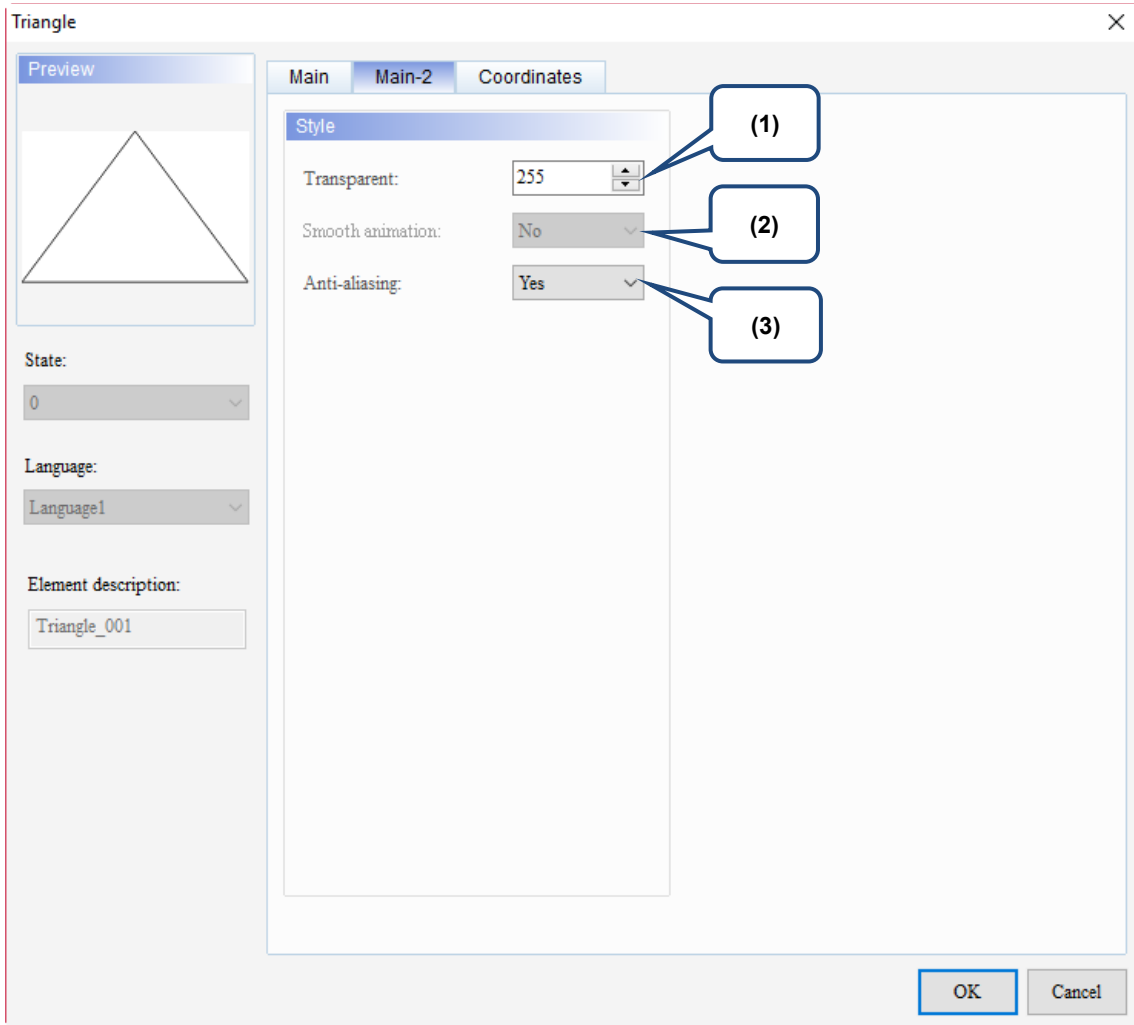
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

21

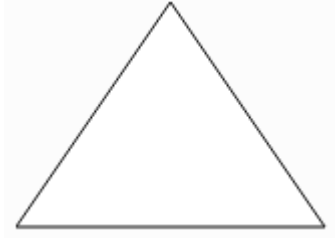
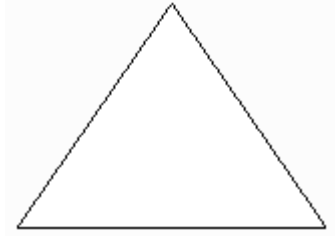
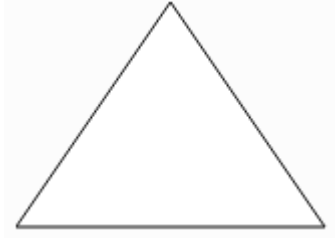
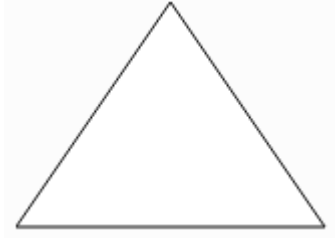
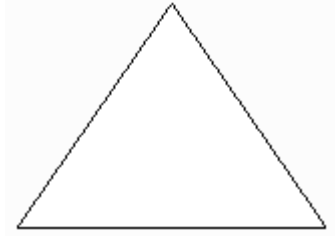
No.	Property	Function description				
(4)	Transparent	<p>■ You can select Yes or No for this function.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Style</p> <p>Line Color: </p> <p>Line Weight: 1</p> <p>.....</p> <p>Foreground Color: </p> <p>Transparent: No No Yes</p> </div> <p>■ If you select Yes, the foreground color of the Triangle element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Transparent is Yes</td> <td style="text-align: center; padding: 5px;">  →  </td> </tr> <tr> <td style="padding: 5px;">Transparent is No</td> <td style="text-align: center; padding: 5px;">  →  </td> </tr> </table>	Transparent is Yes	 → 	Transparent is No	 → 
Transparent is Yes	 → 					
Transparent is No	 → 					

■ Main-2



21

Figure 21.8.3 Main-2 property page for the Triangle element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates

21

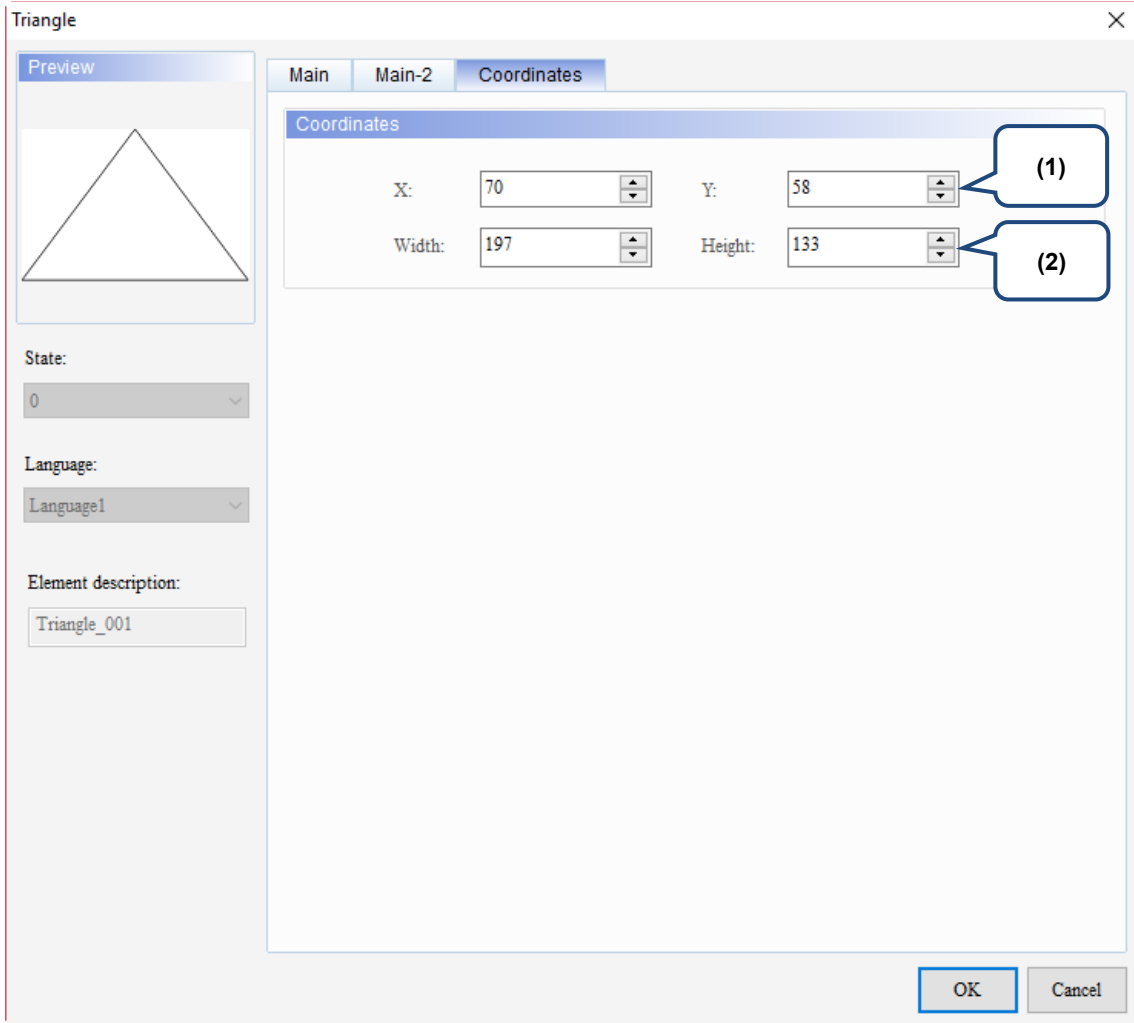
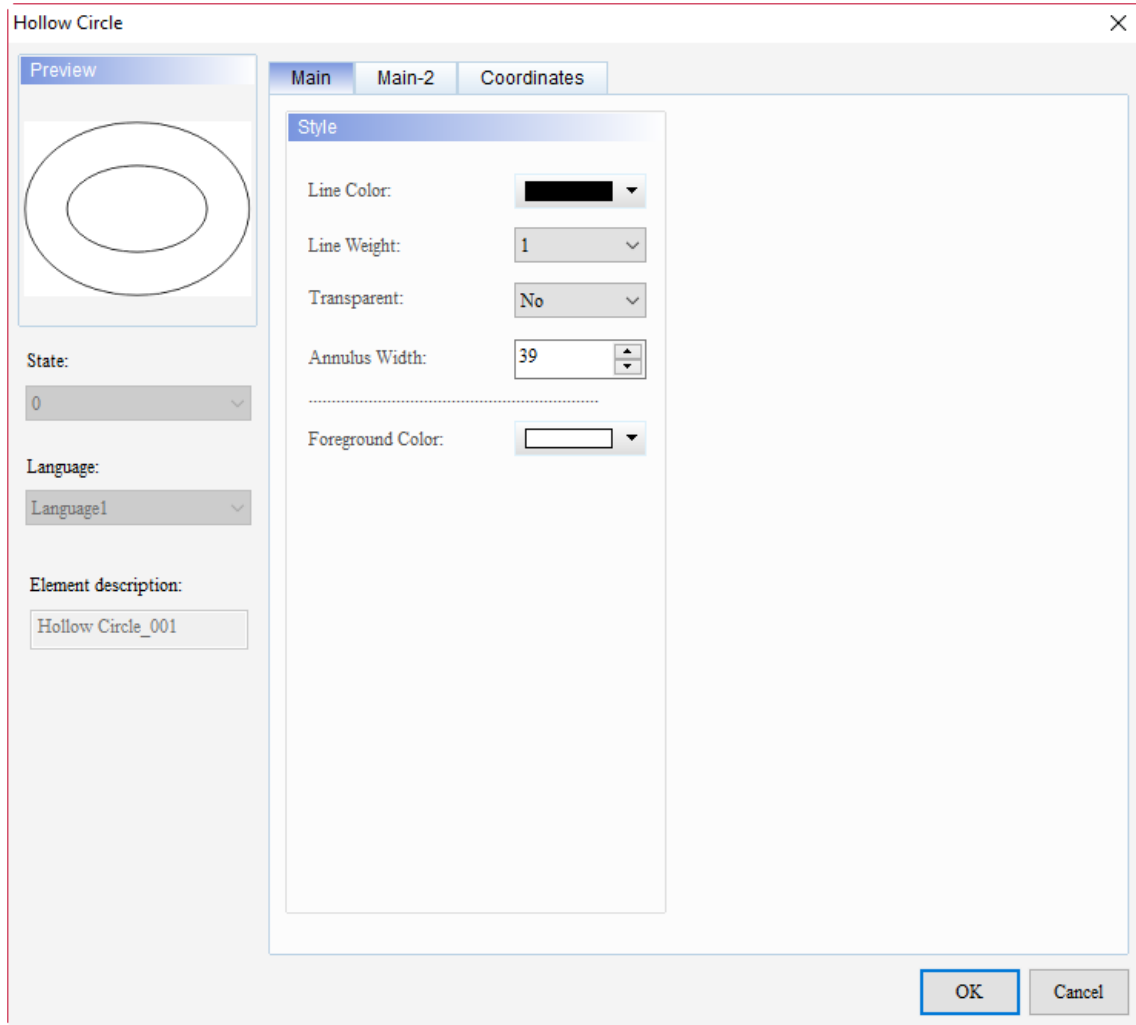


Figure 21.8.4 Coordinates property page for the Triangle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.9 Hollow Circle

When you double-click the Hollow Circle element, the property page is shown as follows.



21

Figure 21.9.1 Properties of Hollow Circle

Table 21.9.1 Function page of Hollow Circle

Hollow Circle	
Function page	Description
Main	Set the Line Color, Line Weight, Transparent, Annulus Width, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

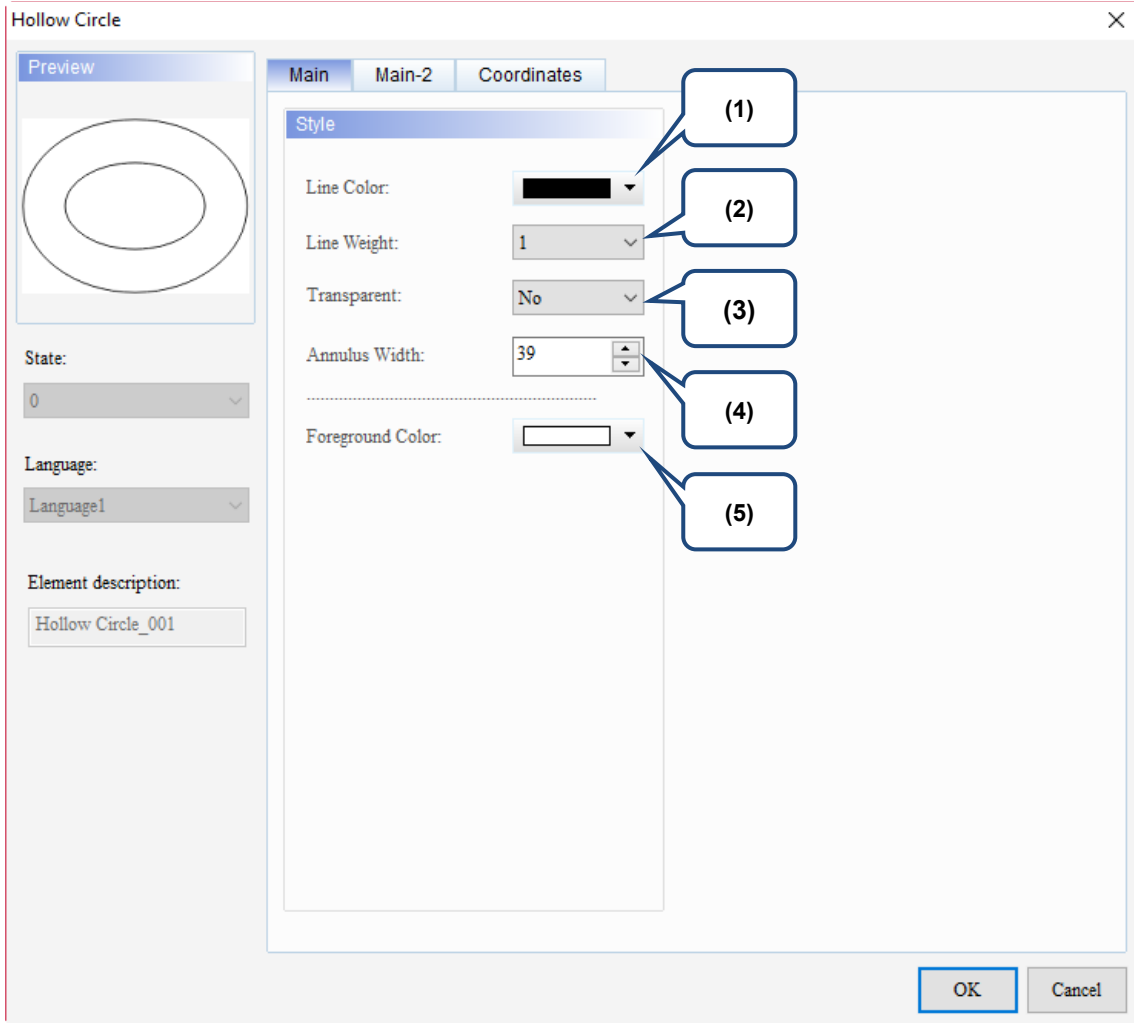
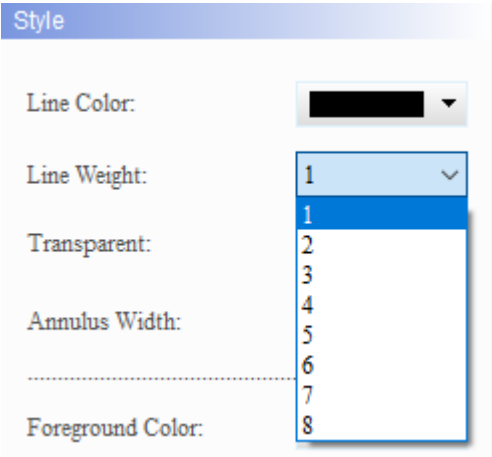
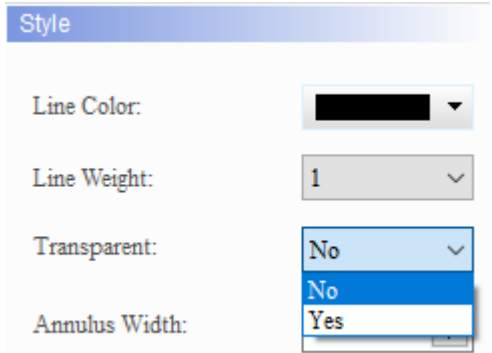
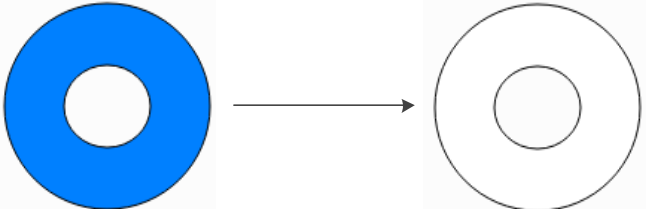
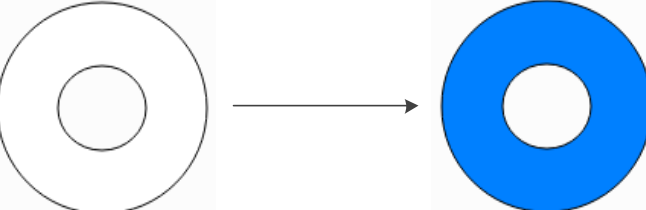
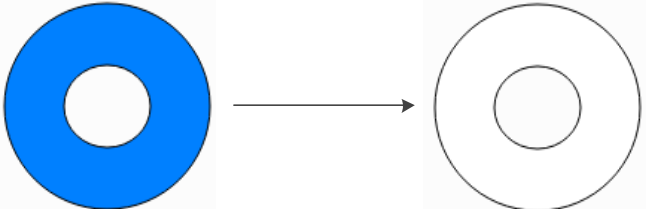
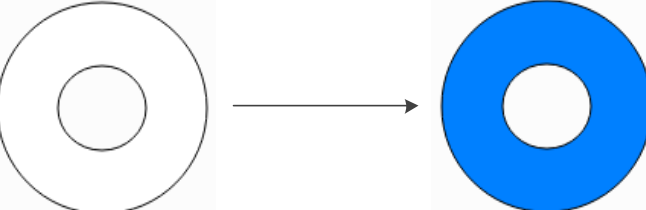
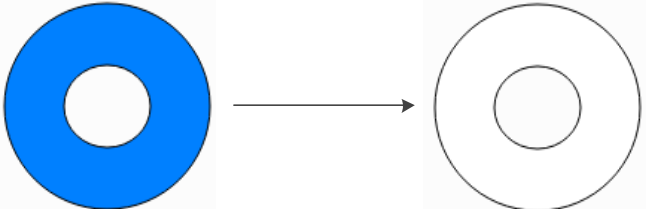
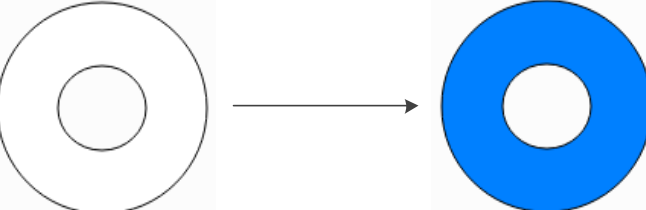


Figure 21.9.2 Main property page for the Hollow Circle element

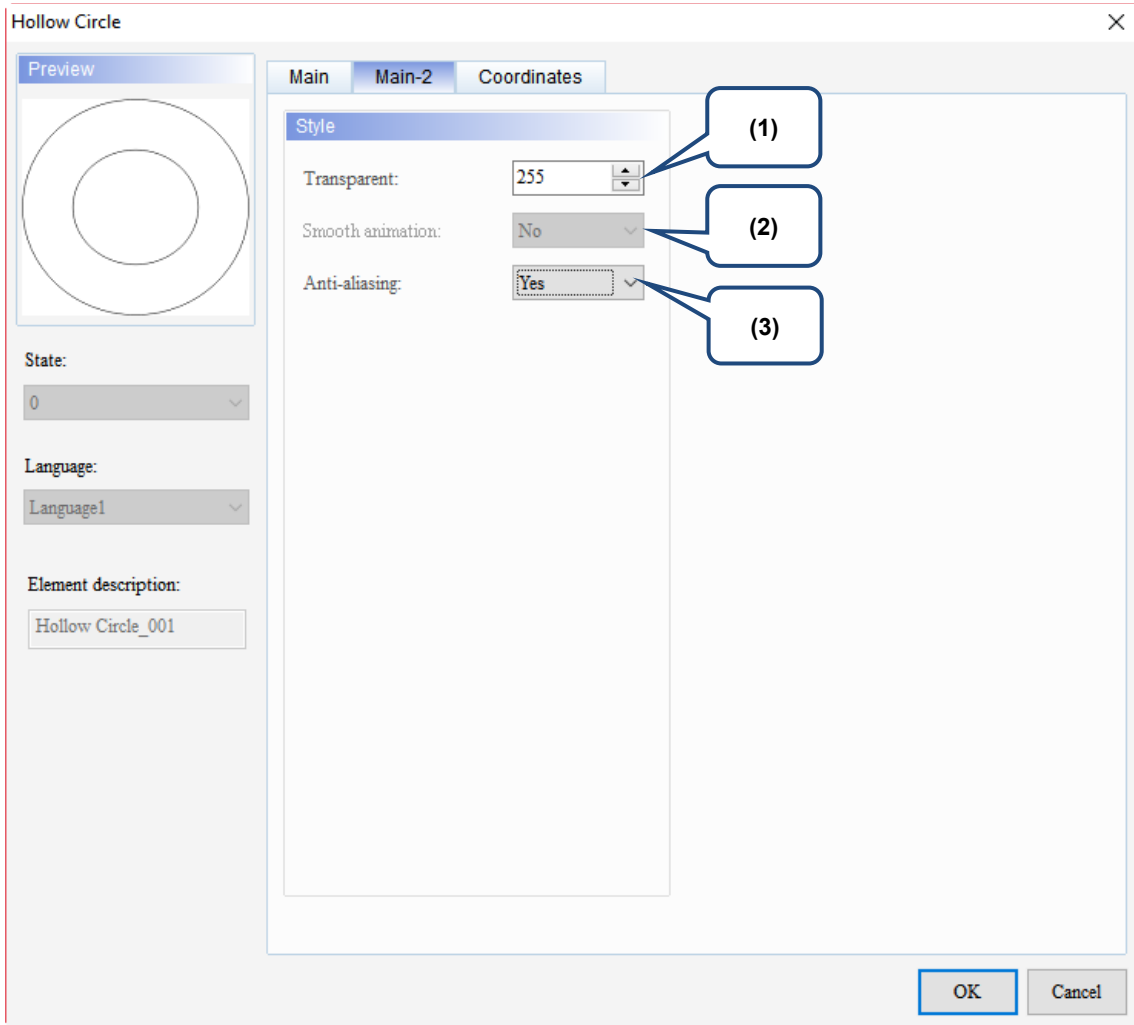
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description				
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 				
(3)	Transparent	<ul style="list-style-type: none"> You can select Yes or No for this function.  <ul style="list-style-type: none"> If you select Yes, the foreground color of the Hollow Circle element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed. <table border="1"> <tr> <td>Transparent is Yes</td> <td>  </td> </tr> <tr> <td>Transparent is No</td> <td>  </td> </tr> </table>	Transparent is Yes		Transparent is No	
Transparent is Yes						
Transparent is No						

21

No.	Property	Function description
(4)	Annulus Width	<p>The maximum of the Annulus Width is determined by taking the minimum value of the element's width and height, and dividing it by 2.</p> <p>Hollow Circle</p> <p>Hollow Circle</p> <p>Take the minimum value of the element's width and height, and divide it by 2 which is the maximum of the Annulus Width.</p>
(5)	Foreground Color	<p>Set the foreground color of the element.</p> <p>Foreground Color</p>

■ Main-2



21

Figure 21.9.3 Main-2 property page for the Hollow Circle element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates

21

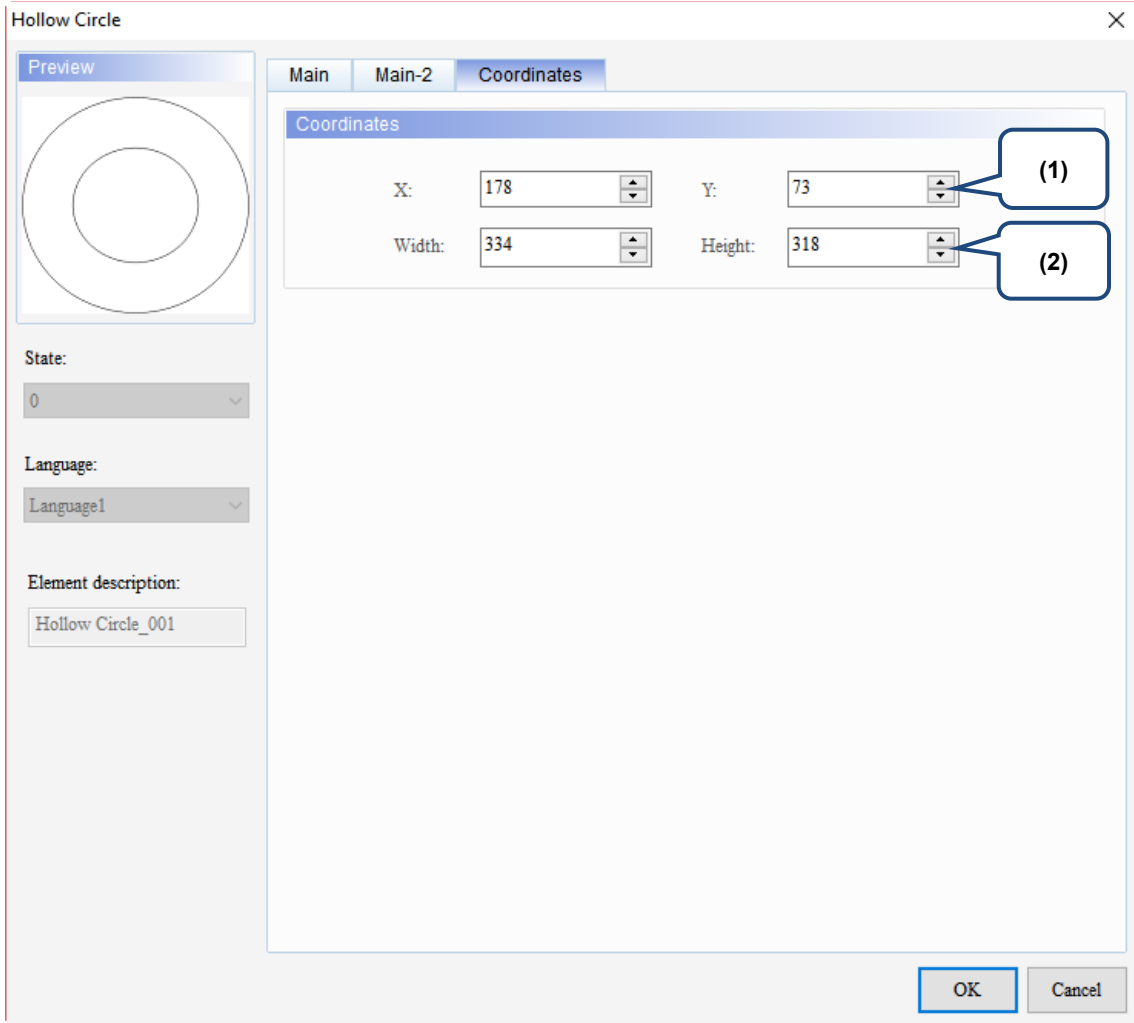
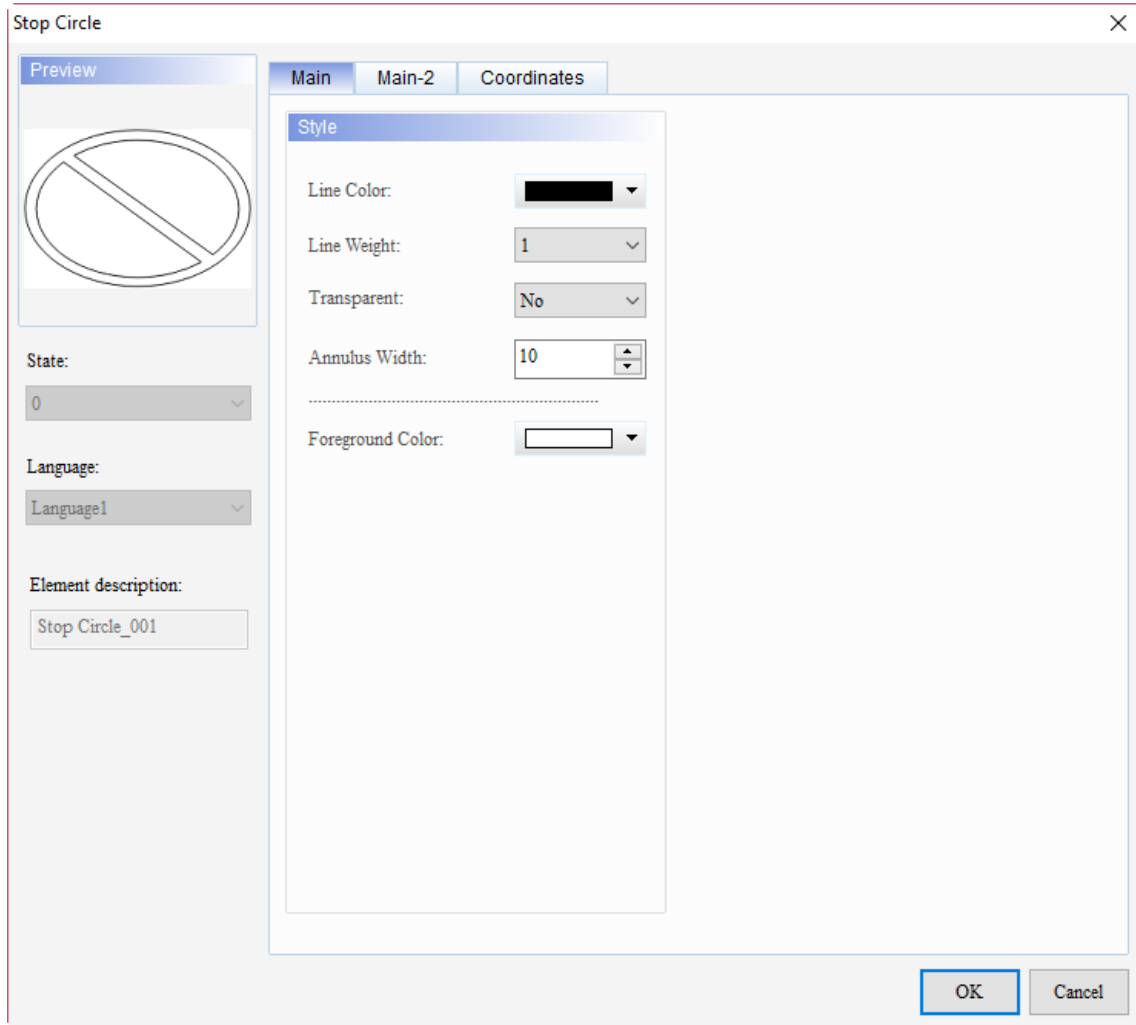


Figure 21.9.4 Coordinates property page for the Hollow Circle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.10 Stop Circle

When you double-click the Stop Circle element, the property page is shown as follows.



21

Figure 21.10.1 Properties of Stop Circle

Table 21.10.1 Function page of Stop Circle

Stop Circle	
Function page	Description
Main	Set the Line Color, Line Weight, Transparent, Annulus Width, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

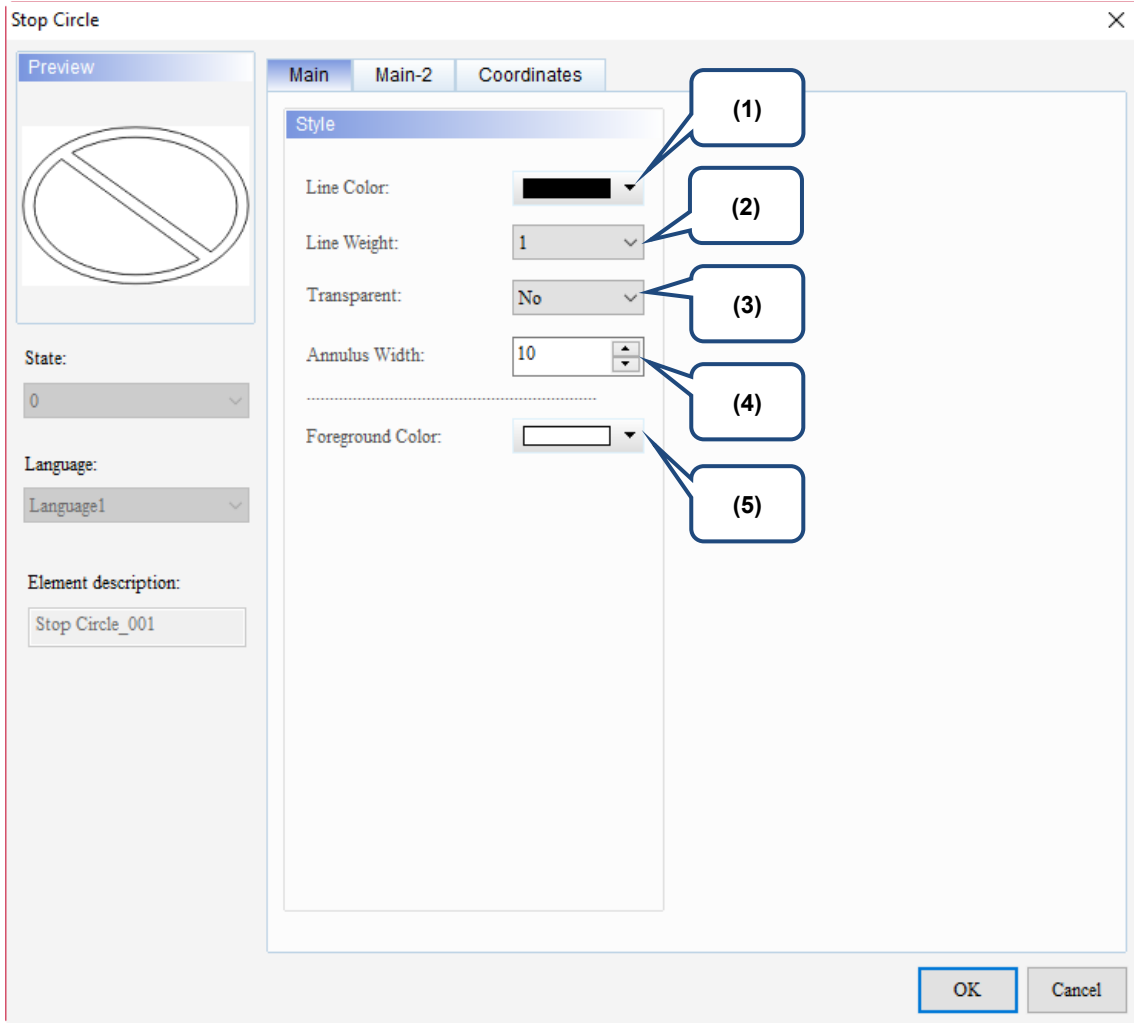
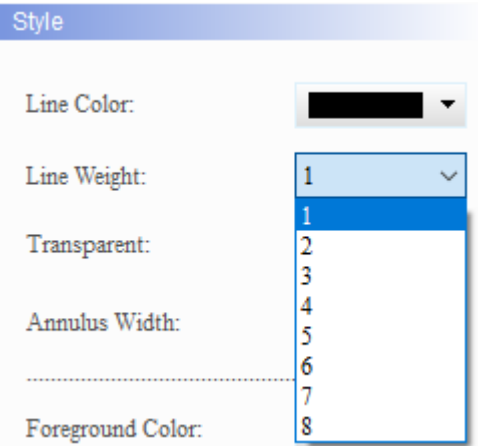
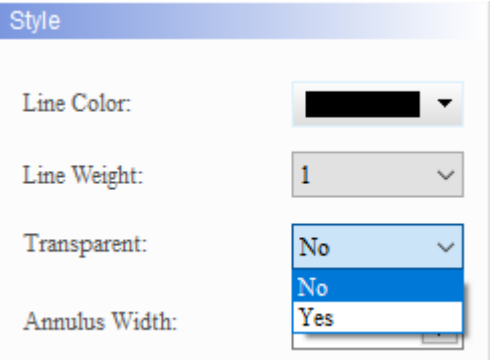

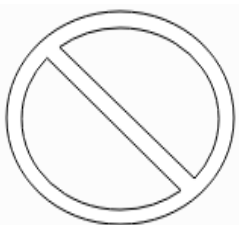



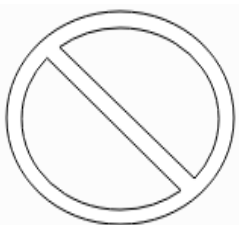



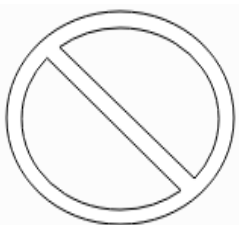


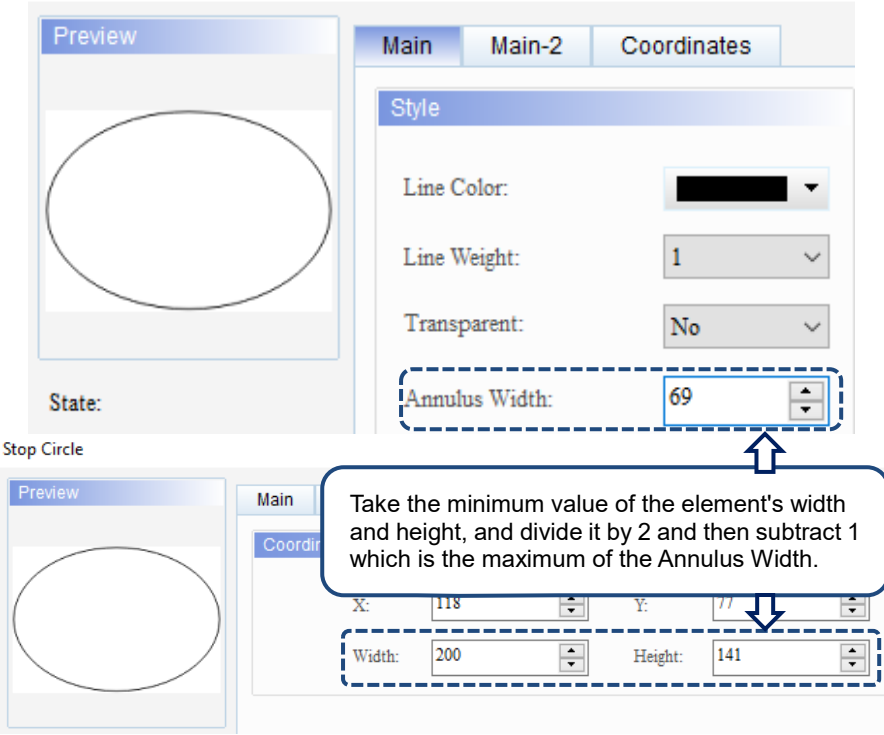
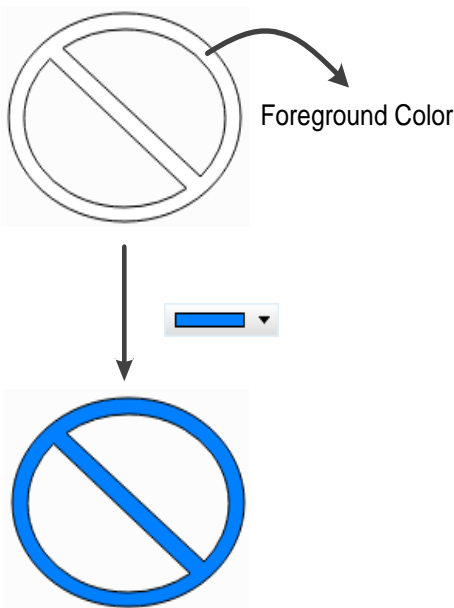


Figure 21.10.2 Main property page for the Stop Circle element

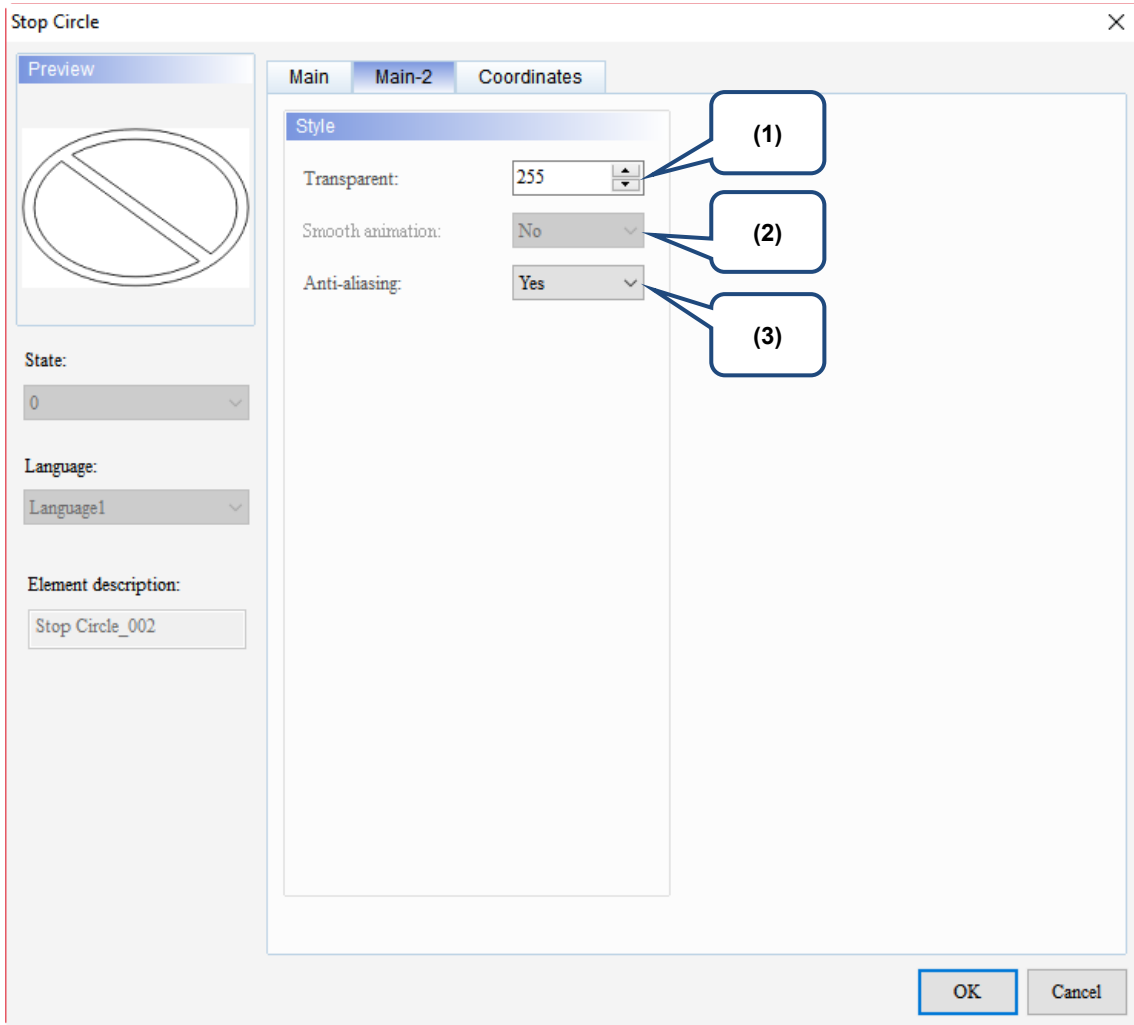
No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description						
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 						
(3)	Transparent	<ul style="list-style-type: none"> You can select Yes or No for this function.  <ul style="list-style-type: none"> If you select Yes, the foreground color of the Stop Circle element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed. <table border="1"> <tr> <td>Transparent is Yes</td> <td>  </td> <td>  </td> </tr> <tr> <td>Transparent is No</td> <td>  </td> <td>  </td> </tr> </table>	Transparent is Yes			Transparent is No		
Transparent is Yes								
Transparent is No								

21

No.	Property	Function description
(4)	Annulus Width	<p>The maximum of the Annulus Width is determined by taking the minimum value of the element's width and height, and dividing it by 2 and then subtracting 1. The reason for subtracting 1 is that the Annulus Width minimum value of the Stop Circle is 1, not 0.</p> <p>Stop Circle</p>  <p>Stop Circle</p> <p>Set the foreground color of the element.</p> 
(5)	Foreground Color	

■ Main-2



21

Figure 21.10.3 Main-2 property page for the Stop Circle element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

Coordinates

21

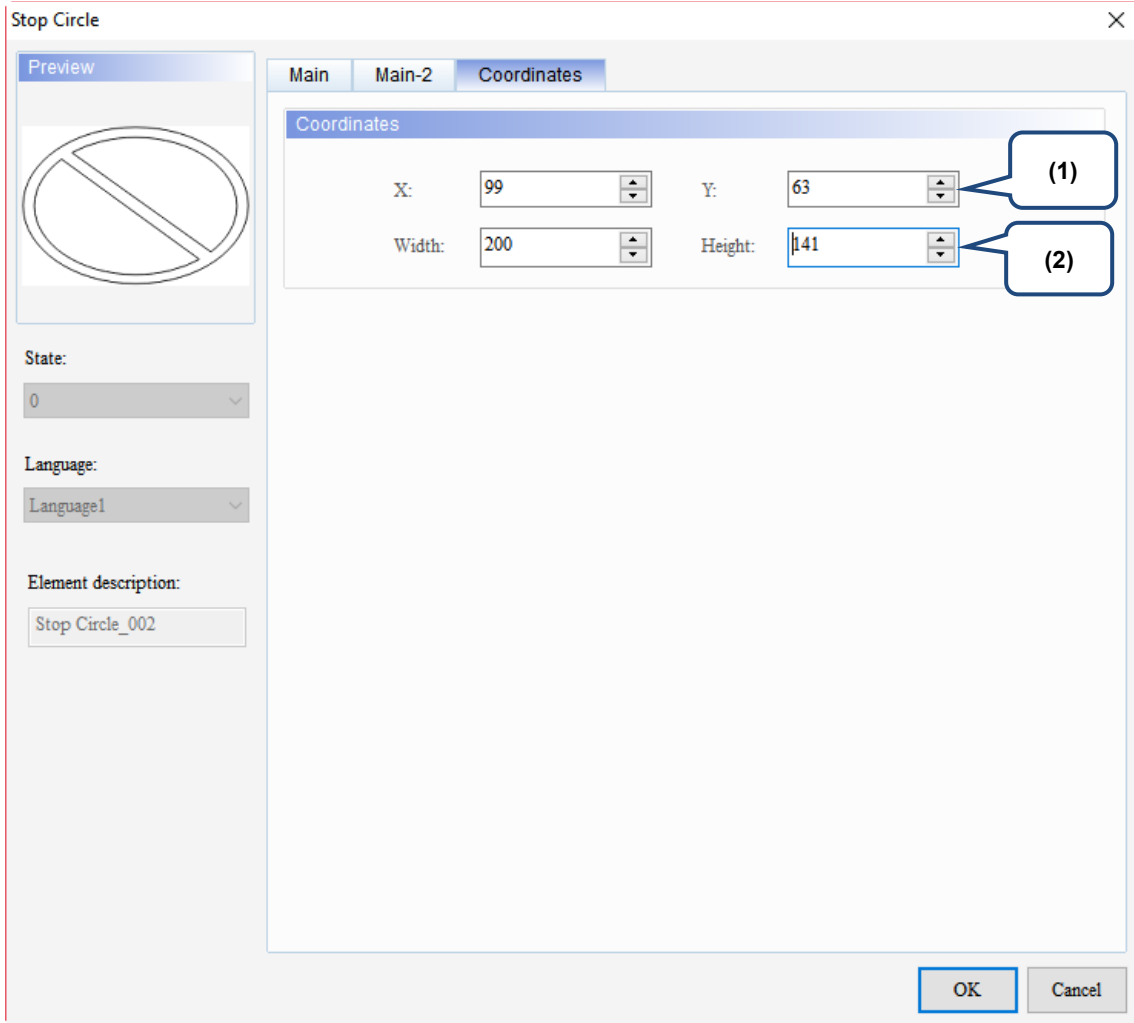
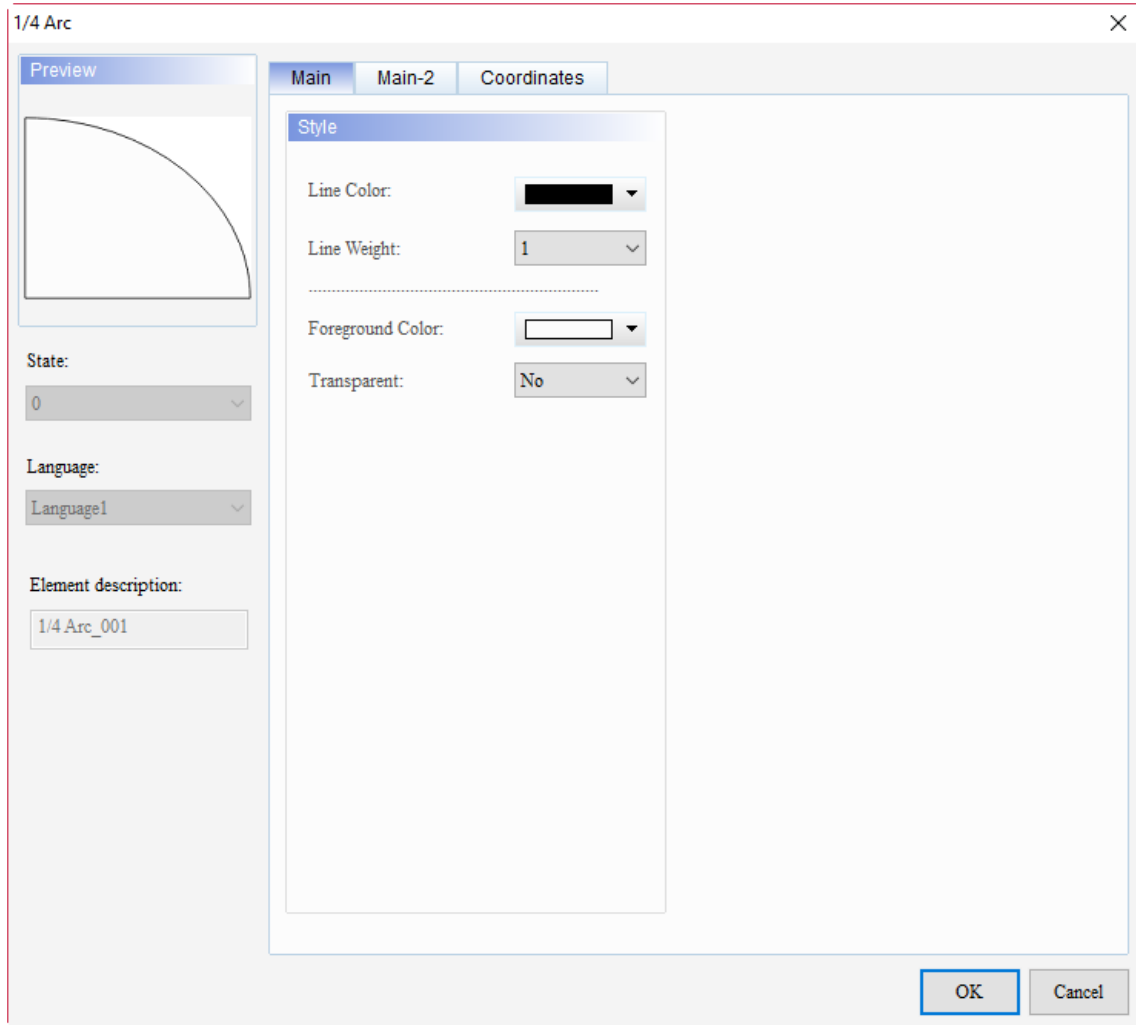


Figure 21.10.4 Coordinates property page for the Stop Circle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

21.11 1/4 Arc

When you double-click the 1/4 Arc element, the property page is shown as follows.



21

Figure 21.11.1 Properties of 1/4 Arc

Table 21.11.1 Function page of 1/4 Arc

1/4 Arc	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

21

■ Main

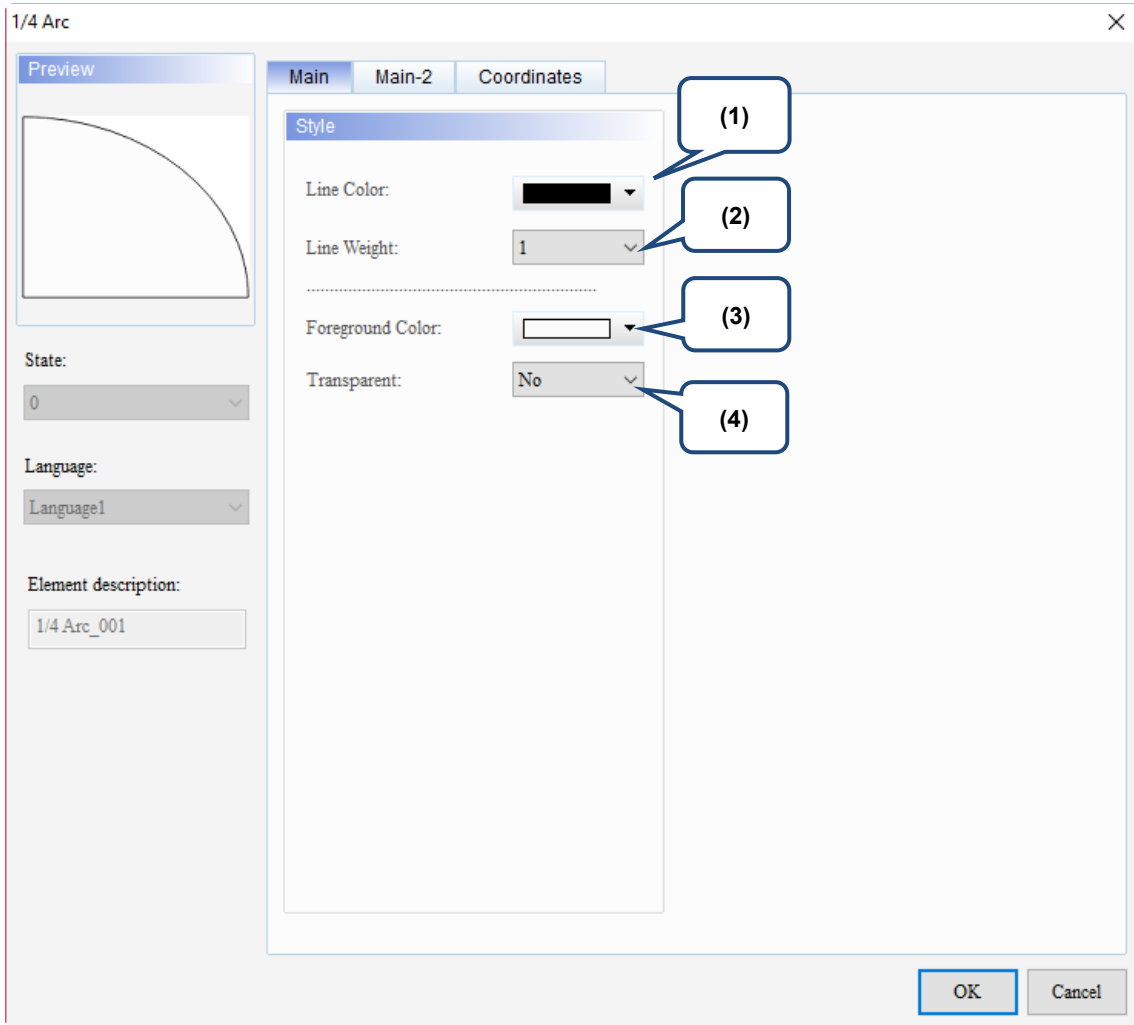
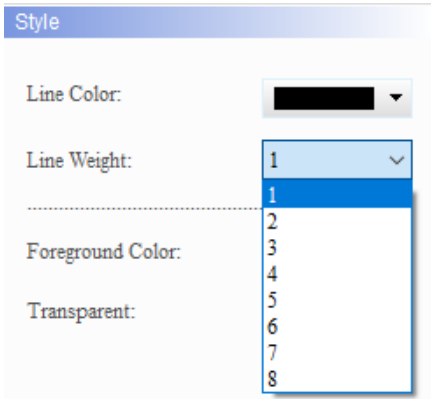
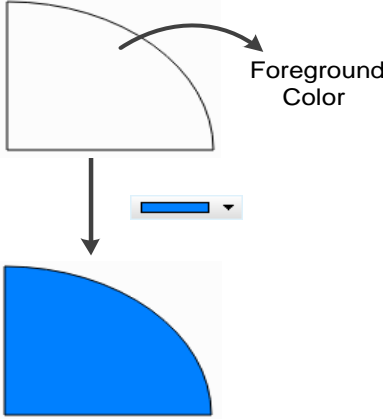
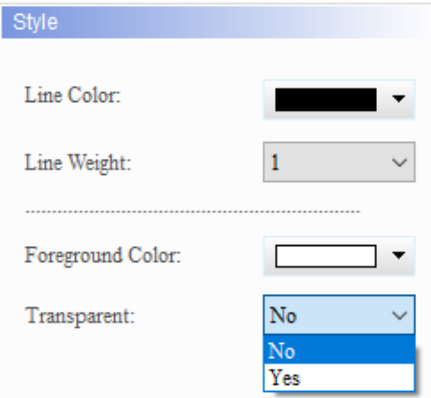








Figure 21.11.2 Main property page for the 1/4 Arc element

No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description				
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 				
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 				
(4)	Transparent	<p>■ You can select Yes or No for this function.</p>  <p>■ If you select Yes, the foreground color of the 1/4 Arc element is transparent and only the border color of the arc part is displayed; if you select No, the foreground color of the entire element is displayed.</p> <table border="1"> <tr> <td>Transparent is Yes</td> <td>  </td> </tr> <tr> <td>Transparent is No</td> <td>  </td> </tr> </table>	Transparent is Yes		Transparent is No	
Transparent is Yes						
Transparent is No						

21

■ Main-2

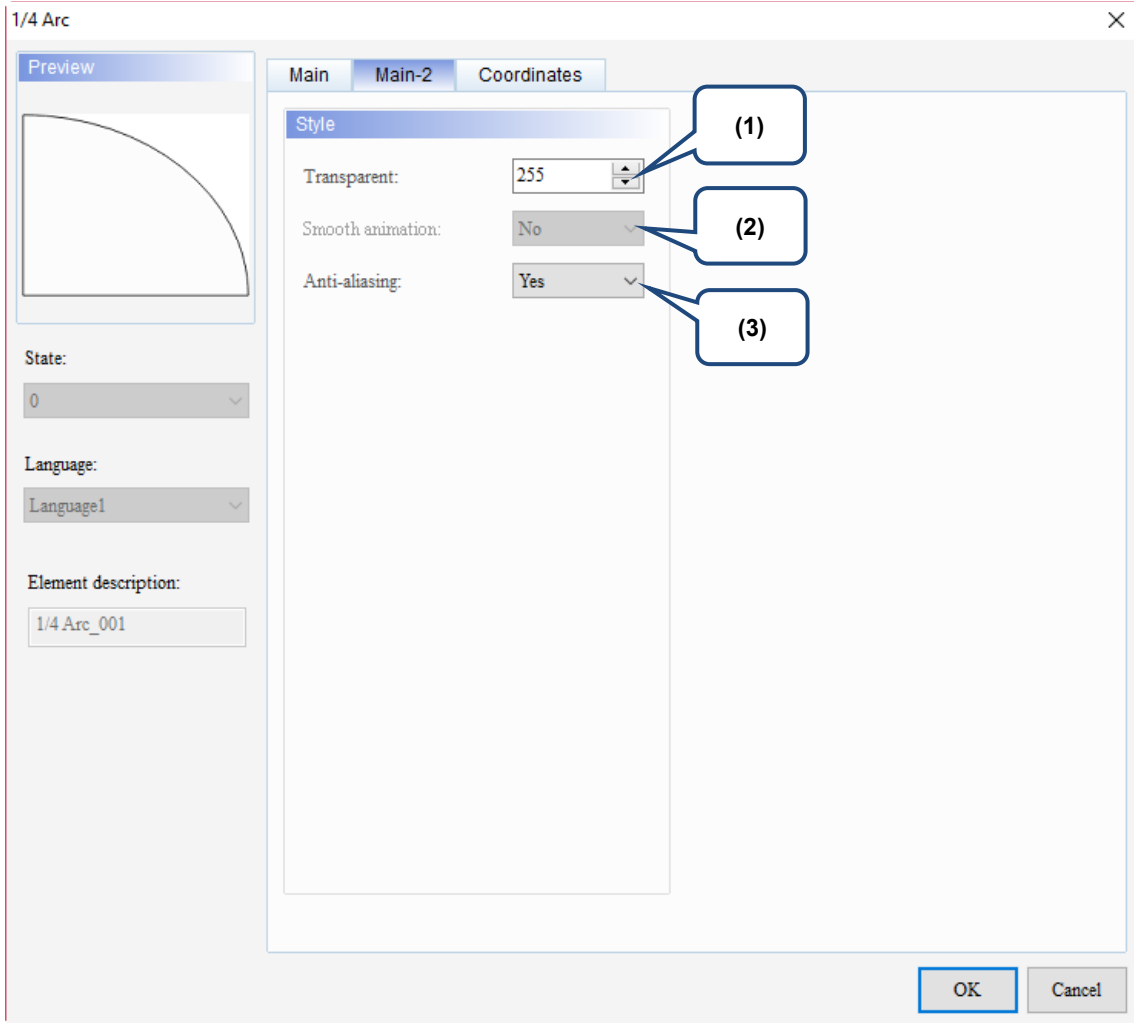
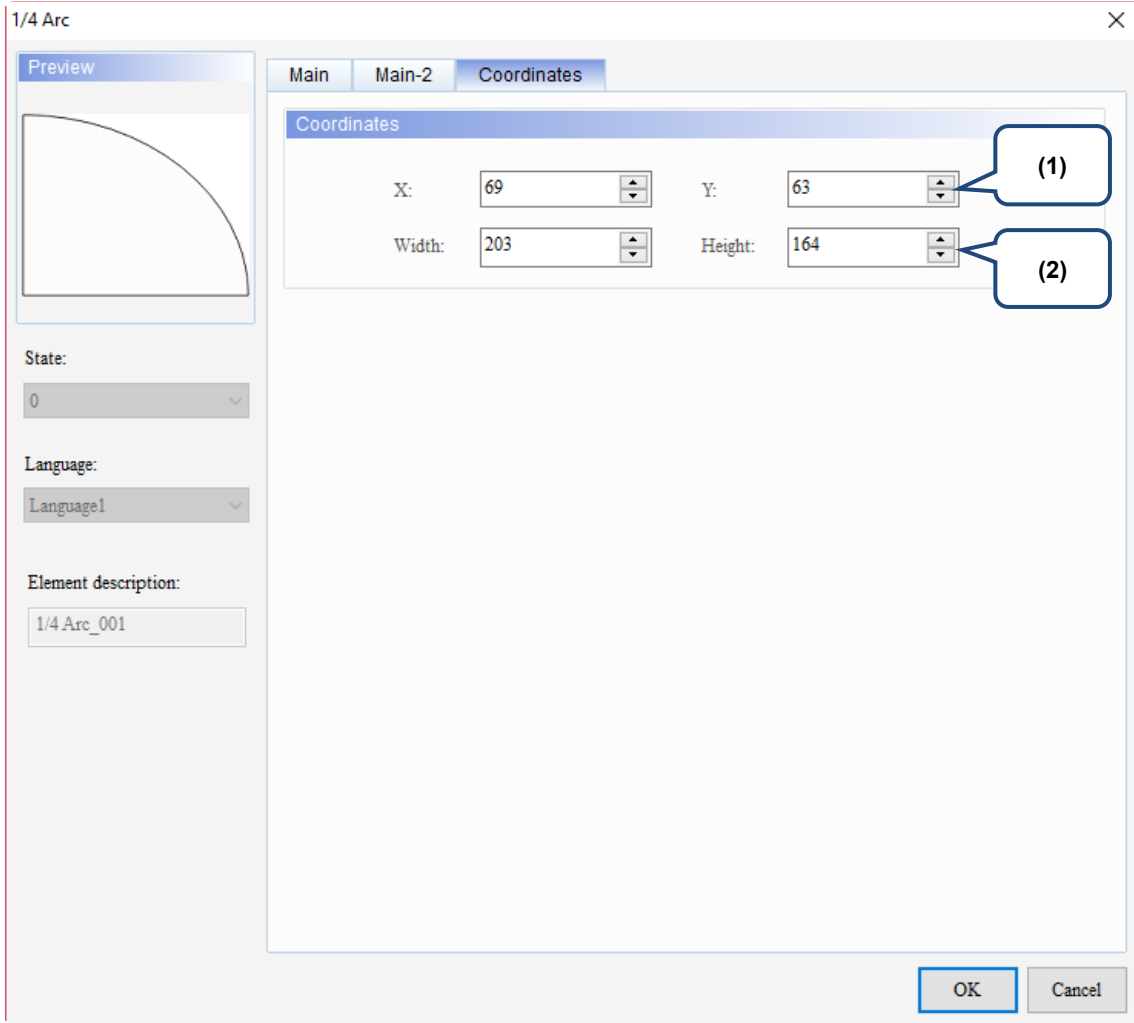


Figure 21.11.3 Main-2 property page for the 1/4 Arc element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates



21


Figure 21.11.4 Coordinates property page for the 1/4 Arc element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

(This page is intentionally left blank.)

21

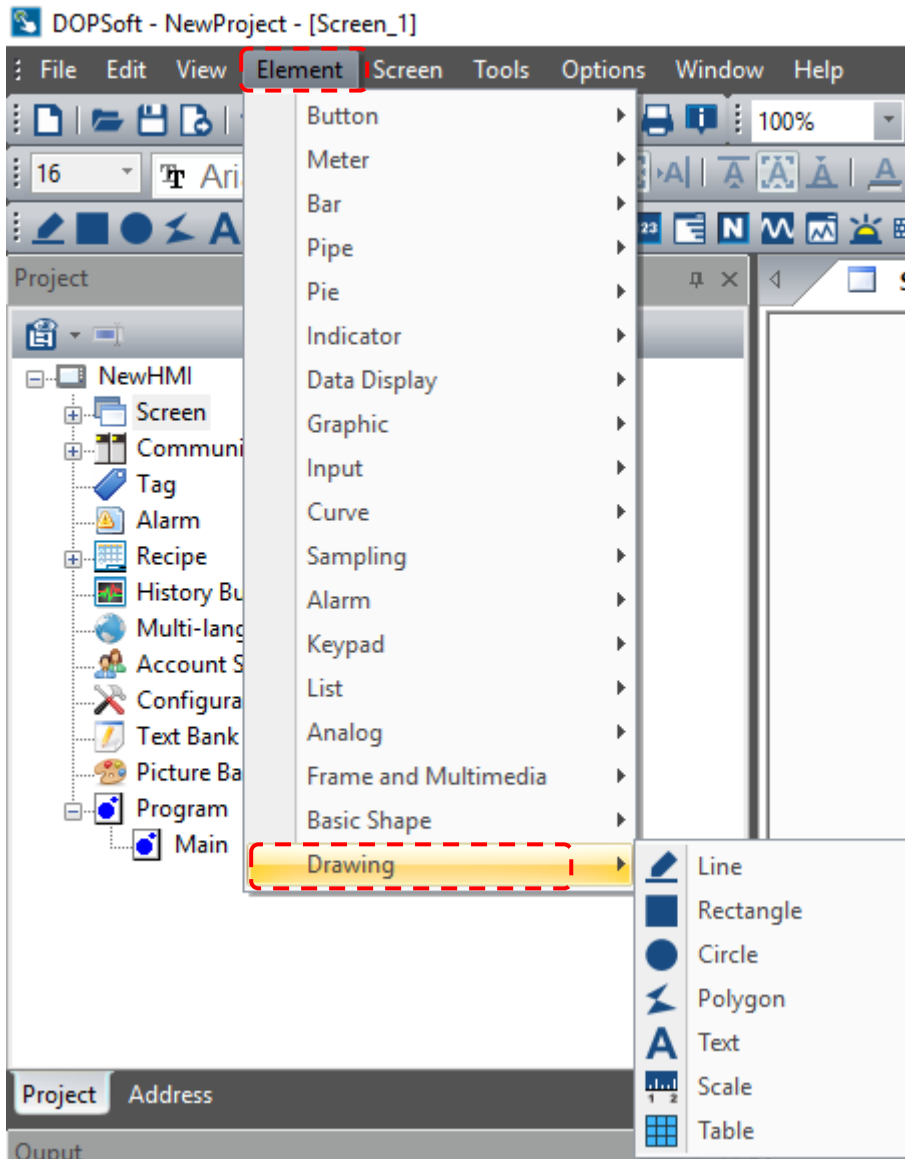
This chapter provides the usage and setting details for the Drawing elements.



22.1	Line	22-3
22.2	Rectangle	22-10
22.3	Circle	22-23
22.4	Polygon	22-31
22.5	Text	22-37
22.6	Scale	22-46
22.7	Table	22-54

To create a Drawing element, go to [Element] > [Drawing] and click on the element to be created or click on the toolbar on the far left side of the window screen and select the Drawing element.

22



22.1 Line

When using the Line element, press and hold the left mouse button to decide on the starting point of the line. Drag the mouse to a length to be created and release the left mouse button to create a straight line. When you click on this line, a rectangle shaped range will appear to help you easily adjust the size of this line. You can also change the width and color of this line.

In addition, you can use the set Read Address to control the moving position, color, blinking, and other functions of the line.

When you double-click the Line, the property page is shown as follows.

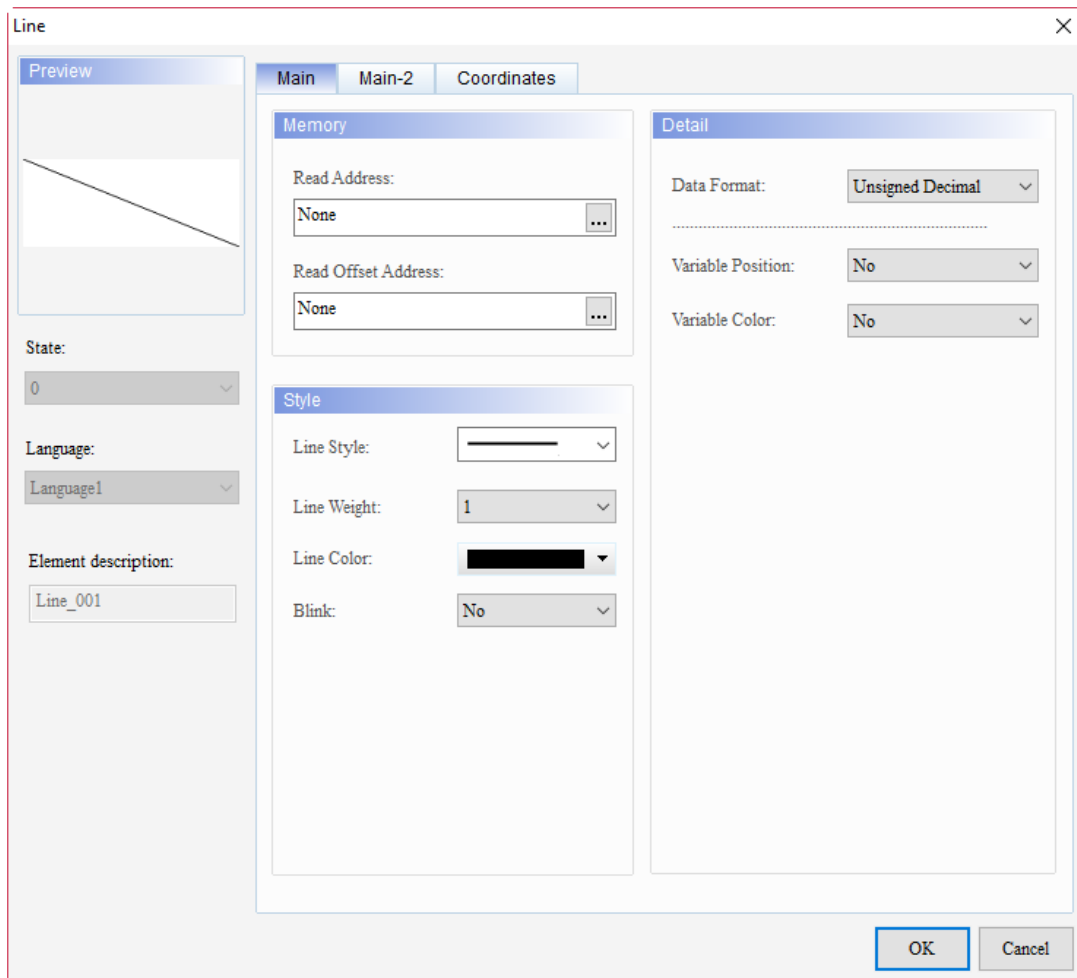


Figure 22.1.1 Properties of Line

Table 22.1.1 Function page of the Line element

Line	
Function page	Description
Preview	The Line element does not support multiple status values and multi-language display.
Main	Set Read Address, Read Offset Address, Line Style, Line Weight, Line Color, and Blink. Set Data Format, Variable Position, and Variable Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width and height of the elements.

22

■ Main

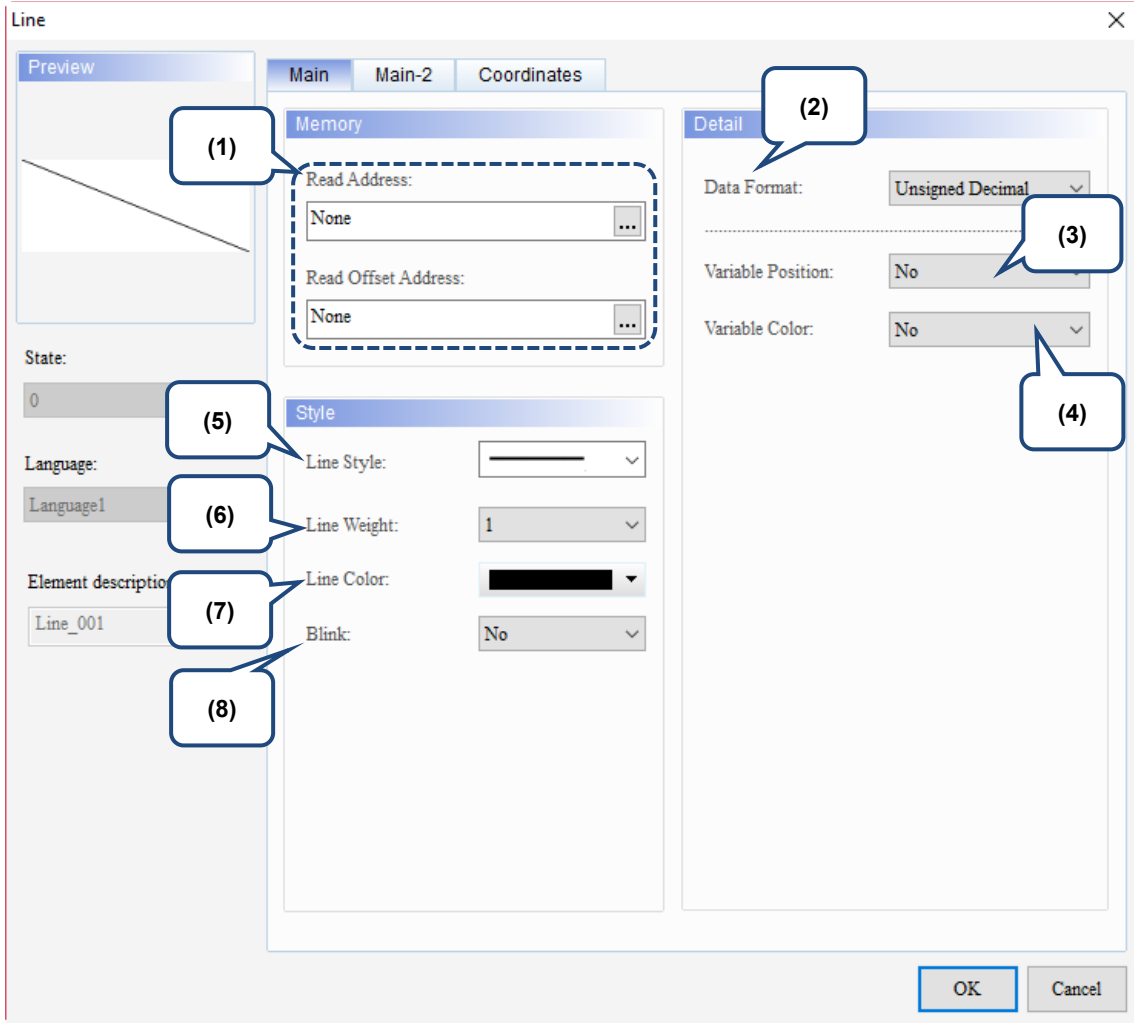
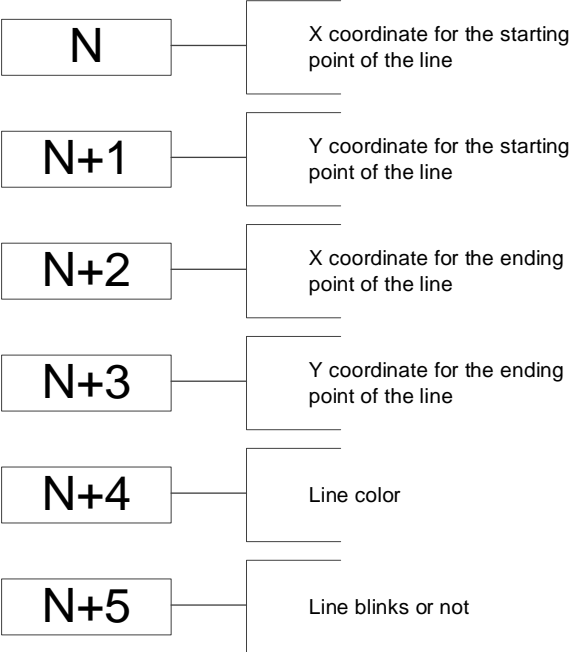
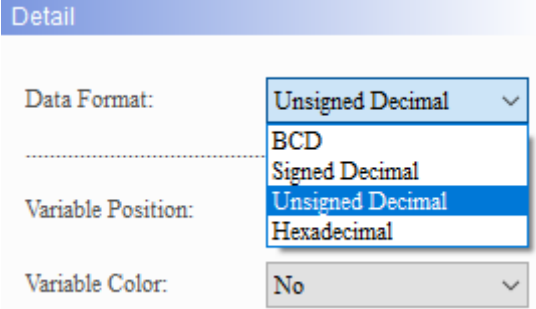
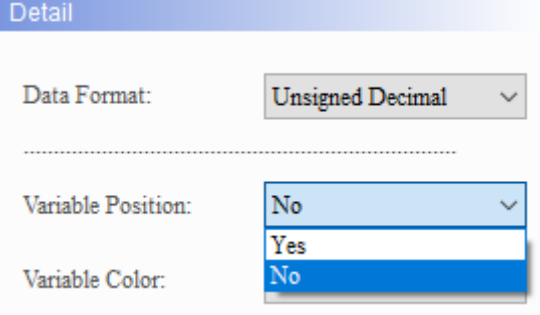
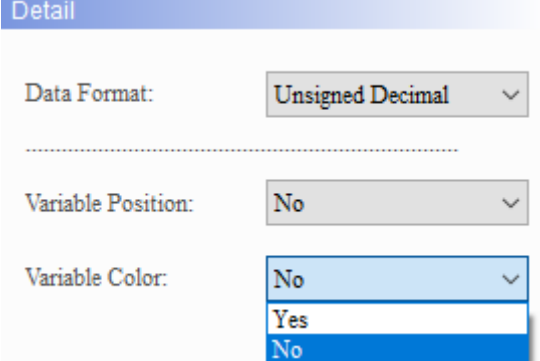
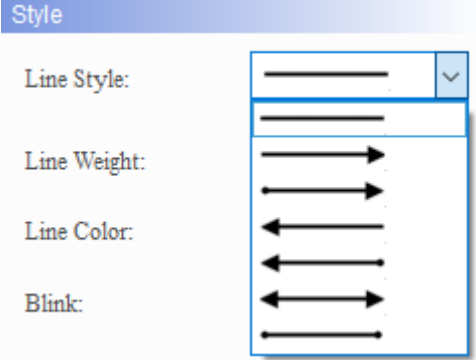
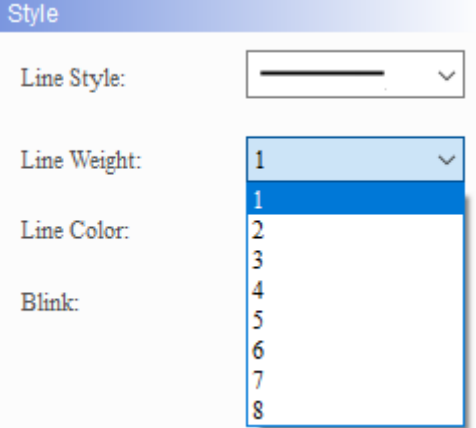
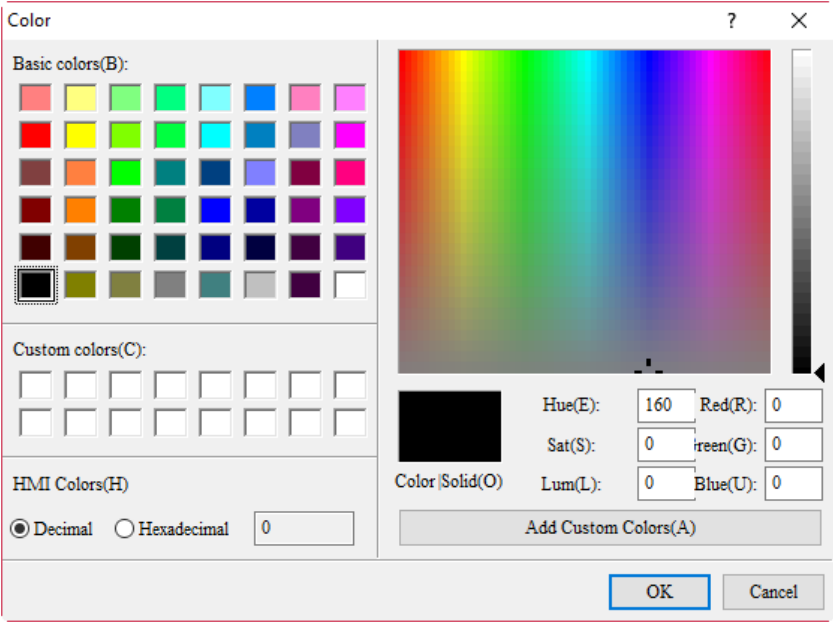
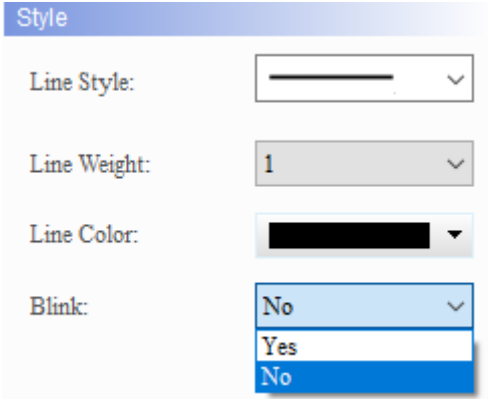


Figure 22.1.2 Main property page for the Line element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> ■ Available options are internal memory and controller register address. ■ When Variable Position is set to Yes, the value of the Read Address is regarded as the X coordinate for the starting point of the dynamic Line. ■ When Variable Position is set to Yes, [Read Address+1] is regarded as the Y coordinate for the starting point of the dynamic Line. ■ When Variable Position is set to Yes, [Read Address+2] is regarded as the X coordinate for the ending point of the dynamic Line. ■ When Variable Position is set to Yes, [Read Address+3] is regarded as the Y coordinate for the ending point of the dynamic Line. ■ When Variable Color is set to Yes, [Read Address+4] is regarded as the color for the dynamic Line. Its value ranges from 0 to 65535. ■ When Blink is set to Yes, [Read Address+5] is regarded as the blinking for the dynamic Line. When its value is greater than 1, the dynamic Line element is displayed as blinking; when the value is 0, it does not blink. <div style="display: flex; justify-content: space-around; align-items: center; margin: 10px 0;"> <div style="border: 1px solid black; padding: 2px 5px; text-align: center;">V</div> Variable Position <div style="border: 1px solid black; padding: 2px 5px; text-align: center;">V</div> Variable Color <div style="border: 1px solid black; padding: 2px 5px; text-align: center;">V</div> Blink </div> <div style="margin: 10px 0;">  </div> <ul style="list-style-type: none"> ■ For information about selecting Link Name or Element Style, please refer to Chapter 5 Buttons.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Format	<p>The formats include BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> 

22

No.	Property	Function description
(3)	Variable Position	<p>You can select Yes or No for Variable Position. When you select Yes, the position of the dynamic Line can be changed; when you select No, the dynamic Line element cannot be moved.</p> 
(4)	Variable Color	<p>You can select Yes or No for Variable Color. When you select Yes, the color of the dynamic Line can be changed; when you select No, the color of the dynamic Line cannot be changed. Its value ranges from 0 to 65535.</p> 
(5)	Line Style	<p>The following seven types of line styles are available for selection.</p> 
(6)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 

No.	Property	Function description
(7)	Line Color	<p>You can set the displaying color for the line.</p> 
(8)	Blink	<p>You can select Yes or No for Blink. When you select Yes, the dynamic Line is displayed as blinking; when you select No, the dynamic Line does not blink. When its value is greater than 1, the dynamic Line element is displayed as blinking; when the value is 0, it does not blink.</p> 

22

■ Main-2

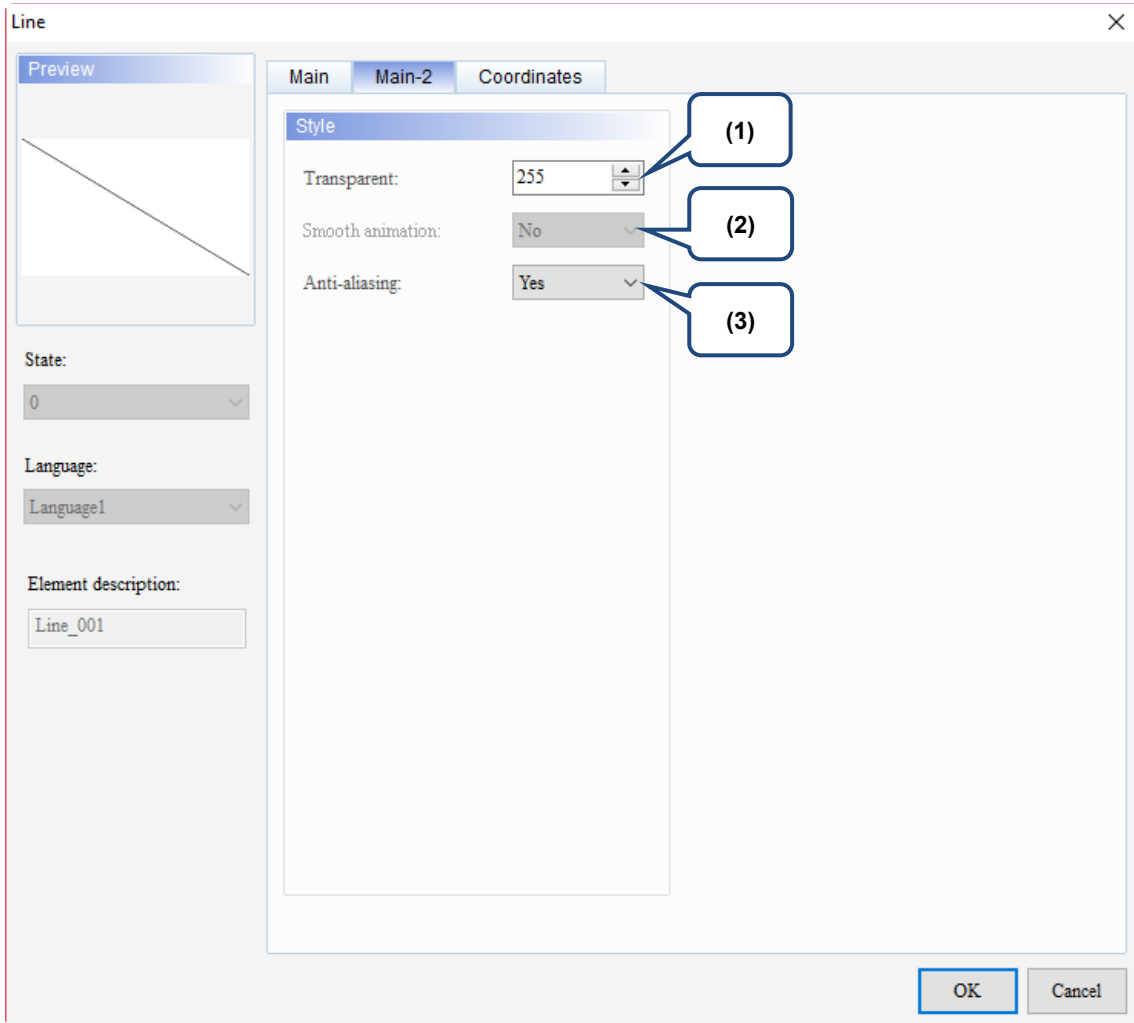
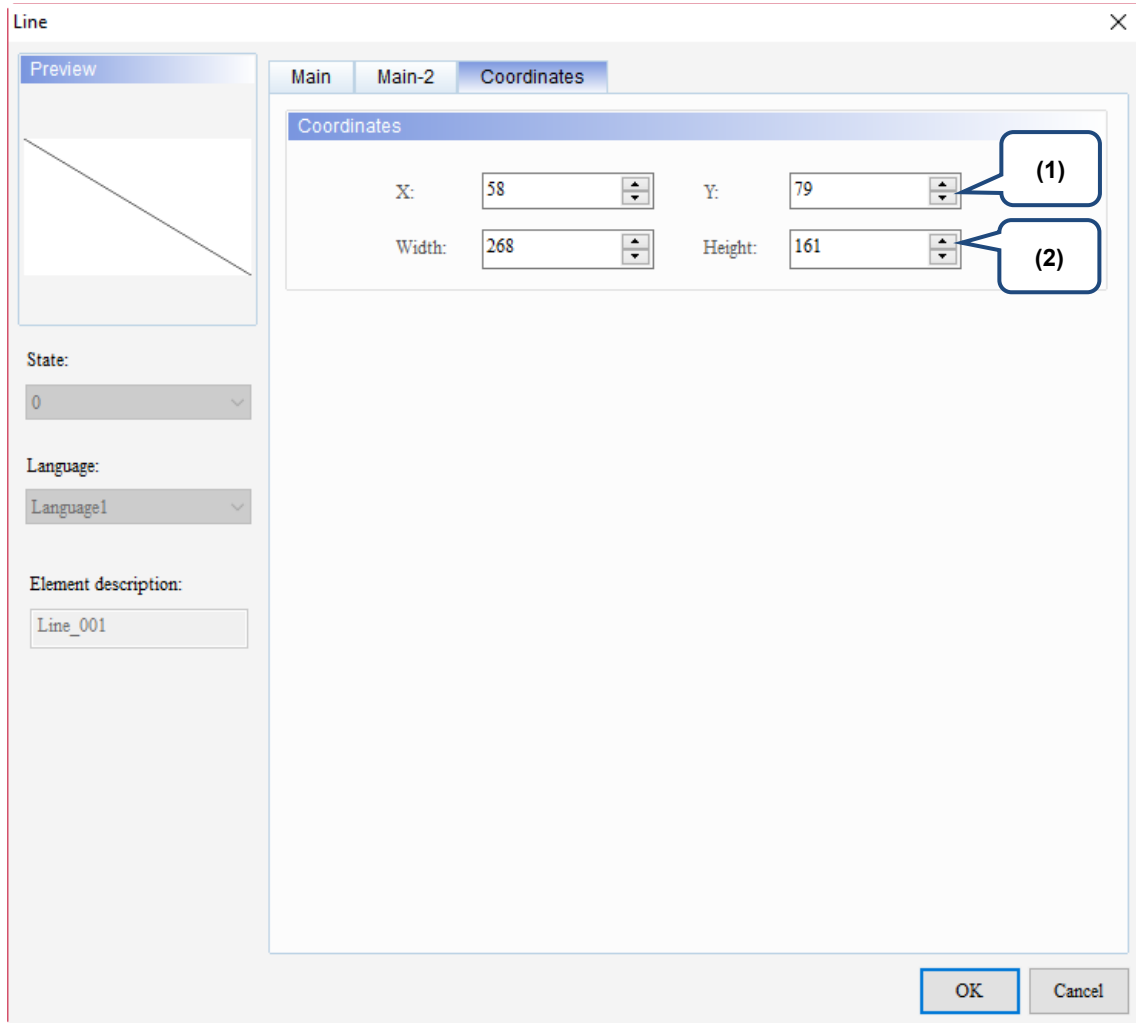


Figure 22.1.3 Main-2 property page for the Line element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

■ Coordinates



22

Figure 22.1.4 Coordinates property page for the Line element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

22

22.2 Rectangle

Other than drawing rectangular graphs with the Rectangle element, you can also import graphs from the Picture Bank. The Invisible Address function is also added to this element enabling the use of covering the entire editing screen with a Rectangle element and after you triggered this Invisible Address, the editing screen under the Rectangle element will display. In addition, you can use the set Read Address to control the moving position, color, size, and blinking of the rectangle.

When you double-click the Rectangle, the property page is shown as follows.

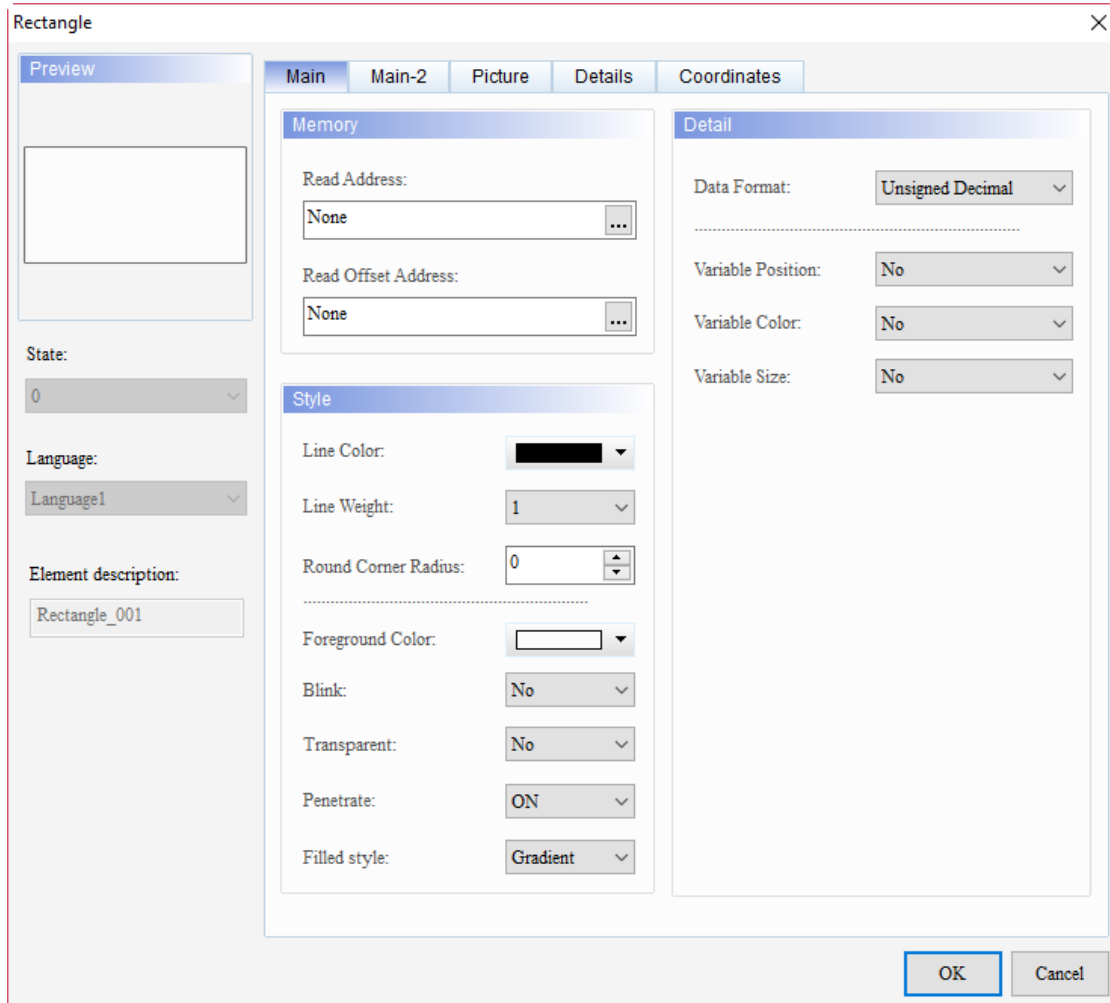
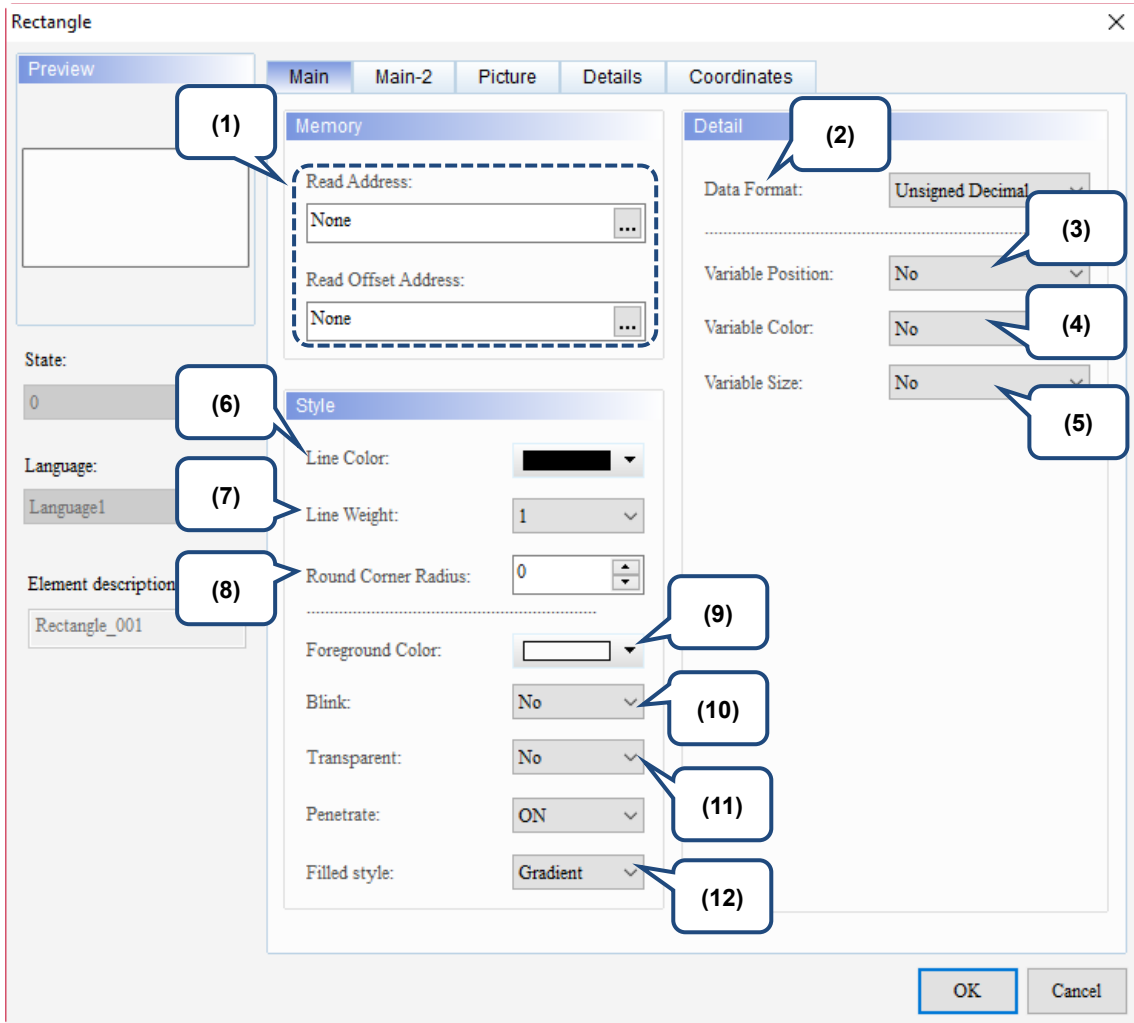


Figure 22.2.1 Properties of Rectangle

Table 22.2.1 Function page of the Rectangle element

Rectangle	
Function page	Description
Preview	The Rectangle element does not support multiple status values and multi-language display.
Main	Set Read Address, Read Offset Address, Line Color, Line Weight, Round Corner Radius, Foreground Color, Blink, Transparent, and Penetrate. Set Data Format, Variable Position, Variable Color, and Variable Size.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

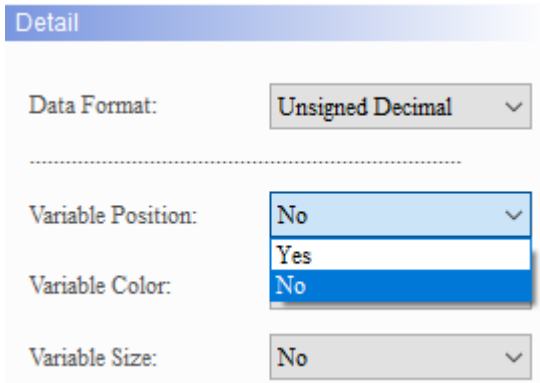
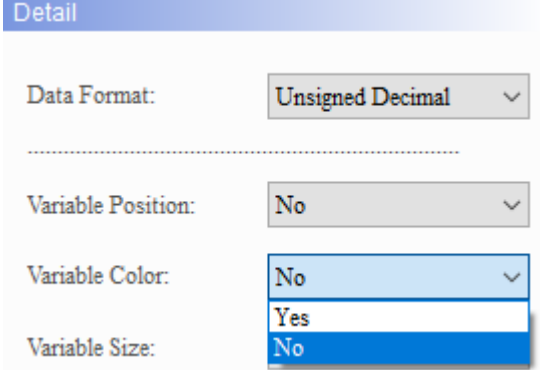
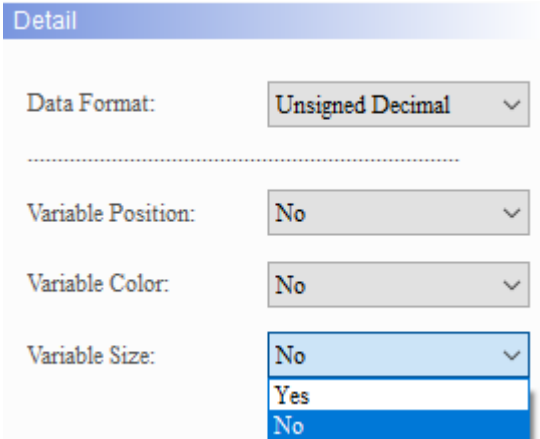


22

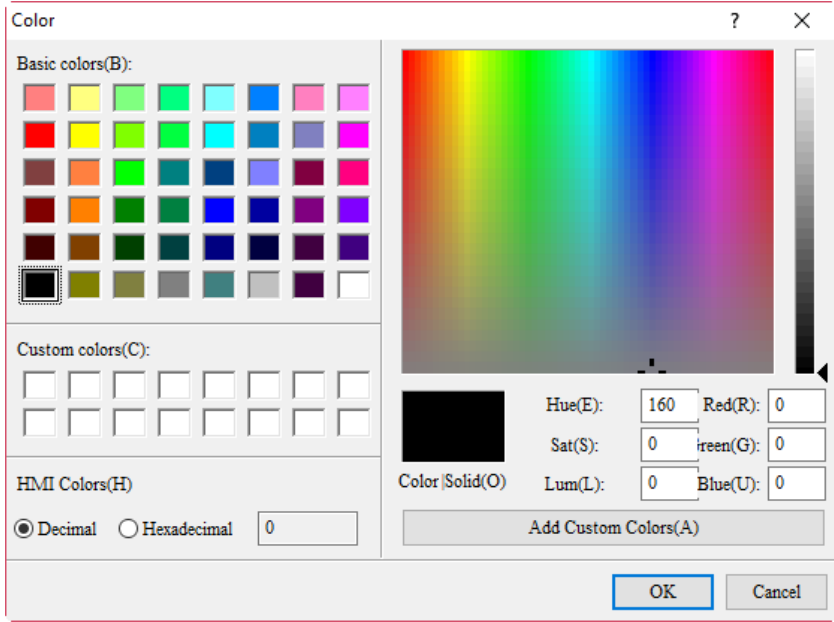
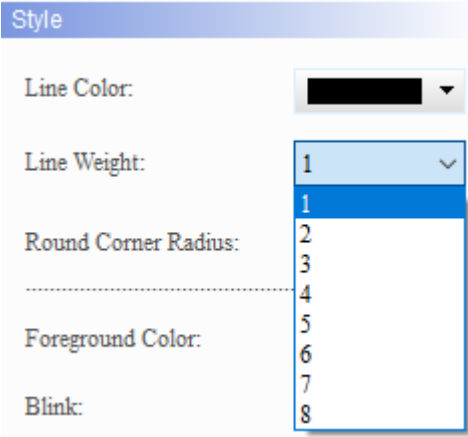
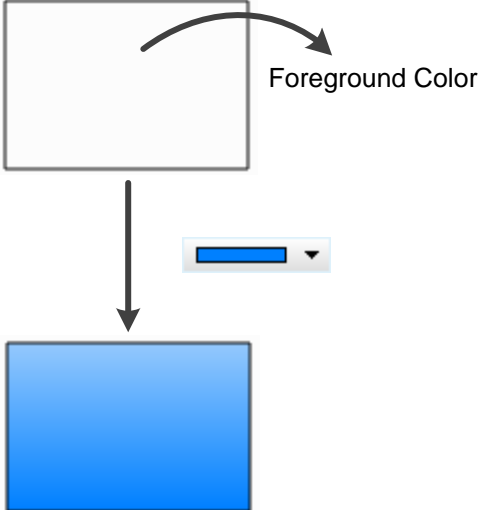
Figure 22.2.2 Main property page for the Rectangle element

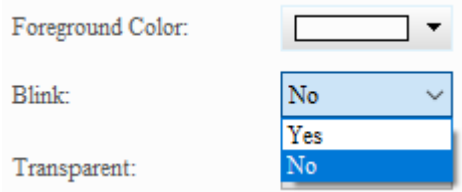
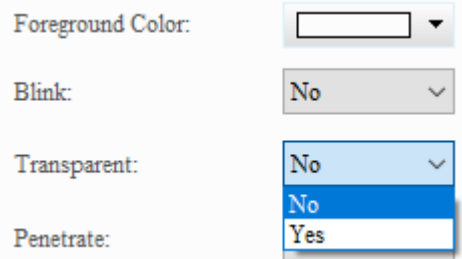
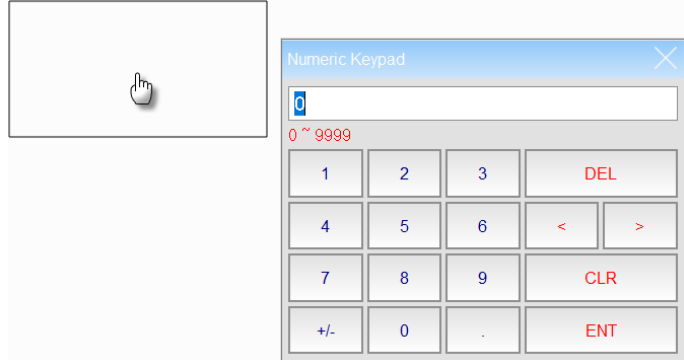
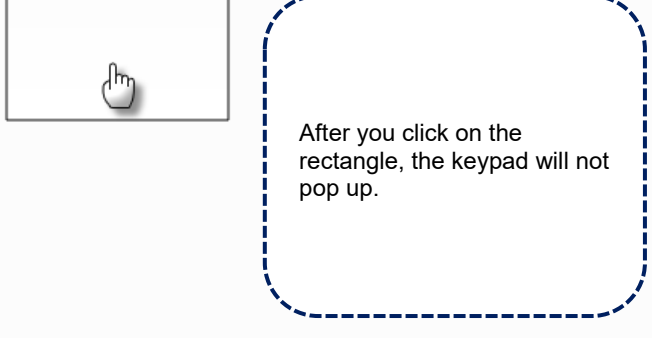
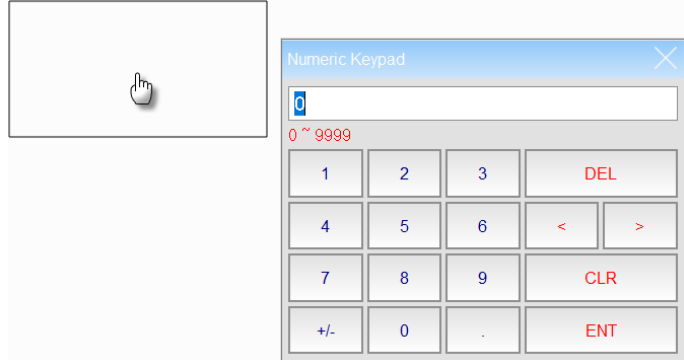
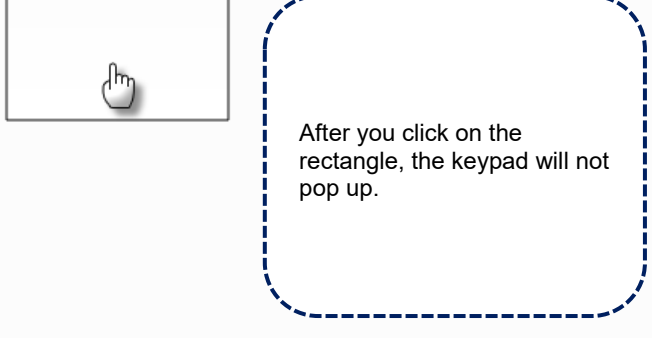
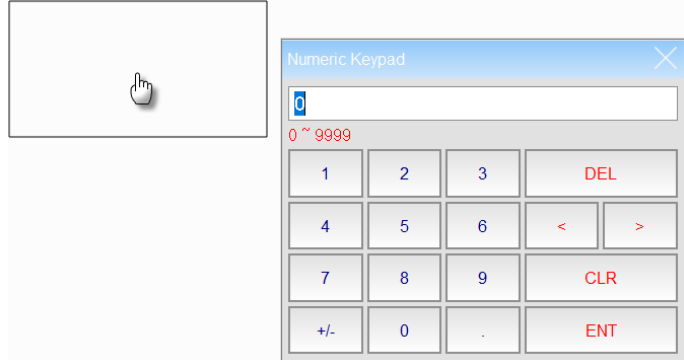
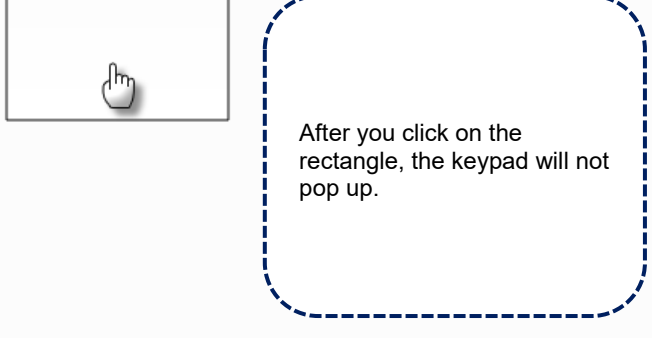
22

No.	Property	Function description																								
(1)	Read Address	<ul style="list-style-type: none"> Available options are internal memory and controller register address. When Variable Position is set to Yes, the value of the Read Address is regarded as the X coordinate of the horizontal axis for the upper left corner of the dynamic Rectangle. When Variable Position is set to Yes, [Read Address+1] is regarded as the Y coordinate of the vertical axis for the upper left corner of the dynamic Rectangle. When Variable Size is set to Yes, [Read Address+2] is regarded as the width for the dynamic Rectangle. When Variable Size is set to Yes, [Read Address+3] is regarded as the height for the dynamic Rectangle. When Variable Color is set to Yes, [Read Address+4] is regarded as the color for the dynamic Rectangle. Its value ranges from 0 to 65535. When Blink is set to Yes, [Read Address+5] is regarded as the blinking for the dynamic Rectangle. When its value is greater than 1, the dynamic Rectangle element is displayed as blinking; when the value is 0, it does not blink. For information about selecting Link Name or Element Style, please refer to Chapter 5 Buttons. When Variable Position is set to No, the corresponding memory address will be automatically filled in. <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input type="checkbox"/> Variable Position <input type="checkbox"/> Variable Color <input type="checkbox"/> Variable Size <input type="checkbox"/> Blink </div> <div style="text-align: center;"> <input type="checkbox"/> Variable Position <input type="checkbox"/> Variable Color <input type="checkbox"/> Variable Size <input type="checkbox"/> Blink </div> </div> <table border="0" style="width: 100%; margin-top: 10px;"> <tr> <td style="text-align: center; width: 15%;">N</td> <td style="width: 35%; border: 1px solid black; padding: 2px;">X coordinate of the horizontal axis for the upper left corner of the Rectangle</td> <td style="text-align: center; width: 15%;">N</td> <td style="width: 35%; border: 1px solid black; padding: 2px;">X coordinate of the horizontal axis for the lower right corner of the Rectangle</td> </tr> <tr> <td style="text-align: center;">N+1</td> <td style="border: 1px solid black; padding: 2px;">Y coordinate of the vertical axis for the upper left corner of the Rectangle</td> <td style="text-align: center;">N+1</td> <td style="border: 1px solid black; padding: 2px;">Y coordinate of the vertical axis for the lower right corner of the Rectangle</td> </tr> <tr> <td style="text-align: center;">N+2</td> <td style="border: 1px solid black; padding: 2px;">X coordinate of the horizontal axis for the lower right corner of the Rectangle</td> <td style="text-align: center;">N+2</td> <td style="border: 1px solid black; padding: 2px;">Foreground Color of the Rectangle</td> </tr> <tr> <td style="text-align: center;">N+3</td> <td style="border: 1px solid black; padding: 2px;">Y coordinate of the vertical axis for the lower right corner of the Rectangle</td> <td style="text-align: center;">N+3</td> <td style="border: 1px solid black; padding: 2px;">Rectangle blinks or not</td> </tr> <tr> <td style="text-align: center;">N+4</td> <td style="border: 1px solid black; padding: 2px;">Rectangle color</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">N+5</td> <td style="border: 1px solid black; padding: 2px;">Rectangle blinks or not</td> <td></td> <td></td> </tr> </table>	N	X coordinate of the horizontal axis for the upper left corner of the Rectangle	N	X coordinate of the horizontal axis for the lower right corner of the Rectangle	N+1	Y coordinate of the vertical axis for the upper left corner of the Rectangle	N+1	Y coordinate of the vertical axis for the lower right corner of the Rectangle	N+2	X coordinate of the horizontal axis for the lower right corner of the Rectangle	N+2	Foreground Color of the Rectangle	N+3	Y coordinate of the vertical axis for the lower right corner of the Rectangle	N+3	Rectangle blinks or not	N+4	Rectangle color			N+5	Rectangle blinks or not		
N	X coordinate of the horizontal axis for the upper left corner of the Rectangle	N	X coordinate of the horizontal axis for the lower right corner of the Rectangle																							
N+1	Y coordinate of the vertical axis for the upper left corner of the Rectangle	N+1	Y coordinate of the vertical axis for the lower right corner of the Rectangle																							
N+2	X coordinate of the horizontal axis for the lower right corner of the Rectangle	N+2	Foreground Color of the Rectangle																							
N+3	Y coordinate of the vertical axis for the lower right corner of the Rectangle	N+3	Rectangle blinks or not																							
N+4	Rectangle color																									
N+5	Rectangle blinks or not																									
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.																								
(2)	Data Format	<p>The formats include BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> <div style="border: 1px solid #ccc; padding: 10px; background-color: #f9f9f9;"> <p style="margin: 0;">Detail</p> <p style="margin: 5px 0;">Data Format: Unsigned Decimal ▾</p> <p style="margin: 5px 0;">Variable Position: BCD</p> <p style="margin: 5px 0;">Variable Color: Signed Decimal</p> <p style="margin: 5px 0;">Variable Size: Unsigned Decimal</p> <p style="margin: 5px 0;">Variable Color: Hexadecimal</p> <p style="margin: 5px 0;">Variable Color: No ▾</p> <p style="margin: 5px 0;">Variable Size: No ▾</p> </div>																								

No.	Property	Function description
(3)	Variable Position	<p>You can select Yes or No for Variable Position. When you select Yes, the position of the dynamic Rectangle can be changed; when you select No, though the dynamic Rectangle element cannot be moved, the size of the Rectangle element can still be changed.</p> 
(4)	Variable Color	<p>You can select Yes or No for Variable Color. When you select Yes, the color of the dynamic Rectangle can be changed; when you select No, the color of the dynamic Rectangle cannot be changed. Its value ranges from 0 to 65535.</p> 
(5)	Variable Size	<p>You can select Yes or No for Variable Size. When you select Yes, the dynamic Rectangle changes the size of the Rectangle element by changing its coordinates at the lower right corner; when you select No, the size of the Rectangle element cannot be changed.</p> 

22

No.	Property	Function description
(6)	Line Color	<p>You can set the displaying color for the line.</p> 
(7)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(8)	Round Corner Radius	<p>The size of this radius is determined by the width and height of the Rectangle element. Take the minimum value of the Rectangle element's width divided by 2 and height divided by 2, and this is the maximum set value for Round Corner Radius.</p>
(9)	Foreground Color	<p>Set the Foreground Color of the element.</p> 

No.	Property	Function description				
(10)	Blink	<p>You can select Yes or No for Blink. When you select Yes, the dynamic Rectangle is displayed as blinking; when you select No, the dynamic Rectangle does not blink. When its value is greater than 1, the dynamic Rectangle element is displayed as blinking; when the value is 0, it does not blink.</p> 				
(11)	Transparent	<p>You can select Yes or No for Transparent. When you select Yes, the setting for the Foreground Color of the element is invalid; when you select No, the dynamic Rectangle element displays only the rectangle border line with the middle shown in transparent color.</p> 				
(12)	Penetrate	<ul style="list-style-type: none"> When an element overlaps with the Rectangle, this function allows you to click on that element. Please refer to the example below. Create a Numeric Entry element and create a Rectangle element that overlaps on top of the Numeric Entry element. <table border="1"> <tr> <td> <p>Penetrate is on</p> </td> <td> <p>You can penetrate the rectangle and click on the Numeric Entry element.</p>  </td> </tr> <tr> <td> <p>Penetrate is off</p> </td> <td> <p>You cannot penetrate the rectangle and click on the Numeric Entry element.</p>  <p>After you click on the rectangle, the keypad will not pop up.</p> </td> </tr> </table>	<p>Penetrate is on</p>	<p>You can penetrate the rectangle and click on the Numeric Entry element.</p> 	<p>Penetrate is off</p>	<p>You cannot penetrate the rectangle and click on the Numeric Entry element.</p>  <p>After you click on the rectangle, the keypad will not pop up.</p>
<p>Penetrate is on</p>	<p>You can penetrate the rectangle and click on the Numeric Entry element.</p> 					
<p>Penetrate is off</p>	<p>You cannot penetrate the rectangle and click on the Numeric Entry element.</p>  <p>After you click on the rectangle, the keypad will not pop up.</p>					

■ Main-2

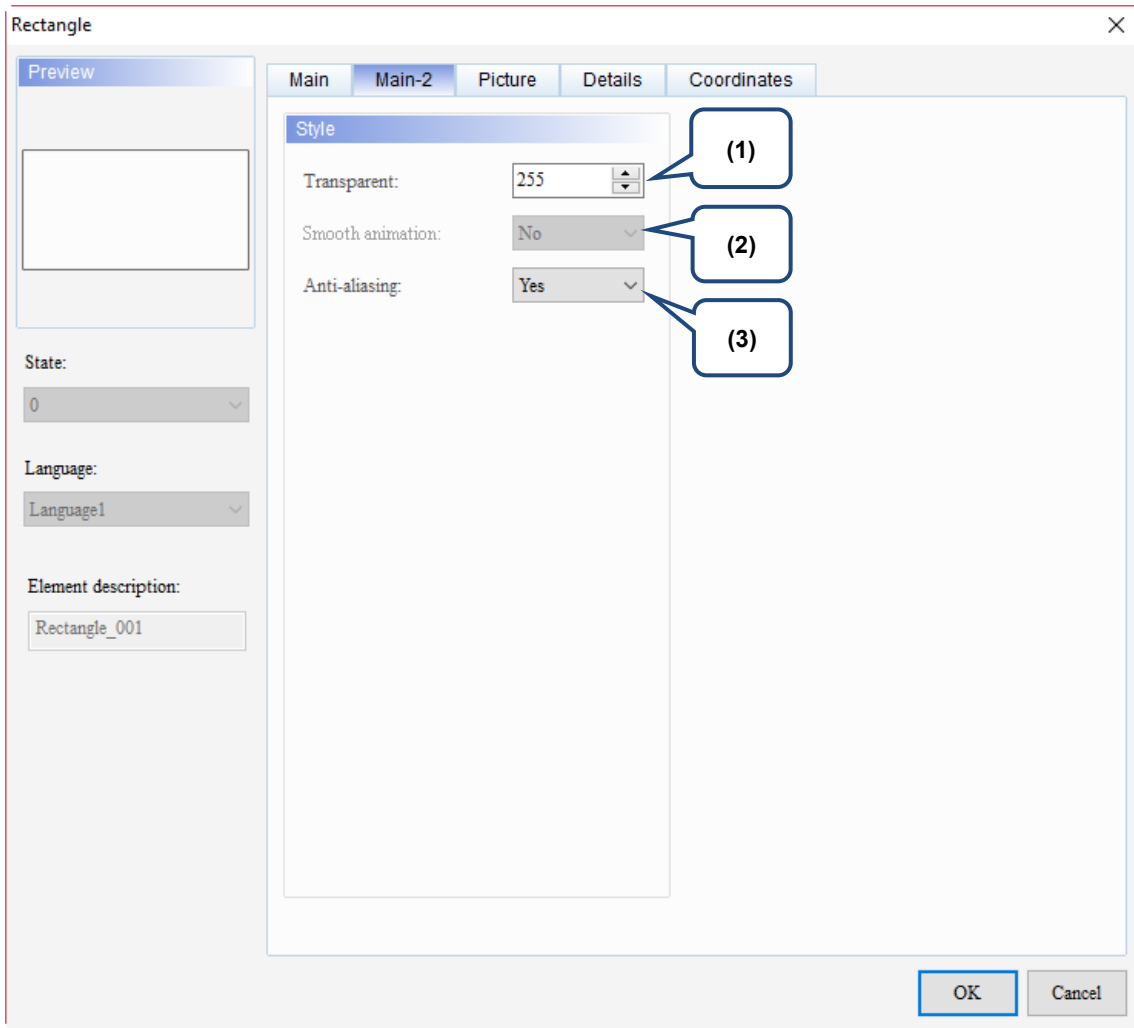
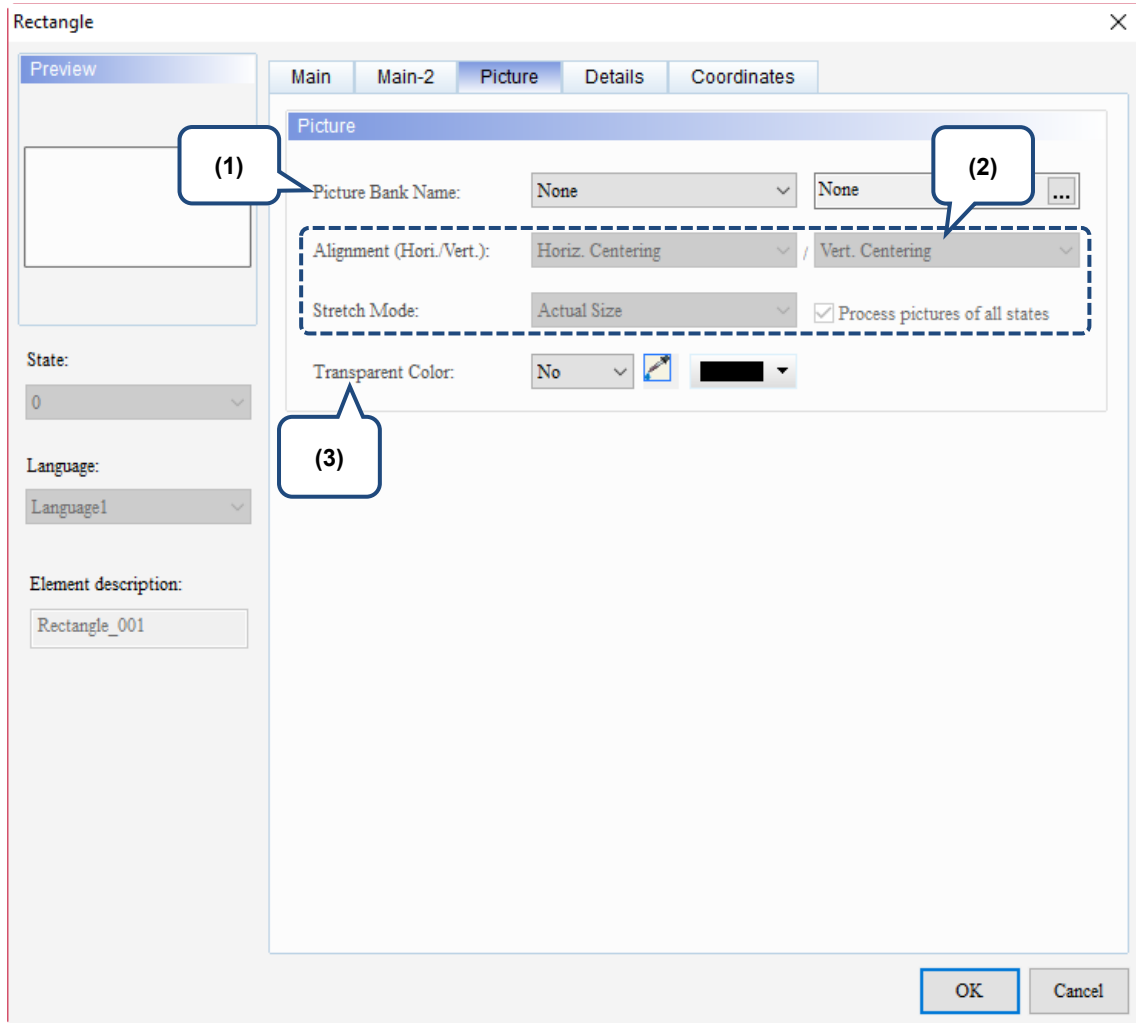


Figure 22.2.3 Main-2 property page for the Rectangle element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.				
		<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 15%;">Yes</td> <td style="width: 15%;"></td> <td style="width: 70%;"></td> </tr> <tr> <td>No</td> <td></td> <td></td> </tr> </table>	Yes			No
Yes						
No						

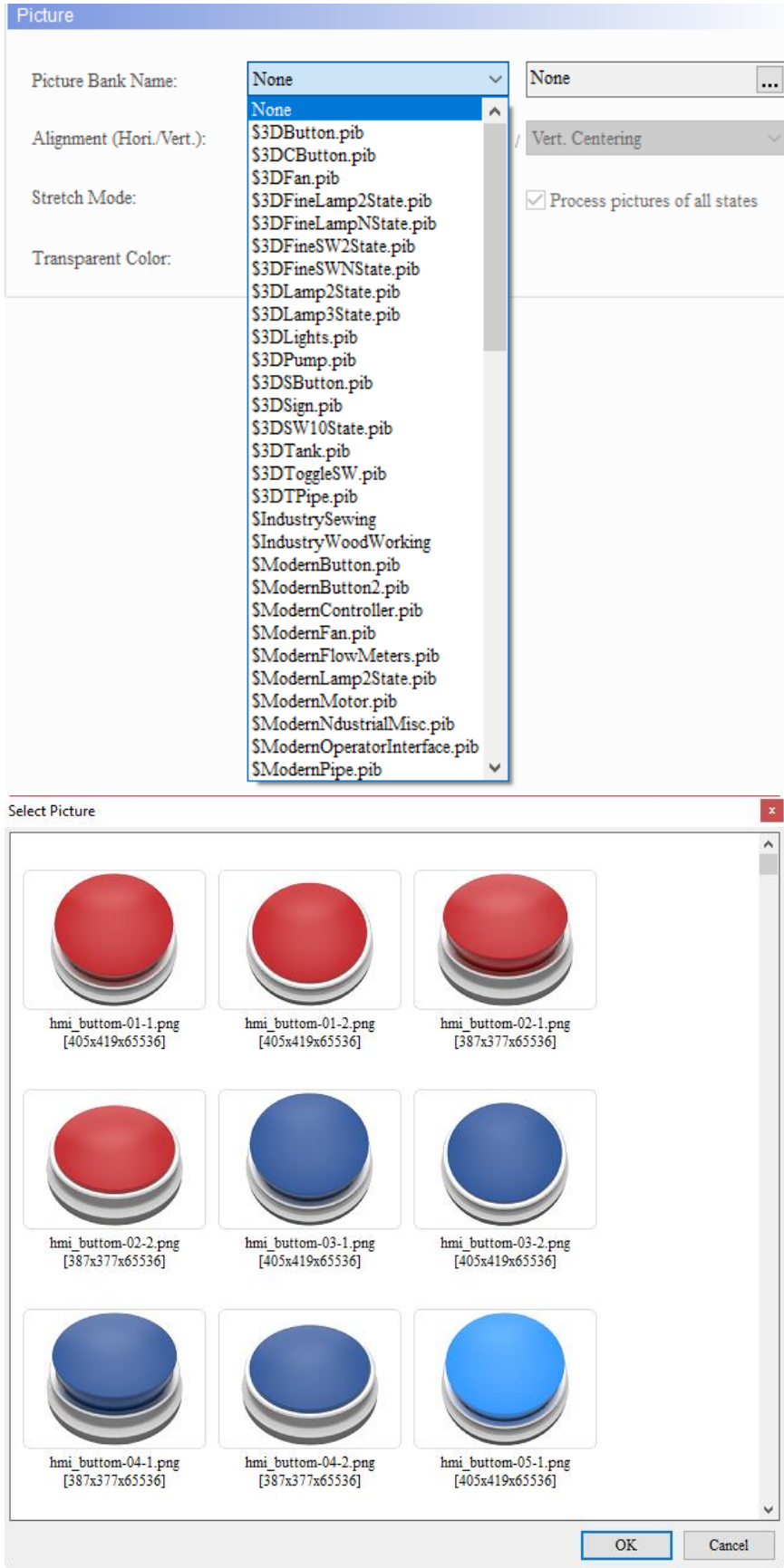
■ Picture

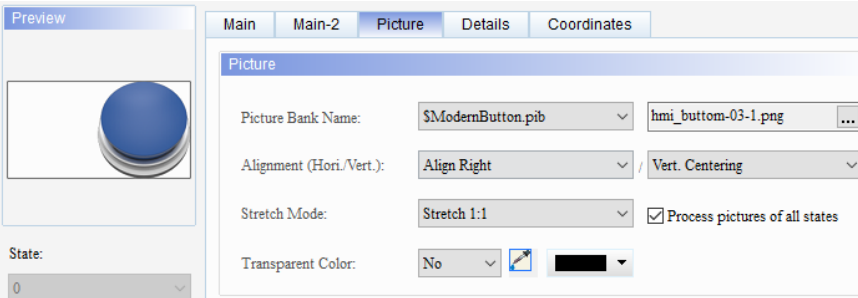














22

Figure 22.2.4 Picture property page for the Rectangle element

22

No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.</p>  <p>The 'Picture' dialog box includes the following fields:</p> <ul style="list-style-type: none"> Picture Bank Name: A drop-down menu currently showing 'None'. Alignment (Hori./Vert.): A field showing 'Vert. Centering'. Stretch Mode: A field. Transparent Color: A field. <p>The drop-down list for Picture Bank Name contains the following items:</p> <ul style="list-style-type: none"> None \$3DButton.pib \$3DCButton.pib \$3DFan.pib \$3DFineLamp2State.pib \$3DFineLampNState.pib \$3DFineSW2State.pib \$3DFineSWNState.pib \$3DLamp2State.pib \$3DLamp3State.pib \$3DLights.pib \$3DPump.pib \$3DSButton.pib \$3DSign.pib \$3DSW10State.pib \$3DTank.pib \$3DToggleSW.pib \$3DTPipe.pib \$IndustrySewing \$IndustryWoodWorking \$ModernButton.pib \$ModernButton2.pib \$ModernController.pib \$ModernFan.pib \$ModernFlowMeters.pib \$ModernLamp2State.pib \$ModernMotor.pib \$ModernNdustrualMisc.pib \$ModernOperatorInterface.pib \$ModernPipe.pib <p>The 'Select Picture' dialog box displays a grid of 9 button images with the following filenames and dimensions:</p> <ul style="list-style-type: none"> hmi_button-01-1.png [405x419x65536] hmi_button-01-2.png [405x419x65536] hmi_button-02-1.png [387x377x65536] hmi_button-02-2.png [387x377x65536] hmi_button-03-1.png [405x419x65536] hmi_button-03-2.png [405x419x65536] hmi_button-04-1.png [387x377x65536] hmi_button-04-2.png [387x377x65536] hmi_button-05-1.png [405x419x65536]

No.	Property	Function description								
(2)	Alignment	<p>■ You can use the alignment options to set how pictures are aligned.</p>  <p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> </table>	Stretch All	Stretch 1:1	Actual Size					
	Stretch All	Stretch 1:1	Actual Size							
Stretch Mode	<table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>■ If you check [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 								

■ Details

22

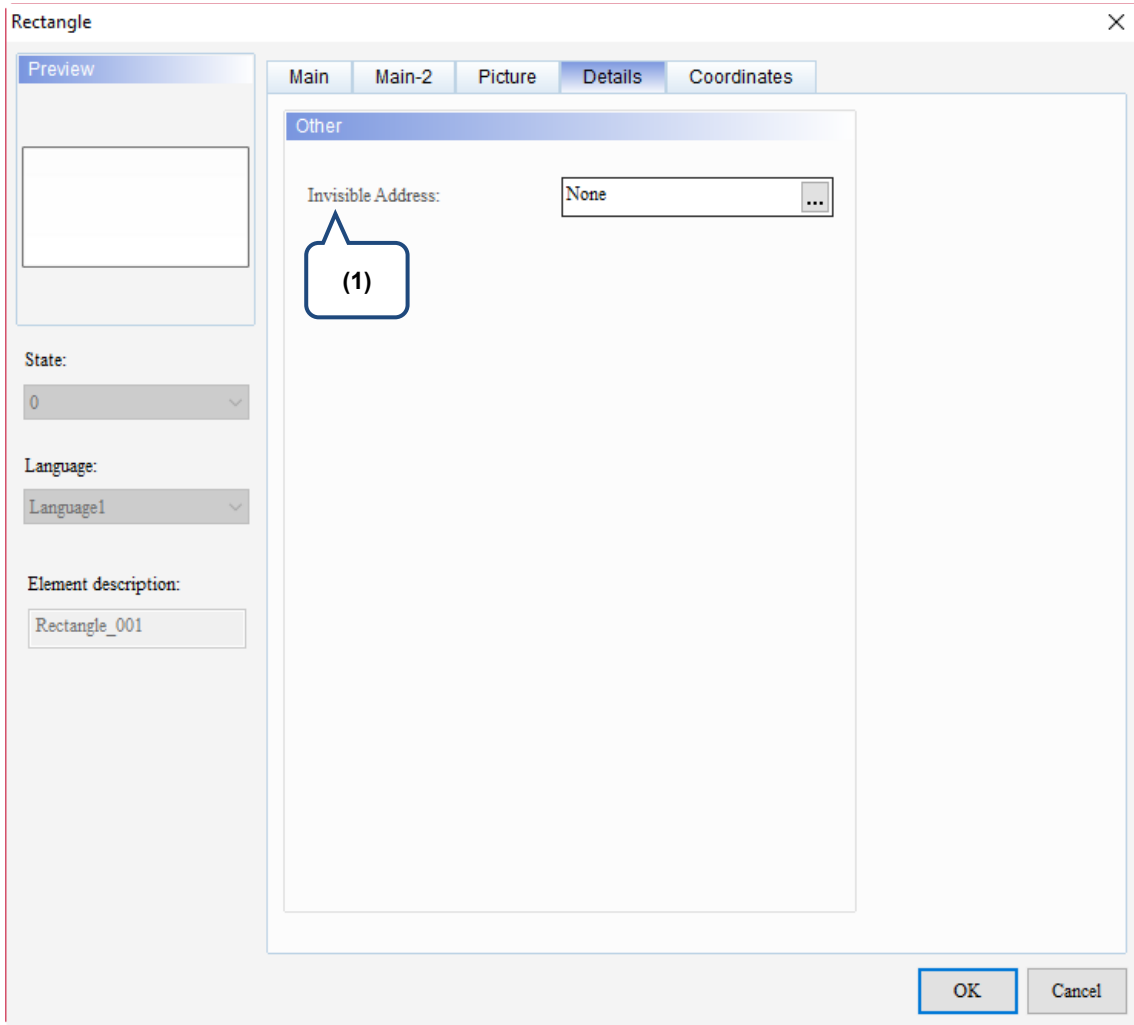

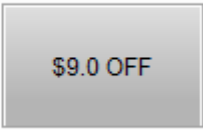

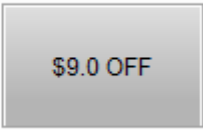

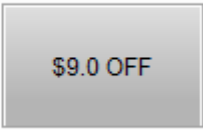
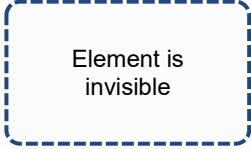
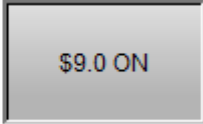
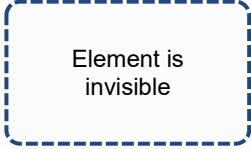
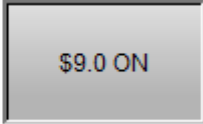
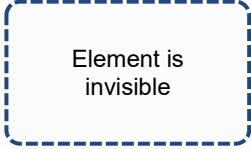
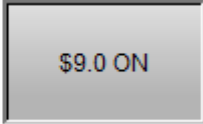
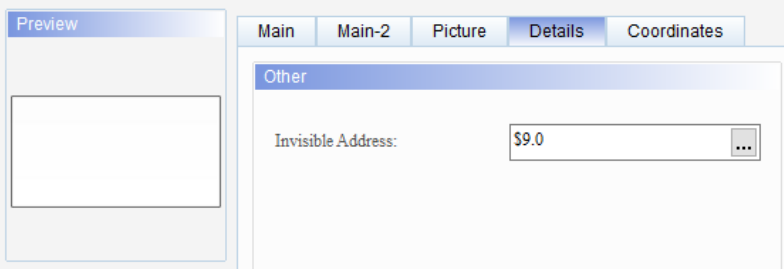


Figure 22.2.5 Details property page for the Rectangle element

No.	Property	Function description			
(1)	Invisible Address	<p>When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td></td> <td></td> </tr> </table>	Invisible Address is off		
		Invisible Address is off			
<table border="1"> <tr> <td>Invisible Address is on</td> <td></td> <td></td> </tr> </table>	Invisible Address is on				
Invisible Address is on					
<p>Rectangle</p> 					

22

■ Coordinates

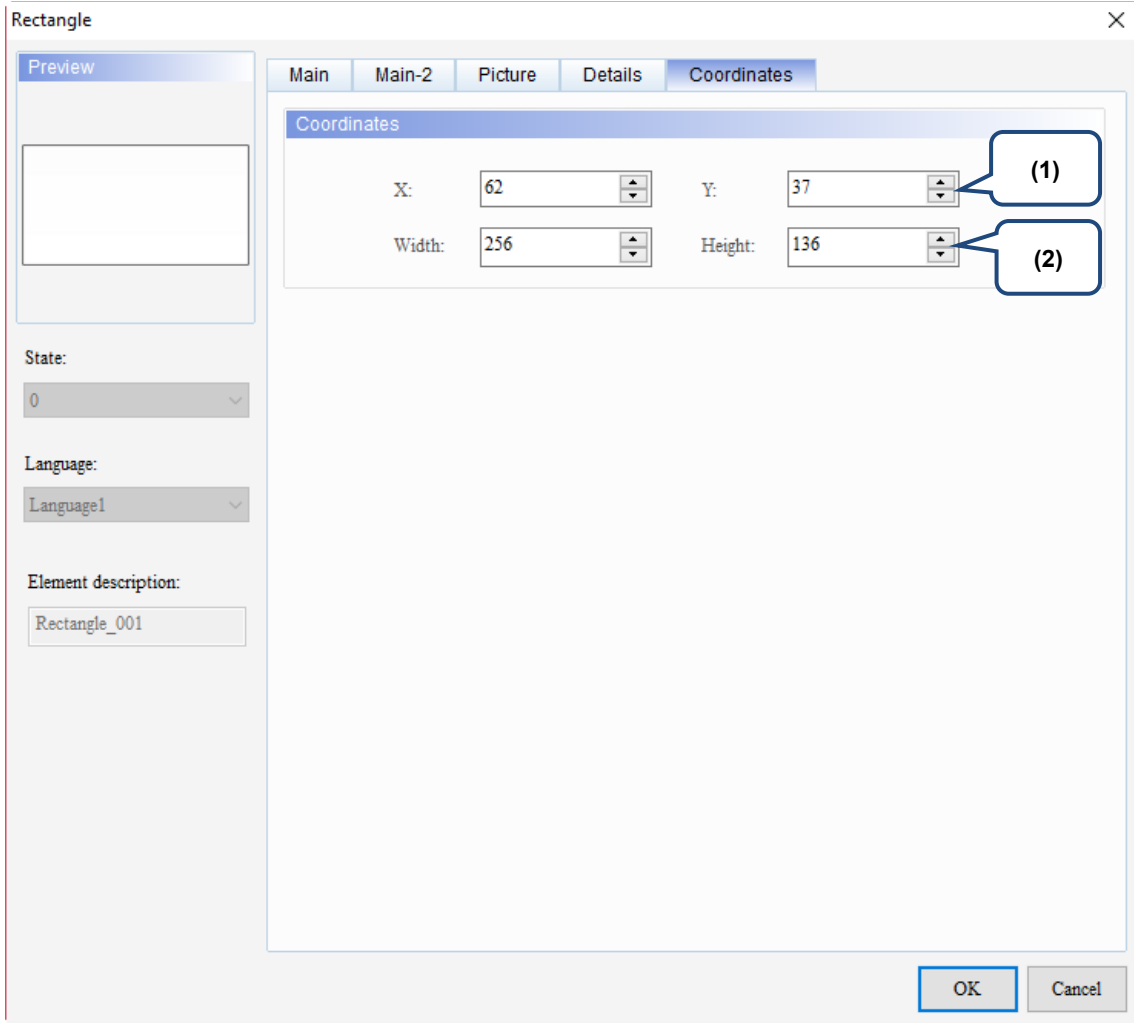


Figure 22.2.6 Coordinates property page for the Rectangle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

22.3 Circle

Press the left mouse key and drag a range to form a circle. If the length is equal to the width, the graph created will become a circle; if not equal, it will become an oval. You can also use the set Read Address to control the moving position, color, size, and blinking of the circle.

When you double-click the Circle, the property page is shown as follows.

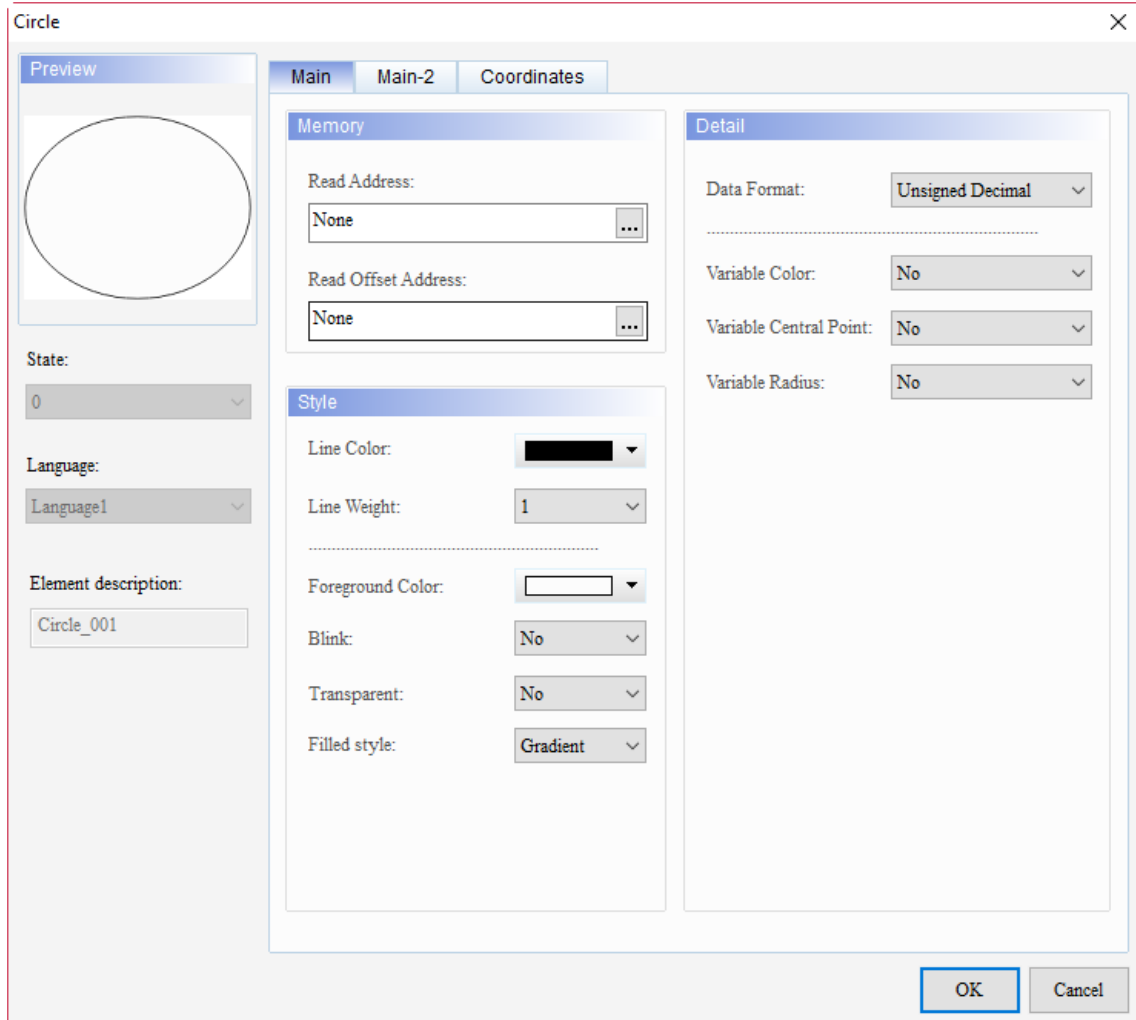


Figure 22.3.1 Properties of Circle

Table 22.3.1 Function page of the Circle element

Circle	
Function page	Description
Preview	The Circle element does not support multiple status values and multi-language display.
Main	Set Read Address, Read Offset Address, Line Color, Line Weight, Foreground Color, Blink, and Transparent. Set Data Format, Variable Color, Variable Central Point, and Variable Radius.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

22

■ Main

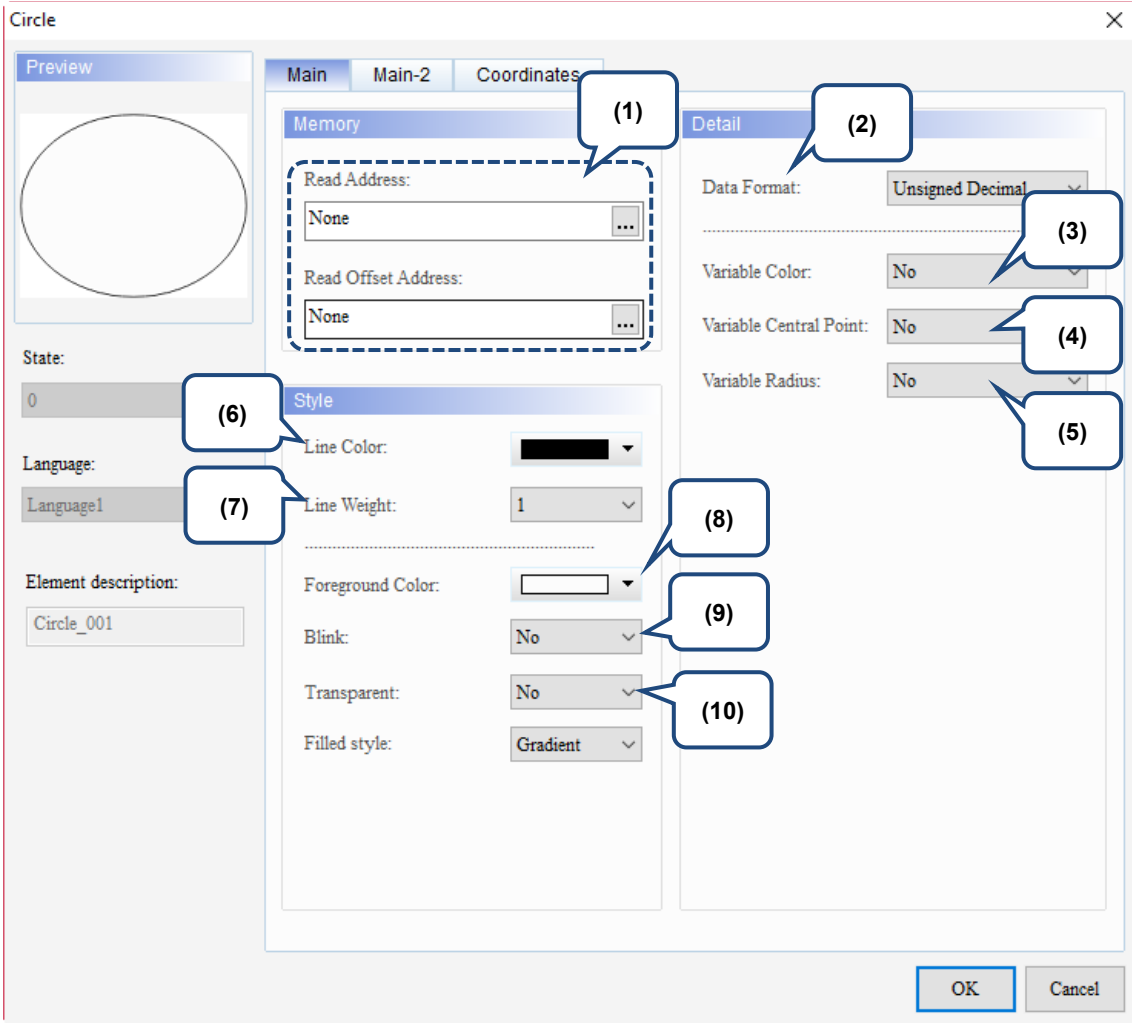
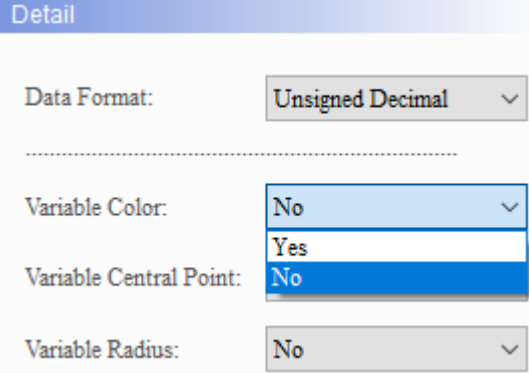
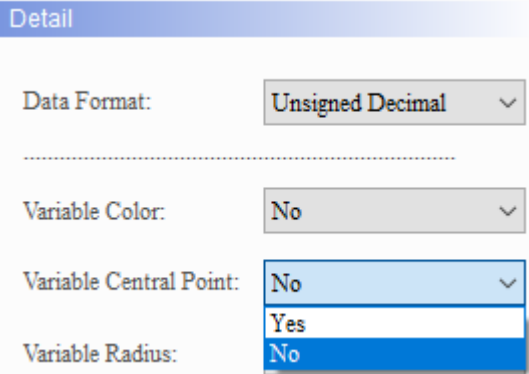
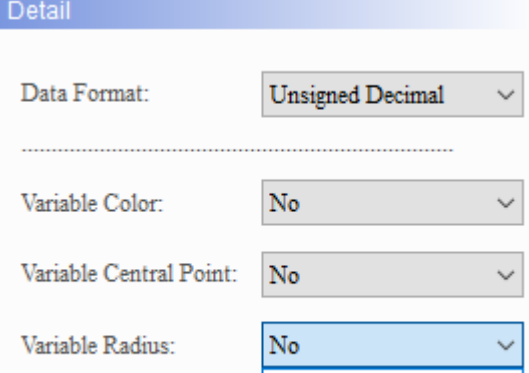
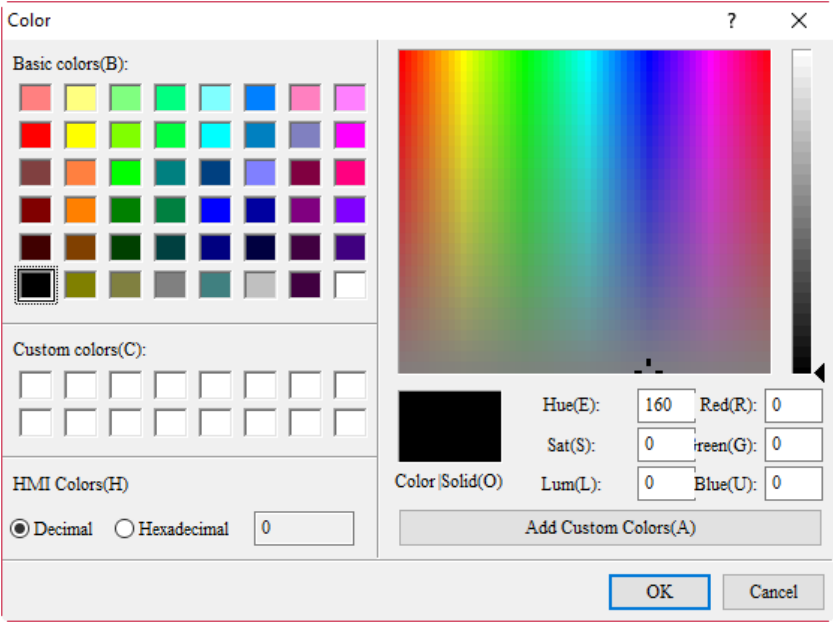
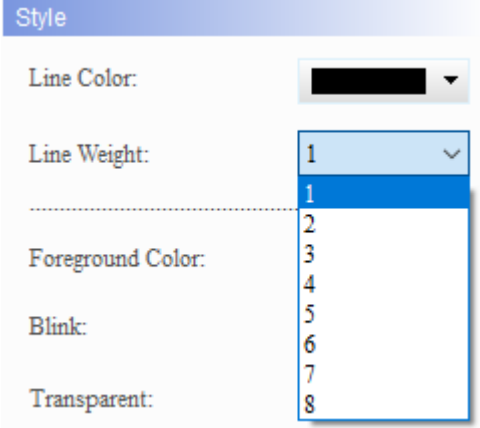
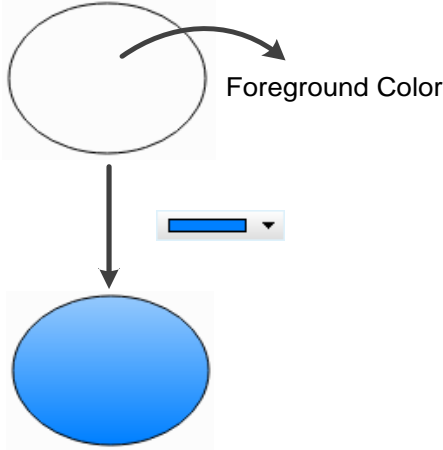


Figure 22.3.2 Main property page for the Circle element

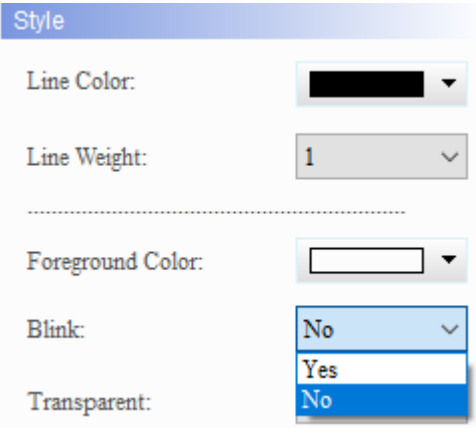
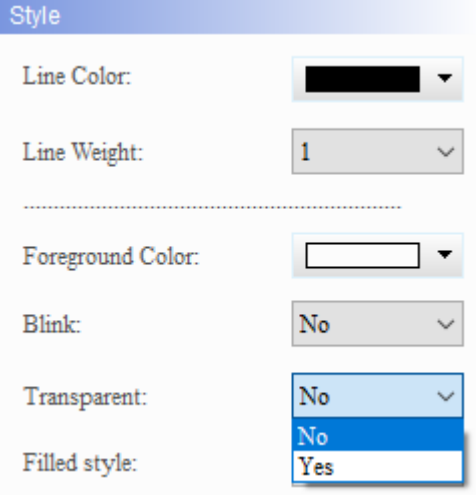
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> ■ Available options are internal memory and controller register address. ■ When Variable Central Point is set to Yes, the value of the Read Address is regarded as the X coordinate of the horizontal axis for the center point of the circle. ■ When Variable Central Point is set to Yes, [Read Address+1] is regarded as the Y coordinate of the vertical axis for the center point of the circle. ■ When Variable Radius is set to Yes, [Read Address+2] is regarded as the extension of the horizontal axis for the center point of the circle which is the width. ■ When Variable Radius is set to Yes, [Read Address+3] is regarded as the extension of the vertical axis for the center point of the circle which is the height. ■ When Variable Color is set to Yes, [Read Address+4] is regarded as the color for the Circle. Its value ranges from 0 to 65535. ■ When Blink is set to Yes, [Read Address+5] is regarded as the blinking for the Circle. When its value is greater than 1, the Circle element is displayed as blinking; when the value is 0, it does not blink. ■ For information about selecting Link Name or Element Style, please refer to Section 5.1. ■ When Variable Central Point is set to No, the corresponding memory address will be automatically filled in. <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input checked="" type="checkbox"/> Variable Central Point <input checked="" type="checkbox"/> Variable Radius <input type="checkbox"/> Variable Color <input type="checkbox"/> Blink </div> <div style="text-align: center;"> <input type="checkbox"/> Variable Central Point <input checked="" type="checkbox"/> Variable Radius <input type="checkbox"/> Variable Color <input type="checkbox"/> Blink </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>N — X coordinate of the horizontal axis for the center point of the circle</p> <p>N+1 — Y coordinate of the vertical axis for the center point of the circle</p> <p>N+2 — Extension of the horizontal axis for the center point of the circle which is the width</p> <p>N+3 — Extension of the vertical axis for the center point of the circle which is the height</p> <p>N+4 — Circle color</p> <p>N+5 — Circle blinks or not</p> </div> <div style="text-align: center;"> <p>N — Radius of the horizontal axis for the circle</p> <p>N+1 — Radius of the vertical axis for the circle</p> <p>N+2 — Foreground Color of the circle</p> <p>N+3 — Circle blinks or not</p> </div> </div>
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Format	<p>The formats include BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p>Detail</p> <p>Data Format: Unsigned Decimal ▾</p> <p style="margin-left: 20px;">BCD</p> <p style="margin-left: 20px;">Signed Decimal</p> <p style="margin-left: 20px;">Unsigned Decimal</p> <p style="margin-left: 20px;">Hexadecimal</p> <p>Variable Color: No ▾</p> <p>Variable Central Point: No ▾</p> <p>Variable Radius: No ▾</p> </div>

22

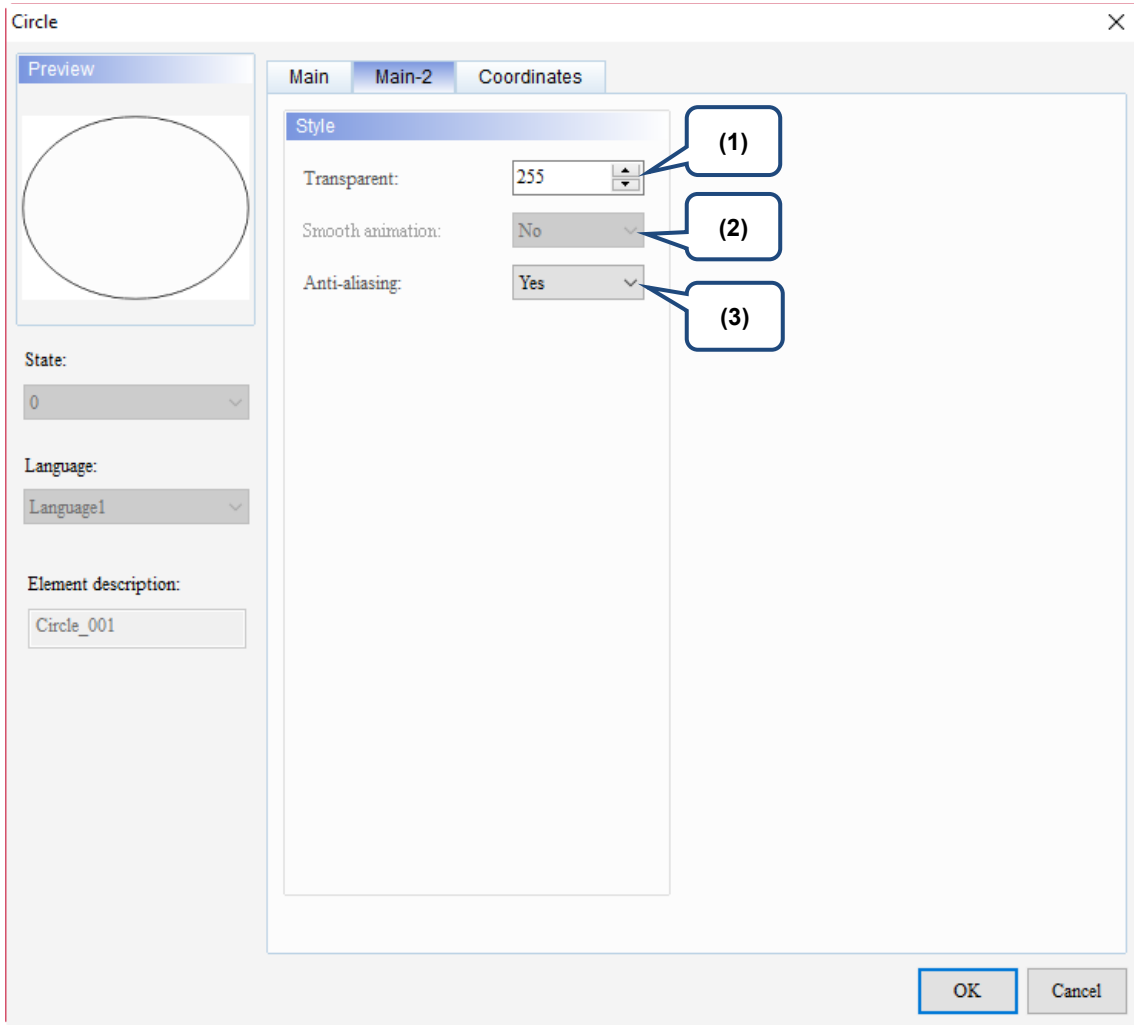
No.	Property	Function description
(3)	Variable Color	<p>You can select Yes or No for Variable Color. When you select Yes, the color of the Circle can be changed; when you select No, the color of the Circle cannot be changed. Its value ranges from 0 to 65535.</p> 
(4)	Variable Central Point	<p>You can select Yes or No for Variable Central Point. When you select Yes, the position of the center point of the circle can be changed; when you select No, though the Circle element cannot be moved, you can extend the size of the Circle element.</p> 
(5)	Variable Radius	<p>You can select Yes or No for Variable Radius. When you select Yes, the size of the Circle element can be extended; when you select No, the size of the Circle element cannot be extended.</p> 

No.	Property	Function description
(6)	Line Color	<p>You can set the displaying color for the line.</p> 
(7)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(8)	Foreground Color	<p>Set the Foreground Color of the element.</p> 

22

No.	Property	Function description
(9)	Blink	<p>You can select Yes or No for Blink. When you select Yes, the Circle is displayed as blinking; when you select No, the Circle does not blink. When its value is greater than 1, the Circle element is displayed as blinking; when the value is 0, it does not blink.</p> 
(10)	Transparent	<p>You can select Yes or No for Transparent. When you select Yes, the setting for the Foreground Color of the element is invalid; when you select No, the Circle element displays only the circle border line with the middle shown in transparent color.</p> 

■ Main-2



22

Figure 22.3.3 Main-2 property page for the Circle element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

22

Coordinates

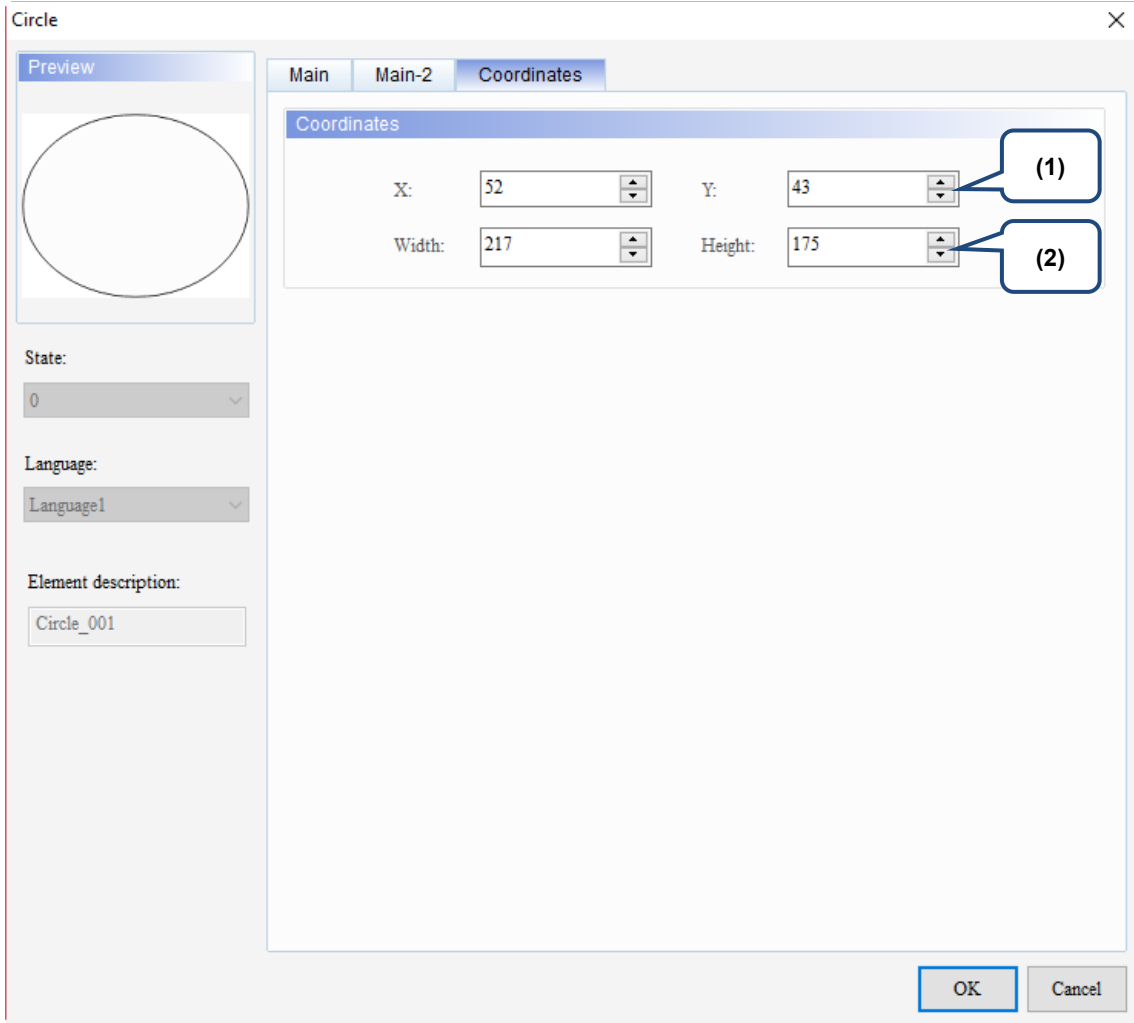


Figure 22.3.4 Coordinates property page for the Circle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

22.4 Polygon

You can press the left mouse key to set each point for the polygon. When all the points are set, press the right mouse key to form a polygon.

When you double-click the Polygon, the property page is shown as follows.

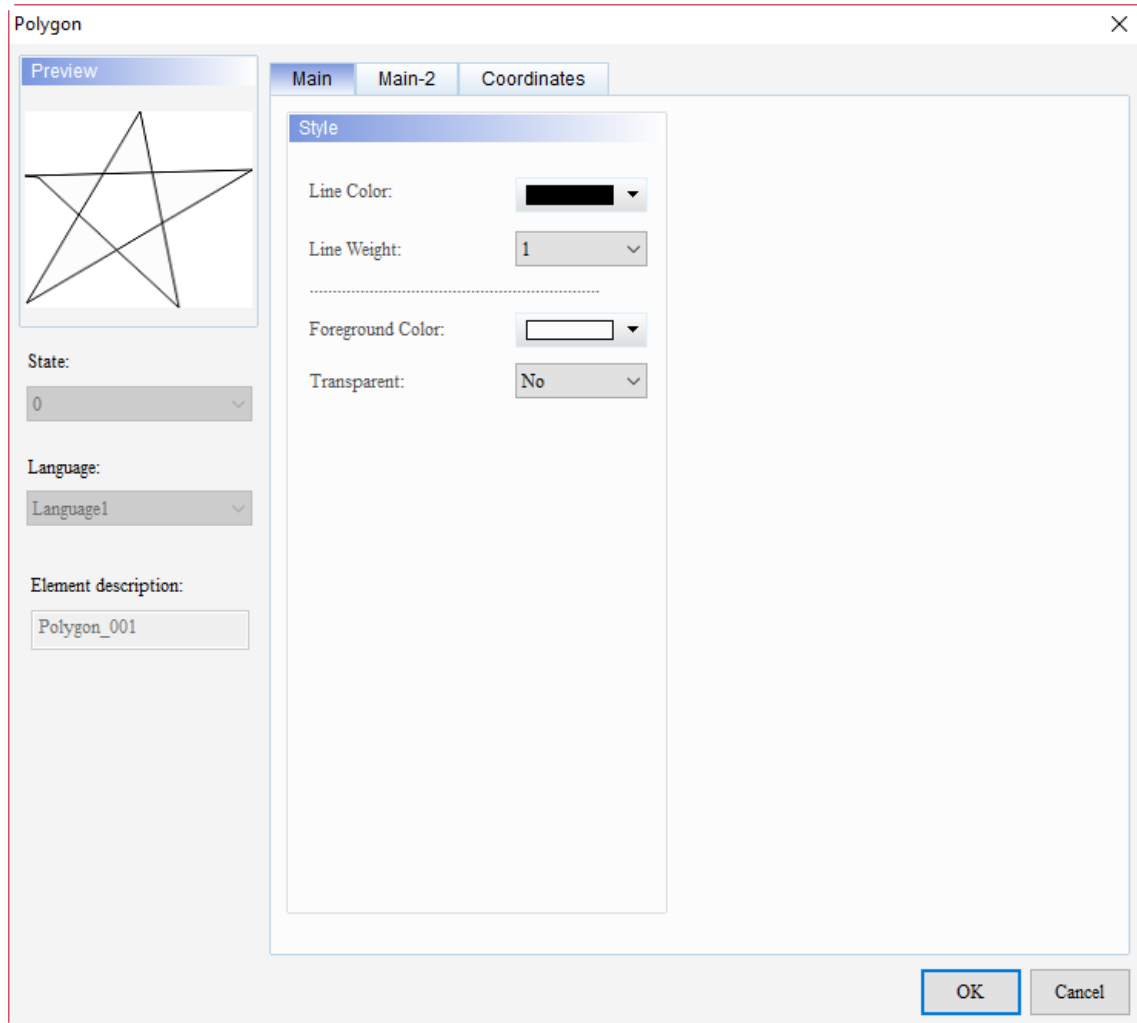


Figure 22.4.1 Properties of Polygon

Table 22.4.1 Function page of the Polygon element

Polygon	
Function page	Description
Preview	The Polygon element does not support multiple status values and multi-language display.
Main	Set Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

22

■ Main

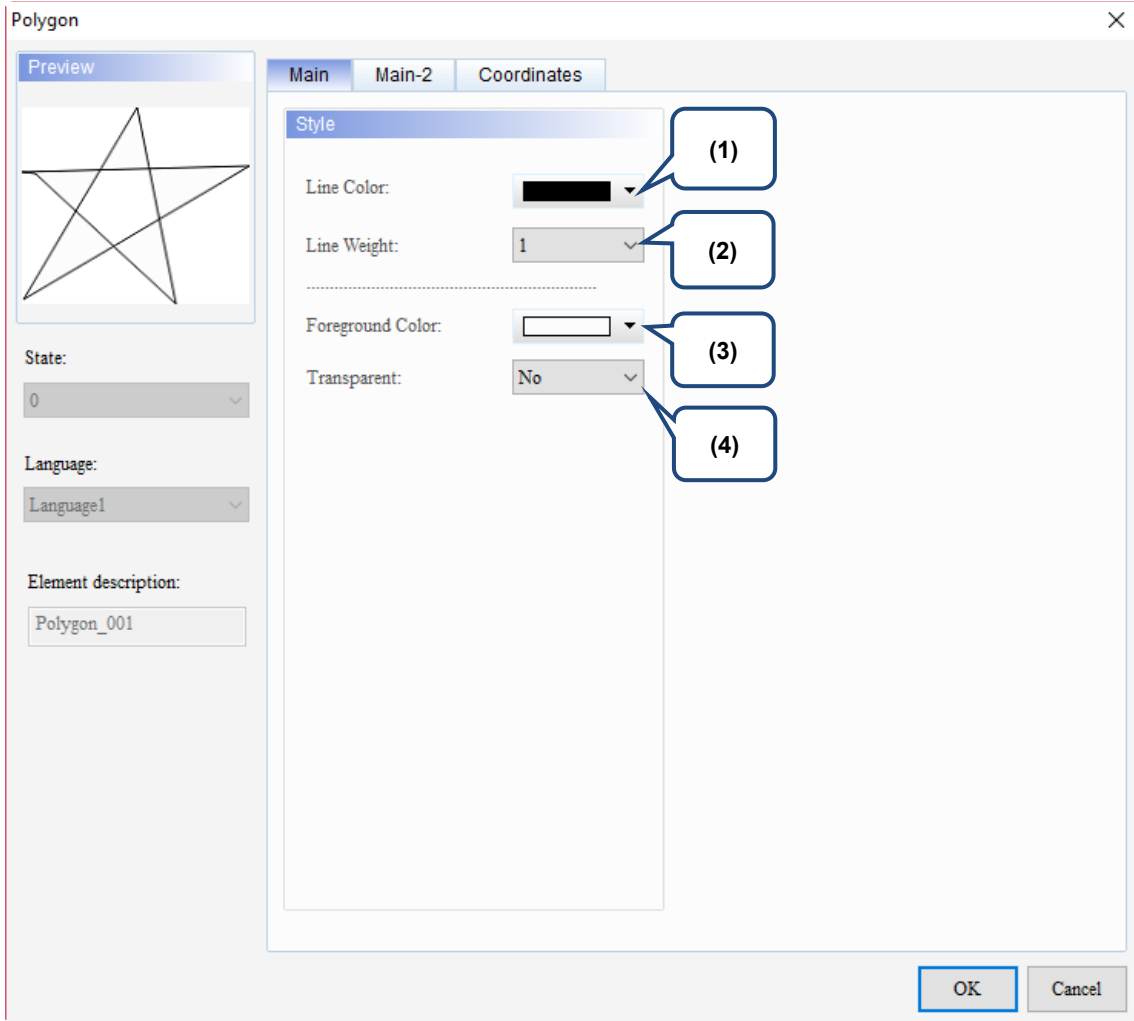
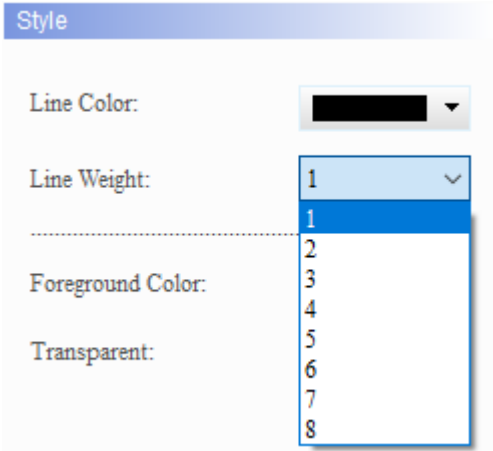
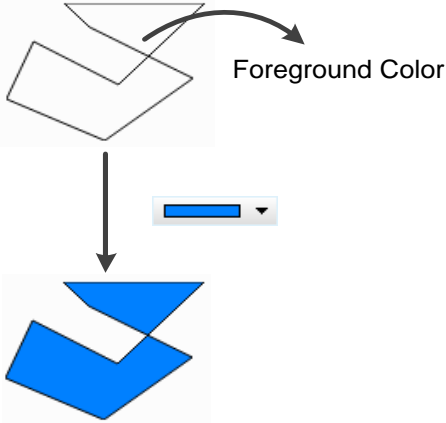
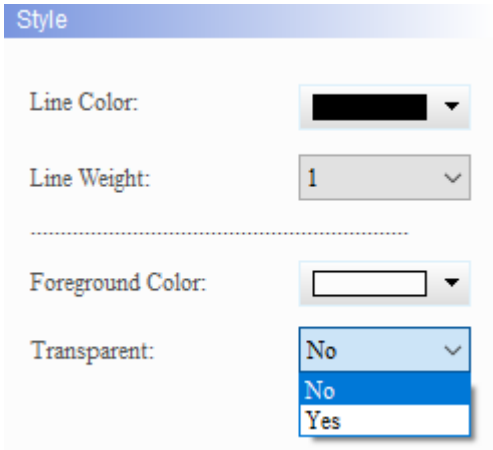








Figure 22.4.2 Main property page for the Polygon element

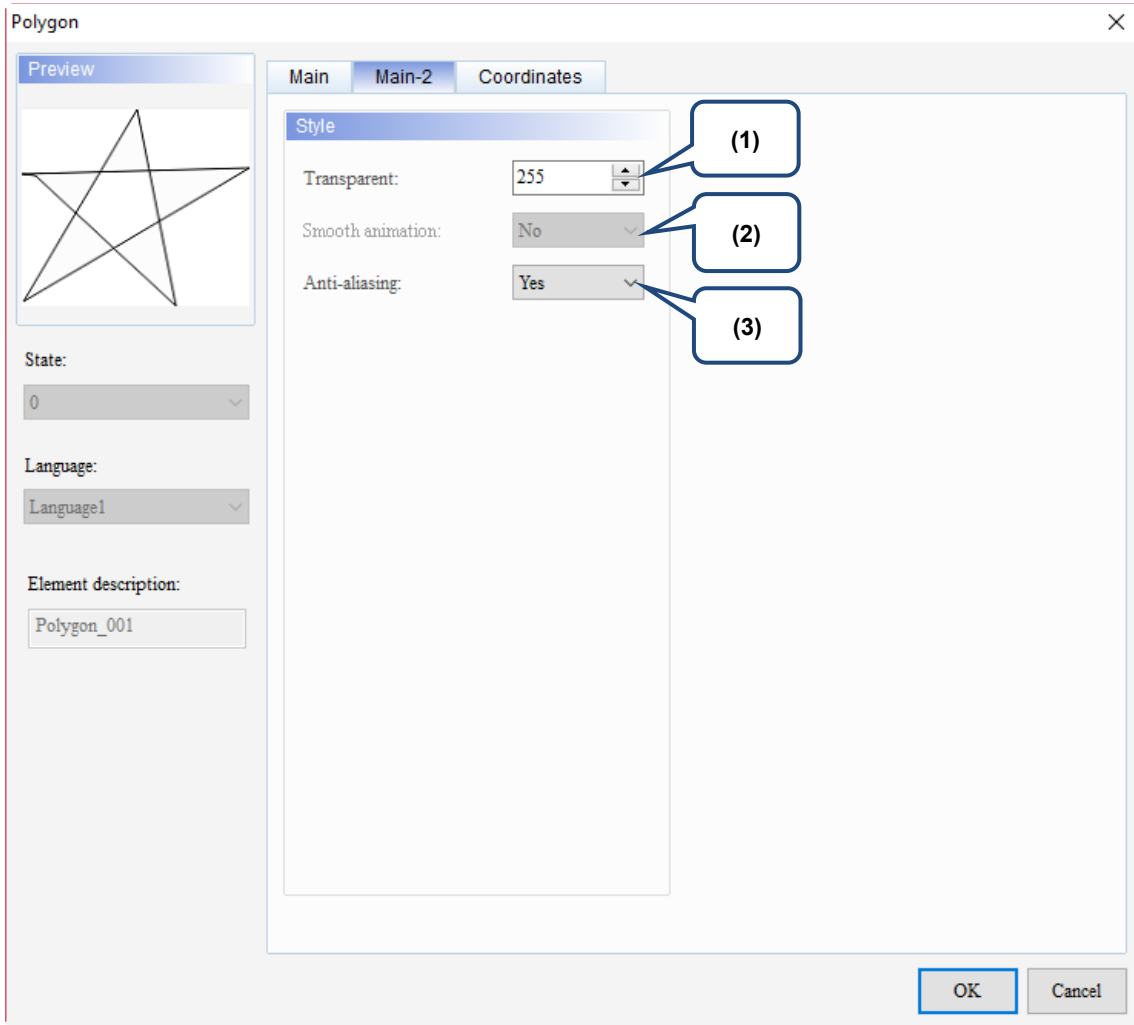
No.	Property	Function description
(1)	Line Color	<p>You can set the displaying color for the line.</p>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the Foreground Color of the element.</p> 

22

No.	Property	Function description				
(4)	Transparent	<p>You can select Yes or No for Transparent. When you select Yes, the foreground color for the pie is transparent with only the border color displayed for the pie; when you select No, the foreground color is displayed.</p>  <p>The 'Style' dialog box shows the following settings: Line Color: Black, Line Weight: 1, Foreground Color: (empty), and Transparent: No. The 'Transparent' dropdown menu is open, showing 'No' selected and 'Yes' as an option.</p> <table border="1"> <tr> <td>Transparent is set to Yes</td> <td>  </td> </tr> <tr> <td>Transparent is set to No</td> <td>  </td> </tr> </table>	Transparent is set to Yes		Transparent is set to No	
Transparent is set to Yes						
Transparent is set to No						

■ Main-2



22

Figure 22.4.3 Main-2 property page for the Polygon element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td style="background-color: #cccccc;">Yes</td> <td></td> </tr> <tr> <td style="background-color: #cccccc;">No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

22

Coordinates

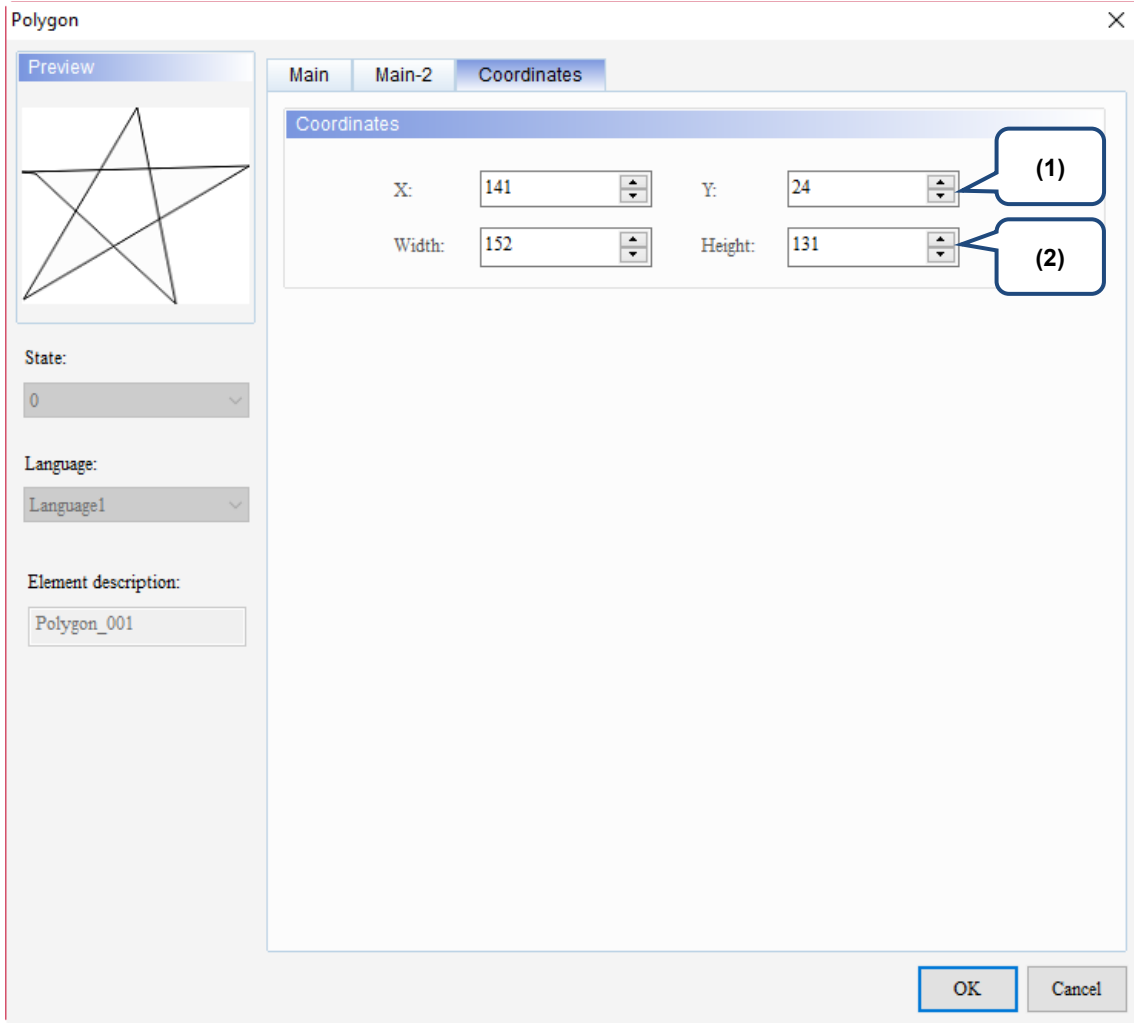


Figure 22.4.4 Coordinates property page for the Polygon element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

22.5 Text

You can use the Text element to enter the text for display.

When you double-click the Text, the property page is shown as follows.

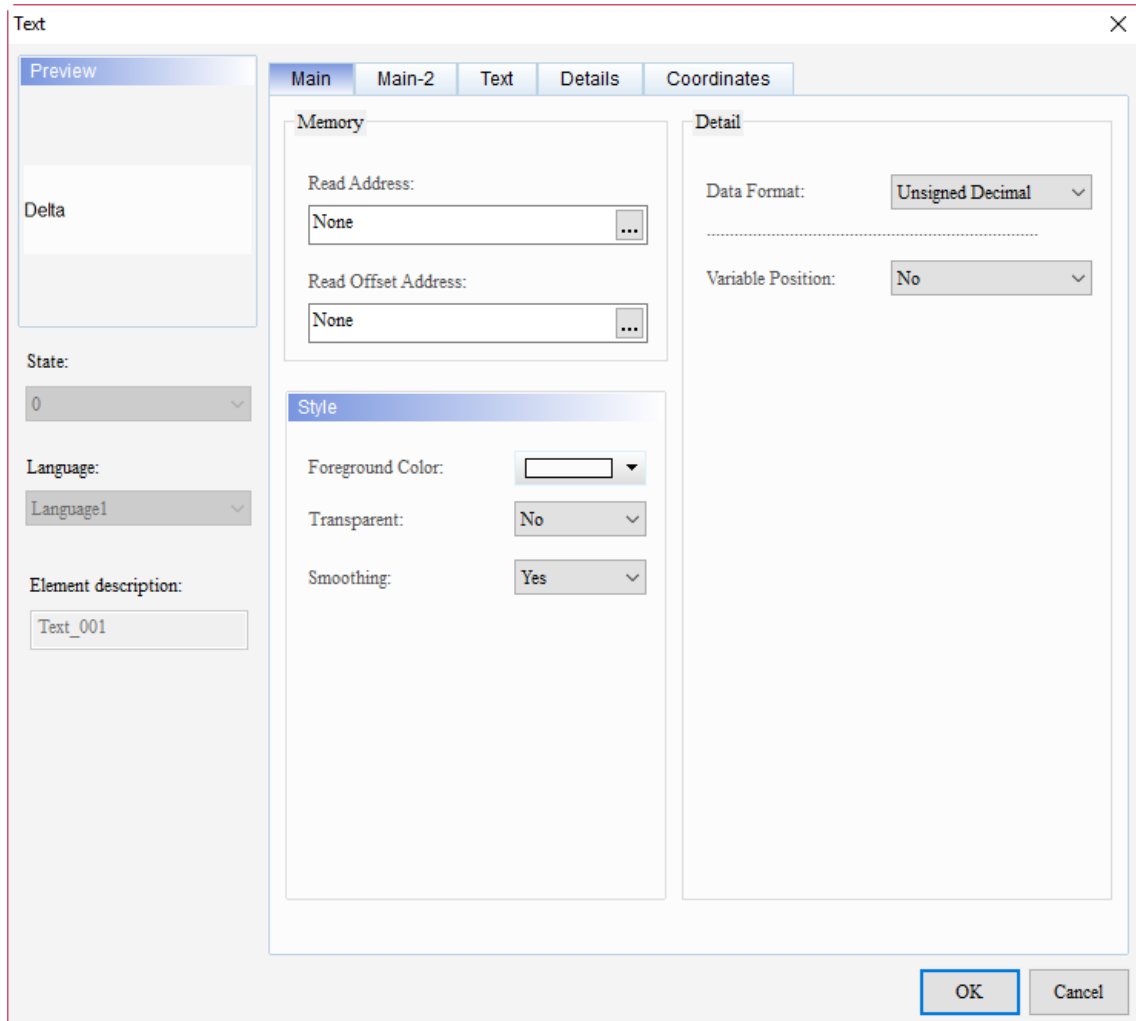


Figure 22.5.1 Properties of Text

Table 22.5.1 Function page of the Text element

Text	
Function page	Description
Preview	The Text element does not support multiple status values, but the multi-language display can be edited.
Main	Set Read Address, Read Offset Address, Foreground Color, Transparent, and Smoothing. Set Data Format and Variable Position.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

22

■ Main

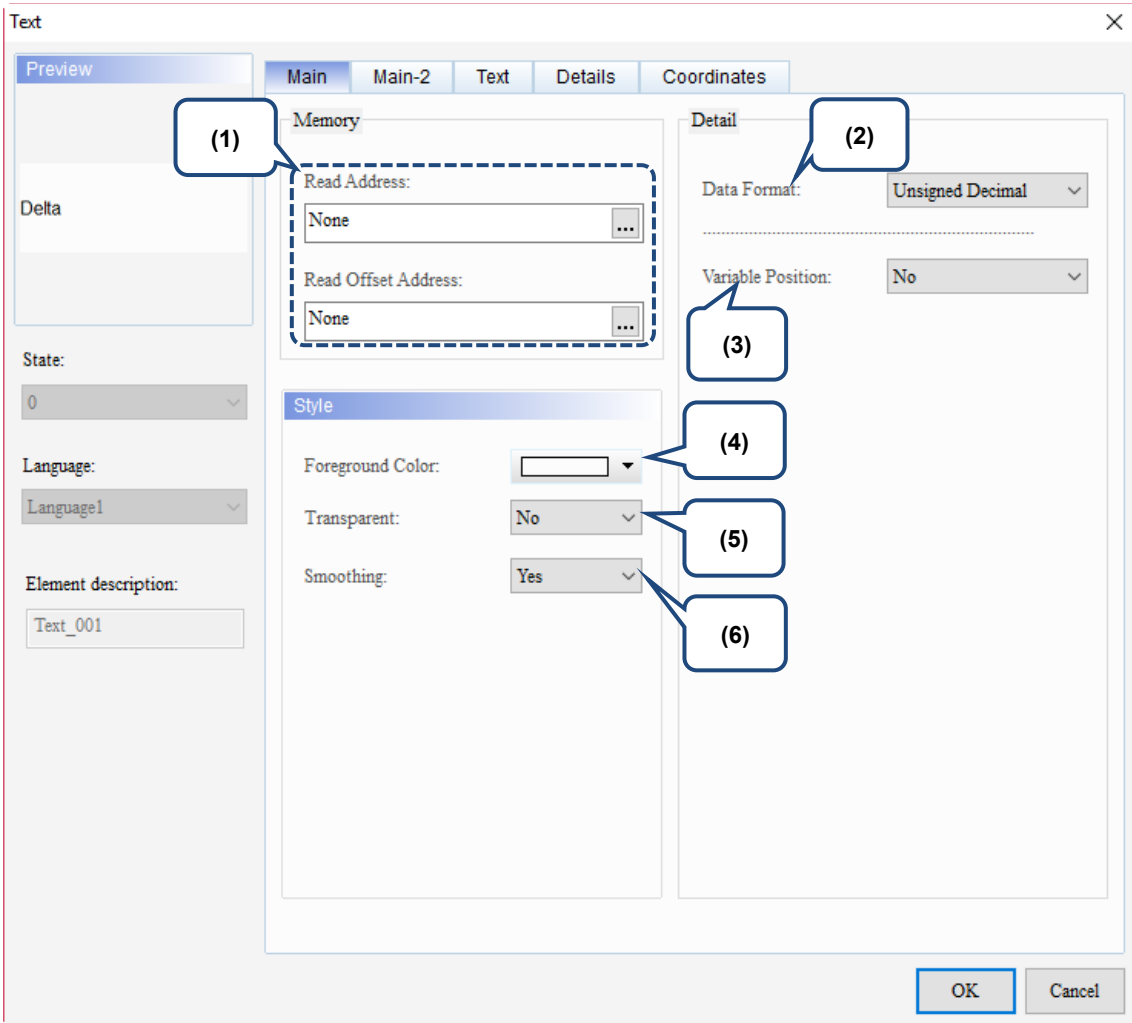
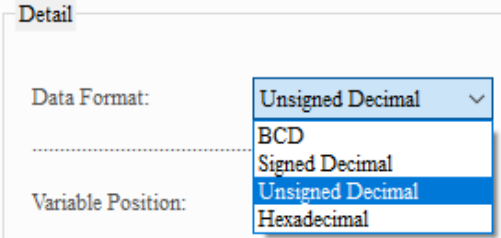
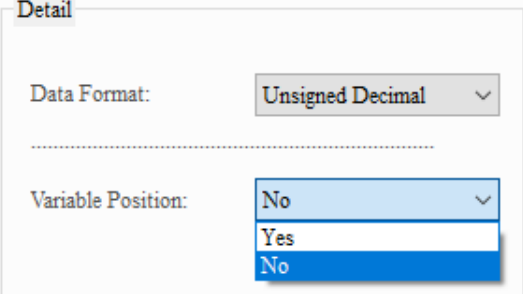
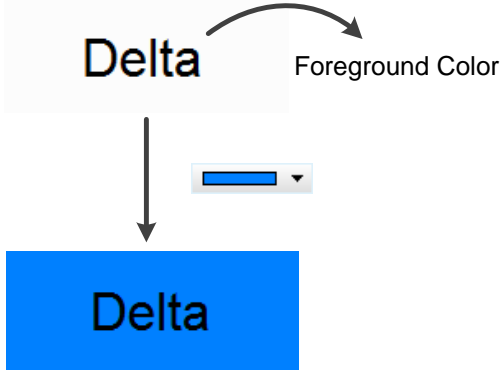
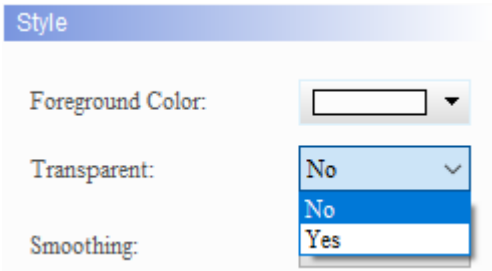












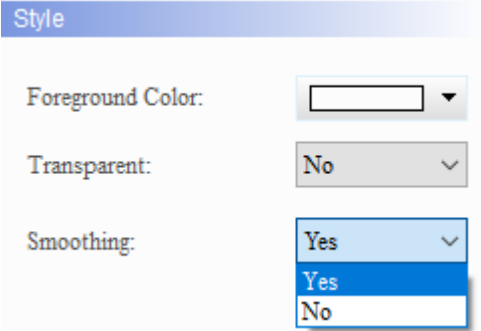




Figure 22.5.2 Main property page for the Text element

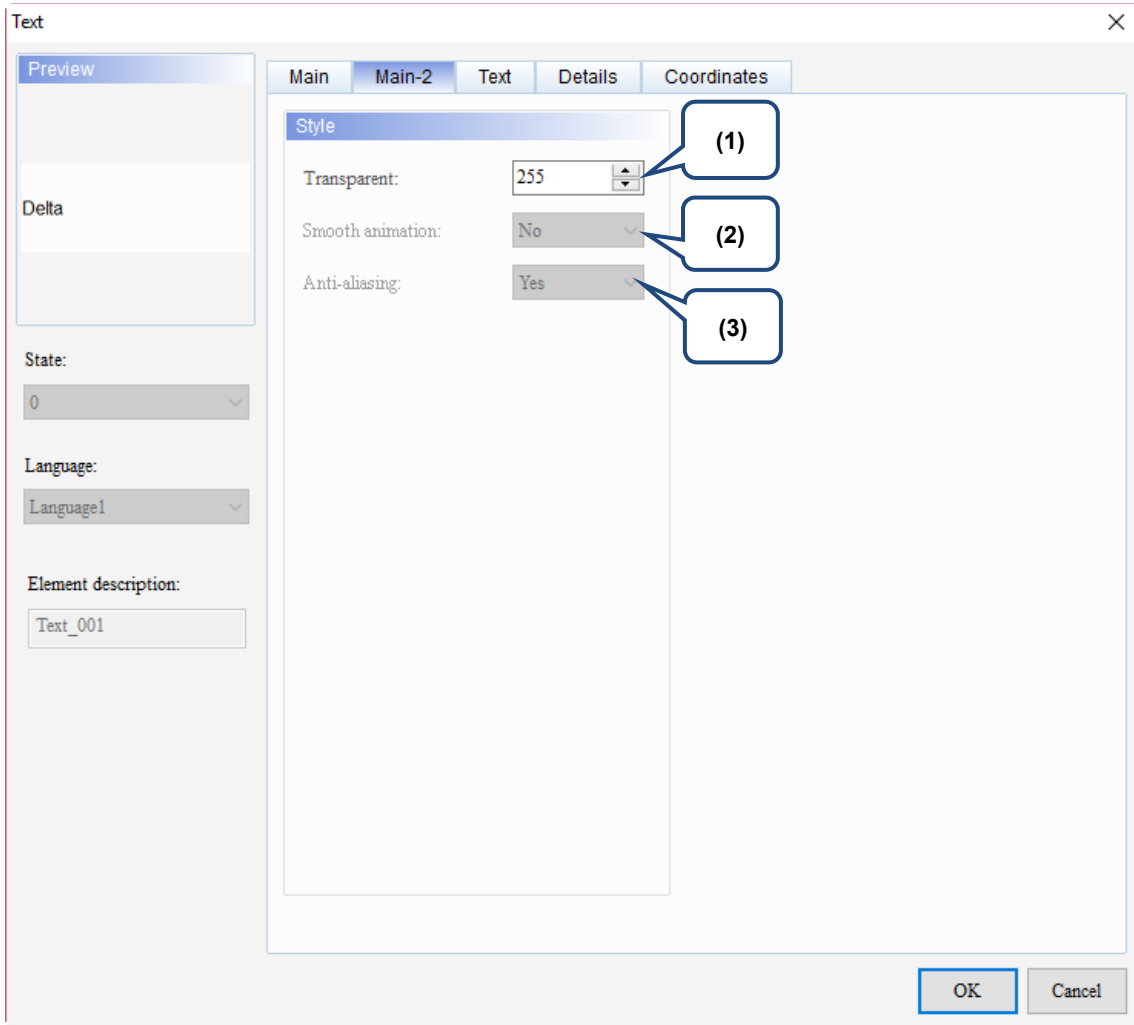
No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> Available options are internal memory and controller register address. When Variable Position is set to Yes, the value of the Read Address is regarded as the X coordinate for the horizontal axis of the Text. When Variable Position is set to Yes, the value of [Read Address+1] is regarded as the Y coordinate for the vertical axis of the Text.
	Read Offset Address	Please refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Format	<p>The formats include BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> 

No.	Property	Function description								
(3)	Variable Position	<p>You can select Yes or No for Variable Position. When you select Yes, the position of the Text can be changed; when you select No, the position of the Text cannot be changed.</p> 								
(4)	Foreground Color	<p>Set the Foreground Color of the element.</p> 								
(5)	Transparent	<p>You can select Yes or No for Transparent. When you select Yes, the foreground color for the Text is transparent with only the text color displayed for the Text; when you select No, the foreground color is displayed.</p>  <table border="1"> <tr> <td>Transparent is set to Yes</td> <td>  </td> <td>→</td> <td>  </td> </tr> <tr> <td>Transparent is set to No</td> <td>  </td> <td>→</td> <td>  </td> </tr> </table>	Transparent is set to Yes		→		Transparent is set to No		→	
Transparent is set to Yes		→								
Transparent is set to No		→								

22

No.	Property	Function description	
(6)	Smoothing	<p>You can select Yes or No for Smoothing. When you select Yes, the font will not be displayed with jagged edges and will be smoother; when you select No, the font will be displayed with jagged edges and will not be smooth.</p> 	
		Smoothing is set to Yes	
		Smoothing is set to No	

■ Main-2



22

Figure 22.5.3 Main-2 property page for the Text element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

22

■ Text

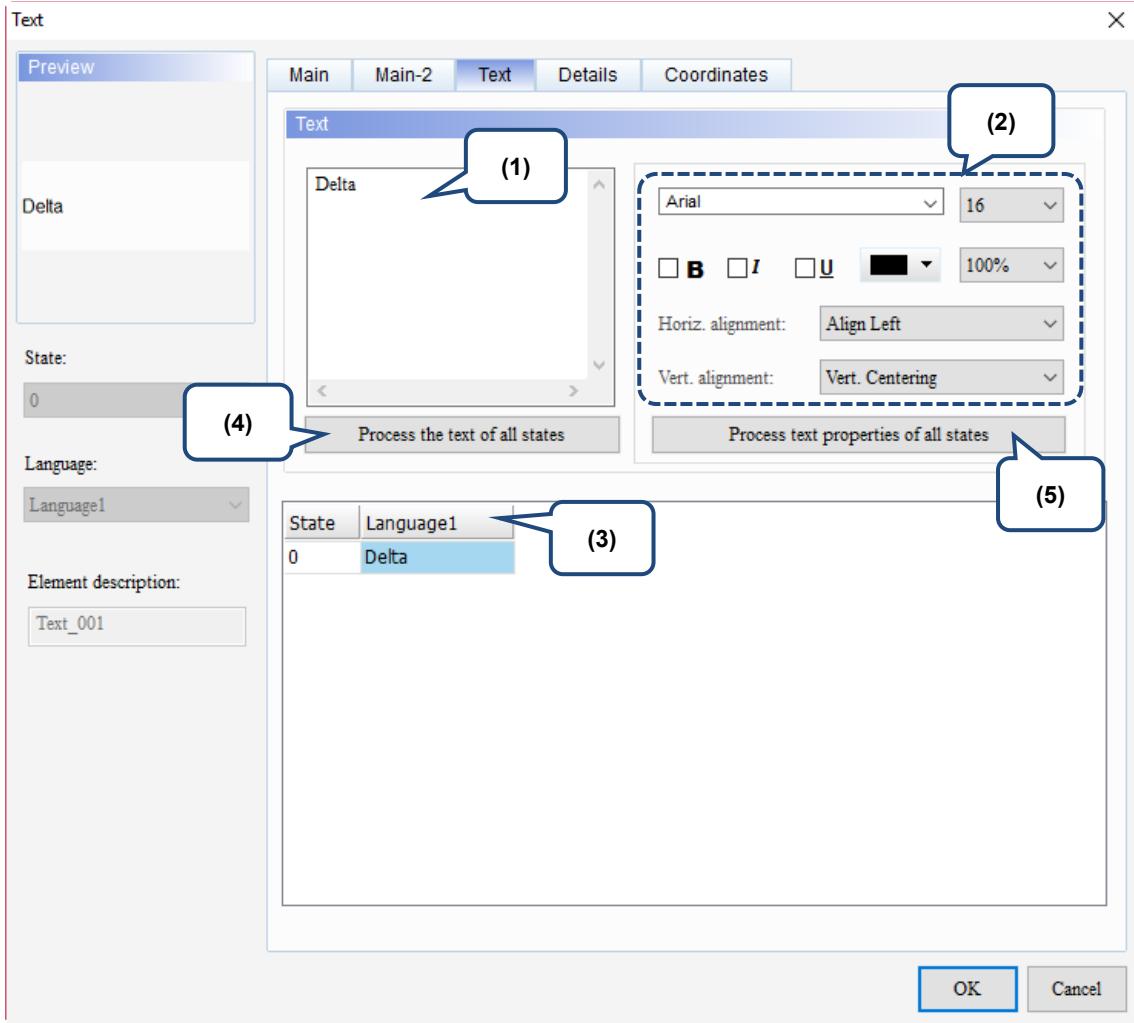



Figure 22.5.4 Text property page for the Text element

No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p>  <p>■ As long as the element allows text input, you can click the element and press the space key to start editing the text.</p>
(2)	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for results of the text property setting.</p>
(3)	Edit multi-language text	<p>If you have added multi-language text, the Text page allows you to edit multi-language data.</p>

No.	Property	Function description
(4)	Process the text of all states	This element does not support multi-state functions.
(5)	Process text properties of all states	This element does not support multi-state functions.

22

■ Details

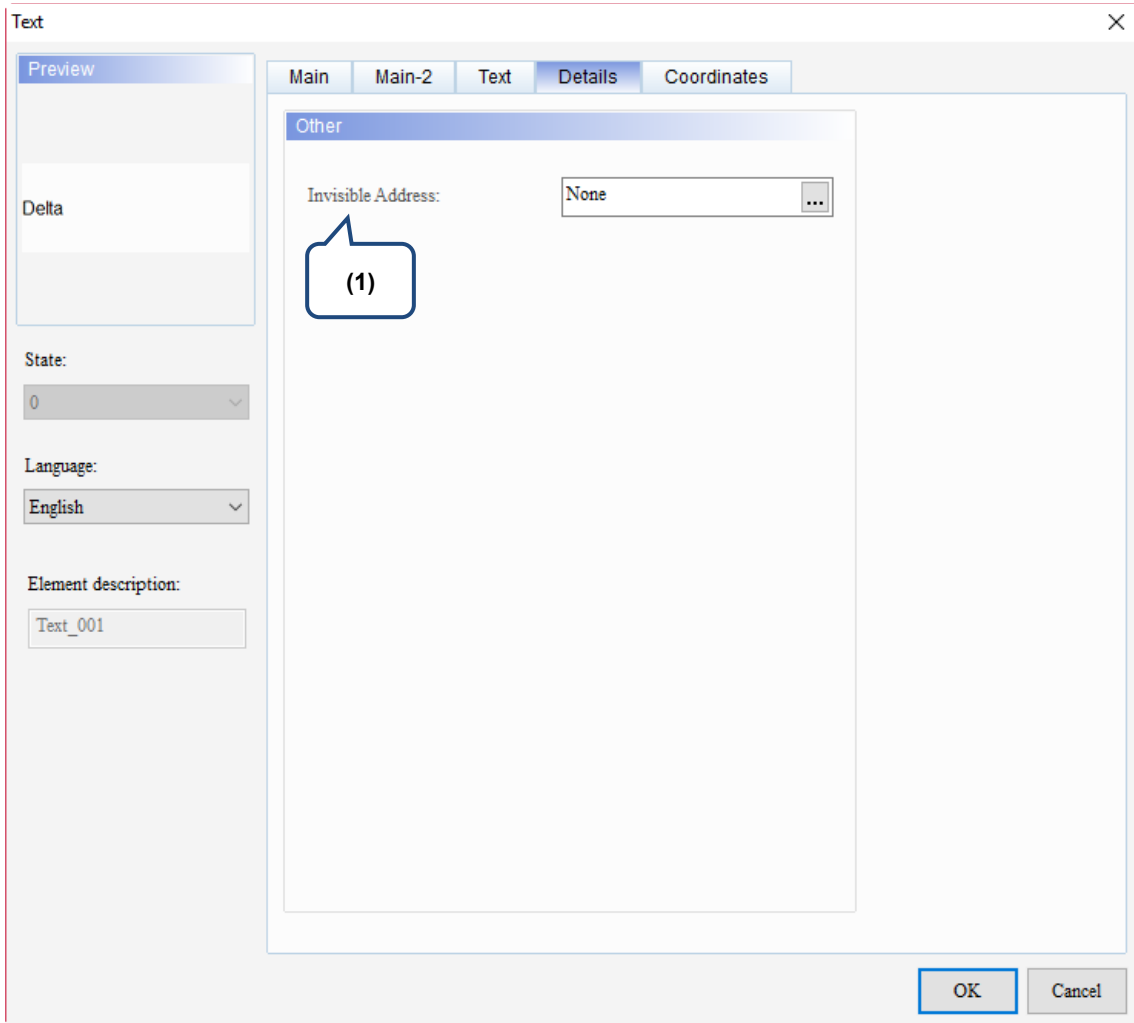
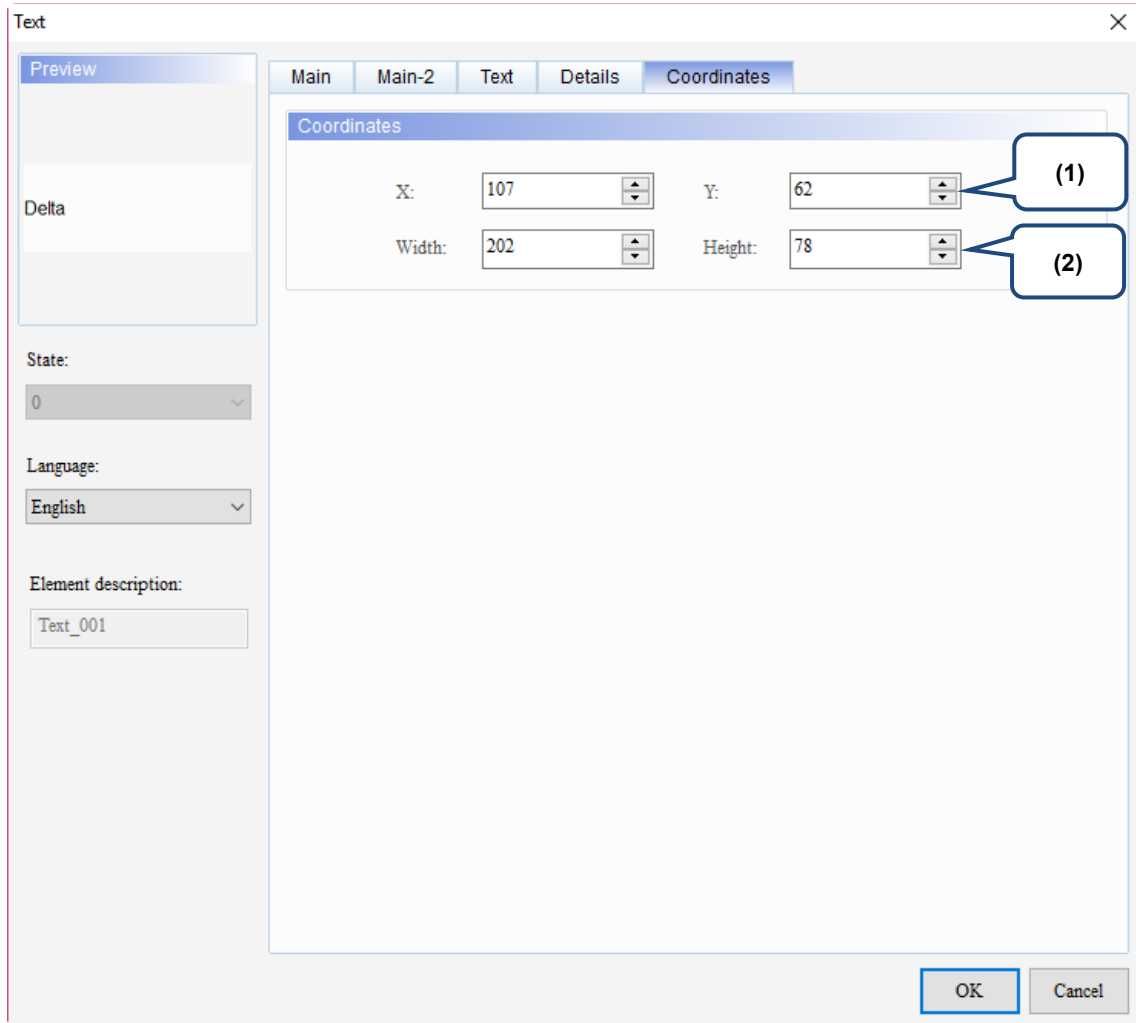


Figure 22.5.5 Details property page for the Text element

No.	Property	Function description		
(1)	Invisible Address	When Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.		
		<table border="1"> <tr> <td>Invisible Address is off</td> <td> </td> </tr> <tr> <td>Invisible Address is on</td> <td> </td> </tr> </table>	Invisible Address is off	
Invisible Address is off				
Invisible Address is on				

■ Coordinates



22

Figure 22.5.6 Coordinates property page for the Text element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

22

22.6 Scale

You can use the Scale element to indicate the curve value for the History Trend Graph. In the Scale element, you can set the Scale Mark Number and Subscale Mark Number, as well as Data Type, Data Format, Maximum, and Minimum to be displayed. You can also decide whether to display the marked value or only to display the scale.

When you double-click the Scale, the property page is shown as follows.

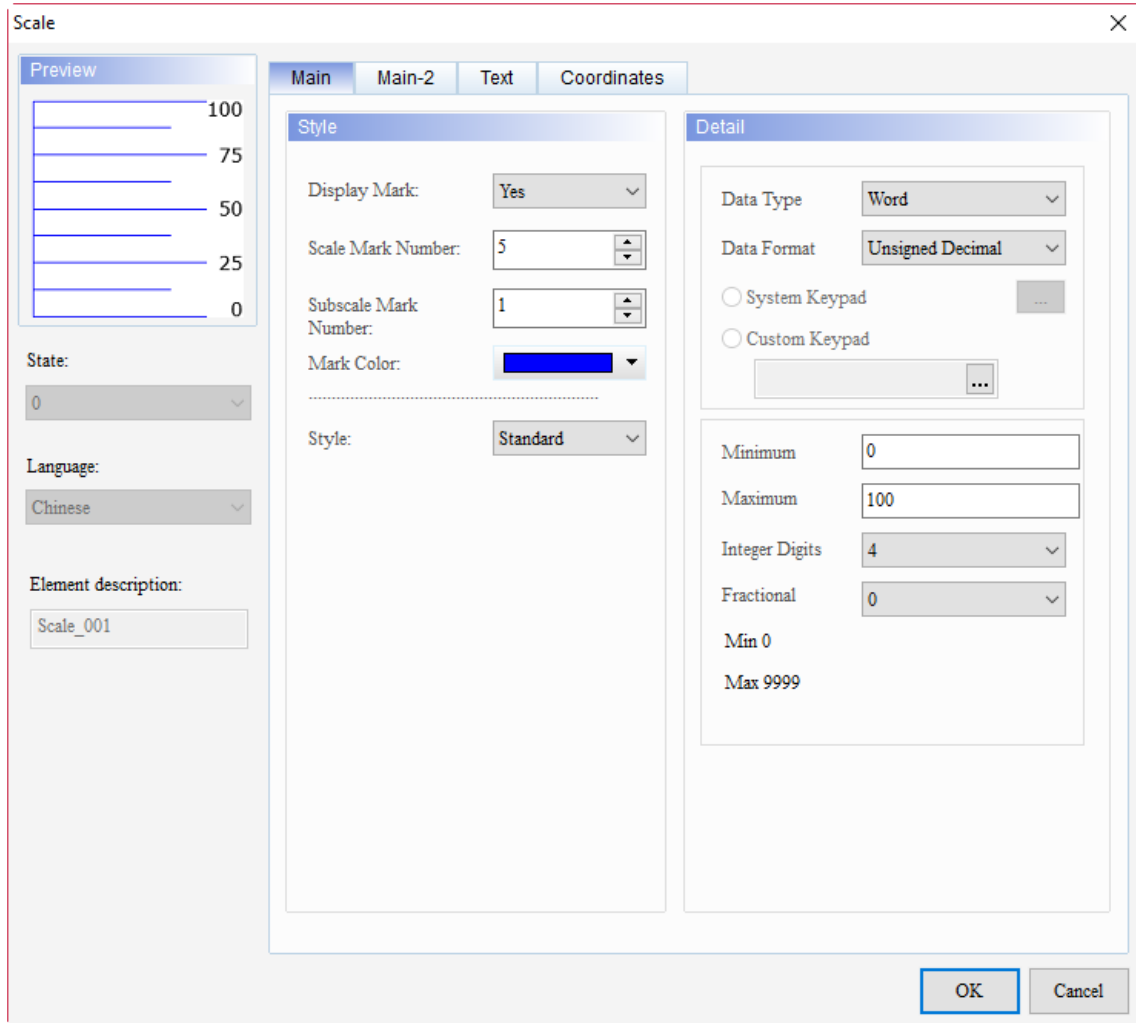


Figure 22.6.1 Properties of Scale

Table 22.6.1 Function page of the Scale element

Scale	
Function page	Description
Preview	The Scale element does not support multiple status values and multi-language display.
Main	Set Display Mark, Scale Mark Number, Subscale Mark Number, Mark Color, and Style. Set Data Type, Data Format, Minimum, Maximum, Integer Digits, and Fractional (Digits).
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the displayed text font, size, and color.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

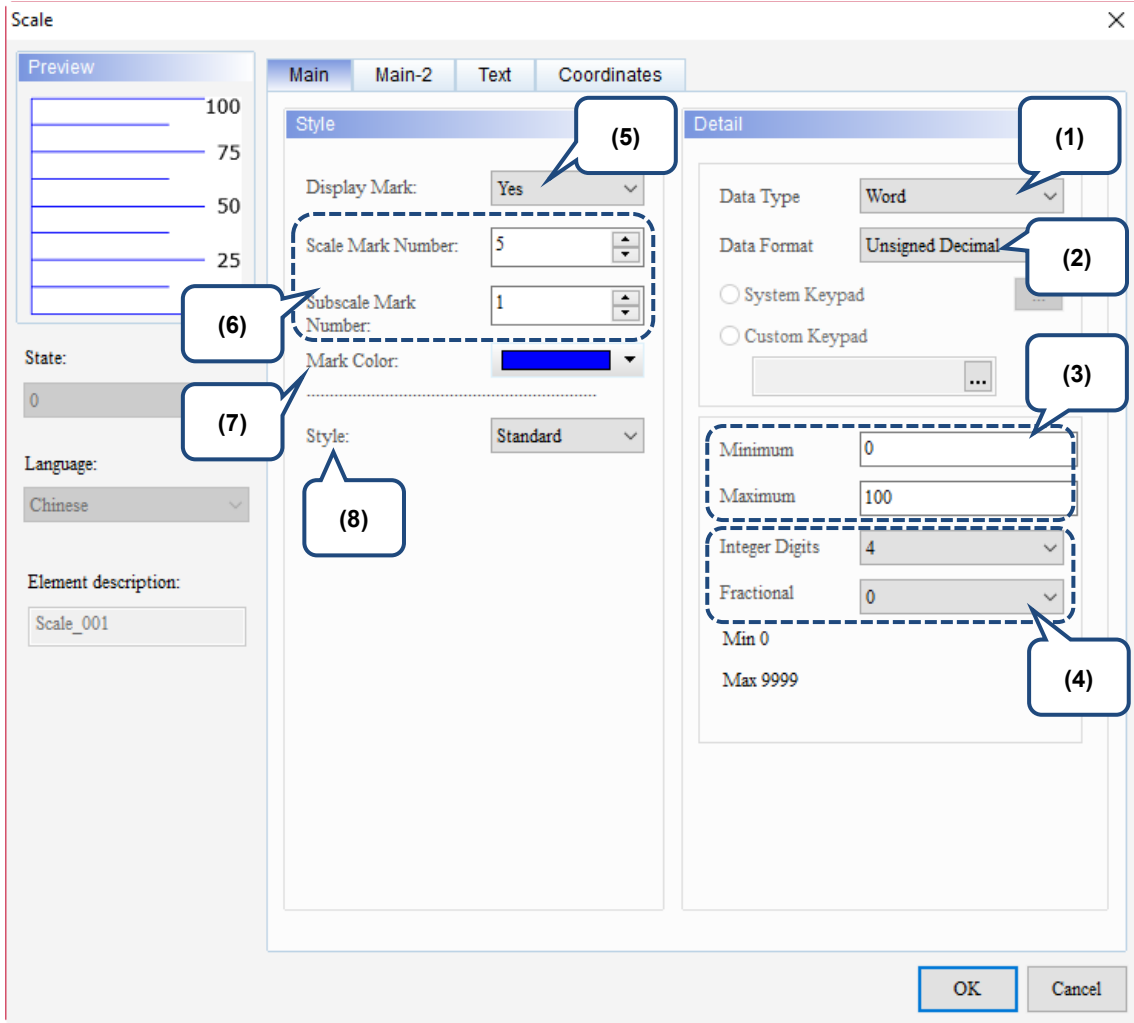
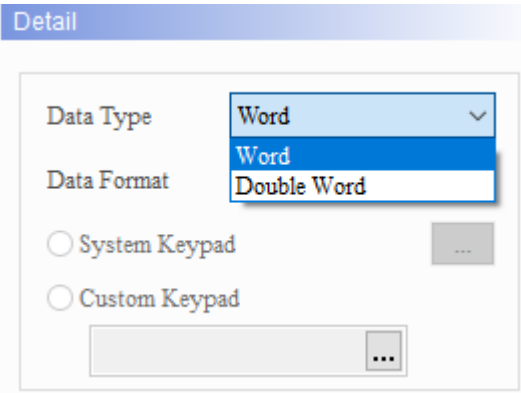
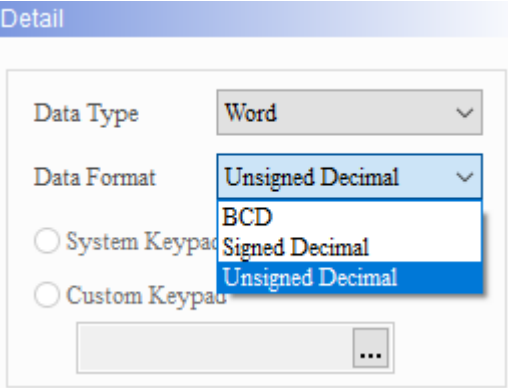
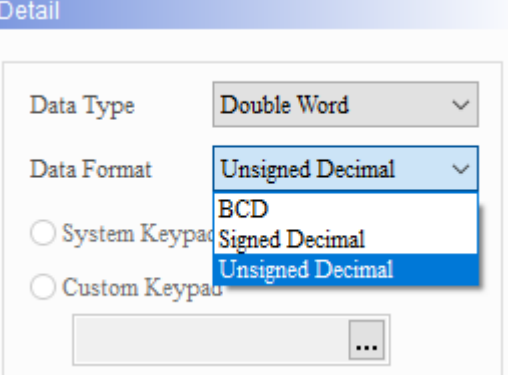
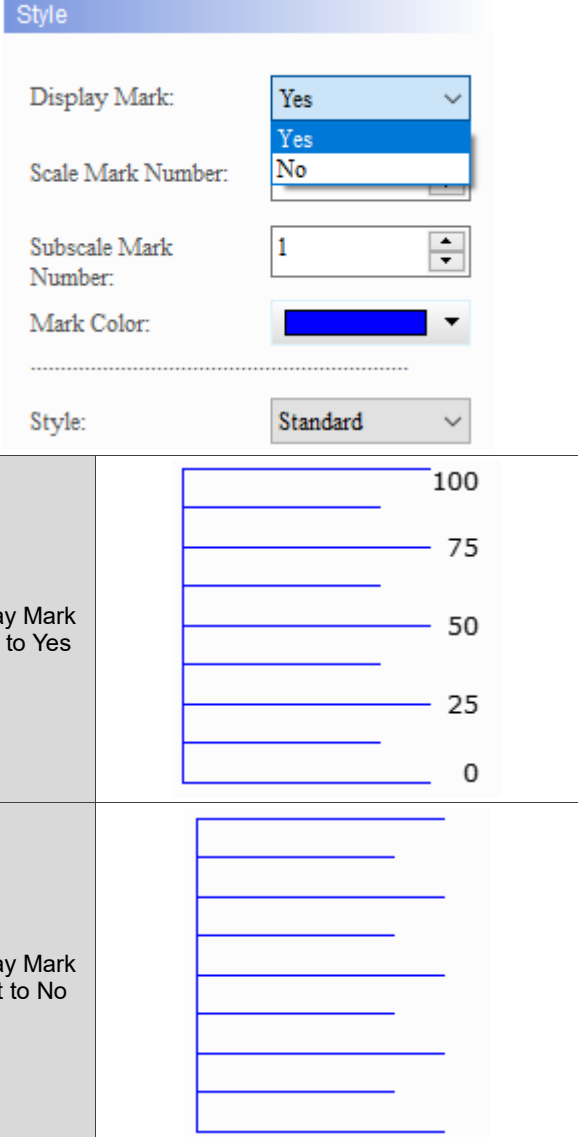
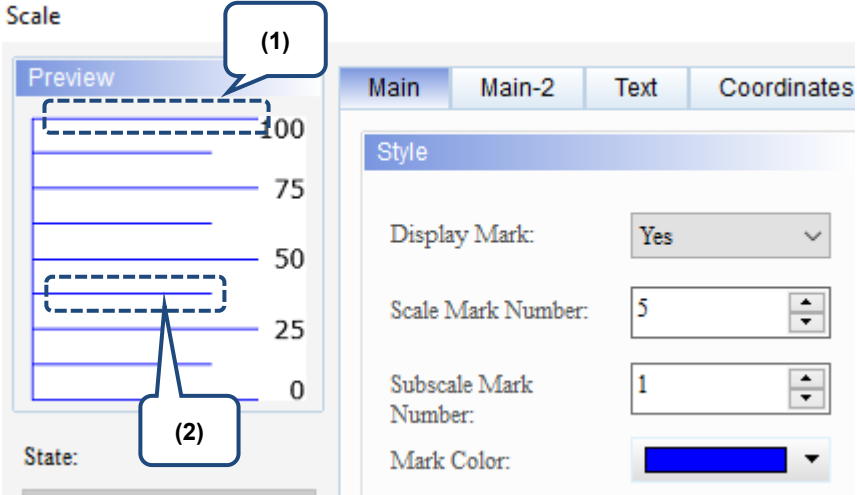


Figure 22.6.2 Main property page for the Scale element

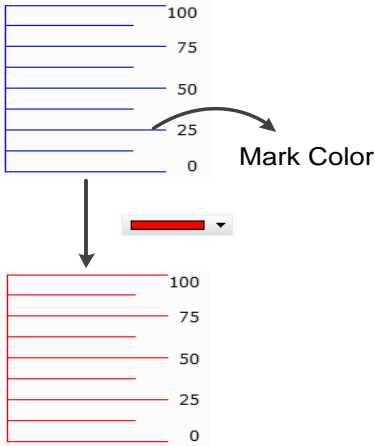
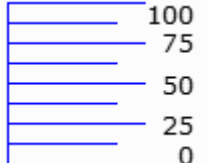
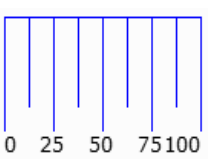
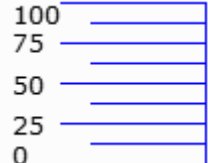
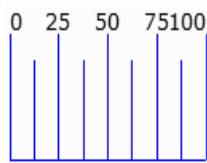
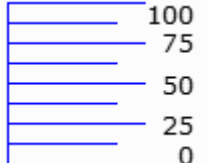
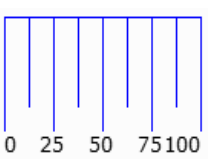
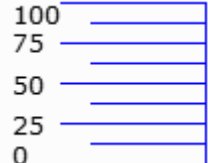
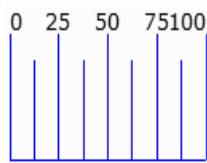
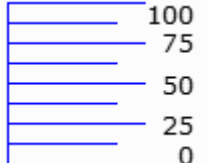
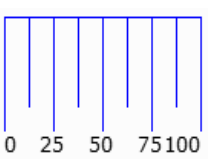
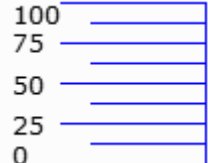
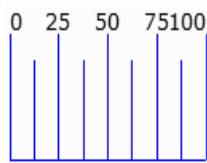
No.	Property	Function description
(1)	Data Type	<p>The Data Type includes Word and Double Word.</p> 

22

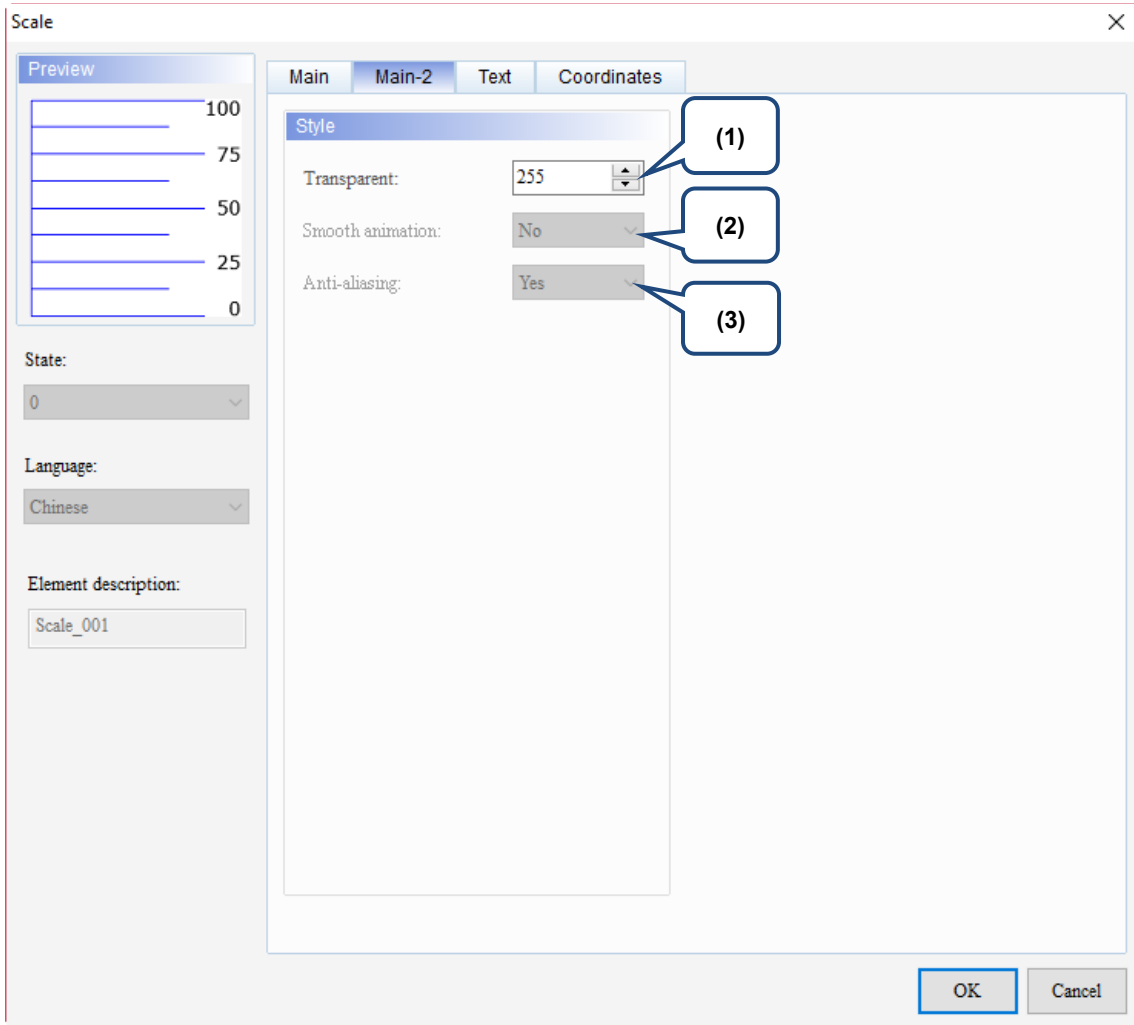
No.	Property	Function description																															
(2)	Data Format	<ul style="list-style-type: none"> When the Data Type is Word, the supported data formats are as follows:  When the Data Type is Double Word, the supported data formats are as follows:  																															
(3)	Minimum / Maximum value	<p>The allowable ranges for the Minimum and Maximum values vary based on the selected Data Type, Integer Digits, and Fractional (Digits). The table below is based on the example with no Fractional (Digits) set.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> <th>Integer Digits</th> <th>Fractional (Digits)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Word</td> <td>BCD</td> <td>0 to 9999</td> <td>4</td> <td>0</td> </tr> <tr> <td>Signed Decimal</td> <td>-3278 to 32767</td> <td>5</td> <td>0</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> <td>5</td> <td>0</td> </tr> <tr> <td rowspan="3">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> <td>8</td> <td>0</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to 2147483647</td> <td>10</td> <td>0</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294697295</td> <td>10</td> <td>0</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Integer Digits	Fractional (Digits)	Word	BCD	0 to 9999	4	0	Signed Decimal	-3278 to 32767	5	0	Unsigned Decimal	0 to 65535	5	0	Double Word	BCD	0 to 99999999	8	0	Signed Decimal	-2147483648 to 2147483647	10	0	Unsigned Decimal	0 to 4294697295	10	0
Data Type	Data Format	Allowable range	Integer Digits	Fractional (Digits)																													
Word	BCD	0 to 9999	4	0																													
	Signed Decimal	-3278 to 32767	5	0																													
	Unsigned Decimal	0 to 65535	5	0																													
Double Word	BCD	0 to 99999999	8	0																													
	Signed Decimal	-2147483648 to 2147483647	10	0																													
	Unsigned Decimal	0 to 4294697295	10	0																													
(4)	Integer / Fractional Digits	<p>You can set the displaying number of integer digits and the number of decimal places.</p>																															

No.	Property	Function description
(5)	Display Mark	<p>You can select Yes or No for Display Mark. When you select Yes, the value on the Scale is displayed; when you select No, the value on the Scale is not displayed and only the Scale is displayed.</p> 
(6)	Scale Mark Number Subscale Mark Number	<p>You can set the number of marks to display for Scale Mark Number and Subscale Mark Number with the maximum of up to 99.</p> 

22

No.	Property	Function description								
(7)	Mark Color	<p>You can customize the color displayed for the scale.</p>  <p>The diagram illustrates the 'Mark Color' property. It shows a vertical scale with horizontal tick marks. The top tick mark is labeled '100', and the bottom is '0'. Intermediate ticks are labeled '75', '50', and '25'. An arrow labeled 'Mark Color' points from the scale to a color selection dropdown menu. The dropdown menu is shown with a red color selected. Below the dropdown, the same scale is shown with all tick marks colored red.</p>								
(8)	Style	<p>The Style setting includes Standard, Rotation 90, Rotation 180, and Rotation 270. You can change the appearance of the element with this setting.</p> <table border="1"> <thead> <tr> <th>Standard</th> <th>Rotation 90</th> <th>Rotation 180</th> <th>Rotation 270</th> </tr> </thead> <tbody> <tr> <td>  </td> <td>  </td> <td>  </td> <td>  </td> </tr> </tbody> </table>	Standard	Rotation 90	Rotation 180	Rotation 270				
Standard	Rotation 90	Rotation 180	Rotation 270							
										

■ Main-2



22

Figure 22.6.3 Main-2 property page for the Scale element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

22

■ Text

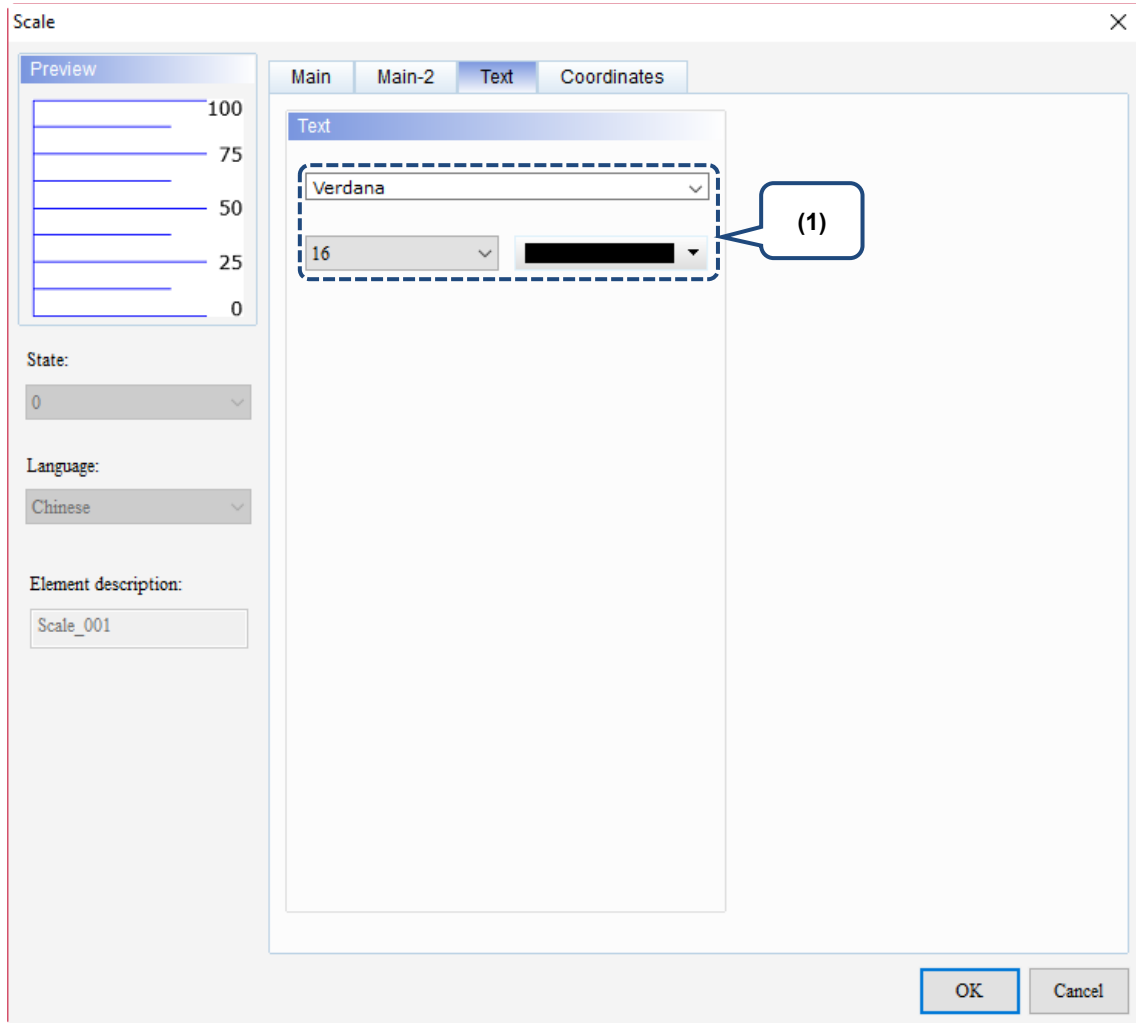
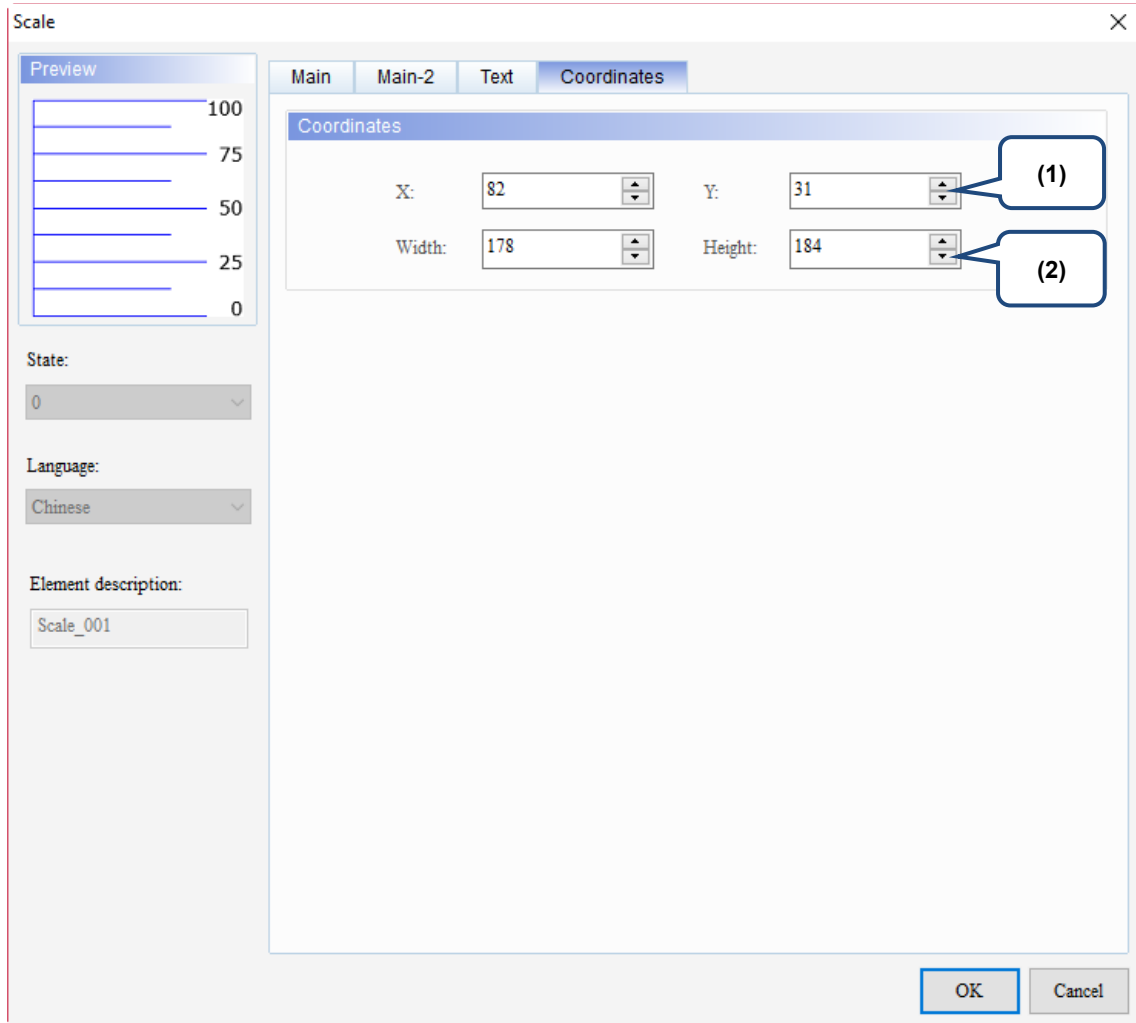


Figure 22.6.3 Text property page for the Scale element

No.	Property	Function description
(1)	Text property	Set the Text properties which include font, size, and color.

Coordinates



22

Figure 22.6.4 Coordinates property page for the Scale element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

22

22.7 Table

The Table element offers the same functions as those in the Office editing program, enabling users to add rows and columns. You can also set the colors for the rows and columns which adds more variety to the appearance of the tables.

When you double-click the Table, the property page is shown as follows.

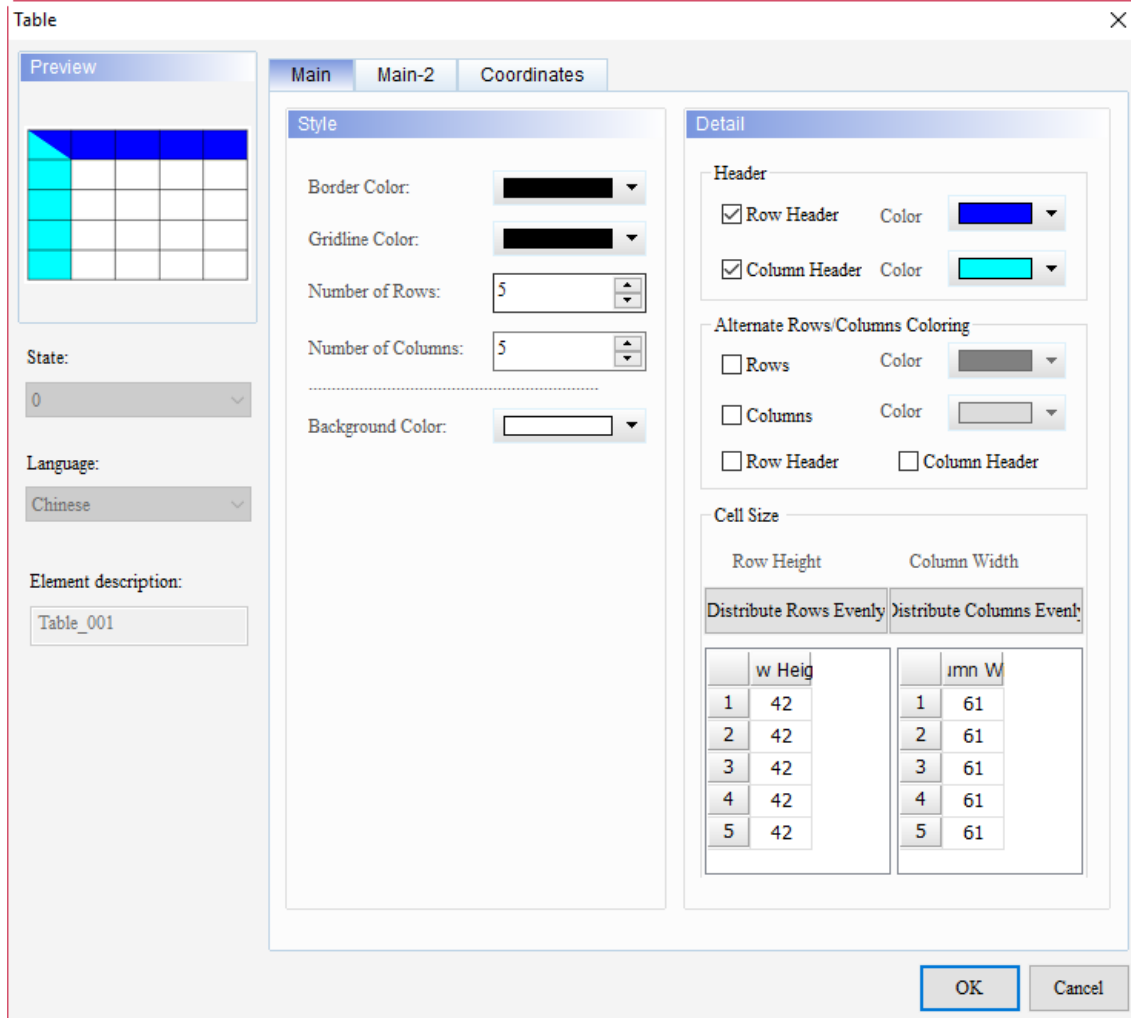
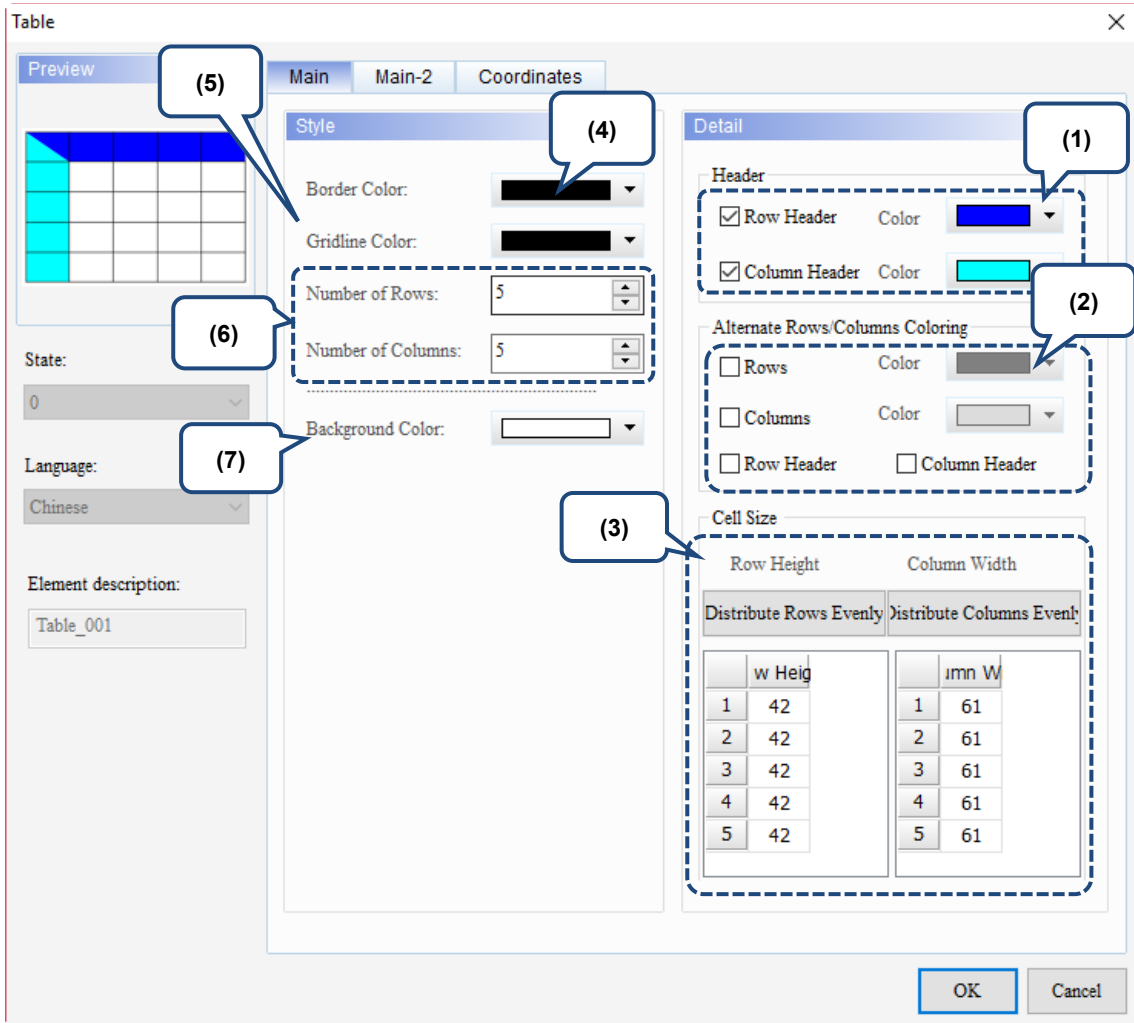


Figure 22.7.1 Properties of Table

Table 22.7.1 Function page of the Table element

Table	
Function page	Description
Preview	The Table element does not support multiple status values and multi-language display.
Main	Set Border Color, Gridline Color, Number of Rows, Number of Columns, and Background Color. Set Row Header, Column Header, (Alternate) Rows / Columns, and (Alternate) Row Header / Column Header. Set to Distribute Rows Evenly and Distribute Columns Evenly.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

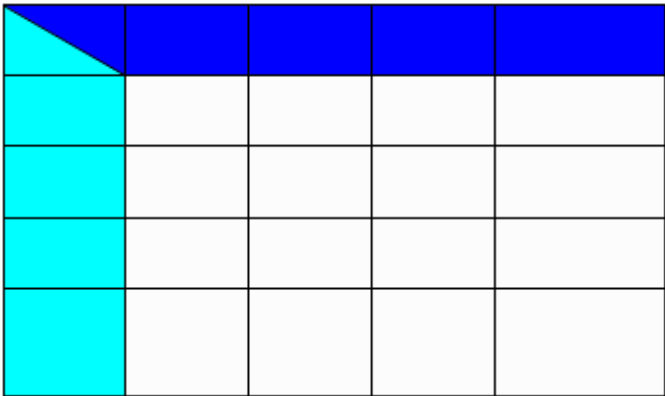
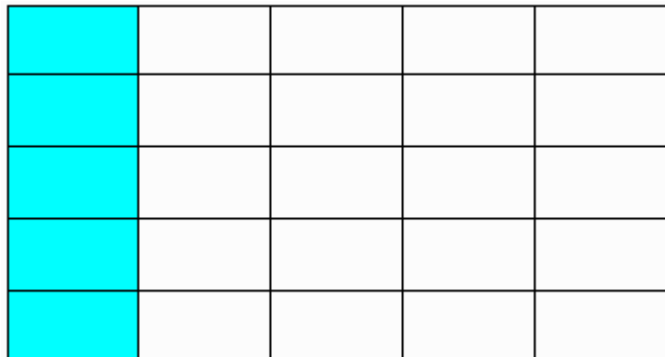
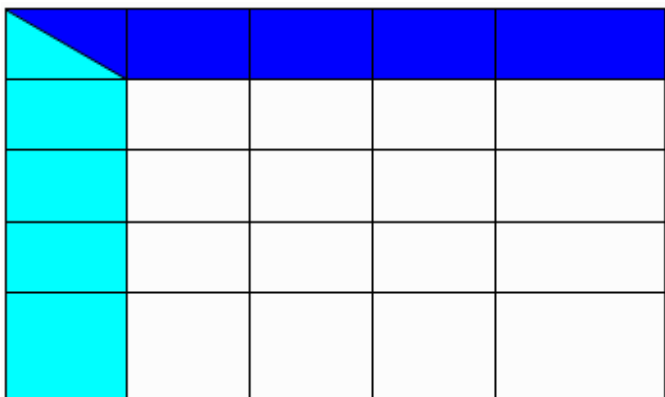
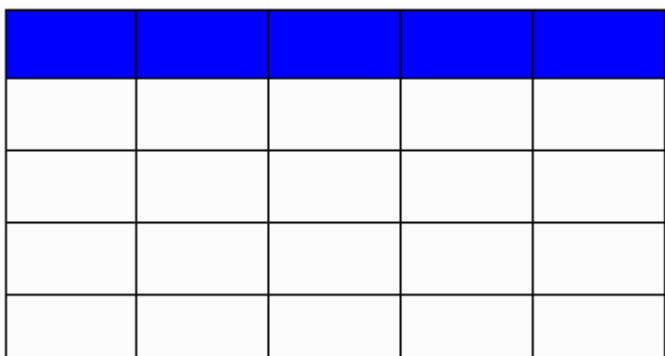
■ Main

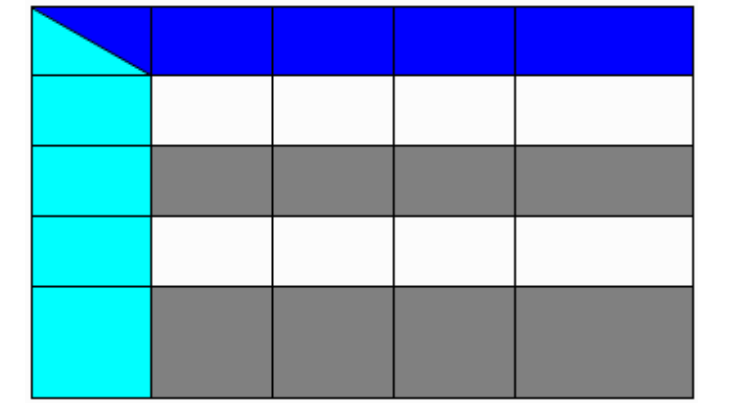
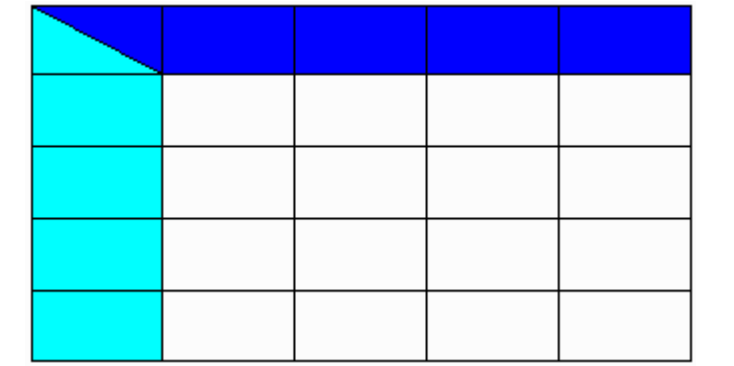
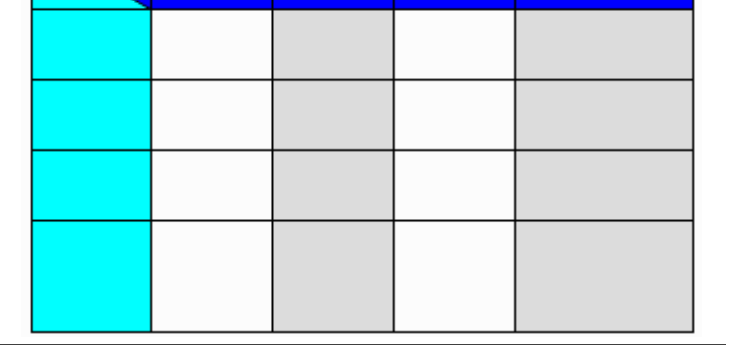
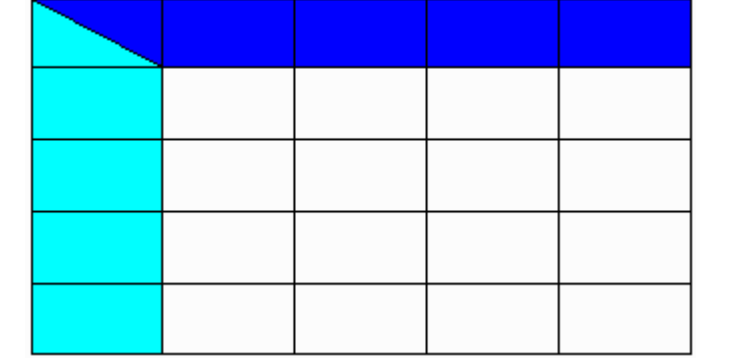


22

Figure 22.7.1 Main property page for the Table element

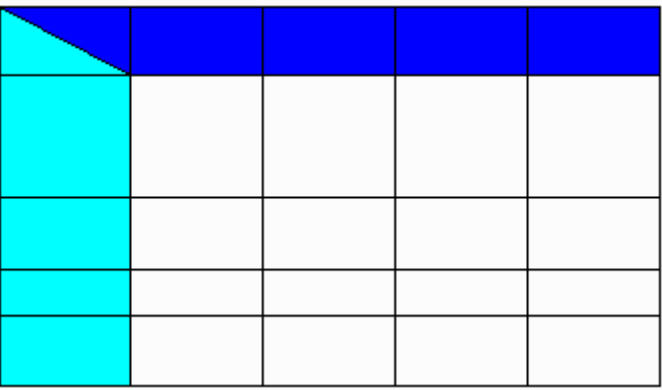
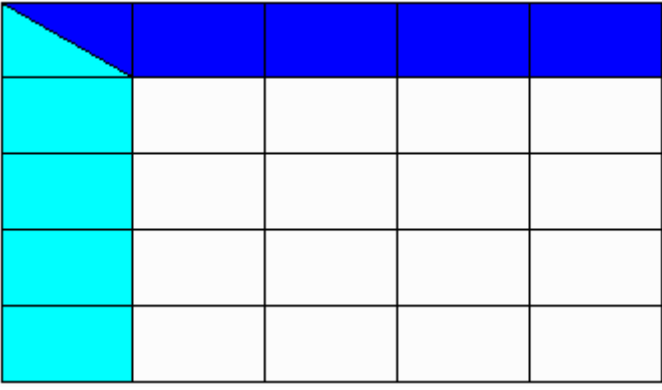
22

No.	Property	Function description
(1)	Row Header	<p>You can set to display the Row Header for the first row of the Table and set the displaying color for the Row Header.</p> 
		
		<p>Check</p>
		<p>Uncheck</p>
(1)	Column Header	<p>You can set to display the Column Header for the first column of the Table and set the displaying color for the Column Header.</p> 
		
		<p>Check</p>
		<p>Uncheck</p>

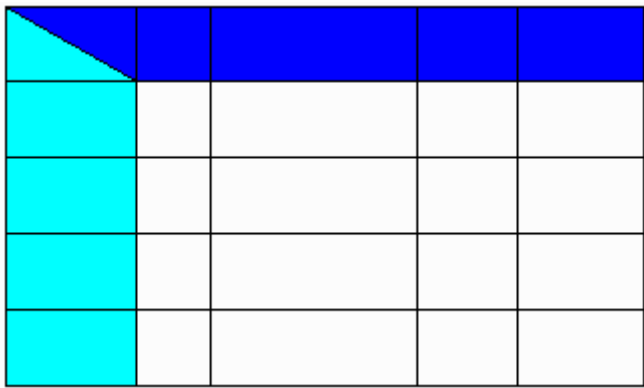
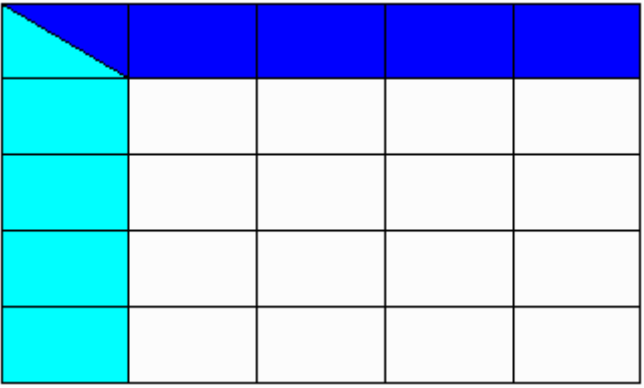
No.	Property	Function description	
(2)	(Alternate) Rows	<p>You can set the displaying color for the (Alternate) Rows and set to use the (Alternate) Rows format.</p>	
		Check	
		Uncheck	
		<p>You can set the displaying color for the (Alternate) Columns and set to use the (Alternate) Columns format.</p>	
(2)	(Alternate) Columns	<p>You can set the displaying color for the (Alternate) Columns and set to use the (Alternate) Columns format.</p>	
		Check	
		Uncheck	

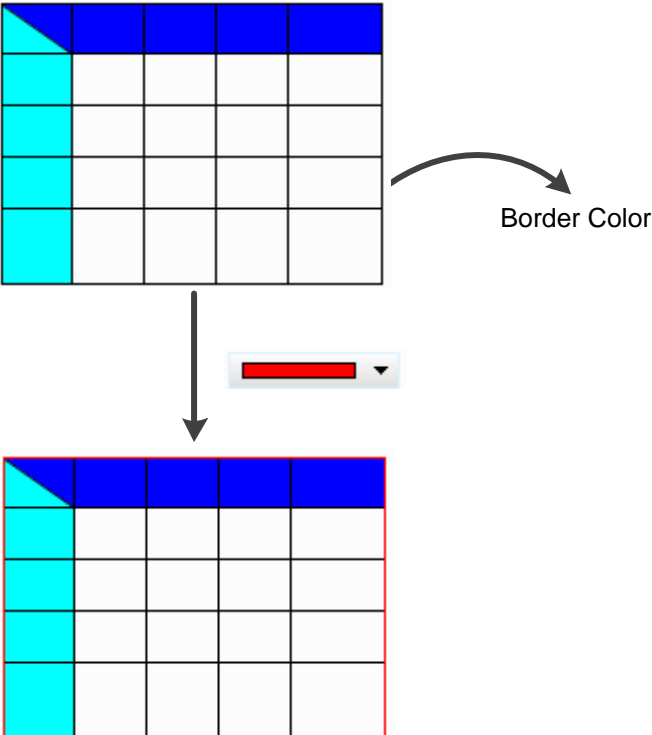
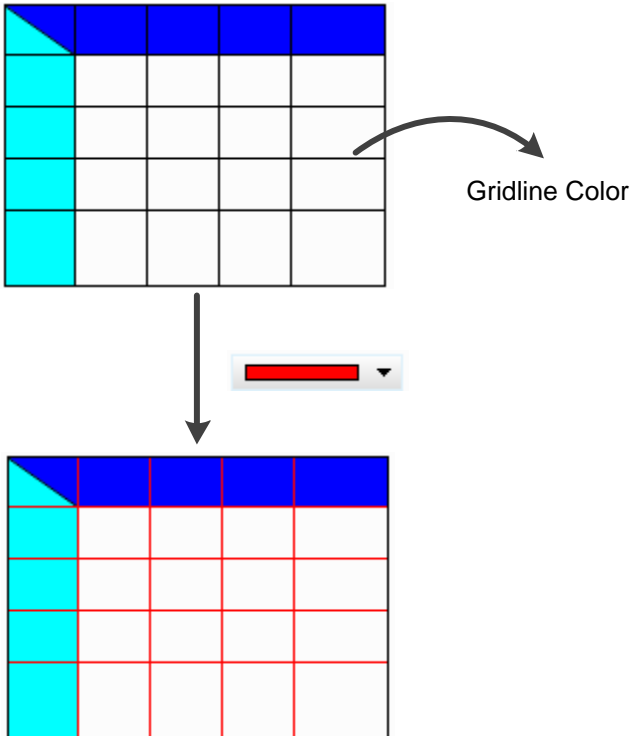
22

No.	Property	Function description	
(2)	(Alternate) Row Header	To use (Alternate) Row Header, you need to check (Alternate) Rows to enable the (Alternate) Row Header function.	
		Check	
		Uncheck	
		To use (Alternate) Column Header, you need to check (Alternate) Columns to enable the (Alternate) Column Header function.	
	(Alternate) Column Header		
		Check	
		Uncheck	

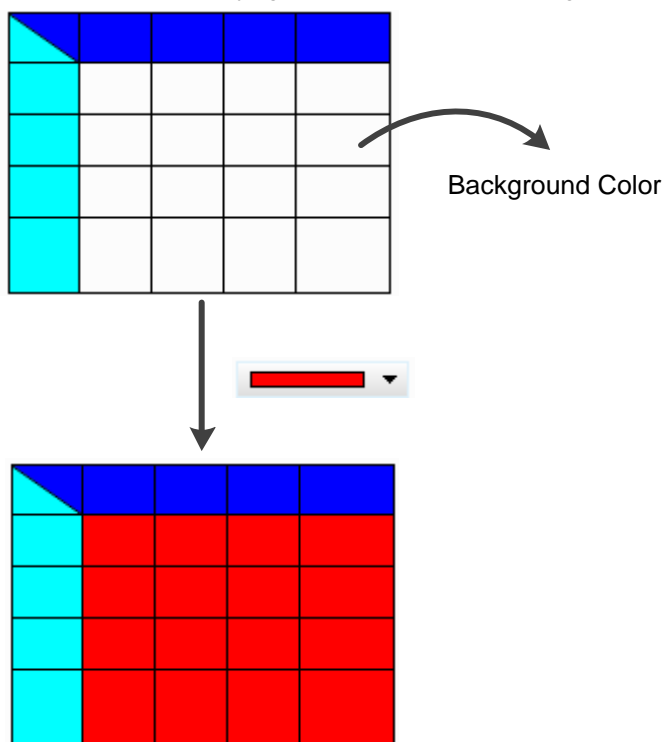
No.	Property	Function description
(3)	Distribute Rows Evenly	<ul style="list-style-type: none"> ■ The Distribute Rows Evenly option adjusts uneven height between the rows in a table. <div style="display: flex; align-items: center; border: 1px solid black; margin-bottom: 10px;"> <div style="border-right: 1px solid black; padding-right: 5px; text-align: center; width: 50px;">Before</div>  </div> <div style="display: flex; align-items: center; border: 1px solid black; margin-bottom: 10px;"> <div style="border-right: 1px solid black; padding-right: 5px; text-align: center; width: 50px;">After</div>  </div> <ul style="list-style-type: none"> ■ You can set the height for the row with the sum of the height not exceeding the element height. ■ If the set row height is greater than the element height, the software prompts the following message. <div style="border: 1px solid red; padding: 10px; margin-top: 10px;"> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid red; padding-bottom: 5px;"> DOPSoft × </div> <p style="text-align: center; margin: 10px 0;">Total row height exceeds the element size.</p> <div style="text-align: right; border-top: 1px solid red; padding-top: 5px;"> <input type="button" value="OK"/> </div> </div>

22

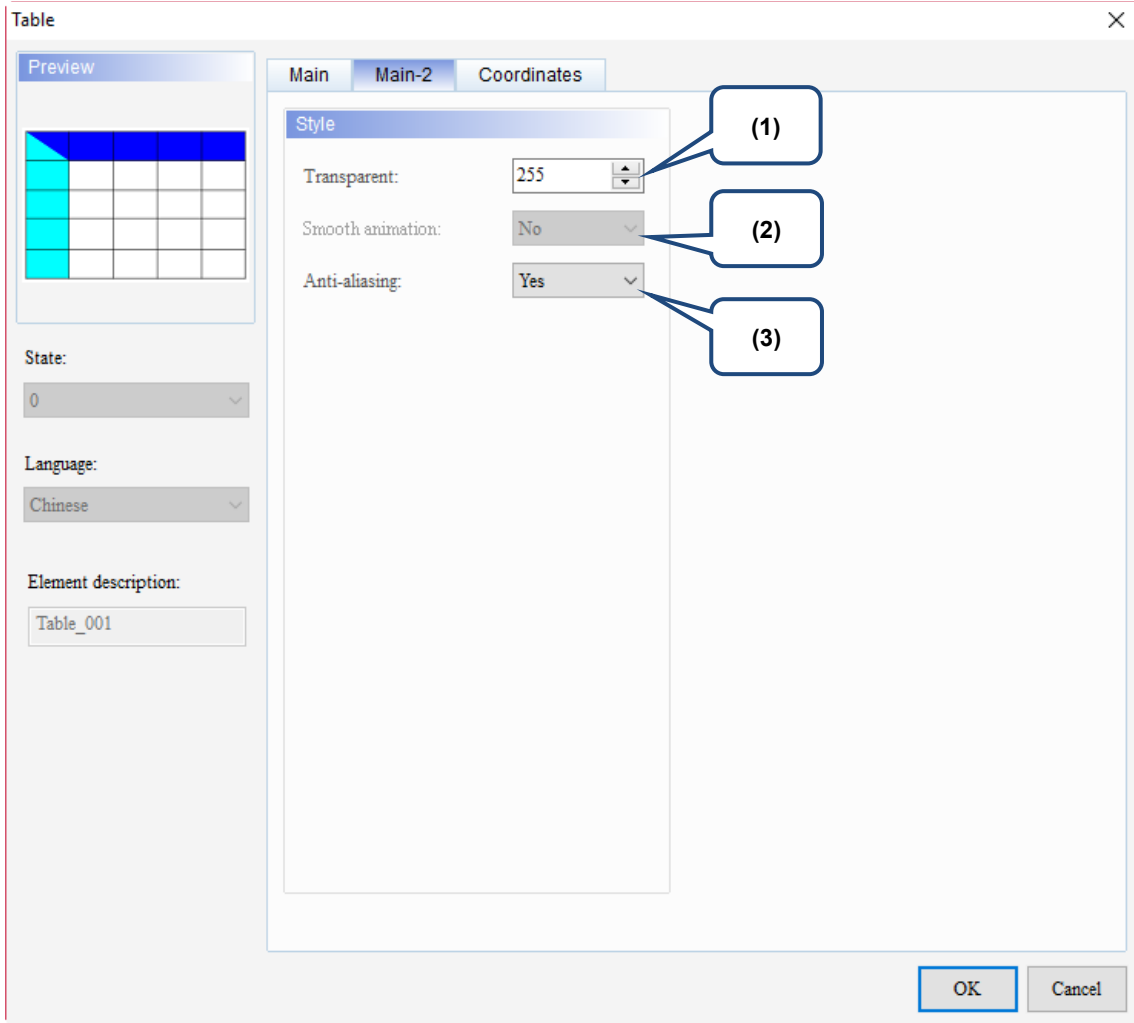
No.	Property	Function description
	Distribute Columns Evenly	<ul style="list-style-type: none"> The Distribute Columns Evenly option adjusts uneven width between the columns in a table. <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">Before</div>  </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 10px;">After</div>  </div> </div> <ul style="list-style-type: none"> You can set the width for the column with the sum of the width not exceeding the element width. If the set column width is greater than the element width, the software prompts the following message. <div style="border: 1px solid gray; padding: 10px; margin-top: 10px; width: fit-content;"> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid gray; padding-bottom: 5px;"> DOPSoft ✕ </div> <p style="text-align: center; margin: 10px 0;">Total column width exceeds the element size.</p> <div style="text-align: right; border-top: 1px solid gray; padding-top: 5px;"> <input type="button" value="OK"/> </div> </div>

No.	Property	Function description
(4)	Border Color	<p>Set the Border Color for the table.</p> 
(5)	Gridline Color	<p>Set the Gridline Color for the table.</p> 
(6)	Number of Rows Number of Columns	Up to 99 rows and columns can be added for the Number of Rows and Columns.

22

No.	Property	Function description
(7)	Background Color	<p>You can customize the displaying color for the element background.</p>  <p>The diagram illustrates the process of customizing the background color of a grid element. It shows a 5x5 grid with a blue top row, a cyan left column, and a white background. An arrow points to the text 'Background Color'. Below the grid, a color picker tool is shown with a red color selected. The resulting grid below has the right three columns colored red, while the top row remains blue and the left column remains cyan.</p>

■ Main-2



22

Figure 22.7.3 Main-2 property page for the Table element

No.	Property	Function description		
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.		
(2)	Smooth animation	The Smooth animation function is not available for this element.		
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.		
		<table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes	
Yes				
No				

22

Coordinates

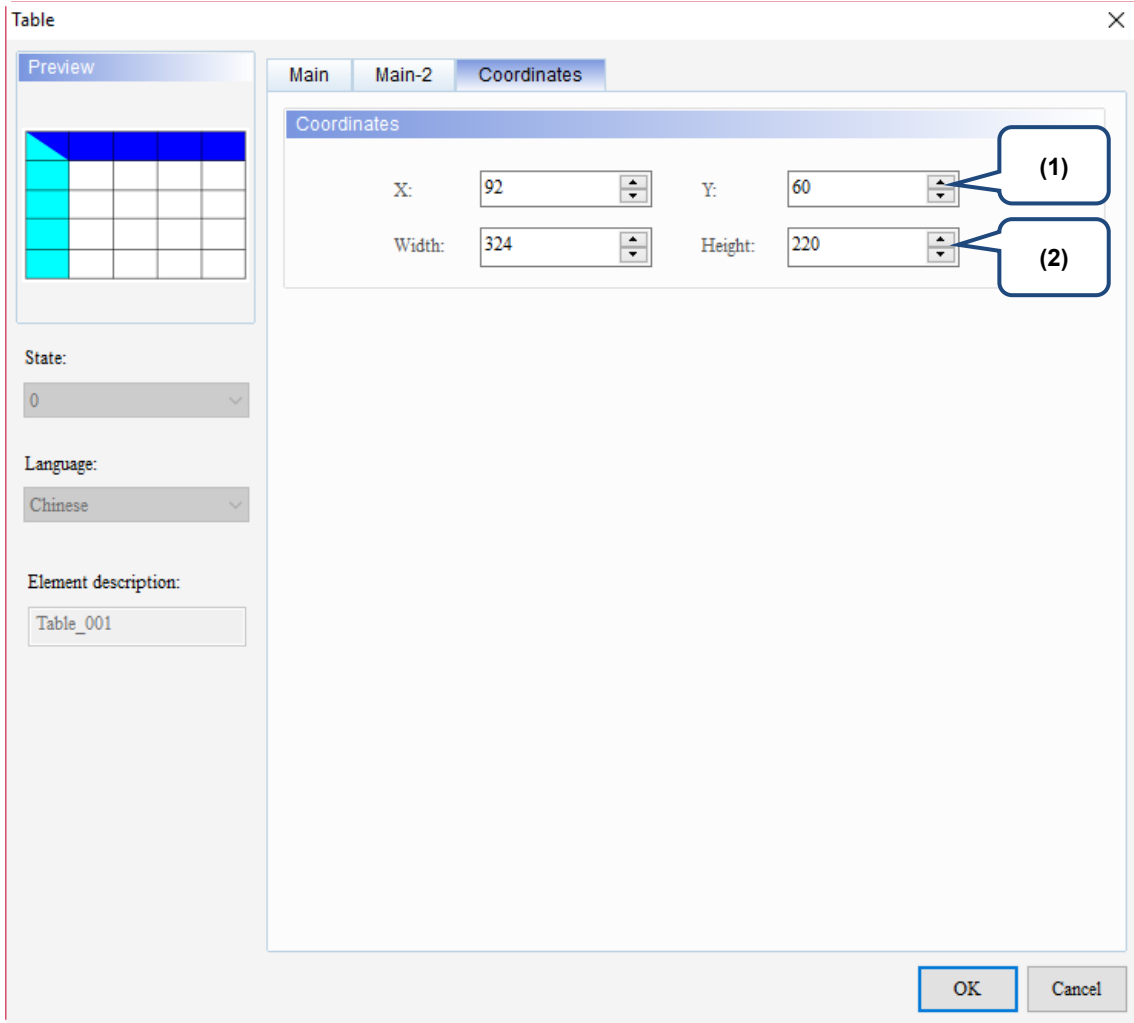


Figure 22.7.4 Coordinates property page for the Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

Recipe

23

This chapter explains the memory address occupied by recipes and the way to set up recipes in detail.

23.1	16-bit Recipe.....	23-3
23.2	32-bit Recipe.....	23-20
23.3	Indirect recipe index register (*RCP)	23-37
23.4	Enhanced recipe	23-40
23.5	Enhanced indirect recipe index register (*ENRCP)	23-62

23

A recipe is comprised of a number of parameters. When using different products for different industrial applications, these products will have their corresponding parameters. You can change the type of the products and use the corresponding recipe parameters. You can also set and save the recipe parameters. The created recipe tables can be uploaded from the HMI to the PLC or downloaded from the PLC to the HMI. The recipe function enables the user to store a large number of numeric parameters in the HMI memory area. For example, the baking time varies for different types of bread, and these time variables can be controlled by the HMI recipe function. The purpose is to reduce the load of the controller, so that the register of the controller can be conserved for other operations.

Classification of recipe setup elements for the HMI:

Recipe setup	16-bit Recipe
	32-bit Recipe
	Enhanced Recipe

23.1 16-bit Recipe

Check Enable to use the 16-bit Recipe and set the 16-bit Recipe Address, then the dedicated register will appear and you can create the 16-bit Recipe data.

The 16-bit Recipe has its own registers, which are RCP and RCPNO.

RCP	Recipe register
RCPNO	Recipe number register

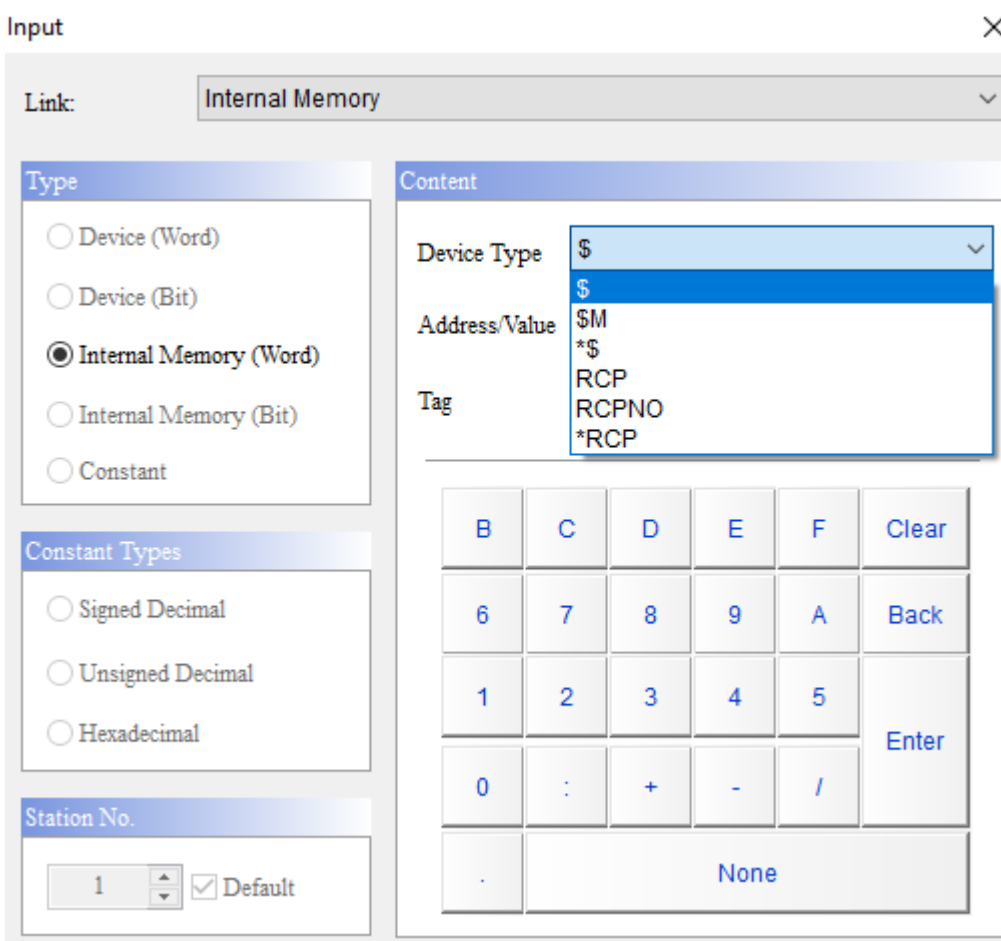
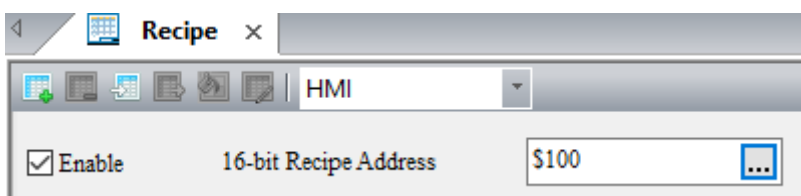


Figure 23.1.1 16-bit Recipe register

23

When using the 16-bit Recipe, the size of each recipe register is 16 bits (16 bits = 1 word). Assuming that the length is L and the group is G, the actual recipe count is L*G words.

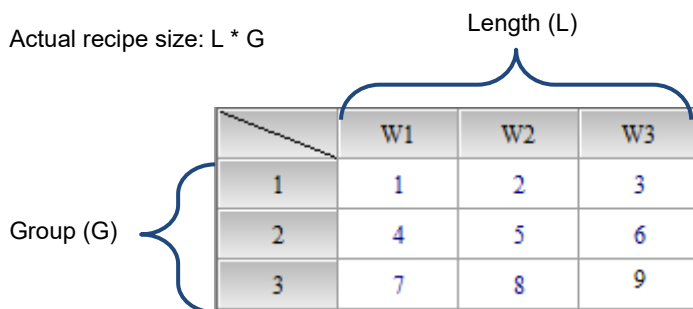


Figure 23.1.2 16-bit Recipe register size

■ Recipe number register (RCPNO)

RCPNO is used to specify the number for the 16-bit Recipe. Reading / writing of the recipe means to read / write a set of recipes according to the recipe number recorded in the recipe number register. When you select the first set of recipes, RCPNO = 1; when you select the fourth set of recipes, RCPNO = 4.

Note: the recipe number register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

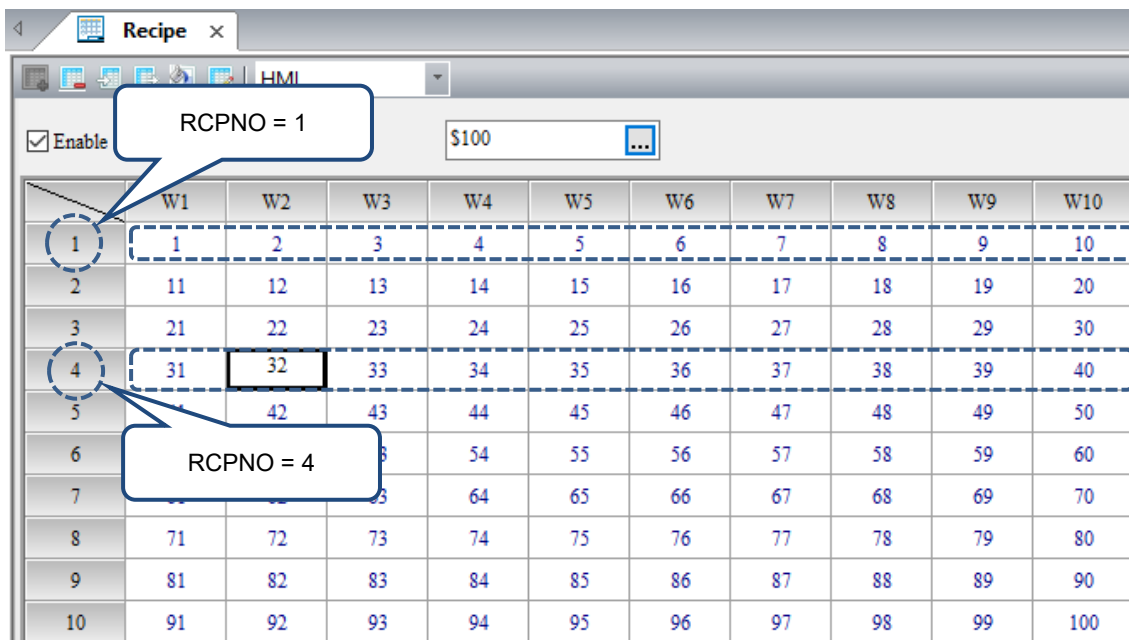
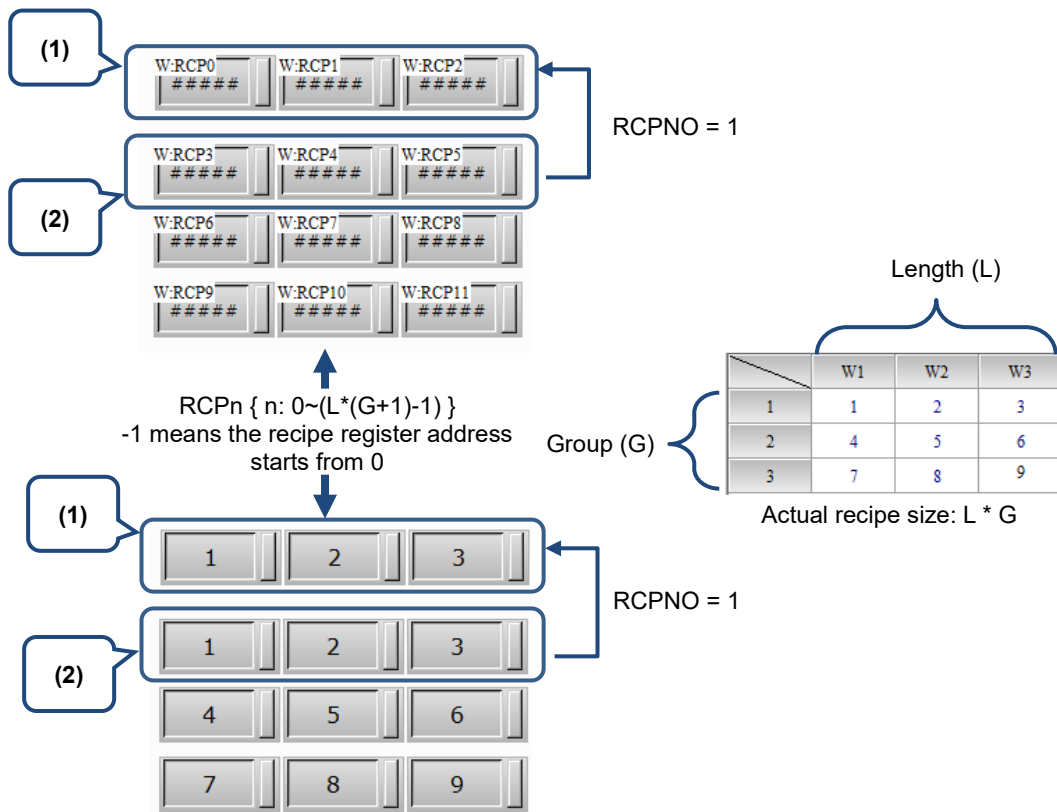


Figure 23.1.3 Recipe number editing screen

■ Recipe register (RCP)

A recipe buffer is featured in the HMI and is configured at the front of the recipe register. This buffer is used to store the selected group of recipes, and the length of the recipe buffer equals the length of the selected group of recipes, that is, the recipe buffer also occupies L recipe registers. Thus, the number of the recipe registers that a recipe table occupies is $L * (G+1)$, where G+1 stands for the number of the registers with an additional buffer. With the recipe buffer, you only need to switch between the recipe numbers to check the currently specified recipe parameters. When the selected recipe number (RCPNO) is 1, the value of recipe number 1 will be displayed in the recipe buffer (i.e. RCPNO = 1 in the figure below).



- (1) Recipe buffer area
- (2) Recipe table address - first recipe

Figure 23.1.4 16-bit Recipe buffer configuration

Accessing range of the recipe register:

Table 23.1.1 Recipe register

Accessing type	Element type	Accessing range
Word	RCPn	RCP0 - RCP65535
Bit	RCPn	RCP0.0 - RCP65535.15

Note: n = Word (0 - 65535)

23

The address accessing range provided by RCP is limited according to the recipe size that you created. Assume the recipe size is length 3*group 3, then the RCP address ranges from RCP0 to RCP11. When creating the RCP12 address, a warning message will pop up, as shown in the figure below.

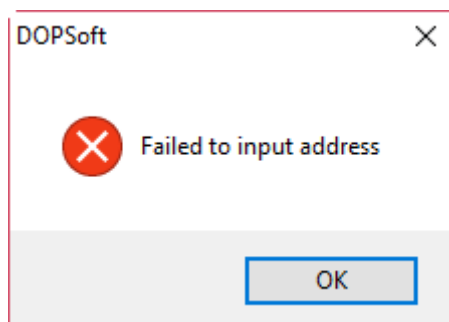


Figure 23.1.5 Recipe register configuration

- 16-bit Recipe size limit
1. If the non-volatile memory area is set in the USB Disk or SD Card, the editable size of a 16-bit Recipe is (L*G) = 4194304. You can go to [View] > [Memory List] to check the size and capacity for the 16-bit Recipe.

Item	Cost-Bytes
History	0 (0K)
Alarm	0 (0K)
Total Used	0 (0K)
Available	437675622 (427417K)
Free	437675622 (427417K)
1 - Screen_1	0.00 % Used
Macro	0 (0K)
Curve	0 (0K)
Image	644 (0K)
Text	0 (0K)
Background Image	0 (0K)
Total Used	644 (0K)
Available	437675622 (427417K)
Free	437674978 (427416K)
Screen Saver	Pass
Sub Screen	Pass
External Storage	
Alarm	0 (0K)
History	0 (0K)
Recipe16	0 (0K)
Recipe 32	0 (0K)
Enhanced Recipe	0 (0K)
Total Used	0 (0K)

Figure 23.1.6 16-bit Recipe external storage

- 2. If the non-volatile memory area is set to HMI, the editable size of a 16-bit Recipe is $(L * G) = 65536$ words or 64K. Hence, when the edited 16-bit Recipe exceeds 64K, a warning message will appear on the recipe setup window to remind the user that the current recipe size has exceeded the allowable limit.

23

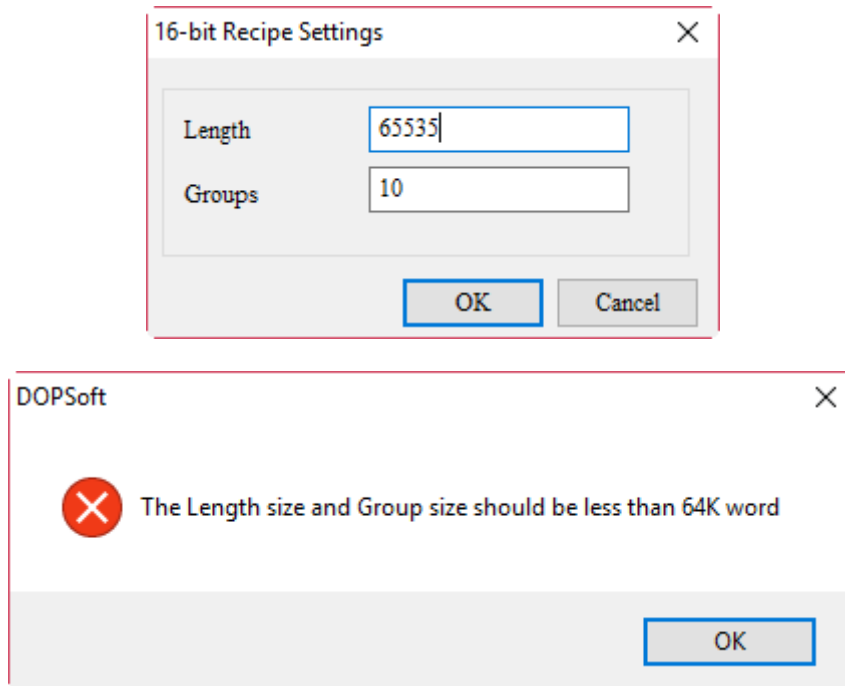


Figure 23.1.7 16-bit Recipe internal storage

23

Go to [Options] > [Recipe] to create the 16-bit Recipe data. By setting the recipe, you can write a large amount of data in batch to the PLC using the recipe control flag in the control area or read the data from the PLC to the HMI. The recipe can be used for production process control in the industry, enhancing convenience in processing a large amount of data.

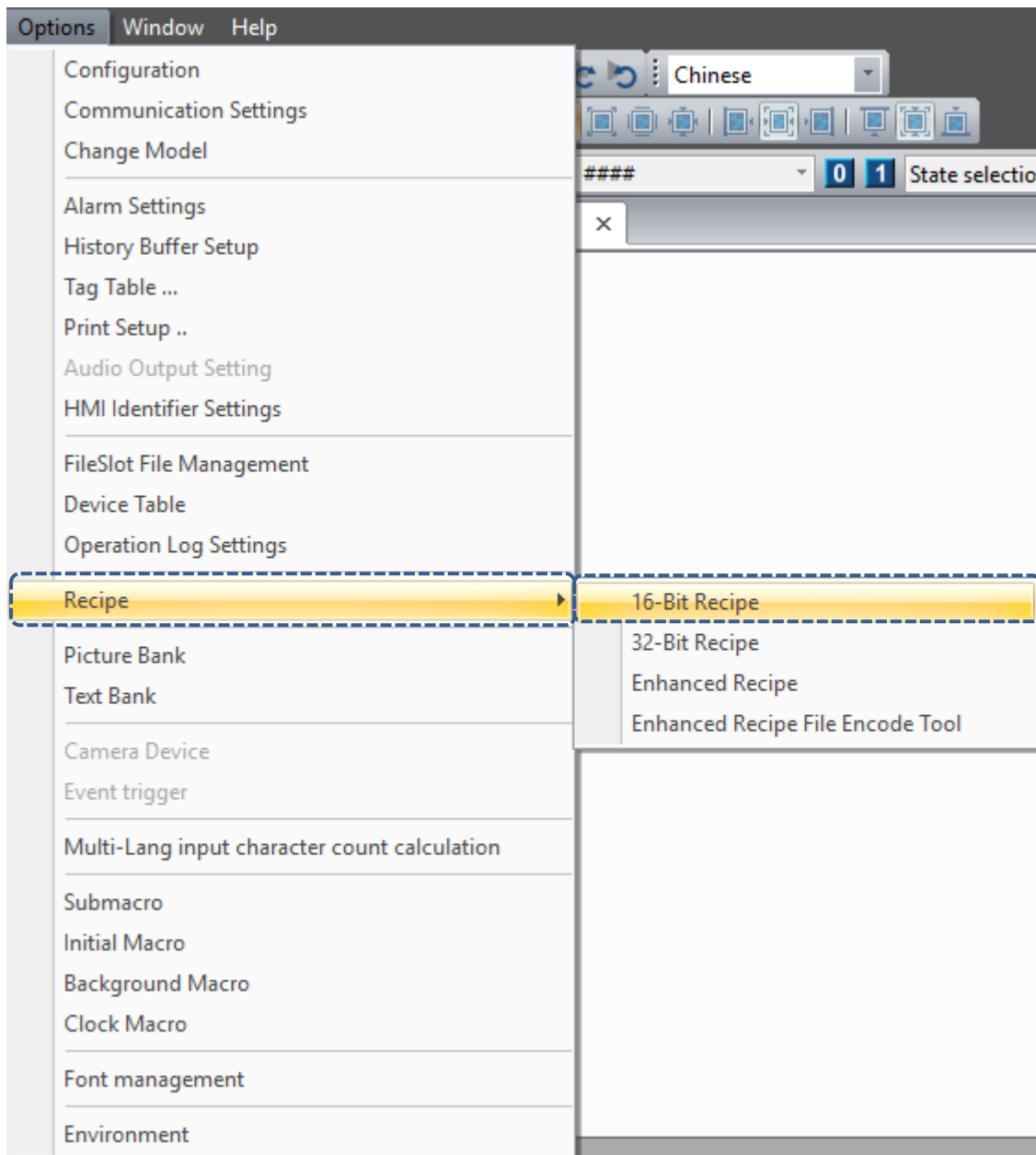


Figure 23.1.8 16-bit Recipe

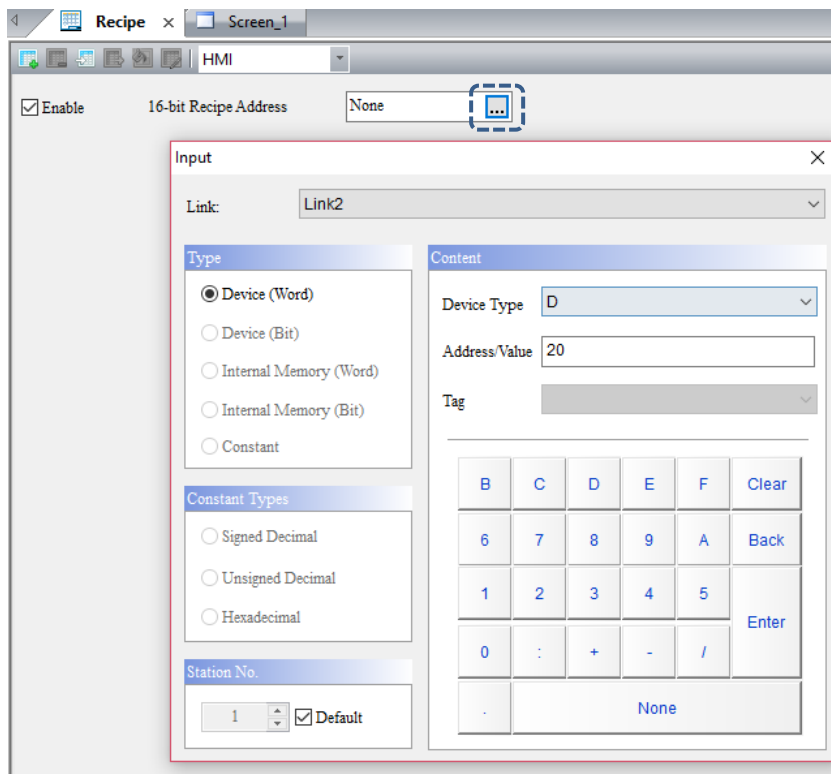
Refer to the 16-bit Recipe example in Table 23.1.4 below.

Table 23.1.2 16-bit Recipe example


16-bit Recipe

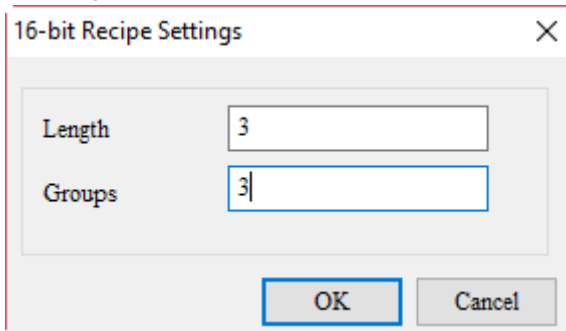
Step 1: go to [Options] > [Recipe] > [16-Bit Recipe].

1. Check Enable.
2. Set the external address to D20.

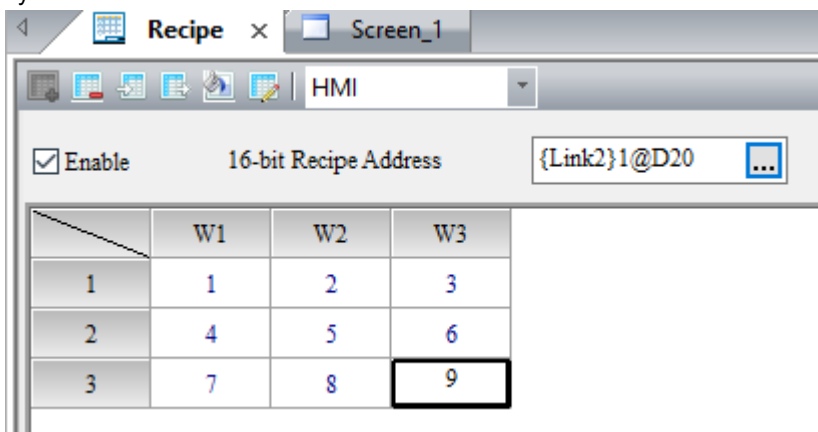


Set 16-bit Recipe

3. Click  to set the Length and Groups to 3.



4. Click **OK** and a table with the set Length and Groups appears. Fill in the values to be displayed.



23

Create RCPNO Numeric Entry element

16-bit Recipe

Create a Numeric Entry element and set the Write Address to Internal Memory. Select RCPNO for the Device Type. This element is used to select the Recipe Group.

Input ✕

Link: Internal Memory

Type

Device (Word)

Device (Bit)

Internal Memory (Word)

Internal Memory (Bit)

Constant

Content

Device Type: RCPNO

Address/Value:

Tag:

Constant Types

Signed Decimal

Unsigned Decimal

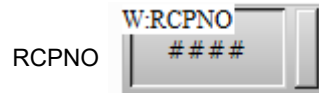
Hexadecimal

Station No.

Default

B	C	D	E	F	Clear
6	7	8	9	A	Back
1	2	3	4	5	Enter
0	:	+	-	/	
.	None				

The following is an example of the created element:



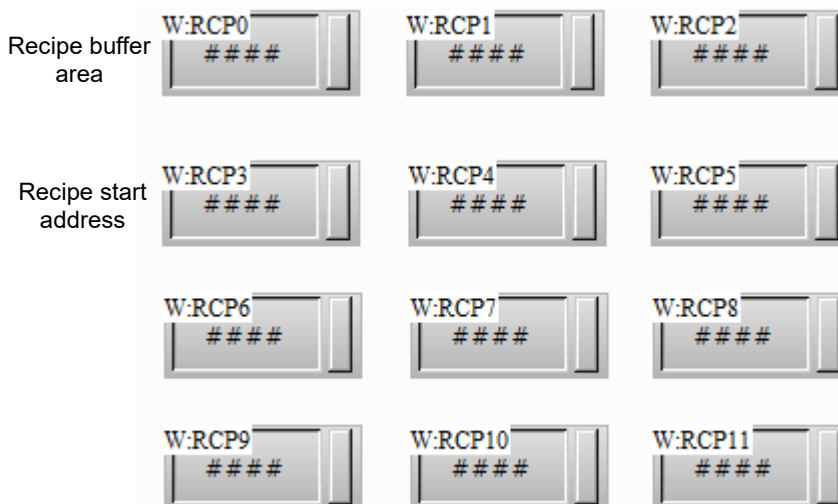
16-bit Recipe

The steps are as follows:

1. Input the size of the recipe (Length (L) x Group (G) = 3 x 3) into the formula $L * (G+1)$ to get the actual configured RCP = RCP0 - RCP11.
2. Create 12 Numeric Entry elements and set their Read Address starting from RCP0 of the Internal Memory in sequence.

Create RCP Numeric Entry elements

3. The following is an example of the created elements:



Note: the created RCP0 - RCP2 are the recipe buffers and the actual recipe data RCPs are RCP3 - RCP11. For more information, refer to Figure 23.1.4 16-bit Recipe buffer configuration.

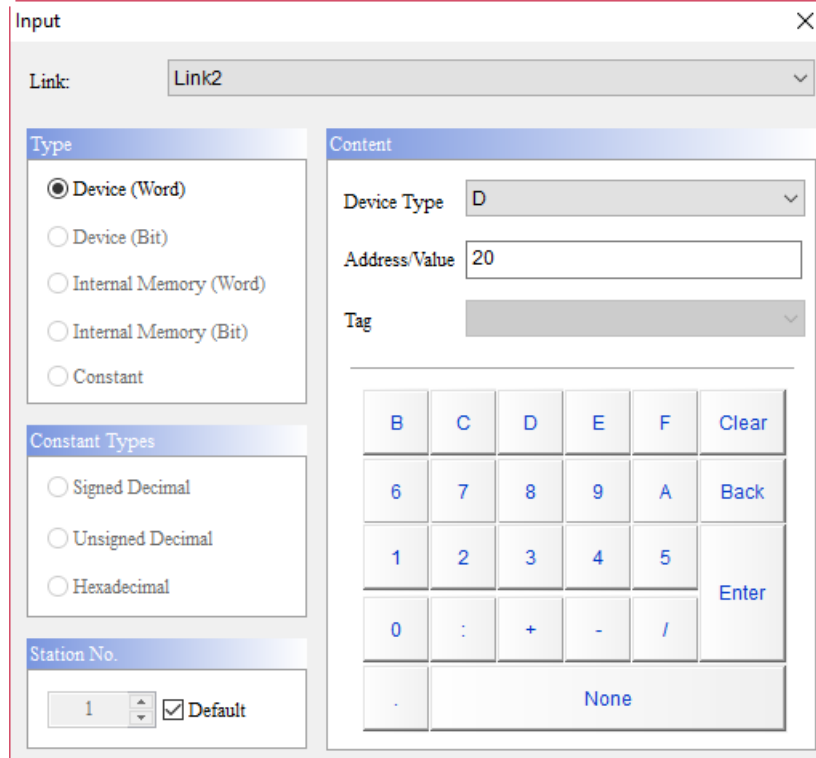
23

Create Numeric Entry elements for the Recipe Address

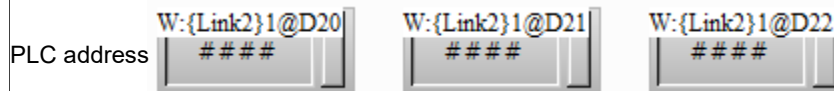
16-bit Recipe

Create three Numeric Entry elements, which are D20, D21, and D22, to display changes made to the data when reading or writing the PLC recipes.

- Set the Read Address to D20 for the Numeric Entry element, as shown below:

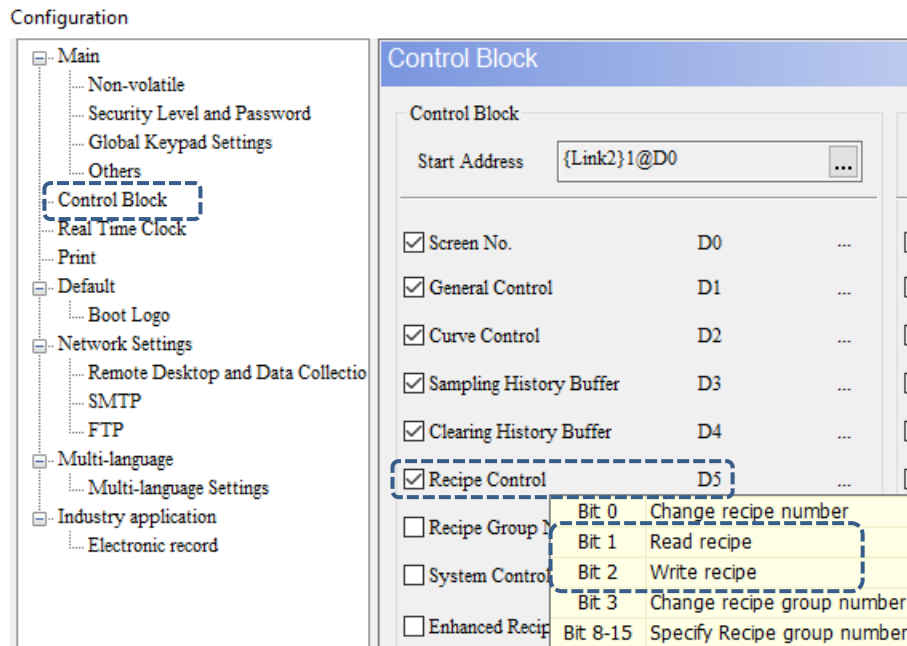


The following is an example of the created elements:



Go to [Options] > [Configuration] > [Control Block], and check the Recipe Control flag. Then, set the Start Address for the Control Block to define the recipe control address. Once the setting is complete, click **OK** to exit the Configuration window.

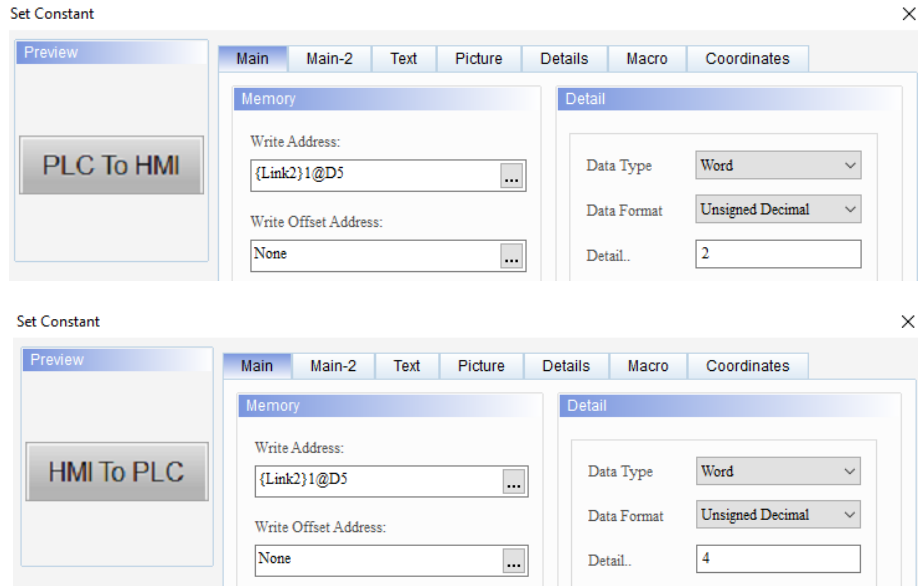
Set Recipe Control flag in Control Block



16-bit Recipe

Create two Set Constant buttons. Set the Write Address to D5 and the setting value to 2 and 4 corresponding to Bit 1 and Bit 2 of the recipe control flag D5 respectively for reading and writing the recipe.

Create Set Constant elements

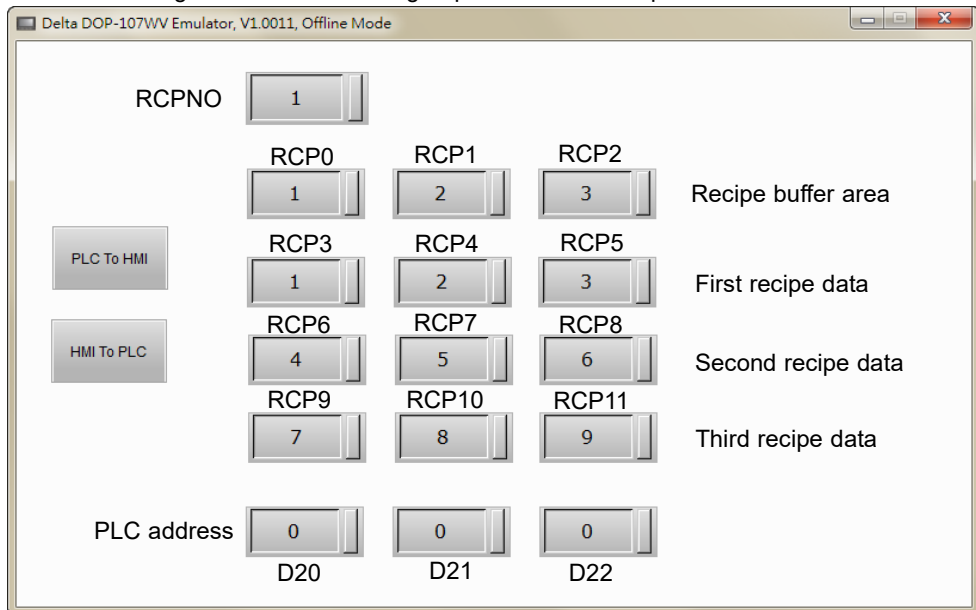


- After creating all the elements, please compile and download all data to the HMI.



- Select the Recipe Group. The recipe data will be displayed in the created RCP0 - RCP11 according to the set recipe, with RCP0 - RCP2 as the recipe buffers. The starting address for the first group of the actual recipe data is RCP3.

Execution results

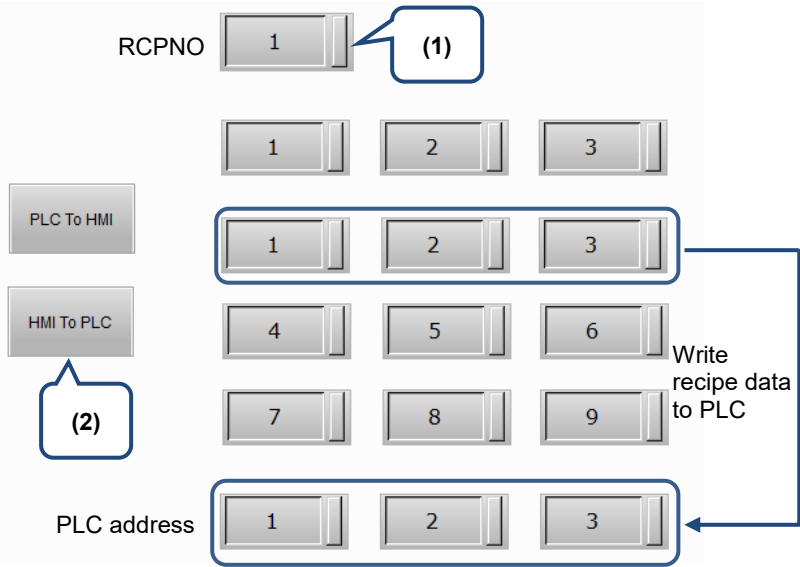


- Trigger the Recipe Write button and the recipe data of the selected recipe group will be written to the PLC. Trigger the Recipe Read button and the recipe data that were written to the PLC will be read back to the HMI with reference to the selected recipe group. The recipe data will be changed to match with the content of the selected recipe group.

23

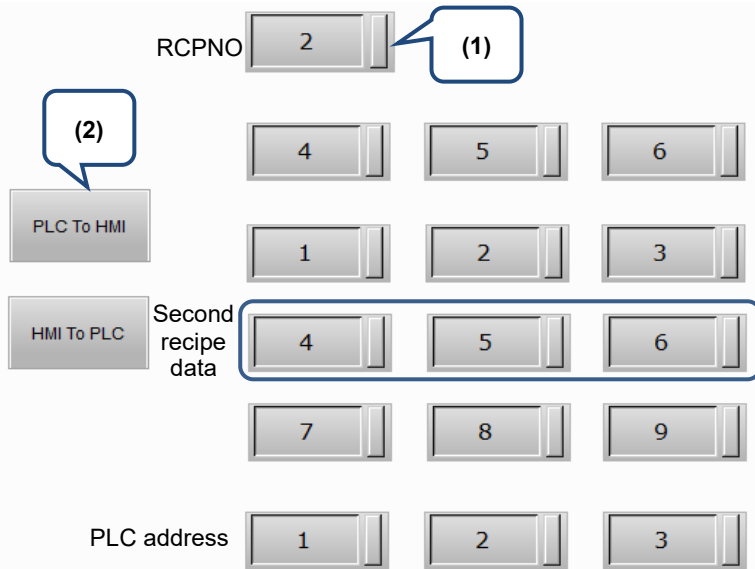
16-bit Recipe

Write recipe
(HMI to PLC)

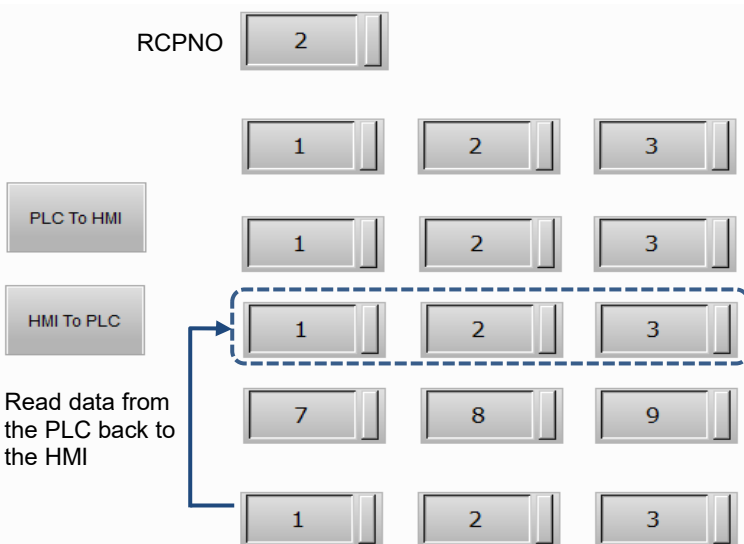


Execution
results

Read recipe
(PLC to HMI)

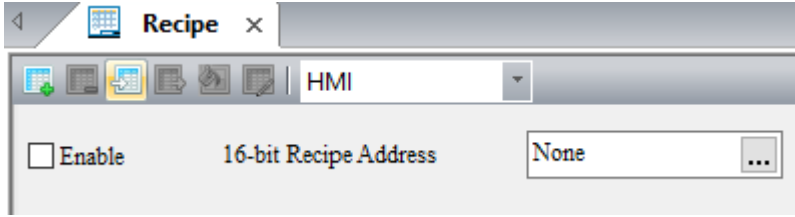
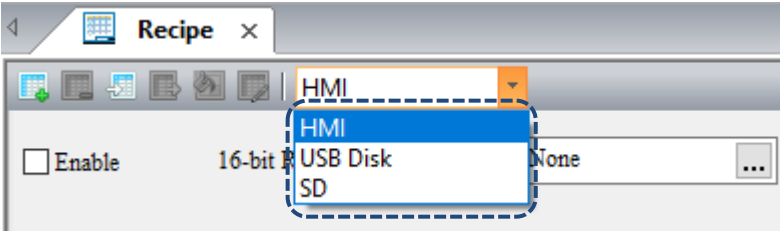


- After carrying out step (2), the second group of recipe data will be displayed in 1, 2, and 3 because of having read the PLC data.



The following section introduces the property settings for the 16-bit Recipe.

Table 23.1.3 Properties of the 16-bit Recipe setting

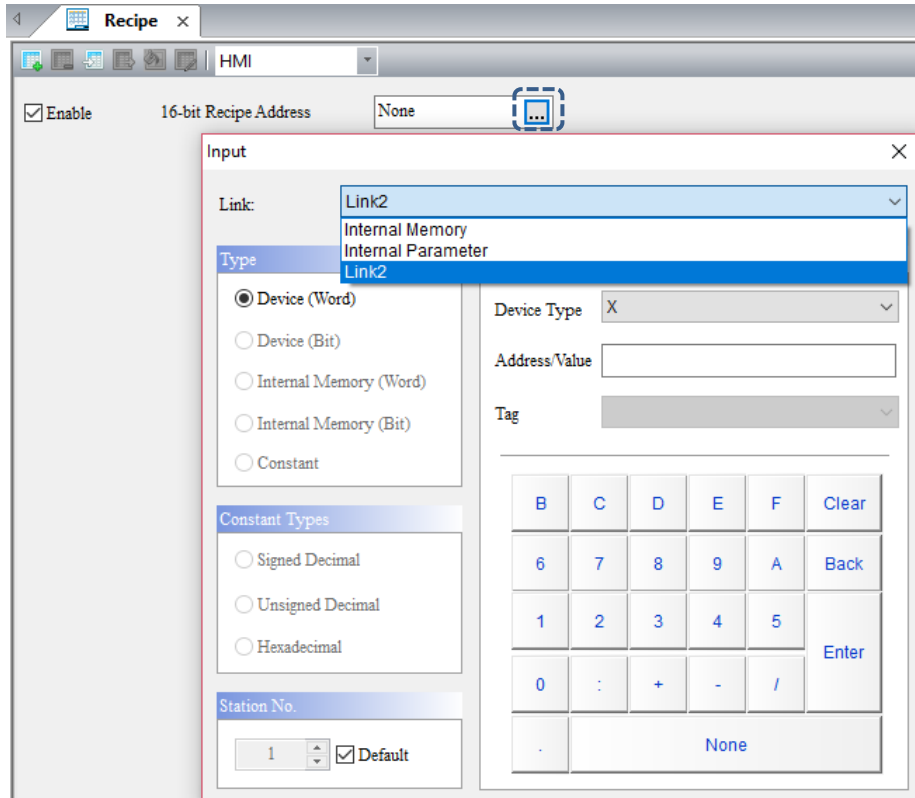
Properties of the 16-bit Recipe setting	
	
Enable	<ul style="list-style-type: none"> ■ Check Enable to use the recipe register address. ■ With Enable not checked, the HMI recipe function will not be activated.
Non-volatile	<ul style="list-style-type: none"> ■ The non-volatile memories include HMI, USB Disk, and SD Card.  <ul style="list-style-type: none"> ■ The non-volatile memory of DOP-103 and DOP-107 can only be set in the HMI and USB Disk; DOP-110 can be set in the HMI, USB Disk, and SD Card. ■ If you select to save in the HMI, the data is saved in the HMI ROM when power is off.

23


Properties of the 16-bit Recipe setting

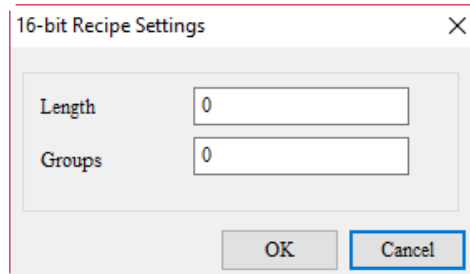
Recipe read address

- Available options are internal memory and controller register address.
- For information about selecting Link Name or Element Style, please refer to Section 5.1.



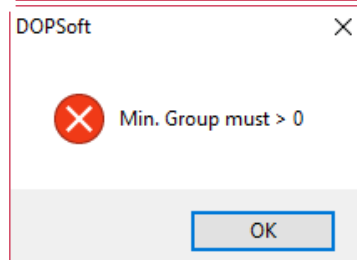
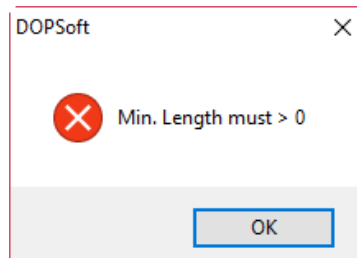
Add recipe

To set the Length and Groups for the recipe, click .



Length / Groups

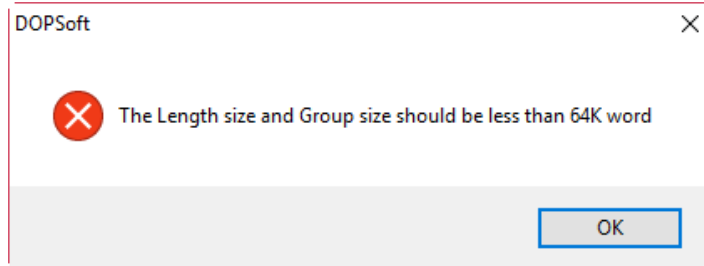
- After entering the Length and Groups values for the recipe, press **OK** to create the recipe.
- The Length and Groups cannot be 0. If you input 0 in Length or Groups, an error message will pop up.



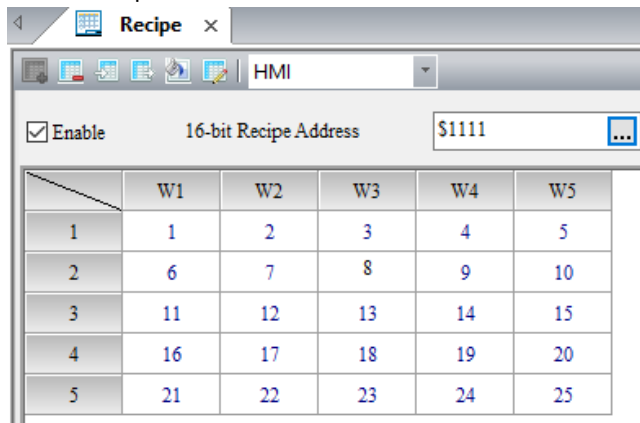
Properties of the 16-bit Recipe setting

Recipe content

- Enter the Length and Groups to form a table of Length (L) x Groups (G) in the blank area. For example, with 4 for the Length and 3 for the Groups, the table will be 4 x 3. Note: limited by the internal memory size of the HMI, the recipe size cannot exceed 64K (Length x Groups cannot be greater than 65536). If the recipe size exceeds 64K, the software will prompt the following warning message:

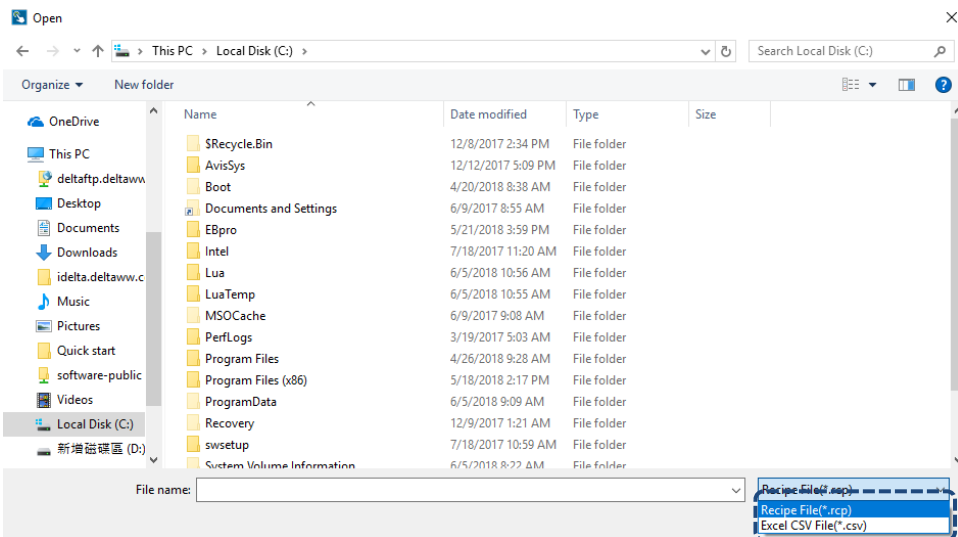


- You can fill in the recipe data in this table.

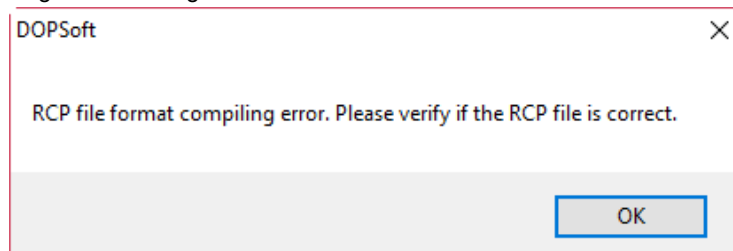


- The import recipe function supports CSV and RCP file formats for you to select and import the recipe.

Import recipe



- The opened and imported recipe file provides the recipe data content only and the recipe address does not support loading the original set address. If you use the 16-bit Recipe to open a RCP or CSV file of the 32-bit Recipe, the software will prompt the following error message once the file is loaded.



23

Export recipe

Properties of the 16-bit Recipe setting

- The export recipe function saves the current 16-bit Recipe. The supported file formats are the same as those of the Open function, which are CSV and RCP files.

- The saved recipe data does not support saving the set recipe address.

Clear configuration

- Clear the recipe content that has the value entered.


Before clearing

	W1	W2	W3	W4	W5
1	1	2	3	4	5
2	6	7	8	9	10
3	11	12	13	14	15
4	16	17	18	19	20
5	21	22	23	24	25

After clearing

	W1	W2	W3	W4	W5
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0

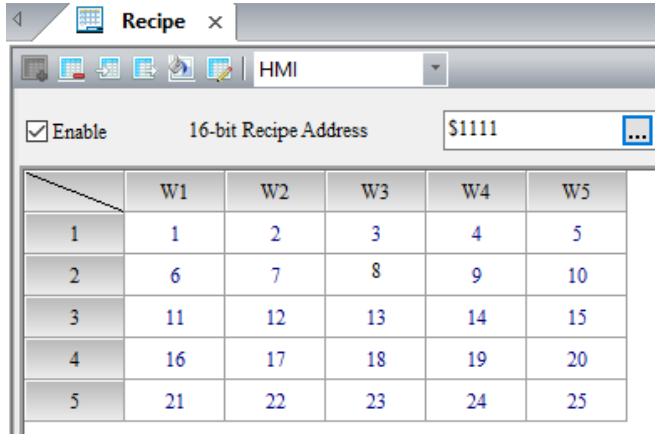
Properties of the 16-bit Recipe setting

- Click  to delete the entire recipe. You will have to create a new recipe.
- The delete function also sets the 16-bit Recipe Address to None.

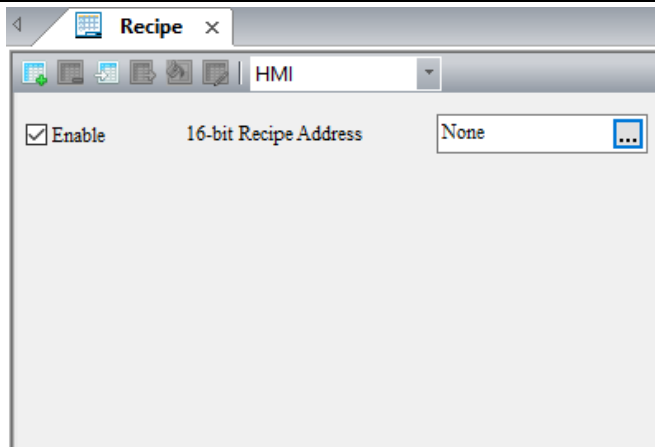
Delete recipe



Before

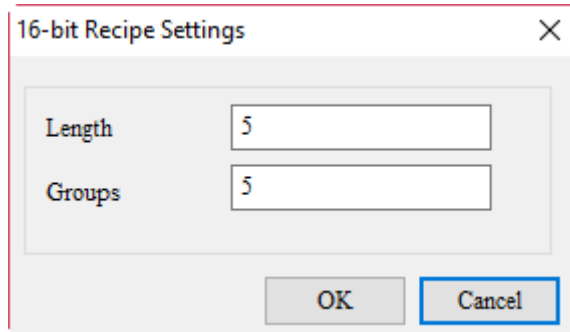


After



Reset the Length and Groups for the recipe.

Recipe Settings



23

23.2 32-bit Recipe

The data type that the 32-bit Recipe supports is Double Word. The data formats include Signed Decimal, Unsigned Decimal, and Floating. The size of each recipe register is 32 bits (2 Words or 1 Double Word, DW). Unlike 16-bit Recipes, the 32-bit Recipe features an additional recipe grouping option. When reading or writing the recipe, you have to specify both the recipe number and recipe group before reading / writing one of the recipe sets.

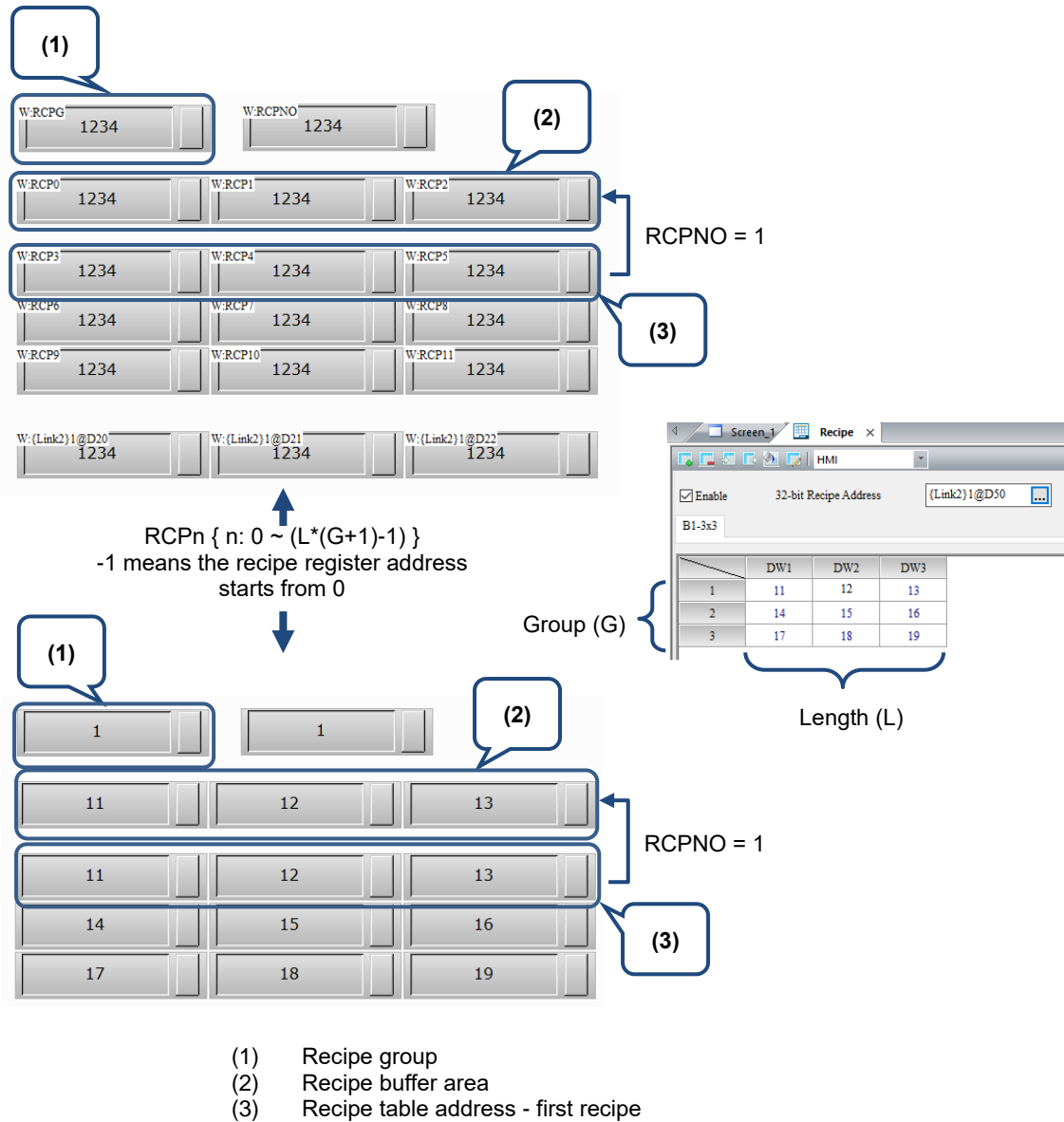


Figure 23.2.1 32-bit Recipe buffer configuration

The 32-bit Recipe has its own registers which are RCP, RCPNO, and RCPG.

RCP	Recipe register
RCPNO	Recipe number register
RCPG	Recipe group register

RCP and RCPNO are registers that are jointly used with the 16-bit Recipe, as have already been introduced in the section on the 16-bit Recipe. The following section introduces the features of the RCPG register.

■ Recipe group register (RCPG)

The recipe group register is used to specify the group for the 32-bit Recipe. You can create up to 255 groups of 32-bit Recipe data.

The Recipe Group 0 (RCPG 0) is assigned for use by the 16-bit Recipe. Calling the 32-bit Recipe data requires use of the Recipe Groups 1 - 255 (RCPG 1 - 255).

For a 32-bit Recipe, when you select the first recipe number in the first group, RCPG = 1 and RCPNO = 1; when you select the fourth recipe number in the third group, RCPG = 3 and RCPNO = 4.

Note: the recipe group register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

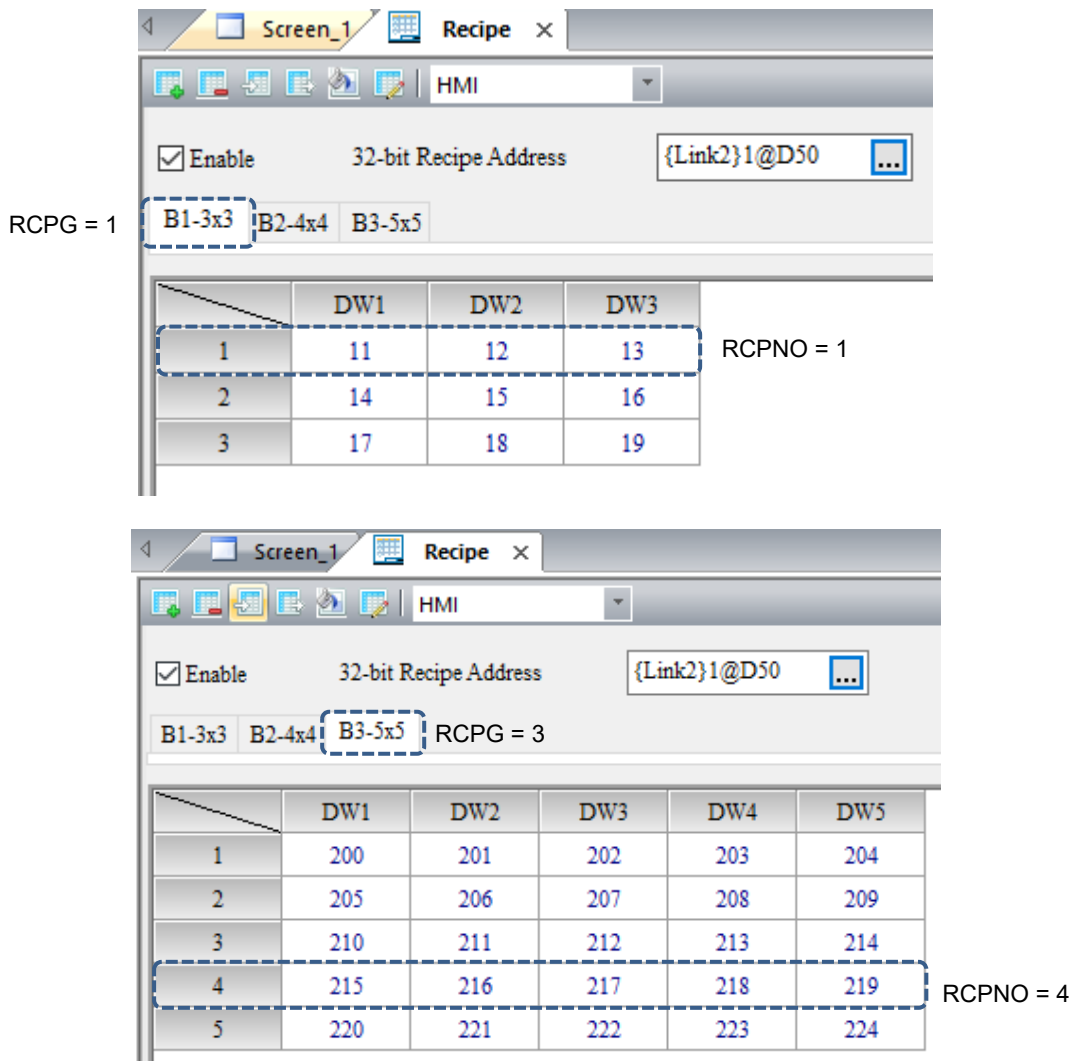


Figure 23.2.2 32-bit Recipe group editing screen

23

■ Recipe number register (RCPNO)

RCPNO is used to specify the number for the 32-bit Recipe. Reading / writing of the recipe means to read / write a set of recipes according to the recipe number recorded in the recipe number register. When you select the first set of recipes, RCPNO = 1; when you select the fourth set of recipes, RCPNO = 4.

Note: the recipe number register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

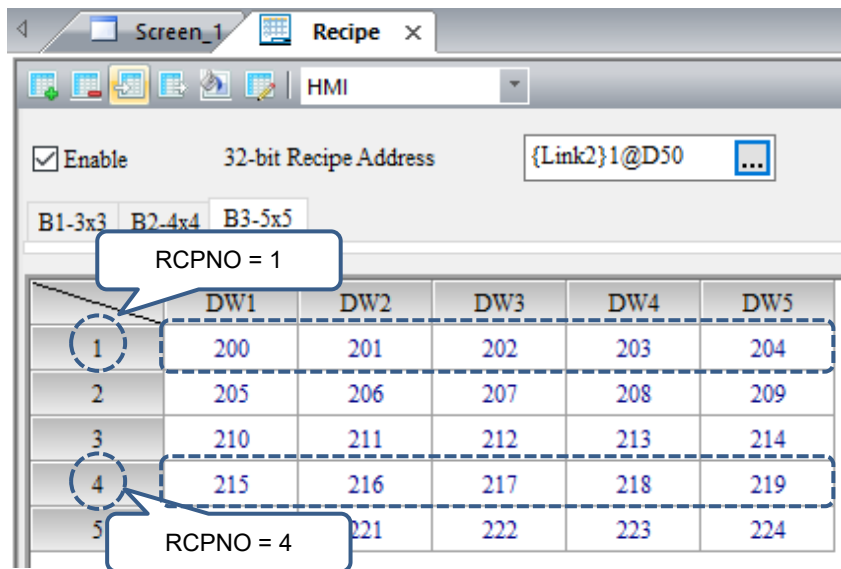
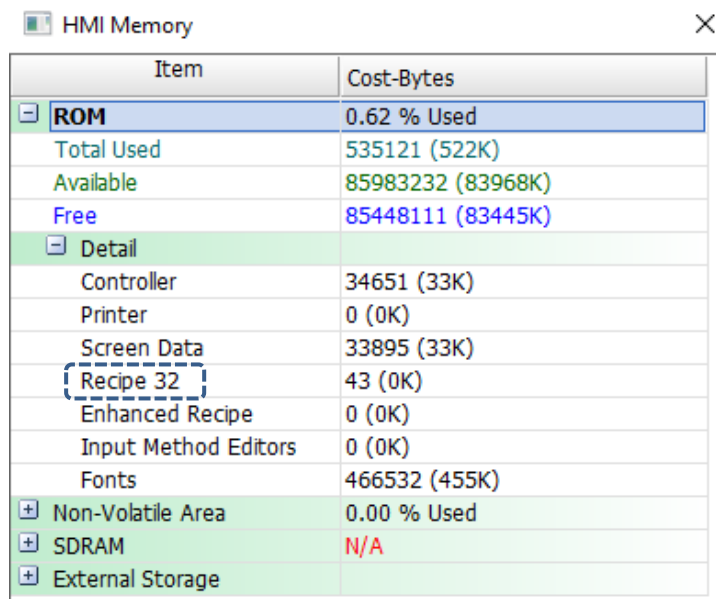


Figure 23.2.3 Recipe Number editing screen

■ 32-bit Recipe size limit

If the non-volatile memory area is set in the USB Disk or SD Card, the size of the 32-bit Recipe file cannot exceed 50MB. Unlike the 16-bit Recipe, the editable size of the 32-bit Recipe is dependent upon the specification of the flash memory for the HMI of different models when the non-volatile memory area is set in the HMI.

You can go to [View] > [Memory List] to check the editable recipe size, as shown in Figure 23.2.4.



Item	Cost-Bytes
ROM	0.62 % Used
Total Used	535121 (522K)
Available	85983232 (83968K)
Free	85448111 (83445K)
Detail	
Controller	34651 (33K)
Printer	0 (0K)
Screen Data	33895 (33K)
Recipe 32	43 (0K)
Enhanced Recipe	0 (0K)
Input Method Editors	0 (0K)
Fonts	466532 (455K)
Non-Volatile Area	0.00 % Used
SDRAM	N/A
External Storage	
Alarm	0 (0K)
History	0 (0K)
Recipe16	0 (0K)
Recipe 32	0 (0K)
Enhanced Recipe	0 (0K)
Total Used	0 (0K)

Figure 23.2.4 32-bit Recipe memory list

Refer to the 32-bit Recipe example in Table 23.2.1 below.


23

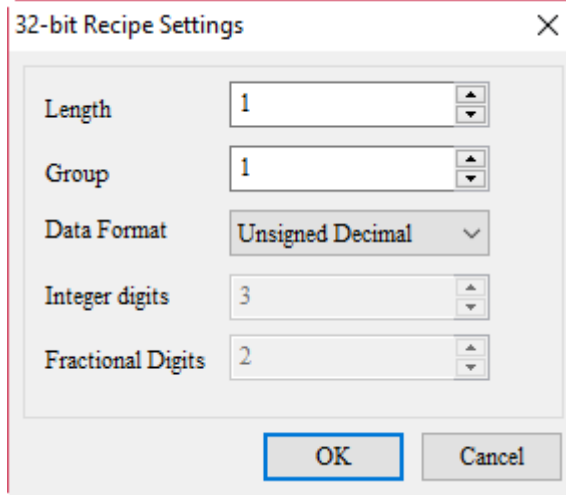
Table 23.2.1 32-bit Recipe example

32-bit Recipe

Step 1: go to [Options] > [Recipe] > [32-Bit Recipe].

1. Check Enable.
2. Set Recipe Address to D50.

Step 2: click  to enter the 32-bit Recipe Settings.



32-bit Recipe Settings

Length: 1

Group: 1

Data Format: Unsigned Decimal

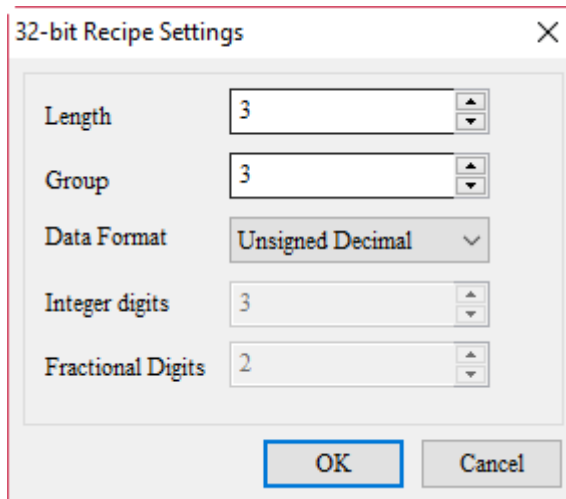
Integer digits: 3

Fractional Digits: 2

OK Cancel

Set both the Length and Group to 3 for the first set of Recipe. Set Data Format to Unsigned Decimal.

Set 32-bit Recipe



32-bit Recipe Settings

Length: 3

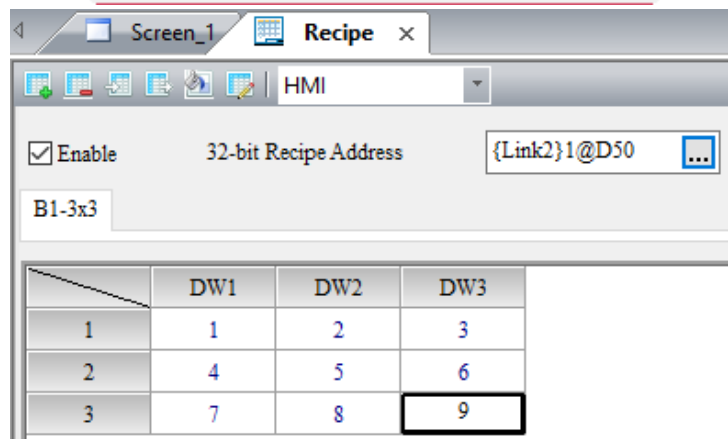
Group: 3

Data Format: Unsigned Decimal

Integer digits: 3

Fractional Digits: 2

OK Cancel



Screen_1 Recipe x

HMI

Enable 32-bit Recipe Address: {Link2}1@D50

B1-3x3

	DW1	DW2	DW3
1	1	2	3
2	4	5	6
3	7	8	9

32-bit Recipe

Step 3: repeat Step 2. Set both Length and Group to 3. The recipe data is shown below:

	DW1	DW2	DW3
1	11	22	33
2	44	55	66
3	77	88	99

Set 32-bit Recipe

Step 4: repeat Step 1. Set both Length and Group to 3. The recipe data is shown below:

	DW1	DW2	DW3
1	111	222	333
2	444	555	666
3	777	888	999

Create a Numeric Entry element and set the Write Address to Internal Memory. Select RCPG for the Device Type. This element is used to select the Recipe Group.

Create RCPG Numeric Entry element

Input

Link: Internal Memory

Type: Device (Word), Device (Bit), Internal Memory (Word), Internal Memory (Bit), Constant

Content: Device Type: RCPG, Address/Value: , Tag:

Constant Types: Signed Decimal, Unsigned Decimal, Hexadecimal

Station No.: 1 [Default]

Buttons: B, C, D, E, F, Clear, 6, 7, 8, 9, A, Back, 1, 2, 3, 4, 5, Enter, 0, :, +, -, /, ., None

The following is an example of the created element:

Recipe Group W:RCPG ####

23

32-bit Recipe

Create a Numeric Entry element and set the Write Address to Internal Memory. Select RCPNO for the Device Type. This element is used to select the Recipe Number.

Create RCPNO Numeric Entry element

The following is an example of the created element:



Step 1: before the Numeric Entry elements are created to display the 32-bit Recipe register, you can use the recipe register formula $[(L*(G+1)-1)]$ to calculate the number that n in RCPn represents. Input the set size of the recipe (Length (L) x Group (G) = 3 x 3) into the formula to gain RCPn = RCP0 - RCP11.

Step 2: create 12 Numeric Display elements and set their Write Address starting from RCP0 of the Internal Memory and so on.

Create RCP Numeric Entry elements

32-bit Recipe

Create RCP Numeric Entry elements

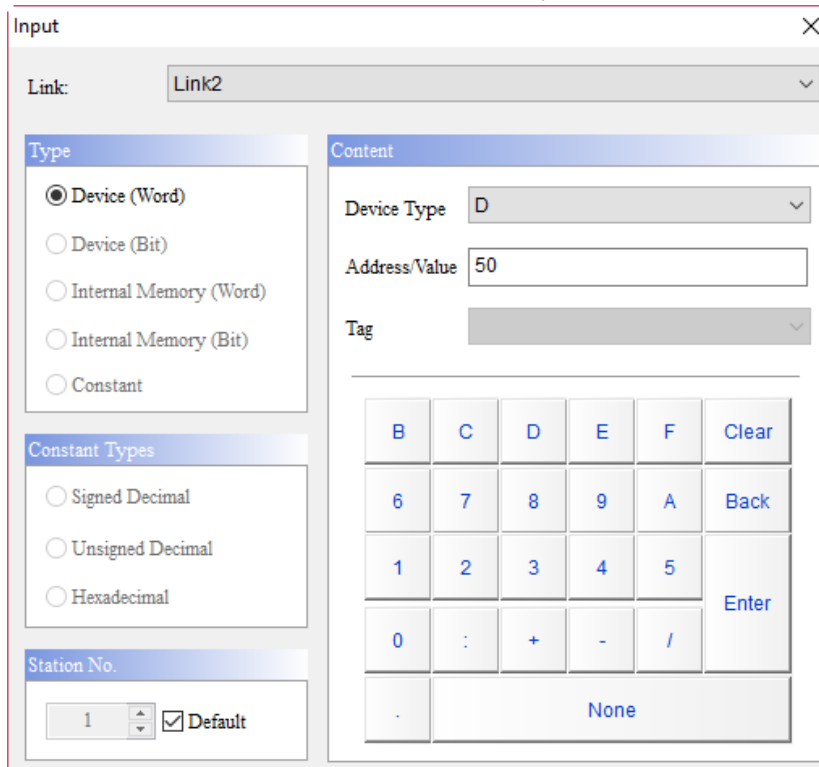
The following is an example of the created elements:



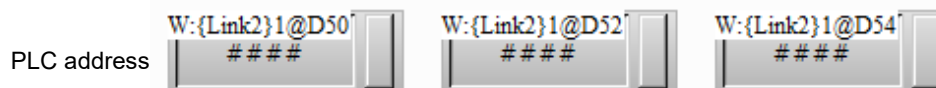
Note: the created RCP0 - RCP2 are the recipe buffers and the actual recipe data RCPs are RCP3 - RCP11. For more information, refer to Figure 23.2.1 32-bit Recipe buffer configuration.

Create Numeric Entry elements for the Recipe Address

- Create three Numeric Entry elements by referring to the address set for the 32-bit Recipe to display changes to the data when reading or writing the PLC recipe. The 32-bit Recipe uses the Double Word format, so the Recipe Address entered needs to start from D50 and increment by 2 addresses to D52, D54.
- Set the Read Address to D50 for the Numeric Entry element , as shown below:



The following is an example of the created elements:



23

Set Recipe Control flag in Control Block

32-bit Recipe

Go to [Options] > [Configuration] > [Control Block], and check the Recipe Control flag. Then, set the Start Address for the Control Block to define the recipe control address. Once the setting is complete, click **OK** to exit the Configuration window.

Configuration

- Main
 - Non-volatile
 - Security Level and Password
 - Global Keypad Settings
 - Others
 - Control Block**
 - Real Time Clock
 - Print
- Default
 - Boot Logo
- Network Settings
 - Remote Desktop and Data Collection
 - SMTP
 - FTP
- Multi-language
 - Multi-language Settings
- Industry application
 - Electronic record

Control Block

Control Block

Start Address:

<input checked="" type="checkbox"/>	Screen No.	D0	...
<input checked="" type="checkbox"/>	General Control	D1	...
<input checked="" type="checkbox"/>	Curve Control	D2	...
<input checked="" type="checkbox"/>	Sampling History Buffer	D3	...
<input checked="" type="checkbox"/>	Clearing History Buffer	D4	...
<input checked="" type="checkbox"/>	Recipe Control	D5	...
<input type="checkbox"/>	Recipe Group	Bit 0	Change recipe number
<input type="checkbox"/>		Bit 1	Read recipe
<input type="checkbox"/>		Bit 2	Write recipe
<input type="checkbox"/>		Bit 3	Change recipe group number
<input type="checkbox"/>	Enhanced Recipe	Bit 8-15	Specify Recipe group number

Create Set Constant button element

Create two Set Constant buttons. Set the Write Address to D5 and the setting value to 2 and 4 corresponding to Bit 1 and Bit 2 of the recipe control flag D5 respectively for reading and writing the recipe.

Set Constant

Preview:

Main | Main-2 | Text | Picture | Details | Macro | Coordinates

Memory

Write Address:

Write Offset Address:

Detail

Data Type: Word

Data Format: Unsigned Decimal

Detail.: 2

Set Constant

Preview:

Main | Main-2 | Text | Picture | Details | Macro | Coordinates

Memory

Write Address:

Write Offset Address:

Detail

Data Type: Word

Data Format: Unsigned Decimal

Detail.: 4

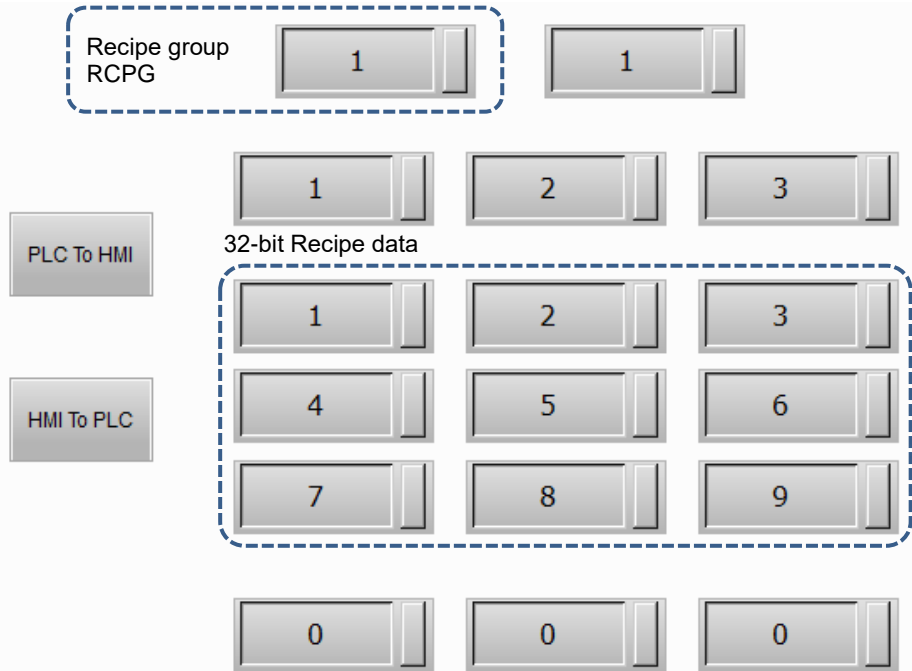
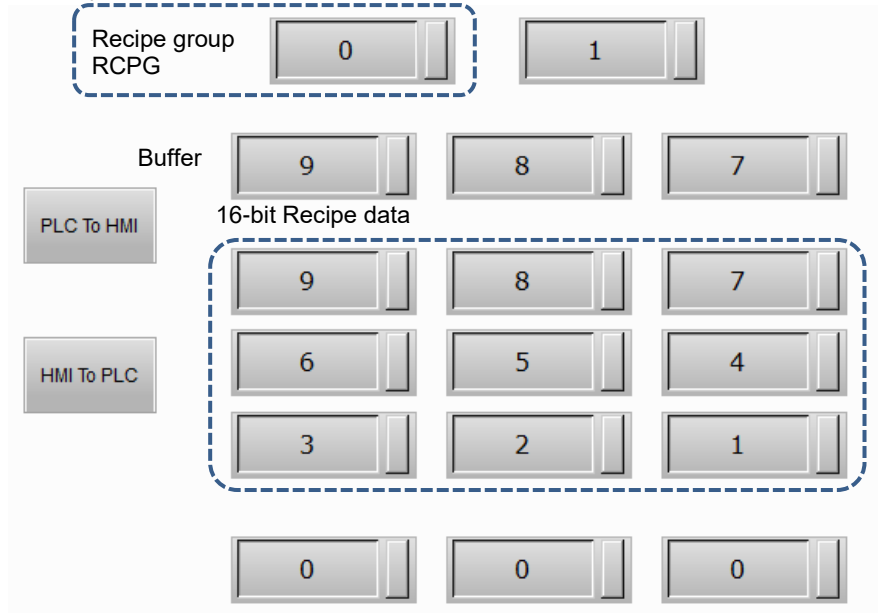
32-bit Recipe

- After creating all the elements, please compile and download the screen data and recipe to the HMI.



- The default for the Recipe Group (RCPG) is 0 after loading to the HMI, meaning that the 16-bit Recipe data is displayed. You need to select 1 for the Recipe Group to display the 32-bit Recipe data.

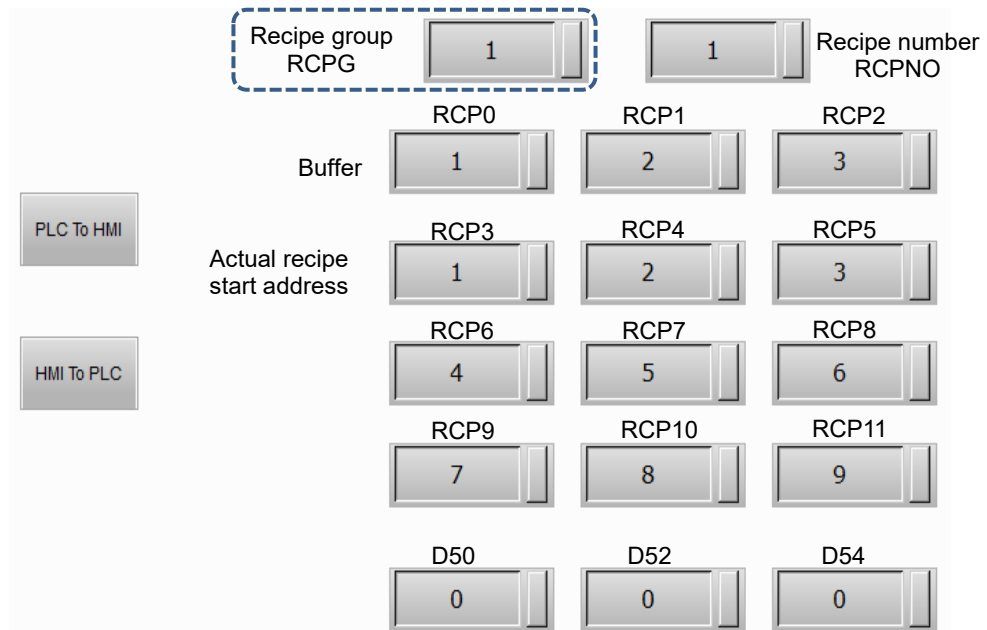
Execution results



23

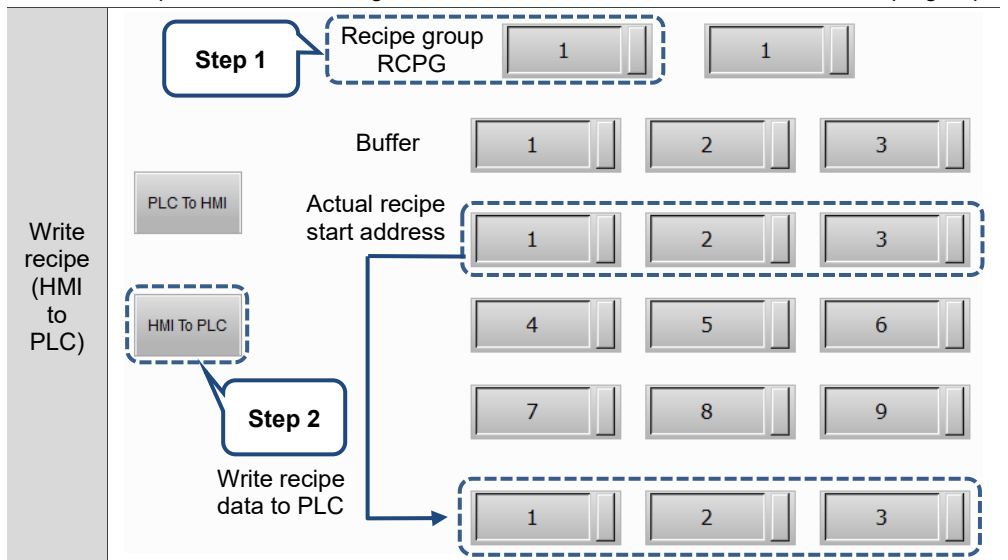
32-bit Recipe

- The recipe data will be displayed in RCP0 - RCP11 according to the selected recipe group. RCP0 - RCP2 are the recipe buffers and the starting address for the first set of recipe data is RCP3.

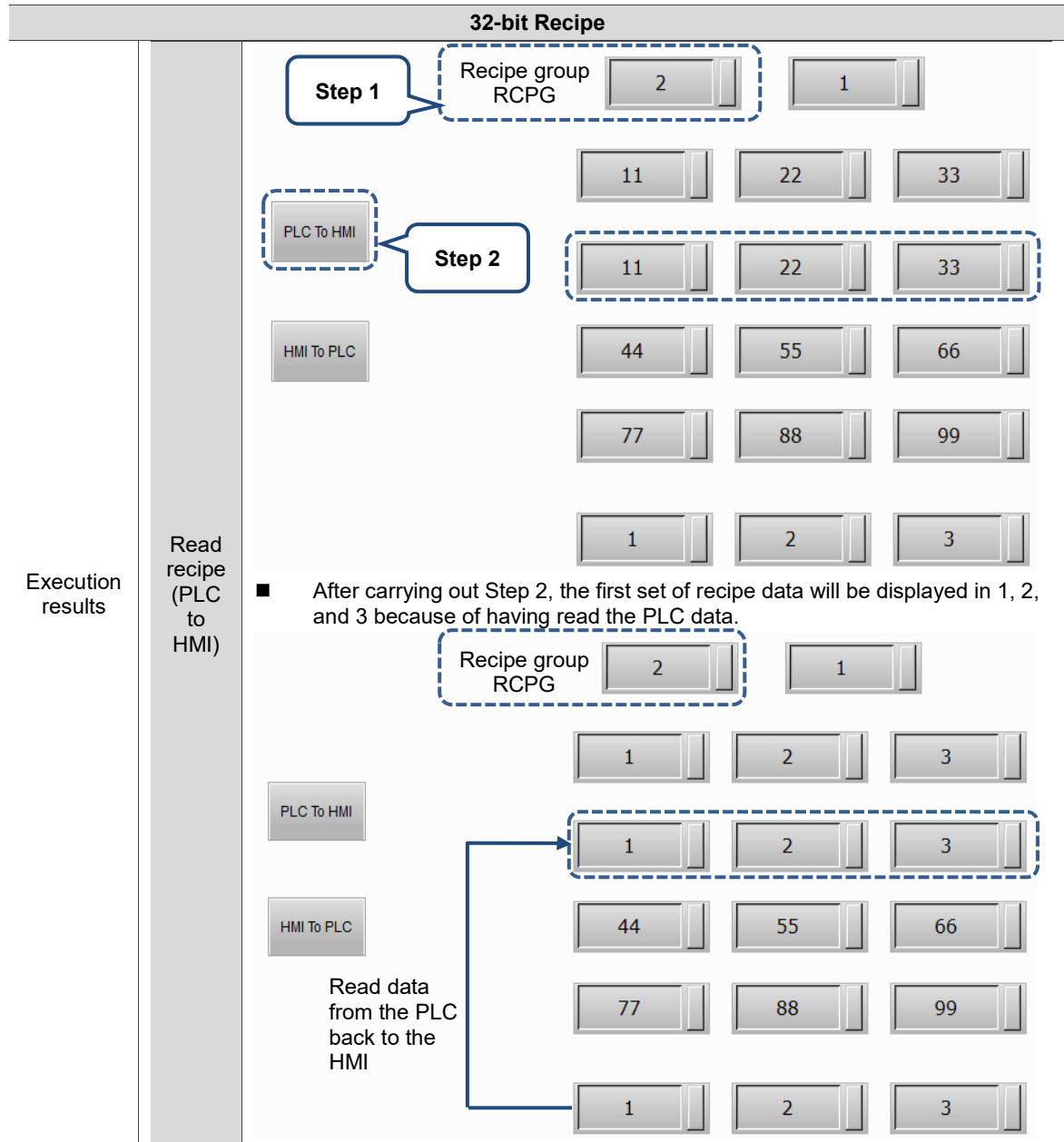


Execution results

- Trigger the Recipe Write button and the recipe data of the selected recipe group will be written to the PLC. Trigger the Recipe Read button and the recipe data that were written to the PLC will be read back to the HMI with reference to the selected recipe group. The recipe data will be changed to match with the content of the selected recipe group.



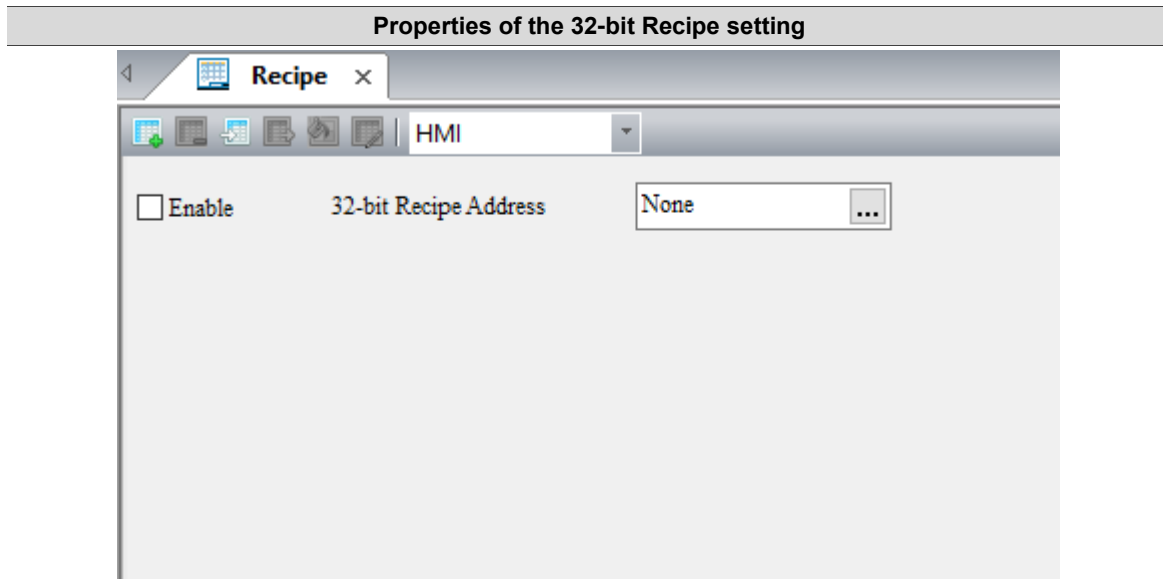
Write recipe (HMI to PLC)

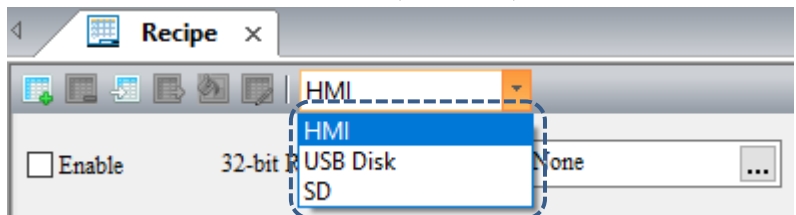
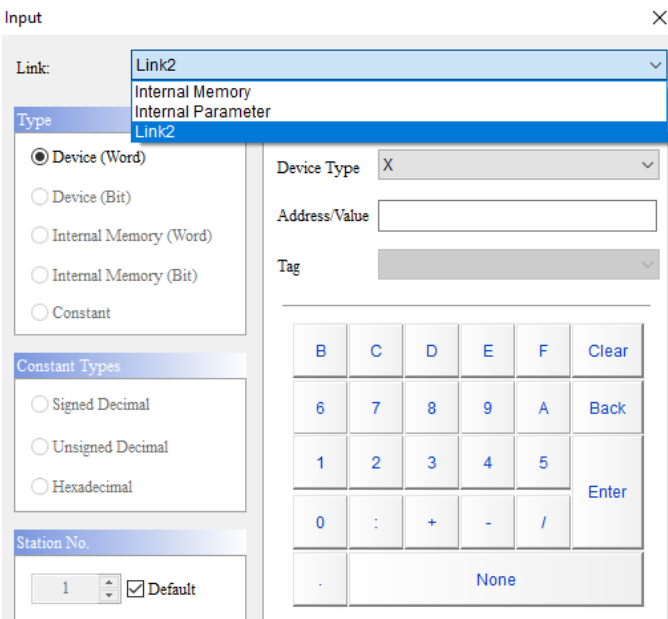


The following section introduces the property settings for the 32-bit Recipe.


Table 23.2.2 Properties of the 32-bit Recipe setting

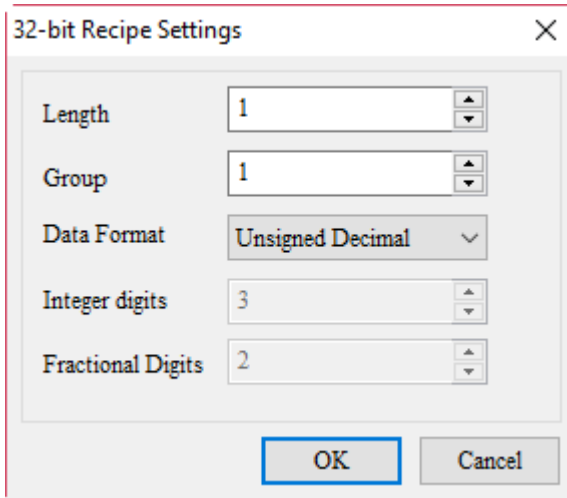
23





<p>Enable</p>	<ul style="list-style-type: none"> Check Enable to use the 32-bit Recipe. If Enable is not checked, all settings for the 32-bit Recipe will not take effect.
<p>Non-volatile</p>	<ul style="list-style-type: none"> The non-volatile memories include HMI, USB Disk, and SD Card.  <ul style="list-style-type: none"> The non-volatile memory of DOP-103 and DOP-107 can only be set in the HMI and USB Disk; DOP-110 can be set in the HMI, USB Disk, and SD Card. If you select to save in the HMI, the data is saved in the HMI ROM when power is off.
<p>Address</p>	<ul style="list-style-type: none"> Available options are internal memory and controller register address. For information about selecting Link Name or Element Style, please refer to Section 5.1. Addresses set by the 32-bit Recipe share one common memory address regardless of the number of the recipe sets created. 

Properties of the 32-bit Recipe setting

- Go to the 32-bit Recipe window, click  to add a 32-bit Recipe data.

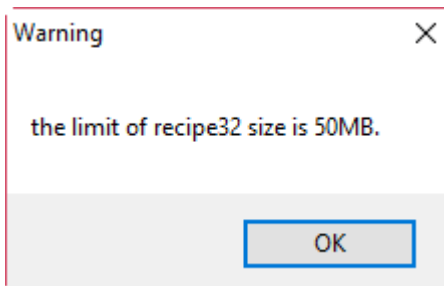


- You can add 255 groups of 32-bit Recipe data via the  button.

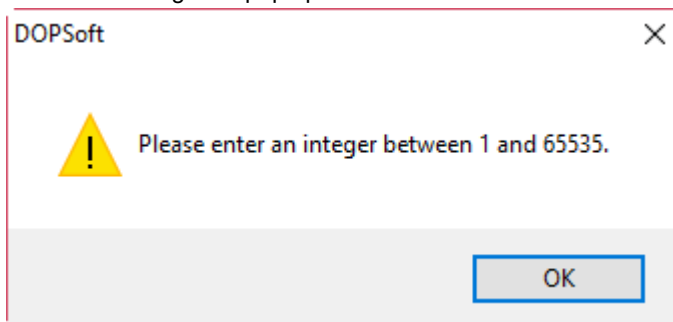
Add recipe


Length /
Groups

- The Length and Group represent the recipe length and group that you entered respectively. The size of Length x Group cannot exceed 50MB.



- The Length and Group cannot be 0. If you input 0 in Length or Group, an error message will pop up.



23

Properties of the 32-bit Recipe setting

Data formats include Signed Decimal, Unsigned Decimal, and Floating.

32-bit Recipe Settings

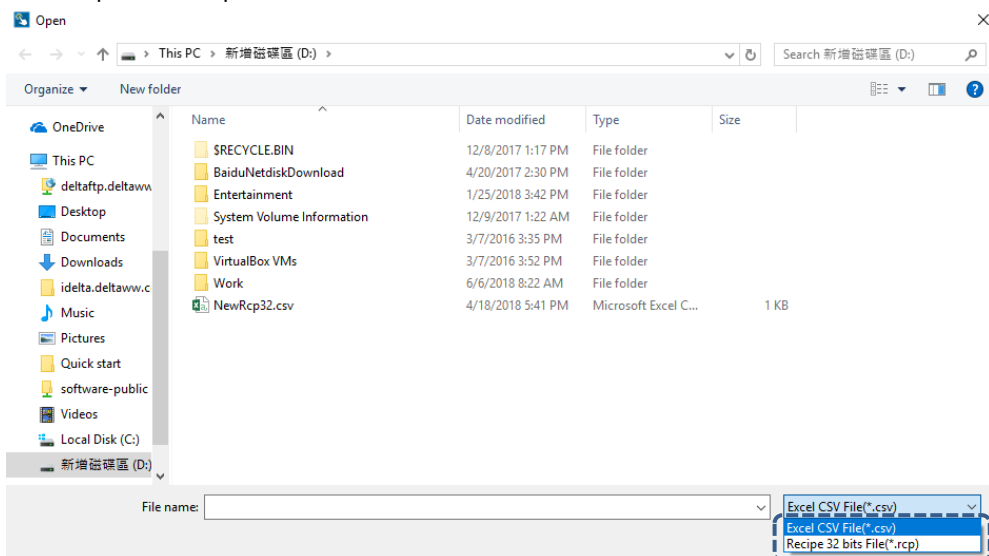
Data Format	<p>Length: 3 Group: 3 Data Format: Unsigned Decimal (dropdown menu open showing Signed Decimal, Unsigned Decimal, Floating) Integer digits: [blank] Fractional Digits: 2</p>
Integer Digits	<ul style="list-style-type: none"> You can only set the integer and fractional digits when the data format is floating. <p>Length: 3 Group: 3 Data Format: Floating Integer digits: 3 Fractional Digits: 2</p>
Fractional Digits	<ul style="list-style-type: none"> When the data format is floating, the integer and fractional digits support only 7 digits in total. When exceeding this limit, a warning message pops up. <p>Length: 3 Group: 3 Data Format: Floating Integer digits: 6 Fractional Digits: 2</p> <p>DOPSoft Integer Position or Fractional Position is incorrect.</p>

Add recipe

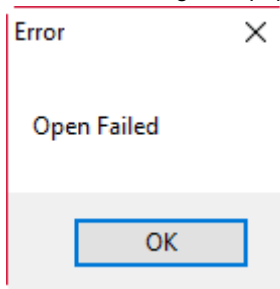
Properties of the 32-bit Recipe setting

- The import recipe function supports CSV and RCP file formats for you to select and import the recipe.

Import recipe

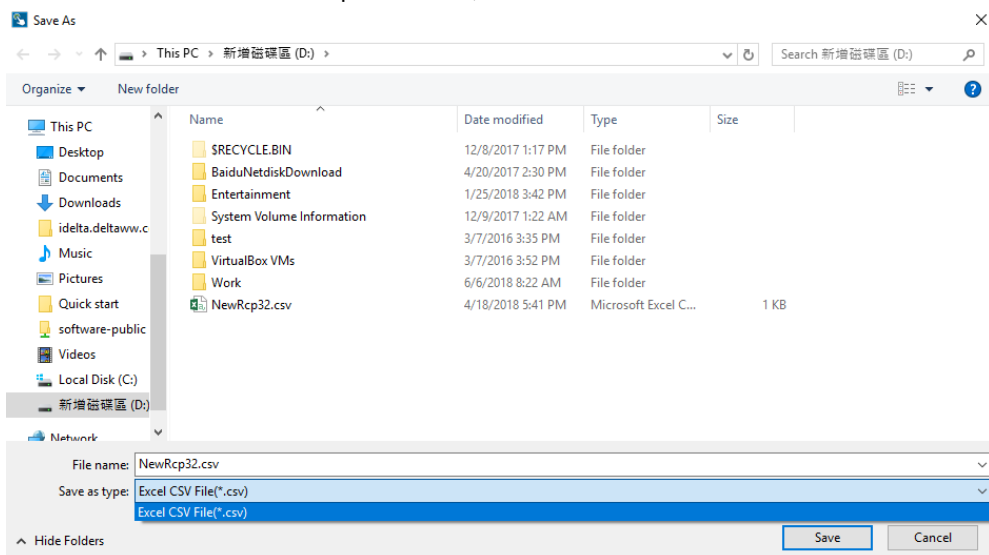


- The opened and imported recipe file provides the recipe data content only and the recipe address does not support loading of the original set address. If you use the 32-bit Recipe to open a RCP or CSV file of the 16-bit Recipe, the recipe data is unable to display once loaded in, and an error message will pop up.



- The export recipe function saves the current 32-bit Recipe. The supported file format is the same as that of the Open function, which is CSV file.

Export recipe



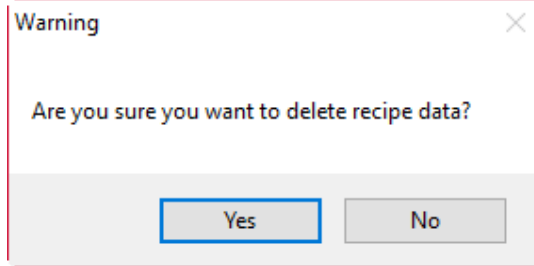
- The saved recipe data does not support saving the set recipe address.

23

Delete recipe 

Properties of the 32-bit Recipe setting

The delete recipe function deletes the 32-bit Recipe data. When executing this function, a warning message will appear confirming if you want to delete the data.



Clear the recipe content that has the value entered.

Clear configuration 

Before clearing

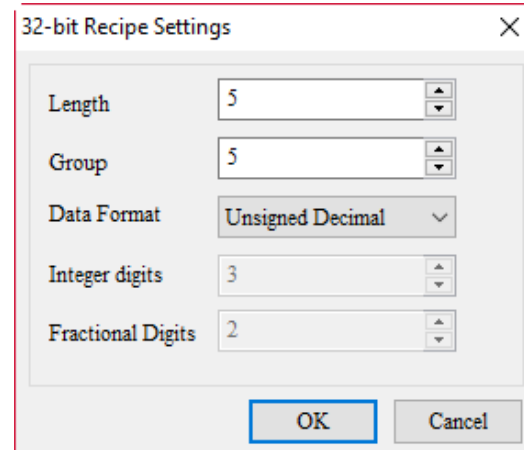
	DW1	DW2	DW3	DW4	DW5
1	200	201	202	203	204
2	205	206	207	208	209
3	210	211	212	213	214
4	215	216	217	218	219
5	220	221	222	223	224

After clearing

	DW1	DW2	DW3	DW4	DW5
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0

To use the 32-bit Recipe Settings function, there must be recipe data in the 32-bit Recipe. You can use this function to change the Length, Group, and Data Format of the recipe.

Recipe Settings 



23.3 Indirect recipe index register (*RCP)

Indirect recipe index register can be used by both 16-bit and 32-bit Recipes. Indirect recipe index register (*RCP n) acquires the value from RCP n first. It treats this value as the new address and then accesses the value from this new address. For example, RCP1 = 3, RCP3 = 99, so *RCP1 = 99 (see Figure 23.3.1).

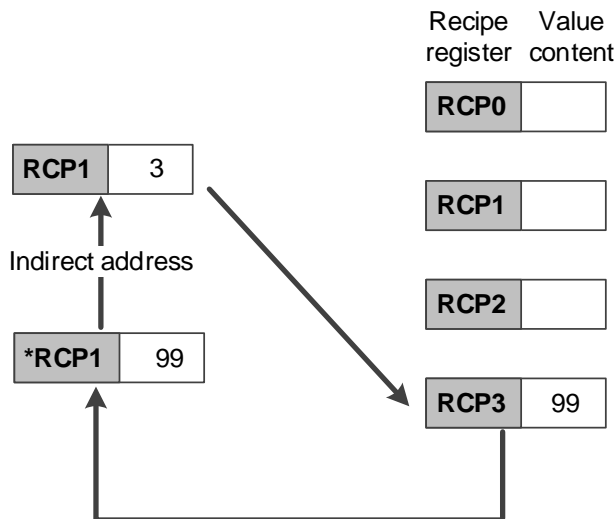


Figure 23.3.1 Indirect recipe index

The accessing range of the indirect recipe index register is as follows:

Accessing type	Element type	Accessing range
Word	*RCPn	RCP0 - RCP65535

Note: n = Word (0 - 65535)

The address accessing range provided by *RCP is limited according to the recipe size created by the users. Assuming the recipe size is Length 3 * Group 3, then the RCP address ranges from *RCP0 to *RCP11. When creating *RCP12, a warning message will pop up, as shown in the figure below.

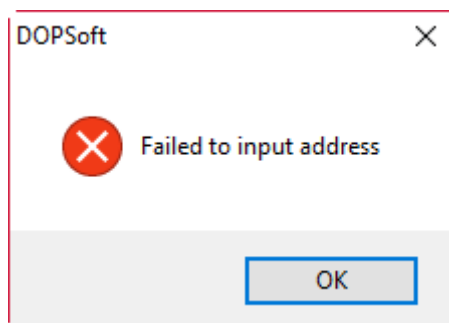


Figure 23.3.2 Indirect recipe index register configuration

The following section introduces the example for the indirect recipe index.

Table 23.3.1 Example of indirect recipe index register

23

Set 16-bit Recipe

Indirect recipe index register

Create a 16-bit Recipe (1024 for Length, 64 for Group) and set RCP3 to 65535.

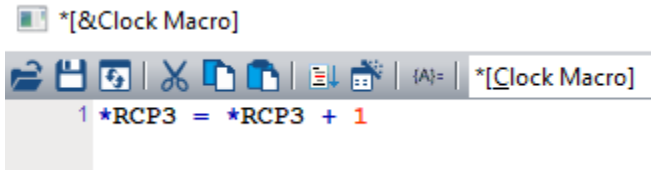
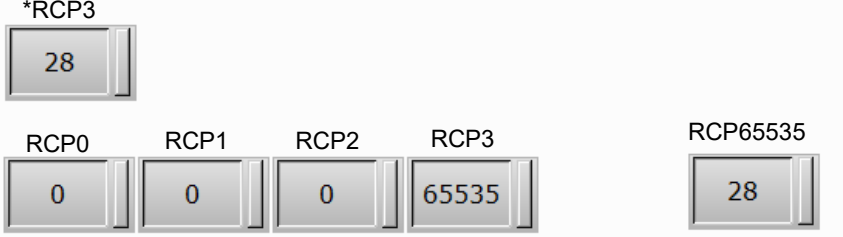
	W1	W2	W3	W4	W5	W6	W7	W8	W9
1	0	0	0	65535	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0

- Create a Numeric Entry element and select *RCP for the Device Type. Then enter 3 for Address/Value.

- Create four Numeric Entry elements and select RCP for the Device Type. Then enter 0 to 3 for Address/Value respectively.

Create Numeric Entry elements

- Create a Numeric Entry element and select RCP for the Device Type. Then enter 65535 for Address/Value.

Indirect recipe index register	
Create Numeric Entry elements	<p>Create the Clock macro command $*RCP3 = *RCP3 + 1$.</p> 
Execution results	<p>After executing compiling for the screen, download it to the HMI. The values of $*RCP3$ and RCP65535 will increase simultaneously.</p> 

23

23.4 Enhanced recipe

During the production process, recording information with character format is sometimes needed for ease of identification. Thus, the provided enhanced recipe is able to record character format (string) / numeric format in mixed use. Its supported data type is Word or Double Word and its data format selections include BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, Floating, and Char. Among them, the Char format supports read length of up to 32 Words (= 64 bits) and Unicode input.

The use of its Control Block setting is the same as that of the 16-bit / 32-bit Recipe with the exception of using a different Control Block address. When reading or writing the recipe, you have to specify both the recipe number and recipe group before reading / writing one of the recipe sets.

DOPSoft provides an enhanced recipe that incorporated the multi-language input element to name the recipe group. Unlike the previous ENRCPG register address, you have to remember the content and other information for the first recipe group. With the added ENRCPGNAME register address, you can enter the recipe name to call the recipe, which is more user-friendly. Also, ENRCPGNAME names the group in Unicode, so you can enter different languages. Therefore, you need to use the multi-language input element with the ENRCPGNAME register.

Configuration

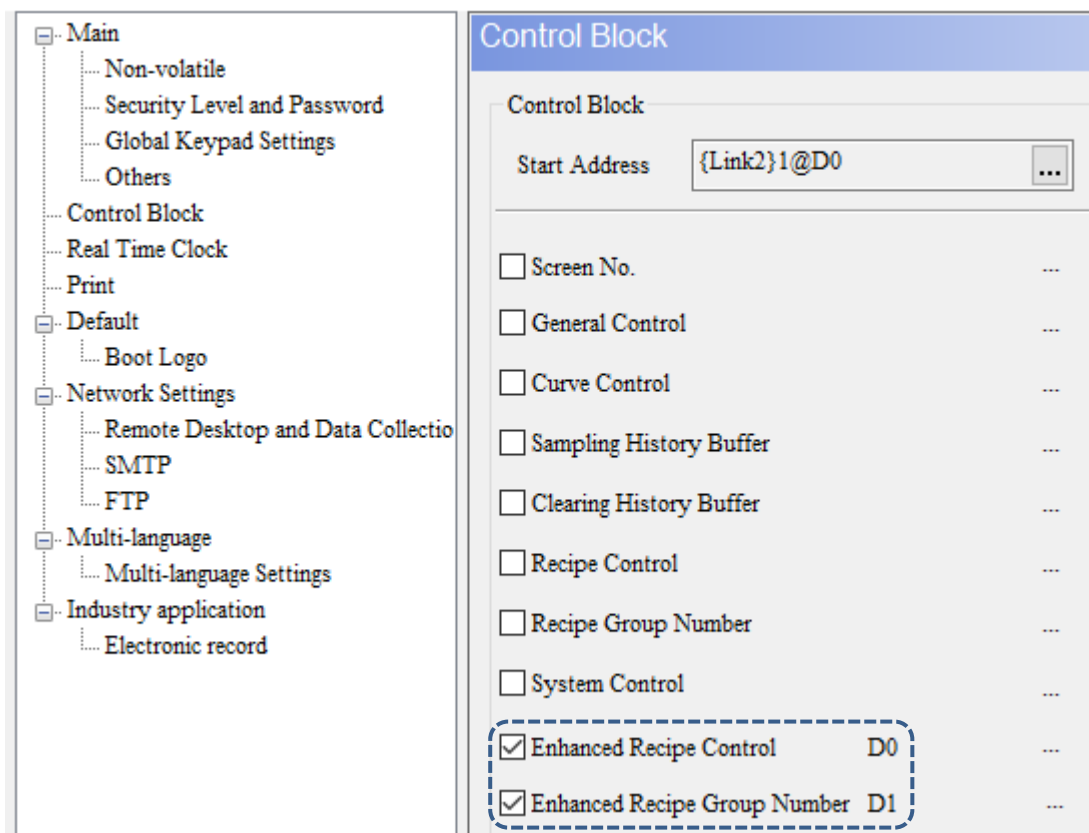


Figure 23.4.1 Using enhanced recipe address in Control Block

The enhanced recipe has its own registers, including ENRCP, ENRCPNO, ENRCPG, ENRCPGNAME, and *ENRCP.

ENRCP	Enhanced recipe register
ENRCPNO	Enhanced recipe number register
ENRCPG	Enhanced recipe group register
ENRCPGNAME	Enhanced recipe group register
*ENRCP	Enhanced indirect recipe index register

The following section introduces the features of each register mentioned above.

■ Enhanced recipe number register (ENRCPNO)

ENRCPNO is used to specify the number for the enhanced recipe. Reading / writing of the recipe means to read / write a set of recipes according to the recipe number recorded in the recipe number register. When you select the first set of recipes, ENRCPNO = 1; when you select the fourth set of recipes, ENRCPNO = 4.

Note: the recipe number register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

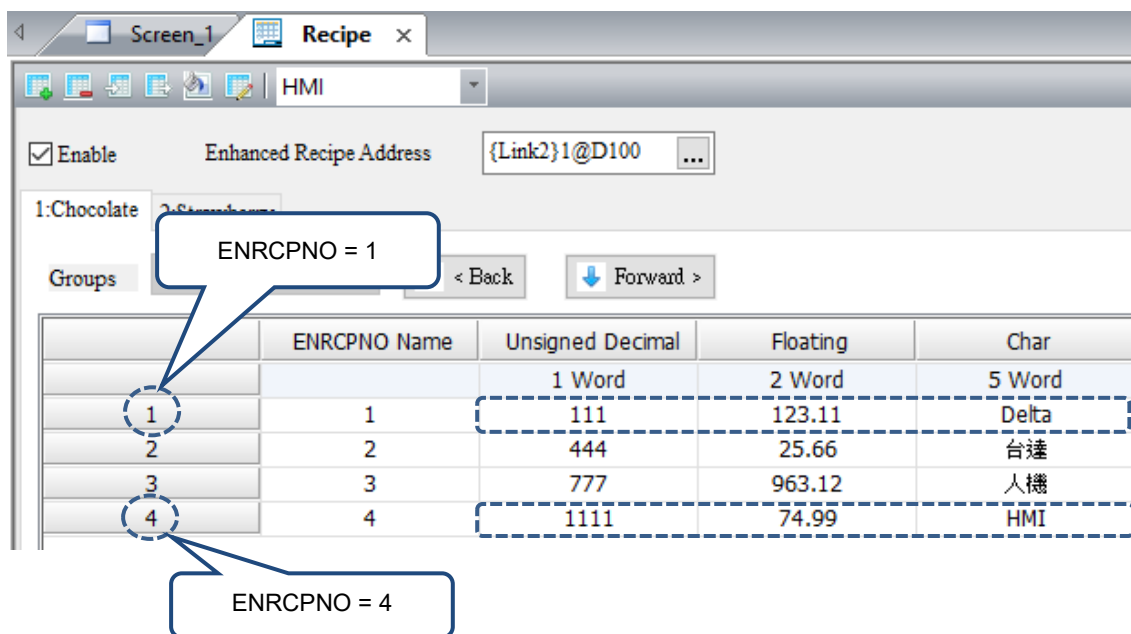


Figure 23.4.2 Enhanced recipe number editing screen

23

■ Enhanced recipe register (ENRCP)

A recipe buffer is featured in the HMI and is configured at the front of the recipe register. This buffer is used to store the selected group of recipes, and the number of fields for the recipe buffer equals the number of fields for the selected recipes, that is, the recipe buffer occupies L registers. Thus, the number of the registers that a recipe table occupies is $L * (G+1)$, where $G+1$ stands for the additional register for the buffer. With the recipe buffer, you only need to switch between the recipe numbers to check the currently specified recipe parameters. When the selected recipe number (ENRCPNO) is 1, the value of recipe number 1 will be displayed in the recipe buffer (i.e. ENRCPNO = 1 in the figure below).

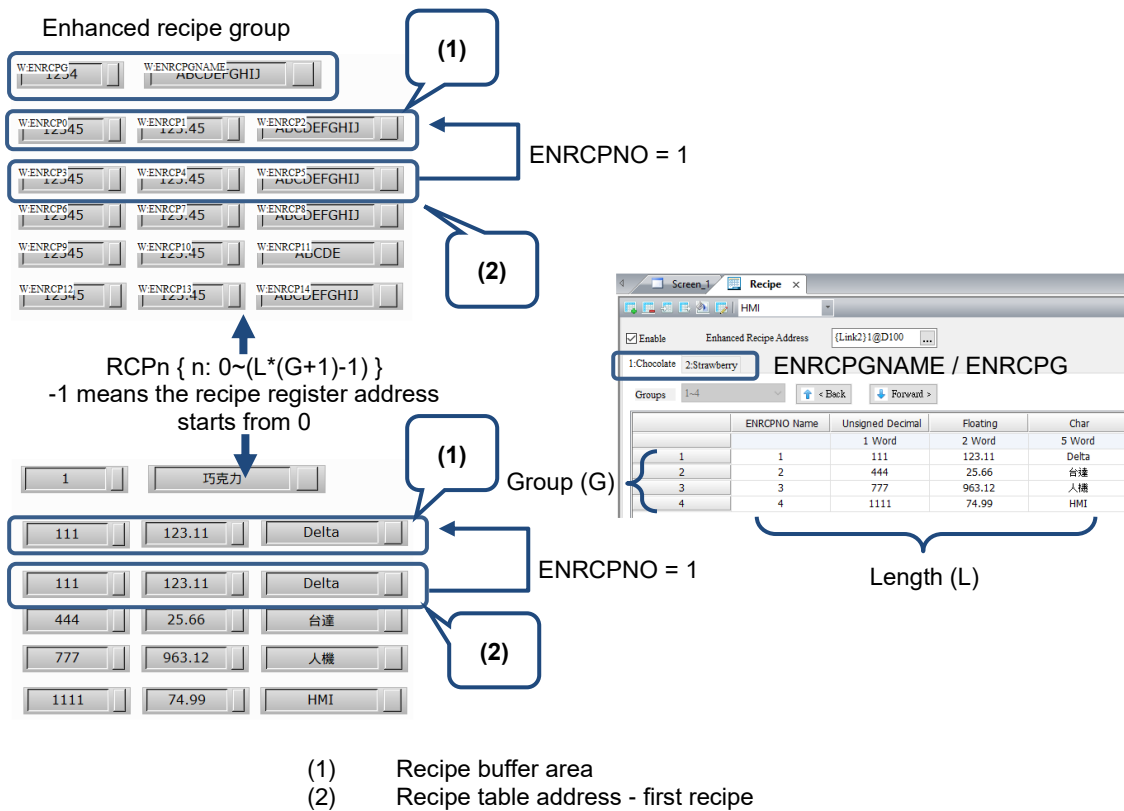


Figure 23.4.3 Enhanced recipe buffer configuration

■ Enhanced recipe group register (ENRCPG / ENRCPGNAME)

Enhanced recipe group register is used to specify the group for the enhanced recipe. Up to 255 groups of enhanced recipe data can be created. Calling the enhanced recipe data requires the use of the Recipe Groups 1 - 255 (RCPG 1 - 255). If the enhanced recipe is activated, the default value of the recipe group is 1.

For an enhanced recipe, if you select the first recipe number in the first group, ENRCPG = 1 / ENRCPGNAME = Chocolate and ENRCPNO = 1; if you select the third recipe number in the second group, ENRCPG = 2 / ENRCPGNAME = Strawberry and ENRCPNO = 3.

The ENRCPGNAME function is identical to the ENRCPG function. The main difference is that with ENRCPGNAME, the recipe content is acquired by entering the recipe name; with ENRCPG, enter a value between 1 and 255.

Note: the recipe group register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

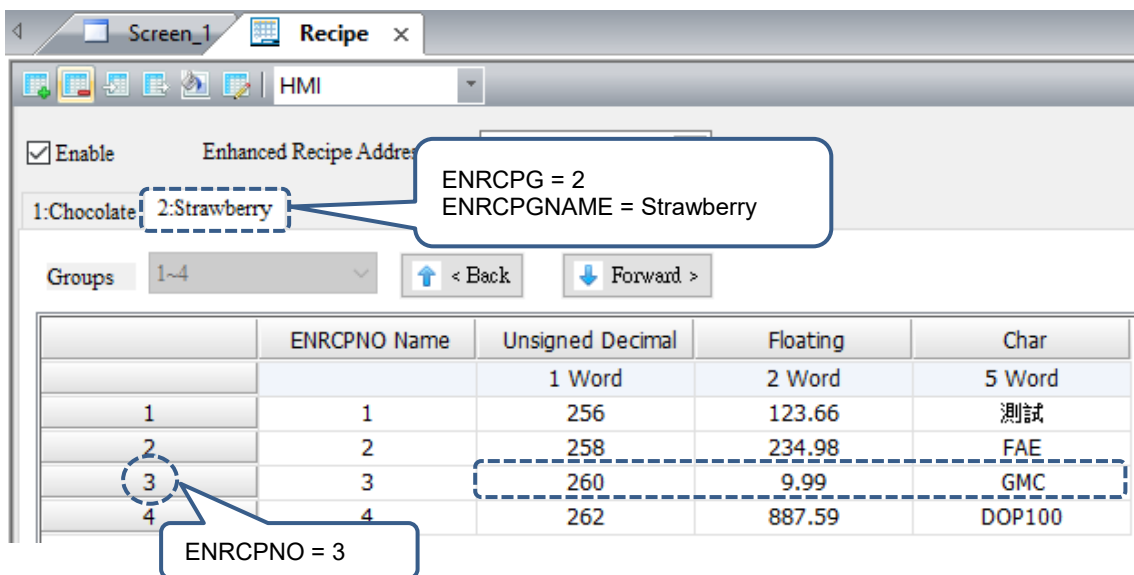
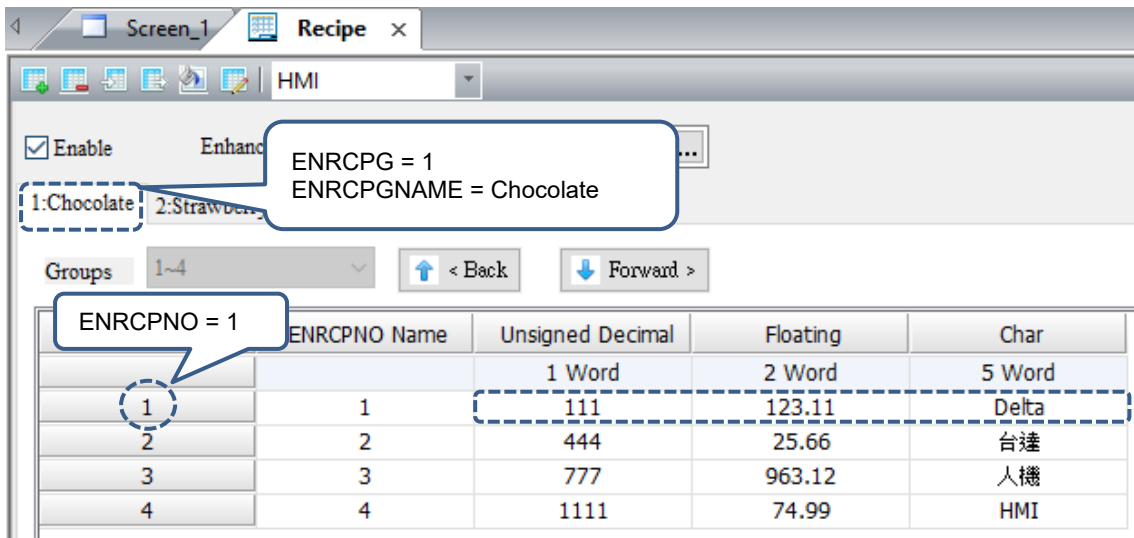


Figure 23.4.4 Recipe Group editing screen

23


■ Enhanced recipe size limit

If the non-volatile memory area is set in the USB Disk or SD Card, the size of the enhanced recipe file cannot exceed Fields 256 x Groups 10000.

If the non-volatile area is set in the HMI, the editable size of the enhanced recipe is dependent upon the specification of the flash memory for the HMI of different models.

Please refer to Table 23.4.1 below for the example of the enhanced recipe.

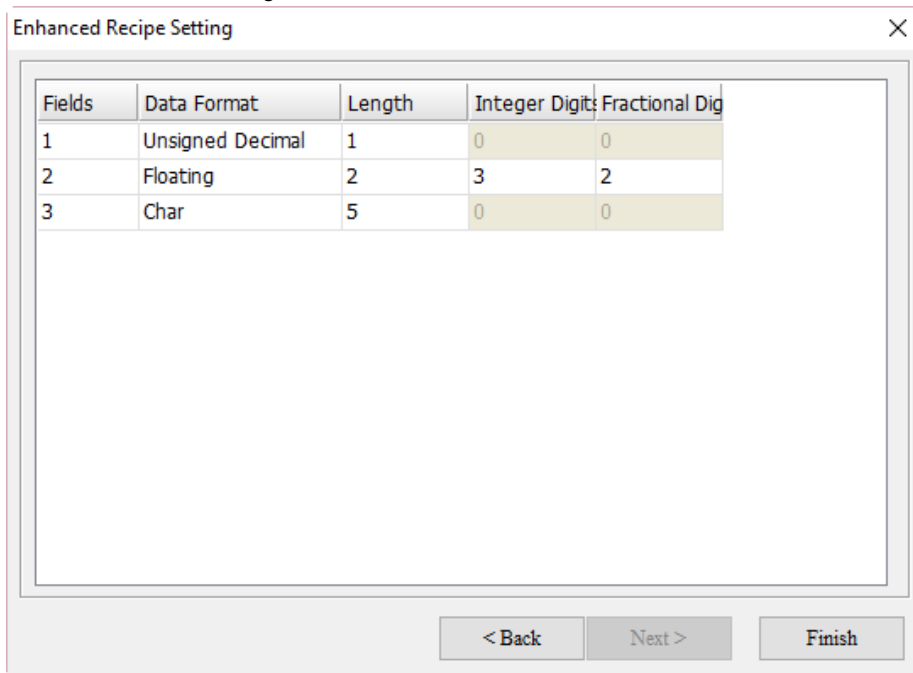
Table 23.4.1 Enhanced recipe example

Enhanced recipe	
<p>Step 1: go to [Options] > [Recipe] > [Enhanced Recipe].</p> <ol style="list-style-type: none"> 1. Check Enable. 2. Set Recipe Address to D100. <p>Step 2: click  to enter the Enhanced Recipe Settings.</p>	<div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <p style="text-align: right; margin: 0;">Enhanced Recipe Setting ✕</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p>Name <input style="width: 150px;" type="text"/></p> <p>Fields <input style="width: 50px;" type="text" value="1"/> ▲▼</p> <p>Group <input style="width: 50px;" type="text" value="1"/> ▲▼</p> </div> <div style="text-align: right; margin-top: 10px;"> < Back Next > Finish </div> </div> <p>1. Set the first recipe Name as Chocolate, Fields as 3, and Group as 4.</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p style="text-align: right; margin: 0;">Enhanced Recipe Setting ✕</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p>Name <input style="width: 150px;" type="text" value="Chocolate"/></p> <p>Fields <input style="width: 50px;" type="text" value="3"/> ▲▼</p> <p>Group <input style="width: 50px;" type="text" value="4"/> ▲▼</p> </div> <div style="text-align: right; margin-top: 10px;"> < Back Next > Finish </div> </div>

Set enhanced recipe

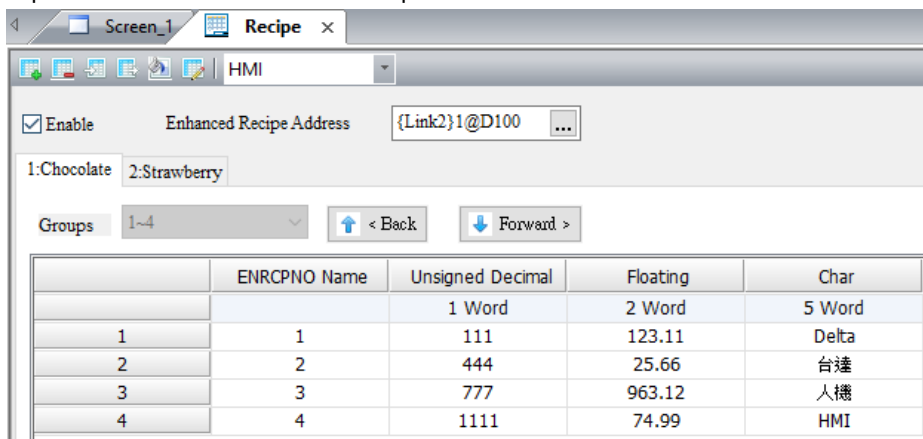
Enhanced recipe

2. Set Data Format as follows.
 Field 1: Unsigned Decimal. Set the Length as 1.
 Field 2: Floating. Set the Length as 2, Integer Digits as 3, and Fractional Digits as 2.
 Field 3: Char. Set the Length as 5.

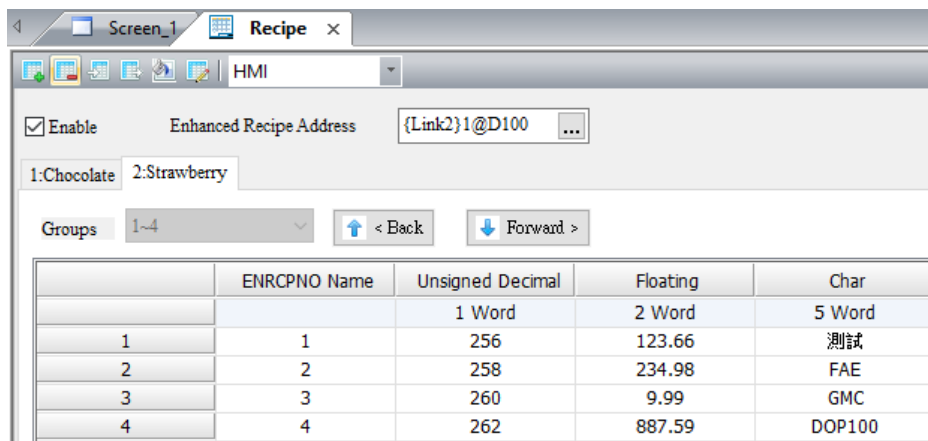


Step 3: Click **Finish** and enter the recipe data as follows:

Set enhanced recipe



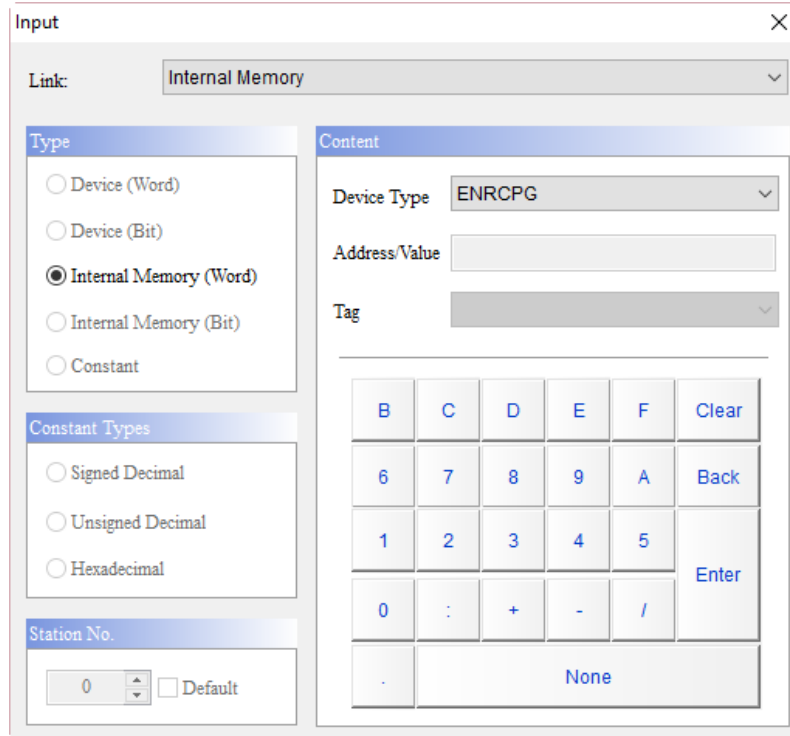
Step 4: repeat Step 1 and 2, and set Fields to 3 and Group to 4. The recipe data is shown below:



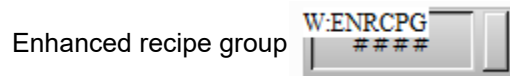
23

Enhanced recipe

Step 1: create a Numeric Entry element and set the Write Address to Internal Memory. Select ENRCPG for the Device Type. This element is used to select the enhanced recipe group.

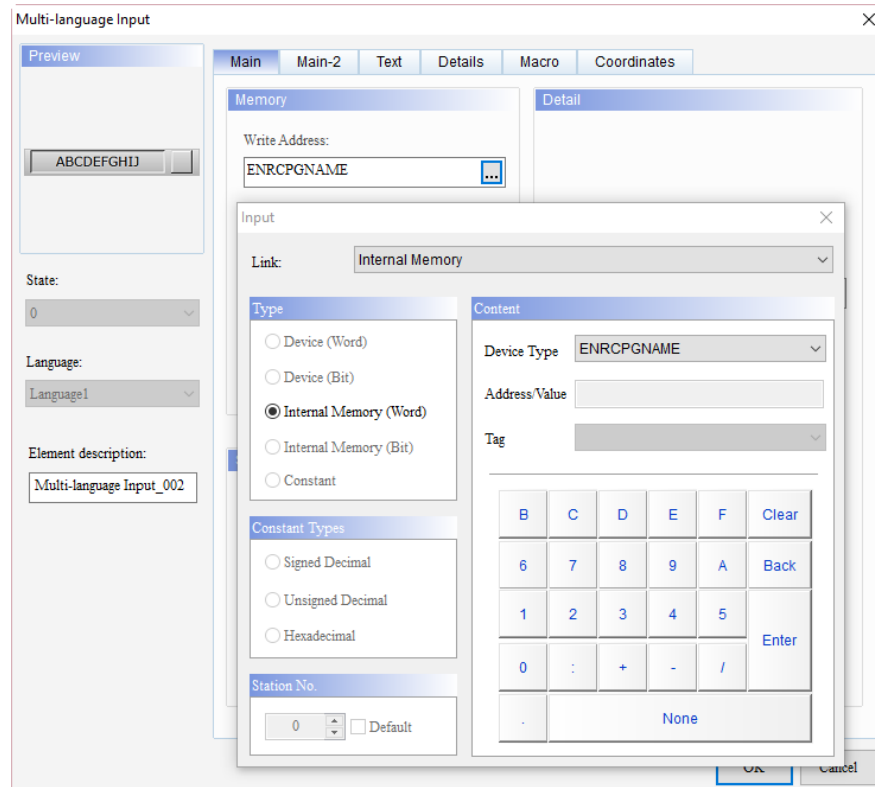


The following is an example of the created element:



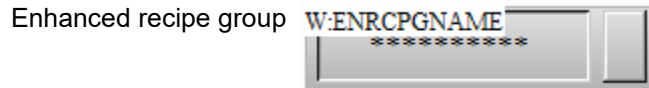
Create Numeric Entry elements for ENRCPG and ENRCPNO

Step 2: create a Multi-language Input element. Set the String Length to 10 and Write Address to Internal Memory, and select ENRCPGNAME as the Device Type. This element is used to select the enhanced recipe group by entering the recipe name.



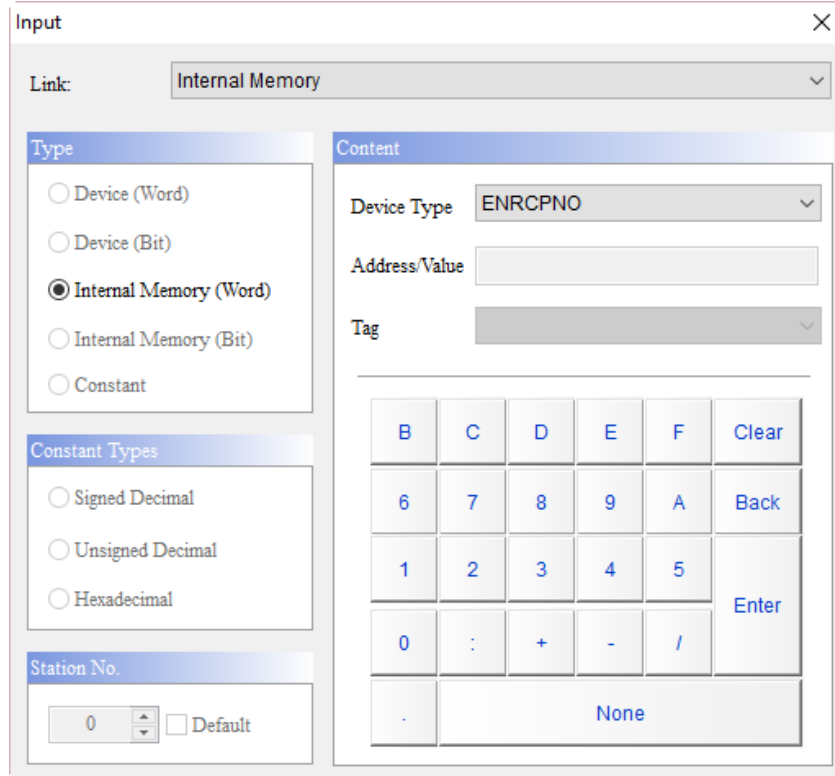
Enhanced recipe

The following is an example of the created element:

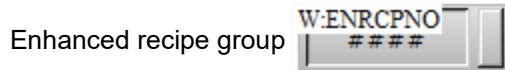


Step 3: create a Numeric Entry element and set the Write Address to Internal Memory. Select ENRCPNO for the Device Type. This element is used to select the enhanced recipe number.

Create Numeric Entry elements for ENRCPG and ENRCPNO



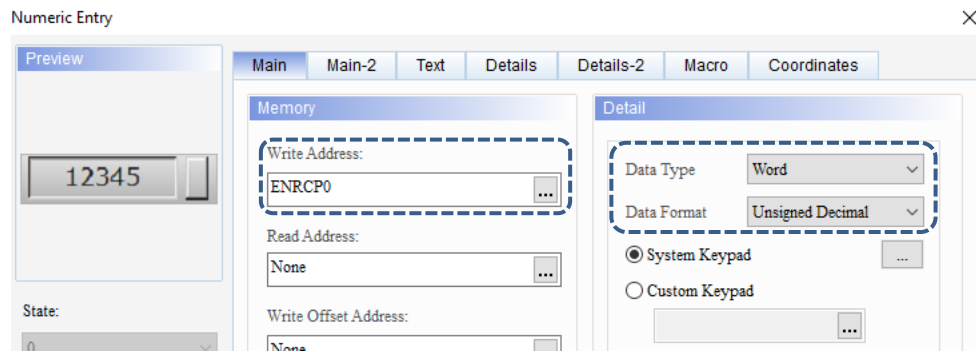
The following is an example of the created element:



Before the Numeric Entry Element is created to display the enhanced recipe register, you can use the recipe register formula $[(L*(G+1)-1)]$ to calculate the number that n in ENRCPn represents. Plug the size of the recipe (Length (L) x Group (G) = 3 x 3) into the formula to gain ENRCPn = ENRCP0 - ENRCP11.

Step 1: create a Numeric Entry Element and set the Write Address to Internal Memory ENRCP0. Set the way of expression according to Field 1 of the recipe table with the Data Type as Word and Data Format as Unsigned Decimal.

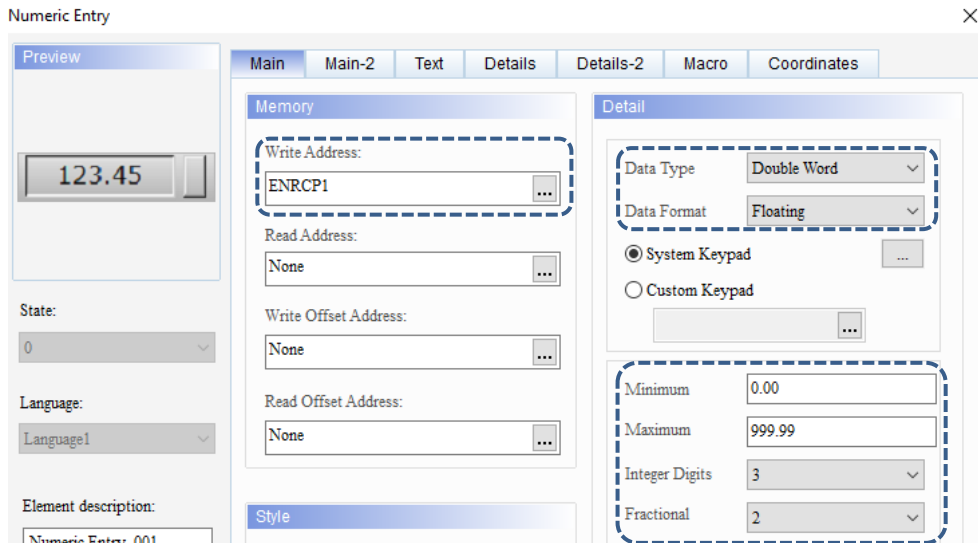
Create ENRCP Numeric Entry Elements



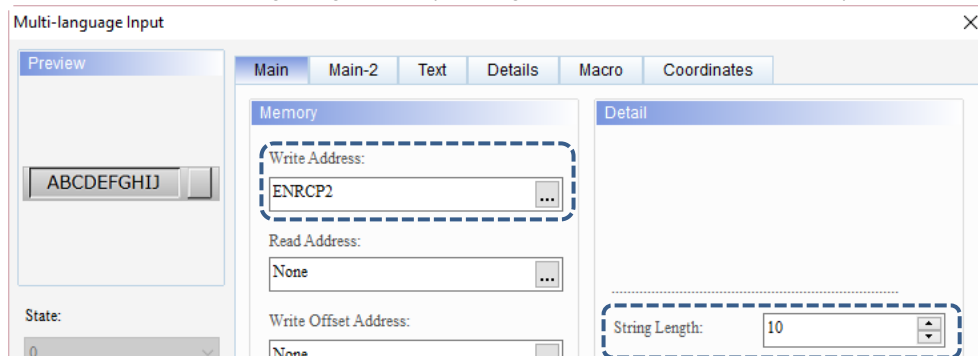
23

Enhanced recipe

Step 2: create a Numeric Entry Element and set the Write Address to ENRCP1 of the Internal Memory. Set the way of expression according to Field 2 of the recipe table with the Data Type as Double Word and Data Format as Floating. Then, set the Integer Digits to 3 and Fractional (Digits) to 2.



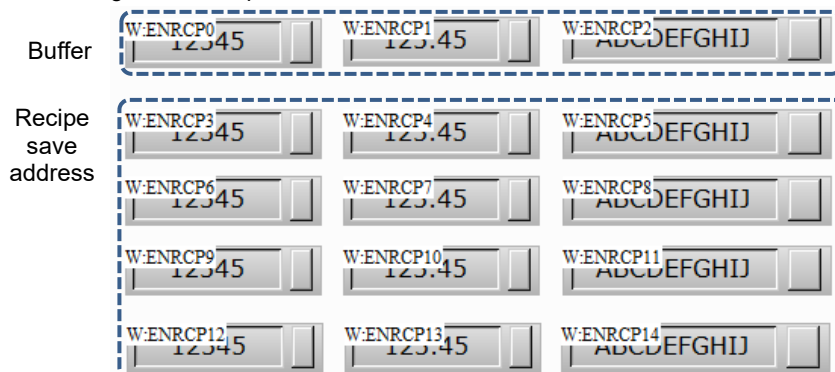
Step 3: create a Multi-language Input element and set the Write Address to ENRCP2 of the Internal Memory. Set the way of expression according to Field 3 of the recipe table and set the String Length to 10 (the length of 1 word can store two bits).



Create ENRCP Numeric Entry elements

Repeat Steps 1 - 3 to create the Display elements for ENRCP3 - ENRCP11 and set the Data Format.

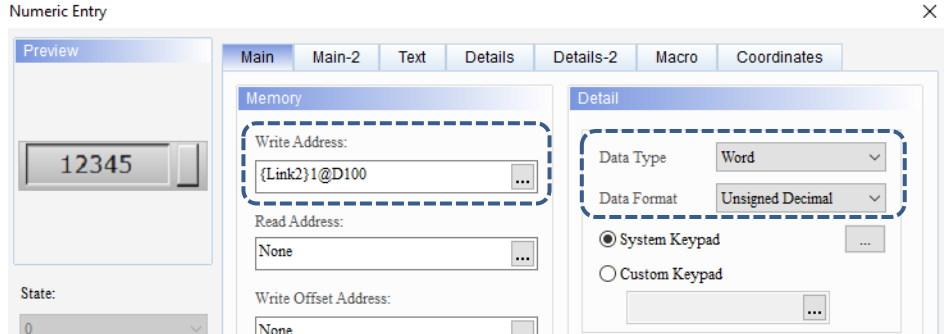
The following is an example of the created elements:



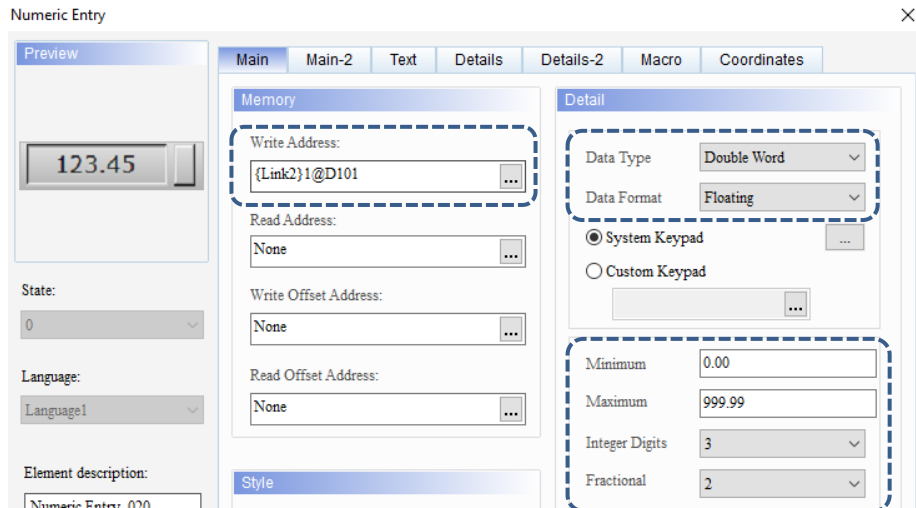
Note: the created ENRCP0 - ENRCP2 are the recipe buffers and the actual recipe data ENRCPs are ENRCP3 - ENRCP11. For more information, refer to Figure 23.4.3 Enhanced recipe buffer configuration.

Enhanced recipe

Step 1: create a Numeric Entry element by referring to the address set for the enhanced recipe to display the data change when reading or writing the PLC recipe. Each field length of the enhanced recipe is not fixed, so you need to set the PLC address to be entered based on the recipe table. For example, the first field of this recipe table is in Unsigned Decimal format and its read length is 1. Thus, the Read Address is set to D100, Data Type is Word, and Data Format is Unsigned Decimal.

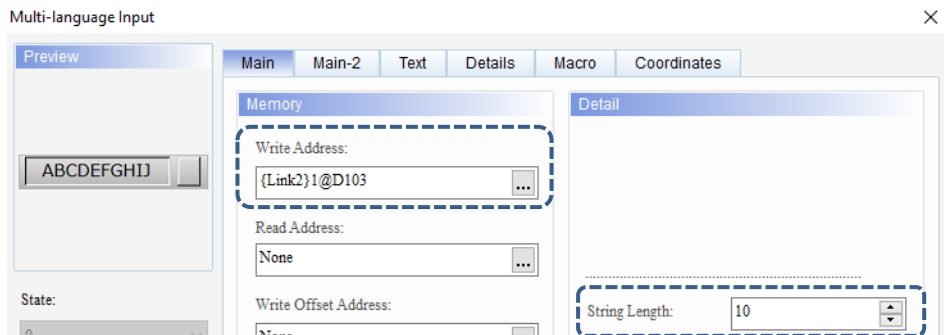


Step 2: create a Numeric Entry element and set the Write Address to D101, Data Type as Double Word, and Data Format as Floating. Then, set the Integer Digits to 3 and Fractional (Digits) to 2.

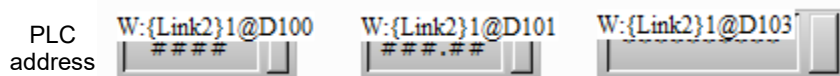


Create Numeric Entry elements for the enhanced recipe address

Step 3: create a Multi-language Input element and set the Write Address to D103 and String Length to 10.



The following is an example of the created elements.

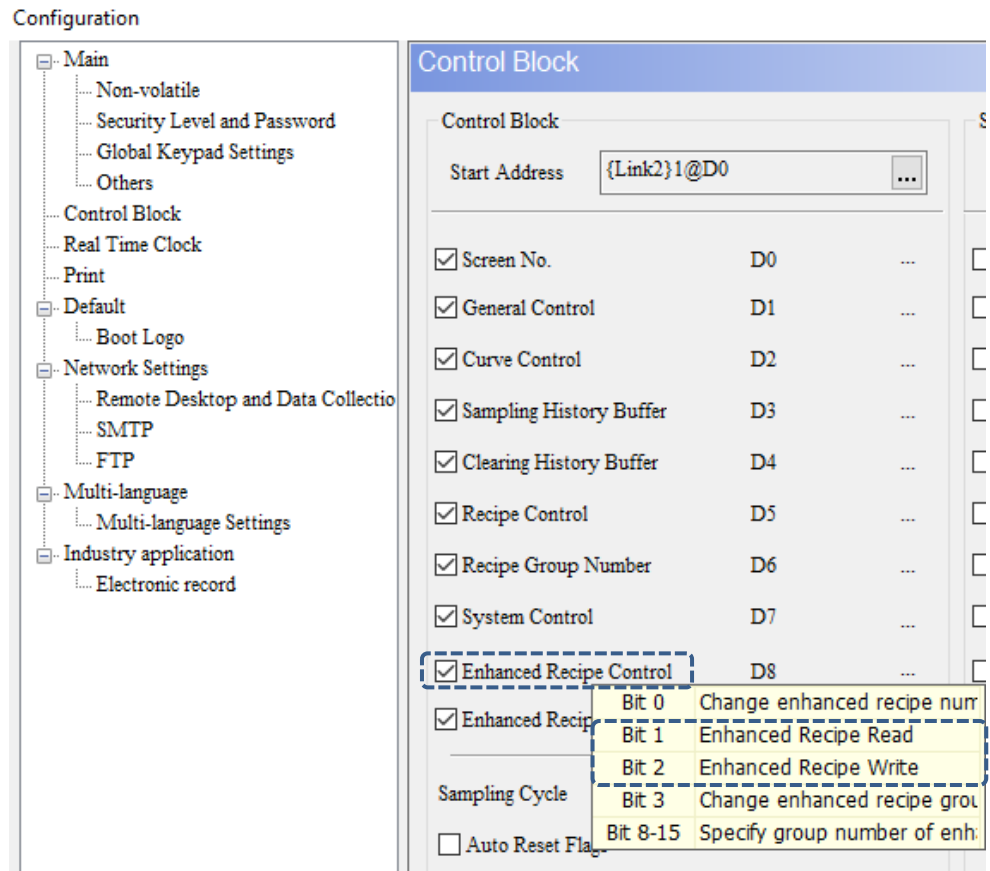


23

Enhanced recipe

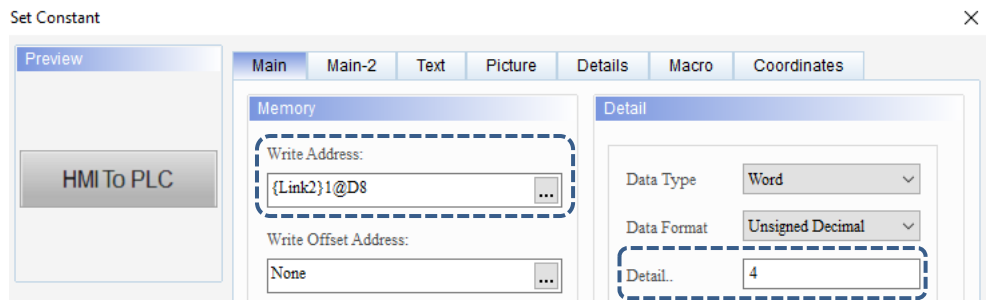
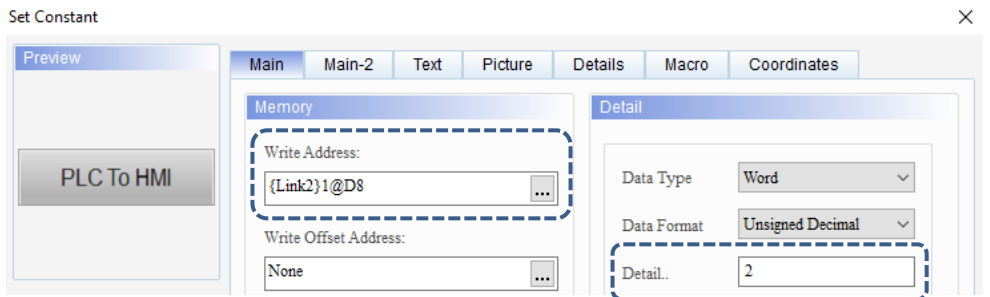
Go to [Options] > [Configuration] > [Control Block], and check the Enhanced Recipe Control flag. Then, set the Start Address for the Control Block to define the recipe control address. Once the setting is complete, click **OK** to exit the Configuration window.

Set Recipe Control flag in Control Block



Create 2 Set Constant buttons with the Write Addresses as D8 and the setting values as 2 and 4 respectively, which correspond to Bit 1 and Bit 2 of the enhanced recipe control flag D8 for reading and writing the recipe.

Create Set Constant button elements



Enhanced recipe

- After creating all the elements, please compile and download all data to the HMI.



- When the enhanced recipe group is loaded into the HMI, the default value is 1. To display different groups, you can select a different enhanced recipe group according to the requirement.
- The recipe data will be displayed in ENRCP0 - ENRCP11 according to the selected recipe group. ENRCP0 - ENRCP2 are the recipe buffer data and the starting address for the first set of recipe data is ENRCP3.

Execution results

Enhanced recipe number	1	Enhanced recipe group	
	1	巧克力	Enhanced recipe group
Buffer	111	123.11	Delta
Actual recipe address	111	123.11	Delta
	444	25.66	台達
	777	963.12	人機
	1111	74.99	HMI
	0	0.00	PLC address

PLC To HMI

HMI To PLC

- Trigger the Recipe Write button and the recipe data of the selected enhanced recipe group will be written to the PLC. Trigger the Recipe Read button and the recipe data that were written to the PLC will be read back to the HMI with reference to the selected enhanced recipe group. The recipe data will be changed to match with the content of the selected recipe group.

Write recipe (HMI to PLC)

Enhanced recipe number	1	Enhanced recipe group	
	1	Chocolate	Enhanced recipe group
	111	123.11	Delta
Recipe address	111	123.11	Delta
	444	25.66	台達
	777	963.12	人機
	1111	74.99	HMI
PLC address	111	123.11	Delta

PLC To HMI

HMI To PLC

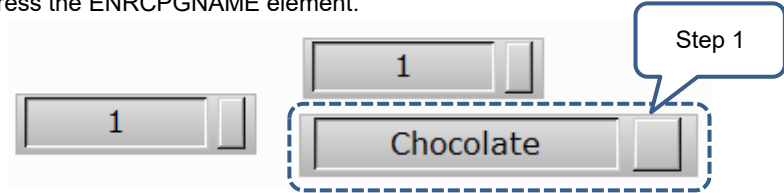
Step 1

Write recipe data to PLC

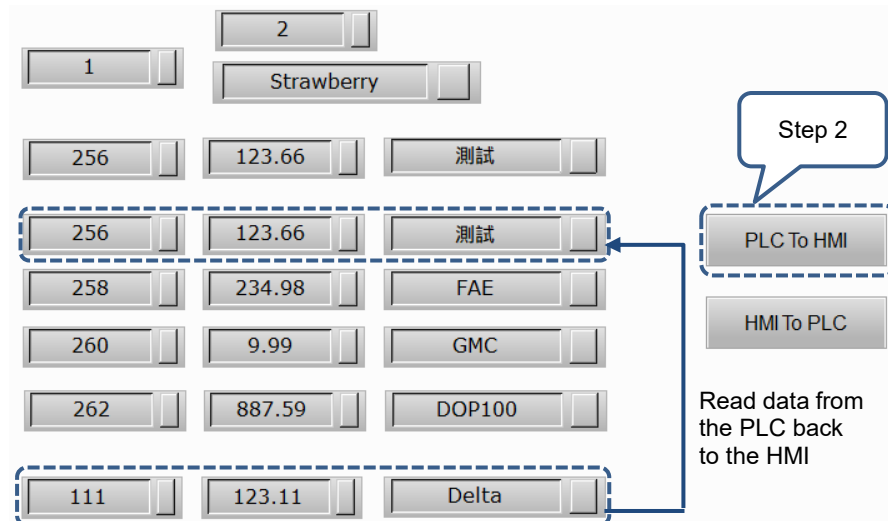
23

Enhanced recipe

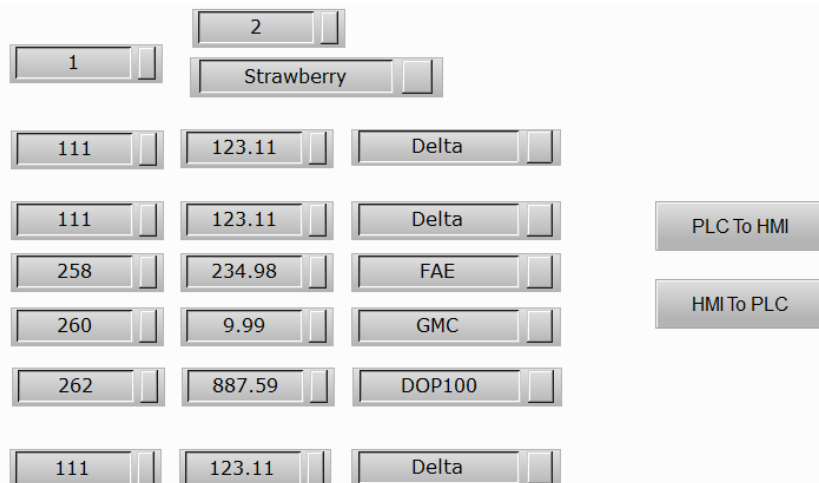
- Press the ENRCPGNAME element.



- Enter "Strawberry", then press



- After executing Step 2, the result is shown as follows.

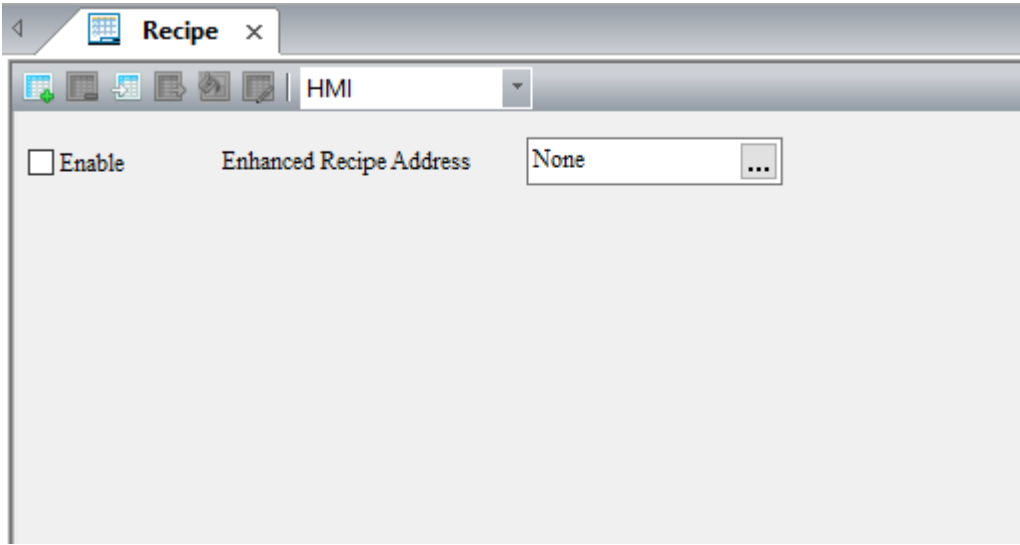
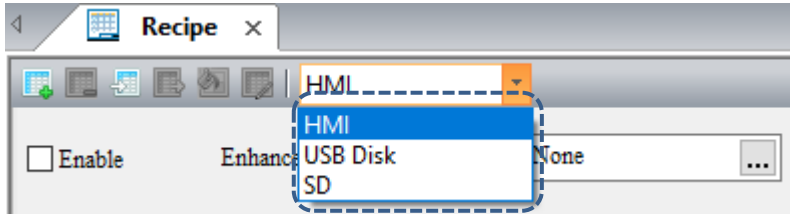


Execution results

Read recipe (PLC to HMI)

The following section introduces the property settings for the enhanced recipe.

Table 23.4.2 Properties of the enhanced recipe setting

Properties of the enhanced recipe setting	
	
Enable	<ul style="list-style-type: none"> ■ Check Enable to use the enhanced recipe. ■ If Enable is not checked, all settings for the enhanced recipe will not take effect.
Non-volatile	<ul style="list-style-type: none"> ■ The non-volatile memories include HMI, USB Disk, and SD Card.  <ul style="list-style-type: none"> ■ The non-volatile memory of DOP-103 and DOP-107 can only be set in the HMI and USB Disk; DOP-110 can be set in the HMI, USB Disk, and SD Card. ■ If you select to save in the HMI, the data is saved in the HMI ROM when power is off.

23

Properties of the enhanced recipe setting

- Available options are internal memory and controller register address.
- For information about selecting Link Name or Element Style, please refer to Section 5.1.
- Addresses set by the enhanced recipe share one common memory address regardless of the number of the recipe sets created.

Address

The 'Input' dialog box contains the following fields and options:

- Link:** A dropdown menu with 'Link2' selected. A list of options is shown: 'Internal Memory', 'Internal Parameter', and 'Link2'.
- Type:** Radio buttons for 'Device (Word)', 'Device (Bit)', 'Internal Memory (Word)', 'Internal Memory (Bit)', and 'Constant'. 'Device (Word)' is selected.
- Device Type:** A dropdown menu with 'X' selected.
- Address/Value:** An empty text input field.
- Tag:** A dropdown menu.
- Constant Types:** Radio buttons for 'Signed Decimal', 'Unsigned Decimal', and 'Hexadecimal'.
- Station No.:** A spinner box with '1' and a checked 'Default' checkbox.
- Keypad:** A numeric keypad with buttons for B, C, D, E, F, Clear, 6, 7, 8, 9, A, Back, 1, 2, 3, 4, 5, Enter, 0, :, +, -, /, and a 'None' button.

Add recipe



- Go to the Enhanced Recipe window. Click to add the enhanced recipe data.

The 'Enhanced Recipe Setting' dialog box contains the following fields:

- Name:** An empty text input field.
- Fields:** A spinner box with '1' selected.
- Group:** A spinner box with '1' selected.

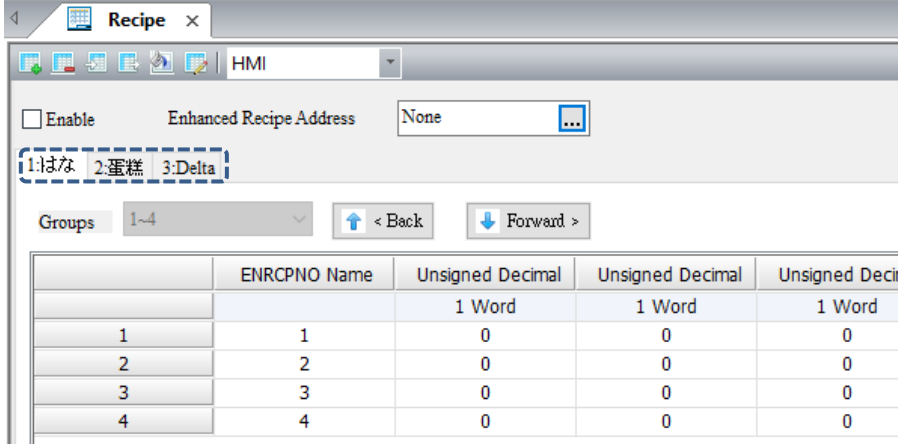
At the bottom, there are three buttons: '< Back', 'Next >', and 'Finish'.

- You can add 255 groups of enhanced recipe data via the button.

Properties of the enhanced recipe setting

- You can name the enhanced recipe group and the use of Unicode characters is supported.
- With the Multi-language Input element, you can enter the name of the enhanced recipe to call the recipe.
- The following example shows the first recipe group name in Japanese, the second recipe group name in Chinese, and the third recipe group name in English.

Name



Fields / Group

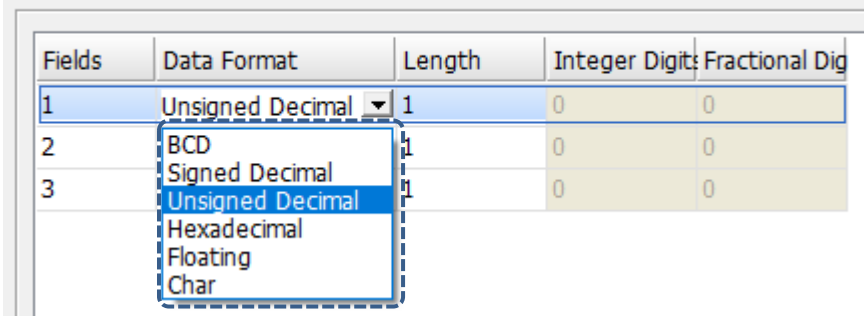
The Fields and Group represent the recipe length and group that you entered respectively. The numbers in Fields x Group cannot exceed 256 x 10000.

The numbers in Fields and Group cannot be 0. If any of the value is 0, the system will automatically set the value to the minimum which is 1.


Data Format

Data formats include BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, Floating, and Char.

Enhanced Recipe Setting



Note: if you select Char as the data format, please do not use the same character for the input value and delimiter. Otherwise, it may cause data error and failure to import the data.

Add recipe 

23

Properties of the enhanced recipe setting

Length	Limit of the read length varies according to different data formats.		
	Data Format	Length	Note
	BCD	1 or 2	1: Word 2: Double Word
	Signed Decimal	1 or 2	
	Unsigned Decimal	1 or 2	
	Hexadecimal	1 or 2	
	Floating	2	2: Double Word
Char	1 - 32	Supports up to 32 Words (64 bits)	

If you select Char as the data format, the system automatically fills in the blank string if there is any remaining space after you entered the characters.

Floating	You can only set the integer and fractional digits when the data format is Floating.																						
	Enhanced Recipe Setting	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Fields</th> <th>Data Format</th> <th>Length</th> <th>Integer Digits</th> <th>Fractional Digits</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">Floating</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">Unsigned Decimal</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">Unsigned Decimal</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> </tbody> </table>			Fields	Data Format	Length	Integer Digits	Fractional Digits	1	Floating	2	3	2	2	Unsigned Decimal	1	0	0	3	Unsigned Decimal	1	0
Fields	Data Format	Length	Integer Digits	Fractional Digits																			
1	Floating	2	3	2																			
2	Unsigned Decimal	1	0	0																			
3	Unsigned Decimal	1	0	0																			

When the data format is Floating, the integer and fractional digits support only 7 digits in total. When exceeding this limit, a warning message pops up.

Enhanced Recipe Setting ✕

Fields	Data Format	Length	Integer Digits	Fractional Digits
1	Floating	2	7	2
2	Unsigned Decimal	1	0	0
3	Unsigned Decimal	1	0	0

✕ Integer Position or Fractional Position is incorrect.

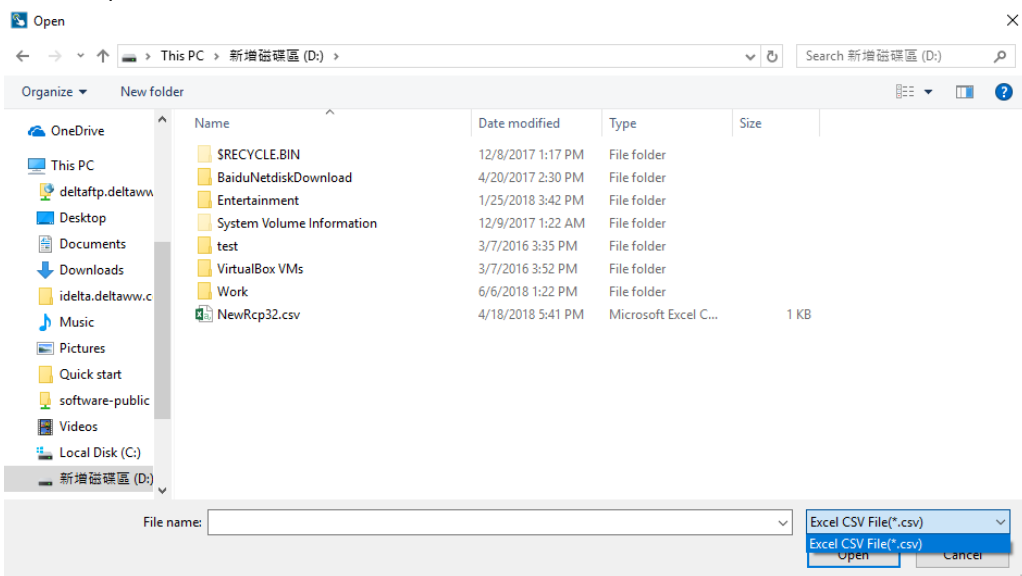
Add recipe

Integer Digits / Fractional Digits

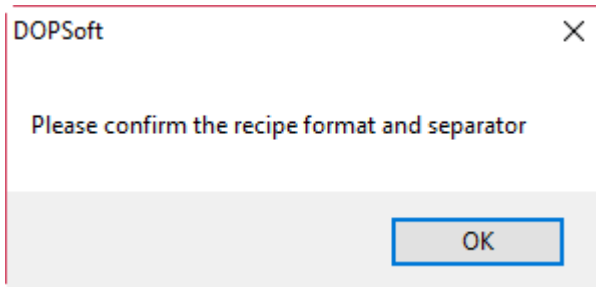
Properties of the Enhanced Recipe Setting

- The import recipe function only supports CSV file format for you to select and import the recipe.

Import recipe

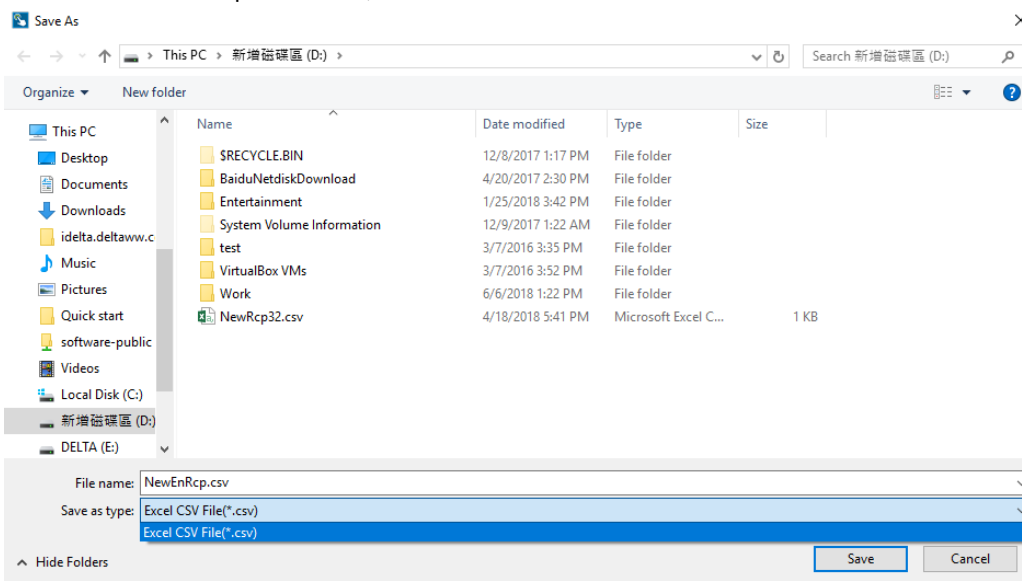


- The opened and imported recipe file provides the recipe data content only and the recipe address does not support loading the original set address. If you use the enhanced recipe to open a CSV file of the 16- or 32-bit Recipe, the software will prompt the following error message once the file is loaded.



The export recipe function saves the current enhanced recipes. The supported file format is the same as that of the Open function, which is CSV file.

Export recipe

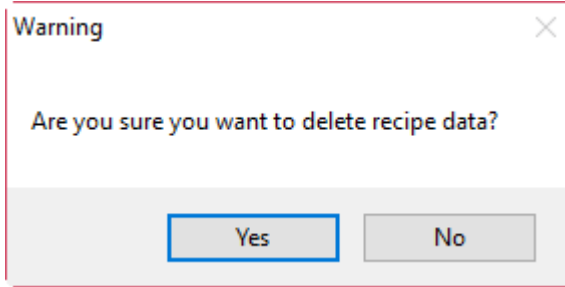


23


Delete recipe 

Properties of the enhanced recipe setting

The delete recipe function deletes the enhanced recipe data. When executing this function, a warning message will pop up confirming if you want to delete the data.



Clear the recipe content that has the value entered.

Clear configuration 

Before clearing

	ENRCPNO Name	Unsigned Decimal	Floating	Char
		1 Word	2 Word	5 Word
1	1	111	123.11	Delta
2	2	444	25.66	台湾
3	3	777	963.12	人機
4	4	1111	74.99	HMI

After clearing

	ENRCPNO Name	Unsigned Decimal	Floating	Char
		1 Word	2 Word	5 Word
1	1	0	0.00	
2	2	0	0.00	
3	3	0	0.00	
4	4	0	0.00	

Properties of the Enhanced Recipe Setting

To use the Enhanced Recipe Setting function, there must be recipe data in the enhanced recipe. You can use this function to change the Name, Fields, Group, and Data Format of the recipe.

Enhanced Recipe Setting


The recipe table displays up to 25 groups of recipe data on one page. This function allows you to quickly and easily select the recipe group that you want to view.

Groups

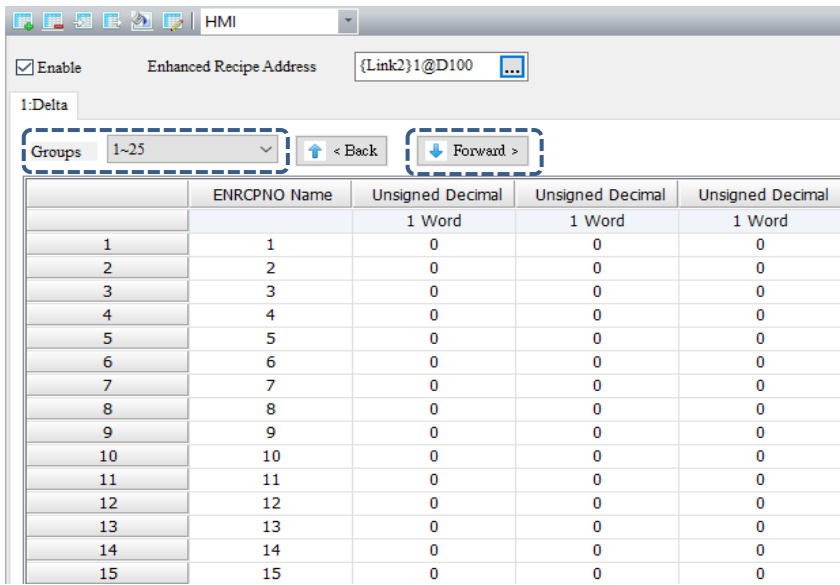
Group	Name	Unsigned Decimal	Unsigned Decimal	Unsigned Decimal
1		0	0	0
2	2	0	0	0
3	3	0	0	0
4	4	0	0	0
5	5	0	0	0
6	6	0	0	0
7	7	0	0	0
8	8	0	0	0
9	9	0	0	0
10	10	0	0	0

23



Properties of the Enhanced Recipe Setting

The recipe table displays up to 25 groups of recipe data on one page. When you press  , you can quickly view the next 25 groups of recipe data.

Before



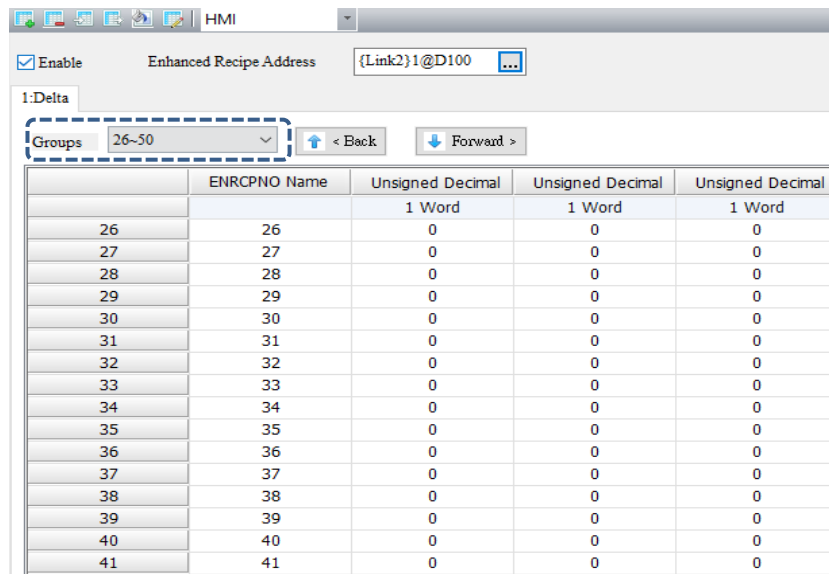
1:Delta

Groups: 1-25  



	ENRCPNO Name	Unsigned Decimal	Unsigned Decimal	Unsigned Decimal
		1 Word	1 Word	1 Word
1	1	0	0	0
2	2	0	0	0
3	3	0	0	0
4	4	0	0	0
5	5	0	0	0
6	6	0	0	0
7	7	0	0	0
8	8	0	0	0
9	9	0	0	0
10	10	0	0	0
11	11	0	0	0
12	12	0	0	0
13	13	0	0	0
14	14	0	0	0
15	15	0	0	0



After




1:Delta

Groups: 26-30  

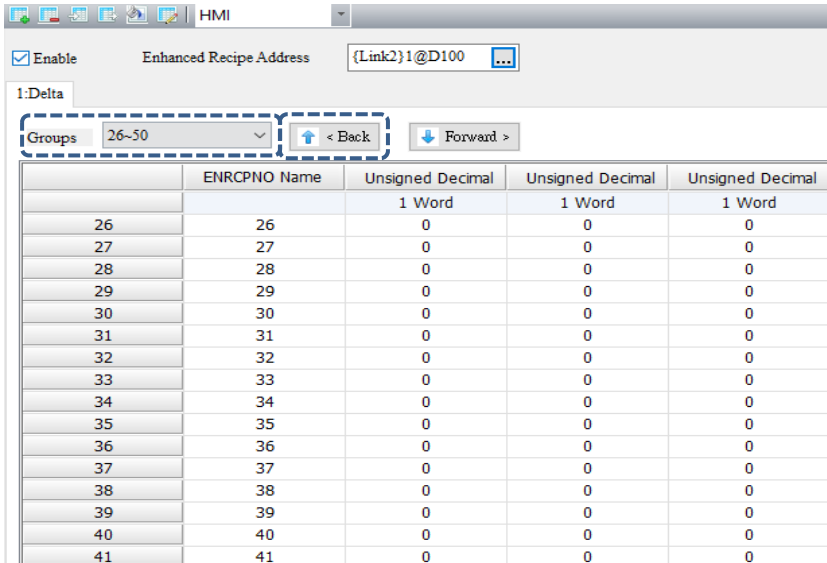
	ENRCPNO Name	Unsigned Decimal	Unsigned Decimal	Unsigned Decimal
		1 Word	1 Word	1 Word
26	26	0	0	0
27	27	0	0	0
28	28	0	0	0
29	29	0	0	0
30	30	0	0	0
31	31	0	0	0
32	32	0	0	0
33	33	0	0	0
34	34	0	0	0
35	35	0	0	0
36	36	0	0	0
37	37	0	0	0
38	38	0	0	0
39	39	0	0	0
40	40	0	0	0
41	41	0	0	0

Properties of the Enhanced Recipe Setting

The recipe table displays up to 25 groups of recipe data on one page. When you press  , you can quickly view the previous 25 groups of recipe data.

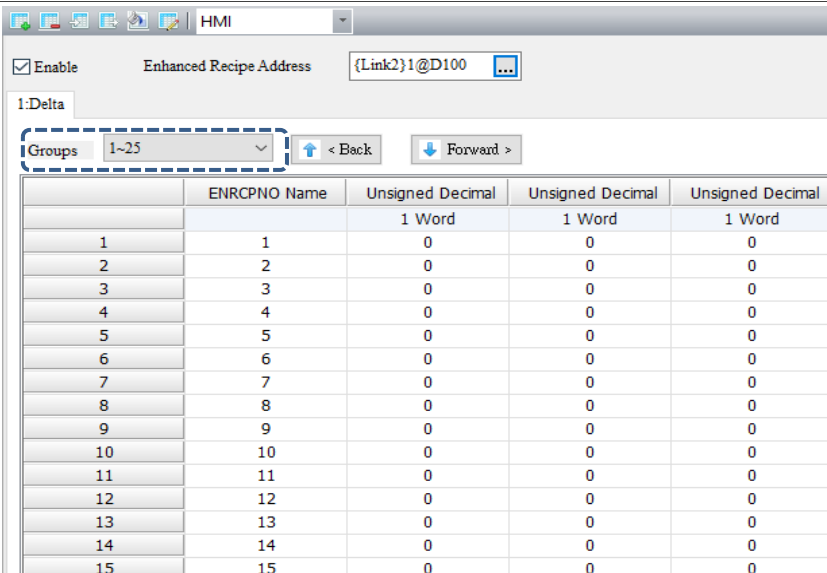
23

Before



	ENRCPNO Name	Unsigned Decimal 1 Word	Unsigned Decimal 1 Word	Unsigned Decimal 1 Word
26	26	0	0	0
27	27	0	0	0
28	28	0	0	0
29	29	0	0	0
30	30	0	0	0
31	31	0	0	0
32	32	0	0	0
33	33	0	0	0
34	34	0	0	0
35	35	0	0	0
36	36	0	0	0
37	37	0	0	0
38	38	0	0	0
39	39	0	0	0
40	40	0	0	0
41	41	0	0	0

After



	ENRCPNO Name	Unsigned Decimal 1 Word	Unsigned Decimal 1 Word	Unsigned Decimal 1 Word
1	1	0	0	0
2	2	0	0	0
3	3	0	0	0
4	4	0	0	0
5	5	0	0	0
6	6	0	0	0
7	7	0	0	0
8	8	0	0	0
9	9	0	0	0
10	10	0	0	0
11	11	0	0	0
12	12	0	0	0
13	13	0	0	0
14	14	0	0	0
15	15	0	0	0



23

23.5 Enhanced indirect recipe index register (*ENRCP)

The enhanced indirect recipe index register is used specifically for the enhanced recipe.

Enhanced indirect recipe index register (*ENRCPn) acquires the value from ENRCPn first, then it treats this value as the new address and accesses the value from this new address. For example, if ENRCP1 = 3 and ENRCP3 = 99, then *ENRCP1 = 99 (see Figure 23.5.1).

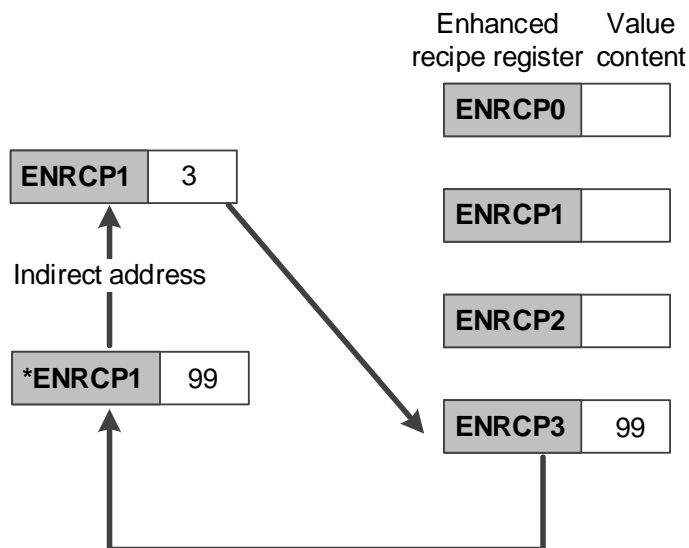


Figure 23.5.1 Enhanced indirect recipe index

The accessing range of the enhanced indirect recipe index register is as follows:

Accessing type	Element type	Accessing range
Word	*ENRCPn	ENRCP0 - ENRCP65535

Note: n = Word (0 - 65535)

The address accessing range provided by *ENRCP is limited according to the recipe size created by the users. Assuming the recipe size is Length 3 * Group 3, then the ENRCP address ranges from *ENRCP0 to *ENRCP11. When creating *ENRCP12, a warning message will pop up, as shown in the figure below.

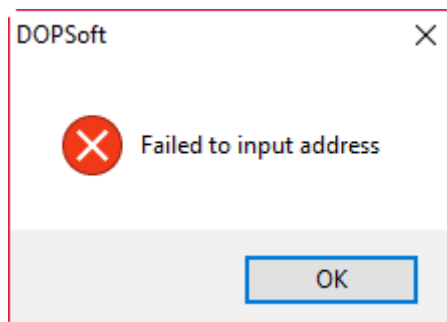


Figure 23.5.2 Enhanced indirect recipe index register configuration

The following section introduces the example for the enhanced indirect recipe index.

Table 23.5.1 Example of enhanced indirect recipe index register

Enhanced indirect recipe index register

Create an enhanced recipe (64 for Fields, 1024 for Group) and set ENRCP3 to 65535.

	ENRCPNO Name	Unsigned Decimal	Unsigned Decimal	Unsigned Decimal	Unsigned Decimal
		1 Word	1 Word	1 Word	1 Word
1	1	0	0	0	65535
2	2	0	0	0	0
3	3	0	0	0	0
4	4	0	0	0	0
5	5	0	0	0	0

Set enhanced recipe

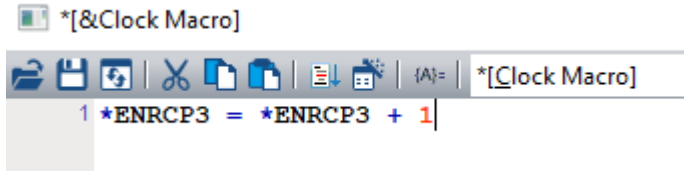
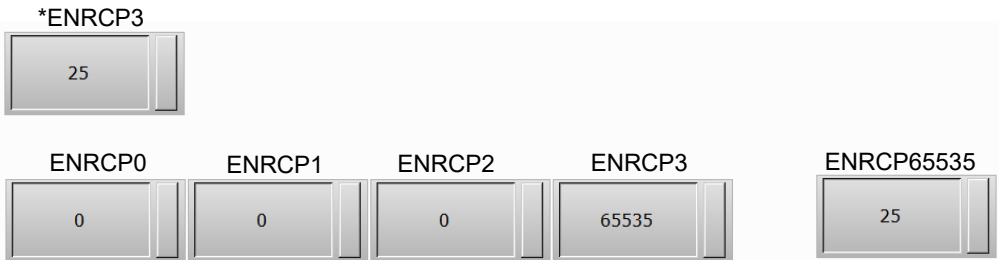
- Create a Numeric Entry element and select *ENRCP for the Device Type. Then enter 3 for Address/Value.

- Create four Numeric Entry elements and select ENRCP for the Device Type. Then enter 0 – 3 for Address/Value respectively.

- Create a Numeric Entry element and select ENRCP for the Device Type. Then enter 65535 for Address/Value.

Create Numeric Entry elements

23

Enhanced indirect recipe index register	
Create Numeric Entry elements	<ul style="list-style-type: none"> ■ Create the Clock macro command $*ENRCP3 = *ENRCP3 + 1$. 
Execution results	<p>After executing compiling for the screen, download it to the HMI. The values of *ENRCP3 and ENRCP65535 will increase simultaneously.</p> 

This chapter mainly describes the types and commands of macro provided by the HMI and the setting details of the macro commands.

24.1	Types of macro	24-3
24.1.1	On Macro / Off Macro	24-4
24.1.2	Before Execute Macro	24-5
24.1.3	After Execute Macro	24-6
24.1.4	Screen Open Macro	24-7
24.1.5	Screen Close Macro	24-8
24.1.6	Screen Cycle Macro	24-9
24.1.7	Submacro	24-12
24.1.8	Initial Macro	24-21
24.1.9	Background Macro	24-23
24.1.10	Clock Macro	24-25
24.2	Macro edit window	24-28
24.3	Macro commands	24-34
24.3.1	Arithmetic	24-40
24.3.2	Logical Operation	24-61
24.3.3	Data transfer	24-70
24.3.4	Data Conversion	24-80
24.3.5	Comparison	24-97
24.3.6	Flow Control	24-145
24.3.7	Bit Setting	24-151
24.3.8	Communication	24-155
24.3.9	Drawing	24-182
24.3.10	File Access	24-189
24.3.11	Others	24-197
24.4	Macro error codes	24-243

DOPSoft provides a variety of macro commands for you to perform various operations, including Arithmetic, Logical Operation, Data transfer, Data Conversion, Comparison, FlowControl, Bit Setting, Communication, Drawing, etc.

24

Arithmetic	>
Logical Operation	>
Data transfer	>
Data Conversion	>
Comparison	>
FlowControl	>
Bit Setting	>
Communication	>
Drawing	>
File Access	>
Others	>

Figure 24.1.1 Types of Macro

24.1 Types of macro

Macros consist of independent commands processing programs written by the user. 512 lines of commands can be edited in each type of macro. The main features of each type of macros are shown in the following table.

Table 24.1.2 Features of macro

Type of macro	Features of macro
On Macro	<ul style="list-style-type: none"> ■ When the On Macro is triggered, it is executed only once. ■ It is available only in Set to On, Set to Off, Maintained, and Momentary buttons.
Off Macro	<ul style="list-style-type: none"> ■ When the Off Macro is triggered, it is executed only once. ■ It is available only in Set to On, Set to Off, Maintained, and Momentary buttons.
Before Execute Macro	<ul style="list-style-type: none"> ■ When you press the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by pressing it (using external controller commands or other macros instead), the HMI does not execute the macro commands. ■ It is available in all button and input elements.
After Execute Macro	<ul style="list-style-type: none"> ■ When you press the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by pressing it (using external controller commands or other macros instead), the HMI does not execute the macro commands. ■ It is available in all button and input elements.
Screen Open Macro	Execute only once when opening a screen.
Screen Close Macro	Execute only once when closing a screen.
Screen Cycle Macro	Execute the macro continuously in the screen. If you set the Screen Open Macro, it will be executed before the execution of Screen Cycle Macro.
Submacro	<ul style="list-style-type: none"> ■ There are 512 submacros and 512 lines of commands can be written in each one. ■ Submacros are similar to subroutines in programming languages where you can write repeating executive programs or functions. And you can call the submacros when needed.
Initial Macro	Initial macro is the first one to be executed after the start of the HMI and it is executed only once.
Background Macro	Background Macro is a program that is executed repeatedly during the HMI operation with one line or several lines being executed at a time (not finished with one execution). It will be executed once again at the end of the last line.
Clock Macro	The Clock Macro is executed repeatedly during the HMI operation. It batch runs programs all at once rather than running one line or several lines at a time.

24

24.1.1 On Macro / Off Macro

On Macro / Off Macro are functions available only when creating Set to On, Set to Off, Maintained, and Momentary buttons.

When you switch the state to On by pressing the button, the HMI executes the On Macro commands. When you switch the state to Off by pressing the button, the HMI executes the Off Macro commands. However, the On Macro / Off Macro commands will not be executed if the button states cannot be changed by pressing it (using external controller commands or other macros instead).

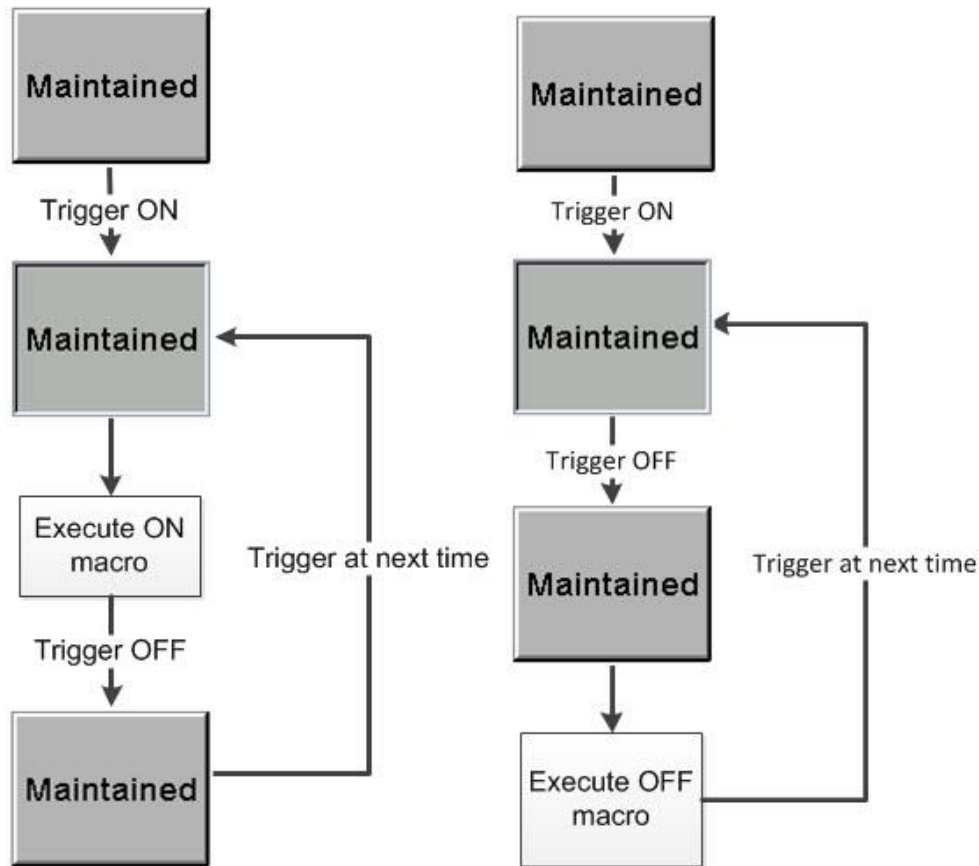


Figure 24.1.1.1 Flowchart of On / Off Macros

24.1.2 Before Execute Macro

Before Execute Macro can only be used when the created elements are button and input elements.

When you press the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states cannot be changed by pressing it (using external controller commands or other macros instead), the HMI does not execute the macro commands.

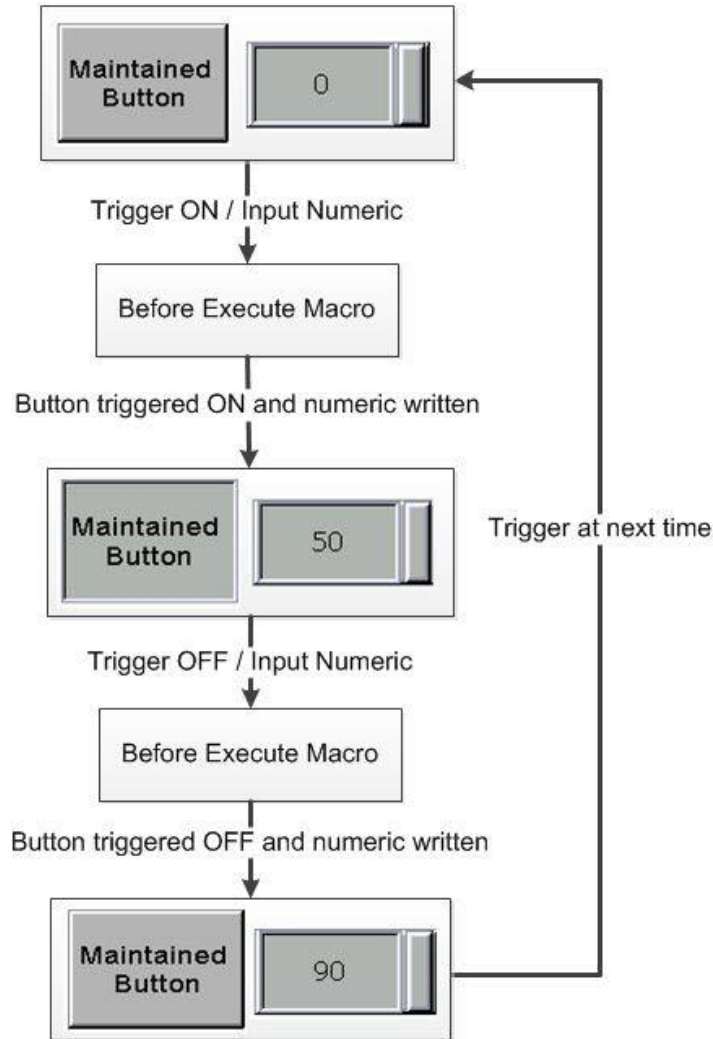


Figure 24.1.2.1 Flowchart of Before Execute Macro

24

24.1.3 After Execute Macro

After Execute Macro can only be used when the created elements are button and input elements.

When you press the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states cannot be changed by pressing it (using external controller commands or other macros instead), the HMI does not execute the macro commands.

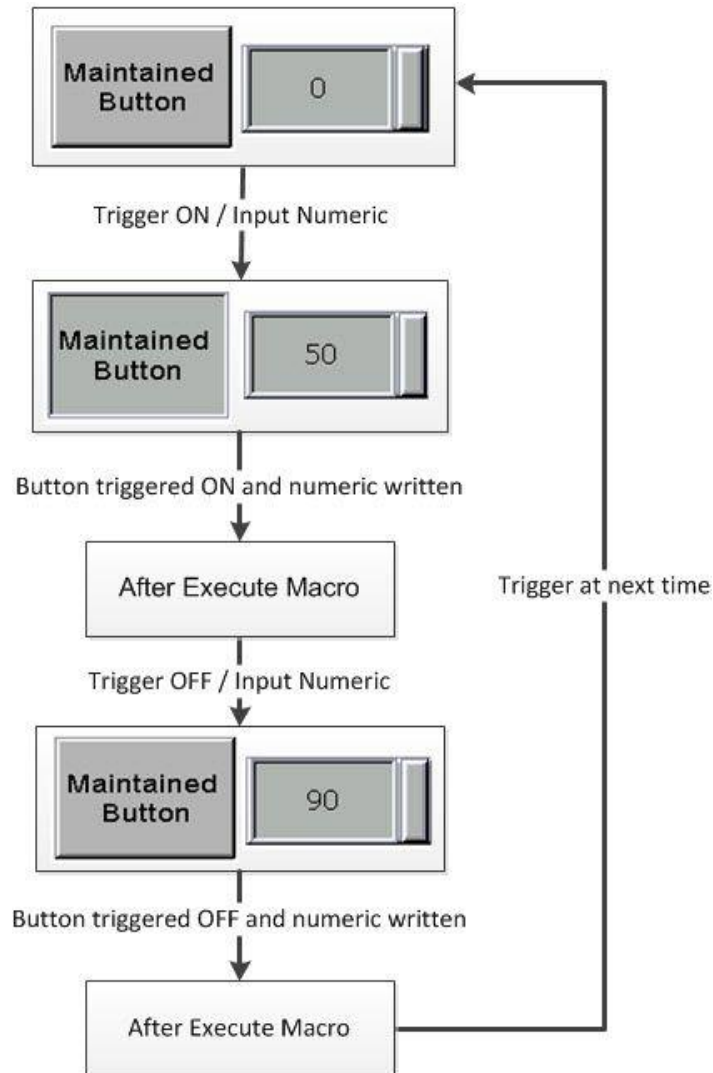


Figure 24.1.3.1 Flowchart of After Execute Macro

24.1.4 Screen Open Macro

Go to [Screen] > [Screen Open Macro] to edit the Screen Open Macro.

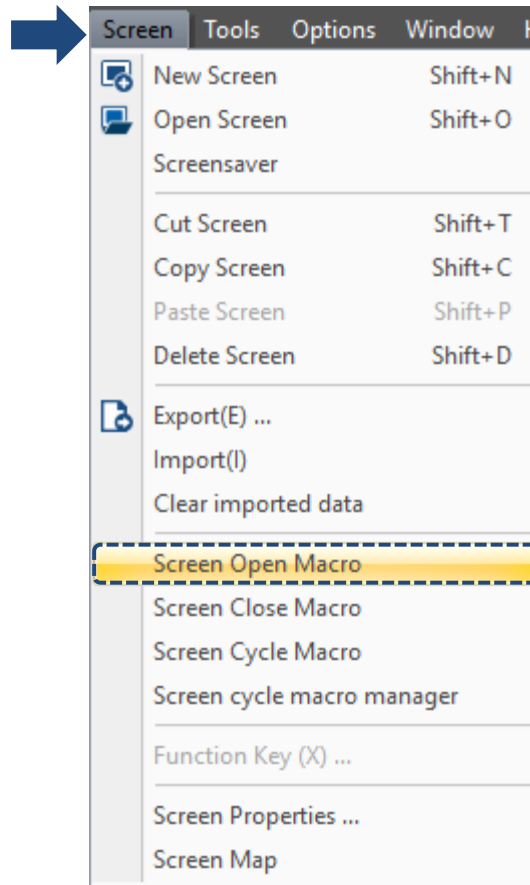


Figure 24.1.4.1 Screen Open Macro

Every screen created by DOPSoft contains a Screen Open Macro which will be executed when you open the current screen or switch to another screen. Other actions of the screen will not be executed until the execution of the Screen Open Macro is finished.

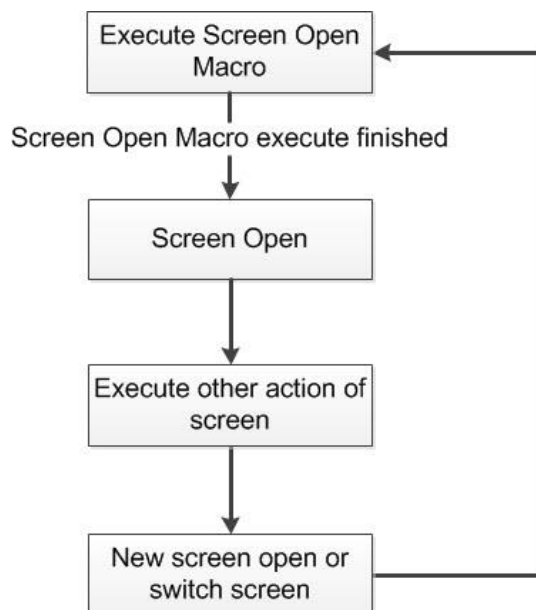


Figure 24.1.4.2 Flowchart of Screen Open Macro

24.1.5 Screen Close Macro

Go to [Screen] > [Screen Close Macro] to edit the Screen Close Macro.

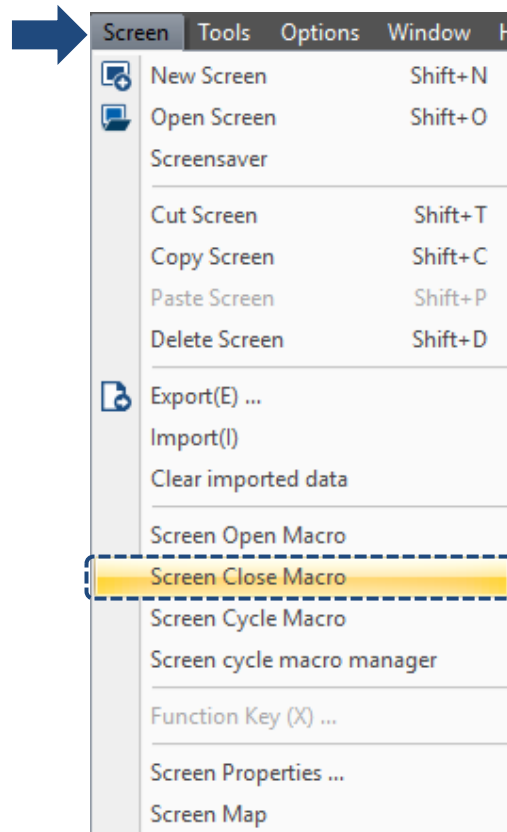


Figure 24.1.5.1 Screen Close Macro

Every screen created by DOPSoft contains a Screen Close Macro which will be executed when you close the current screen or switch to another screen. Actions of the new screen will not be executed until the execution of the macro is finished.

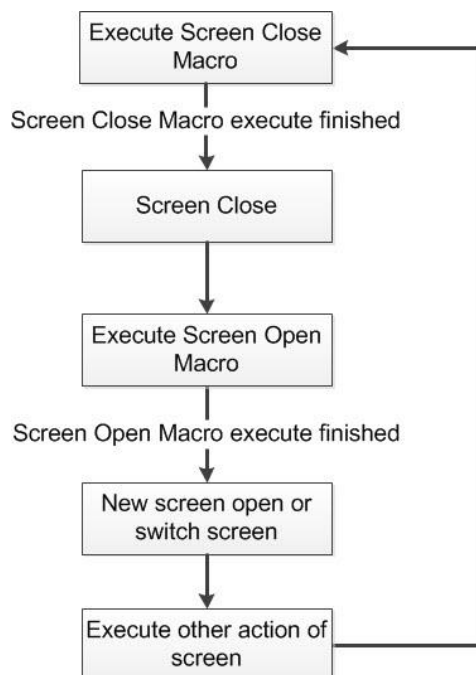


Figure 24.1.5.2 Flowchart of Screen Close Macro

24.1.6 Screen Cycle Macro

Go to [Screen] > [Screen Cycle Macro] to edit the Screen Cycle Macro.

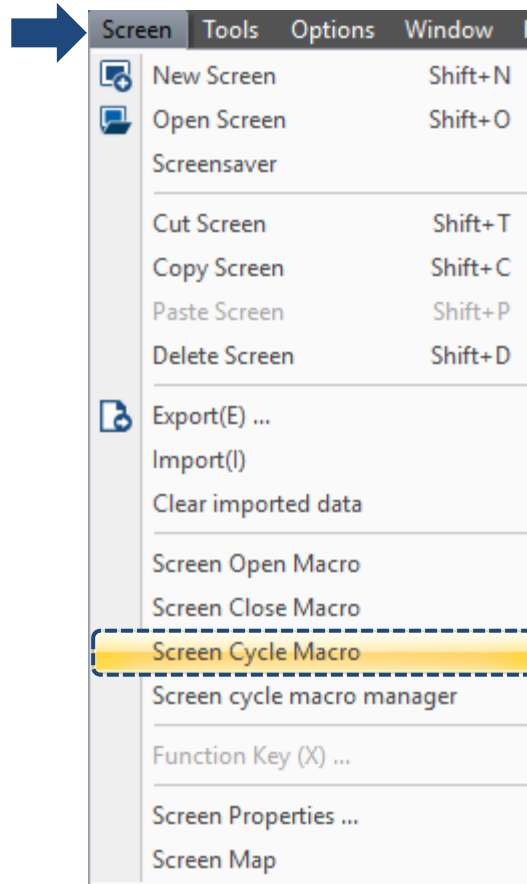


Figure 24.1.6.1 Screen Cycle Macro

24

Every screen created by DOPSoft contains a Screen Cycle Macro which will be executed according to the Cycle Macro delay time set by users after the execution of Screen Open Macro is finished. You can double-click on the screen to go to Screen Property page for setting the Macro Cycle Delay. It represents the delay time before the re-execution of each Screen Cycle Macro. The default is 100 ms.

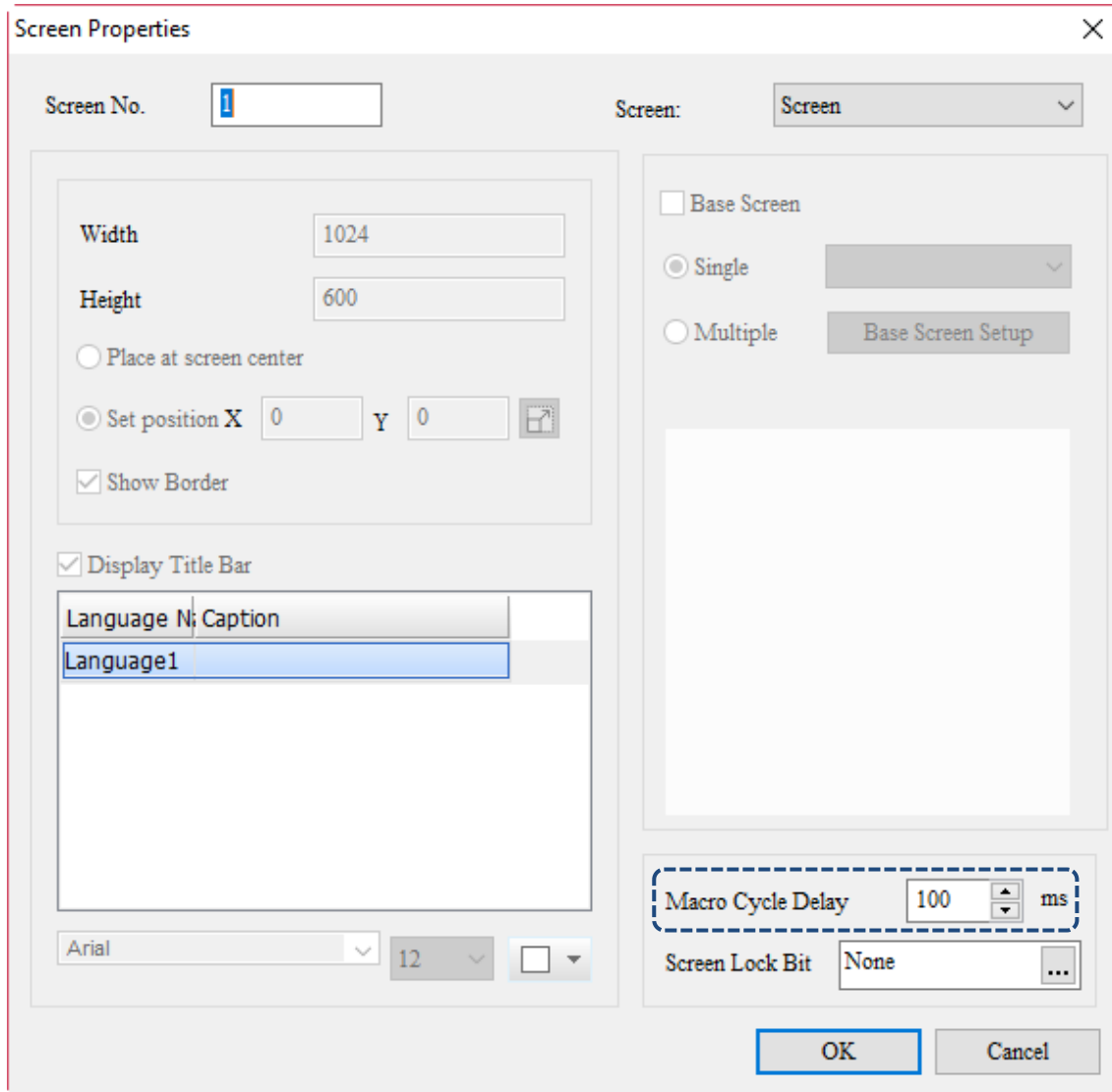


Figure 24.1.6.2 Setting of Macro Cycle Delay

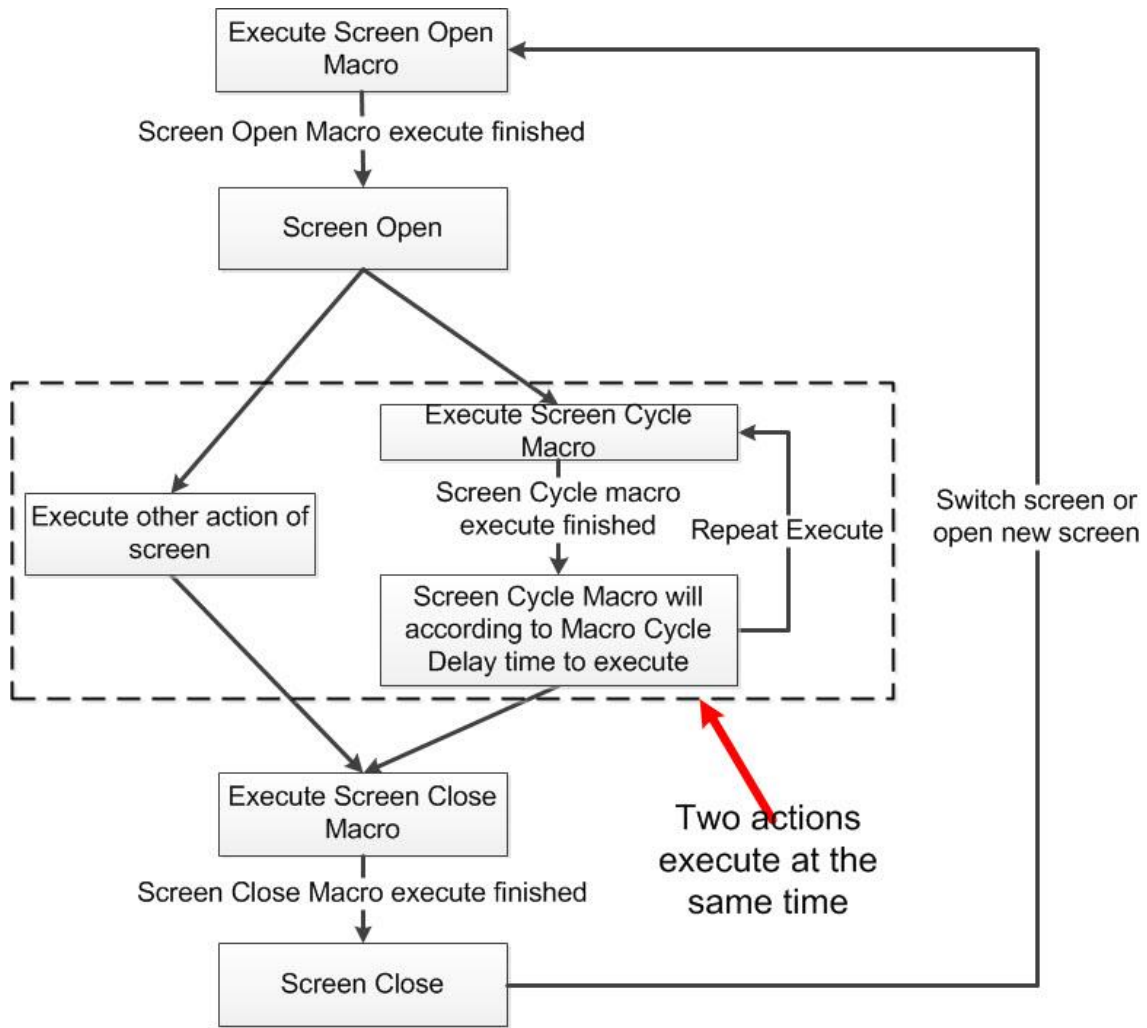


Figure 24.1.6.3 Flowchart of Screen Cycle Macro

24.1.7 Submacro

Go to [Options] > [Submacro] to set the Submacro.

24

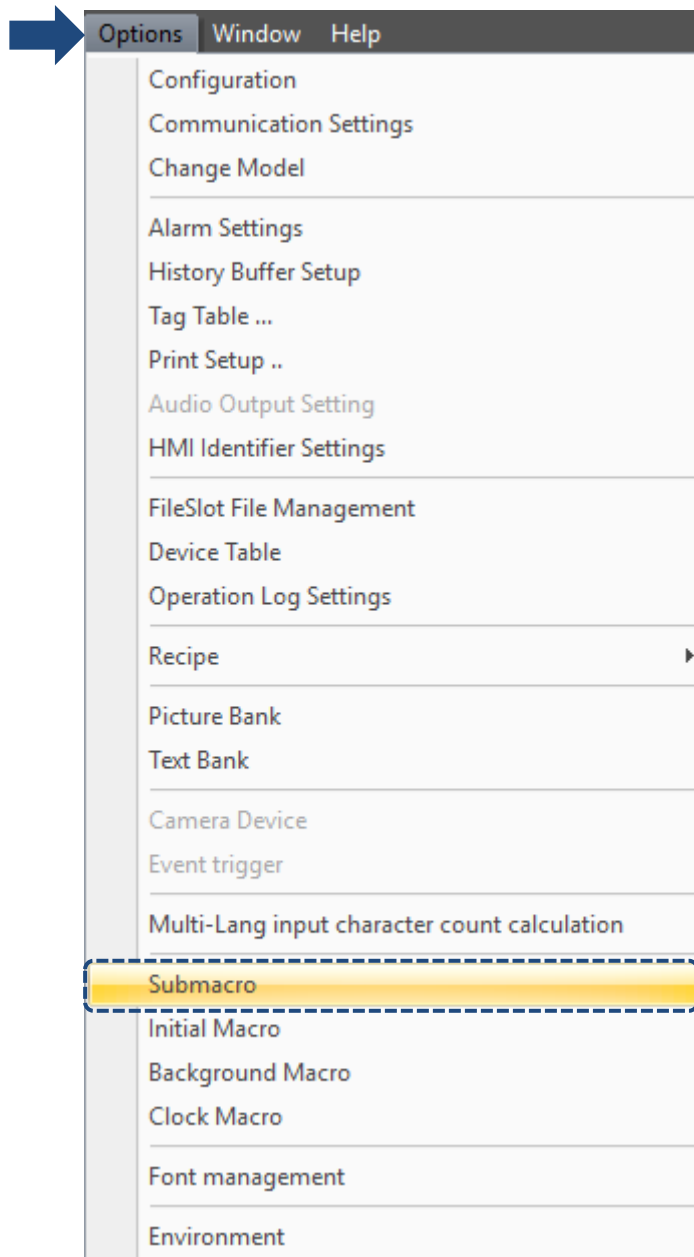


Figure 24.1.7.1 Submacro

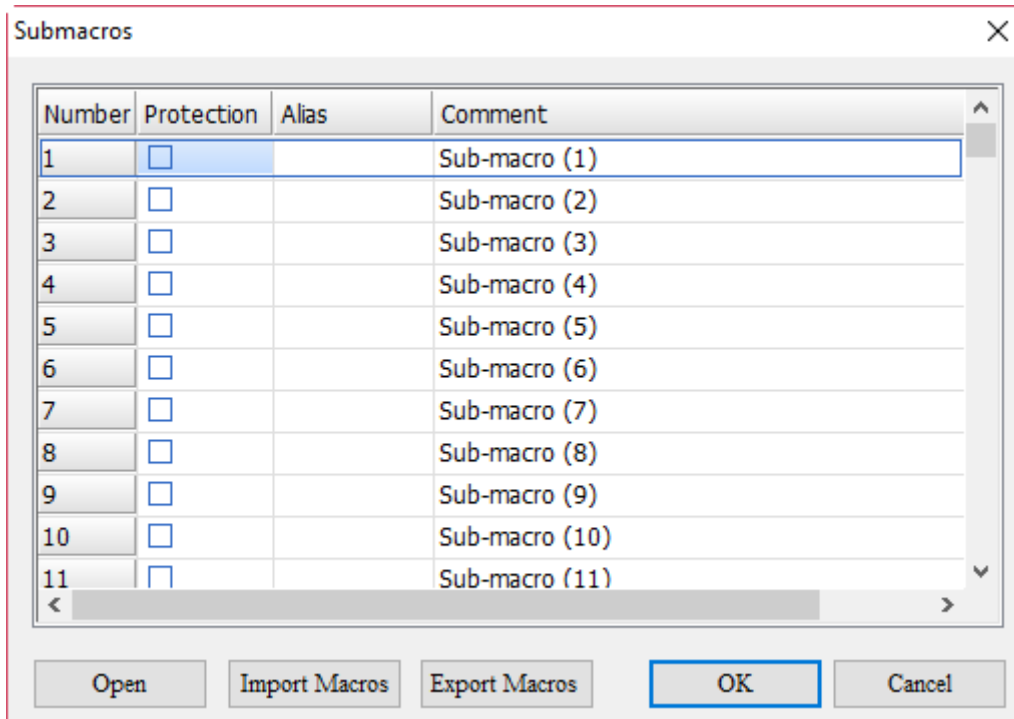


Figure 24.1.7.2 Submacro setting window

Submacro provides 512 submacro programs with numbers of 1 - 512 respectively. Submacros are similar to subroutines in programming languages where users can write repeating executive programs or functions. And you can call the submacros when needed, which can save the time to write macros and make it easier for maintenance as well.

Note: the actions of calling submacros in the Submacro should not exceed six layers.

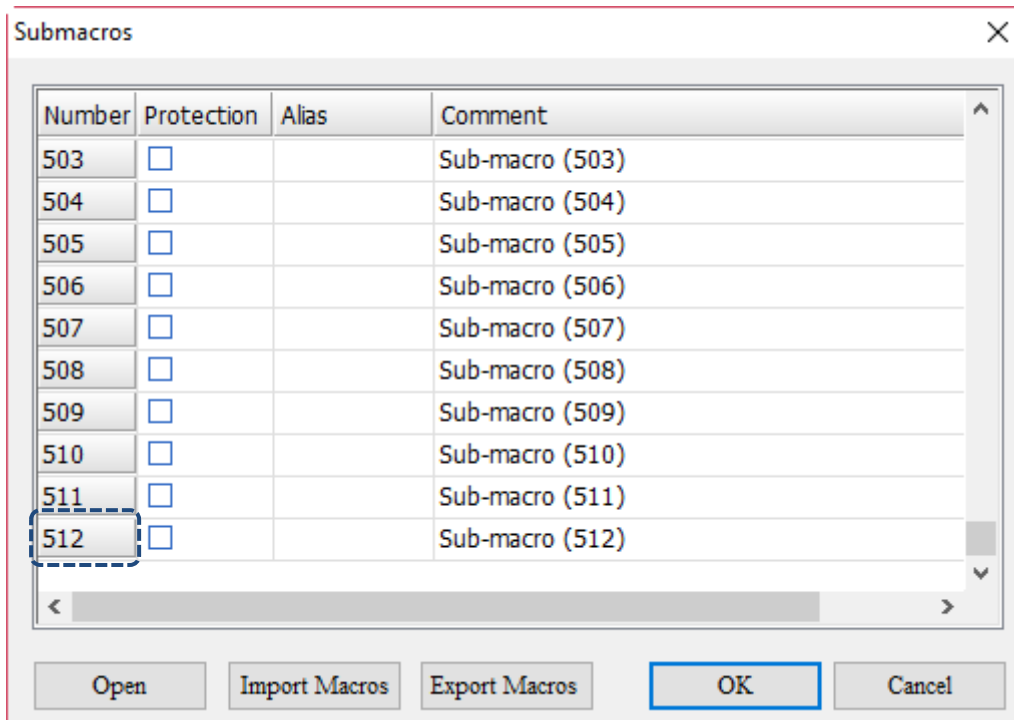


Figure 24.1.7.3 Submacro Screen I

24

To call a submacro, you can call its number directly or name it in the Alias column and call its alias. Submacro names support character and Chinese input for up to 64 words.

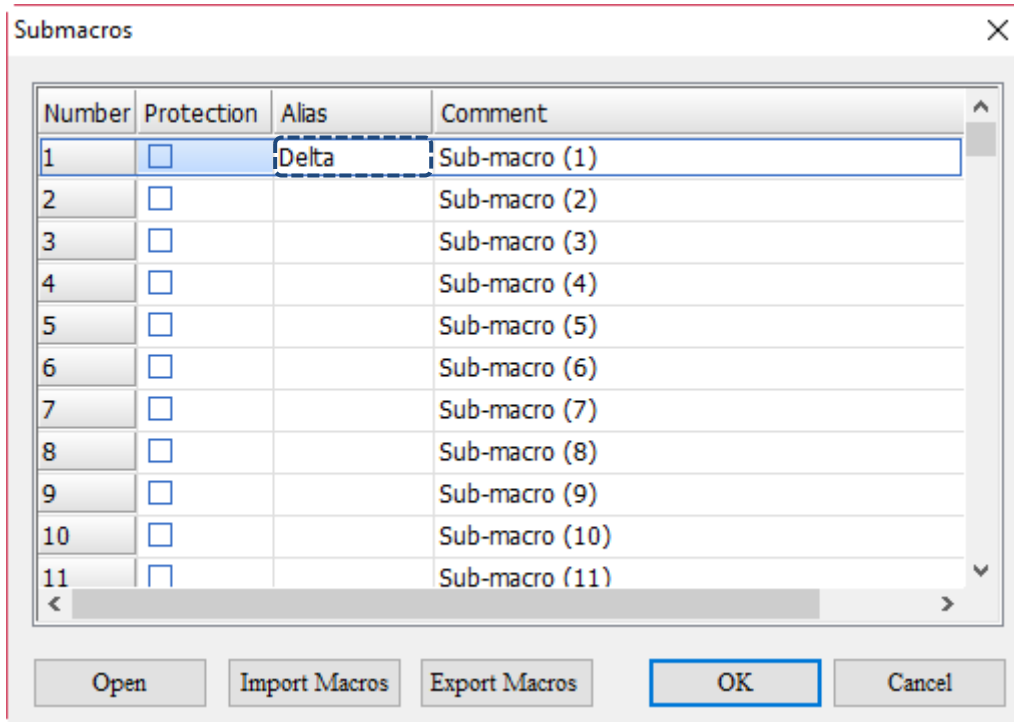


Figure 24.1.7.4 Submacro Screen II

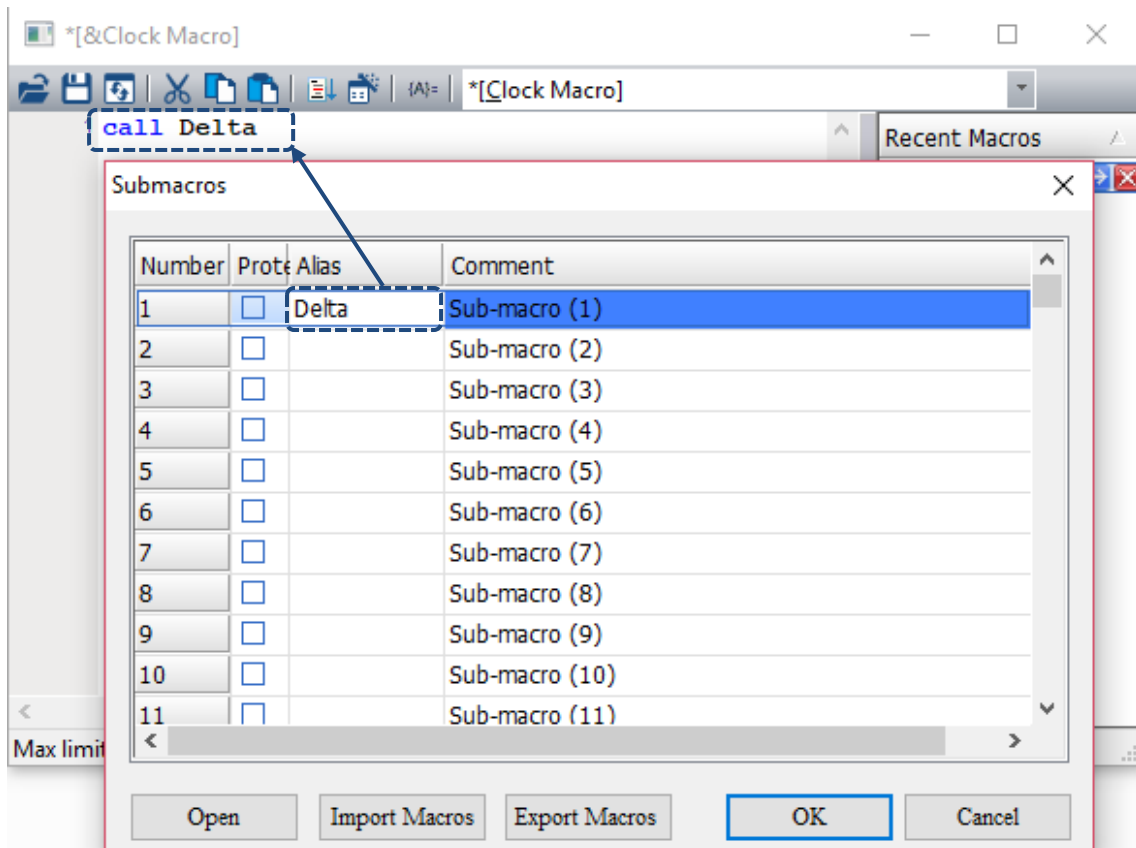
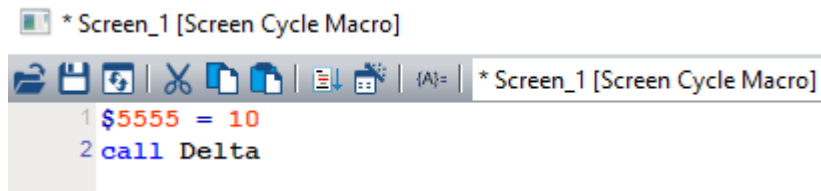


Figure 24.1.7.5 Submacro Screen III

Macro contents written in the Screen Cycle Macro.



Macro contents written in the Submacro.

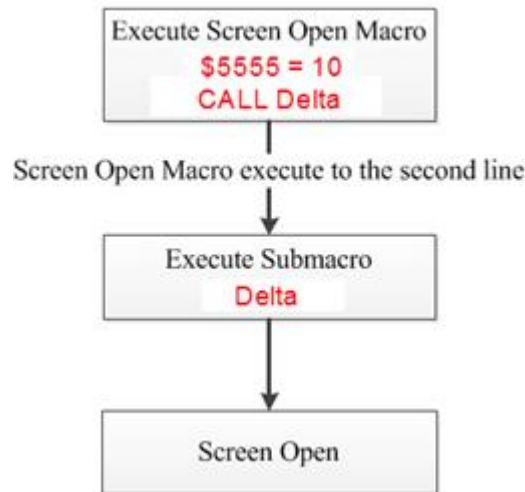
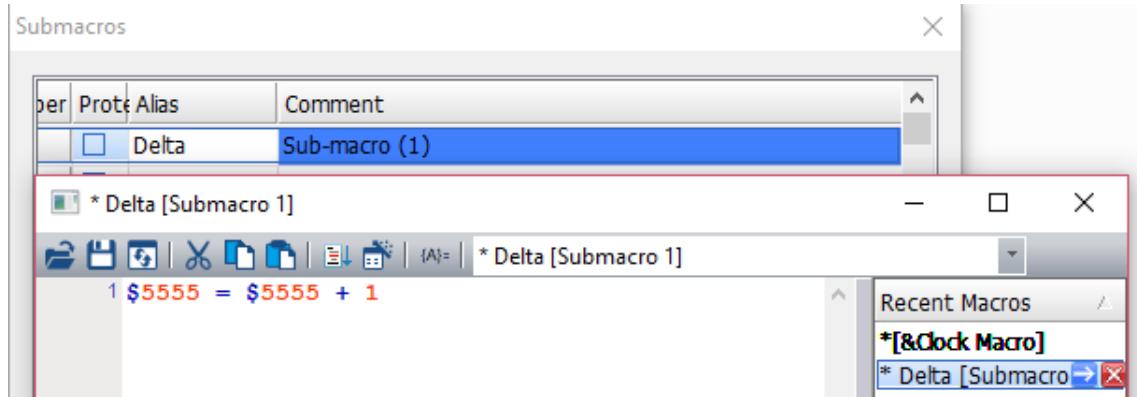


Figure 24.1.7.6 Flowchart of Submacro

24

Submacro also provides the function of password protection which can encrypt each submacro.

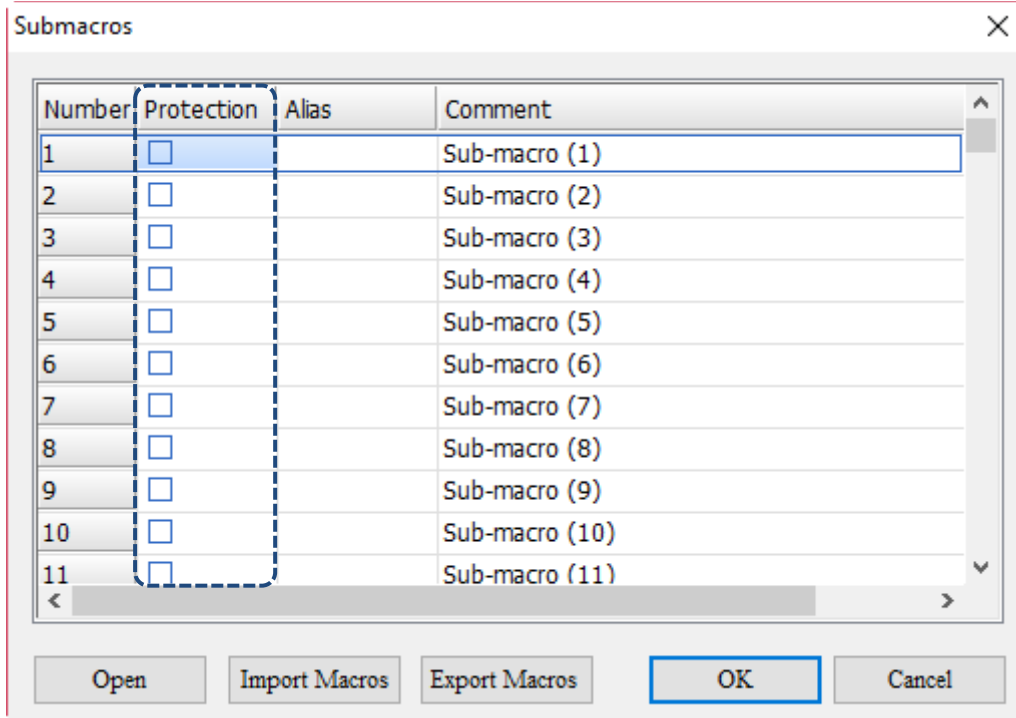


Figure 24.1.7.7 Protection function of Submacro

When Protection is checked, you are immediately asked to input a set of password.

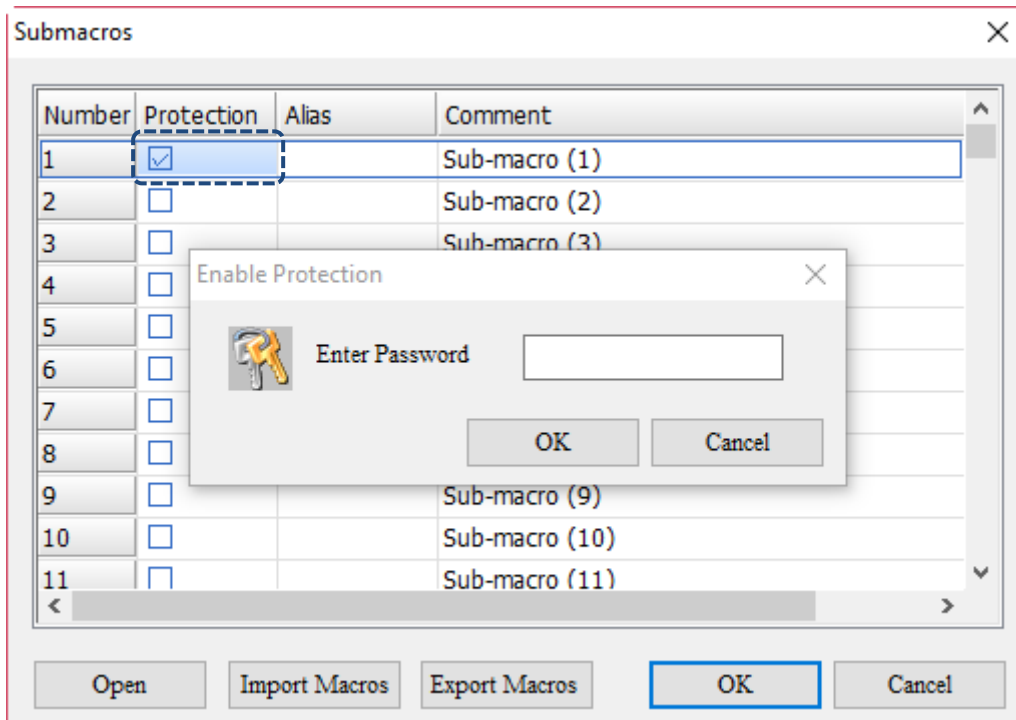
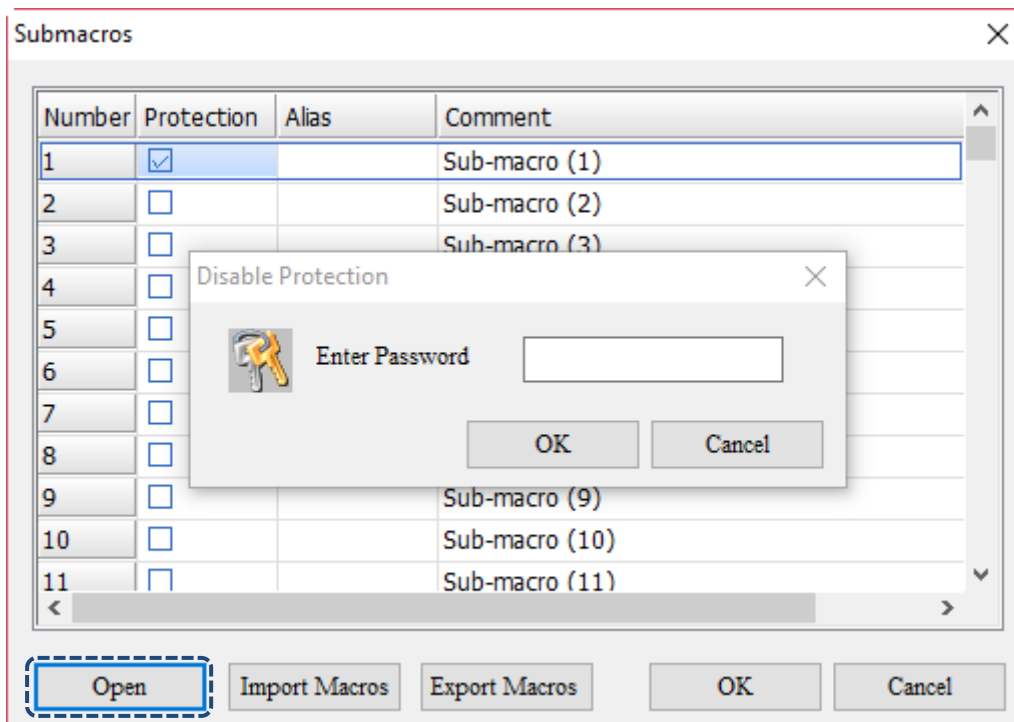


Figure 24.1.7.8 Submacro encryption

After Submacro Number 1 is encrypted, you must enter the password to enter Submacro Number 1 and edit the macro commands.



When Protection is unchecked, you are also required to enter the password set for Submacro Number 1 to disable the protection function.

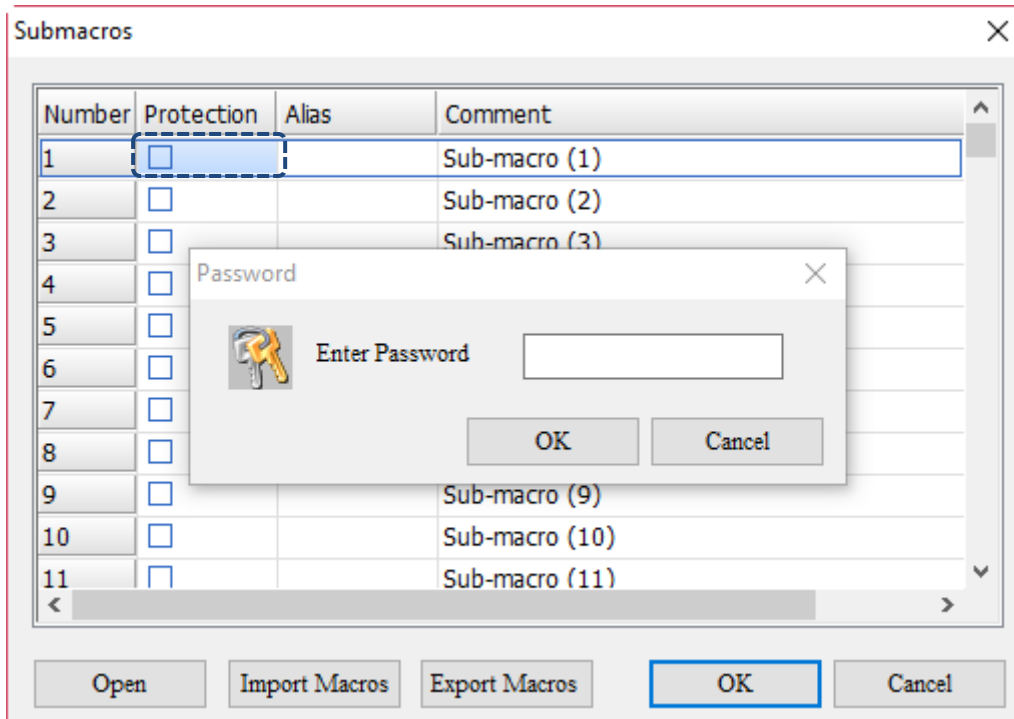


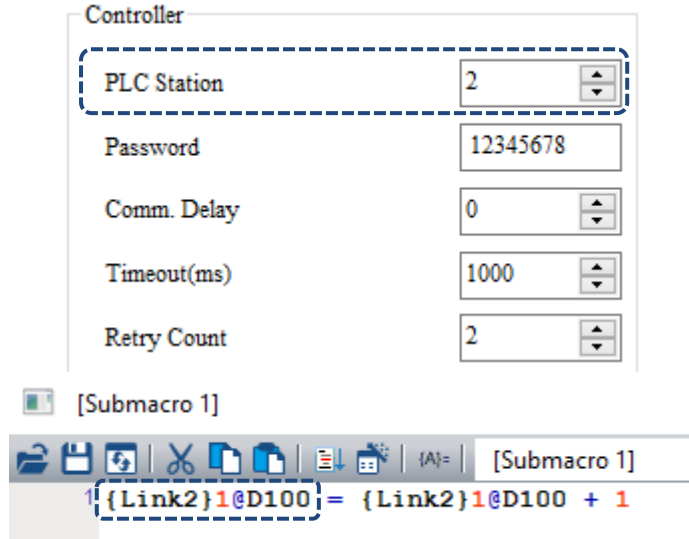
Figure 24.1.7.9 Disable Submacro encryption

24

When submacros are password-protected, the functions affected are as follows:

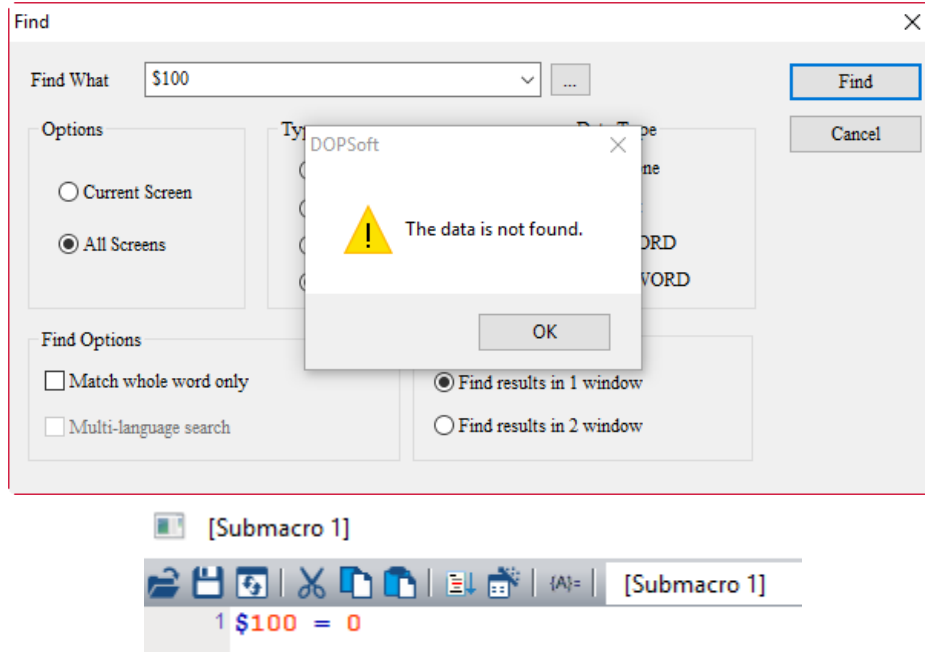
- If there is a communication station number in a protected submacro, the function of changing station number will be invalid.
- If the station number in the protected submacro is 1, change the PLC Station to 2 and then enter the protected submacro. You will find that the station number must be 1 and will not be changed.

(1)



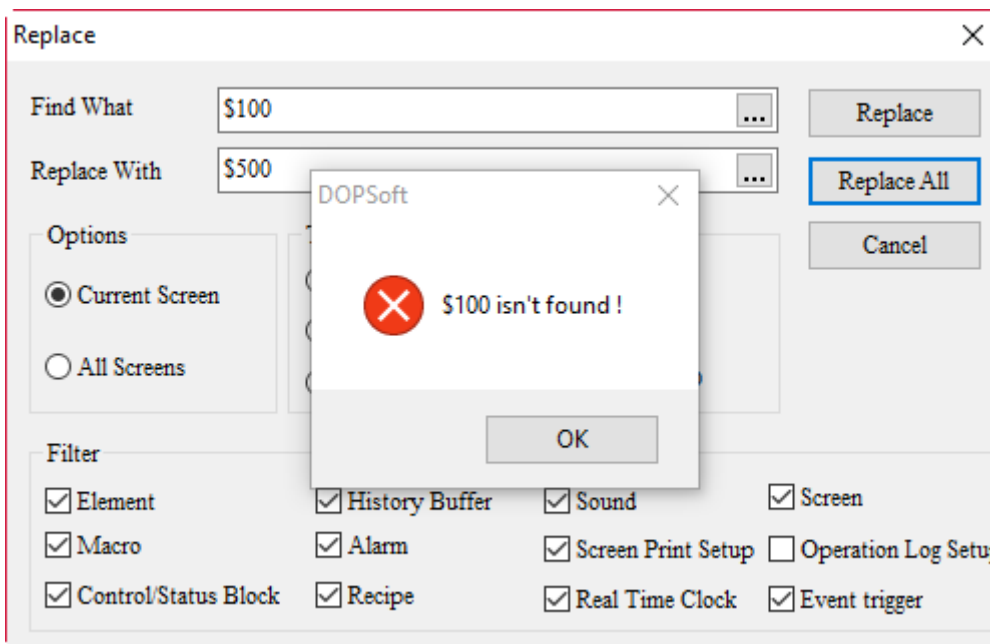
If \$100 is set inside the protected submacro, \$100 will not be found when the find address function is executed.

(2)



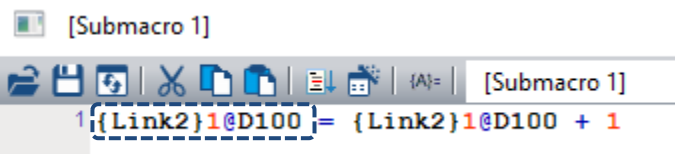
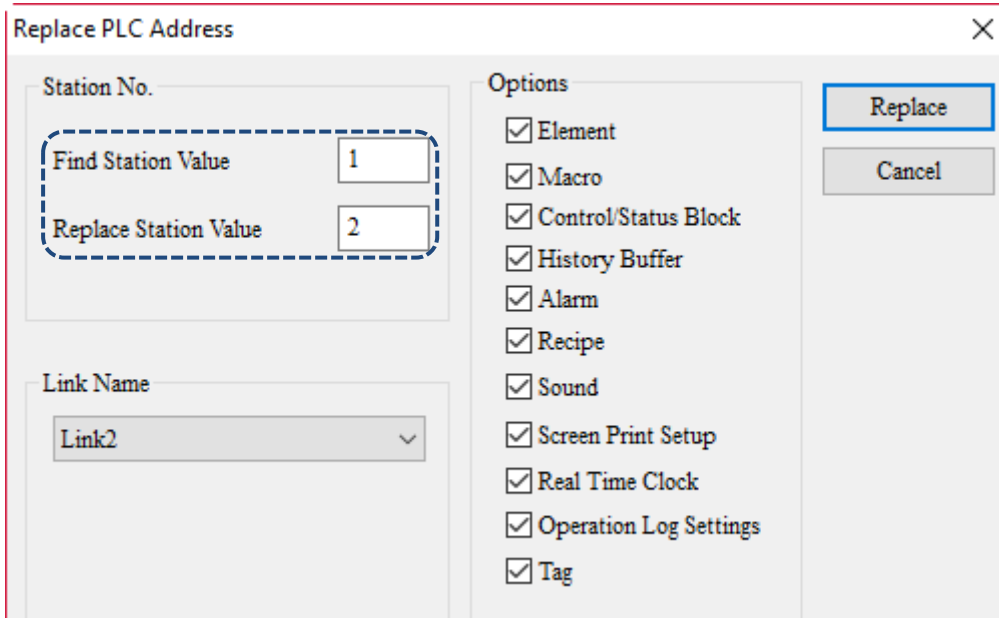
If \$100 is set inside the protected submacro, \$100 cannot be replaced by \$500 when executing the replace address function.

(3)



If the station value in the protected submacro is 1, it cannot be replaced by 2 when executing the Replace Station Value function.

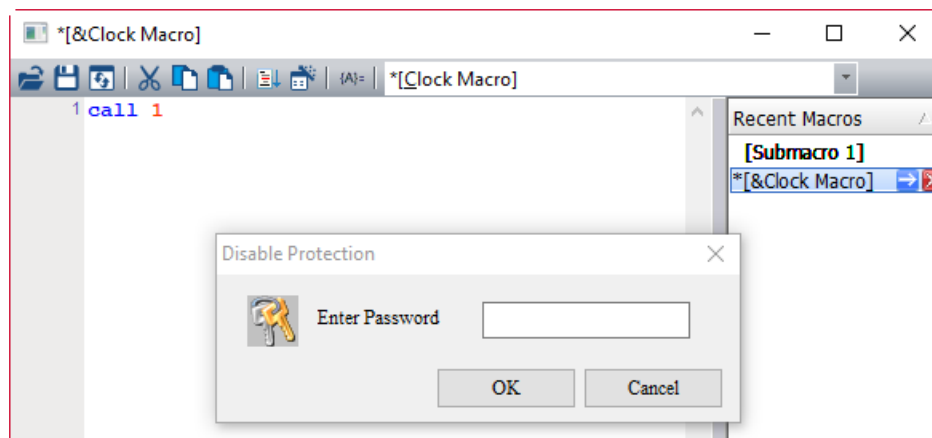
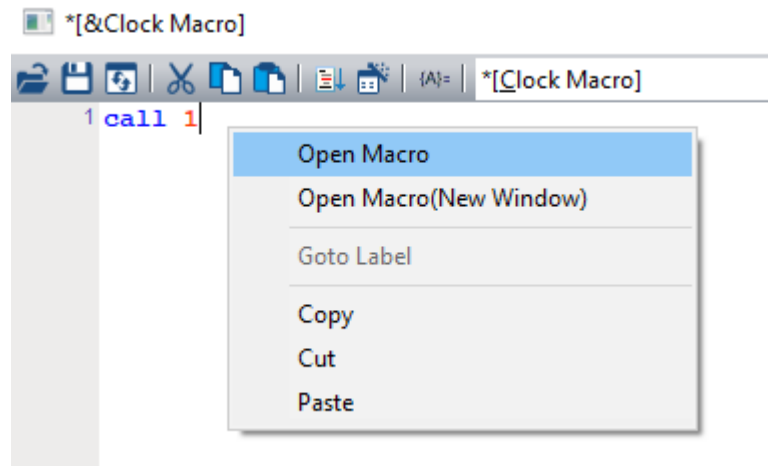
(4)



24

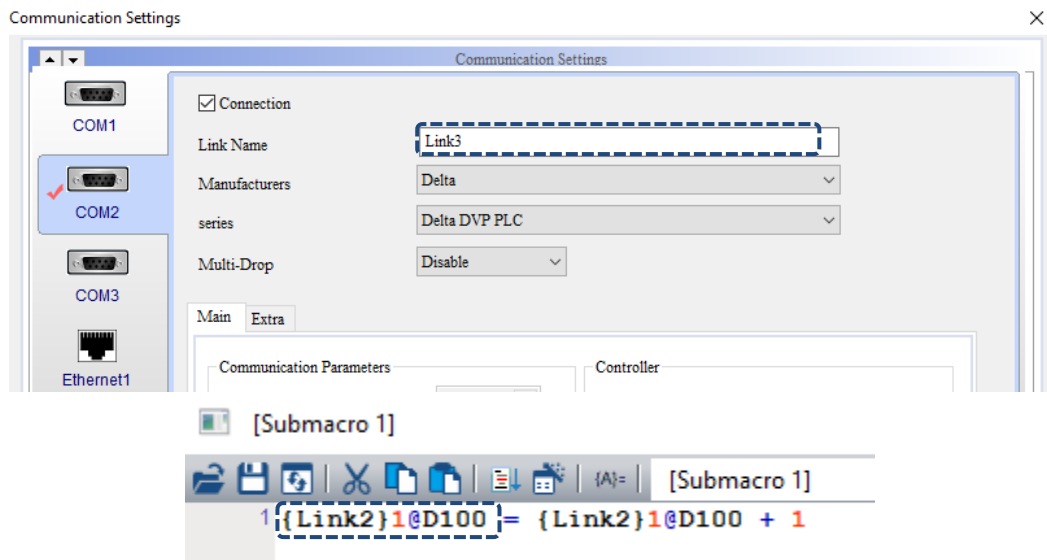
When there is a call command in the macro, right-click and select Open Macro. You will be asked to enter the password if the submacro is password-protected.

(5)



Change the Link Name to Link3, and Link2 cannot be changed to Link3 in the protected submacro.

(6)



24.1.8 Initial Macro

Go to [Options] > [Initial Macro] to set the Initial Macro.

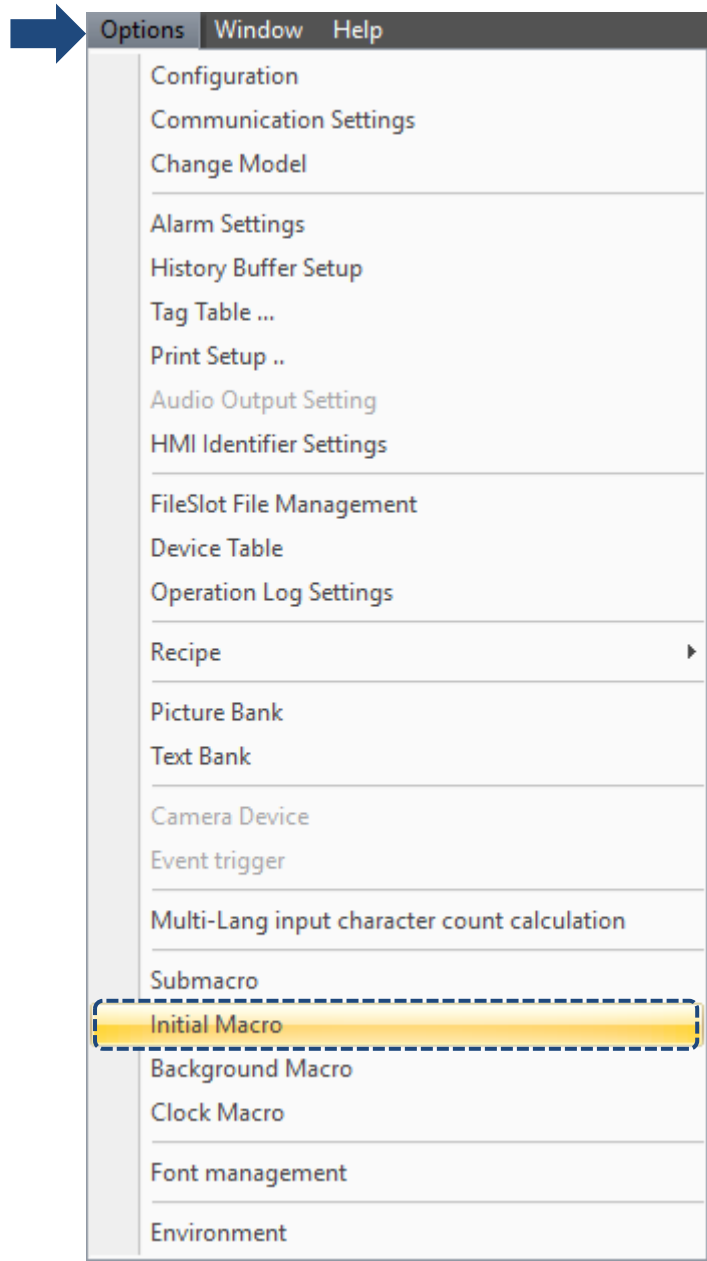


Figure 24.1.8.1 Initial Macro

Initial Macro is the first macro to be executed when the HMI starts up, so you can write the initial settings required for the whole HMI program in Initial Macro.

24

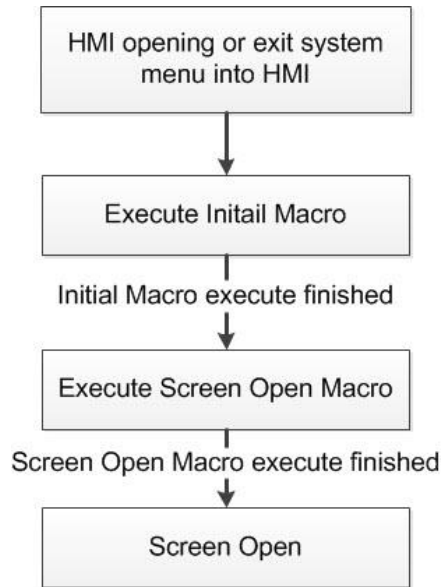


Figure 24.1.8.2 Flowchart of Initial Macro

24.1.9 Background Macro

Go to [Options] > [Background Macro] to set the Background Macro.

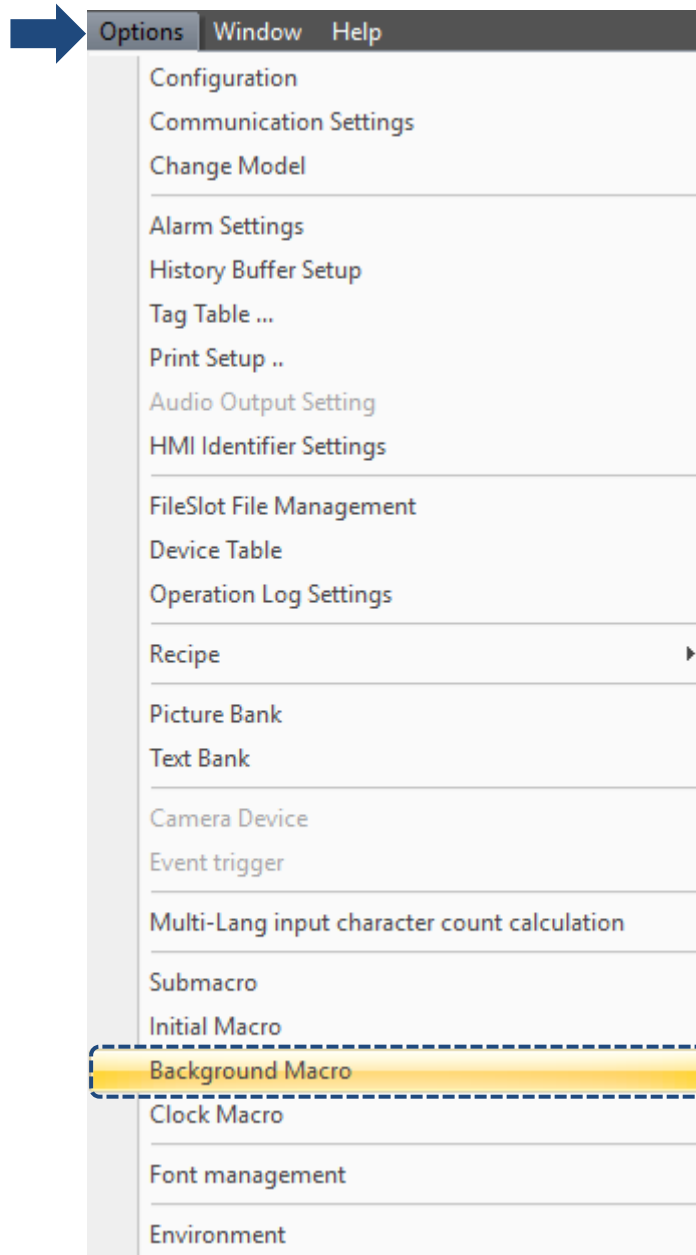


Figure 24.1.9.1 Background Macro

Background macro is a program that is executed repeatedly during the operation of the HMI with one line or several lines being executed at a time (not finished after executing once). It will be executed once again at the end of the last line. To define the number of lines for each Background Macro execution, go to [Options] > [Configuration] to set the Background macro update cycle with a maximum of 512 lines.

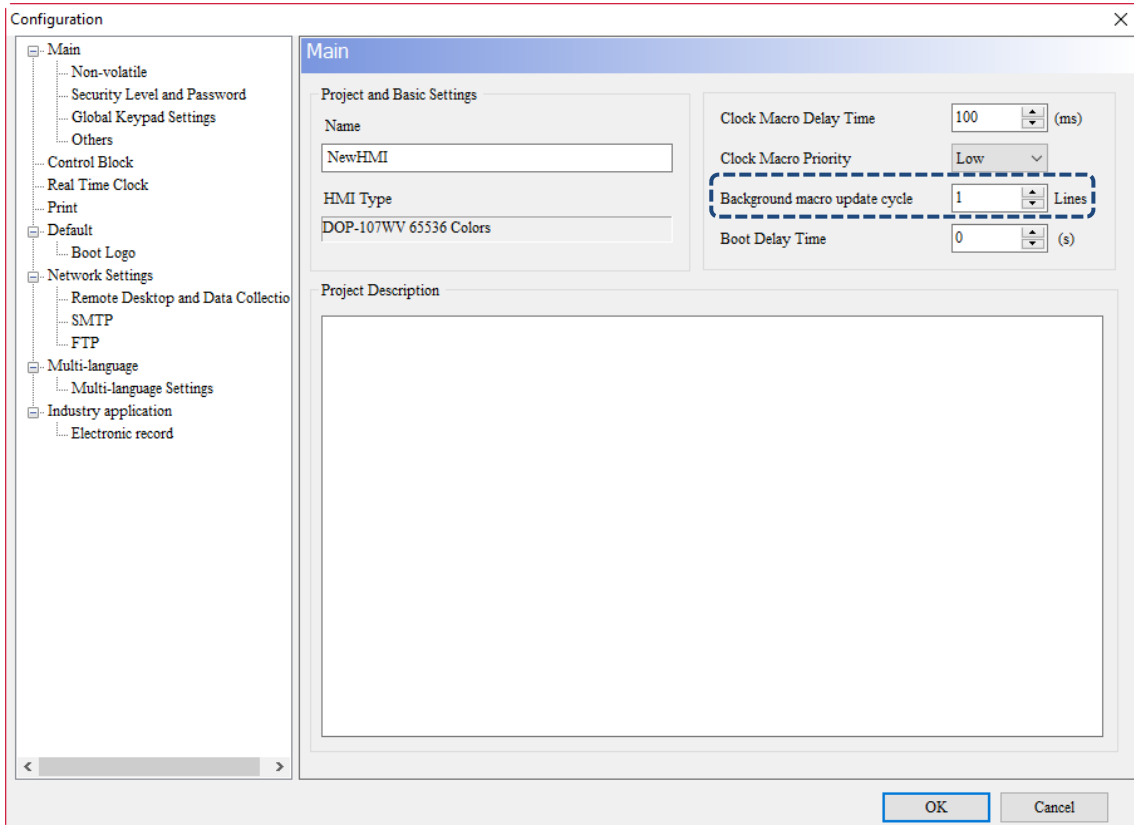


Figure 24.1.9.2 Background macro update cycle

Suppose that 10 elements are created on the HMI screen, input 6 lines of macro commands into the Background Macro and set the Background macro update cycle to 3 lines, then the execution process of Background Macro is shown as follows:

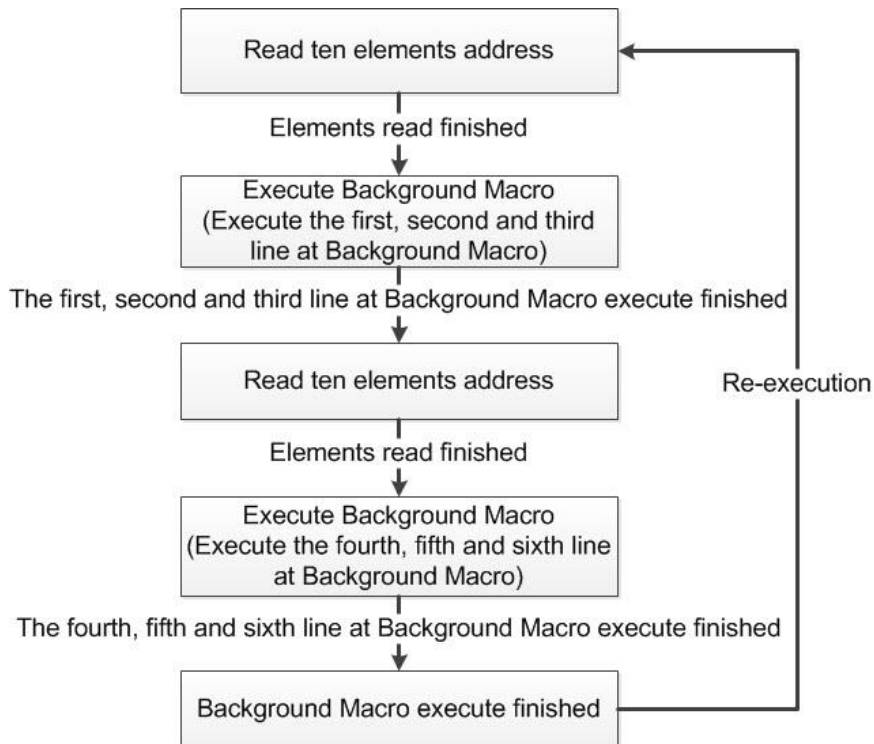


Figure 24.1.9.3 Flowchart of Background Macro

24.1.10 Clock Macro

Go to [Options] > [Clock Macro] to set the Clock Macro.

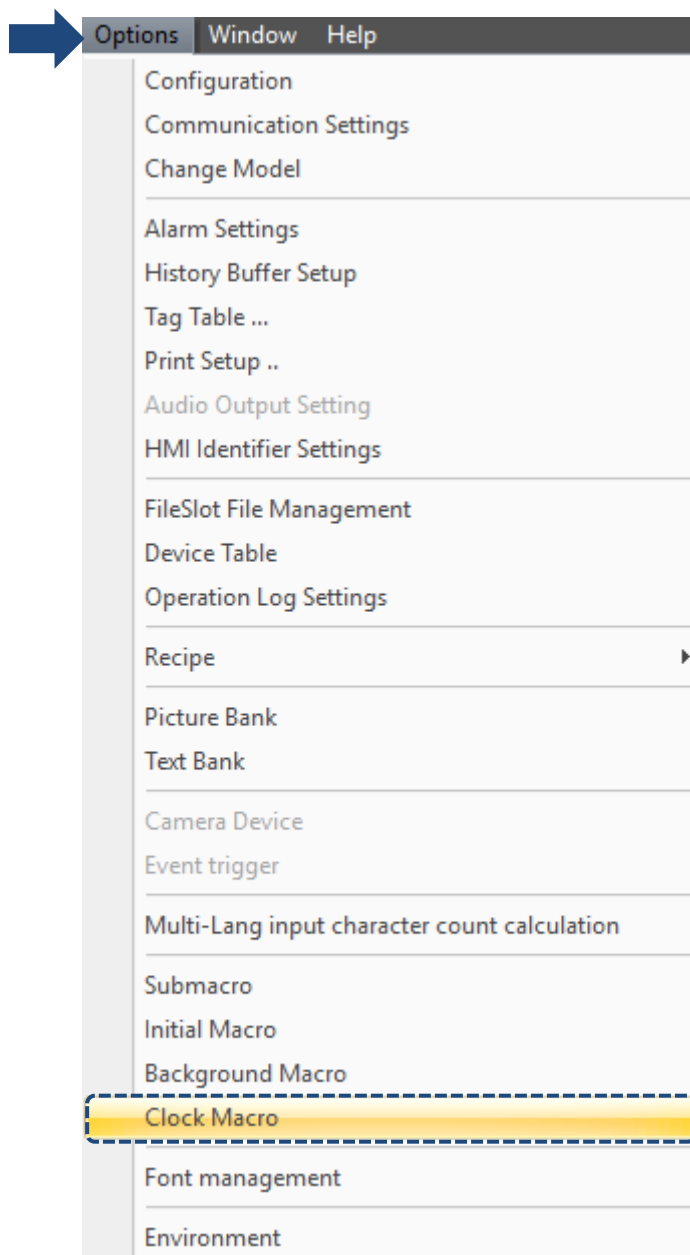


Figure 24.1.10.1 Clock Macro

Clock Macro will be executed repeatedly in the process of the HMI operation. Unlike Background Macro, Clock Macro executes its commands all at once rather than one line or several lines at a time. Similar to Screen Cycle macro, the Clock Macro is executed repeatedly according to the set macro delay time. You can go to [Options] > [Configuration] to set the Clock Macro Delay Time. At the end of each Clock Macro execution, it will resume its execution according to the set delay time. The default is 100 ms and the maximum is 65535 ms.

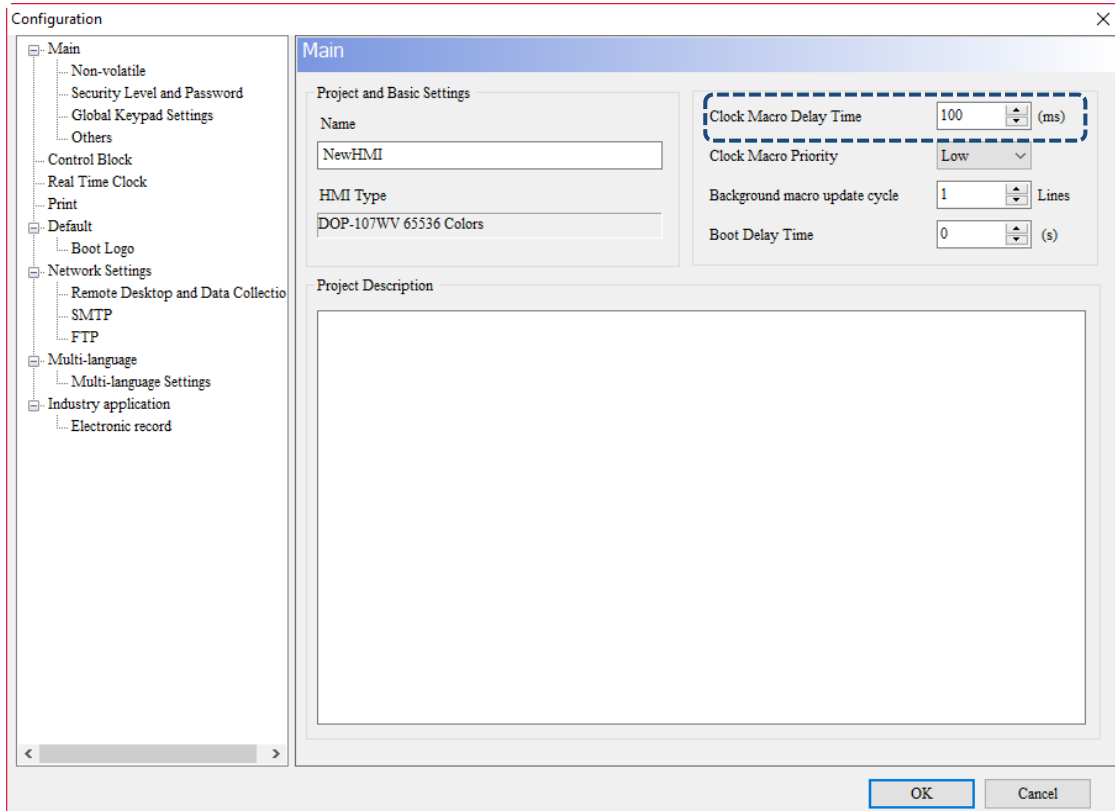


Figure 24.1.10.2 Clock Macro Delay Time

Clock Macro also provides you with the function to prioritize the execution of the Clock Macro, which provides the selections of Low, Medium, and High. Set the Clock Macro Priority, and when the priority is higher, it ensures the Clock Macro Delay Time is more accurate.

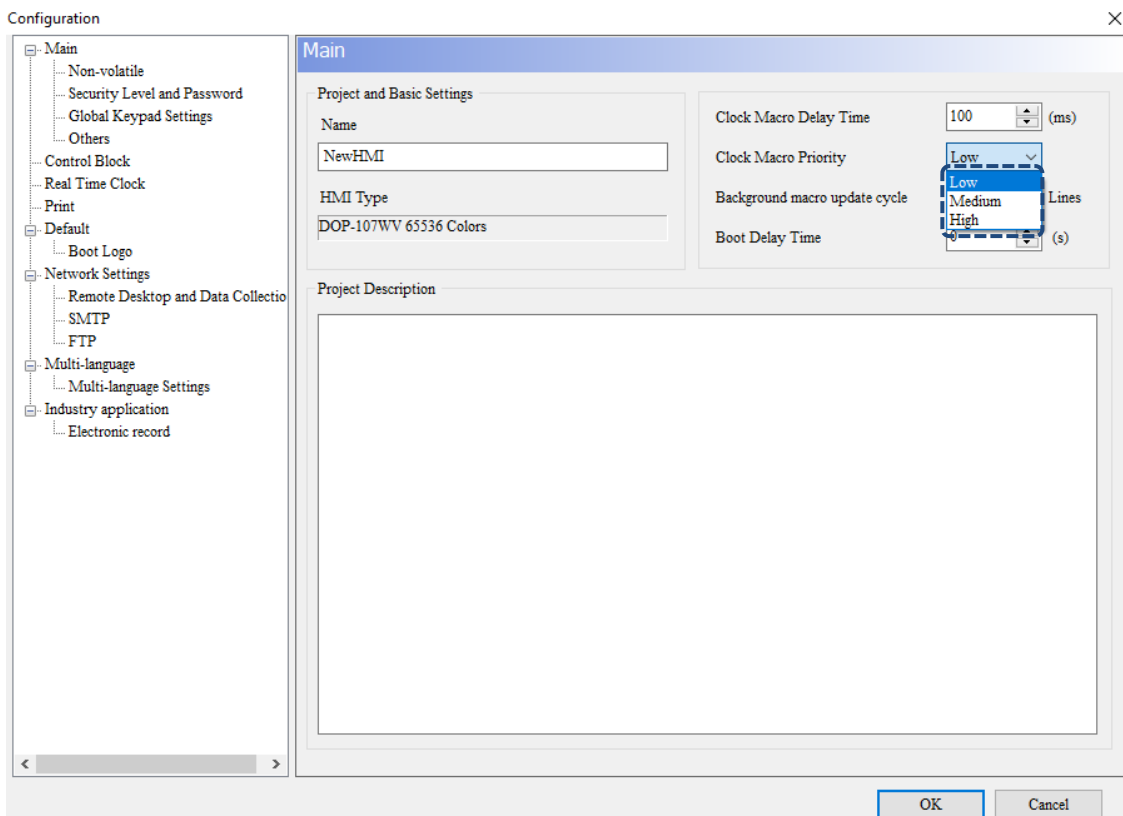


Figure 24.1.10.3 Clock Macro Priority

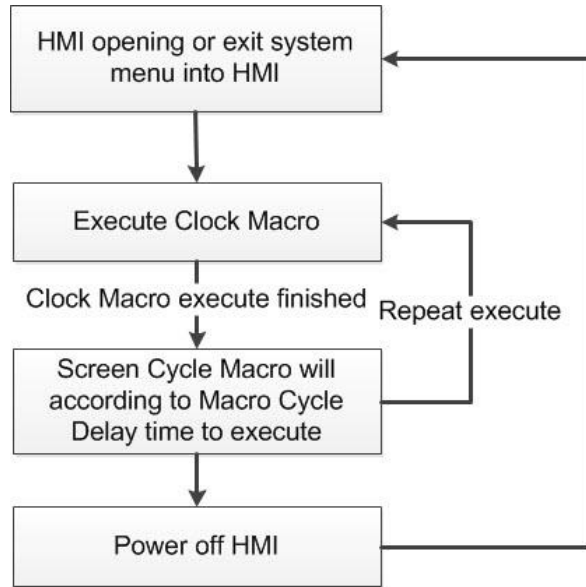


Figure 24.1.10.4 Flowchart of Clock Macro

24

24.2 Macro edit window

Go to the macro screen to be edited to start editing the macros. The maximum lines for each type of macros is 512 lines and the maximum words is 640 bytes or 640 words. The right side of the macro edit window can only record a maximum of 10 recently-opened macros. If there are more than 10 records, the first macro will be closed and a new macro will be added. If the first macro record is updated before being closed, the system will prompt you to save the first macro before adding the new macro.

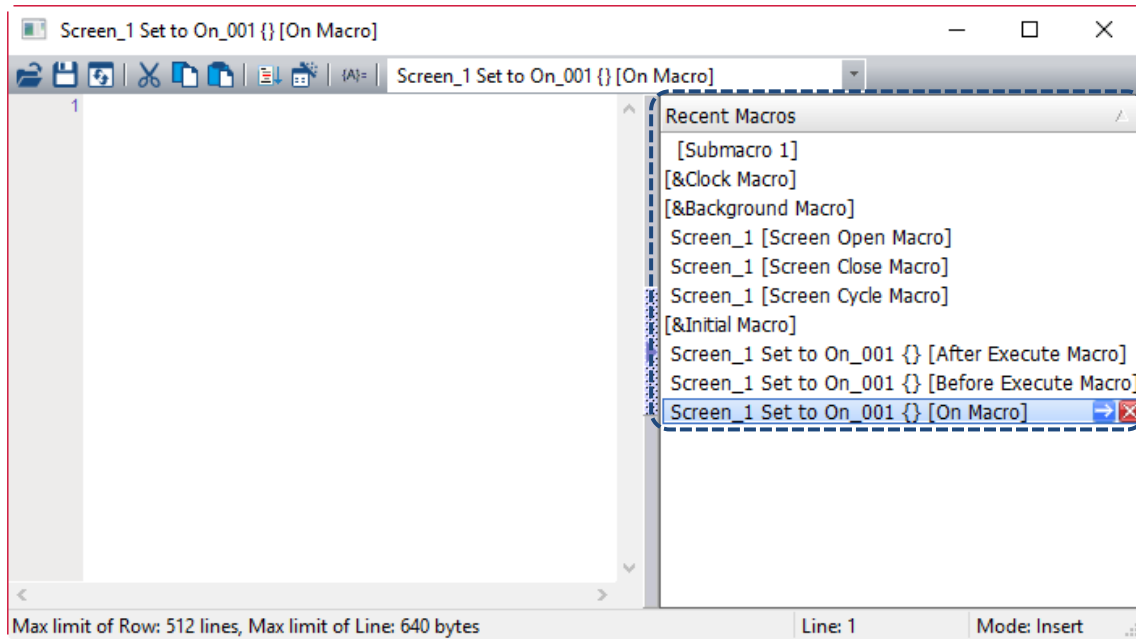


Figure 24.2.1 Macro edit window

Each macro has a toolbar to assist you in planning and editing macro commands.

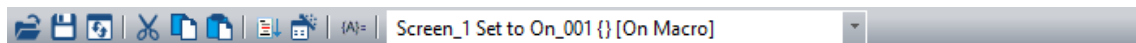

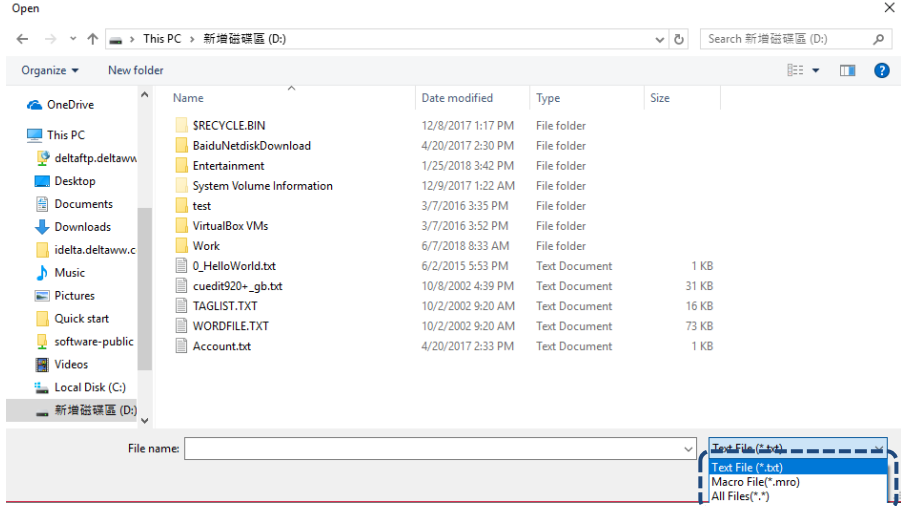

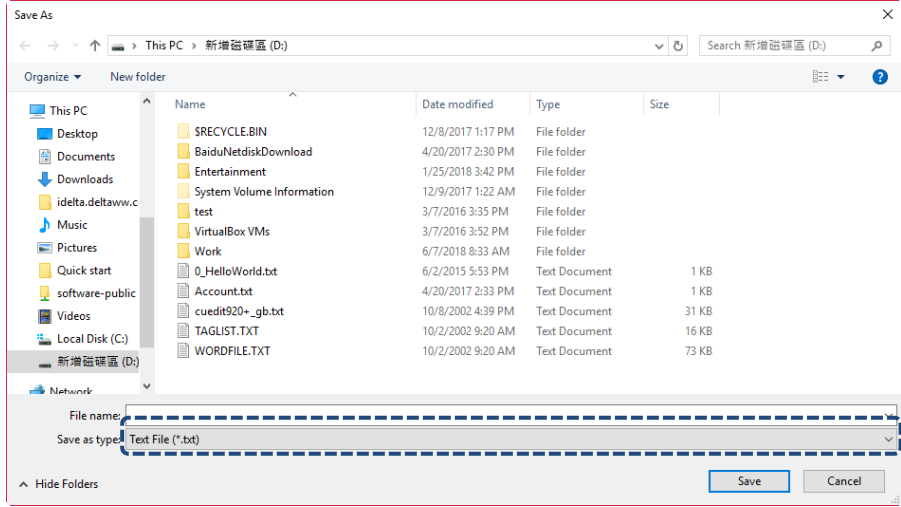









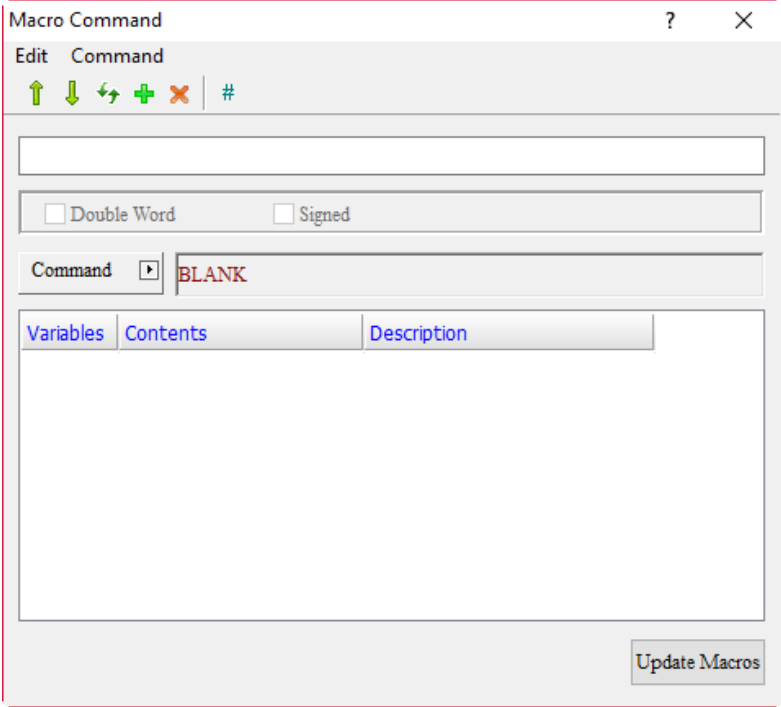




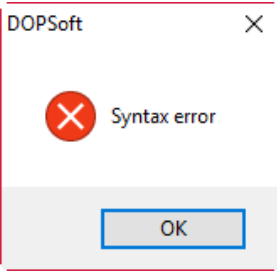
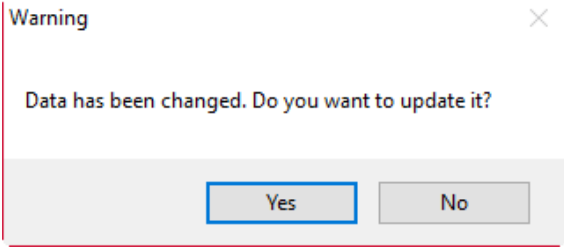
Figure 24.2.2 Macro toolbar



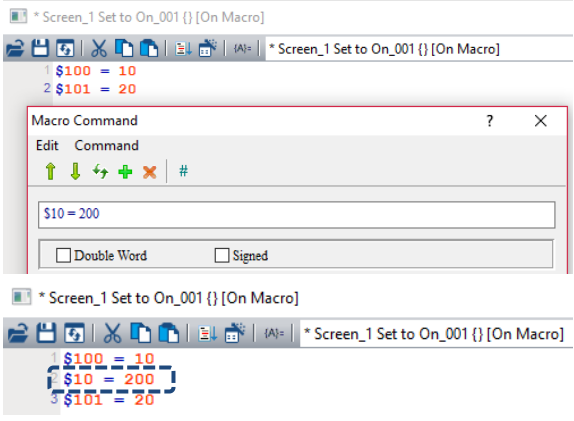



The functions in the macro toolbar are shown in the following table.



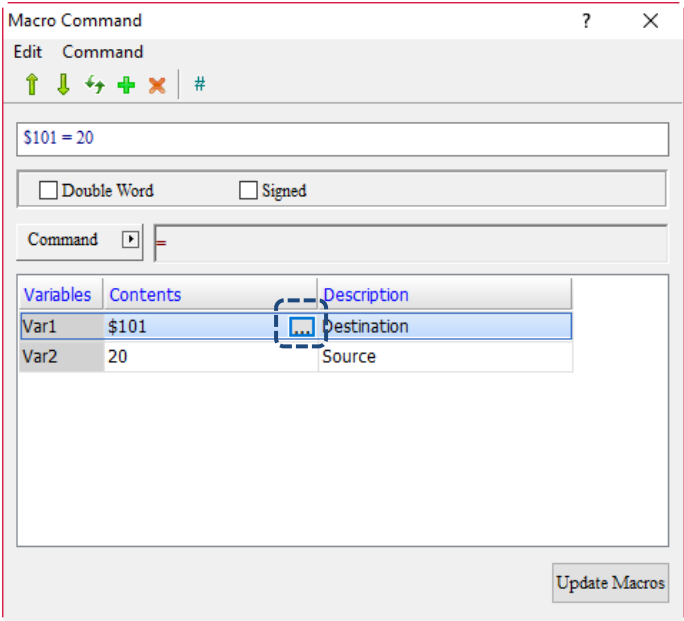

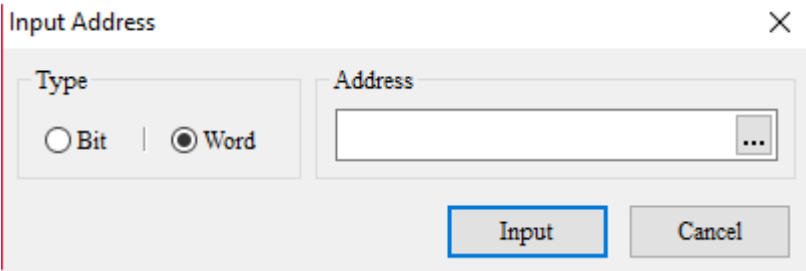
Figure 24.2.1 Description of macro toolbar functions

Macro toolbar functions		
Icon	Function	Content
	Open	<p>The Open function is equivalent to the action of import. The software provides two formats: txt and mro. You can import edited macros to reduce the time for repeated editing.</p> 
	Save	<p>The Save function is equivalent to the action of export. The software only provides the txt format for saving. You can save the edited macros for backup or for use of other screens.</p> 

Macro toolbar functions		
Icon	Function	Content
	Update	<ul style="list-style-type: none"> The Update function is to update the modified macro contents and check the macro syntax as well. If you close the macro edit window without executing , the software will inform you that the macro has been changed. <div style="border: 1px solid red; padding: 5px; margin: 10px 0;"> <p>The macro has been changed. ✕</p> <p>Update the edited macro contents.</p> <p style="text-align: center;"> <input type="button" value="Yes"/> <input type="button" value="No"/> <input type="button" value="Cancel"/> </p> </div> If  is executed, the current syntax will be checked. If there are syntax errors, the software will show the following message. <div style="border: 1px solid red; padding: 5px; margin: 10px 0;"> <p>DOPSoft ✕</p> <p>Failed to check macro syntax. : Line 1</p> <p style="text-align: center;"><input type="button" value="OK"/></p> </div>
	Cut	Operations of Cut, Copy, and Paste are the same as those of Office. You can also execute Cut, Copy, and Paste with the keyboard shortcuts (cut: Ctrl + X; copy: Ctrl + C; paste: Ctrl + V).
	Copy	
	Paste	
	Syntax check	<p>The function of Syntax check is used to make sure that macro commands are correct. An error message will pop up if there is any syntax error.</p> <div style="border: 1px solid red; padding: 5px; margin: 10px 0;"> <p>DOPSoft ✕</p> <p>Failed to check macro syntax. : Line 1</p> <p style="text-align: center;"><input type="button" value="OK"/></p> </div> <p>Note: the Syntax check function is not equivalent to macro compilation. You need to execute the compile function to compile macros.</p>

Macro toolbar functions		
Icon	Function	Content
		<p>The Macro Wizard function provides convenient and easy input of macro commands, which are less error-prone than manually entering macro commands.</p> 
	Macro Wizard	<ul style="list-style-type: none"> <p>Up</p>  <ul style="list-style-type: none"> You can move the cursor up or down You can select to move to which line by using the Up and Down functions. <p>Down</p> 
	Edit	<ul style="list-style-type: none"> <p>Update</p>  <ul style="list-style-type: none"> Execute the Update button and check whether the syntax of macro command is correct. If there are syntax errors, an error message will pop up.  If you change data and close the Macro Wizard window without updating it, the software will also display a message asking if you want to update the data as it has been changed. 

Macro toolbar functions		
Icon	Function	Content
	Macro Wizard	<p>Edit</p> <p>Insert </p> <p>■ Insert (add) a line of macro command. The new macro command will be inserted above the macro command of which the cursor has selected and the original one will be moved down.</p> 
		<p>Delete </p> <p>Delete the macro command of which the cursor has selected. If there are other macro commands below the deleted one, they will be moved up automatically. If the cursor has selected a line without a macro command, the delete action is invalid.</p>
		<p>Comment </p> <p>The function of Comment is to help you manage macros, improve readability, and simply maintenance. You can simply type the symbol "#" in the macro edit screen, or use the [Edit] > [Comment] on the Macro Wizard or click , and then write comments or macro programs. The comments written will not be executed in macros.</p>
	Command	<p>■ Command includes all functions of macro commands which are shown as follows:</p> <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <ul style="list-style-type: none"> Arithmetic > Logical Operation > Data transfer > Data Conversion > Comparison > FlowControl > Bit Setting > Communication > Drawing > File Access > Others > </div> <p>■ For a detailed description of macro command functions, refer to Section 24.3 Macro commands.</p>

Macro toolbar functions										
Icon	Function	Content								
	Macro Wizard	<p>Macro commands provide 32 bits and signed number operations. The command will be operated with signed number if Signed is checked and will be operated with unsigned number if it is not checked. The command will be operated with 32 bits if Double Word is checked and will be operated with 16 bits if it is not checked.</p> <table border="1"> <tr> <td>Unsigned</td> <td>Unsigned number</td> </tr> <tr> <td>Signed</td> <td>Signed number</td> </tr> <tr> <td>Word</td> <td>16-bit data</td> </tr> <tr> <td>DW (Double Word)</td> <td>32-bit data</td> </tr> </table>	Unsigned	Unsigned number	Signed	Signed number	Word	16-bit data	DW (Double Word)	32-bit data
		Unsigned	Unsigned number							
		Signed	Signed number							
		Word	16-bit data							
DW (Double Word)	32-bit data									
Signed	Note: if the macro command is set to Double Word, two registers will be occupied for each memory in the command.									
Command	The Command function is the same as the Command function in the Macro Wizard window, which is used to select macro commands. Refer to Section 24.3 Macro commands for more details.									
	Macro Wizard	<p>You can directly click  to set parameters if the variables are required in macro commands.</p> 								
	Input Address	<p>You can input the PLC memory address to be used in the macro through the Input Address function to prevent inputting the wrong address.</p> 								

24.3 Macro commands

Macro commands include Arithmetic, Logical Operation, Data transfer, Data Conversion, Comparison, FlowControl, Bit Setting, Communication, Drawing, File Access, and Others.

Arithmetic	>
Logical Operation	>
Data transfer	>
Data Conversion	>
Comparison	>
FlowControl	>
Bit Setting	>
Communication	>
Drawing	>
File Access	>
Others	>

Figure 24.3.1 Types of macro commands

A list of macro commands are shown in the following table.

Macro type	Command	Expression	Description
Arithmetic	+	Var1 = Var2 + Var3	Addition
	-	Var1 = Var2 - Var3	Subtraction
	*	Var1 = Var2 * Var3	Multiplication
	/	Var1 = Var2 / Var3	Division
	%	Var1 = Var2 % Var3	Remainder
	+*/	Var1 = Var2	Arithmetic
	MUL64	Var1 = MUL64(Var2, Var3) (Signed DW)	64-bit multiplication
	ADDSUMW	Var1 = ADDSUMW(Var2, Var3)	Accumulative
	FADD	Var1 = FADD(Var2, Var3) (Signed DW)	Floating-point number addition
	FSUB	Var1 = FSUB(Var2, Var3) (Signed DW)	Floating-point number subtraction
	FMUL	Var1 = FMUL(Var2, Var3) (Signed DW)	Floating-point number multiplication
	FDIV	Var1 = FDIV(Var2, Var3) (Signed DW)	Floating-point number division
	FMOD	Var1 = FMOD(Var2, Var3) (Signed DW)	Floating-point number remainder
	SIN	Var1 = SIN(Var2) (Signed DW)	Sine function
	COS	Var1 = COS(Var2) (Signed DW)	Cosine function
	TAN	Var1 = TAN(Var2) (Signed DW)	Tangent function
	COT	Var1 = COT(Var2) (Signed DW)	Cotangent function
	SEC	Var1 = SEC(Var2) (Signed DW)	Secant function
CSC	Var1 = CSC(Var2) (Signed DW)	Cosecant function	

Macro type	Command	Expression	Description
Logical Operation	|	Var1 = Var2 | Var3	OR logical operation
	&&	Var1 = Var2 && Var3	AND logical operation
	^	Var1 = Var2 ^ Var3	XOR logical operation
	NOT	Var1 = NOT Var2	NOT logical operation
	<<	Var1 = Var2 << Var3	SHL (left shift) logical operation
	>>	Var1 = Var2 >> Var3	SHR (right shift) logical operation
Data transfer	MOV	Var1 = Var2	Data specified operand
	BMOV	BMOV(Var1, Var2, Var3)	Copy block
	ArrayCopy	Var1 = ArrayCopy(Var2, Var3, Var4, Var5, Var6)	Copy array
	FILL	FILL(Var1, Var2, Var3)	Fill block
	FILLASC	FILLASC(Var1, " ")	Convert text to ASCII values
	STRCAT	Var1 = STRCAT(Var2, Var3, Var4)	Connection string
	FMOV	Var1 = FMOV(Var2) (Signed DW)	Specify floating-point number data
Data Conversion	BCD	Var1 = BCD(Var2)	Convert decimal values to BCD values
	BIN	Var1 = BIN(Var2)	Convert BCD values to decimal values
	TODWORD	Var1 = TODWORD(Var2)	Convert values from Word to Double Word
	TOWORD	Var1 = TOWORD(Var2, Var3)	Convert values from Byte to Word
	TOBYTE	Var1 = TOBYTE(Var2, Var3)	Convert values from Word to Byte
	SWAP	SWAP(Var1, Var2, Var3)	Swap high and low bytes of Word
	XCHG	XCHG(Var1, Var2, Var3)	Exchange value data
	MAX	Var1 = MAX(Var2, Var3)	Get maximum
	MIN	Var1 = MIN(Var2, Var3)	Get minimum
	TOHEX	Var1 = TOHEX(Var2)	Convert 4 ASCII characters to Word hexadecimal integers
	TOASC	Var1 = TOASC(Var2)	Convert a hexadecimal integer of Word to 4 Word ASCII characters
	FCNV	Var1 = FCNV(Var2) (Signed DW)	Convert an integer to a floating-point number
	ICNV	Var1 = ICNV(Var2) (Signed DW)	Convert a floating-point number to an integer
	SPRINTF	Var1 = SPRINTF(Var2, "%u", Var4)	Format string

24

Macro type	Command	Expression		Description	
Comparison	IF ... THEN GOTO	IF ==	IF Var1 == Var2 THEN GOTO LABEL Var3	If... GOTO execute according to the specified label name	
		IF !=	IF Var1 != Var2 THEN GOTO LABEL Var3		
		IF >	IF Var1 > Var2 THEN GOTO LABEL Var3		
		IF >=	IF Var1 >= Var2 THEN GOTO LABEL Var3		
		IF <	IF Var1 < Var2 THEN GOTO LABEL Var3		
		IF <=	IF Var1 <= Var2 THEN GOTO LABEL Var3		
		IF AND == 0	IF (Var1 && Var2) == 0 THEN GOTO LABEL Var3		
		IF AND != 0	IF (Var1 && Var2) != 0 THEN GOTO LABEL Var3		
		IF == ON	IF Var1 == ON THEN GOTO LABEL Var2		
		IF == OFF	IF Var1 == OFF THEN GOTO LABEL Var2		
		IFB == ON	IFB Var1 == ON THEN GOTO LABEL Var2		
		IFB == OFF	IFB Var1 == OFF THEN GOTO LABEL Var2		
	IF ... THEN CALL		IF == CALL	IF Var1 == Var2 THEN CALL Var3	If...call submacro
			IF != CALL	IF Var1 != Var2 THEN CALL Var3	
			IF > CALL	IF Var1 > Var2 THEN CALL Var3	
			IF >= CALL	IF Var1 >= Var2 THEN CALL Var3	
			IF < CALL	IF Var1 < Var2 THEN CALL Var3	
			IF <= CALL	IF Var1 <= Var2 THEN CALL Var3	
			IF AND == 0 CALL	IF (Var1 && Var2) == 0 THEN CALL Var3	
			IF AND != 0 CALL	IF (Var1 && Var2) != 0 THEN CALL Var3	
IF == ON CALL			IF Var1 == ON THEN CALL Var2		
IF == OFF CALL			IF Var1 == OFF THEN CALL Var2		

Macro type	Command	Expression		Description	
Comparison	IF...	IF ==	IF Var1 == Var2	Logical comparison	
		IF !=	IF Var1 != Var2		
		IF >	IF Var1 > Var2		
		IF >=	IF Var1 >= Var2		
		IF <	IF Var1 < Var2		
		IF <=	IF Var1 <= Var2		
		IF AND == 0	IF (Var1 && Var2) == 0		
		IF AND != 0	IF (Var1 && Var2) != 0		
		IF == ON	IF Var1 == ON		
		IF == OFF	IF Var1 == OFF		
	ELSEIF...	ELSEIF...	ELSEIF ==	ELSEIF Var1 == Var2	Logical comparison
			ELSEIF !=	ELSEIF Var1 != Var2	
			ELSEIF >	ELSEIF Var1 > Var2	
			ELSEIF >=	ELSEIF Var1 >= Var2	
			ELSEIF <	ELSEIF Var1 < Var2	
			ELSEIF <=	ELSEIF Var1 <= Var2	
			ELSEIF AND == 0	ELSEIF (Var1 && Var2) == 0	
			ELSEIF AND != 0	ELSEIF (Var1 && Var2) != 0	
			ELSEIF == ON	ELSEIF Var1 == ON	
			ELSEIF == OFF	ELSEIF Var1 == OFF	
	ELSE	ELSE	Logical comparison		
	ENDIF	ENDIF	Logical comparison		
	FCMP	Var1 = FCMP(Var2, Var3) (Signed DW)	Comparison of floating-point value		
FlowControl	GOTO	GOTO LABEL Var1	Go to a label unconditionally (LABEL)		
	LABEL	LABEL Var1	Label		
	CALL	CALL Var1	Call submacro		
	RET	RET	Exit submacro		
	FOR	FOR Var1	Program loop		
	NEXT	NEXT			
	END	END	End macro program		
Bit Setting	BITON	BITON Var1	Set the bit to On		
	BITOFF	BITOFF Var1	Set the bit to Off		
	BITNOT	BITOFF Var1	Inverse bit (ON→OFF, OFF→ON)		
	GETB	Var1 = GETB Var2	Get bit value		

24

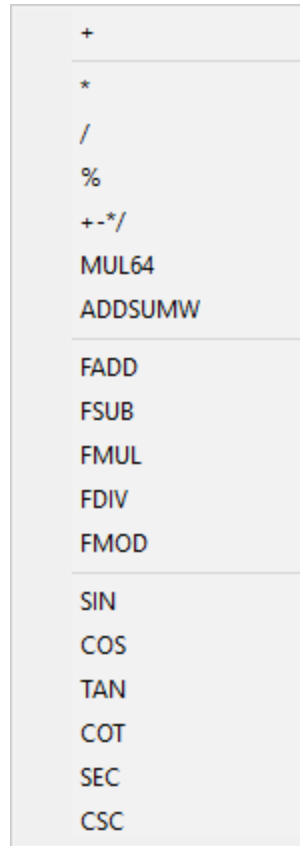
Macro type	Command	Expression	Description
Communication	INITCOM	Var1 = INITCOM(Var2, Var3, Var4, Var5, Var6, Var7, Var8)	COM PORT initialization
	ADDSUM	Var1 = ADDSUM(Var2, Var3)	Calculate CHECKSUM by addition
	XORSUM	Var1 = XORSUM(Var2, Var3)	Calculate CHECKSUM by XOR
	PUTCHARS	Var1 = PUTCHARS(Var2, Var3, Var4)	Export characters via the communication port
	GETCHARS	Var1 = GETCHARS(Var2, Var3, Var4)	Get characters via the communication port
	SELECTCOM	SELECTCOM(Var1)	Select COM Port
	CLEARCOMBUFFER	CLEARCOMBUFFER(Var1, Var2)	Clear buffer of Com Port
	CHRCHKSUM	Var1 = CHRCHKSUM("Var2", Var3, Var4)	Calculate the length and checksum of string
	LOCKCOM	Var1 = LOCKCOM(Var2, Var3)	Lock COM Port
	UNLOCKCOM	UNLOCKCOM(Var1)	Unlock COM Port
	STATION CHK	Var1 = STATIONCHK(Var2, Var3)	Check COM Port communication state
	STATIONON	STATIONON(Var1, Var2)	Station On
	STATIONOFF	STATIONOFF(Var1, Var2)	Station Off
	IPON	Var1 = IPON(Var2, Var3, Var4, Var5, Var6)	Enable IP address
	IPOFF	Var1 = IPOFF(Var2, Var3, Var4, Var5, Var6)	Disable IP address
IPCHANGE	Var1 = IPCHANGE(Var2, Var3, Var4, Var5, Var6, Var7)	Change the IP address of the connecting controller and the communication port	
Drawing	RECTANGLE	RECTANGLE(Var1)	Rectangle
	LINE	LINE(Var1)	Line
	POINT	POINT(Var1)	Point
	CIRCLE	CIRCLE(Var1)	Circle
File Access	FileSlotRead	Var1 = FileSlotRead(Var2, Var3, Var4, Var5)	Read file
	FileSlotWrite	Var1 = FileSlotWrite(Var2, Var3, Var4, Var5)	Write file
	FileSlotRemove	Var1 = FileSlotRemove(Var2)	Remove file
	FileSlotGetLength	Var1 = FileSlotGetLength(Var2, Var3)	Read length of file
	FileSlotExport	Var1 = FileSlotEXPORT(Var2, Var3, Var4, Var5)	Export file
	FileSlotImport	Var1 = FileSlotIMPORT(Var2, Var3, Var4, Var5)	Import file

Macro type	Command	Expression	Description
Others	Time Tick	Var1 = TIMETICK	Get the time from the start of the system up to now
	GETLASTERROR	Var1 = GETLASTERROR	Get the error value of the previous command
	Comment	#	Comment
	Delay	Delay(Var1)	Delay
	GETSYSTEMTIME	Var1 = GETSYSTEMTIME	Get system time
	SETSYSTEMTIME	SETSYSTEMTIME(Var1)	Set system time
	GETHISTORY	Var1 = GETHISTORY(Var2, Var3, Var4, Var5, Var6)	Get history data
	EXPORT	EXPORT(Var1)	Export list
	EXRCP16	Var1 = EXRCP16(Var2, Var3)	Export 16-bit Recipe
	IMRCP16	Var1 = IMRCP16(Var2, Var3)	Import 16-bit Recipe
	EXRCP32	Var1 = EXRCP32(Var2, Var3)	Export 32-bit Recipe
	IMRCP32	Var1 = IMRCP32(Var2, Var3)	Import 32-bit Recipe
	EXENRCP	Var1 = EXENRCP(Var2, Var3)	Export enhanced recipe
	IMENRCP	Var1 = IMENRCP(Var2, Var3)	Import enhanced recipe
	EXHISTORY	Var1 = EXHISTORY(Var2, Var3, Var4)	Export history data
	EXALARM	Var1 = EXALARM(Var2, Var3)	Export alarm data
	DISKFORMAT	Var1 = DISKFORMAT(Var2)	Format disk
	BMPCAPTURE	Var1 = BMPCAPTURE(Var2)	Screen capture
	PLCDOWNLOAD	Var1 = PLCDOWNLOAD(Var2, Var3, Var4, Var5, Var6)	Download DVP or ISP file to PLC via the HMI
	OPENSREEN	OPENSREEN(Var1)	Open screen
	CLOSESUBSCREEN	CLOSESUBSCREEN(Var1)	Close subscreen
	GetCircleCenter	Var1 = GetCircleCenter(Var2, Var3)	Calculate the coordinates of the center of a circle
	VAR	VAR Var1	Variable

24.3.1 Arithmetic

Arithmetic includes integer and floating-point operations. Its macro commands are detailed below.

24



+
*
/
%
+-* /
MUL64
ADDSUMW
FADD
FSUB
FMUL
FDIV
FMOD
SIN
COS
TAN
COT
SEC
CSC

Figure 24.3.1.1 Arithmetic

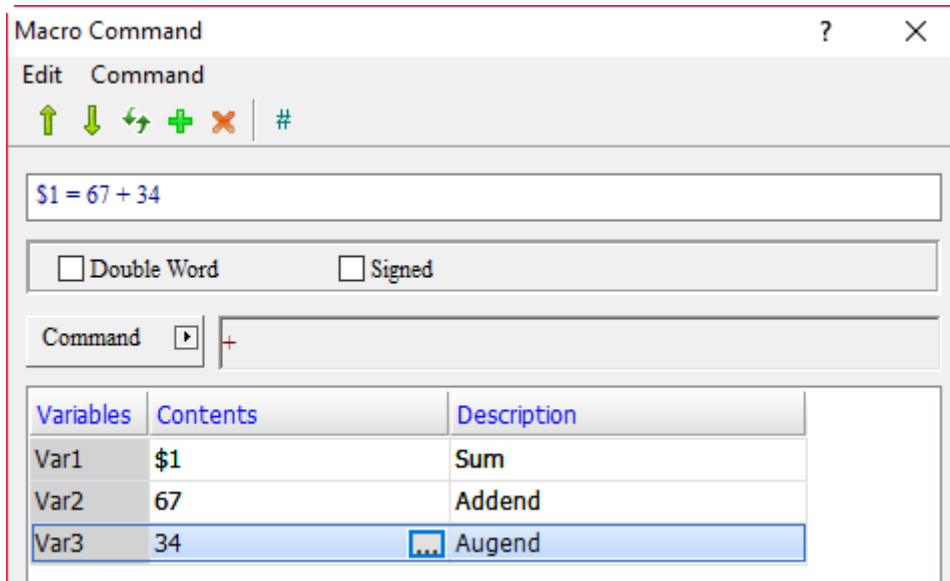
- + (addition)

Expression	Meaning of variable		Note
Var1 = Var2 + Var3 (W) Var1 = Var2 + Var3 (DW) Var1 = Var2 + Var3 (Signed W) Var1 = Var2 + Var3 (Signed DW)	Var1	Sum	W: Word DW: Double Word Signed: signed number
	Var2	Addend	
	Var3	Augend	
	Description of action		
	Add Var2 and Var3, and put the result in Var1.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is `$1 = 67 + 34`, the addition operation is executed and the result of `67 + 34` is put in `$1`, so `$1 = 101`.

24

- - (subtraction)

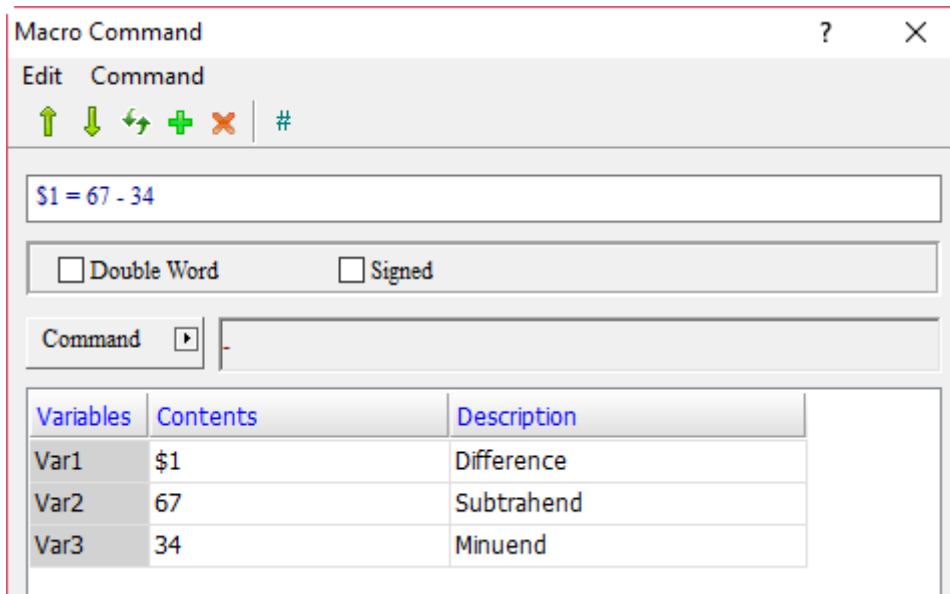
Expression	Meaning of variable		Note
	Var1 = Var2 - Var3 (W) Var1 = Var2 - Var3 (DW) Var1 = Var2 - Var3 (Signed W) Var1 = Var2 - Var3 (Signed DW)	Var1		Difference
Var2		Subtrahend	
Var3		Minuend	
Description of action			
		Subtract Var2 from Var3, and put the result in Var1.	

W: Word
 DW: Double Word
 Signed: signed number

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = 67 - 34, the subtraction operation is executed and the result of 67 - 34 is put in \$1, so \$1 = 33.

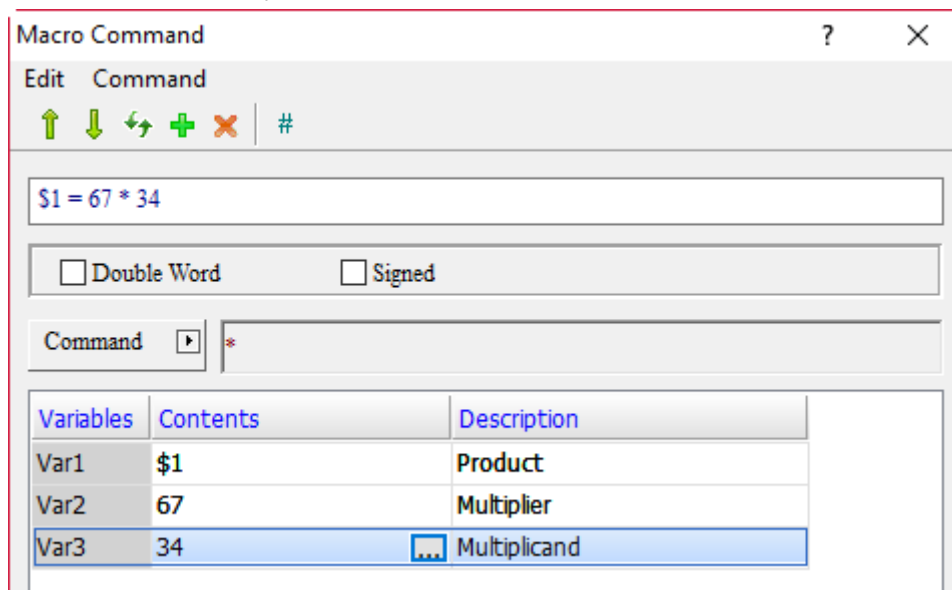
- * (multiplication)

Expression	Meaning of variable		Note
Var1 = Var2 * Var3 (W) Var1 = Var2 * Var3 (DW) Var1 = Var2 * Var3 (Signed W) Var1 = Var2 * Var3 (Signed DW)	Var1	Product	W: Word DW: Double Word Signed: signed number
	Var2	Multiplier	
	Var3	Multiplicand	
	Description of action		
	Multiply Var2 by Var3, and put the result in Var1.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is `$1 = 67 * 34`, the multiplication operation is executed and the result of `67 * 34` is put in `$1`, so `$1 = 2278`.

24

- / (division)

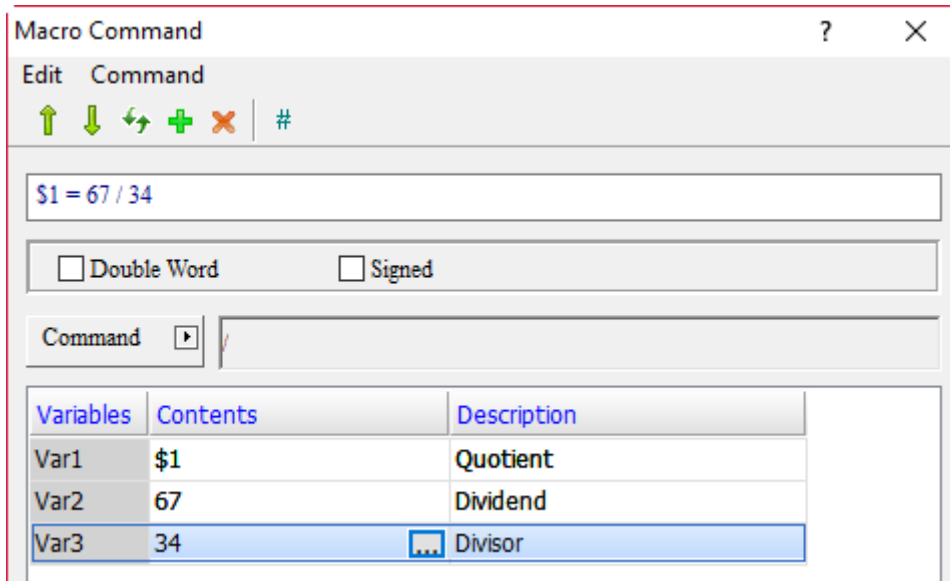
Expression	Meaning of variable		Note
Var1 = Var2 / Var3 (W) Var1 = Var2 / Var3 (DW) Var1 = Var2 / Var3 (Signed W) Var1 = Var2 / Var3 (Signed DW)	Var1	Quotient	W: Word DW: Double Word Signed: signed number
	Var2	Dividend	
	Var3	Divisor	
	Description of action		
	Divide Var2 by Var3 and put the result in Var1.		

Note: Var3 cannot be 0

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is `$1 = 67 / 34`, the division operation is executed and the result of `67 / 34` is put in `$1`, so `$1 = 1`.

- % (remainder)

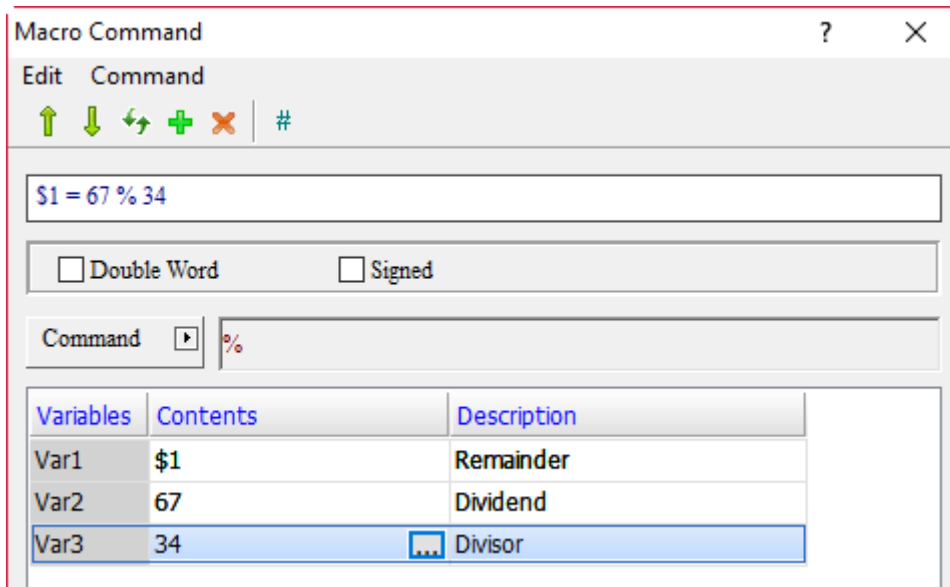
Expression	Meaning of variable		Note
Var1 = Var2 % Var3 (W) Var1 = Var2 % Var3 (DW) Var1 = Var2 % Var3 (Signed W) Var1 = Var2 % Var3 (Signed DW)	Var1	Remainder	W: Word DW: Double Word Signed: signed number
	Var2	Dividend	
	Var3	Divisor	
	Description of action		
	Divide Var2 by Var3 and put the remainder in Var1.		

Note: Var3 cannot be 0

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is `$1 = 67 % 34`, the remainder operation is executed and the result of `67 % 34` is put in `$1`, so `$1 = 33`.

24

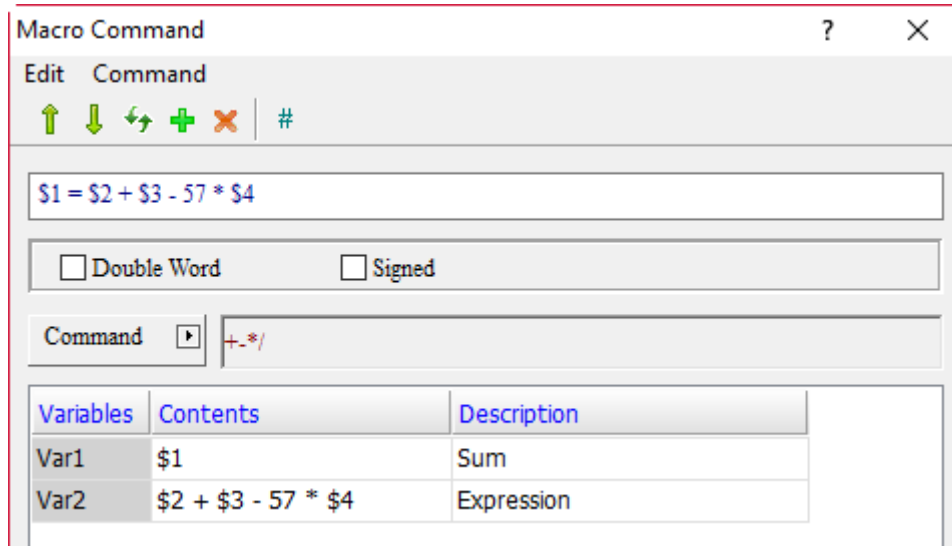
■ **+*/** (arithmetic)

Expression	Meaning of variable		Note
Var1 = Var2 (W) Var1 = Var2 (DW) Var1 = Var2 (Signed W) Var1 = Var2 (Signed DW)	Var1	Sum	W: Word DW: Double Word Signed: signed number
	Var2	Expression	
	Description of action		
	Put the result of Var2 expression in Var1.		

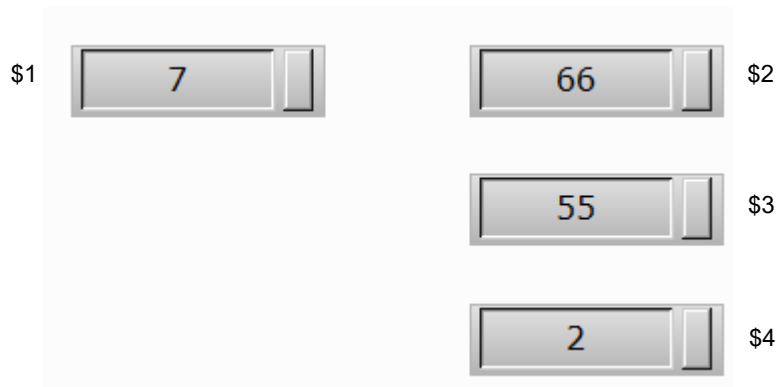
Variable	Type			
	Internal memory	PLC register	Constant	String
Var1	v	v		
Var2				v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = \$2 + \$3 - 57 * \$4, the arithmetic operations will be executed, and the result of \$2 + \$3 subtracting 57 * \$4 will be put in \$1. Take the following figure as an example. Input 66, 55, and 2 into \$2, \$3, and \$4 respectively, and the result in \$1 will be 7.



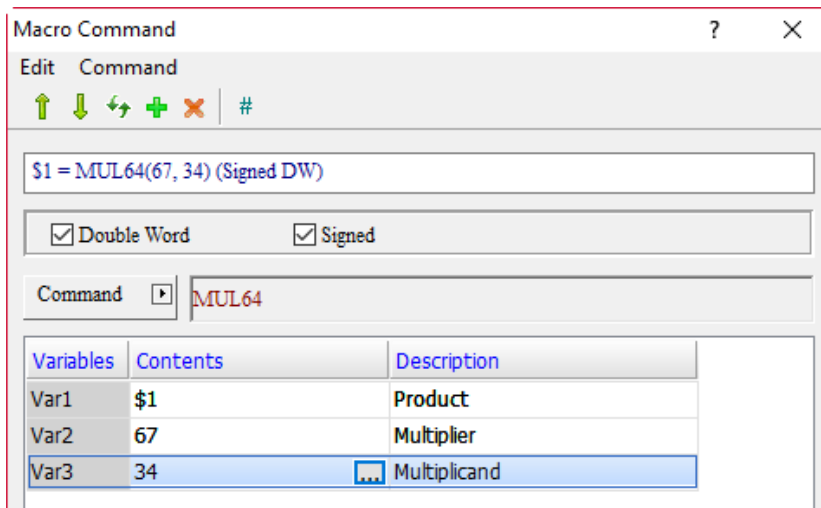
■ MUL64 (64-bit multiplication)

Expression	Meaning of variable		Note
Var1 = MUL64(Var2, Var3) (W) Var1 = MUL64(Var2, Var3) (DW) Var1 = MUL64(Var2, Var3) (Signed W) Var1 = MUL64(Var2, Var3) (Signed DW)	Var1	Product	W: Word DW: Double Word Signed: signed number
	Var2	Multiplier	
	Var3	Multiplicand	
	Description of action		
Multiple Var3 by Var2, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

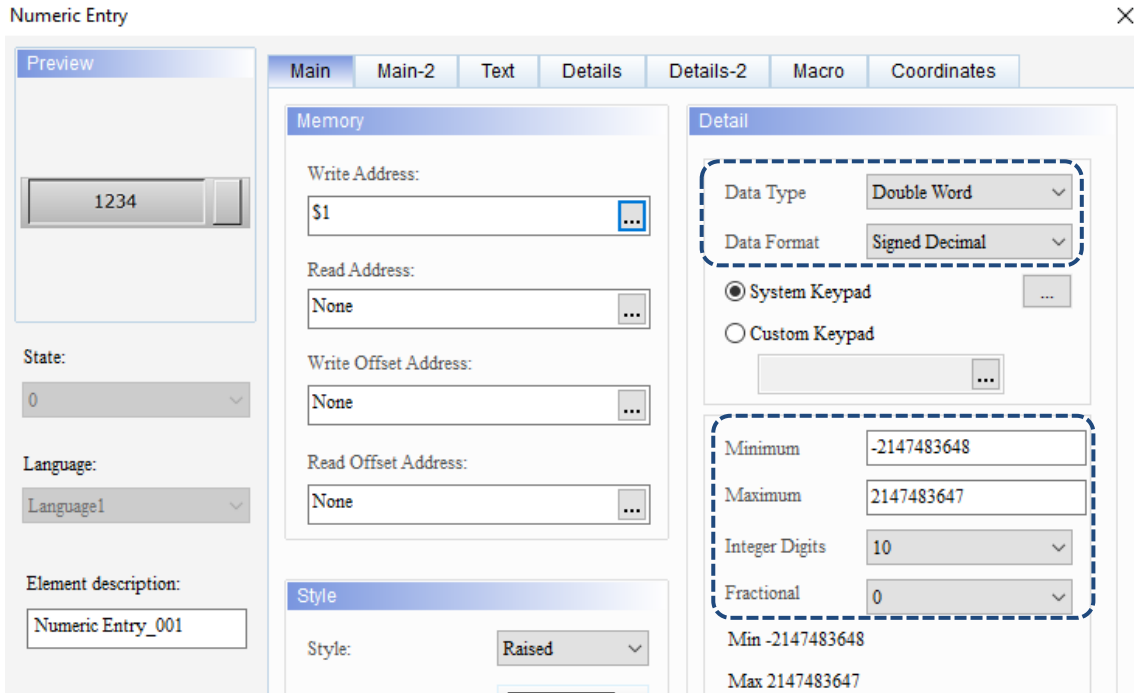
- Var1 is the internal memory address, and Var2 and Var3 are constants.



24

Example

- If Double Word is checked, set the Data Type of the elements to Double Word so as to save the correct value.



- When the command is \$1 = MUL64(67, 34), the MUL64 bit multiplication is executed and the result of 67 multiplied by 34 is put in \$1, so \$1 = 2278.

■ ADDSUMW (accumulation)

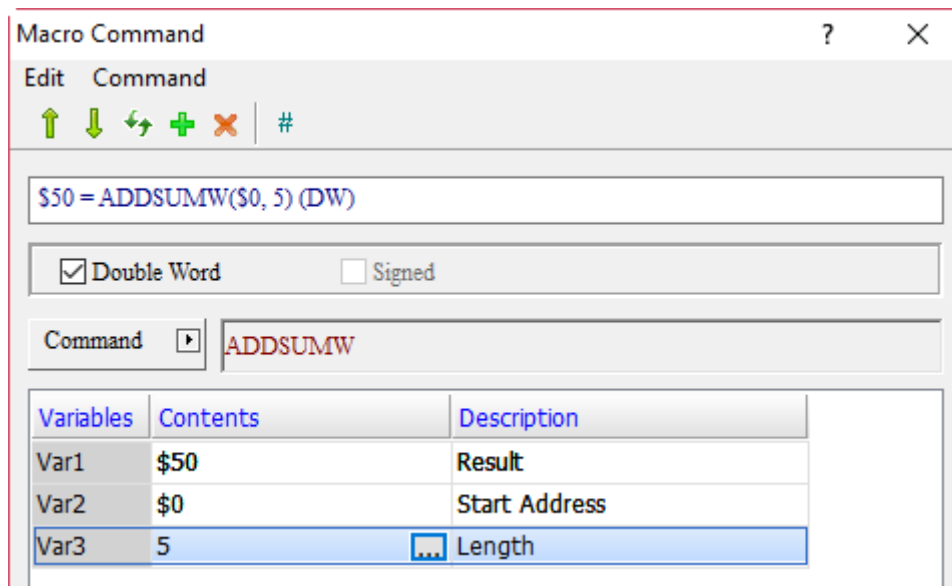
Expression	Meaning of variable		Note
Var1 = ADDSUMW(Var2, Var3) (W) Var1 = ADDSUMW(Var2, Var3) (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Start address	
	Var3	Length	
	Description of action		
	Add up Var3 length addresses continuously from Var2 start address, and put the result in Var1.		

Note: if Double Word is selected, the Start Address increments by 2 to Length; if Word is selected, it increments by 1.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 and Var2 are the internal memory addresses, Var3 is a constant, and Double Word is checked.
- Memory address increments by 2 addresses from \$0 to 5 lengths: \$0, \$2, \$4, \$6, \$8.



- Enter \$0 = 1, \$2 = 2, \$4 = 3, \$6 = 4, and \$8 = 5, and put the accumulated value in \$50, so \$50 = 15.

24

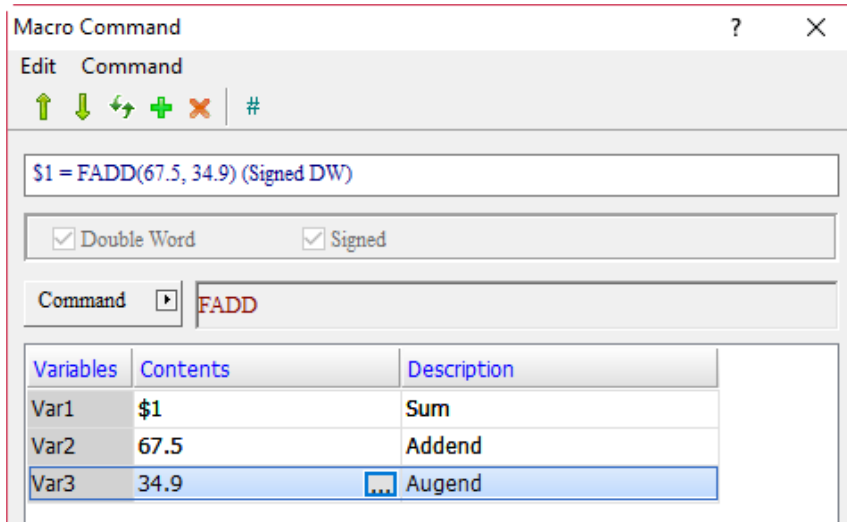
- FADD (floating-point number addition)

Expression	Meaning of variable		Note
Var1 = FADD(Var2, Var3) (Signed DW)	Var1	Sum	DW: Double Word Signed: signed number
	Var2	Addend	
	Var3	Augend	
	Description of action		
Add Var2 and Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FADD(67.5, 34.9), the floating-point number addition operation is executed and the result of 67.5 plus 34.9 is put in \$1, so \$1 = 102.4.

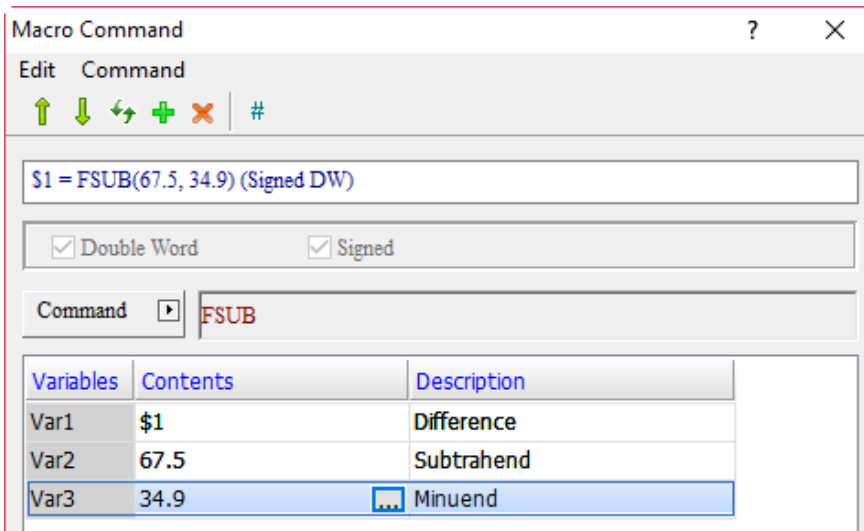
- FSUB (floating-point number subtraction)

Expression	Meaning of variable		Note
Var1 = FSUB(Var2, Var3) (Signed DW)	Var1	Difference	DW: Double Word Signed: signed number
	Var2	Subtrahend	
	Var3	Minuend	
	Description of action		
Subtract Var2 from Var3, and put the result in Var 1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FSUB(67.5, 34.9), the floating-point number subtraction operation is executed and the result of 67.5 minus 34.9 is put in \$1, so \$1 = 32.6.

24

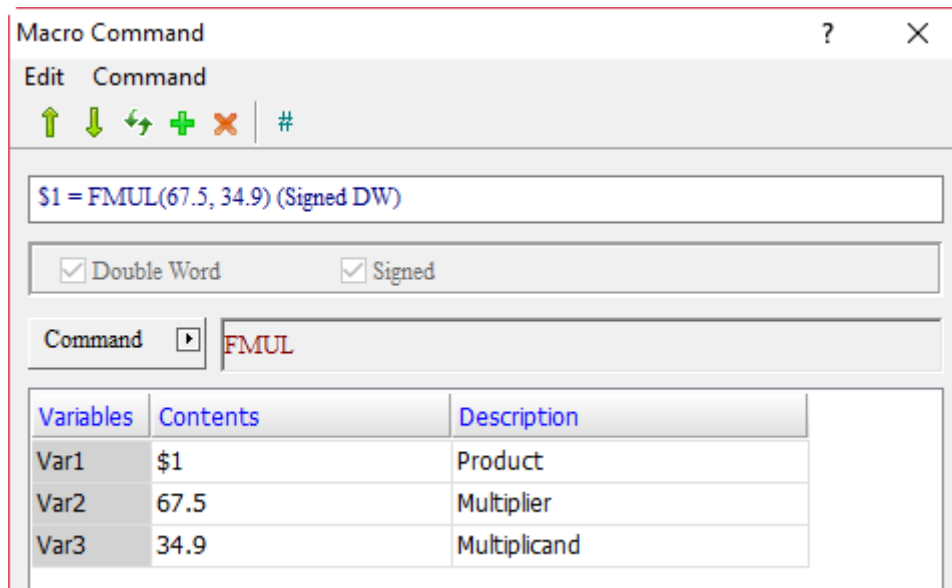
- FMUL (floating-point number multiplication)

Expression	Meaning of variable		Note
Var1 = FMUL(Var2, Var3) (Signed DW)	Var1	Product	DW: Double Word Signed: signed number
	Var2	Multiplier	
	Var3	Multiplicand	
	Description of action		
Multiply Var 3 by Var 2, and put the result in Var 1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FMUL(67.5, 34.9), the floating-point number multiplication is executed and the result of 67.5 multiplied by 34.9 is put in \$1, so \$1 = 2355.75.

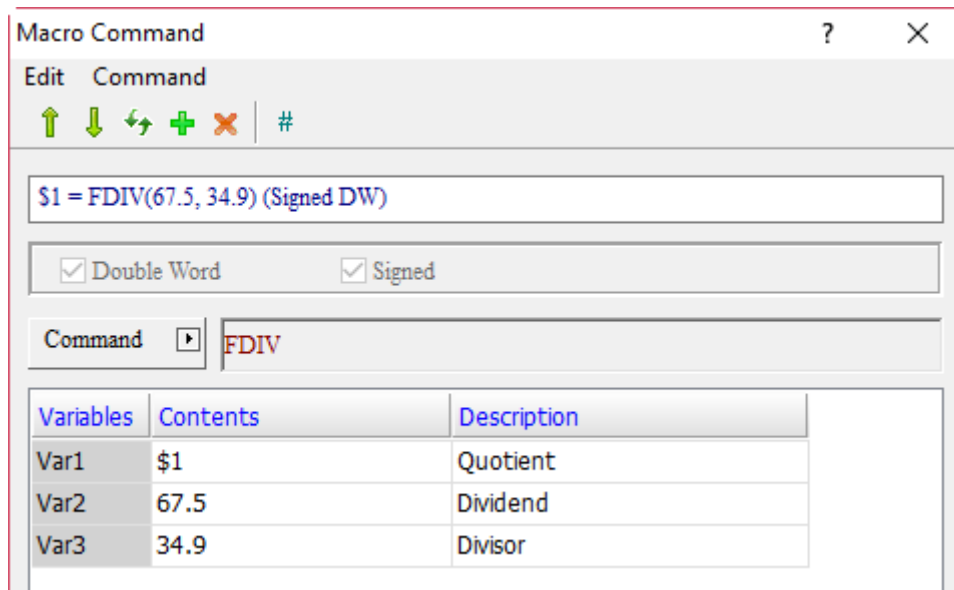
- FDIV (floating-point number division)

Expression	Meaning of variable		Note
Var1 = FDIV(Var2, Var3) (Signed DW)	Var1	Quotient	DW: Double Word Signed: signed number
	Var2	Dividend	
	Var3	Divisor	
	Description of action		
Divide Var 2 by Var 3, and put the result in Var 1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is `$1 = FDIV(67.5, 34.9)`, the floating-point number division operation is executed and the result of 67.5 divided by 34.9 is put in \$1, so `$1 = 1.934`.

24

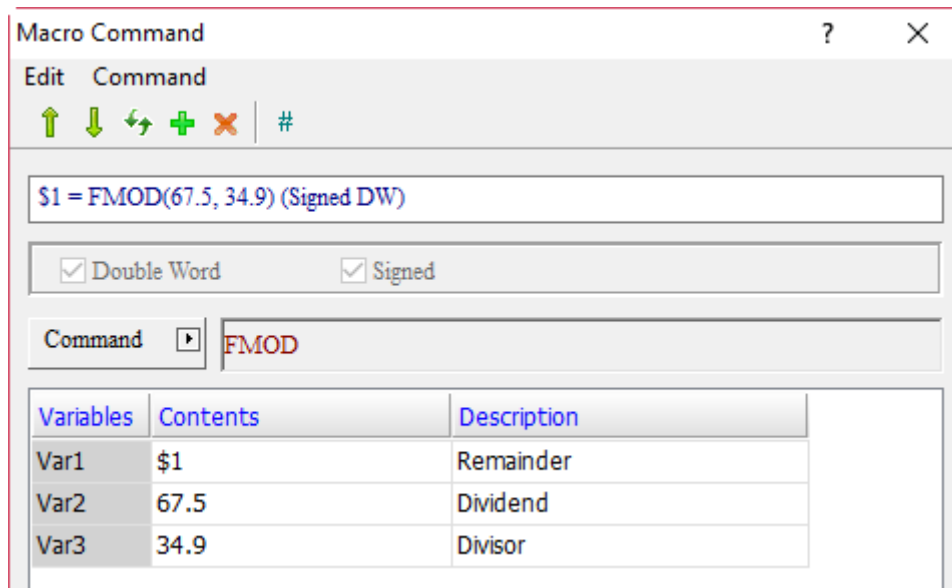
- FMOD (floating-point number remainder)

Expression	Meaning of variable		Note
Var1 = FMOD(Var2, Var3) (Signed DW)	Var1	Remainder	DW: Double Word Signed: signed number
	Var2	Dividend	
	Var3	Divisor	
	Description of action		
Divide Var2 by Var3 and put the remainder in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FMOD(67.5, 34.9), the floating-point number remainder operation is executed and the remainder of 67.5 divided by 34.9 is put in \$1, so \$1 = 32.6.

■ SIN (sine function)

Expression	Meaning of variable		Note
Var1 = SIN(Var2) (Signed DW)	Var1	Sine	DW: Double Word Signed: signed number
	Var2	Angle	
	Description of action		
	Sine operation is executed for the value input in Var2, and the result is put in Var1.		

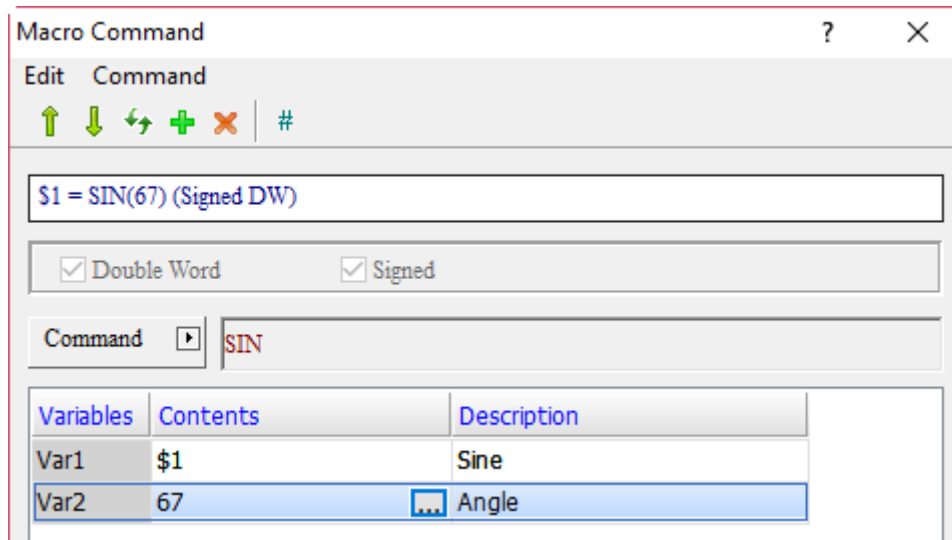
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = SIN(67), the input angle of 67 is used for sine operation and the result is put in \$1, so \$1 = 0.921.

24

■ COS (cosine function)

Expression	Meaning of variable		Comment
Var1 = COS(Var2) (Signed DW)	Var1	Cosine	DW: Double Word Signed: signed number
	Var2	Angle	
	Description of action		
		Cosine operation is executed for the value input in Var2, and the result is put in Var1.	

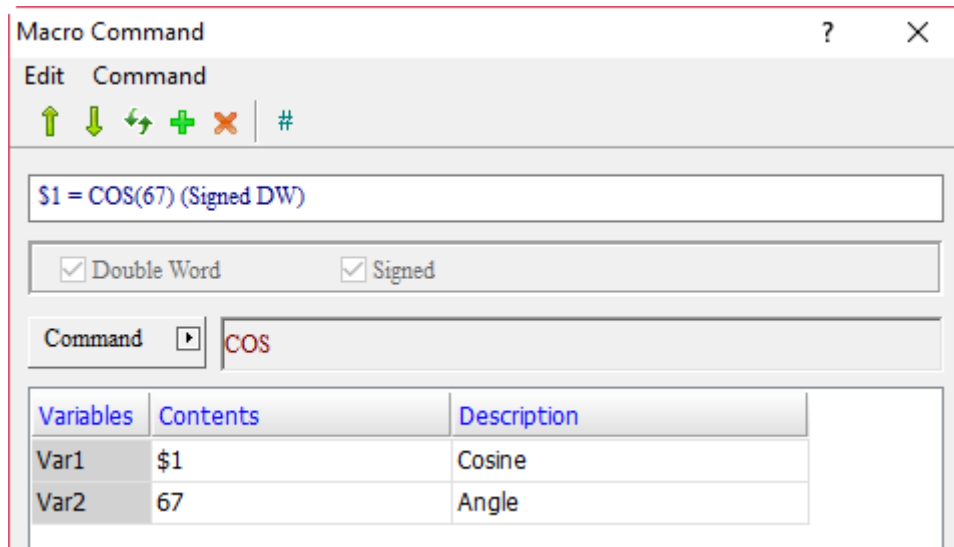
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = COS(67), the input angle of 67 is used for cosine operation and the result is put in \$1, so \$1 = 0.391.

■ TAN (tangent function)

Expression	Meaning of variable		Note
Var1 = TAN(Var2) (Signed DW)	Var1	Tangent	DW: Double Word Signed: signed number
	Var2	Angle	
	Description of action		
		Tangent operation is executed for the value input in Var2, and the result is put in Var1.	

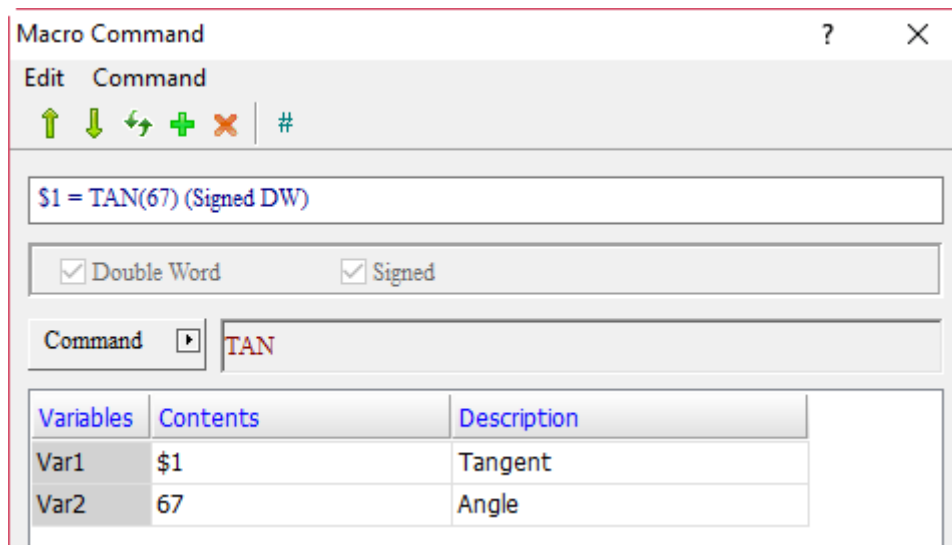
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = TAN(67), the input angle of 67 is used for tangent operation and the result is put in \$1, so \$1 = 2.356.

24

■ COT (cotangent function)

Expression	Meaning of variable		Note
Var1 = COT(Var2) (Signed DW)	Var1	Cotangent	DW: Double Word Signed: signed number
	Var2	Angle	
	Description of action		
	Cotangent operation is executed for the value input in Var2. and the result is put in Var1.		

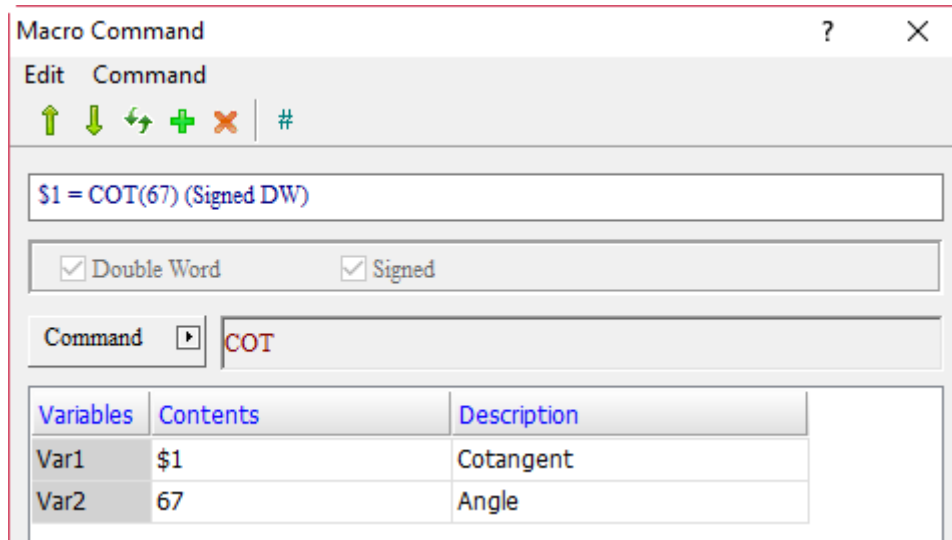
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is `$1 = COT(67)`, the input angle of 67 is used for cotangent operation and the result is put in \$1, so $\$1 = 0.424$.

■ SEC (secant function)

Expression	Meaning of variable		Note
Var1 = SEC(Var2) (Signed DW)	Var1	Secant	DW: Double Word Signed: signed number
	Var2	Angle	
	Description of action		
	Secant operation is executed for the value input in Var2, and the result is put in Var1.		

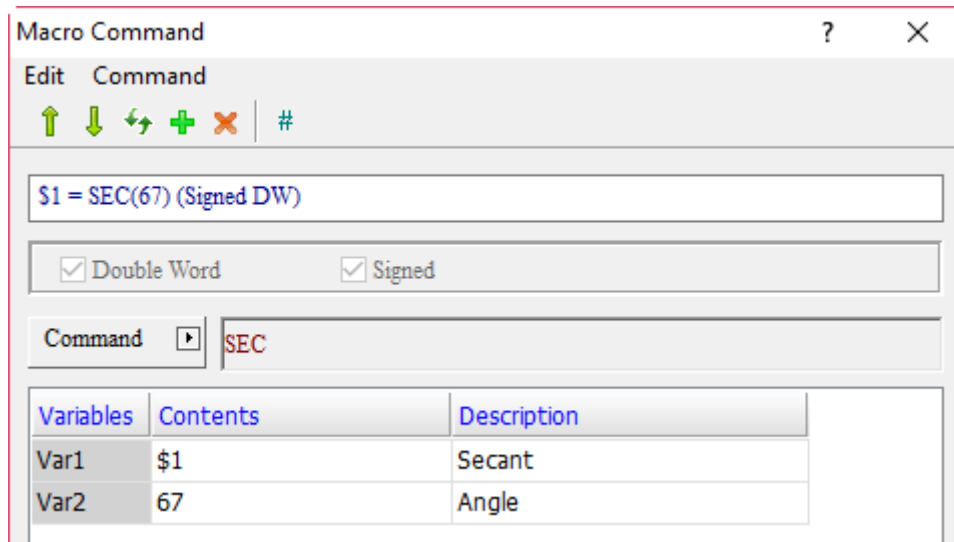
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = SEC(67), the input angle of 67 is used for secant operation and the result is put in \$1, so \$1 = 2.559.

24

■ CSC (cosecant function)

Expression	Meaning of variable		Note
Var1 = CSC(Var2) (Signed DW)	Var1	Cosecant	DW: Double Word Signed: signed number
	Var2	Angle	
	Description of action		
	Cosecant operation is executed for the value input in Var2, and the result is put in Var1.		

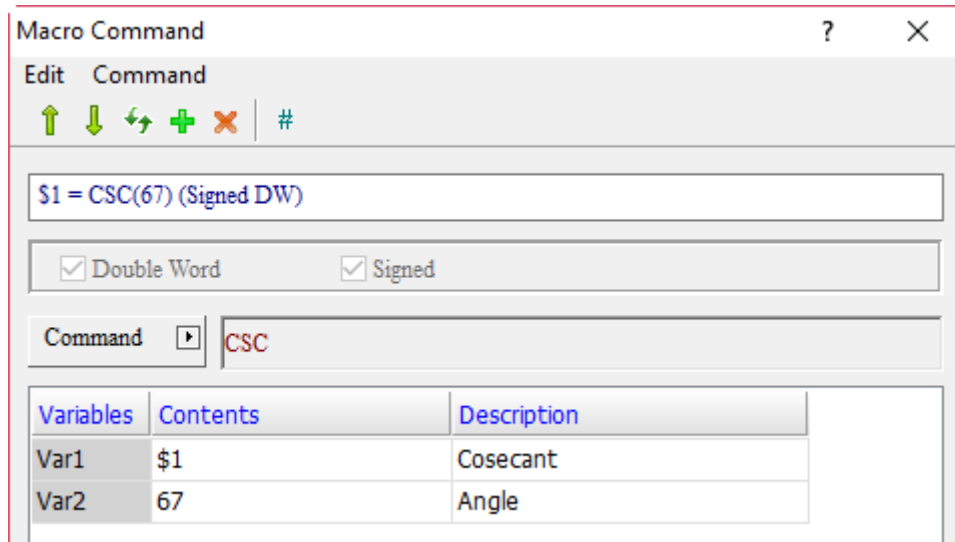
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is `$1 = CSC(67)`, the input angle of 67 is used for cosecant operation and the result is put in \$1, so `$1 = 1.086`.

24.3.2 Logical Operation

Logic Operation contains six operators which convert numerical values to binary 0 and 1 representations, and then conduct |, &&, ^, NOT, <<, and >> operations. The macro commands are detailed below.

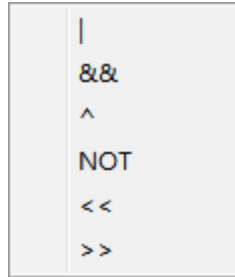


Figure 24.3.2.1 Logical Operation

■ | (OR logical operation)

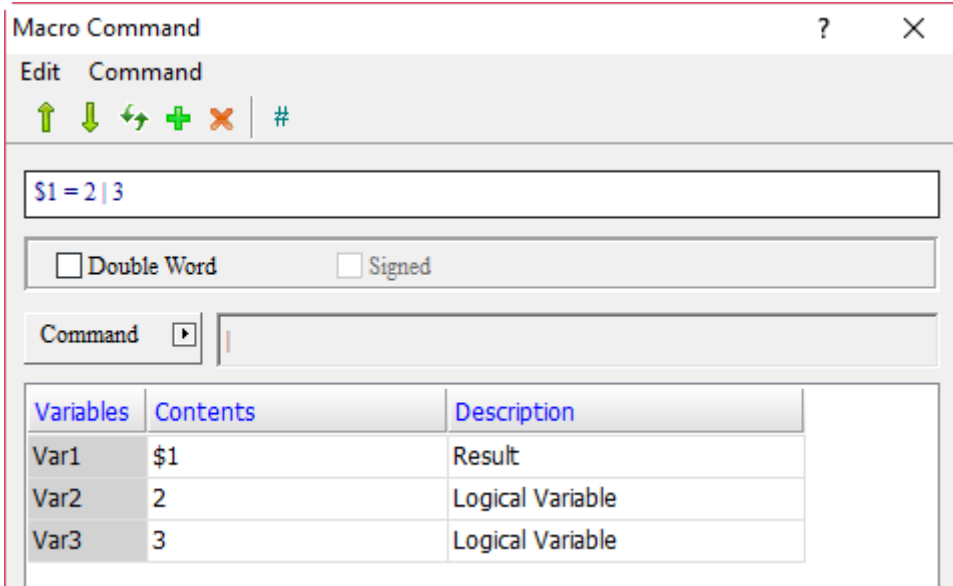
OR logical operation feature	
Expression	Result
0 | 0	0
0 | 1	1
1 | 0	1
1 | 1	1

Expression	Meaning of variable		Note
Var1 = Var2 | Var3 (W) Var1 = Var2 | Var3 (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Logical Variable	
	Var3	Logical Variable	
	Description of action		
Execute OR operation on Var2 and Var3, and put the result in Var1.			

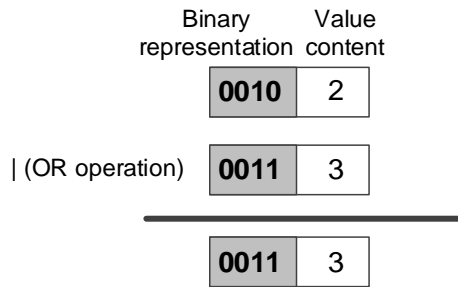
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- After converting the values of Var2 and Var3 into binary representations (2 = 0010 and 3 = 0011), execute OR logical operation on 0010 and 0011, and the result is 0011 which is also 3.



■ && (AND logical operation)

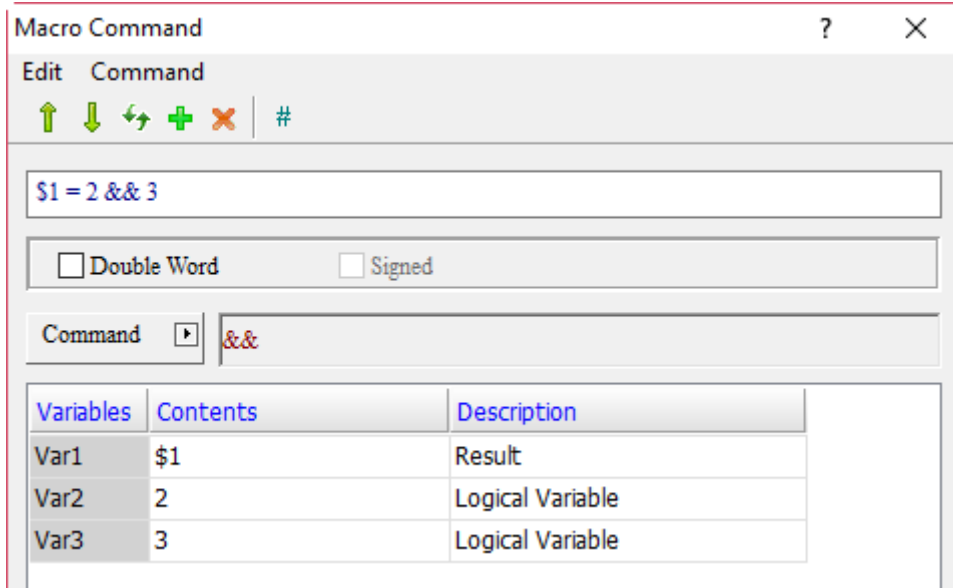
AND logical operation feature	
Expression	Result
0 && 0	0
0 && 1	0
1 && 0	0
1 && 1	1

Expression	Meaning of variable		Note
Var1 = Var2 && Var3 (W) Var1 = Var2 && Var3 (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Logical Variable	
	Var3	Logical Variable	
	Description of action		
Execute AND operation on Var2 and Var3, and put the result in Var1.			

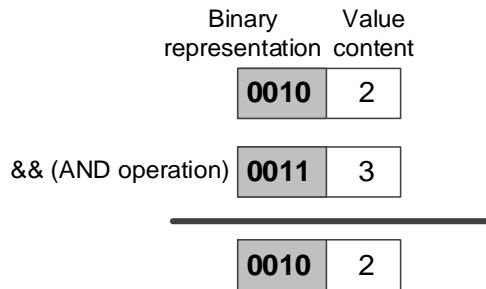
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- After converting the values of Var2 and Var3 into binary representations (2 = 0010 and 3 = 0011), execute AND logical operation on 0010 and 0011, and the result is 0010 which is also 2.



- ^ (XOR logical operation)

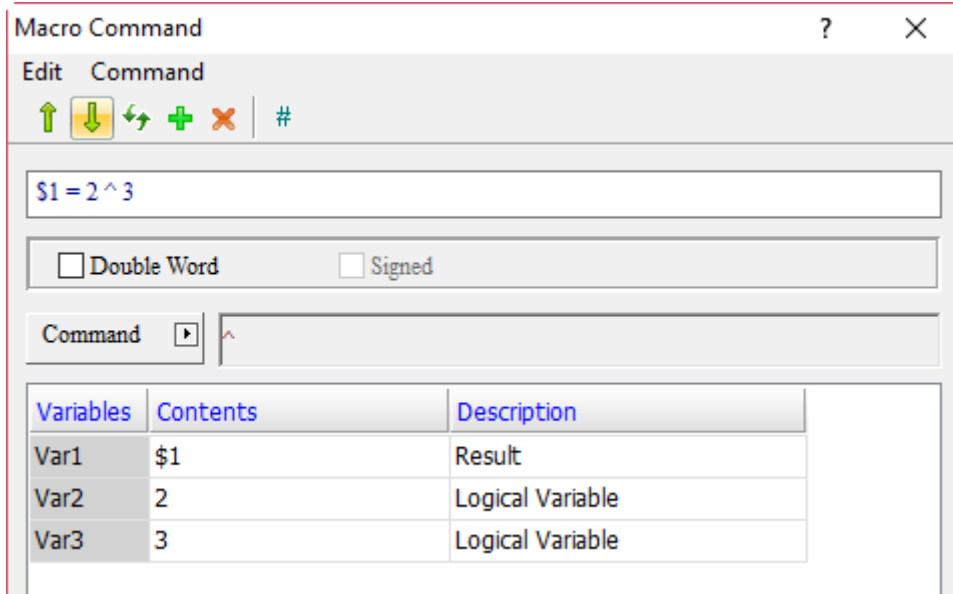
XOR logical operation feature	
Expression	Result
0 ^ 0	0
0 ^ 1	1
1 ^ 0	1
1 ^ 1	0

Expression	Meaning of variable		Note
Var1 = Var2 ^ Var3 (W) Var1 = Var2 ^ Var3 (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Logical Variable	
	Var3	Logical Variable	
	Description of action		
Execute XOR operation on Var2 and Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- After converting the values of Var2 and Var3 into binary representations (2 = 0010 and 3 = 0011), execute XOR logical operation on 0010 and 0011, and the result is 0001 which is also 1.

	Binary representation	Value content
	0010	2
^ (XOR operation)	0011	3
	0001	1

- NOT (NOT logical operation)

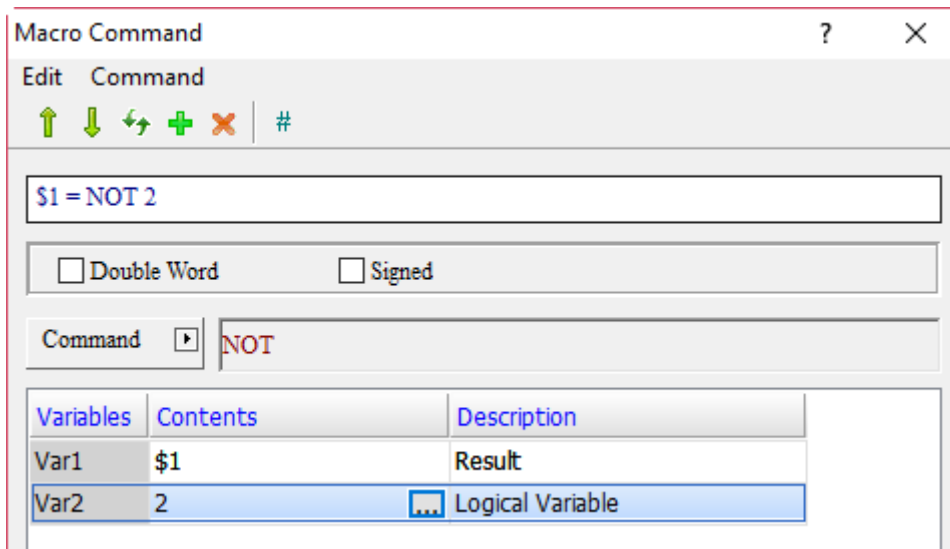
NOT logical operation feature	
Expression	Result
NOT 0	1
NOT 1	0

Expression	Meaning of variable		Note
Var1 = NOT Var2 (W) Var1 = NOT Var2 (DW) Var1 = NOT Var2 (Signed W) Var1 = NOT Var2 (Signed DW)	Var1	Result	W: Word DW: Double Word Signed: signed number
	Var2	Logical Variable	
	Description of action		
	Execute NOT operation on Var2, and put the result in Var1.		

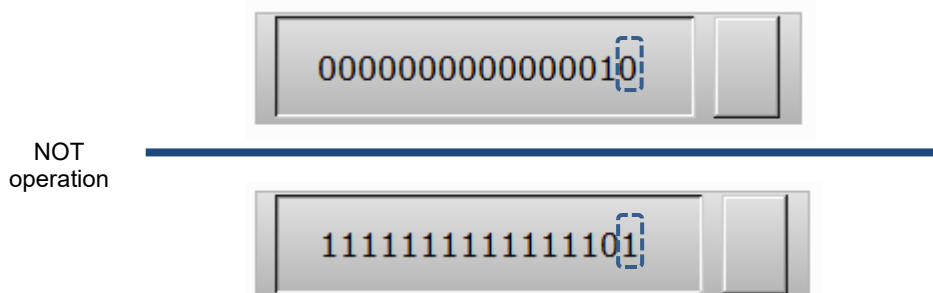
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

Example

- Var1 is the internal memory address and Var2 is a constant.



- After converting the value of Var2 into binary representation (2 = 000000000000010), execute NOT 2 logical operation on 000000000000010, and the result is 111111111111101.



24

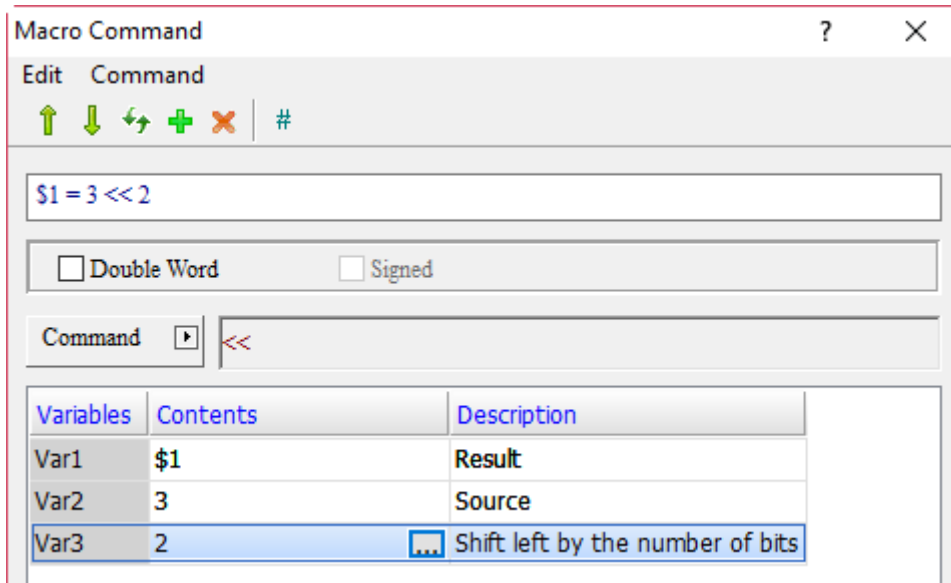
- << (SHL left shift logical operation)

Expression	Meaning of variable		Note
Var1 = Var2 << Var3 (W) Var1 = Var2 << Var3 (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Source	
	Var3	Shift left by the number of bits	
	Description of action		
Move the number of bits of Source Var2 to the left by Var3, and put the result in Var1.			

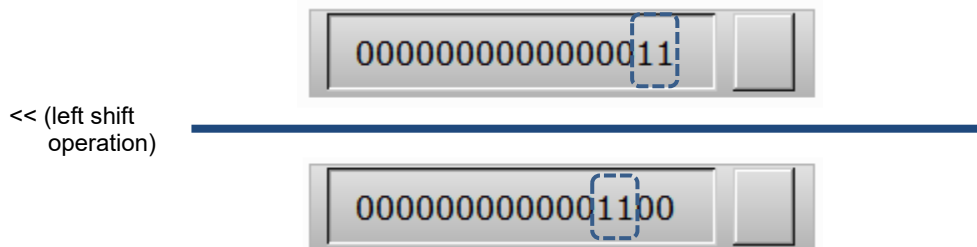
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- After converting the value of Var2 into binary representation (3 = 0000000000000011), execute the logical operation of << left shift by 2 bits on 0000000000000011, and the result is 0000000000001100.



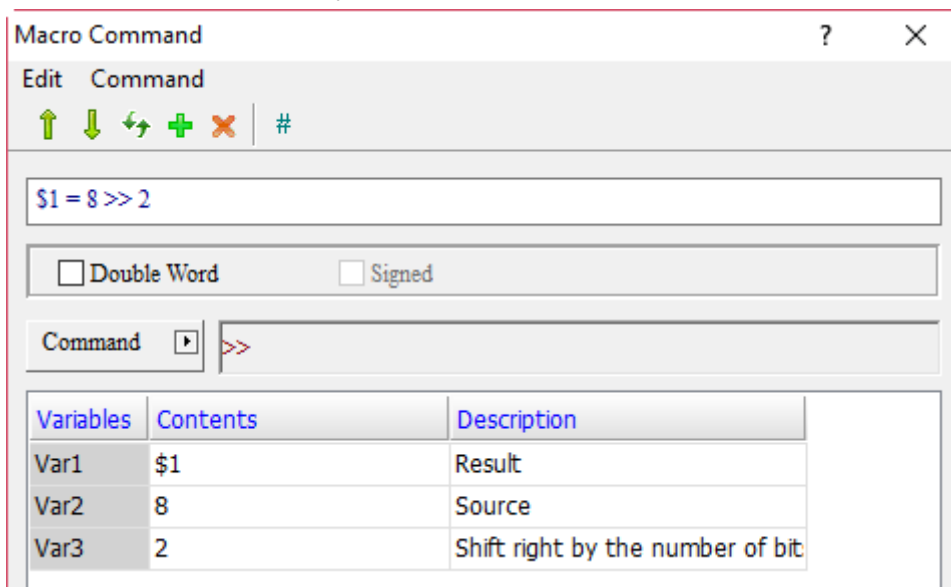
- >> (SHR right shift logical operation)

Expression	Meaning of variable		Note
Var1 = Var2 >> Var3 (W) Var1 = Var2 >> Var3 (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Source	
	Var3	Shift right by the number of bits	
	Description of action		
Move the number of bits of Source Var2 to the right by Var3, and put the result in Var1.			

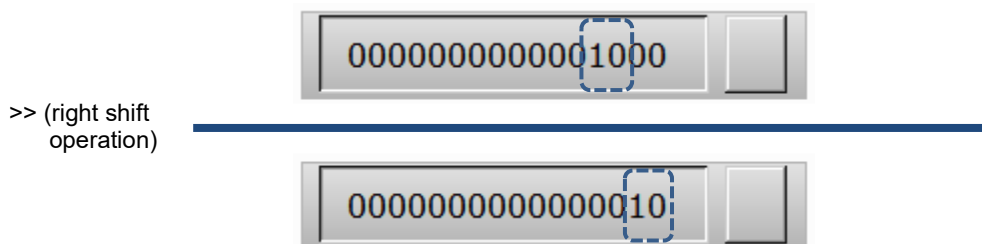
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- After converting the value of Var2 into binary representation (8 = 0000000000001000), execute the logical operation of >> right shift by 2 bits on 0000000000001000, and the result is 0000000000000100.



24.3.3 Data transfer

Data transfer includes the following transfer commands which are detailed below.

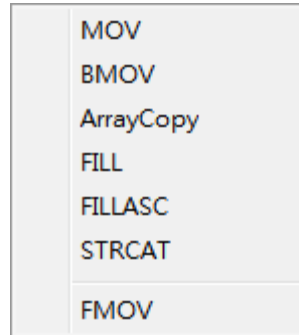


Figure 24.3.3.1 Data transfer

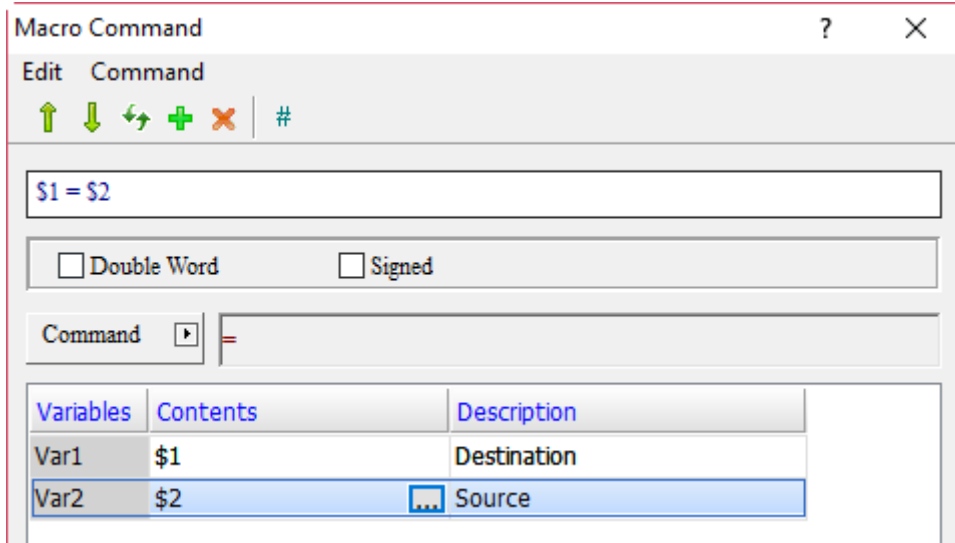
■ MOV (data specified operand)

Expression	Content		Note
Var1 = Var2 (W) Var1 = Var2 (DW) Var1 = Var2 (Signed W) Var1 = Var2 (Signed DW)	Var1	Destination	W: Word DW: Double Word Signed: signed number
	Var2	Source	
	Description of action		
	Copy the source of Var2 to the Var1 destination, and Var2's source will not be changed due to the data specify command.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

Example

- Var1 and Var2 are internal memory addresses.



- When the command \$1 = \$2 is executed, the input value of \$2 will be moved to \$1. If the input value of \$2 is 34, \$1 will equal 34.



24

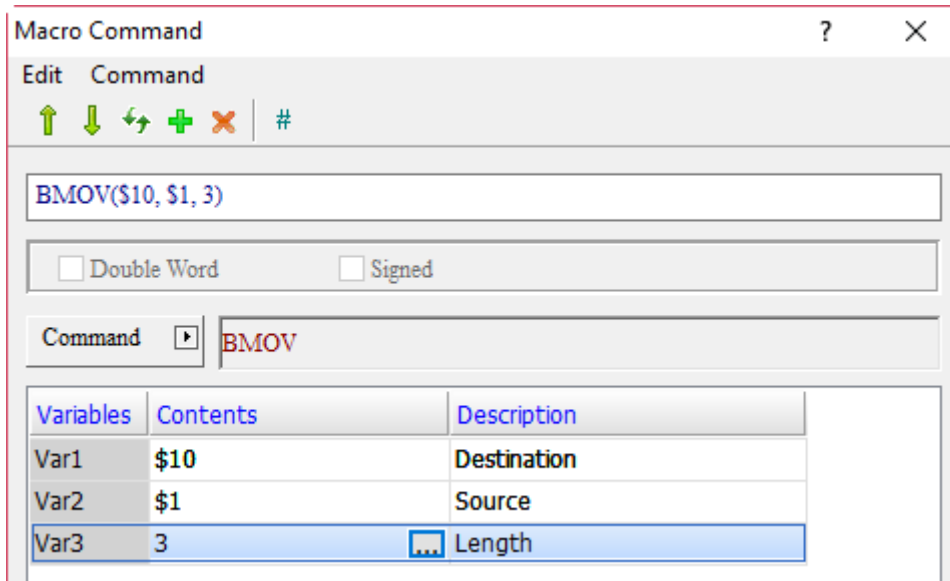
■ BMOV (copy block)

Expression	Meaning of variable		Note
BMOV(Var1, Var2, Var3) (W)	Var1	Destination	W: Word
	Var2	Source	
	Var3	Length (Word)	
	Description of action		
Copy Var3 data lengths from Var2 source to Var1 destination.			

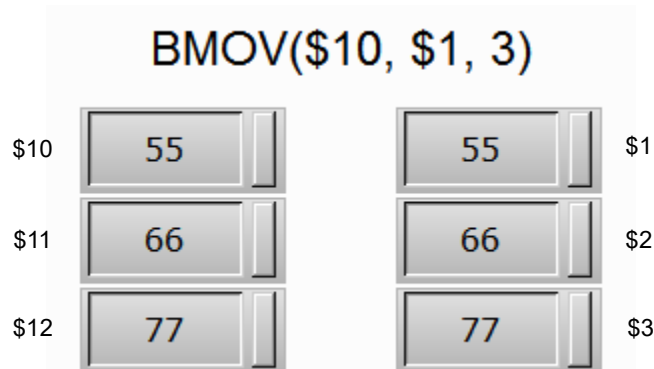
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Move the three data lengths starting with \$1 to \$10, so the values entered in \$1, \$2, and \$3 will be transferred to \$10, \$11, and \$12 respectively.



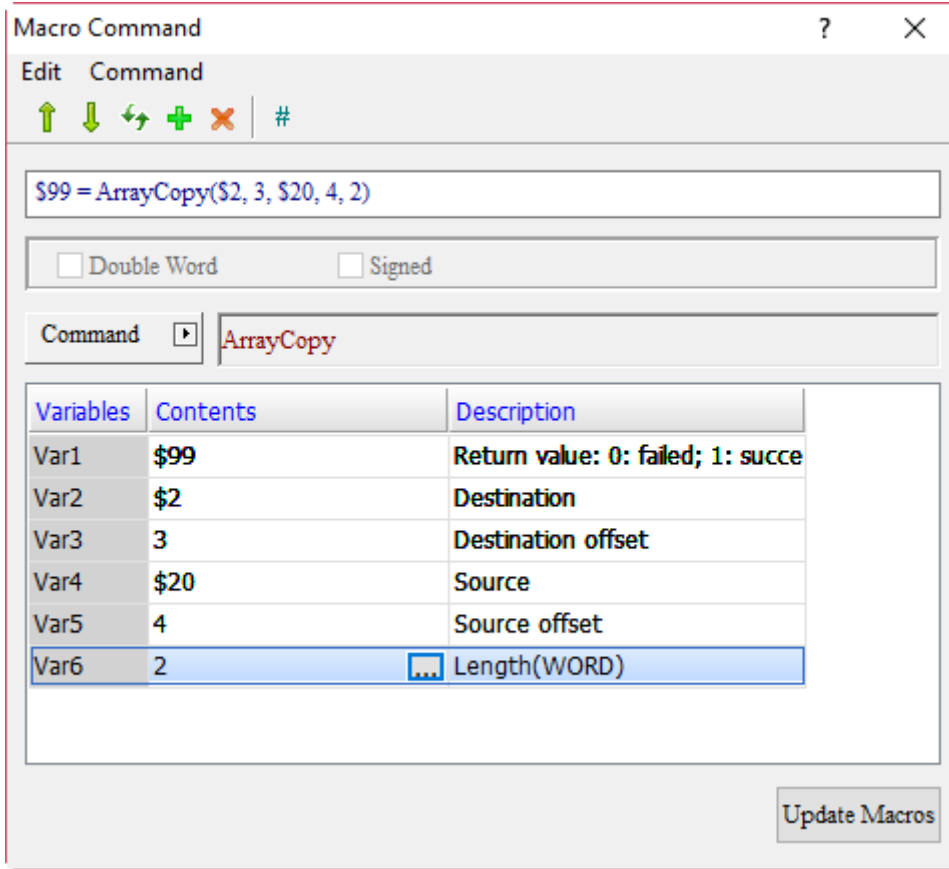
■ ArrayCopy (copy array)

Expression	Meaning of variable		Note	
Var1 = ArrayCopy(Var2, Var3, Var4, Var5, Var6)	Var1	Return value		
		Failed	0	
		Succeeded	1	
	Var2	Destination		
	Var3	Destination offset		
	Var4	Source		
	Var5	Source offset		
	Var6	Length(WORD)		
	Description of action			
	Copy a continuous address data to another address.			

Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v			
Var2	v	v		
Var3	v	v		v
Var4	v	v		
Var5	v	v		v
Var6	v	v		v

Example

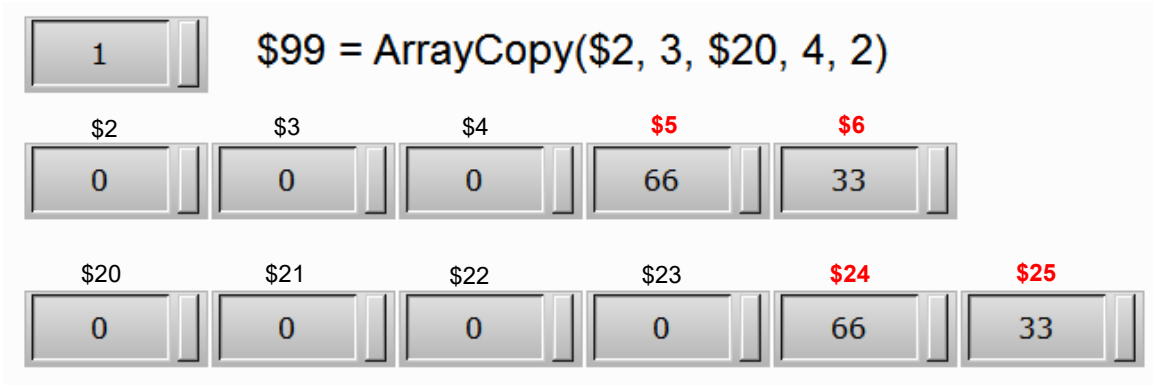
- Var1, Var2, and Var4 are internal memory addresses, and Var3 and Var5 are constants.



Address	\$0	\$1	\$2	\$3	\$4	\$5	\$6	\$7	\$20	\$21	\$2	\$2	\$24	\$25	\$26	...	
Offset			+0	+1	+2	+3					+0	+1	+2	+3	+4				...



Copy the offset (4, address is \$24) specified by the source address (\$20) to the offset (3, address is \$5) specified by the destination address (\$2) and move 2 Word of length according to the start address determined by the offset, as shown in the figure below.



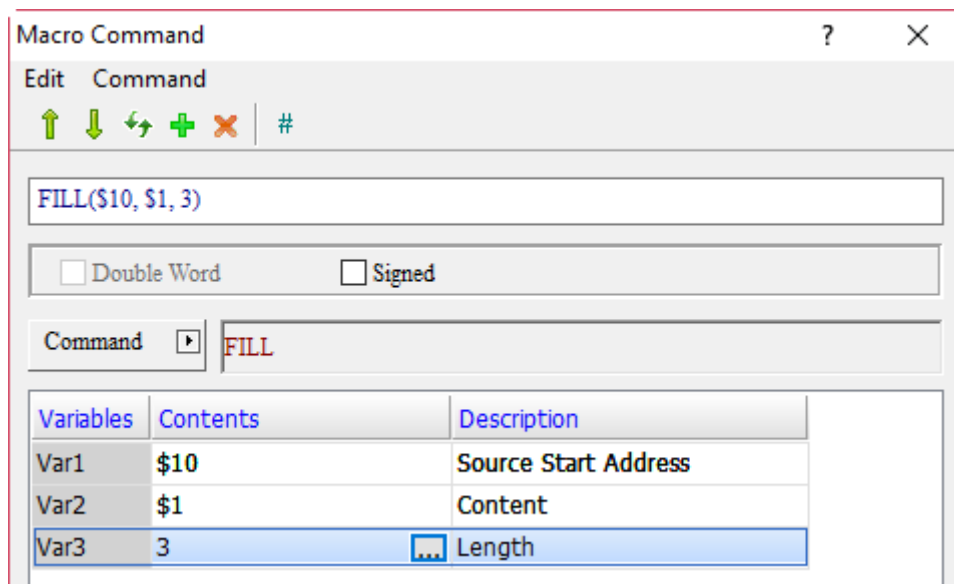
■ FILL (fill block)

Expression	Meaning of variable		Note
FILL(Var1, Var2, Var3) (W) FILL(Var1, Var2, Var3) (Signed W)	Var1	Destination Start Address	W: Word
	Var2	Source	
	Var3	Length	
	Description of action		
		Store values of Var2 to the Var1 start address in sequence. The total length is Var3.	

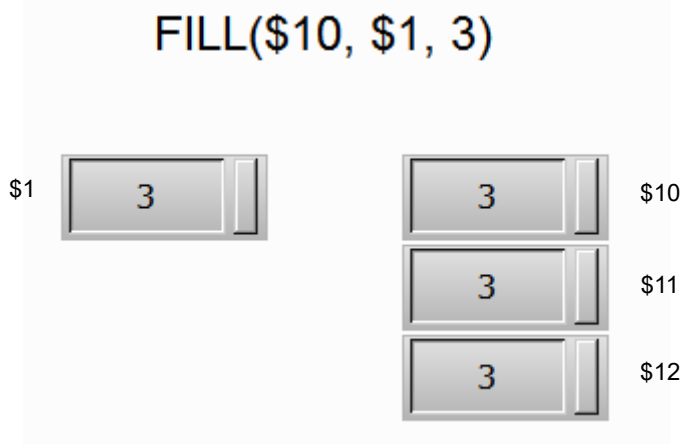
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- Save the input value of \$1 for 3 data lengths in sequence to \$10, \$11, and \$12.



24

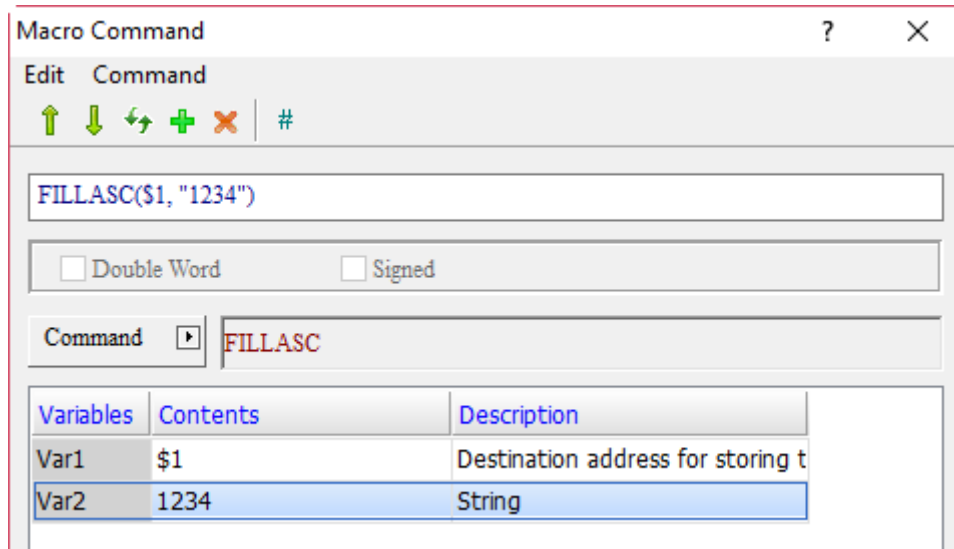
- FILLASC (convert text to ASCII values)

Expression	Meaning of variable		Note
FILLASC(Var1, "Var2") (W)	Var1	Destination address for storing string	W: Word
	Var2	String	
	Description of action		
Convert each character of Var2 string into an ASCII value, and put it in Var1 address.			

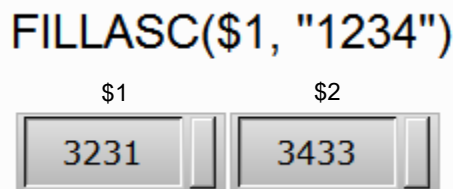
Variable	Type			
	Internal memory	PLC register	Constant	String
Var1	v	v		
Var2				v

Example

- Var1 is the internal memory address and Var2 is a string.



- The results after operation are \$1 = 3231H and \$2 = 3433H.



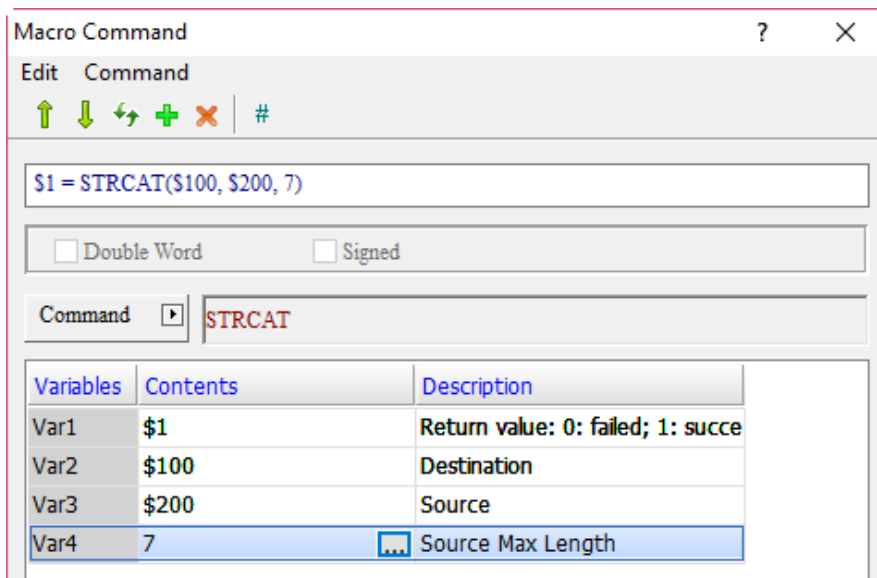
■ STRCAT (connection string)

Expression	Meaning of variable		Note	
Var1 = STRCAT(Var2, Var3, Var4)	Var1	Return value		
		Failed	0	
		Succeeded	1	
	Var2	Destination		
	Var3	Source		
	Var4	Maximum length of the destination string (unit: Char)		
	Description of action			
Connect the source address string to the destination address string.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		
Var4	v		v

Example

- Var1 is the internal memory address, Var2 and Var3 are strings, and Var4 is a constant.



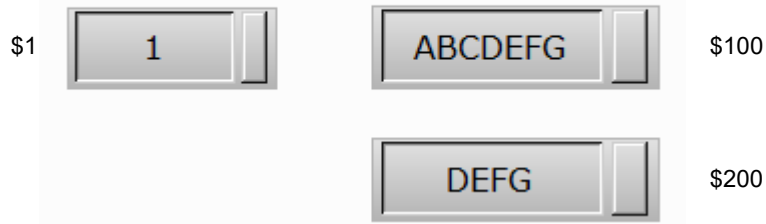
- Create a Numeric Entry element with the address as \$1 and create Character Entry elements of \$100 and \$200.
- After execution, enter the following values.



Example

- The results after operation are \$100 = ABCDEFG and \$1 = 1.

\$1 = STRCAT(\$100, \$200, 7)



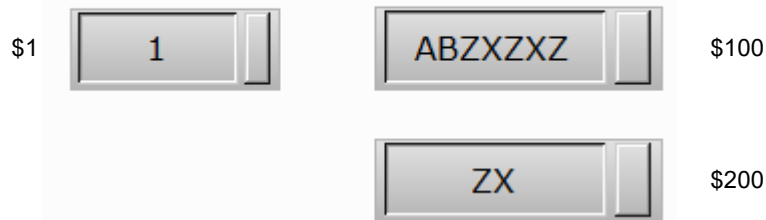
- A length of 7 indicates a maximum length of 7 characters in \$100. If the connection string is more than 7 characters, only 7 characters will be displayed.

\$1 = STRCAT(\$100, \$200, 7)



- If the total length is less than 7 characters, it will be added to 7 characters for display.

\$1 = STRCAT(\$100, \$200, 7)



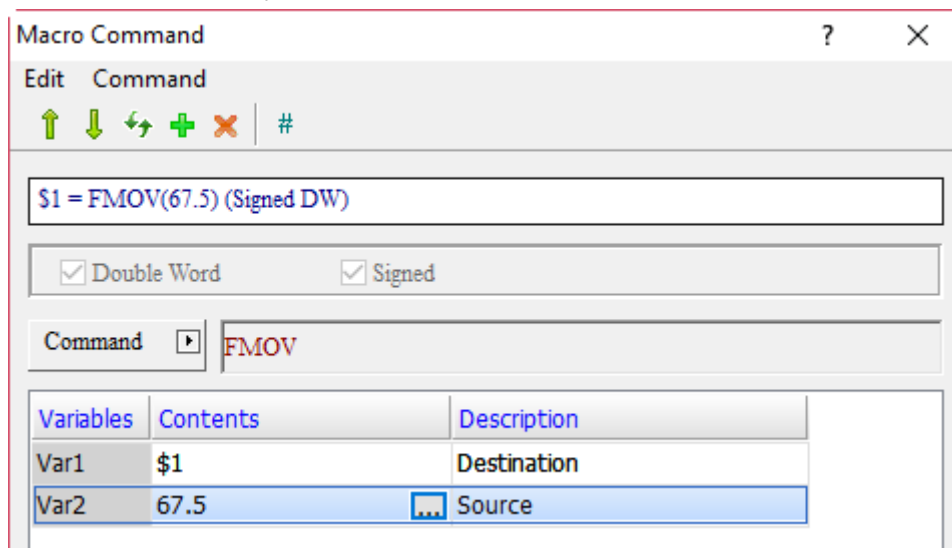
- FMOV (specify floating-point number data)

Expression	Meaning of variable		Note
Var1 = FMOV(Var2) (Signed DW)	Var1	Destination	DW: Double Word Signed: signed number
	Var2	Source	
	Description of action		
	Copy the floating-point number data of Var2 to Var1, and Var2's source will not be changed due to the specify floating-point number data command.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

Example

- Var1 is the internal memory address and Var2 is a constant.



- Store the floating-point number data of 67.5 to \$1, so \$1 = 67.5.

24

24.3.4 Data Conversion

Data Conversion includes conversion of Data Format, Maximum and Minimum, and value data swap commands, which are explained in detail below.

BCD	XCHG
BIN	MAX
TODWORD	MIN
TOWORD	TOHEX
TOBYTE	TOASC
SWAP	FCNV
	ICNV
	SPRINTF

Figure 24.3.4.1 Data Conversion

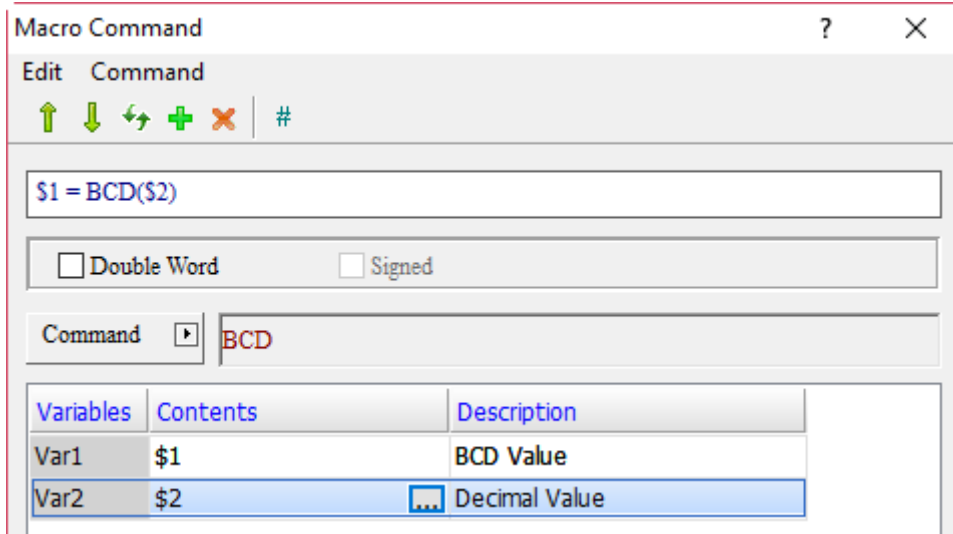
- BCD (convert decimal values to BCD values)

Expression	Meaning of variable		Note
Var1 = BCD(Var2) (W) Var1 = BCD(Var2) (DW)	Var1	BCD Value	W: Word DW: Double Word
	Var2	Decimal Value	
	Description of action		
	Convert the decimal value in Var2 to the BCD format value, and put it in Var1.		

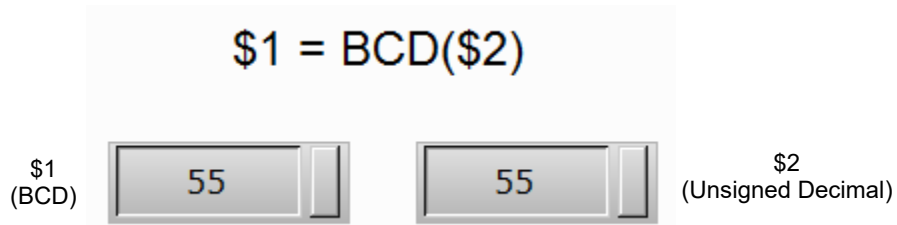
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

Example

- Var1 and Var2 are internal memory addresses.



- Convert the decimal value of \$2 to BCD and store it in \$1.



24

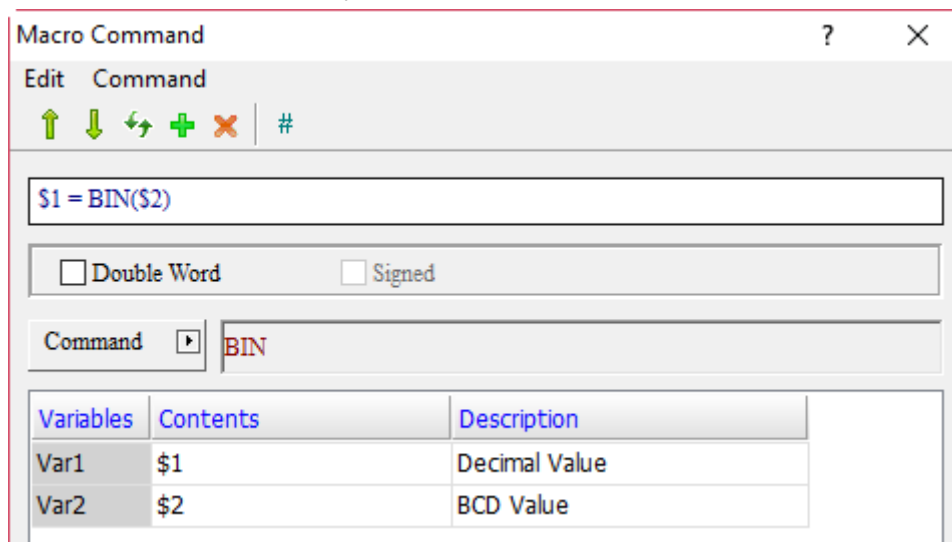
- BIN (convert BCD values to decimal values)

Expression	Meaning of variable		Note
Var1 = BIN(Var2) (W) Var1 = BIN(Var2) (DW)	Var1	Decimal Value	W: Word DW: Double Word
	Var2	BCD Value	
	Description of action		
		Convert the BCD format value in Var2 to a decimal value and put it in Var1.	

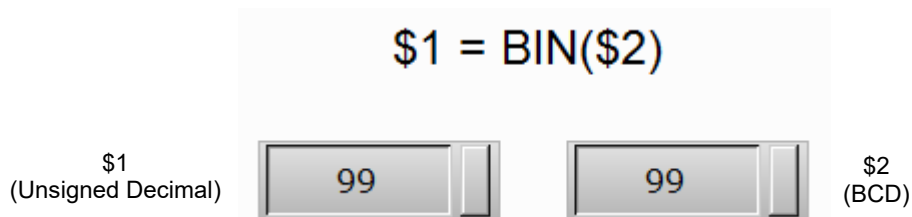
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

Example

- Var1 and Var2 are internal memory addresses.



- Convert the BCD value format of \$2 to decimal value format and save it in \$1.



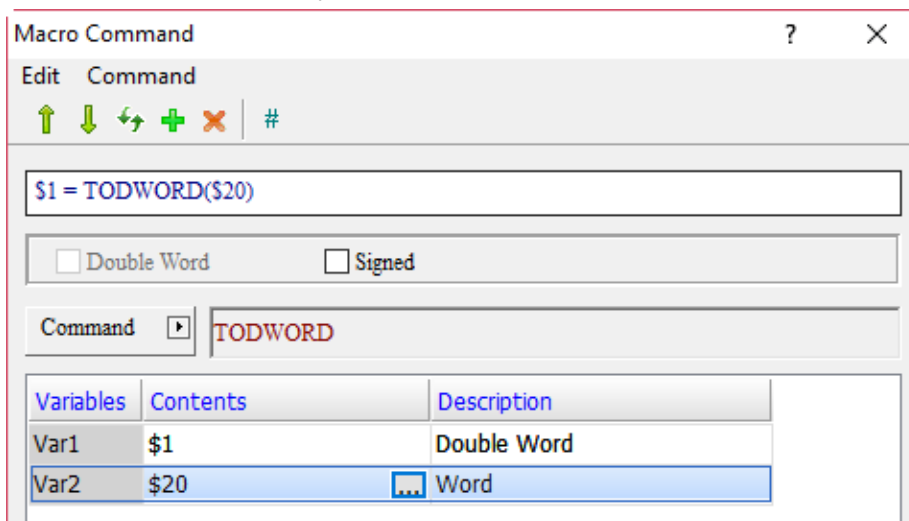
■ TODWORD (convert values from Word to Double Word)

Expression	Meaning of variable		Note
Var1 = TODWORD(Var2) (W) Var1 = TODWORD(Var2) (Signed W)	Var1	Double Word	W: Word Signed: signed number
	Var2	Word	
	Description of action		
	Convert the Word format value in Var2 to the Double Word value and put it in Var1.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

Example

- Var1 and Var2 are internal memory addresses.



- Convert the Word value of \$20 to Double Word value and store it in \$1. Because the value has been converted to Double Word format, it actually occupies two addresses, \$1 and \$2.

■ TOWORD (convert values from Byte to Word)

Expression	Meaning of variable		Note
Var1 = TOWORD(Var2, Var3) (W)	Var1	Word value	W: Word
	Var2	Source Start Address	
	Var3	Length	
	Description of action		
	Starting from Var2 start address, convert a continuous Var3 bytes to Word value and save the result in Var1. Add 0 for the high byte of each Var1.		

Note:

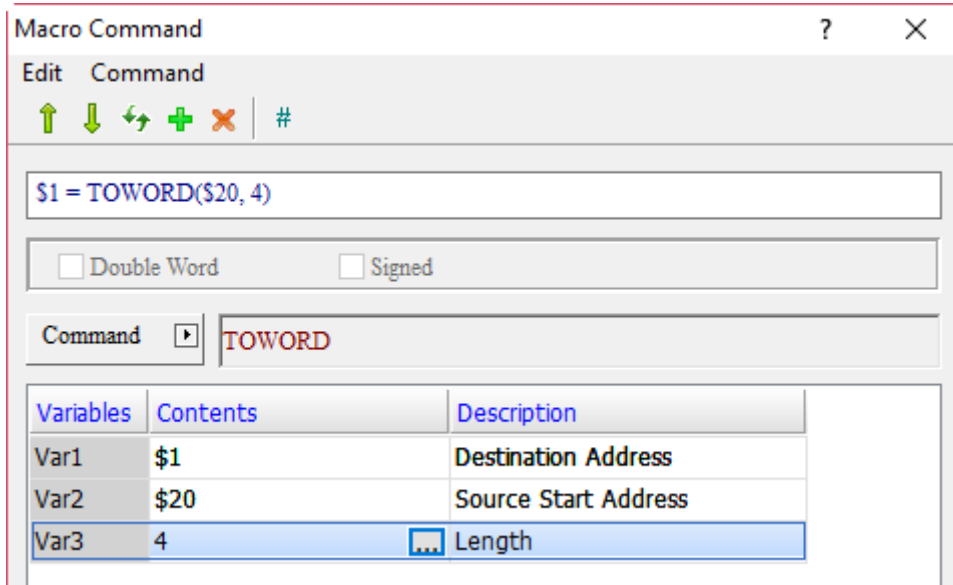
1. Since the unit of Var2 is Word, each Word of Var2 can be converted into 2 Words.
2. After data conversion, the high and low bytes of Word will be swapped.

24

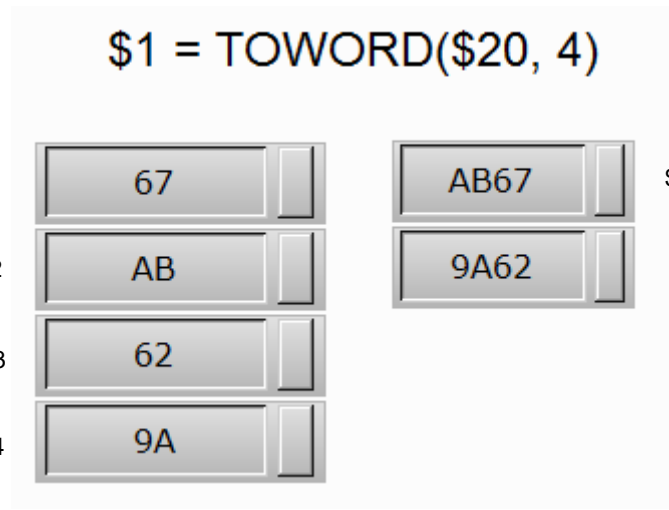
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Convert a continuous 4 bytes from \$20 to Word value and put it in \$1.
- The Data Format of \$1 and \$20 is set to Hex.
- Suppose \$20 = AB67H and \$21 = 9A62H, read 4 bytes of data in \$20 with the TOWORD command and put them in \$1, \$2, \$3, and \$4. Accordingly, the data obtained are \$1 = 67H, \$2 = ABH, \$3 = 62H, and \$4 = 9AH.



- TOBYTE (convert values from Word to Byte)

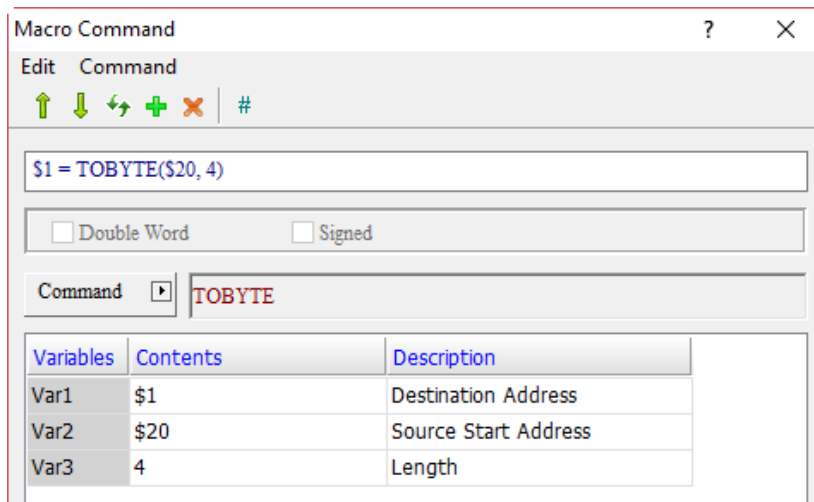
Expression	Meaning of variable		Note
Var1 = TOBYTE(Var2, Var3) (W)	Var1	BYTE Value	W: Word
	Var2	Source Start Address	
	Var3	Length	
	Description of action		
		Starting from the low byte of Var2, convert a continuous Var3 Words to byte values and ignore the high byte of Var2. The result is saved in Var1.	

Note: after data conversion, the high and low bytes of Word will be swapped.

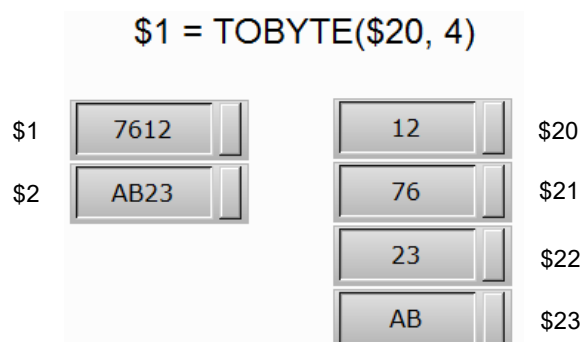
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Convert a continuous 4 Words from \$20 to byte value and put it in \$1.
- The Data Format of \$1 and \$20 is set to Hex.
- Suppose \$20 = 12H, \$21 = 76H, \$22 = 23H, and \$23 = ABH, read 4 Words of data in \$20 with the TOBYTE command and put them in \$1 and \$2. Accordingly, the data obtained are \$1 = 7612H and \$2 = AB23H.



24

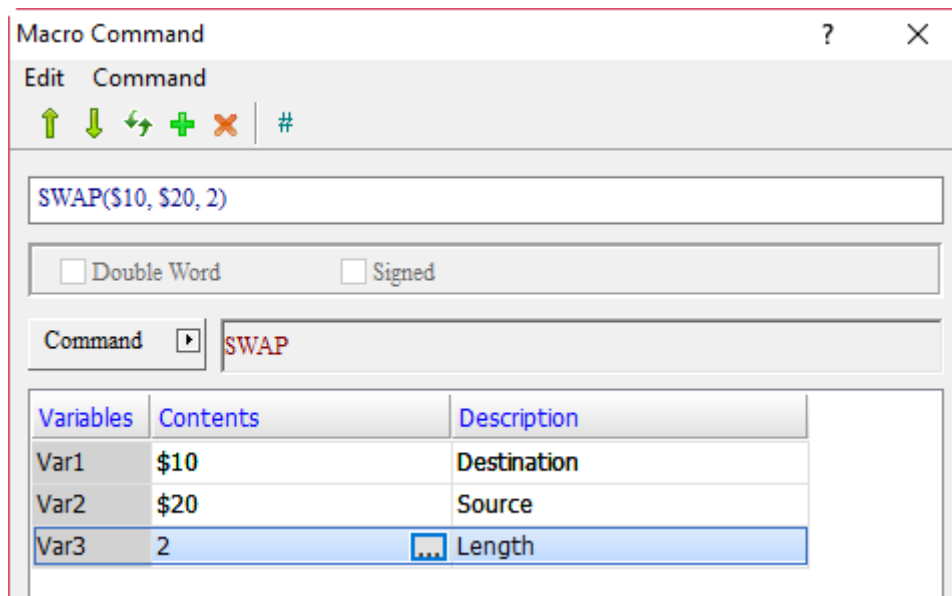
- SWAP (swap high and low bytes of Word)

Expression	Meaning of variable		Note
SWAP(Var1, Var2, Var3) (W)	Var1	Destination Start Address	W: Word
	Var2	Source Start Address	
	Var3	Length	
	Description of action		
Convert Var3 lengths from Var2 start address and swap high and low bytes of Var2 Word data to Var1.			

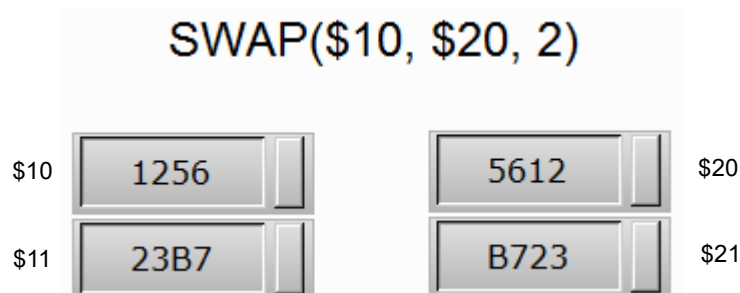
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Swap high and low bytes of the value in \$20, and put them in \$10. Exchange 2 data lengths of values.
- The Data Format of \$10 and \$20 is set to Hex.
- Suppose \$20 = 5612H and \$21 = B723H, swap high and low bytes of the data in \$20 with the SWAP command and put them in \$10 and \$11. Accordingly, the data obtained are \$10 = 1256H and \$11 = 23B7H.



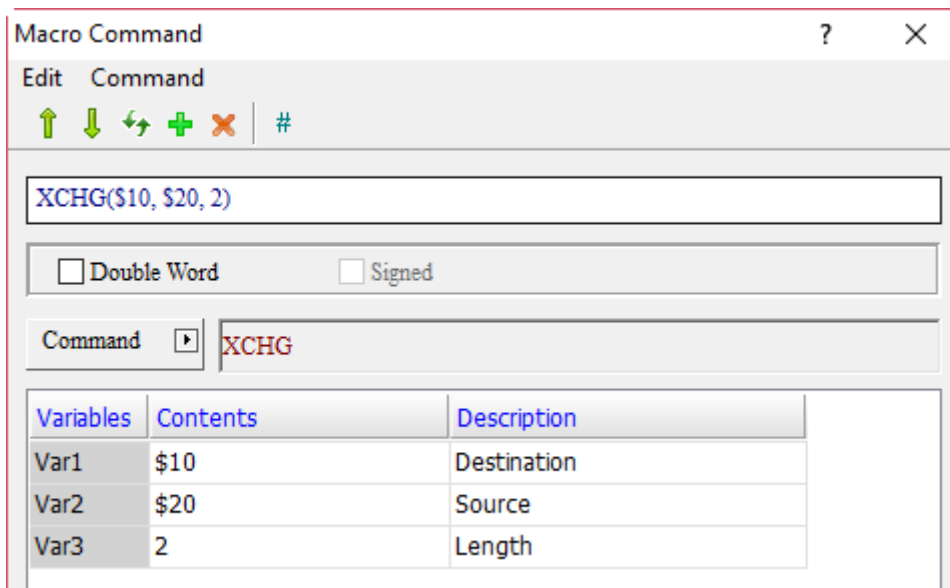
- XCHG (exchange value data)

Expression	Meaning of variable		Note
XCHG(Var1, Var2, Var3) (W) XCHG(Var1, Var2, Var3) (DW)	Var1	Destination Start Address	W: Word DW: Double Word
	Var2	Source Start Address	
	Var3	Length	
	Description of action		
		Exchange Var2 start address data to Var1 destination start address according to Var3 lengths.	

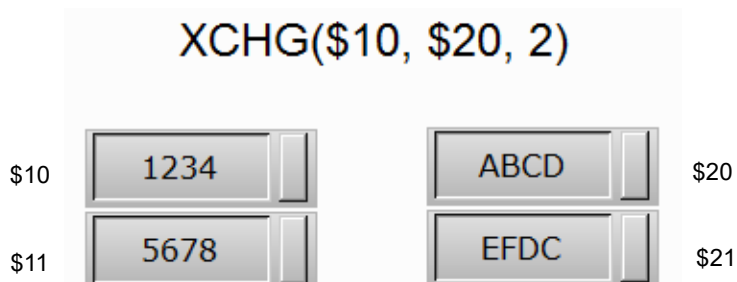
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Exchange 2 data lengths of values in \$20 and \$10.
- The Data Formats of \$10 and \$27 is set to Hex.
- Suppose \$20 = 1234H, \$21 = 5678H, \$10 = ABCDH, and \$11 = EFDCH, exchange the data in \$20 and \$21 with the data in \$10 and \$11 with the SCHG command. Accordingly, the data obtained are \$20 = ABCDH, \$21 = EFDCH, \$10 = 1234H, and \$11 = 5678H.



24

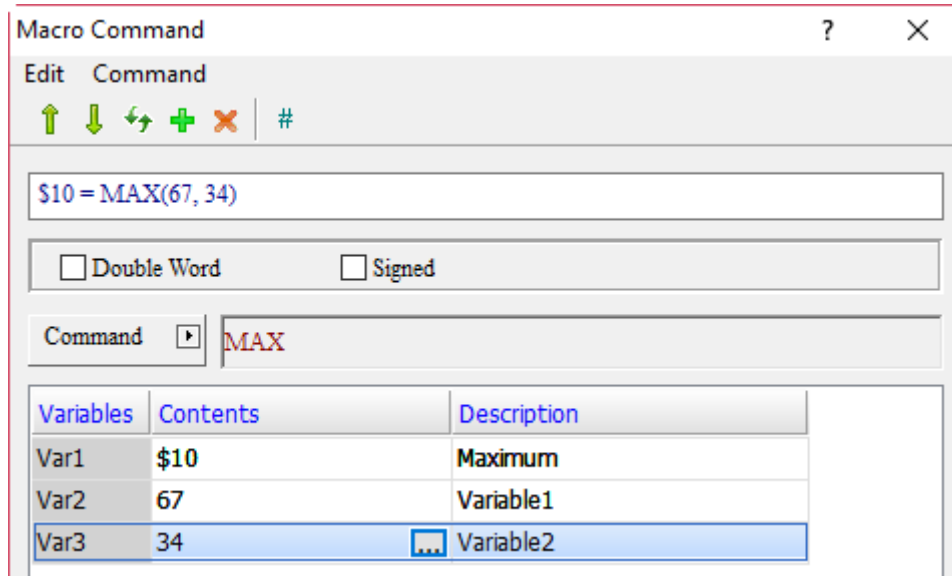
■ MAX (get maximum)

Expression	Meaning of variable		Note
Var1 = MAX(Var2, Var3) (W) Var1 = MAX(Var2, Var3) (DW) Var1 = MAX(Var2, Var3) (Signed W) Var1 = MAX(Var2, Var3) (Signed DW)	Var1	Maximum	W: Word DW: Double Word
	Var2	Variable1	
	Var3	Variable2	
	Description of action		
Take the maximum value of Var2 and Var3, and put it in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- Put the maximum value of 67 and 34 in \$1, so \$1 = 67.

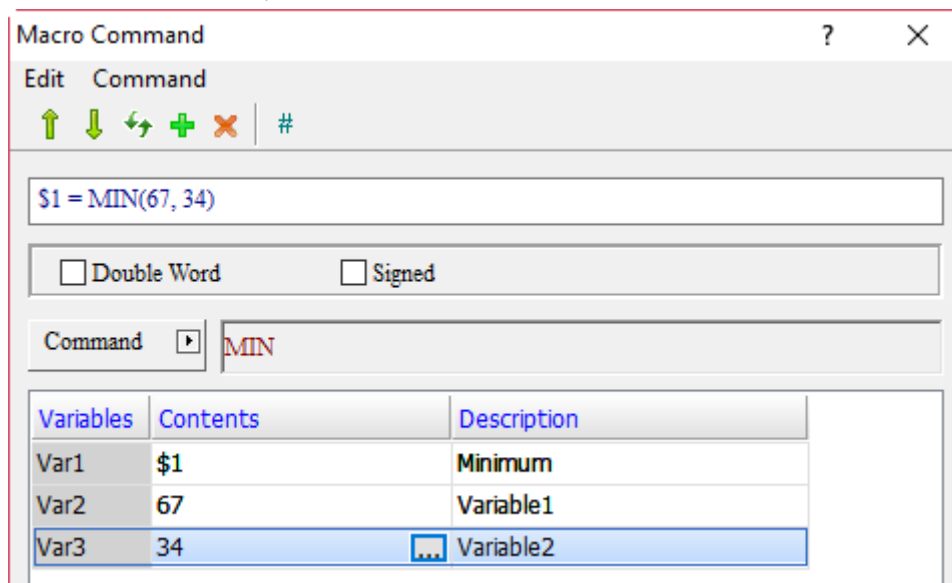
■ MIN (get minimum)

Expression	Meaning of variable		Note
Var1 = MIN(Var2, Var3) (W) Var1 = MIN(Var2, Var3) (DW) Var1 = MIN(Var2, Var3) (Signed W) Var1 = MIN(Var2, Var3) (Signed DW)	Var1	Minimum	W: Word DW: Double Word
	Var2	Variable1	
	Var3	Variable2	
	Description of action		
	Take the minimum value of Var2 and Var3 and put it in Var1.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- Put the minimum value of 67 and 34 in \$1, so \$1 = 34.

- TOHEX (convert 4 ASCII characters to HEX)

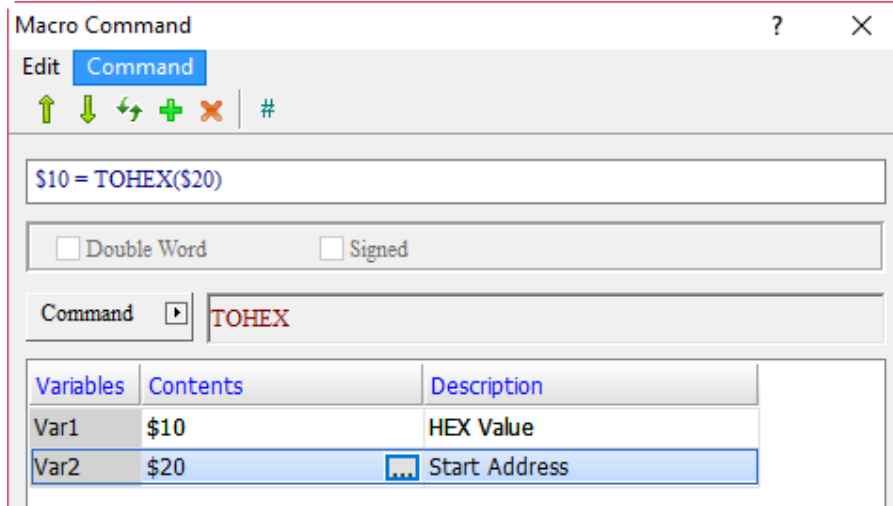
24

Expression	Meaning of variable		Note
Var1 = TOHEX(Var2) (W)	Var1	HEX Value	W: Word
	Var2	ASCII Start Address	
	Description of action		
Convert 4 ASCII characters of WORD to HEX from Var2 and put it in Var1.			

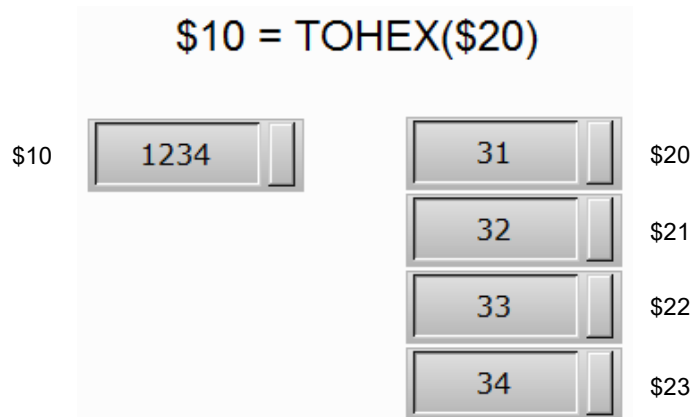
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

Example

- Var1 and Var2 are internal memory addresses.



- Convert 4 consecutive ASCII characters of Word from the address of \$20 to HEX value and put it in \$10.
- The Data Format of \$10 and \$20 is set to Hex.
- Suppose \$20 = 31H, \$21 = 32H, \$22 = 33H, and \$23 = 34H, convert ASCII characters in \$20, \$21, \$22, and \$23 to HEX with the TOHEX command and put it in \$10. Accordingly, the data obtained is \$10 = 1234H.



24

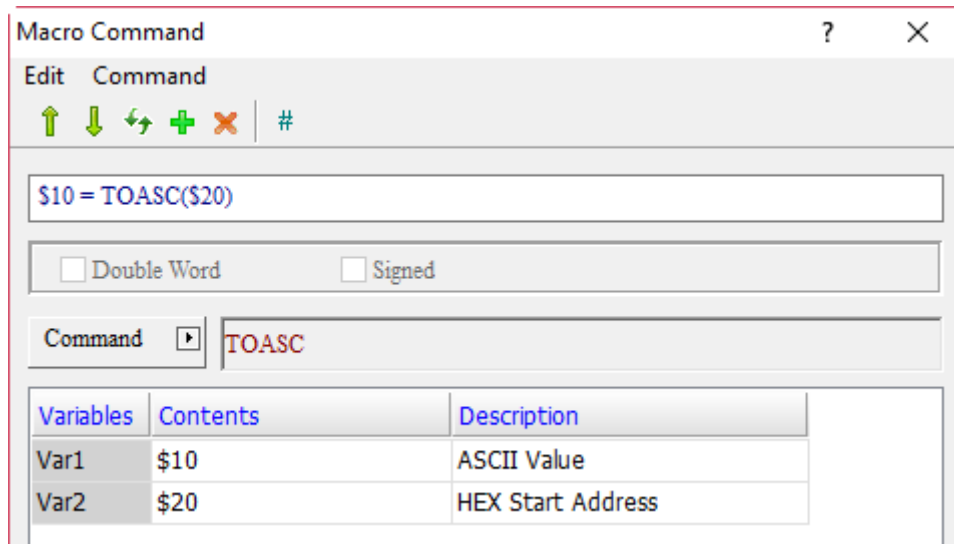
- TOASC (convert HEX to 4 ASCII characters of Word)

Expression	Meaning of variable		Note
Var1 = TOASC(Var2) (W)	Var1	ASCII Value	W: Word
	Var2	HEX Start Address	
	Description of action		
		Convert HEX from the address of Var2 to 4 ASCII characters of WORD and put them in Var1.	

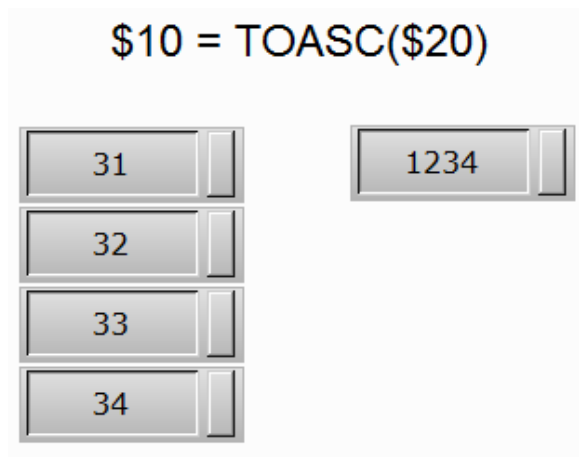
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

Example

- Var1 and Var2 are internal memory addresses.



- Convert HEX value of \$20 into 4 consecutive ASCII characters of Word and put them in \$10.
- The Data Format of \$10 and \$20 is set to Hex.
- Suppose \$20 = 1234H, convert HEX in \$20 into ASCII characters with the TOASC command and put them in \$10, \$11, \$12, and \$13. Accordingly, the data obtained are \$10 = 31H, \$11 = 32H, \$12 = 33H, and \$13 = 34H.



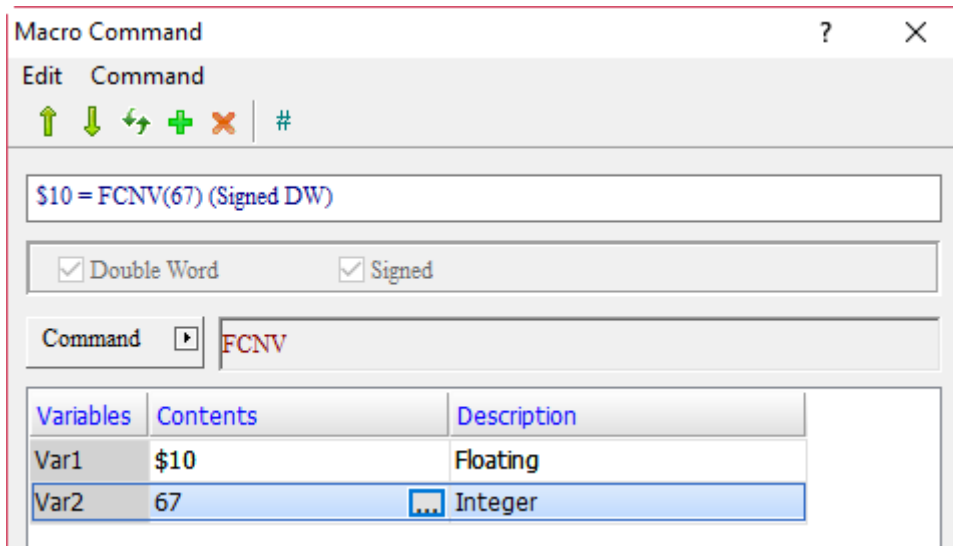
- FCNV (convert integer to floating-point number)

Expression	Meaning of variable		Note
Var1 = FCNV(Var2) (Signed DW)	Var1	Floating	DW: Double Word Signed: signed number
	Var2	Integer	
	Description of action		
		Convert the integer in Var2 to floating-point number and put it in Var1.	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



- Convert the integer value of 67 to a floating-point value and put it in \$10.
- The Data Format set for \$10 is Floating and the Data Type is Double Word.
- The result after the HMI operation is \$10 = 67.0.

24

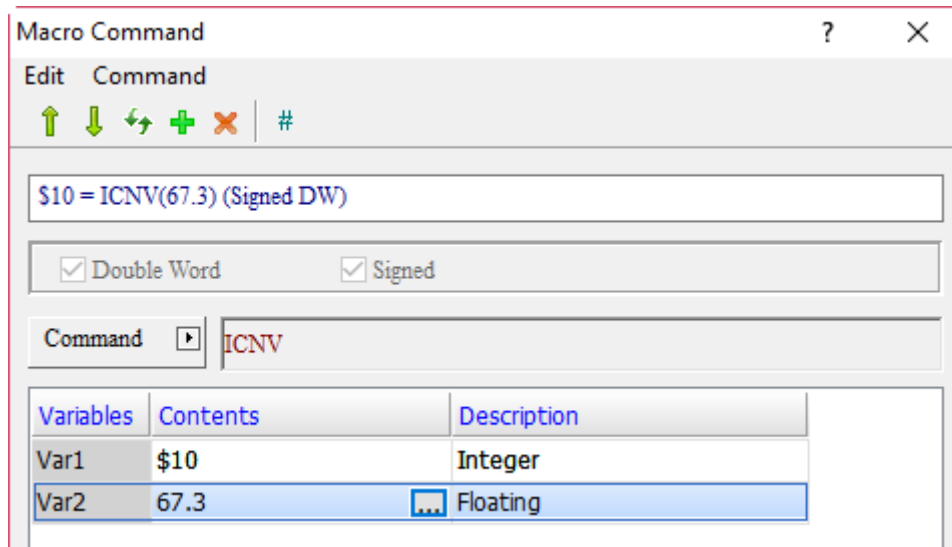
- ICNV (convert floating-point number to integer)

Expression	Meaning of variable		Note
Var1 = ICNV(Var2) (Signed DW)	Var1	Integer	DW; Double Word Signed: signed number
	Var2	Floating	
	Description of action		
	Convert the floating-point number in Var2 to integer and put it in Var1.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



- Convert the floating-point value of 67.3 into an integer value and put it in \$10.
- The Data Format set for \$10 is Unsigned Decimal, and the Data Type is Word.
- The result after the HMI operation is \$10 = 67.

■ SPRINTF (format string)

Expression	Meaning of variable		Note	
Var1 = SPRINTF(Var2, "%u", Var4) (DW) Var1 = SPRINTF (Var2, "%u", Var4, ..., Var23) (DW) (Note 2)	Var1	Return value		DW: Double Word
		Failed	0	
		Succeeded	1	
	Var2	Enter destination address of string		
	Var3	Format description string (Note 1)		
	Var4	Value 1		
		
	Var23	Value 20		
	Description of action			
		Connect the values according to Var2 "format description string" and fill in the destination address.		

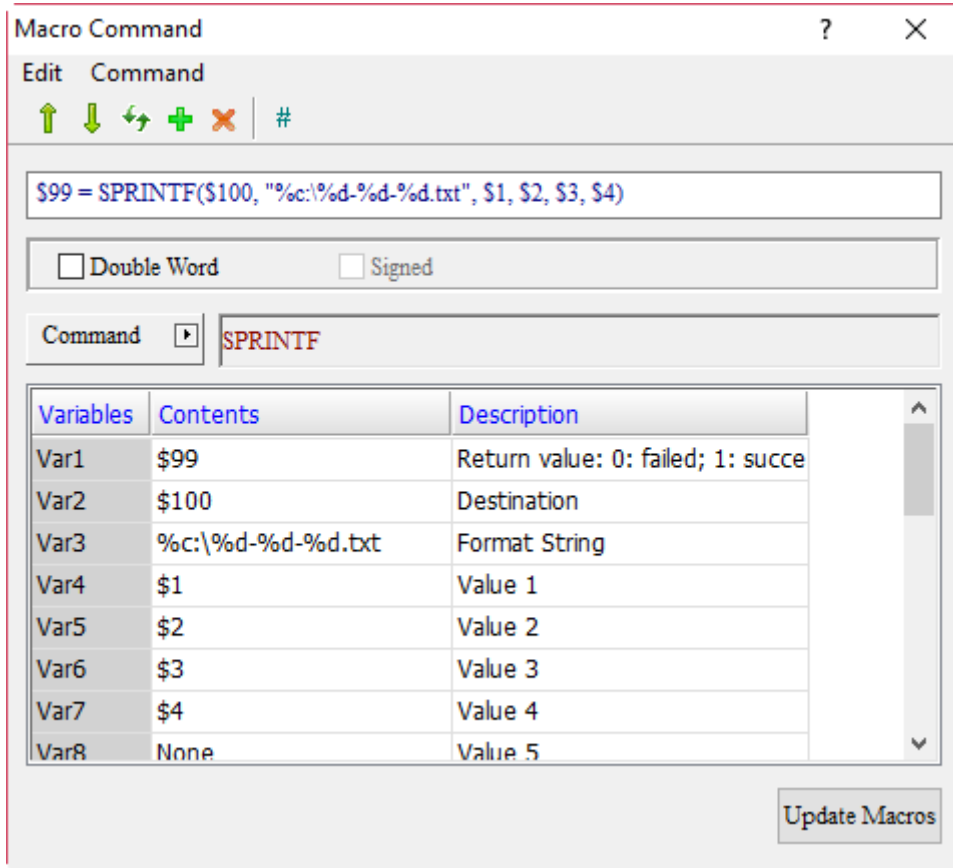
Note:

- The supporting string formats are as follows:
 %d: signed integer
 %u: unsigned integer
 %c: ASCII character
 %x: hexadecimal value
- Support up to 20 numeric variables.
- The number of the parameters of variable conversion in the string contents should be consistent with the number of values.

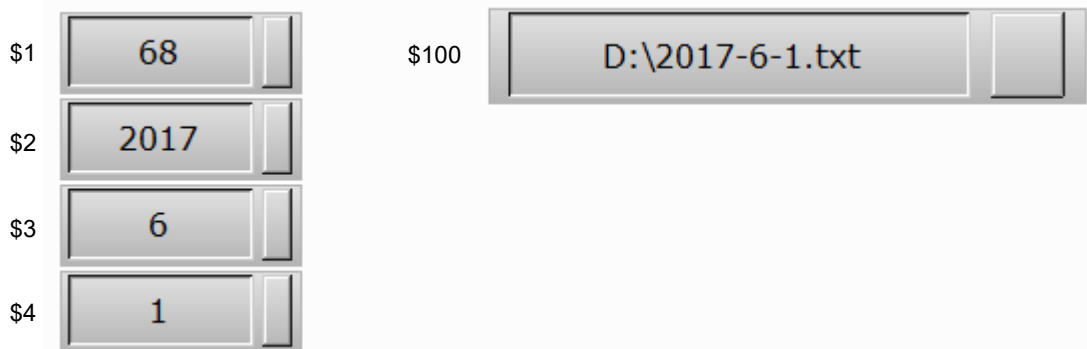
Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v			
Var2	v	v		
Var3			v	
Var4	v	v		v
...
Var23	v	v		v

24

Example



- Create a Character Entry element, set the address as \$100, and set the length as 20.
- Create Numeric Entry elements of \$1, \$2, \$3, and \$4.
- After downloading the screen to the HMI, enter \$1 = 68 (representing D in ASCII code), \$2 = 2017, \$3 = 6, and \$4 = 1 on the HMI. The results are as follows.



24.3.5 Comparison

Comparison contains IF... THEN GOTO, IF... THEN CALL, IF, ELSEIF and other comparison commands, as detailed below.

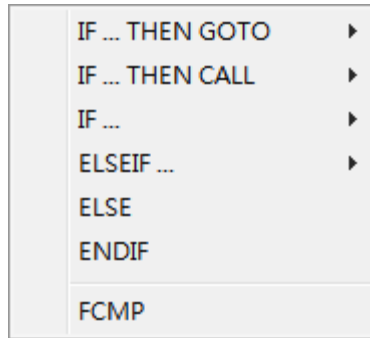
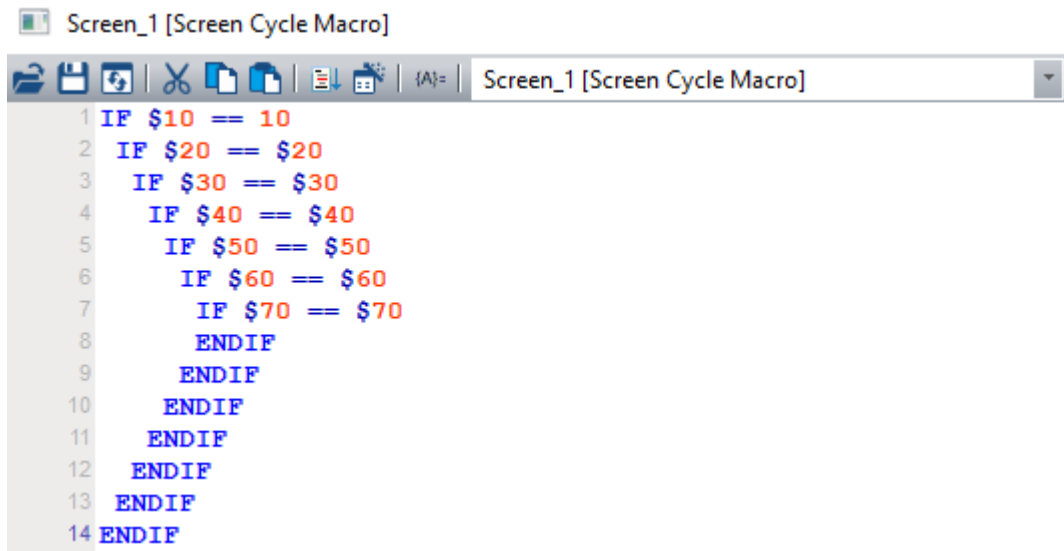


Figure 24.3.5.1 Comparison

- The nested structure of IF... supports up to 7 layers.



```
Screen_1 [Screen Cycle Macro]
1 IF $10 == 10
2   IF $20 == $20
3     IF $30 == $30
4       IF $40 == $40
5         IF $50 == $50
6           IF $60 == $60
7             IF $70 == $70
8             ENDIF
9           ENDIF
10        ENDIF
11       ENDIF
12      ENDIF
13     ENDIF
14    ENDIF
```

24

- IF...THEN GOTO (if...GOTO execute according to the specified label name)

IF ==	IF AND == 0
IF !=	IF AND != 0
IF >	IF == ON
IF >=	IF == OFF
IF <	IFB == ON
IF <=	IFB == OFF

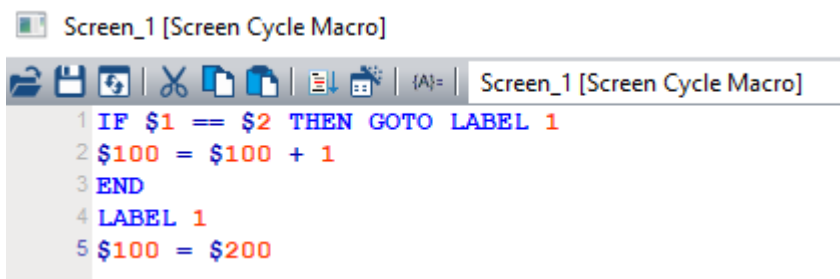
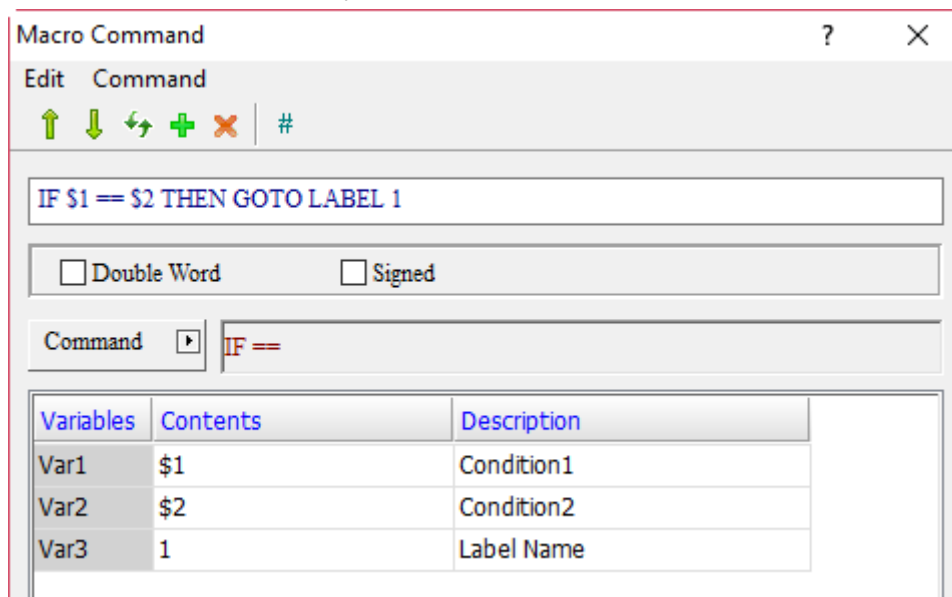
The following will introduce the 12 commands of the IF... THEN GOTO macro.

(1) IF ==			
Expression	Meaning of variable		Note
IF Var1 == Var2 THEN GOTO LABEL Var3 (W) IF Var1 == Var2 THEN GOTO LABEL Var3 (DW) IF Var1 == Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 == Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If Condition1 equals Condition2, then GOTO executes LABEL Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



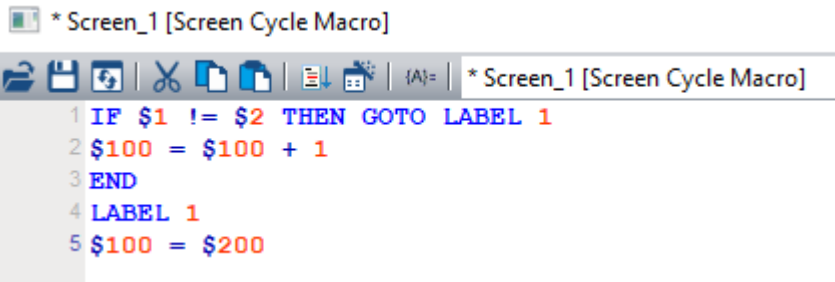
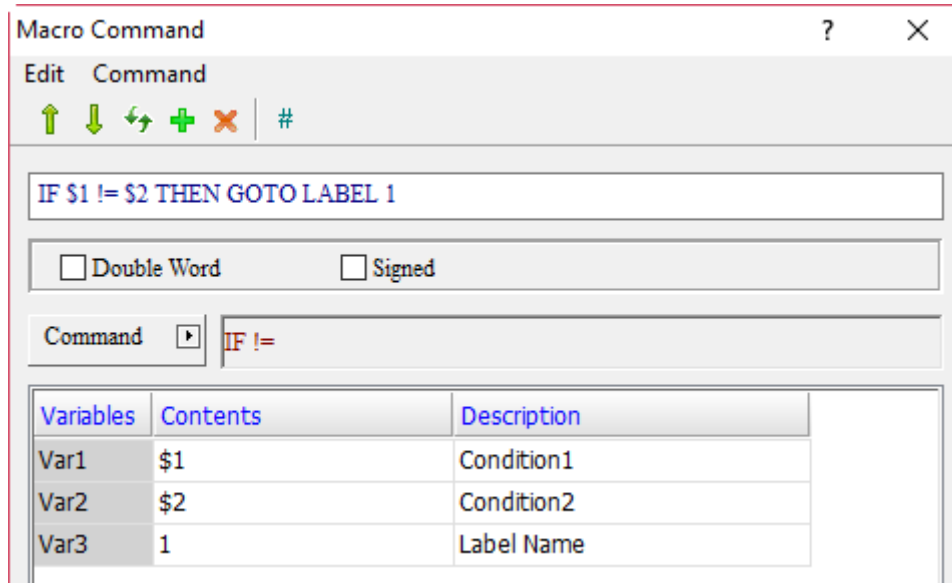
- If the value of \$1 equals \$2, execute LABEL1 (\$100 = \$200); if \$1 does not equal \$2, then execute \$100 = \$100 + 1.

(2) IF !=			
Expression	Meaning of variable		Note
IF Var1 != Var2 THEN GOTO LABEL Var3 (W) IF Var1 != Var2 THEN GOTO LABEL Var3 (DW) IF Var1 != Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 != Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If Condition1 does not equal Condition2, then GOTO executes LABEL Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



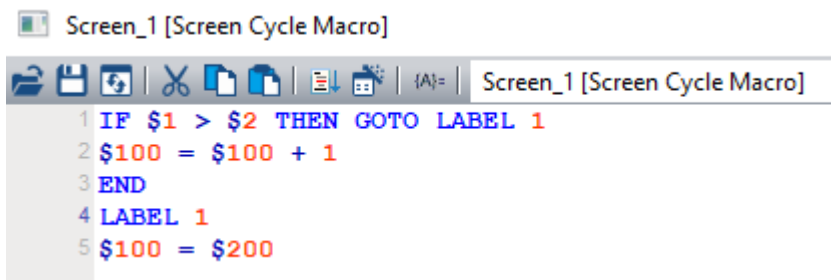
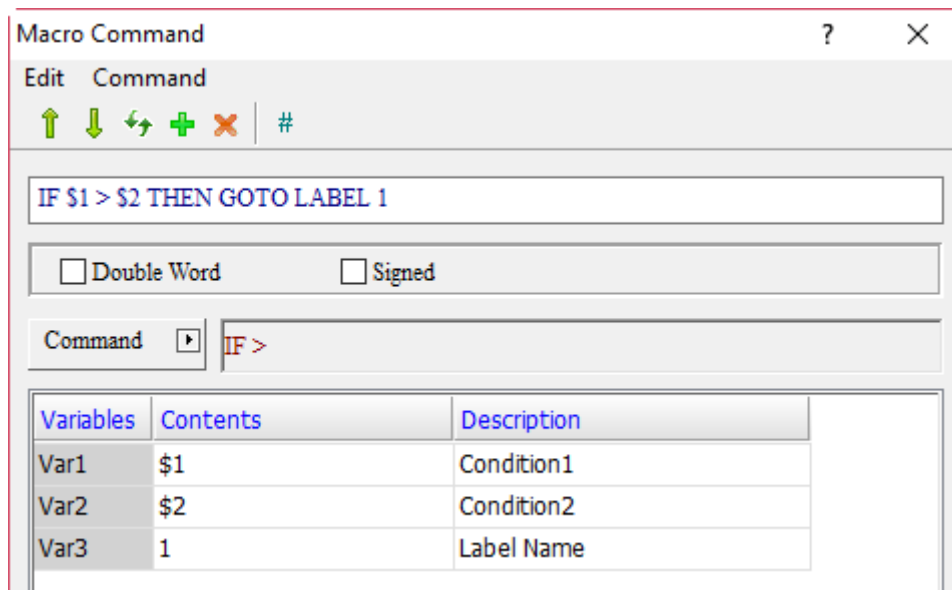
- If the value of \$1 does not equal \$2, execute LABEL1 (\$100 = \$200); if \$1 equals \$2, then execute \$100 = \$100 + 1.

(3) IF >		
Expression	Meaning of variable	Note
IF Var1 > Var2 THEN GOTO LABEL Var3 (W) IF Var1 > Var2 THEN GOTO LABEL Var3 (DW) IF Var1 > Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 > Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1
	Var2	Condition2
	Var3	Label index name
	Description of action	
	If Condition1 is greater than Condition2, then GOTO executes LABEL Var3.	
		W: Word DW: Double Word Signed: signed number

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than \$2, execute LABEL1 (\$100 = \$200); if \$1 is less than or equal to \$2, then execute \$100 = \$100 + 1.

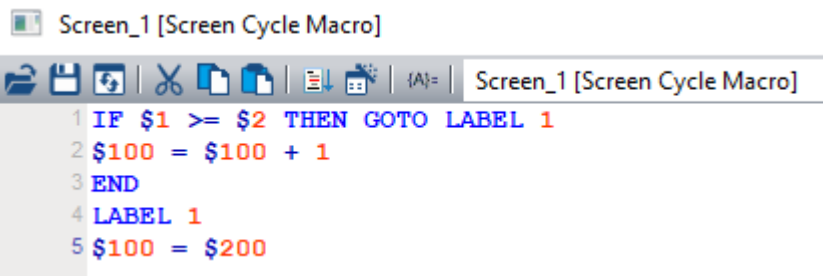
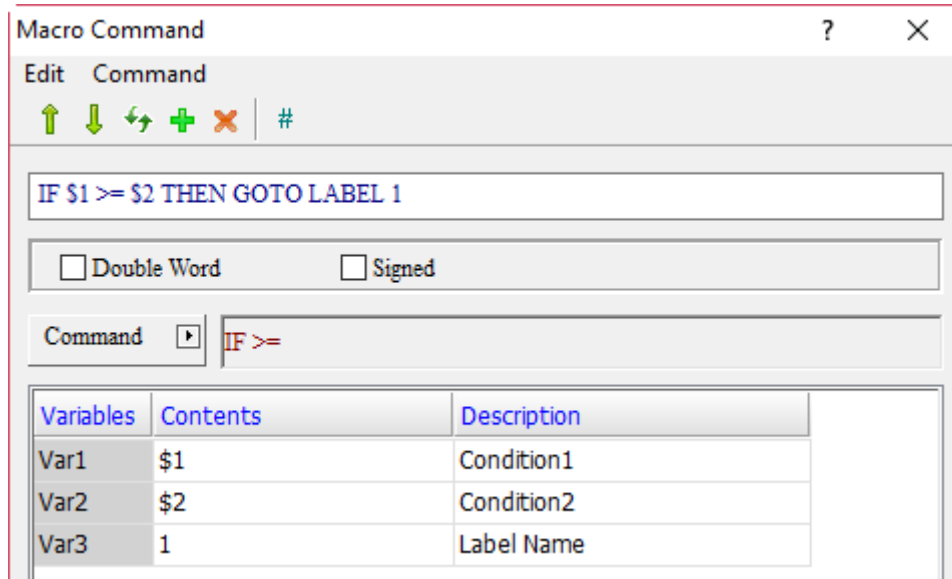
(4) IF >=

Expression	Meaning of variable	Note
IF Var1 >= Var2 THEN GOTO LABEL Var3 (W) IF Var1 >= Var2 THEN GOTO LABEL Var3 (DW) IF Var1 >= Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 >= Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1
	Var2	Condition2
	Var3	Label Name
	Description of action	
	If Condition1 is greater than or equal to Condition 2, then GOTO executes LABEL Var3.	
	W: Word DW: Double Word Signed: signed number	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



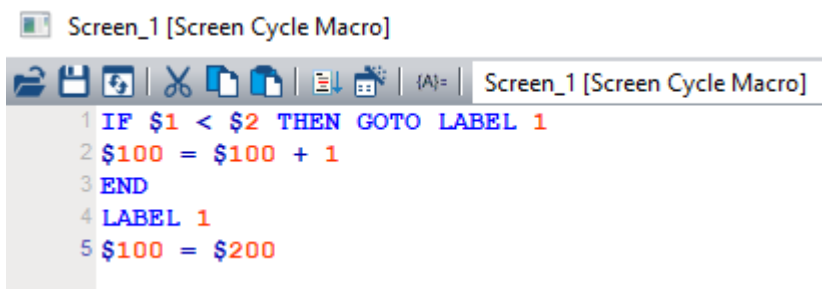
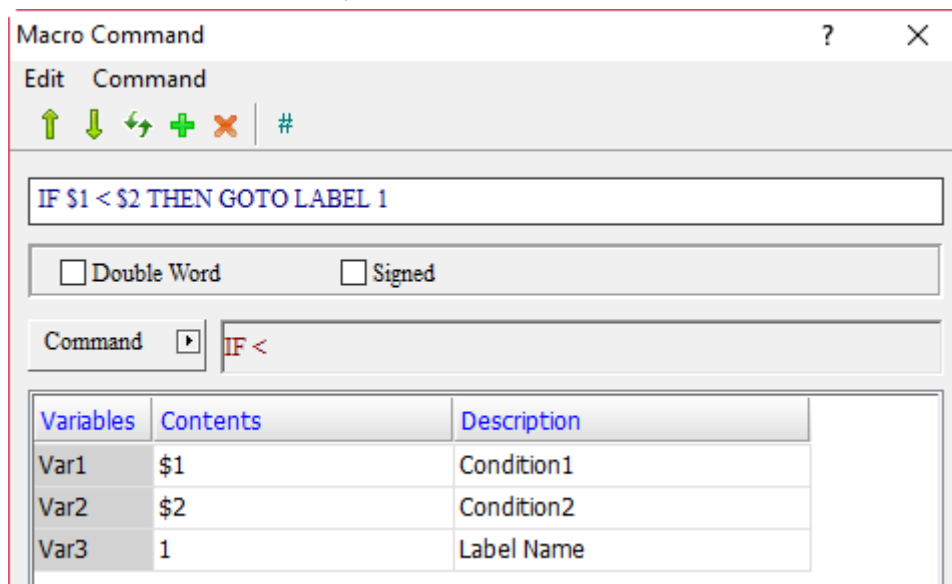
- If the value of \$1 is greater than or equal to \$2, execute LABEL1 (\$100 = \$200); if \$1 is less than \$2, then execute \$100 = \$100 + 1.

(5) IF <		
Expression	Meaning of variable	Note
IF Var1 < Var2 THEN GOTO LABEL Var3 (W) IF Var1 < Var2 THEN GOTO LABEL Var3 (DW) IF Var1 < Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 < Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1
	Var2	Condition2
	Var3	Label Name
	Description of action	
	If Condition1 is less than Condition2, then GOTO executes LABEL Var3.	
	W: Word DW: Double Word Signed: signed number	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



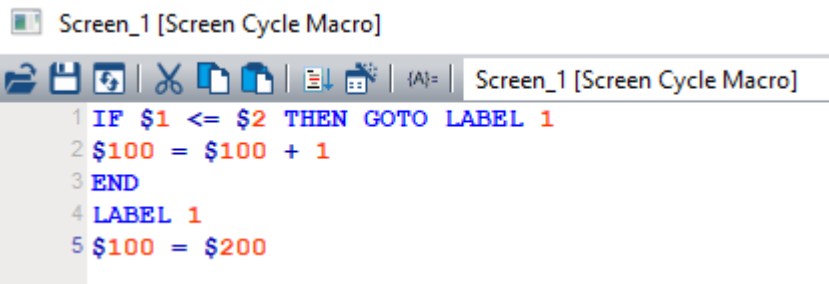
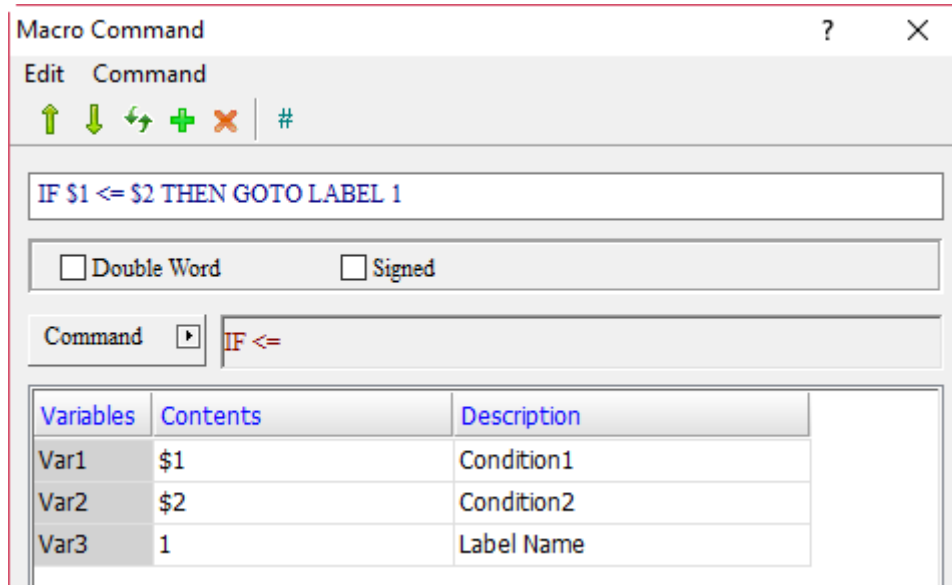
- If the value of \$1 is less than \$2, execute LABEL1 (\$100 = \$200); If \$1 is greater than or equal to \$2, execute \$100 = \$100 + 1.

(6) IF <=		
Expression	Meaning of variable	Note
IF Var1 <= Var2 THEN GOTO LABEL Var3 (W) IF Var1 <= Var2 THEN GOTO LABEL Var3 (DW) IF Var1 <= Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 <= Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1
	Var2	Condition2
	Var3	Label Name
	Description of action	
	If Condition1 is less than or equal to Condition2, then GOTO executes LABEL Var3.	
		W: Word DW: Double Word Signed: signed number

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than or equal to \$2, execute LABEL1 (\$100 = \$200); if \$1 is greater than \$2, then execute \$100 = \$100 + 1.

(7) IF AND == 0			
Expression	Meaning of variable		Note
IF (Var1 && Var2) == 0 THEN GOTO LABEL Var3 (W) IF (Var1 && Var2) == 0 THEN GOTO LABEL Var3 (DW)	Var1	Condition1	W: Word DW: Double Word
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
If the result of AND operation on Condition1 and Condition2 is 0, then GOTO executes LABEL Var3.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.

- If the result of AND operation on \$1 and \$2 is 0, execute LABEL 1 (\$100 = \$200); if the result of AND operation on \$1 and \$2 is not 0, then execute \$100 = \$100 + 1.

(8) IF AND != 0			
Expression	Meaning of variable		Note
IF (Var1 && Var2) != 0 THEN GOTO LABEL Var3 (W) IF (Var1 && Var2) != 0 THEN GOTO LABEL Var3 (DW)	Var1	Condition1	W: Word DW: Double Word
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
		If the result after AND operation on Condition1 and Condition2 is not 0, then GOTO executes LABEL Var3.	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.

Variables	Contents	Description
Var1	\$1	Condition1
Var2	\$2	Condition2
Var3	1	Label Name

```
1 IF ($1 && $2) != 0 THEN GOTO LABEL 1
2 $100 = $100 + 1
3 END
4 LABEL 1
5 $100 = $200
```

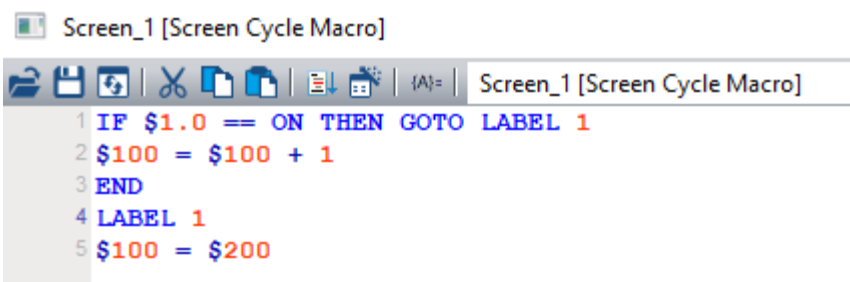
- If the result of AND operation on \$1 and \$2 is not 0, execute LABEL1 (\$100 = \$200); if the result of AND operation on \$1 and \$2 is 0, then execute \$100 = \$100 + 1.

(9) IF == ON			
Expression	Meaning of variable		Note
IF Var1 == ON THEN GOTO LABEL Var2 (W)	Var1	Condition1	W: Word
	Var2	Label Name	
	Description of action		
	If Condition1 is ON, then GOTO executes LABEL Var2.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		
Var2			v

Example

- Var1 is the internal memory address and Var2 is a constant.



- If \$1.0 is ON, execute LABEL1 (\$100 = \$200); if \$1.0 is not ON, then execute \$100 = \$100 + 1.

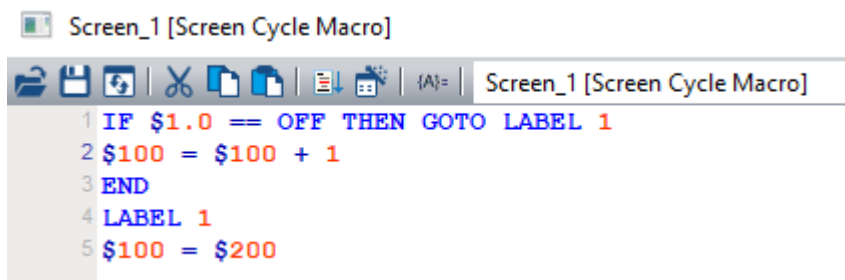
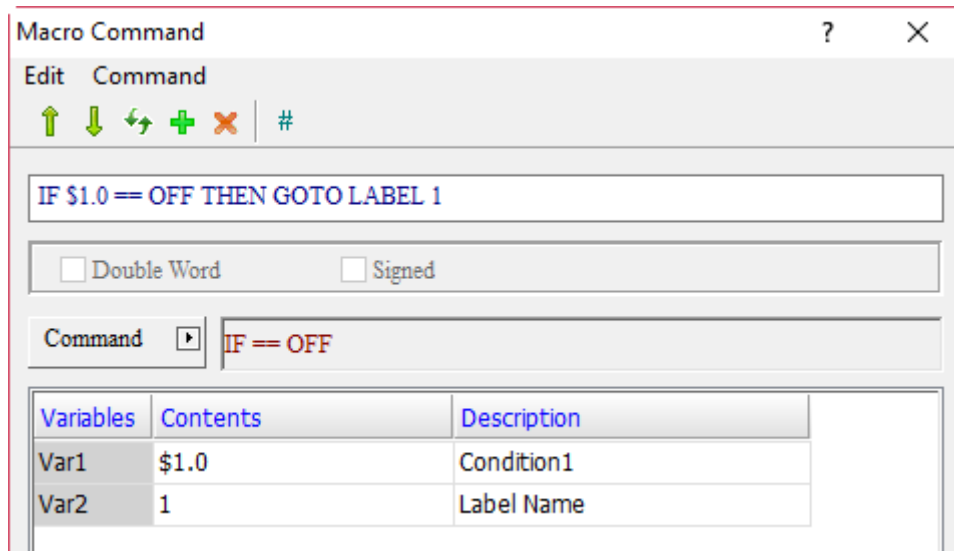
24

(10) IF == OFF			
Expression	Meaning of variable		Note
IF Var1 == OFF THEN GOTO LABEL Var2 (W)	Var1	Condition1	W: Word
	Var2	Label Name	
	Description of action		
	If Condition1 is OFF, then GOTO executes LABEL Var2.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		
Var2			v

Example

- Var1 is the internal memory address and Var2 is a constant.



- If \$1.0 is OFF, execute LABEL1 (\$100 = \$200); if \$1.0 is not OFF, then execute \$100 = \$100 + 1.

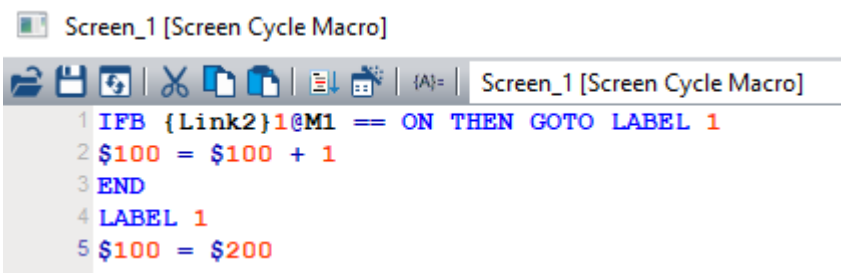
(11) IFB == ON			
Expression	Meaning of variable		Note
IFB Var1 == ON THEN GOTO LABEL Var2 (W)	Var1	Condition1	W: Word
	Var2	Label Name	
	Description of action		
	If Condition1 is ON, then GOTO executes LABEL Var2.		

Note: for the IFB == ON command, its Bit address of Var1 can support the setting of external PLC register.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	
Var2			v

Example

- Var1 is the address of PLC register and Var2 is a constant.



- If M1 is ON, execute LABEL1 (\$100 = \$200); if M1 is not ON, then execute \$100 = \$100 + 1.

24

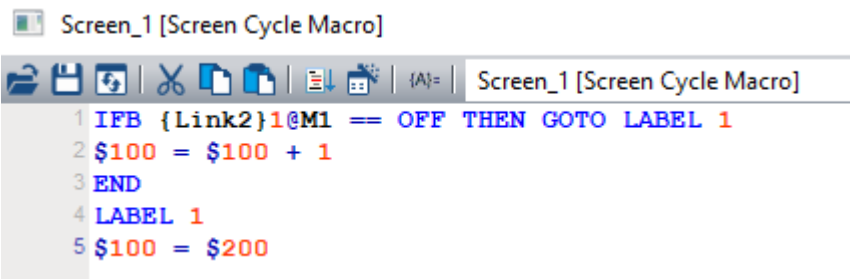
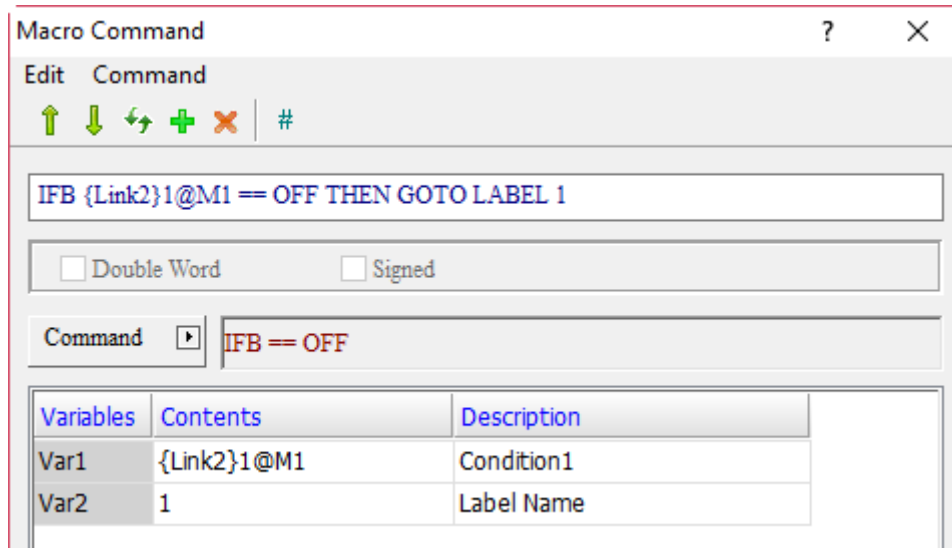
(12) IFB == OFF			
Expression	Meaning of variable		Note
IFB Var1 == OFF THEN GOTO LABEL Var2 (W)	Var1	Condition1	W: Word
	Var2	Label Name	
	Description of action		
	If Condition 1 is OFF, then GOTO executes LABEL Var2.		

Note: for the IFB == OFF command, its Bit address of Var1 can support the setting of external PLC register.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	
Var2			v

Example

- Var1 is the address of PLC register and Var2 is a constant.



- If M1 is OFF, execute LABEL1 (\$100 = \$200); if M1 is not OFF, then execute \$100 = \$100 + 1.

■ IF...THEN CALL (If...call submacro)

```

IF == CALL
IF != CALL
IF > CALL
IF >= CALL
IF < CALL
IF <= CALL
IF AND == 0 CALL
IF AND != 0 CALL
IF == ON CALL
IF == OFF CALL
    
```

The following will introduce the 10 commands of the IF... THEN CALL macro.

(1) IF ==			
Expression	Meaning of variable		Note
IF Var1 == Var2 THEN CALL Var3 (W) IF Var1 == Var2 THEN CALL Var3 (DW) IF Var1 == Var2 THEN CALL Var3 (Signed W) IF Var1 == Var2 THEN CALL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If Condition1 equals Condition2, then call Submacro Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.

- If the value of \$1 equals \$2, call Submacro 1 (\$100 = \$200); if \$1 does not equal \$2, then execute \$100 = \$100 + 1.

(2) IF !=			
Expression	Meaning of variable		Note
IF Var1 != Var2 THEN CALL Var3 (W) IF Var1 != Var2 THEN CALL Var3 (DW) IF Var1 != Var2 THEN CALL Var3 (Signed W) IF Var1 != Var2 THEN CALL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
		If Condition1 does not equal Condition2, call Submacro Var3.	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.

Variables	Contents	Description
Var1	\$1	Condition1
Var2	\$2	Condition2
Var3	1	Call Submacro

```
1 $100 = $200
2 END
```

```
1 IF $1 != $2 THEN CALL 1
2 $100 = $100 + 1
3 END
```

- If the value of \$1 does not equal \$2, call Submacro 1 (\$100 = \$200); if \$1 equals \$2, then execute \$100 = \$100 + 1.

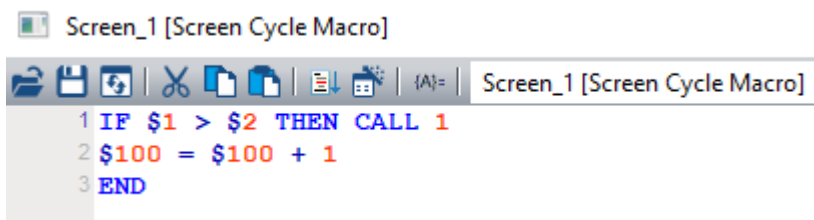
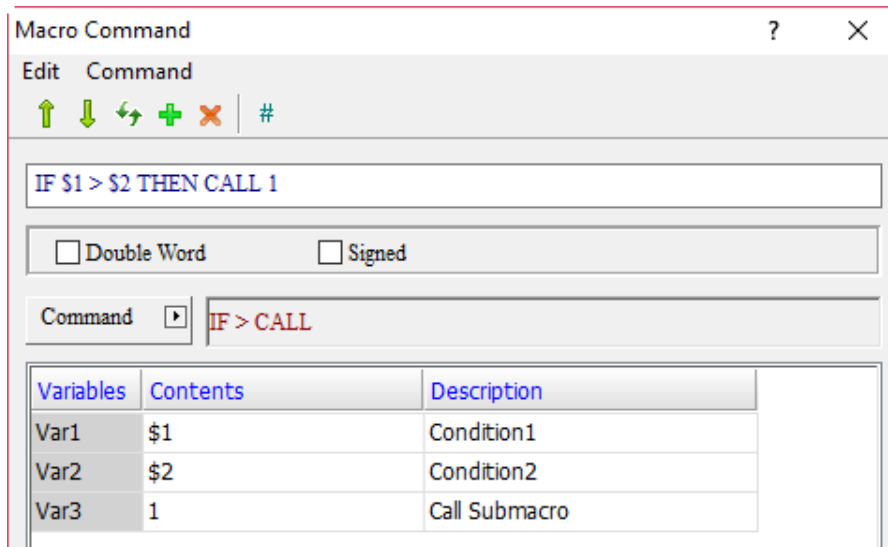
24

(3) IF >			
Expression	Meaning of variable		Note
IF Var1 > Var2 THEN CALL Var3 (W) IF Var1 > Var2 THEN CALL Var3 (DW) IF Var1 > Var2 THEN CALL Var3 (Signed W) IF Var1 > Var2 THEN CALL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If Condition1 is greater than Condition2, call Submacro Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



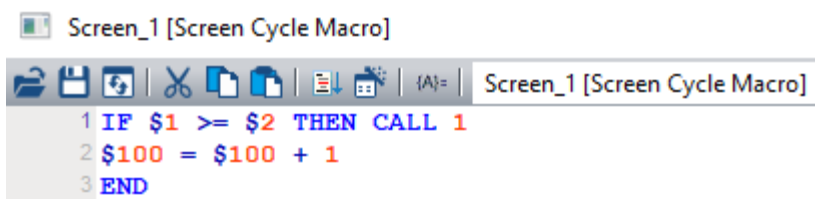
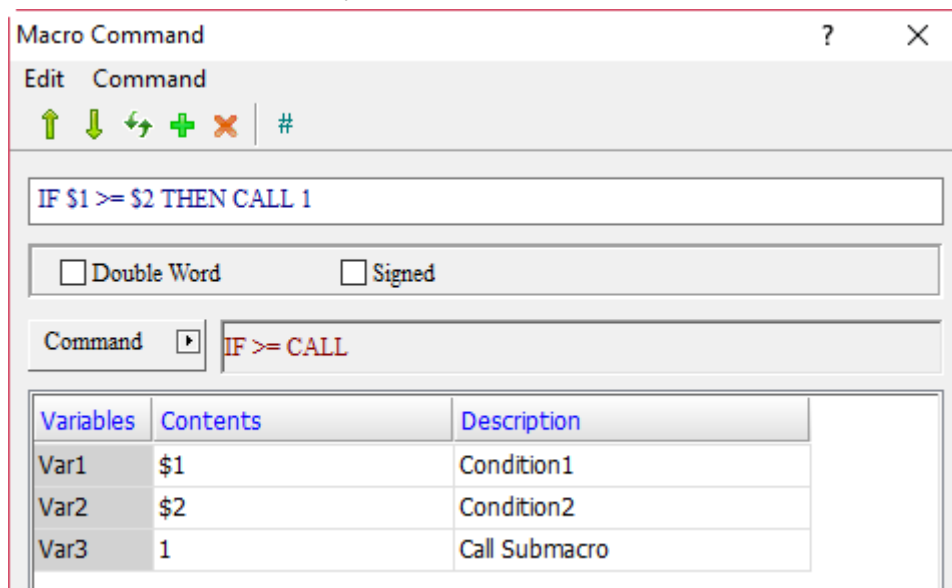
- If the value of \$1 is greater than \$2, call Submacro 1 (\$100 = \$200); if \$1 is less than or equal to \$2, then execute \$100 = \$100 + 1.

(4) IF >=			
Expression	Meaning of variable		Note
IF Var1 >= Var2 THEN CALL Var3 (W) IF Var1 >= Var2 THEN CALL Var3 (DW) IF Var1 >= Var2 THEN CALL Var3 (Signed W) IF Var1 >= Var2 THEN CALL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If Condition1 is greater than or equal to Condition2, call Submacro Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than or equal to \$2, call Submacro 1 (\$100 = \$200); if \$1 is less than \$2, then execute \$100 = \$100 + 1.

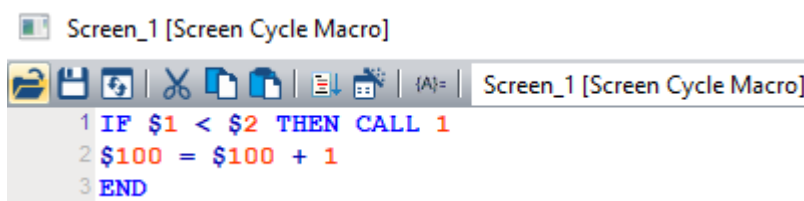
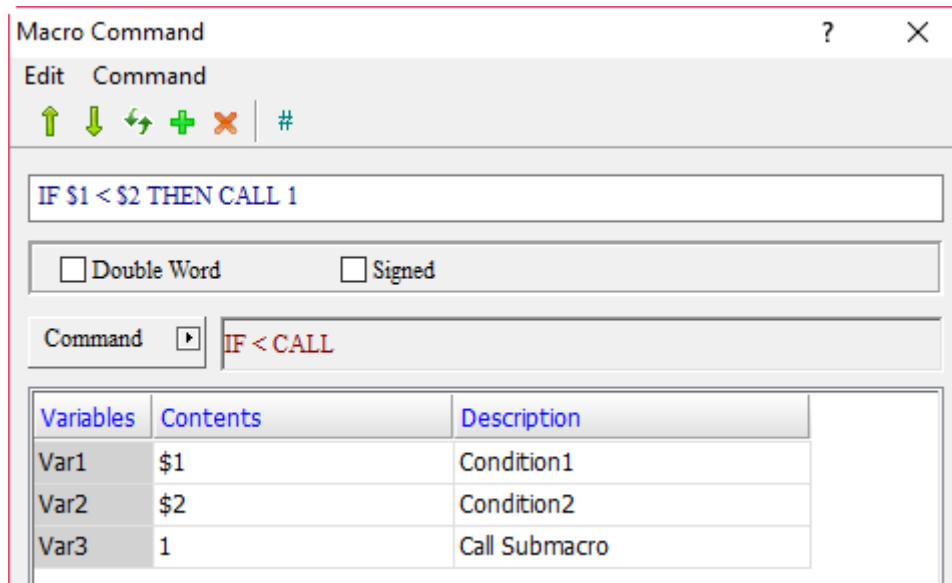
24

(5) IF <			
Expression	Meaning of variable		Note
IF Var1 < Var2 THEN CALL Var3 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
IF Var1 < Var2 THEN CALL Var3 (DW)	Var2	Condition2	
IF Var1 < Var2 THEN CALL Var3 (Signed W)	Var3	Label Name	
IF Var1 < Var2 THEN CALL Var3 (Signed DW)	Description of action		
	If Condition1 is less than Condition2, call Submacro Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



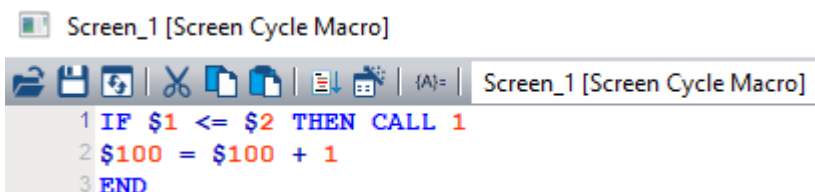
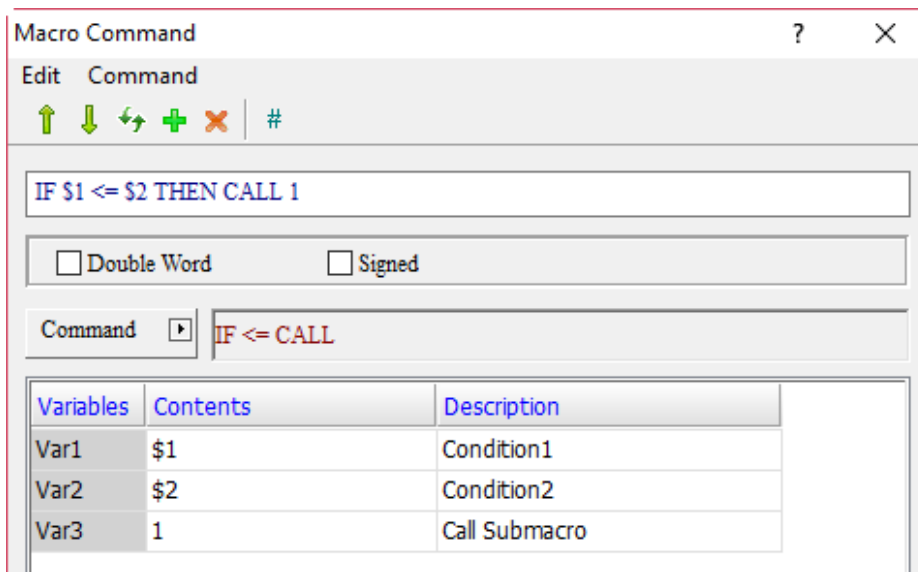
- If the value of \$1 is less than \$2, call Submacro 1 (\$100 = \$200); if \$1 is greater than or equal to \$2, then execute \$100 = \$100 + 1.

(6) IF <=			
Expression	Meaning of variable		Note
IF Var1 <= Var2 THEN CALL Var3 (W) IF Var1 <= Var2 THEN CALL Var3 (DW) IF Var1 <= Var2 THEN CALL Var3 (Signed W) IF Var1 <= Var2 THEN CALL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If Condition1 is less than or equal to Condition2, call Submacro Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than or equal to \$2, call Submacro 1 (\$100 = \$200); if \$1 is greater than \$2, then execute \$100 = \$100 + 1.

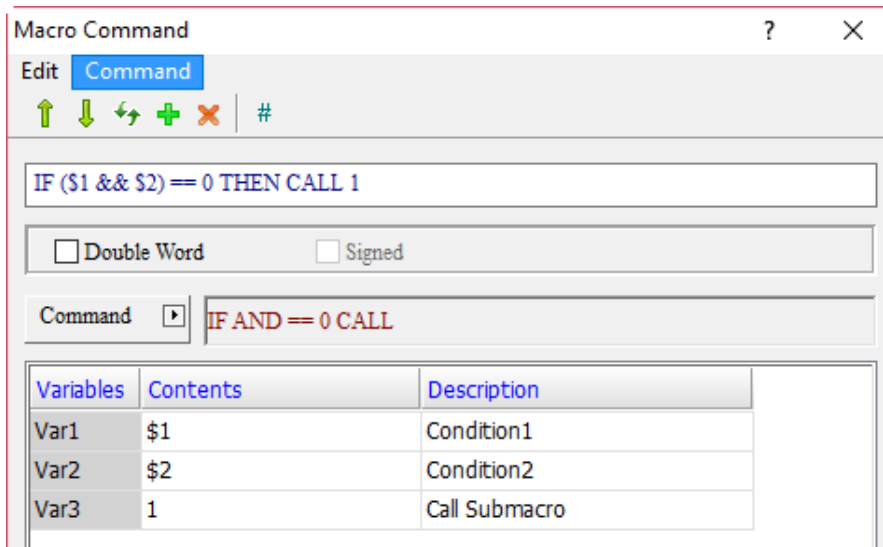
24

(7) IF AND == 0			
Expression	Meaning of variable		Note
IF (Var1 && Var2) == 0 THEN CALL Var3 (W) IF (Var1 && Var2) == 0 THEN CALL Var3 (DW)	Var1	Condition1	W: Word DW: Double Word
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
		If the result of the AND operation on Condition1 and Condition2 is 0, call Submacro Var3.	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



Macro Command

Edit Command

IF (\$1 && \$2) == 0 THEN CALL 1

Double Word Signed

Command IF AND == 0 CALL

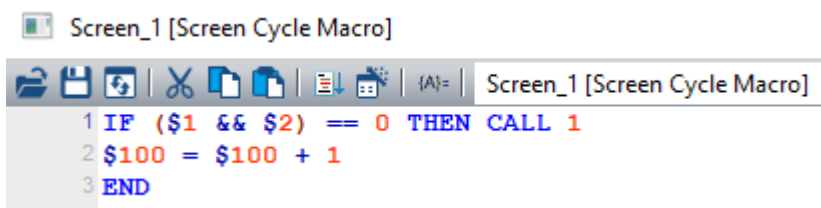
Variables	Contents	Description
Var1	\$1	Condition1
Var2	\$2	Condition2
Var3	1	Call Submacro



[Submacro 1]

1 \$100 = \$200

2 END



Screen_1 [Screen Cycle Macro]

1 IF (\$1 && \$2) == 0 THEN CALL 1

2 \$100 = \$100 + 1

3 END

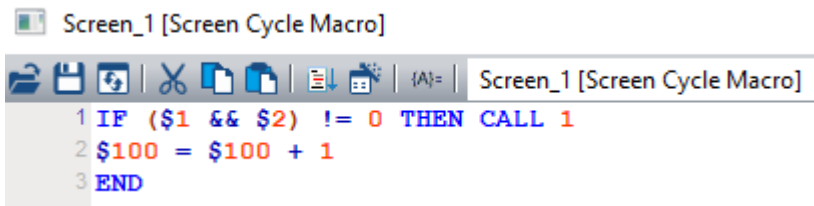
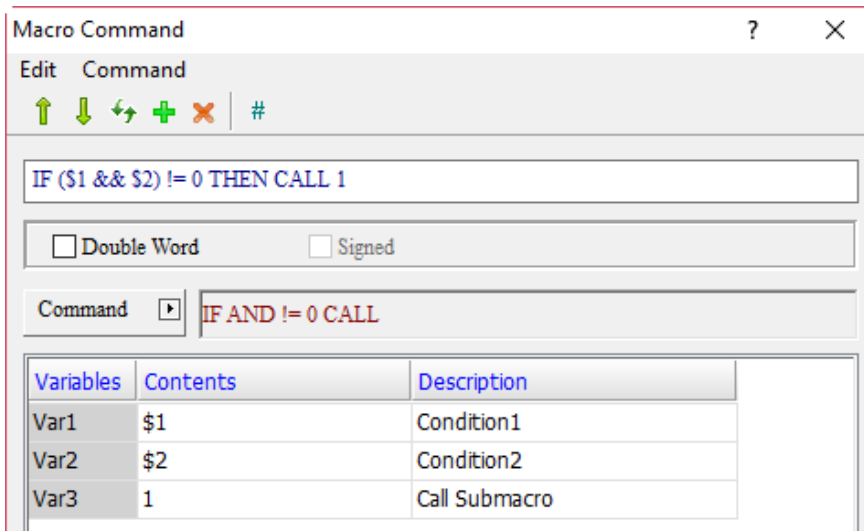
- If the result of the AND operation on \$1 and \$2 is 0, call Submacro 1 (\$100 = \$200); if the result of the AND operation on \$1 and \$2 is not 0, then execute \$100 = \$100 + 1.

(8) IF AND != 0			
Expression	Meaning of variable		Note
IF (Var1 && Var2) != 0 THEN CALL Var3 (W) IF (Var1 && Var2) != 0 THEN CALL Var3 (DW)	Var1	Condition1	W: Word DW: Double Word
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
		If the result of the AND operation on Condition1 and Condition2 is not 0, call Submacro Var3.	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the result of the AND operation on \$1 and \$2 is not 0, call Submacro 1 (\$100 = \$200); if the result of the AND operation on \$1 and \$2 is 0, then execute \$100 = \$100 + 1.

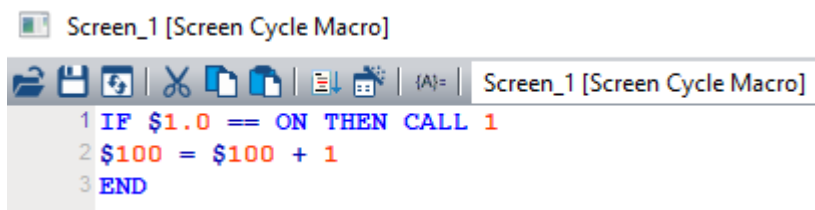
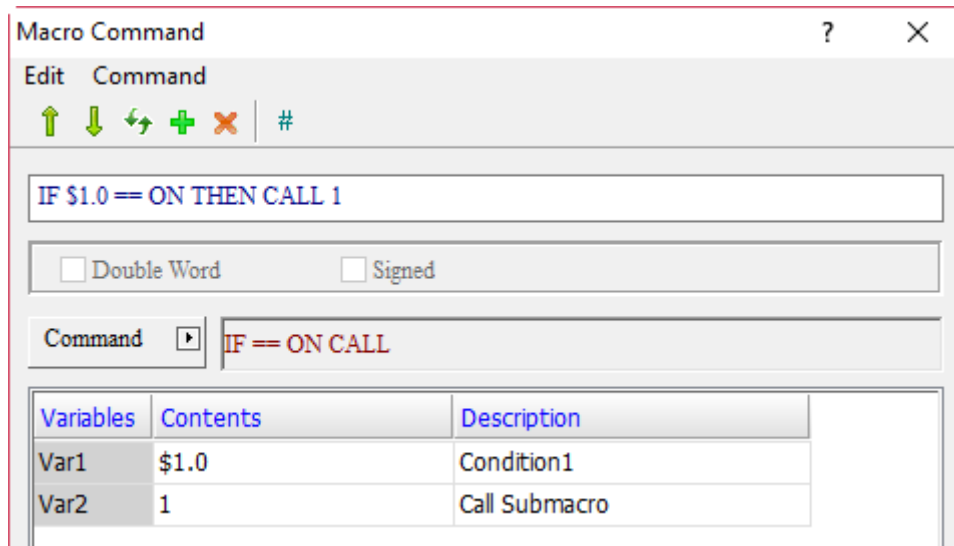
24

(9) IF == ON			
Expression	Meaning of variable		Note
IF Var1 == ON THEN CALL Var2 (W)	Var1	Condition1	W: Word
	Var2	Label Name	
	Description of action		
	If Condition1 is ON, call Submacro Var2.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		
Var2			v

Example

- Var1 is the internal memory address and Var2 is a constant.



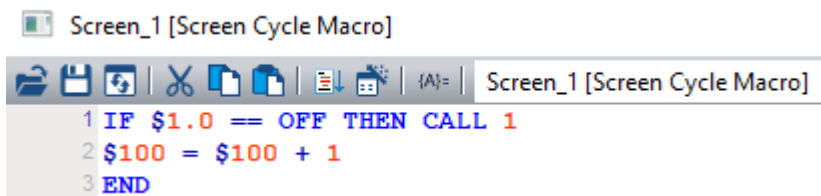
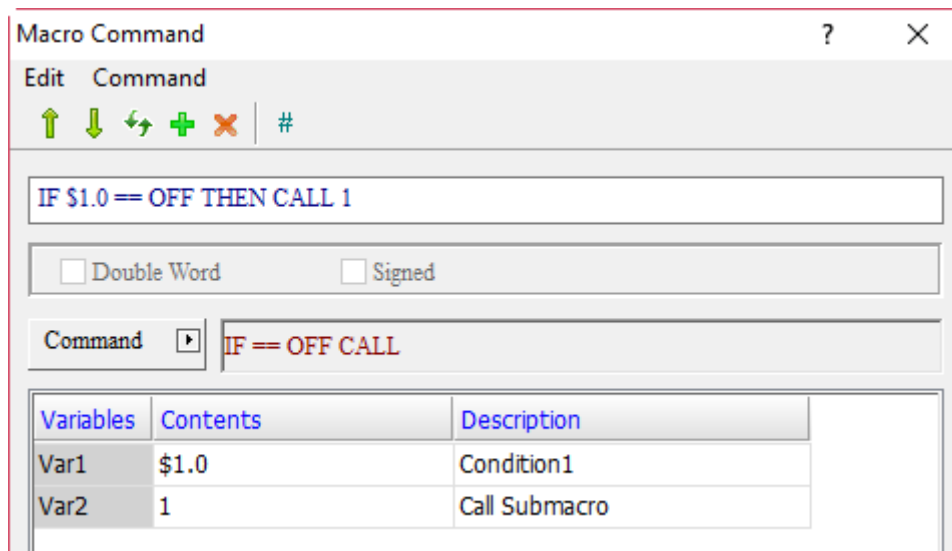
- If \$1.0 is ON, call Submacro 1 (\$100 = \$200); if \$1.0 is not ON, then execute \$100 = \$100 + 1.

(10) IF == OFF			
Expression	Meaning of variable		Note
IF Var1 == OFF THEN CALL Var2 (W)	Var1	Condition1	W: Word
	Var2	Label Name	
	Description of action		
	If Condition1 is OFF, call Submacro Var2.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		
Var2			v

Example

- Var1 is the internal memory address and Var2 is a constant.



- If \$1.0 is OFF, call Submacro 1 (\$100 = \$200); if \$1.0 is not OFF, then execute \$100 = \$100 + 1.

24

■ IF... (If...)

```

IF ==
IF !=
IF >
IF >=
IF <
IF <=
IF AND == 0
IF AND != 0
IF == ON
IF == OFF

```

The following will introduce the 10 commands of the IF... macro.

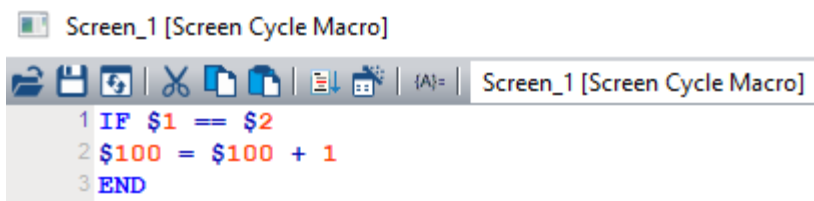
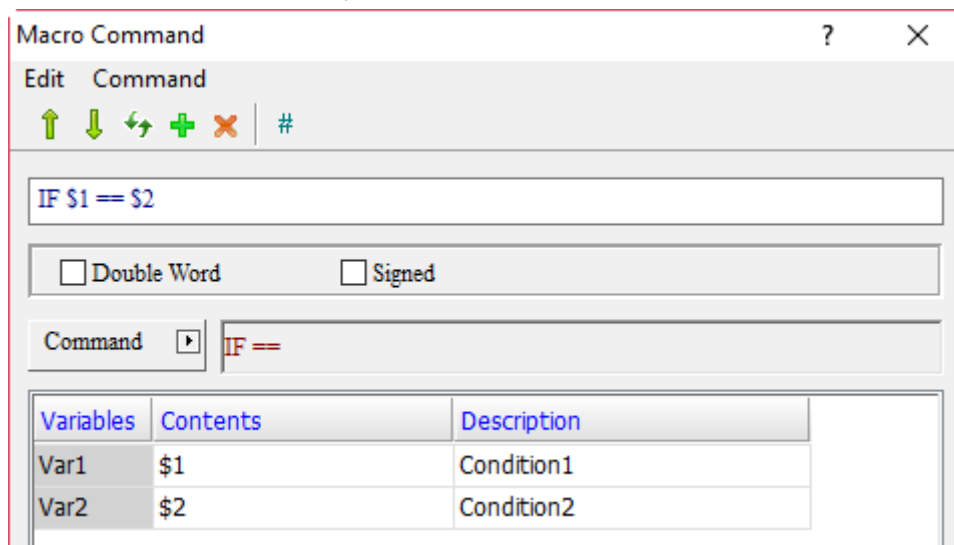
(1) IF ==			
Expression	Meaning of variable		Note
IF Var1 == Var2 (W) IF Var1 == Var2 (DW) IF Var1 == Var2 (Signed W) IF Var1 == Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Description of action		
	If Condition1 equals Condition2, execute...		

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 equals \$2, execute \$100 = \$100 + 1; if \$1 is greater than or less than \$2, then \$100 = \$100 + 1 will not be executed.

(2) IF !=			
Expression	Meaning of variable		Note
IF Var1 != Var2 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
IF Var1 != Var2 (DW)	Var2	Condition2	
IF Var1 != Var2 (Signed W)	Description of action		
IF Var1 != Var2 (Signed DW)	If Condition1 does not equal Condition2, execute...		

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.

The image shows two screenshots from a software interface. The top screenshot is a 'Macro Command' dialog box. It has a title bar with a question mark and a close button. Below the title bar is a menu bar with 'Edit' and 'Command'. Underneath are several icons: an up arrow, a down arrow, a double-headed arrow, a plus sign, a minus sign, and a hash symbol. A text input field contains the command 'IF \$1 != \$2'. Below this are two checkboxes: 'Double Word' and 'Signed', both of which are unchecked. A 'Command' dropdown menu is set to 'IF !='. At the bottom is a table with three columns: 'Variables', 'Contents', and 'Description'. The table contains two rows: 'Var1' with contents '\$1' and description 'Condition1', and 'Var2' with contents '\$2' and description 'Condition2'.

The bottom screenshot shows a window titled 'Screen_1 [Screen Cycle Macro]'. It has a toolbar with various icons and a text area containing the following macro code:

```

1 IF $1 != $2
2 $100 = $100 + 1
3 END
    
```

- If the value of \$1 does not equal \$2, execute \$100 = \$100 + 1; if \$1 is greater than or less than \$2, then \$100 = \$100 + 1 will not be executed.

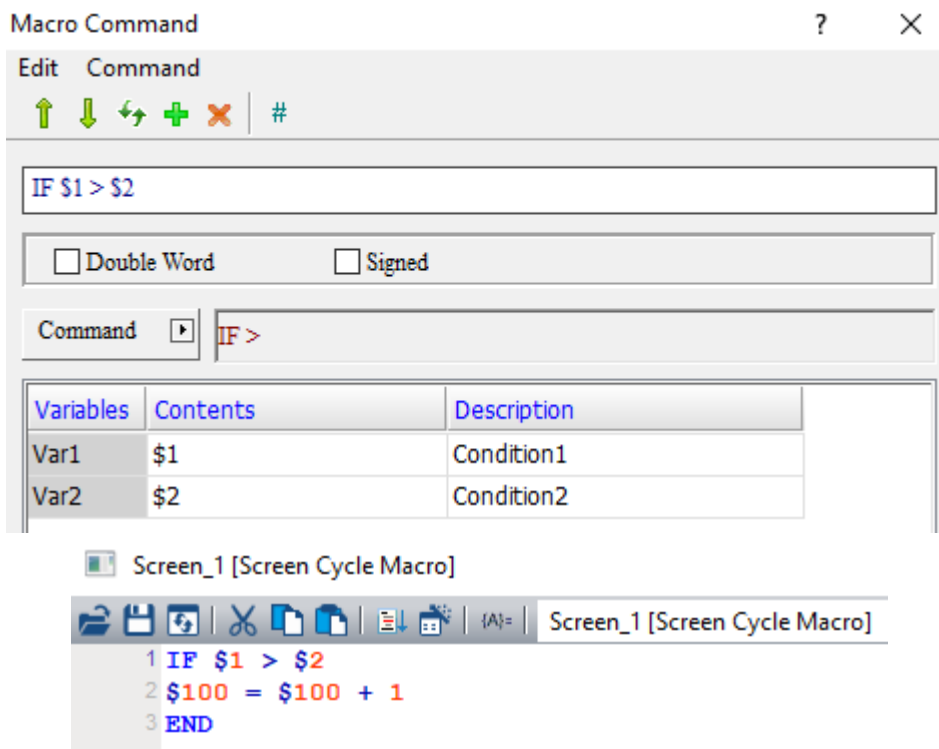
(3) IF >			
Expression	Meaning of variable		Note
IF Var1 > Var2 (W) IF Var1 > Var2 (DW) IF Var1 > Var2 (Signed W) IF Var1 > Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Description of action		
	If Condition1 is greater than Condition2, execute...		

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than \$2, execute \$100 = \$100 + 1; if \$1 is less than or equal to \$2, then \$100 = \$100 + 1 will not be executed.

24

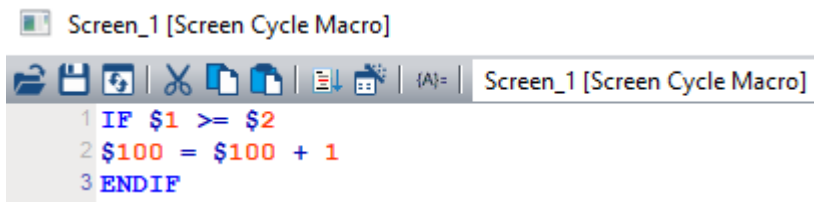
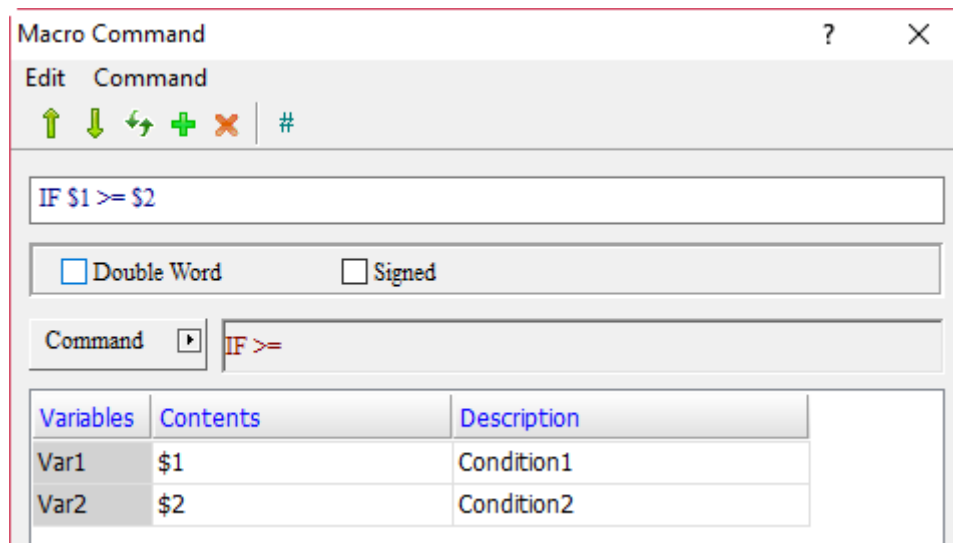
(4) IF >=			
Expression	Meaning of variable		Note
IF Var1 >= Var2 (W) IF Var1 >= Var2 (DW) IF Var1 >= Var2 (Signed W) IF Var1 >= Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Description of action		
	If Condition1 is greater than or equal to Condition2, execute...		

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than or equal to \$2, execute \$100 = \$100 + 1; if \$1 is less than \$2, then \$100 = \$100 + 1 will not be executed.

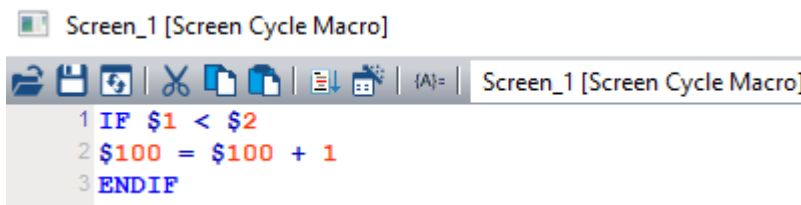
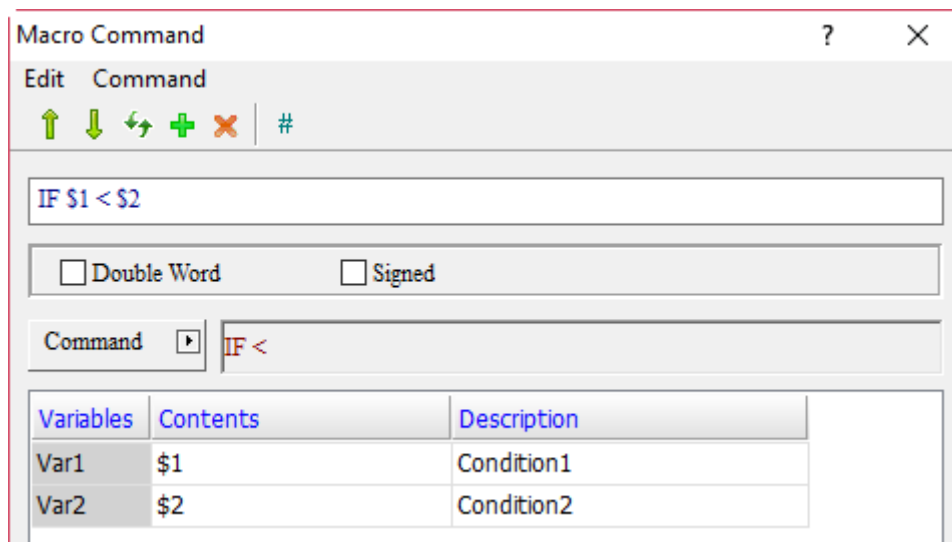
(5) IF <			
Expression	Meaning of variable		Note
IF Var1 < Var2 (W) IF Var1 < Var2 (DW) IF Var1 < Var2 (Signed W) IF Var1 < Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Description of action		
	If Condition1 is less than Condition2, execute...		

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than \$2, execute \$100 = \$100 + 1; if \$1 is greater than or equal to \$2, then \$100 = \$100 + 1 will not be executed.

24

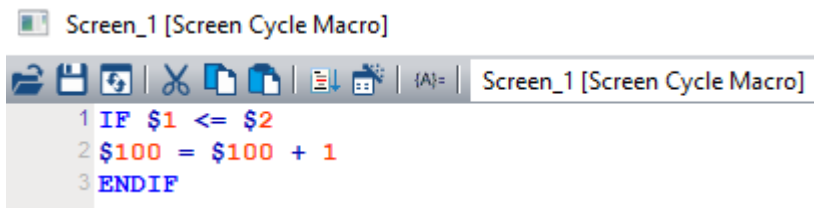
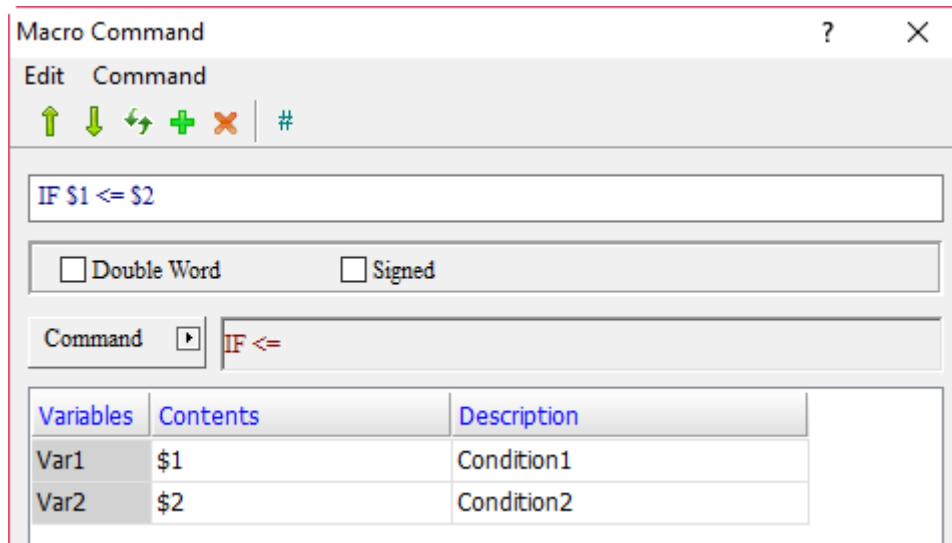
(6) IF <=			
Expression	Meaning of variable		Note
	IF Var1 <= Var2 (W) IF Var1 <= Var2 (DW) IF Var1 <= Var2 (Signed W) IF Var1 <= Var2 (Signed DW)	Var1		Condition1	W: Word DW: Double Word Signed: signed number
Var2		Condition2	
Description of action			
If Condition1 is less than or equal to Condition2, execute...			

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



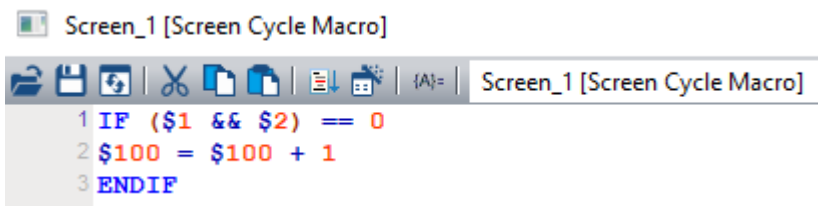
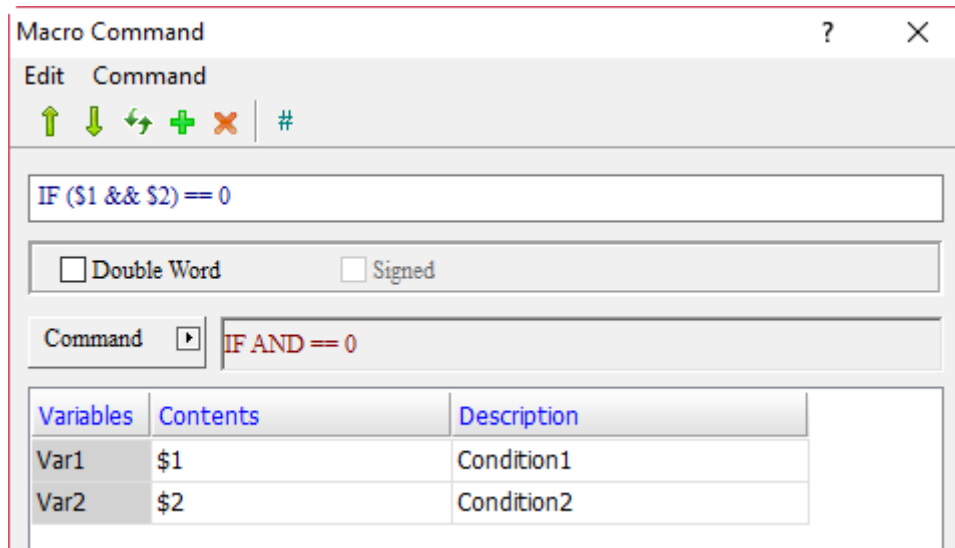
- If the value of \$1 is less than or equal to \$2, execute \$100 = \$100 + 1; if \$1 is greater than \$2, then \$100 = \$100 + 1 will not be executed.

(7) IF AND == 0			
Expression	Meaning of variable		Note
IF (Var1 && Var2) == 0 (W) IF (Var1 && Var2) == 0 (W)	Var1	Condition1	W: Word DW: Double Word
	Var2	Condition2	
	Description of action		
	If the result of the AND operation on Condition1 and Condition2 is 0, execute...		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



- If the result of the AND operation on \$1 and \$2 is 0, execute \$100 = \$100 + 1; if the result of the AND operation on \$1 and \$2 is not 0, then \$100 = \$100 + 1 will not be executed.

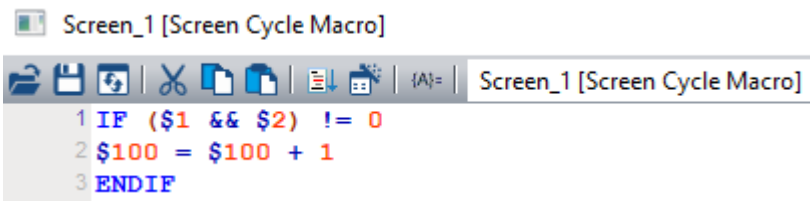
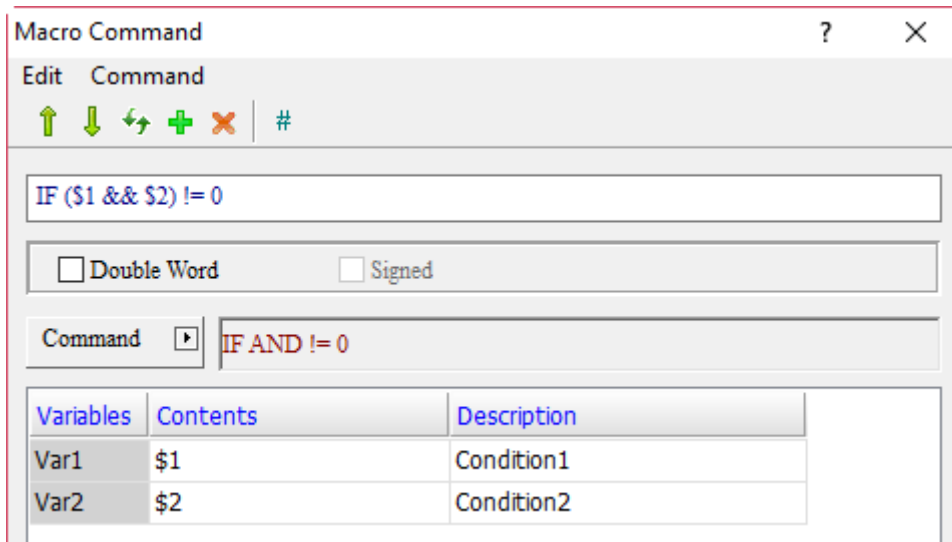
24

(8) IF AND != 0			
Expression	Meaning of variable		Note
IF (Var1 && Var2) != 0 (W) IF (Var1 && Var2) != 0 (DW)	Var1	Condition1	W: Word DW: Double Word
	Var2	Condition2	
	Description of action		
	If the result of the AND operation on Condition1 and Condition2 is not 0, execute...		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



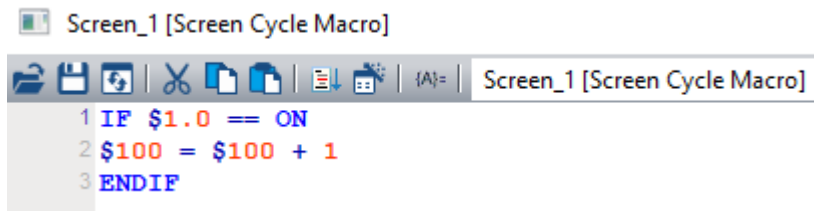
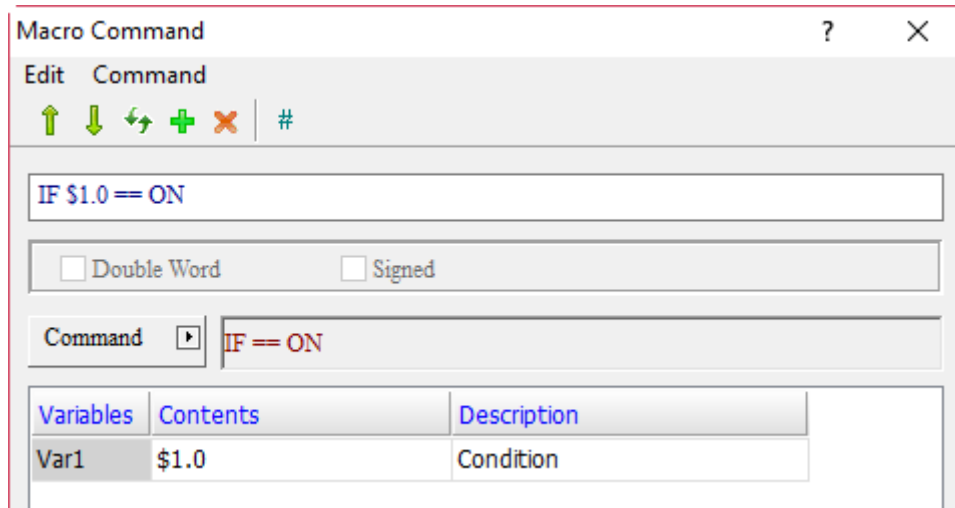
- If the result of the AND operation on \$1 and \$2 is not 0, execute \$100 = \$100 + 1; if the result of the AND operation on \$1 and \$2 is 0, then \$100 = \$100 + 1 will not be executed.

(9) IF == ON			
Expression	Meaning of variable		Note
IF Var1 == ON (W)	Var1	Condition1	W: Word
	Description of action		
	If Condition1 is ON, execute...		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		

Example

- Var1 is the internal memory address.



- If \$1.0 is ON, execute \$100 = \$100 + 1; if \$1.0 is not ON, then \$100 = \$100 + 1 will not be executed.

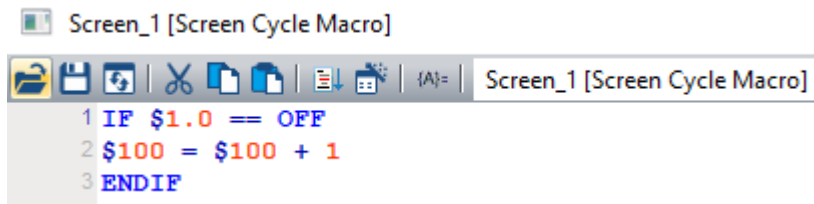
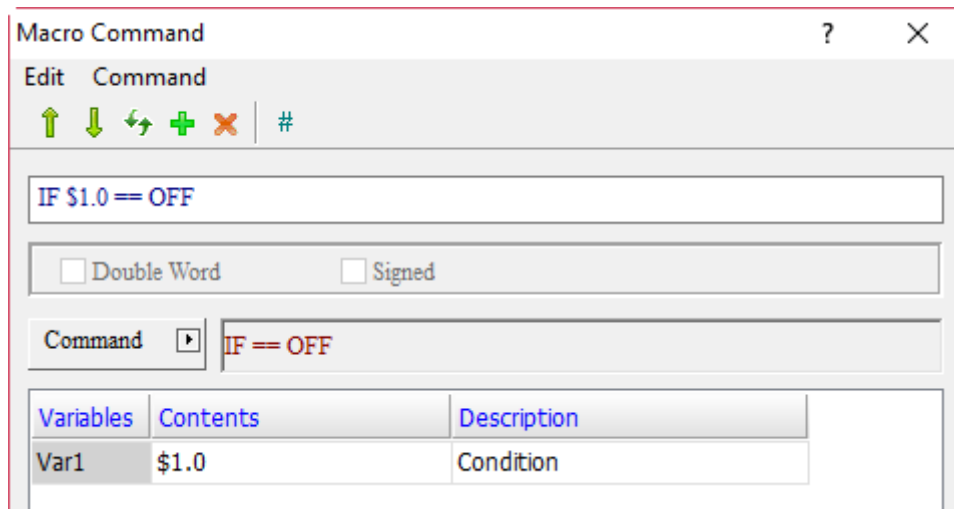
24

(10) IF == OFF			
Expression	Meaning of variable		Note
IF Var1 == OFF (W)	Var1	Condition1	W: Word
	Description of action		
	If Condition1 is OFF, execute...		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		

Example

- Var1 is the internal memory address.



- If \$1.0 is OFF, execute \$100 = \$100 + 1; if \$1.0 is not OFF, then \$100 = \$100 + 1 will not be executed.

■ ELSEIF... (else if...)

```

ELSEIF ==
ELSEIF !=
ELSEIF >
ELSEIF >=
ELSEIF <
ELSEIF <=
ELSEIF AND == 0
ELSEIF AND != 0
ELSEIF == ON
ELSEIF == OFF
    
```

The following will introduce the 10 commands of ELSEIF... macro.

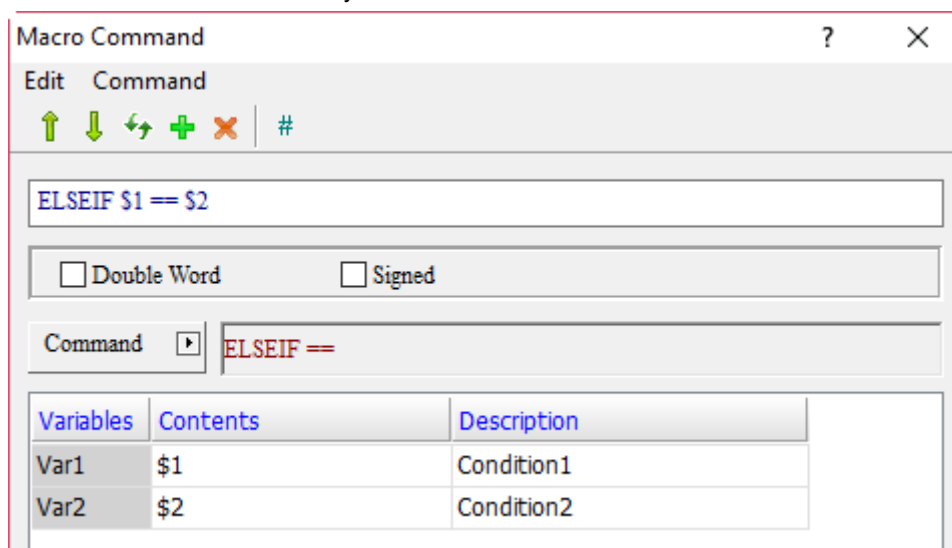
(1) ELSEIF ==			
Expression	Meaning of variable		Note
ELSEIF Var1 == Var2 (W) ELSEIF Var1 == Var2 (DW) ELSEIF Var1 == Var2 (Signed W) ELSEIF Var1 == Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Description of action		
	Else if Condition1 equals Condition2, execute...		

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



Example

```

1 IF $1 != $2
2 $200 = $200 + 1
3 ELSEIF $1 == $2
4 $100 = $100 + 1
5 ENDIF
    
```

- If the value of \$1 does not equal \$2, execute \$200 = \$200 + 1; else if \$1 equals \$2, then execute \$100 = \$100 + 1.

(2) ELSEIF !=

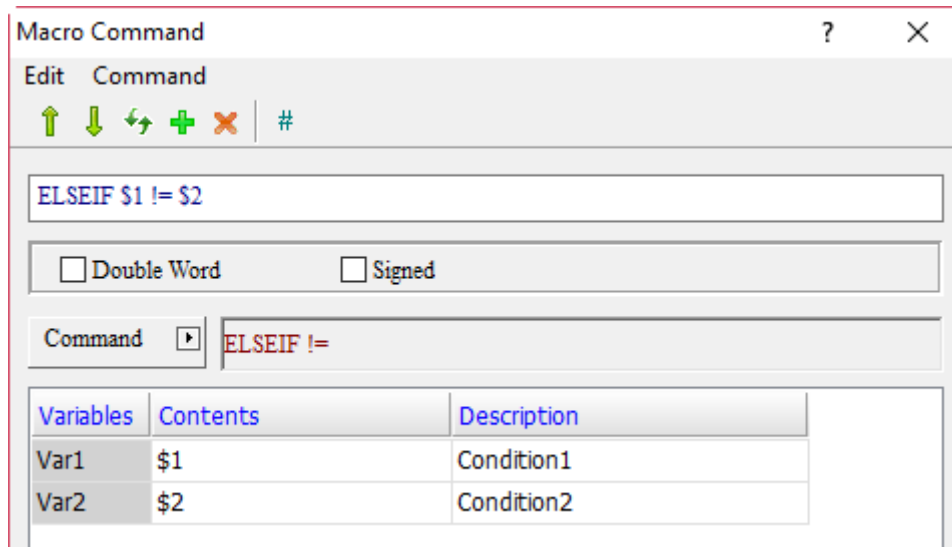
Expression	Meaning of variable		Note
ELSEIF Var1 != Var2 (W) ELSEIF Var1 != Var2 (DW) ELSEIF Var1 != Var2 (Signed W) ELSEIF Var1 != Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Description of action		
	Else if Condition1 does not equal Condition2, execute...		

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



Example

```

Screen_1 [Screen Cycle Macro]
1 IF $1 == $2
2   $200 = $200 + 1
3 ELSEIF $1 != $2
4   $100 = $100 + 1
5 ENDIF
    
```

- If the value of \$1 equals \$2, execute \$200 = \$200 + 1; else if \$1 does not equal \$2, then execute \$100 = \$100 + 1.

(3) ELSEIF >

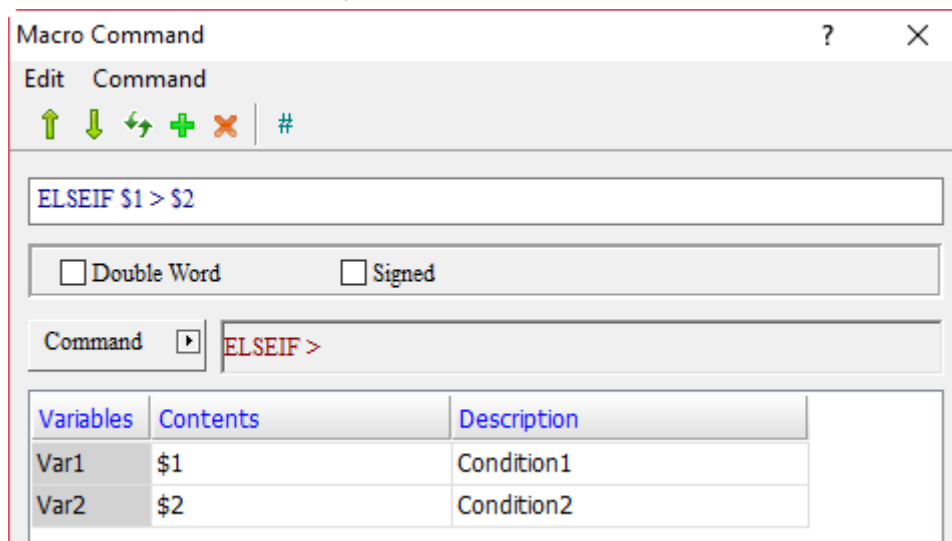
Expression	Meaning of variable		Note
ELSEIF Var1 > Var2 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
ELSEIF Var1 > Var2 (DW)	Var2	Condition2	
ELSEIF Var1 > Var2 (Signed W)	Description of action		
ELSEIF Var1 > Var2 (Signed DW)	Else if Condition1 is greater than Condition2, execute...		

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



Example

```

Screen_1 [Screen Cycle Macro]
1 IF $1 = $2
2   $200 = $200 + 1
3 ELSEIF $1 > $2
4   $100 = $100 + 1
5 ENDIF
    
```

- If the value of \$1 equals \$2, execute \$200 = \$200 + 1; else if \$1 is greater than \$2, then execute \$100 = \$100 + 1.

(4) ELSEIF >=

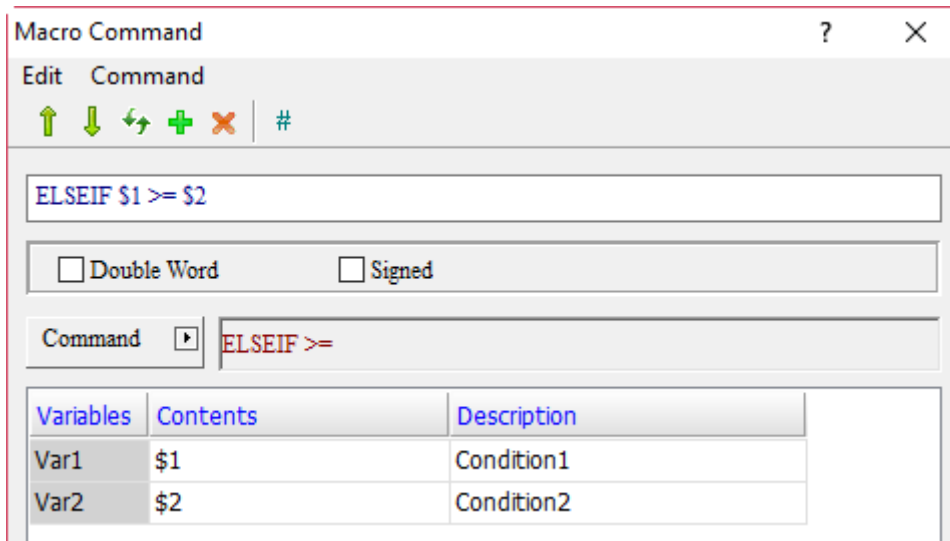
Expression	Meaning of variable		Note
ELSEIF Var1 >= Var2 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
ELSEIF Var1 >= Var2 (DW)	Var2	Condition2	
ELSEIF Var1 >= Var2 (Signed W)	Description of action		
ELSEIF Var1 >= Var2 (Signed DW)	Else if Condition1 is greater than or equal to Condition2, execute...		

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



Example

```

Screen_1 [Screen Cycle Macro]
IF $1 < $2
$200 = $200 + 1
ELSEIF $1 >= $2
$100 = $100 + 1
ENDIF
    
```

- If the value of \$1 is less than \$2, execute \$200 = \$200 + 1; else if \$1 is greater than or equal to \$2, then execute \$100 = \$100 + 1.

(5) ELSEIF <

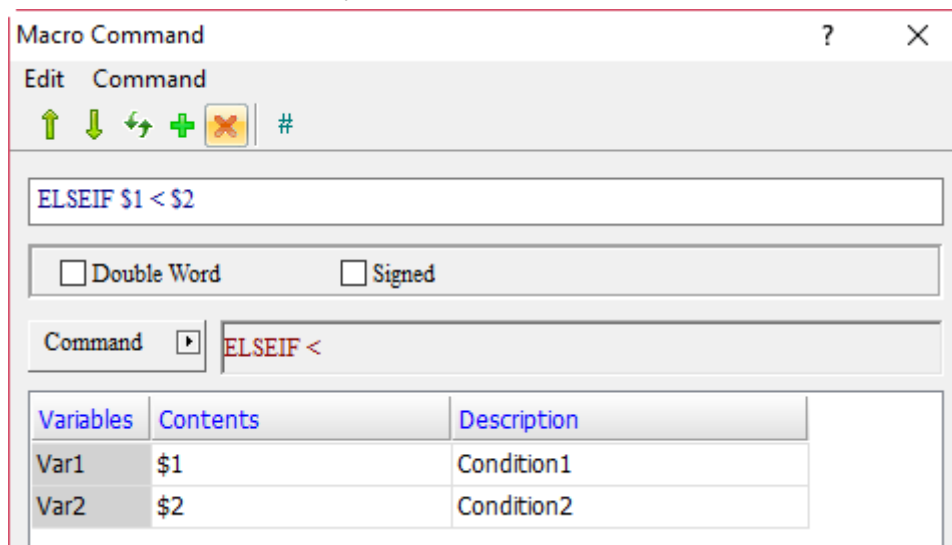
Expression	Meaning of variable		Note
ELSEIF Var1 < Var2 (W)	Var 1	Condition 1	W: Word DW: Double Word Signed: signed number
ELSEIF Var1 < Var2 (DW)	Var 2	Condition 2	
ELSEIF Var1 < Var2 (Signed W)	Description of action		
ELSEIF Var1 < Var2 (Signed DW)	Else if Condition1 is less than Condition2, execute...		

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



Example

```

Screen_1 [Screen Cycle Macro]
1 IF $1 >= $2
2   $200 = $200 + 1
3 ELSEIF $1 < $2
4   $100 = $100 + 1
5 ENDIF
    
```

- If the value of \$1 is greater than or equal to \$2, execute \$200 = \$200 + 1; else if \$1 is less than \$2, then execute \$100 = \$100 + 1.

(6) ELSEIF <=

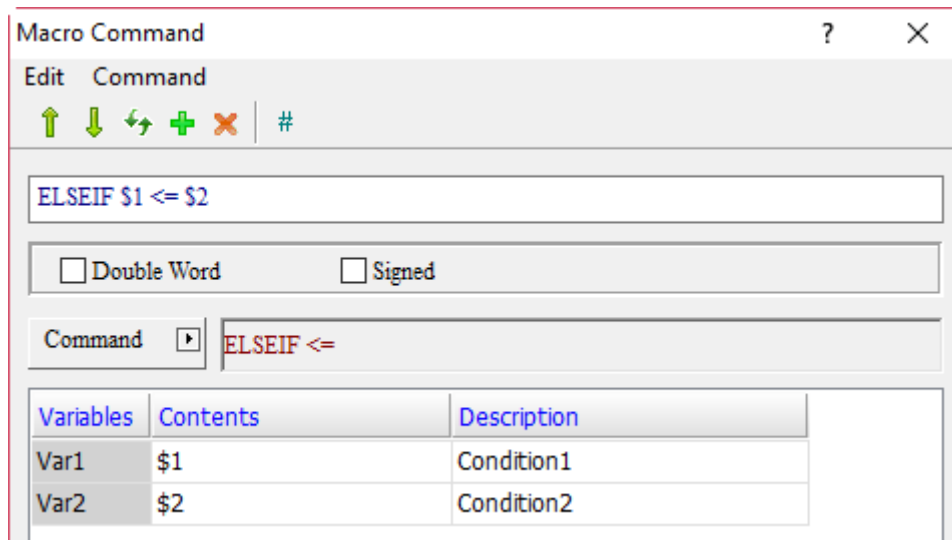
Expression	Meaning of variable		Note
ELSEIF Var1 <= Var2 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
ELSEIF Var1 <= Var2 (DW)	Var2	Condition2	
ELSEIF Var1 <= Var2 (Signed W)	Description of action		
ELSEIF Var1 <= Var2 (Signed DW)	Else if Condition1 is less than or equal to Condition2, execute...		

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	⊙		⊙
Var2	⊙		⊙

Example

- Var1 and Var2 are internal memory addresses.



Example

```

Screen_1 [Screen Cycle Macro]
1 IF $1 > $2
2 $200 = $200 + 1
3 ELSEIF $1 <= $2
4 $100 = $100 + 1
5 ENDIF
    
```

- If the value of \$1 is greater than \$2, execute \$200 = \$200 + 1; else if \$1 is less than or equal to \$2, then execute \$100 = \$100 + 1.

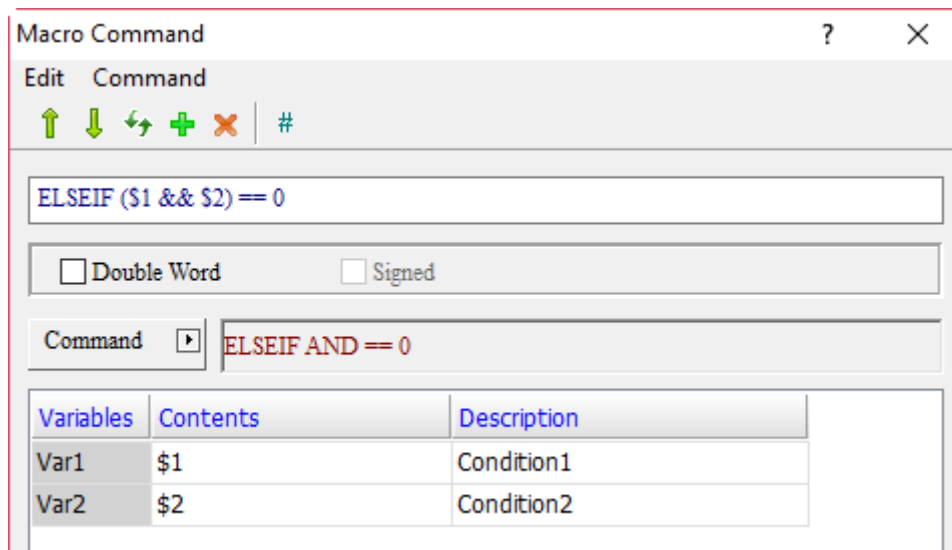
(7) ELSEIF AND == 0

Expression	Meaning of variable	Note
ELSEIF (Var1 && Var2) == 0 (W) ELSEIF (Var1 && Var2) == 0 (DW)	Var1 Condition1	W: Word DW: Double Word
	Var2 Condition2	
	Description of action	
	Else if the result of the AND operation on Condition1 and Condition2 is 0, execute...	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



Example

```

Screen_1 [Screen Cycle Macro]
1 IF ($1 && $2) != 0
2 $200 = $200 + 1
3 ELSEIF ($1 && $2) == 0
4 $100 = $100 + 1
5 ENDIF
    
```

- If the result of the AND operation on \$1 and \$2 is not 0, execute \$200 = \$200 + 1; else if the result of the AND operation on \$1 and \$2 is 0, then execute \$100 = \$100 + 1.

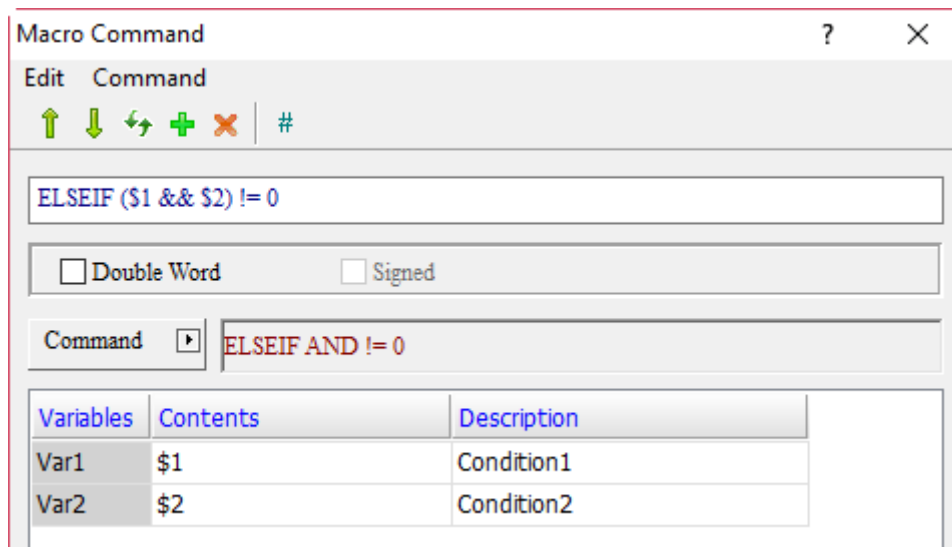
(8) ELSEIF AND != 0

Expression	Meaning of variable	Note
ELSEIF (Var1 && Var2) != 0 (W) ELSEIF (Var1 && Var2) != 0 (DW)	Var1	Condition1
	Var2	Condition2
	Description of action	
	Else if the result of the AND operation on Condition1 and Condition2 is not 0, execute...	
		W: Word DW: Double Word

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are internal memory addresses.



Example

```

Screen_1 [Screen Cycle Macro]
1 IF ($1 && $2) == 0
2 $200 = $200 + 1
3 ELSEIF ($1 && $2) != 0
4 $100 = $100 + 1
5 ENDIF
    
```

- If the result of the AND operation on \$1 and \$2 is 0, execute \$200 = \$200 + 1; else if the result of the AND operation on \$1 and \$2 is not 0, then execute \$100 = \$100 + 1.

(9) ELSEIF ==ON

Expression	Meaning of variable	Note
ELSEIF Var1 == ON (W)	Var1	W: Word
	Condition1	
	Description of action	
	Else if Condition1 is ON, execute...	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		

Example

- Var1 is the internal memory address.

Macro Command

Edit Command

↑ ↓ ↻ + × #

ELSEIF \$1.0 == ON

Double Word Signed

Command ▾ ELSEIF == ON

Variables	Contents	Description
Var1	\$1.0	Condition

```

Screen_1 [Screen Cycle Macro]
1 IF $1.0 == OFF
2 $200 = $200 + 1
3 ELSEIF $1.0 == ON
4 $100 = $100 + 1
5 ENDIF
    
```

- If \$1.0 is OFF, execute \$200 = \$200 + 1; else if \$1.0 is ON, then execute \$100 = \$100 + 1.

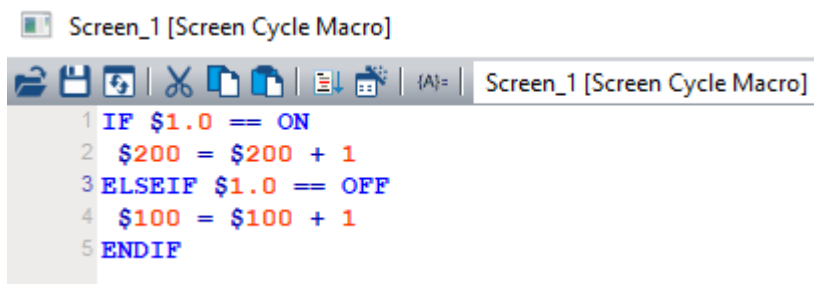
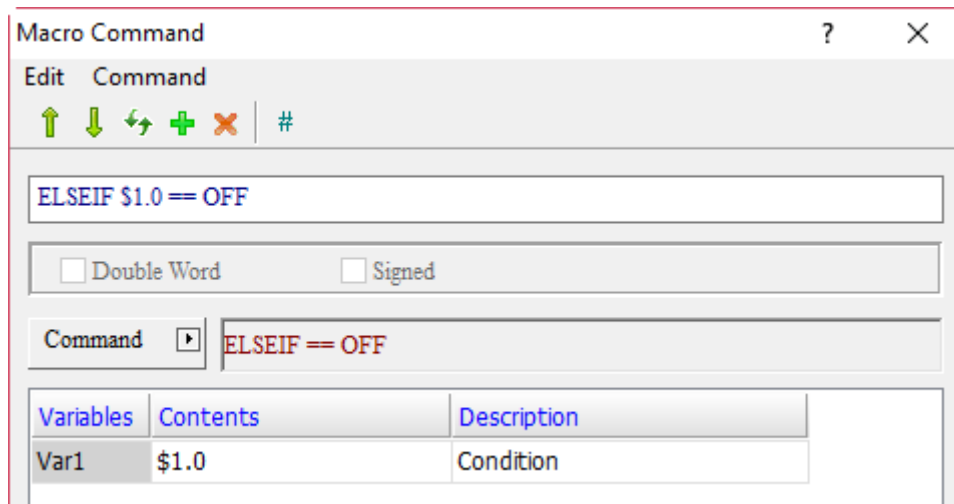
24

(10) ELSEIF == OFF			
Expression	Meaning of variable		Note
ELSEIF Var1 == OFF (W)	Var1	Condition1	W: Word
	Description of action		
	Else if Condition1 is OFF, execute...		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	V (can only be Bit)		

Example

- Var1 is the internal memory address.



- If \$1.0 is ON, execute $\$200 = \$200 + 1$; else if \$1.0 is OFF, then execute $\$100 = \$100 + 1$.

■ ELSE

The ELSE command is mainly used to execute other programs when conditions of IF... or ELSEIF are not met. ELSE must be used together with IF... and ENDIF, otherwise the software will prompt a syntax error message while compiling.

```

Screen_1 [Screen Cycle Macro]
1 IF $1 == $2
2   $200 = $200 + 1
3 ELSEIF $1 > $2
4   $100 = $100 + 1
5 ELSE
6   $300 = $300 + 1
7 ENDIF
    
```

■ ENDIF

ENDIF is mainly used together with IF..., ELSE, and ELSEIF... commands.

```

Screen_1 [Screen Cycle Macro]
1 IF $1 == $2
2   $200 = $200 + 1
3 ELSEIF $1 > $2
4   $100 = $100 + 1
5 ELSE
6   $300 = $300 + 1
7 ENDIF
    
```

■ FCMP (comparison of floating-point value)

Expression	Meaning of variable		Note	
Var1 = FCMP(Var2, Var3) (Signed DW)	Var1	Return value of comparison result		DW: Double Word Signed: signed number
		=	0	
		>	1	
	<	2		
	Var2	Condition1		
	Var3	Condition2		
Description of action				
Compare Var2 and Var3, and put the result in Var1.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v

24

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.

The screenshot shows the 'Macro Command' dialog box. The command field contains '\$1 = FCMP(67.5, 34.9) (Signed DW)'. Below the command field, there are two checked checkboxes: 'Double Word' and 'Signed'. The 'Command' dropdown menu is set to 'FCMP'. At the bottom, there is a table with three columns: 'Variables', 'Contents', and 'Description'.

Variables	Contents	Description
Var1	\$1	Return Value, 0: =, 1: >, 2: <
Var2	67.5	Condition1
Var3	34.9	Condition2

- Compare the floating-point values of 67.5 and 34.9. $67.5 > 34.9$, and the return value is 1, so $\$1 = 1$.

24.3.6 Flow Control

FlowControl includes commands such as GOTO, LABEL, CALL, RET, FOR, NEXT, END, etc., which you can use to control the execution process while writing macro programs. The details will be provided below.

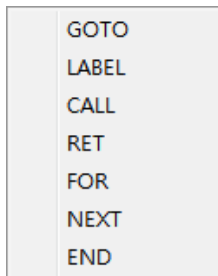


Figure 24.3.6.1 FlowControl

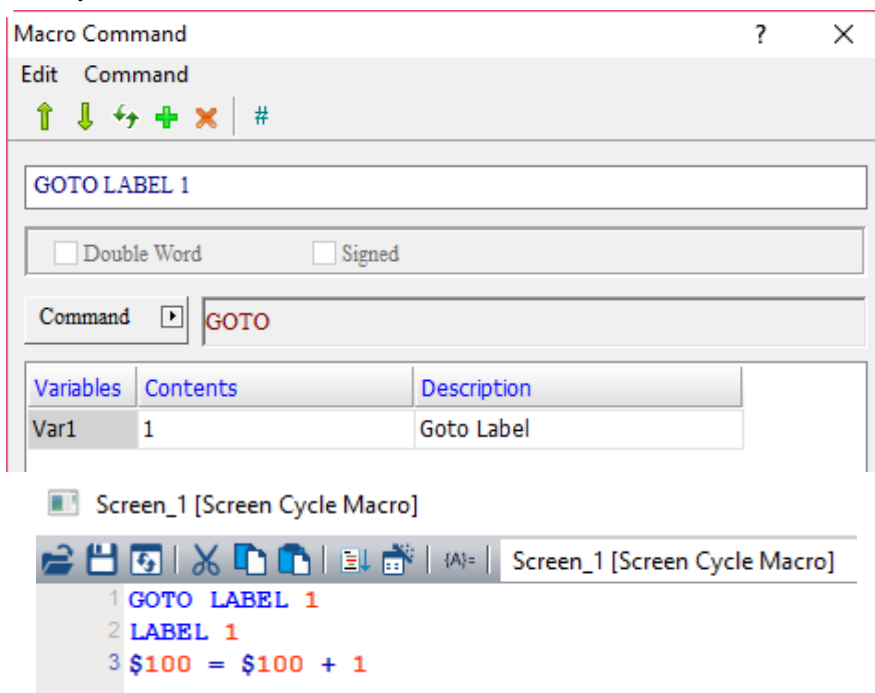
- GOTO LABEL (unconditionally execute a label name)

Expression	Meaning of variable		Note
GOTO LABEL Var1 (W)	Var1	Goto Label	W: Word
	Description of action		
	Directly execute the specified label name.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1			v

Example

- Var1 can only be a constant.



- Execute LABEL 1 directly. The command of LABEL 1 is \$100 = \$100 + 1.

■ LABEL (label name)

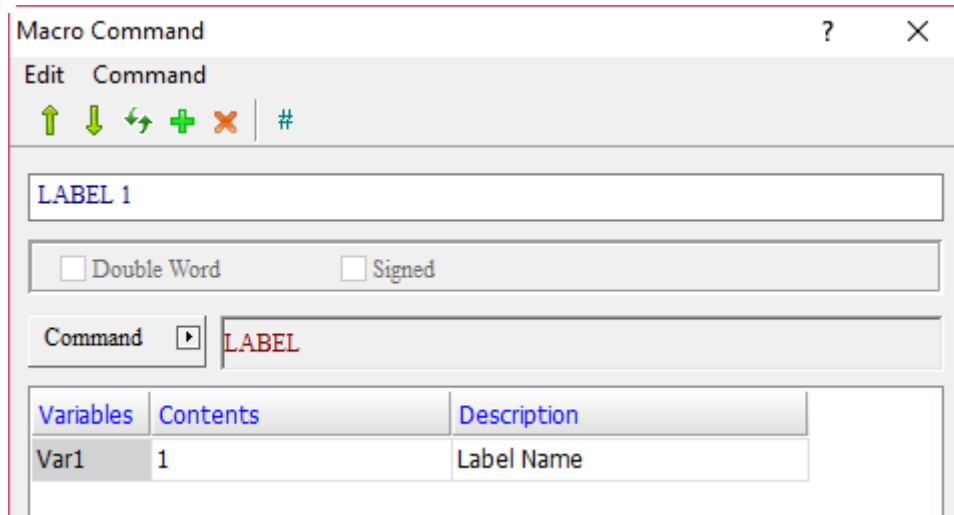
Expression	Meaning of variable		Note
LABEL Var1 (W)	Var 1	Label name	W: Word
	Description of action		
	Specify the label name.		

Note: the same label name shall not be used in the same macro.

Variable	Type		
	Internal memory	PLC register	Constant
Var1			v

Example

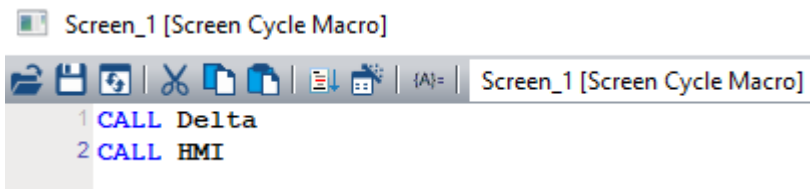
Var1 can only be a constant.



■ CALL (call submacro)

Expression	Meaning of variable		Note
CALL Var1 (W)	Var1	Submacro number (1 - 512)	W: Word
	Description of action		
	Specify the names of submacros.		

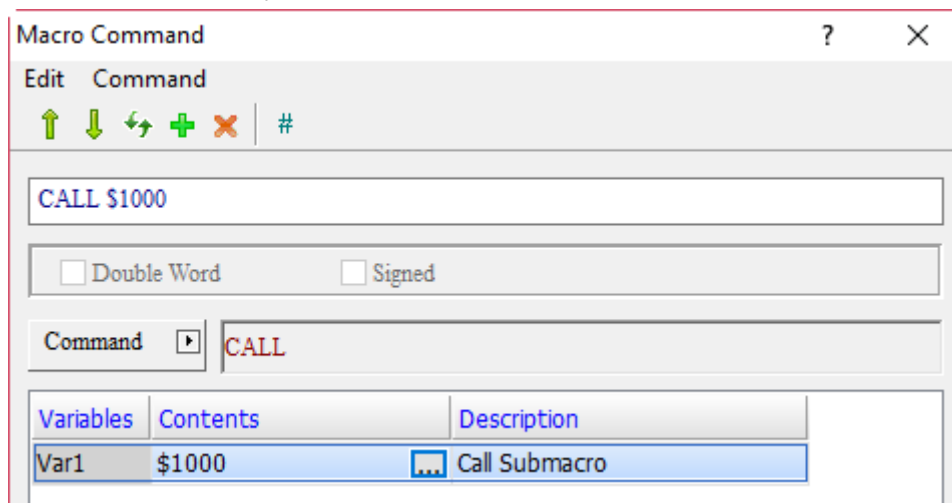
Note: Var1 can support the input of Chinese and English names. If you want to input Chinese and English names, please enter its macro alias manually. The Macro Wizard only supports the input of submacro numbers.



Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v

Example

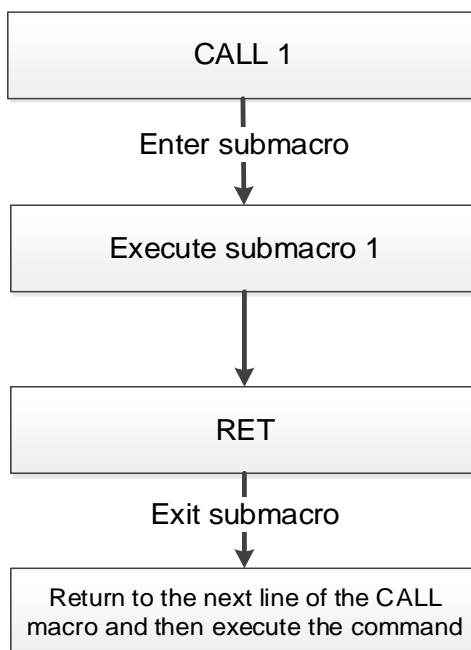
- Var1 is the internal memory address.



- You can execute the submacro commands by entering submacro numbers via the internal memory address \$1000 (Numeric Entry element).

- RET (exit submacro)

Expression	Description of action	Note
RET	Exit submacro and return to the next line of the CALL submacro and then execute the command.	RET should be added at the end of the submacro, and must be used together with the CALL command.

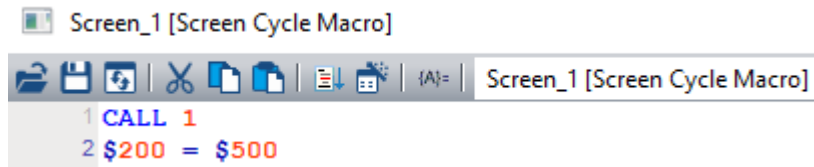


Example

- The RET command must be written at the end of the submacro.



- Return and execute the next line of the CALL macro command after exiting the submacro.



- FOR, NEXT (program loop)

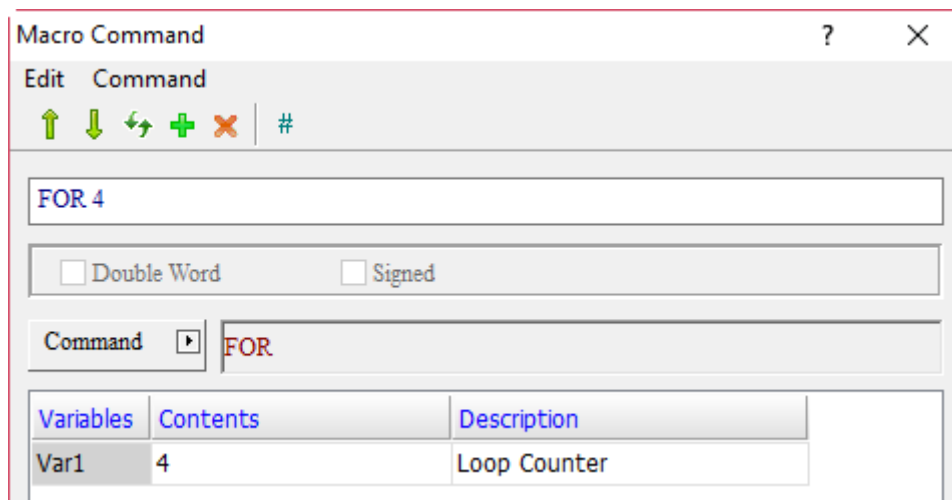
Expression	Meaning of variable		Note
FOR Var1 (W)	Var1	Loop Counter	W: Word
	Description of action		
	Execute the statement for Var1 times continuously.		
Expression	Description of action		Note
NEXT	It must be used together with the FOR command.		

Note: the multilayer loops can be used to support up to 10 layers.

Memory usage			
Variable	Internal memory	PLC register	Constant
Var1	v		v

Example

- Var1 is a constant.



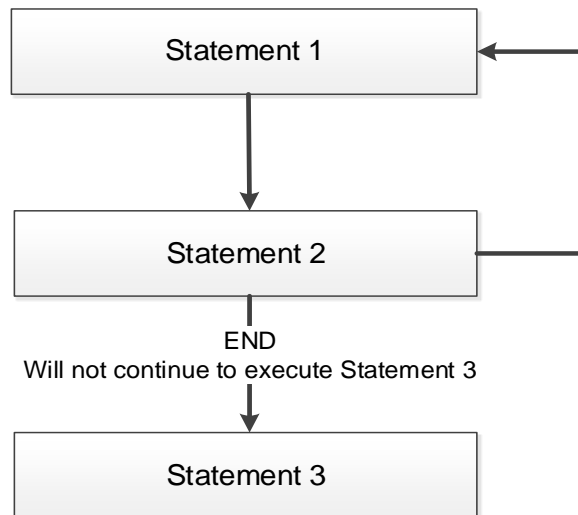
Example

```

Screen_1 [Screen Cycle Macro]
1 FOR 4
2 $100 = $100 + 1
3 NEXT
    
```

- FOR 4 means that the \$100 = \$100 + 1 comand is executed for four times, so the result obtained is 4.
- END (end macro programs)

Expression	Description of action	Note
END	End macro programs.	Adding END to the submacro means the program will not return to the original macro command to continue executing the next line.



Example

- Commands below END will not be executed.

```

Screen_1 [Screen Cycle Macro]
1 $300 = $300 + 1
2 $301 = $300 % 10
3
4 IF $350 == 3
5   $312 = 2
6   $313 = 0
7 ELSEIF $350 == 2
8   $312 = 0
9   $313 = 2
10 ENDIF
11 END ← Commands below END will not be executed
12
13 IF $301 == 0
14   IF $311 == 2
15     $310 = $310 - 5
16   ENDIF
17   IF $312 == 2
18     $320 = $320 + 5
19   ENDIF
20   IF $313 == 2
21     $330 = $330 + 5
22   ENDIF
23   IF $345 == 1
24     $340 = $340 + 10
25     $342 = $342 - 10
26   ELSEIF $345 == 2
27     $340 = $340 - 10
28     $342 = $342 + 10
29   ENDIF
30 ENDIF
  
```

- When the END command is written to the end of a submacro, it means the program will not return to execute the previous macro command.

```

[Submacro 1]
1 $100 = $200
2 END

Screen_1 [Screen Cycle Macro]
1 CALL 1
2 $200 = $500 ← This line of command will not be executed
  
```

24.3.7 Bit Setting

Bit Setting includes BITON, BITOFF, BITNOT, GETB and other instructions, which allow you to set the On / Off state of bit, inverse bit, and get the value represented by the bit. The details will be provided below.

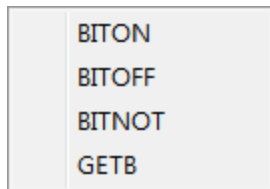


Figure 24.3.7.1 Bit Setting

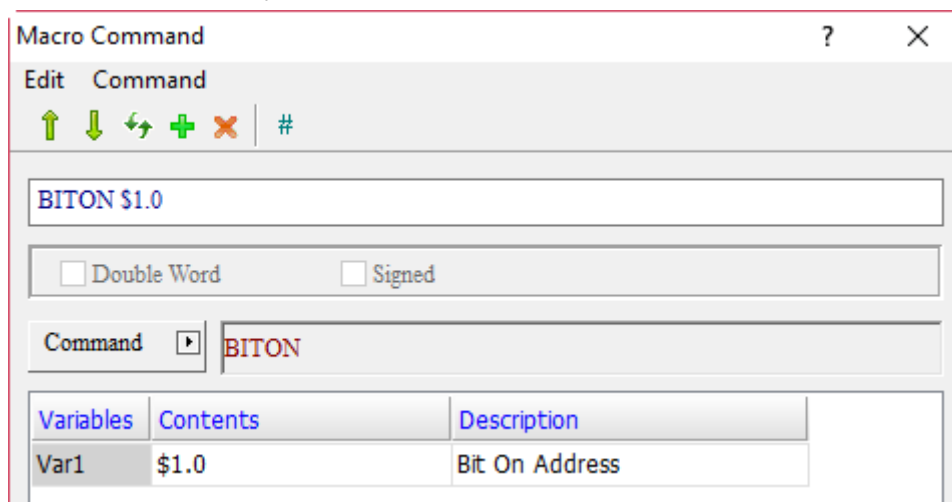
■ BITON (set bit as On)

Expression	Meaning of variable		Note
BITON Var1 (W)	Var1	Bit setting	W: Word
	Description of action		
	Set Var1 to ON.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	

Example

■ Var1 is the internal memory address.



■ Create a Maintained button and set the Write Address to \$1.0. When BITON \$1.0 is executed, the result is as follows.



24

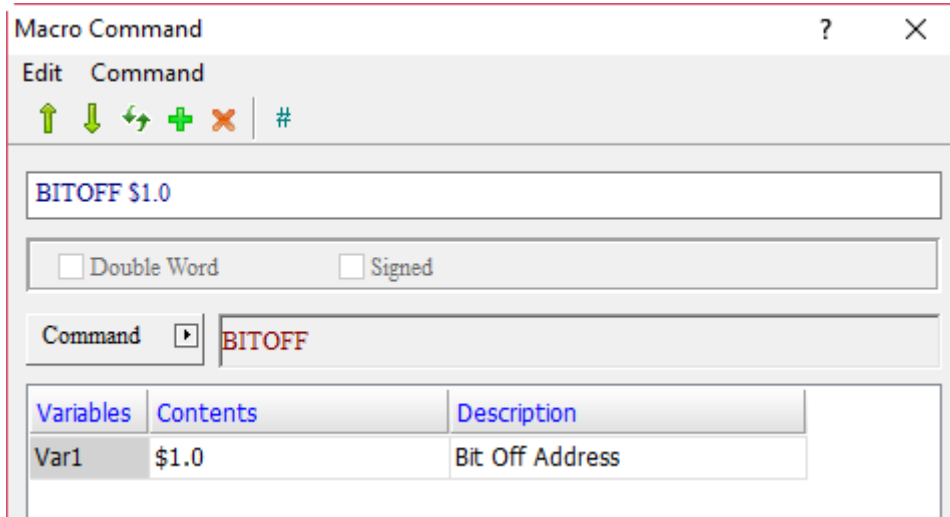
- BITON (set bit as Off)

Expression	Meaning of variable		Note
	Var1	Bit setting	
BITOFF Var1 (W)	Description of action		W: Word
	Set Var1 to Off.		

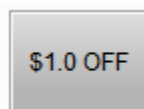
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	

Example

- Var1 is the internal memory address.



- Create a Maintained button and set the Write Address to \$1.0. When BITOFF \$1.0 is executed, the result is as follows.



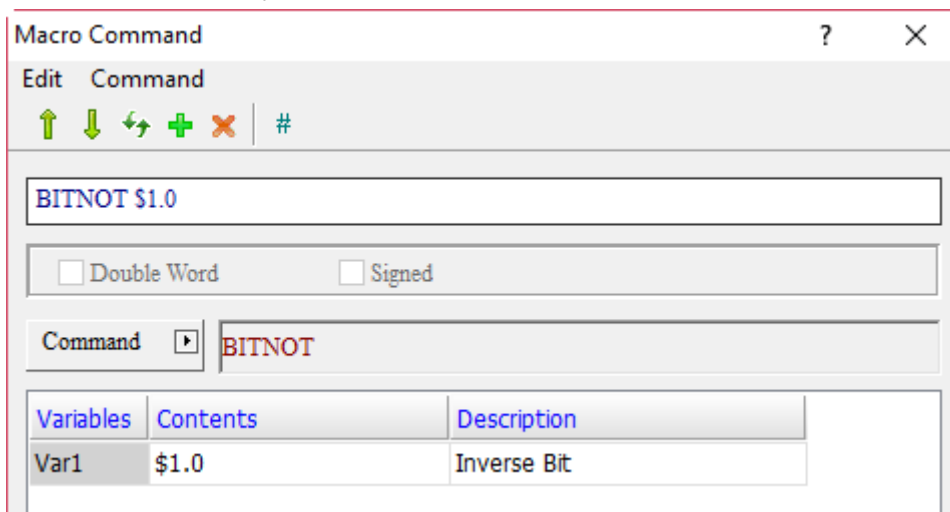
- BITNOT (inverse bit, ON→OFF,OFF→ON)

Expression	Meaning of variable		Note
	Var1	Bit setting	
BITNOT Var1 (W)	Description of action		W: Word
	Set Var1 bit from On to Off and from Off to On.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	

Example

- Var1 is the internal memory address.



- Create a Maintained button and set the Write Address to \$1.0. When BITNOT \$1.0 is executed, the actions of the Maintained button will be continuously switched from On to Off and from Off to On.

- GETB (get bit value)

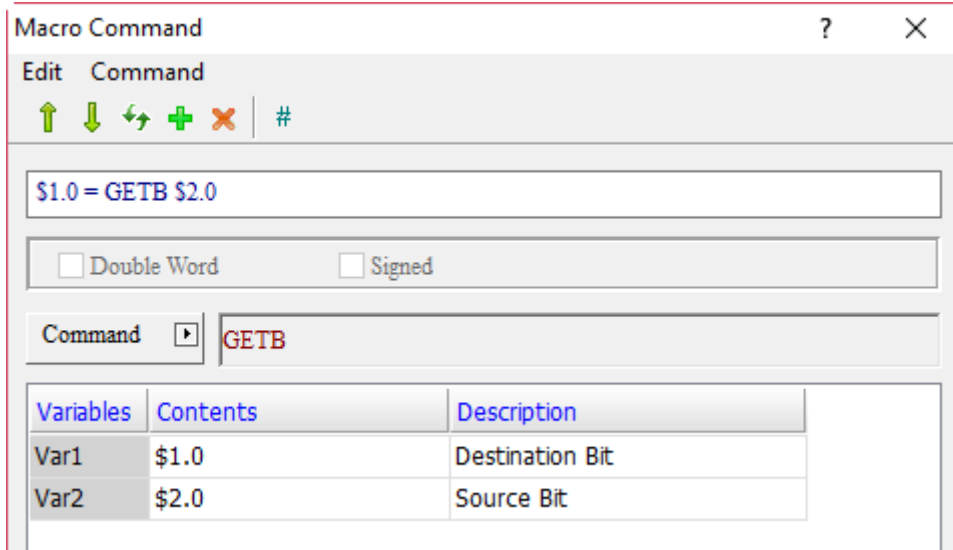
Expression	Meaning of variable		Note
(Var1) = GETB (Var2) (W)	Var1	Bit setting	W: Word
	Description of action		
	Put the Var2 bit value in Var1.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	
Var2	v (can only be Bit)	v (can only be Bit)	

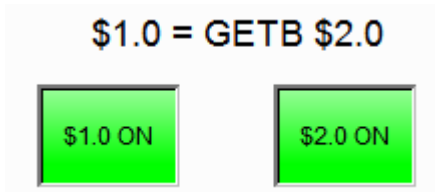
24

Example

- Var1 and Var2 are internal memory addresses.



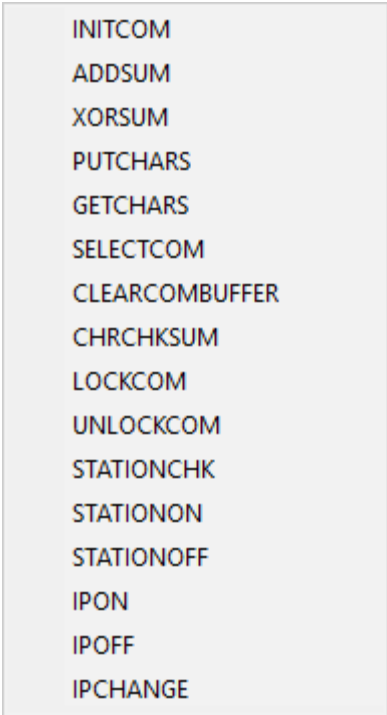
- Set \$1.0 and \$2.0 as Set to On button elements. When executing \$1.0 = GETB \$2.0, press the \$2.0 button, then \$1.0 will be triggered to ON.



24.3.8 Communication

The Communication macro command provides several macros related to COM Port and network IP control, as detailed below.

24



- INITCOM
- ADDSUM
- XORSUM
- PUTCHARS
- GETCHARS
- SELECTCOM
- CLEARCOMBUFFER
- CHRCHKSUM
- LOCKCOM
- UNLOCKCOM
- STATIONCHK
- STATIONON
- STATIONOFF
- IPON
- IPOFF
- IPCHANGE

Figure 24.3.8.1 Communication

24

■ INITCOM (COM Port initialization)

Expression	Meaning of variable		Note	
Var1 = INITCOM(Var2, Var3, Var4, Var5, Var6, Var7, Var8) (W)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	COM Port		
	Var3	Interface		
	Var4	Data Bits		
	Var5	Parity Bits		
	Var6	Stop Bits		
	Var7	Baud Rate		
	Var8	Flow Control		
	Description of action			
The initialization of COM Port is used to open the communication port, set the communication protocol (Var2 - Var8), and put the return value of the initialization result in Var1.				

Note: the INITCOM command can only be issued once. If it is used again, the command is invalid.

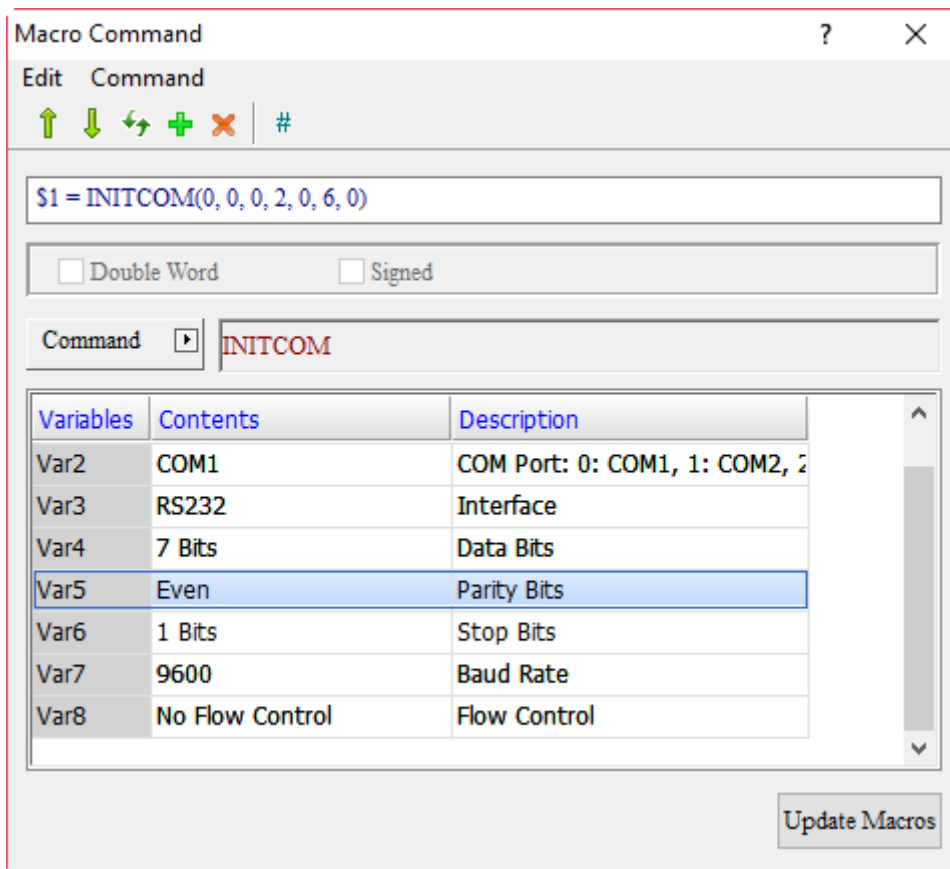
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Parameter setting			
Variable	Option	Option content	Corresponding code
Var2	COM Port	COM1	0
		COM2	1
		COM3	2
Var3	Interface	RS232	0
		RS422	1
		RS485	2
Var4	Data Bits	7 Bits	0
		8 Bits	1
Var5	Parity Bits	None	0
		Old	1
		Even	2
Var6	Stop Bits	1 Bits	0
		2 Bits	1
Var7	Baud Rate	300	0
		600	1
		900	2
		1200	3
		2400	4
		4800	5
		9600	6
		14400	7
		19200	8
		28800	9
		38400	10
		57600	11
115200	12		
Var8	Flow Control	No Flow Control	0
		CTS RTS Flow Control	1
		DTR DSR Flow Control	2
		Xon Xoff Flow Control	3

Notes for Flow Control		
No Flow Control		Flow Control is not set.
Flow Control		While using serial port to transmit data, real-time compression, debugging, and other transmission processing technologies greatly increase the speed and accuracy of communication, but also make the speed of data transmission between the computer and the HMI greater than the real data transfer speed. In order to ensure the security and integrity of data in transmission, the transfer flow must be controlled.
Flow Control	CTS / RTS Flow Control	Flow control for the hardware, which is achieved by the electrical pulse wave generated by the hardware flowing to internal modem or to external modem through a connecting cable.
	DSR / DTR Flow Control	Flow control for the hardware, which is achieved by a cable directly connecting the computer and the HMI.
	Xon / Xoff Flow Control	Flow control for the software, which is only used in 2400 bps modem. It is achieved by adding the control code generated by software to the data in transmission.

Example

- Var1 is the internal memory address.



- After executing the INITCOM command, 0 or 1 will be returned to \$1 for failure or success, respectively.

■ ADDSUM (get CHECKSUM through addition)

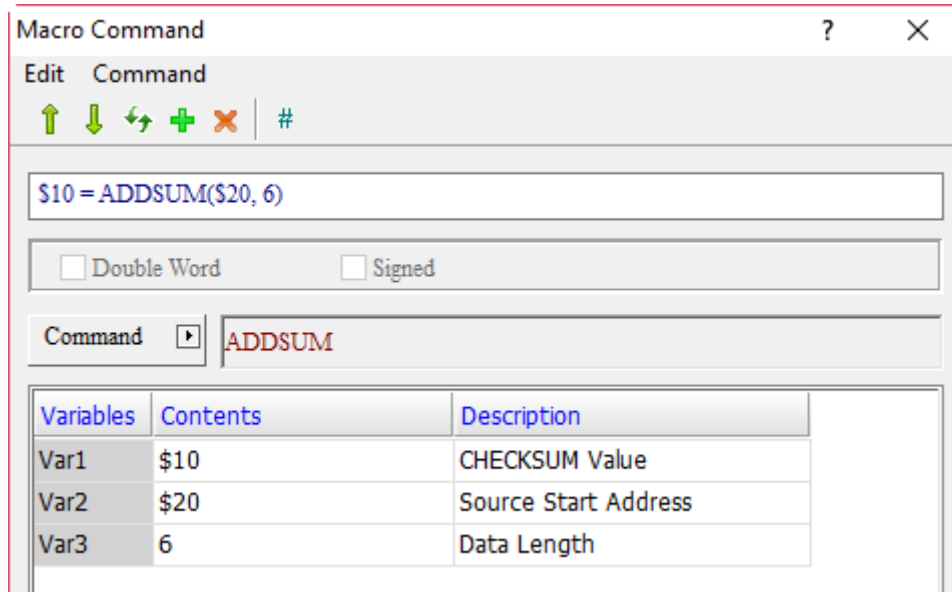
Expression	Meaning of variable		Note
Var1 = ADDSUM(Var2, Var3) (W)	Var1	CHECKSUM Value	W: Word
	Var2	Source Start Address	
	Var3	Data Length	
	Description of action		
	Get CHECKSUM through addition. Var1 is the CHECKSUM value after calculation, Var2 is the start address of the data to be calculated, and Var3 is the length of the data.		

Note: the value of CHECKSUM calculated by ADDSUM is based on Byte. If the length of data is 6, it has to be divided by 2, so the actual length is 3.

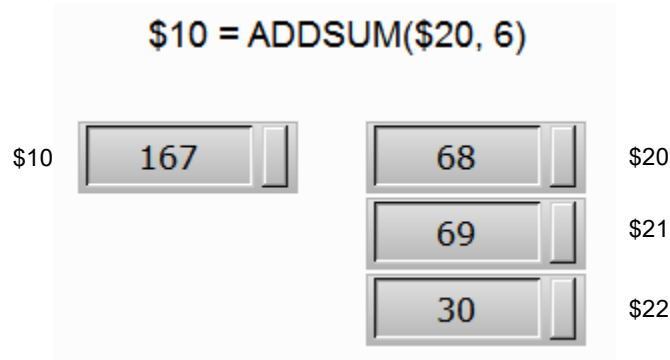
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Conduct addition operation for 3 (6 / 2 = 3) consecutive data length from the start address of \$20 and put the value result in \$10. The expression is \$20 + \$21 + \$22 = \$10.



- XORSUM (get CHECKSUM through XOR)

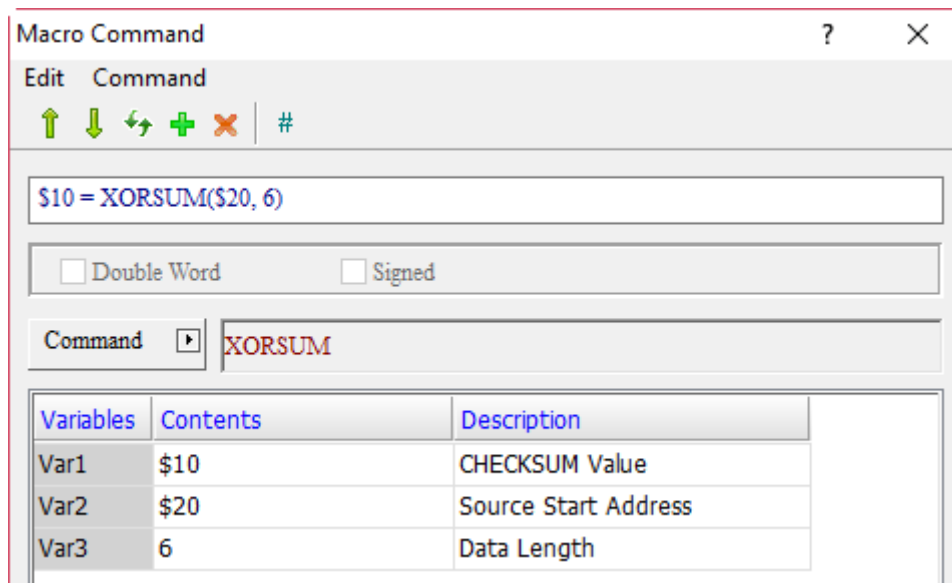
Expression	Meaning of variable	Note
Var1 = XORSUM(Var2, Var3) (W)	Var1	CHECKSUM Value
	Var2	Source Start Address
	Var3	Data Length
	Description of action		W: Word
Get CHECKSUM through addition. Var1 is the CHECKSUM value after calculation, Var2 is the start address of the data to be calculated, and Var3 is the length of the data.		

Note: the value of CHECKSUM calculated by XORSUM is based on Byte. If the length of data is 6, it has to be divided by 2, so the actual length is 3.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Conduct XOR operation for 3 (6 / 2 = 3) consecutive data length from the start address of \$20 and put the value result in \$10.

- PUTCHARS (output characters via the communication port)

Expression	Meaning of variable		Note	
Var1 = PUTCHARS(Var2, Var3, Var4) (W)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	Source Start Address		
	Var3	Data Length		
	Var4	Communication Time		
Description of action				
By the selected communication port, output characters of Var3 data length to Var2 start address within the required Var4 communication time, and put the return value in Var1.				

Note:

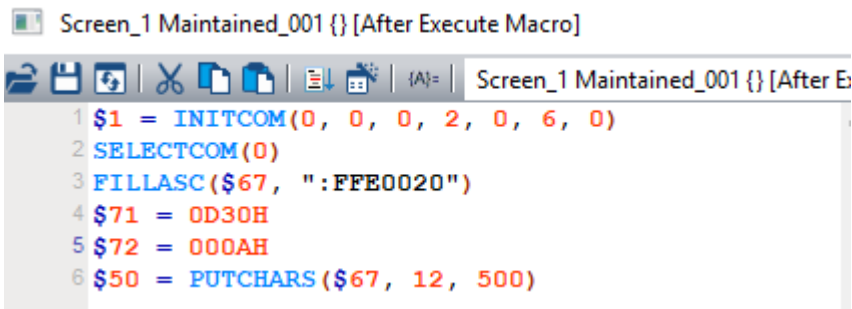
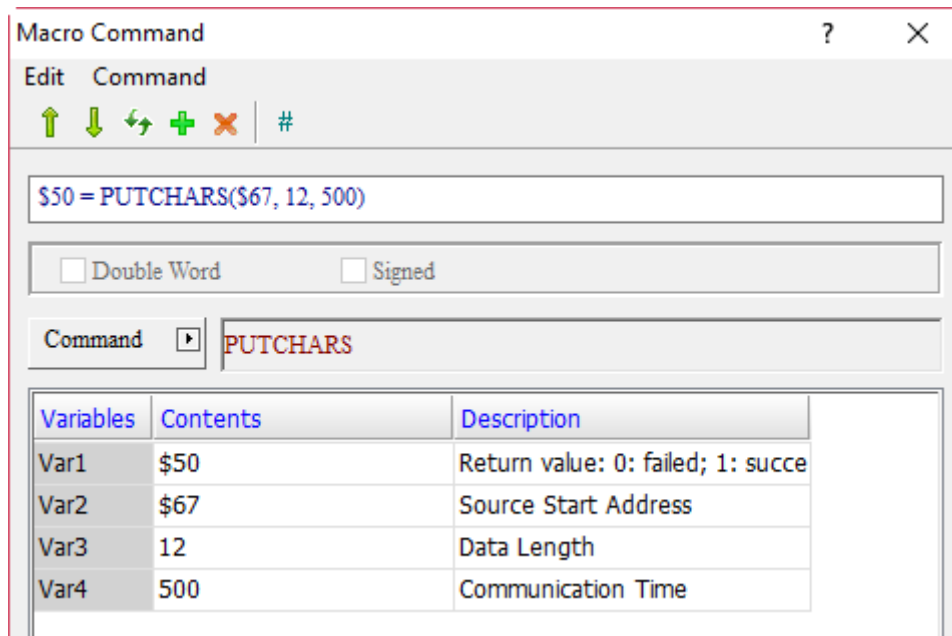
- The PUTCHARS command must be used together with INITCOM and SELECTCOM.
- The unit of Var3 is Byte.
- The unit of Var4 is ms, which means to complete the macro execution within a specific time and end the execution when the time is up, so as to avoid delaying the execution of macros below.

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v
Var4	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 and Var4 are constants.



- In the case of \$50 = PUTCHARS(\$67, 12, 500), its action is to send 12 bytes (6 words) data and write them to \$67. If 12 bytes cannot be sent within 500 ms, the program will exit the macro command when the time is up and write 0 to \$50; if 12 bytes are sent successfully, it will exit this command immediately and write 1 to \$50.

■ GETCHARS (get characters via the COM Port)

Expression	Meaning of variable		Note	
Var1 = GETCHARS(Var2, Var3, Var4) (W)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	Source Start Address		
	Var3	Data Length		
	Var4	Communication Time		
	Description of action			
By the selected communication port, obtain characters of Var3 data length to Var2 start address within the required Var4 communication time, and put the return value in Var1.				

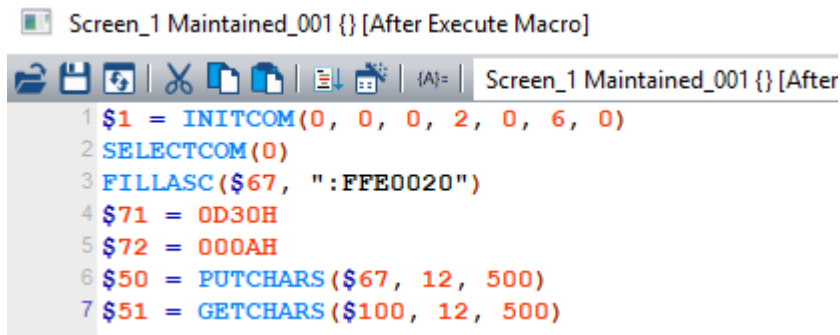
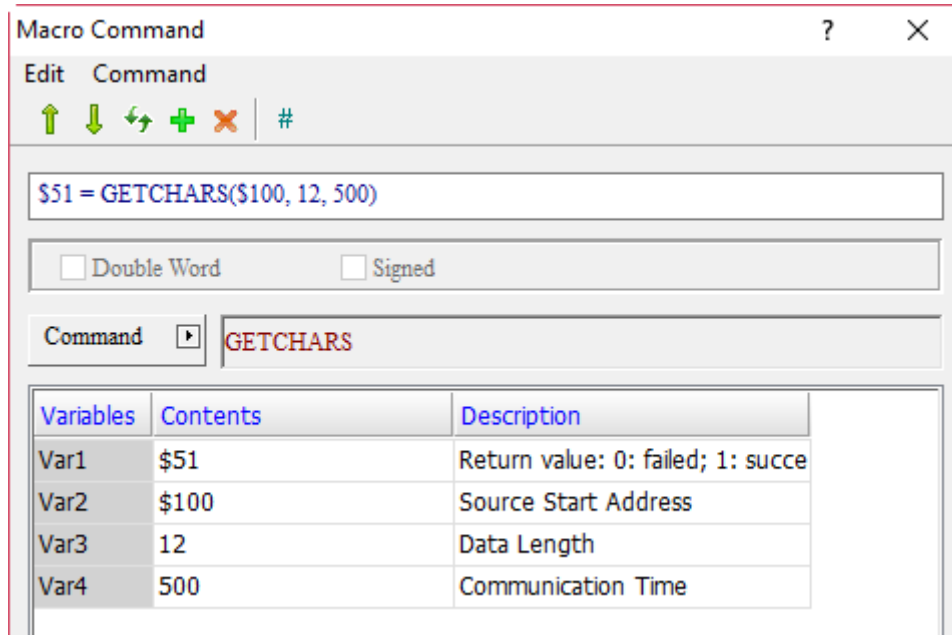
Note:

1. The GETCHARS command must be used together with INITCOM and SELECTCOM.
2. The unit of Var3 is Byte.
3. The unit of Var4 is ms, which means to complete the macro execution within a specific time and end the execution when the time is up, so as to avoid delaying the execution of macros below.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v
Var4	v		v

Example

- Var1 and Var2 are internal memory addresses, and Var3 and Var4 are constants.



- In the case of \$51 = GETCHARS(\$100, 12, 500), its action is to collect 12 bytes (6 words) data and write them to \$100. If 12 bytes cannot be collected within 500 ms, the program will exit the macro command when the time is up and write 0 to \$51; if 12 bytes are collected successfully, it will exit this command immediately and write 1 to \$51.

- SELECTCOM (select COM Port)

Expression	Meaning of variable		Note
SELECTCOM(Var1) (W)	Var 1	COM1	0
		COM2	1
		COM3	2
	Description of action		W: Word
Select the communication port.			

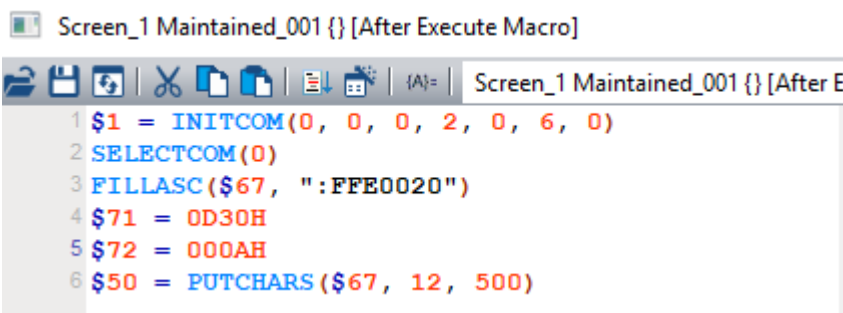
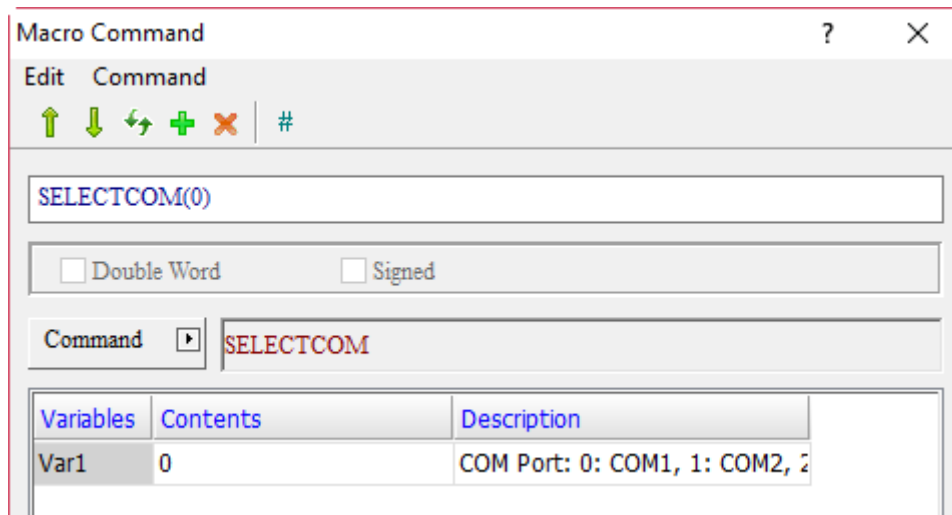
Note:

- The SELECTCOM command must be used together with INITCOM.
- The specified COM Port cannot be the same as the one used by the system. The selected COM Port will process relevant communication commands, so the SELECTCOM command in different macros will not support or interfere with each other.

Variable	Type		
	Internal memory	PLC register	Constant
Var1			v

Example

Var1 can only be a constant.



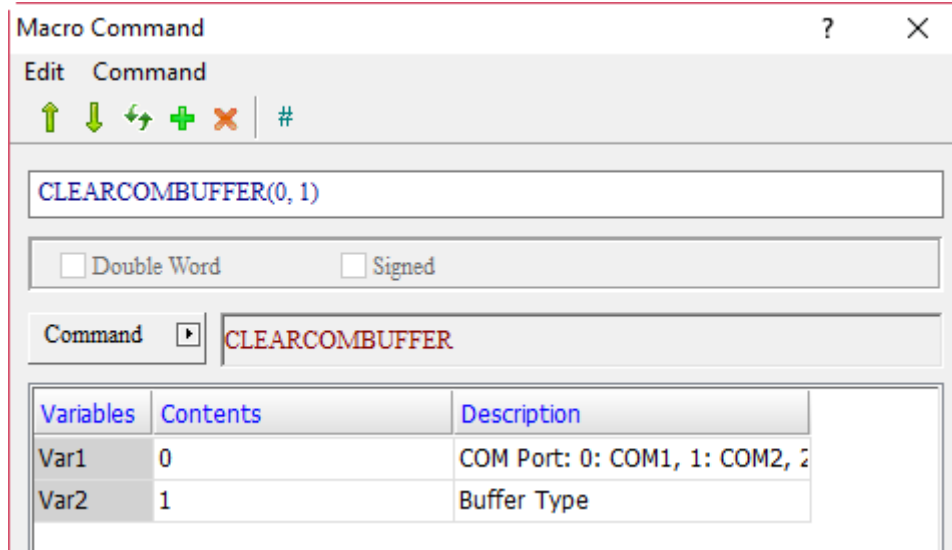
■ CLEARCOMBUFFER (clear buffer of COM Port)

Expression	Meaning of variable			Note
CLEARCOMBUFFER(Var1, Var2) (W)	Var1	COM1	0	W: Word
		COM2	1	
		COM3	2	
	Var2	Receive Buffer	0	
		Transmit Buffer	1	
Description of action				
Clear buffer of Var1 COM Port.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1			v
Var2			v

Example

- Var1 and Var2 can only be constants.



- CHRCHKSUM (calculate the length and CHECKSUM value of the string)

Expression	Meaning of variable			Note	
Var1 = CHRCHKSUM("Var2", Var3, Var4) (W)	Var1	String Length		W: Word	
	Var2	Input String			
	Var3	Memory address for storing strings			
	Var4	Select the display format for CHECKSUM result	1 BYTE		1
			2 BYTES (WORD)		2
	Description of action				
Calculate string length and CHECKSUM value, and put them in Var1.					

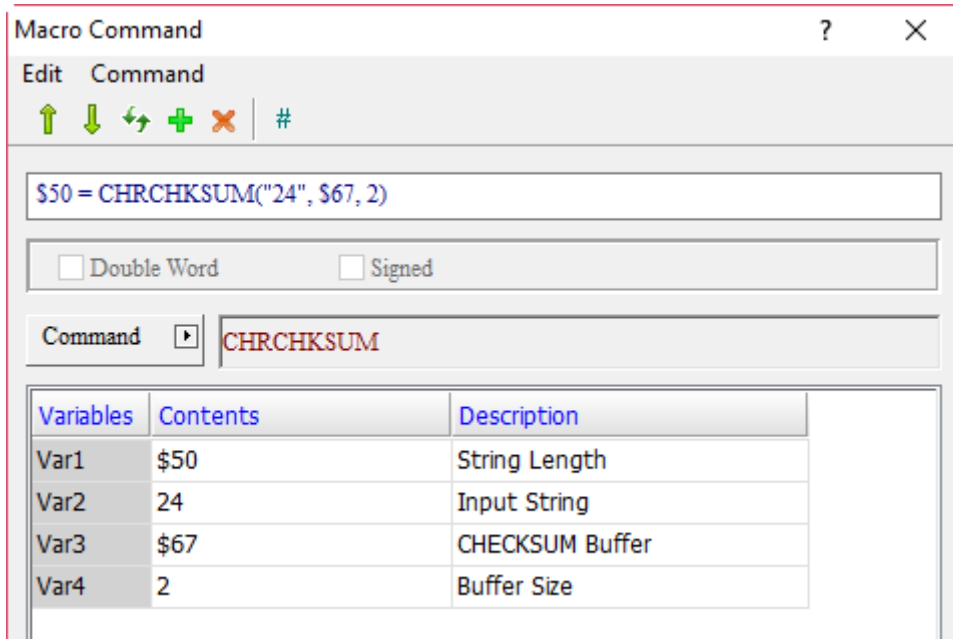
Note:

- The string length of Var1 varies according to the format set by Var4.
- If the input string is "345", Var4 is set as 2, the result value of the string length of Var1 is 5. On the contrary, if Var4 is set as 1, the result value is 4. (Unit based on Byte.)

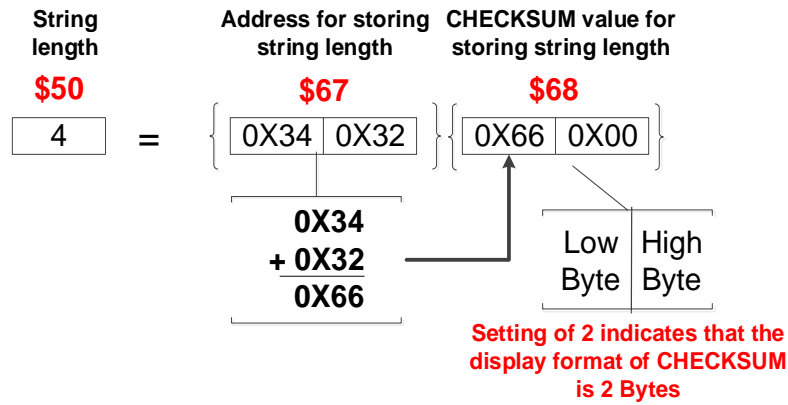
Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v			
Var2			v	
Var3	v			
Var4				v (can only input 1 and 2)

Example

■ Example 1



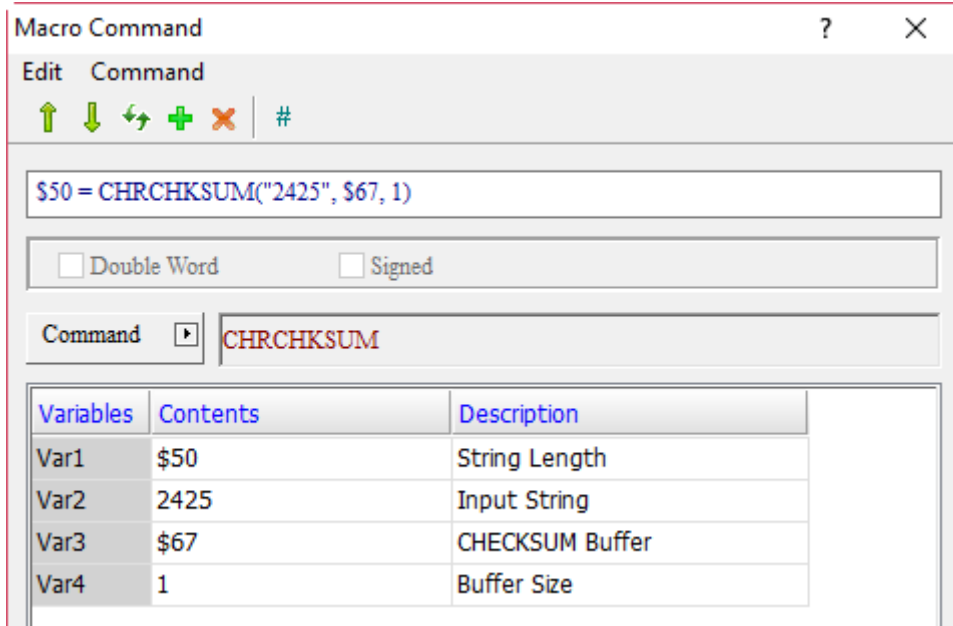
\$50 = CHRCHKSUM ("24" , \$67, 2)



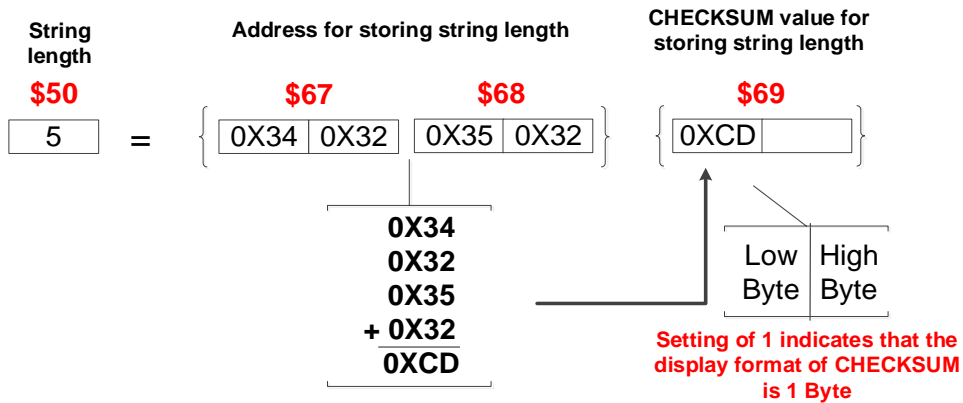
24

Example

■ Example 2



\$50 = CHRCHKSUM ("2425" , \$67, 1)



■ LOCKCOM / UNLOCKCOM (lock COM Port / unlock COM Port)

Expression	Meaning of variable			Note
Var1 = LOCKCOM(Var2, Var3) (W)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	COM1	0	
		COM2	1	
		COM3	2	
	Var3	Time Out		
Description of action				
Lock COM port.				
UNLOCKCOM(Var1) (W)	Var1	COM1	0	
		COM2	1	
		COM3	2	
	Description of action			
	Unlock COM port.			

Note:

1. If the LOCKCOM command is set to infinite waiting (i.e. Var3 = 0), it means LOCKCOM will be executed twice in the same macro which will cause the HMI unable to respond.
2. If there are communication commands in more than one macro at the same time, it may cause interference of the communication data. To prevent this problem, LOCKCOM and UNLOCKCOM can be added before and after the communication commands. This can avoid communication interruption and execution of other communication actions in the same period of time to ensure the integrity of communication contents.
3. Please use LOCKCOM and UNLOCKCOM together, otherwise the HMI cannot execute the download action.
4. The unit of Var3 Time Out value is ms.

Variable	LOCKCOM command type		
	Internal memory	PLC register	Constant
Var1	v		
Var2			v
Var3			v

Variable	UNLOCKCOM command type		
	Internal memory	PLC register	Constant
Var1			v

The following are examples of the proper, improper, and incorrect usages of the LOCKCOM / UNLOCKCOM macro commands.

LOCKCOM / UNLOCKCOM example (proper use)

Background Macro	Element On Macro	Screen Cycle Macro
<pre>\$50 = LOCKCOM(0,500) \$51 = PUTCHARS(\$67, 3, 300) UNLOCKCOM(0)</pre>	<pre>\$50 = LOCKCOM(0,500) \$51 = GETCHARS(\$67, 3, 300) UNLOCKCOM(0)</pre>	<pre>\$50 = LOCKCOM(0,500) \$51 = PUTCHARS(\$67, 3, 300) UNLOCKCOM(0)</pre>

Suppose that communication commands are currently executed in three macros, when the Background macro executes LOCKCOM(0, 500) first, then COM 1 is locked. As a result, LOCKCOM(0, 500) in Element On Macro and Screen Cycle Macro will stop, which will not be executed until Background macro executes UNLOCKCOM(0) to unlock COM 1. This action can avoid data interference or receiving error.

LOCKCOM / UNLOCKCOM example (improper use)

Element On Macro	Screen Cycle Macro
<pre>\$51 = GETCHARS(\$67, 3, 300)</pre>	<pre>\$50 = LOCKCOM(0,500) \$51 = PUTCHARS(\$67, 3, 300) UNLOCKCOM(0)</pre>

Suppose that communication commands are currently executed in two macros, when Screen Cycle Macro executes LOCKCOM(0, 500) first, COM 1 is locked. However, because Element On Macro is not locked by LOCKCOM, the GETCHARS command can still be executed, meaning it does not need to wait until the Screen Cycle Macro executes the UNLOCKCOM command. This will result in data interference and errors, so please avoid the above usage.

LOCKCOM / UNLOCKCOM example (Incorrect use)

Background Macro	Element On Macro
<pre>\$50 = LOCKCOM(0, 500) \$51 = PUTCHARS(\$67, 3, 300)</pre>	<pre>UNLOCKCOM(0)</pre>

Suppose you lock COM Port in the Background macro and transmits data through COM Port, but you cannot unlock COM Port in Element On Macro. This means that the two commands of locking COM Port and unlocking COM Port cannot be written separately.

Example

- Var1 is the internal memory address, and Var2 and Var3 can only be constants.

Macro Command

Edit Command

↑ ↓ ↺ + × #

\$50 = LOCKCOM(0, 500)

Double Word Signed

Command ▾ LOCKCOM

Variables	Contents	Description
Var1	\$50	Return value: 0: failed; 1: succe
Var2	0	COM Port: 0: COM1, 1: COM2, 2
Var3	500	Time Out

- Var1 can only be a constant.

Macro Command

Edit Command

↑ ↓ ↺ + × #

UNLOCKCOM(0)

Double Word Signed

Command ▾ UNLOCKCOM

Variables	Contents	Description
Var1	0	COM Port: 0: COM1, 1: COM2, 2

Screen_1 [Screen Cycle Macro]

Screen_1 [Screen Cycle Macro]

- 1 \$50 = LOCKCOM(0, 500)
- 2 \$51 = PUTCHARS(\$67, 12, 500)
- 3 \$52 = GETCHARS(\$100, 12, 500)
- 4 UNLOCKCOM(0)

24

- STATIONCHK (check COM connection status)

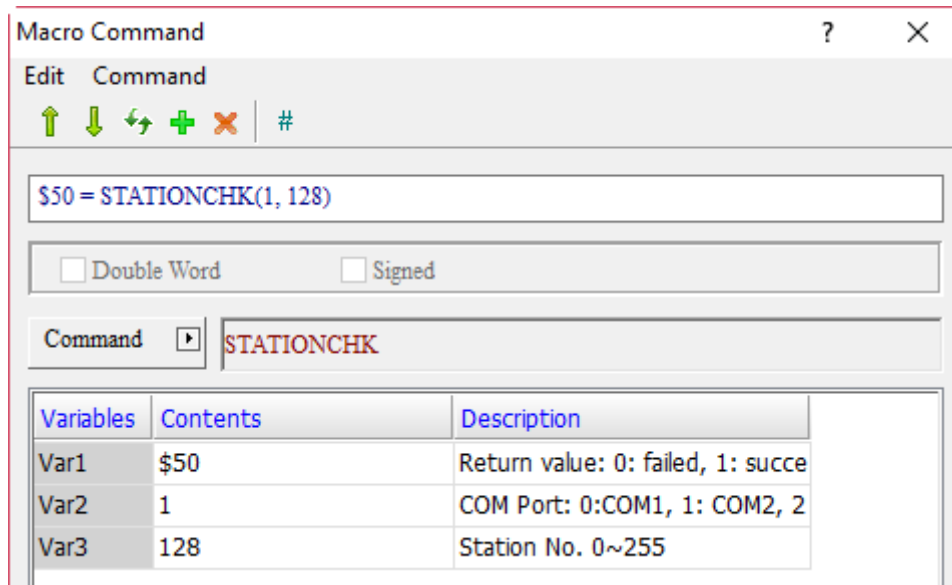
Expression	Meaning of variable		Note	
Var1 = STATIONCHK(Var2, Var3) (W)	Var1	Return value		W: Word
		Failed	0	
	Succeeded	1		
	Var2	COM1	0	
		COM2	1	
		COM3	2	
	Var 3	Station No.		
Description of action				
Check COM connection status.				

Note: this command reads internal memory parameters without increasing the HMI communication.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v

Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.

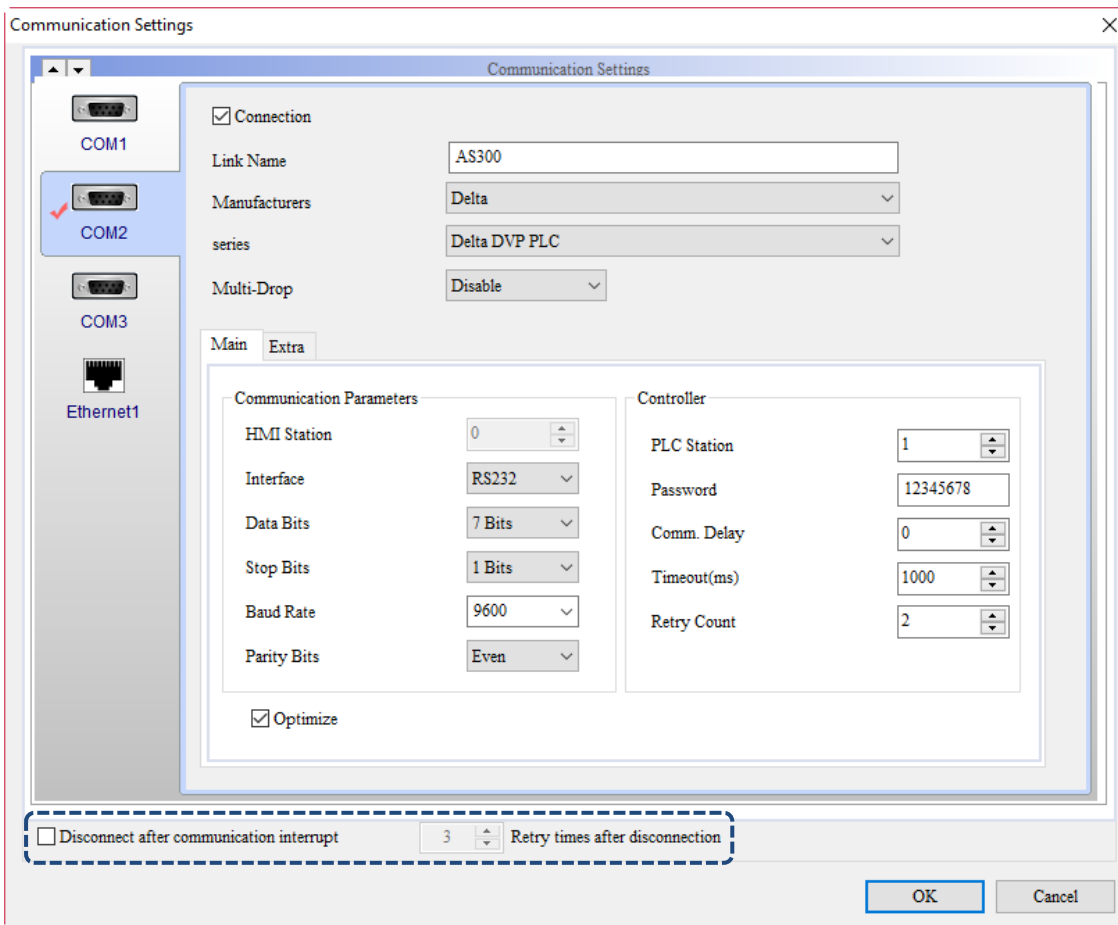


- After executing this macro, if the communication between the HMI COM2 and the PLC of Station No. 128 is normal, the return value is \$50 = 1; if the communication is abnormal, the return value is \$50 = 0.

■ STATIONON (station On)

Expression	Meaning of variable		Note	
STATIONON(Var1, Var2) (W)	Var1	COM1	0	W: Word
		COM2	1	
		COM3	2	
	Var2	Station No.		
	Description of action			
Enable Station No. Var2 of COM Var1 and the HMI can communicate with the station controller.				

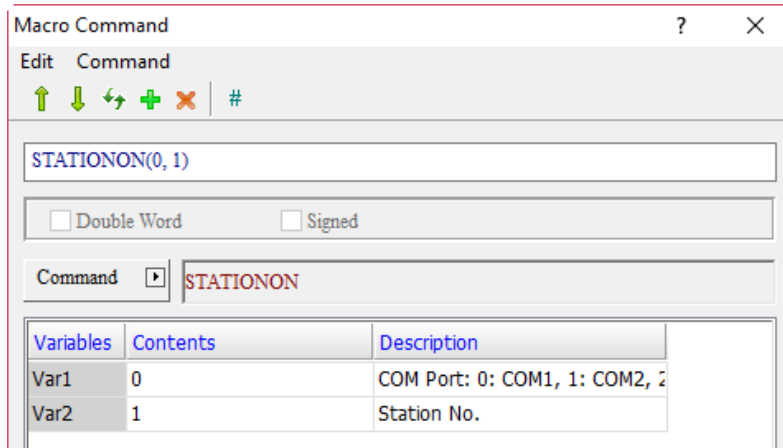
Note: the STATIONON macro and the [Disconnect after communication interrupt] of [Options] > [Communication Settings] cannot be used at the same time.



Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

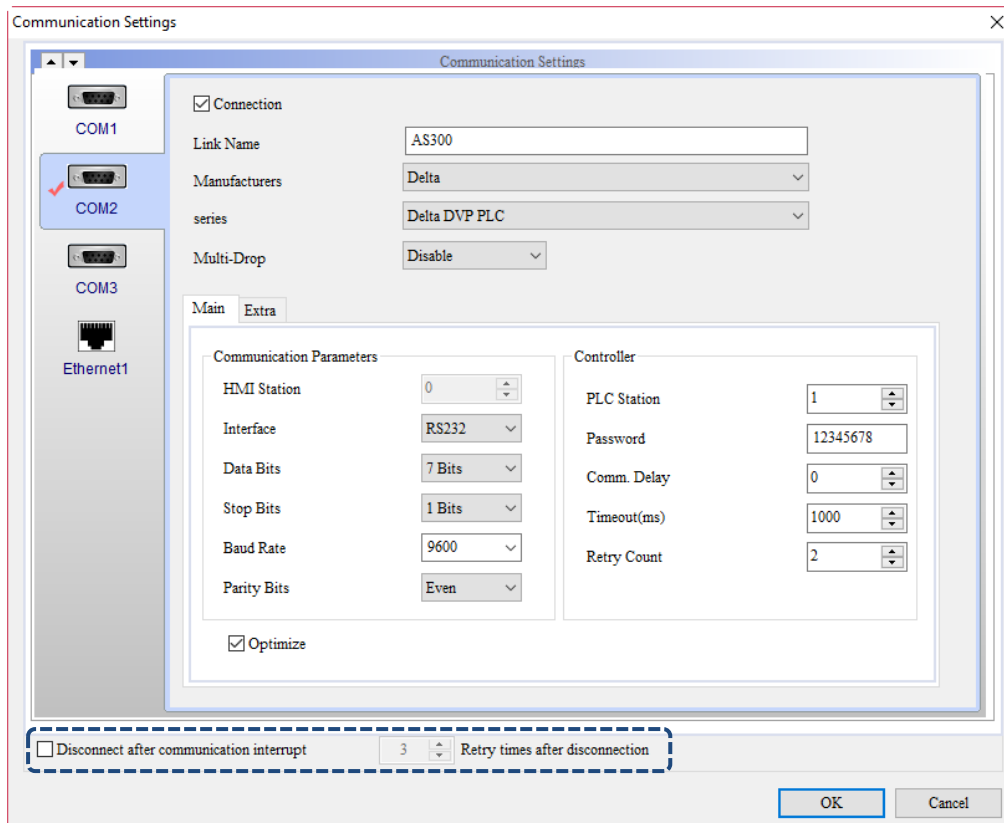
- Var1 and Var2 are constants. Enable Station No. 1 on COM 1.



- STATIONON (station OFF)

Expression	Meaning of variable		Note
STATIONOFF(Var1, Var2) (W)	Var1	COM1	0
		COM2	1
		COM3	2
	Var2	Station No.		W: Word
Description of action			
Disable Station No. Var2 of COM Var1, and the HMI cannot communicate with the station controller.			

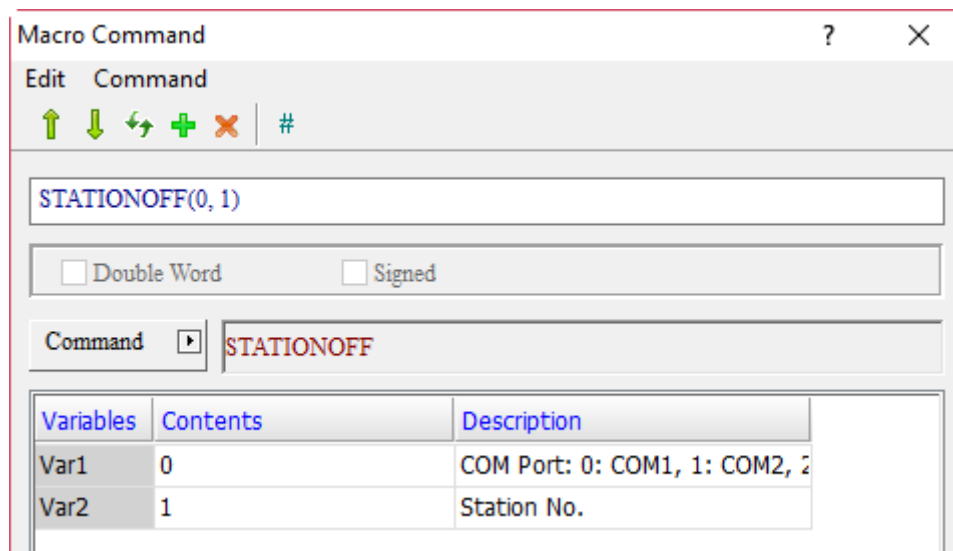
Note: the STATIONOFF macro and the [Disconnect after communication interrupt] of [Options] > [Communication Settings] cannot be used at the same time.



Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

Example

- Var1 and Var2 are constants. Disable Station No. 1 on COM 1.



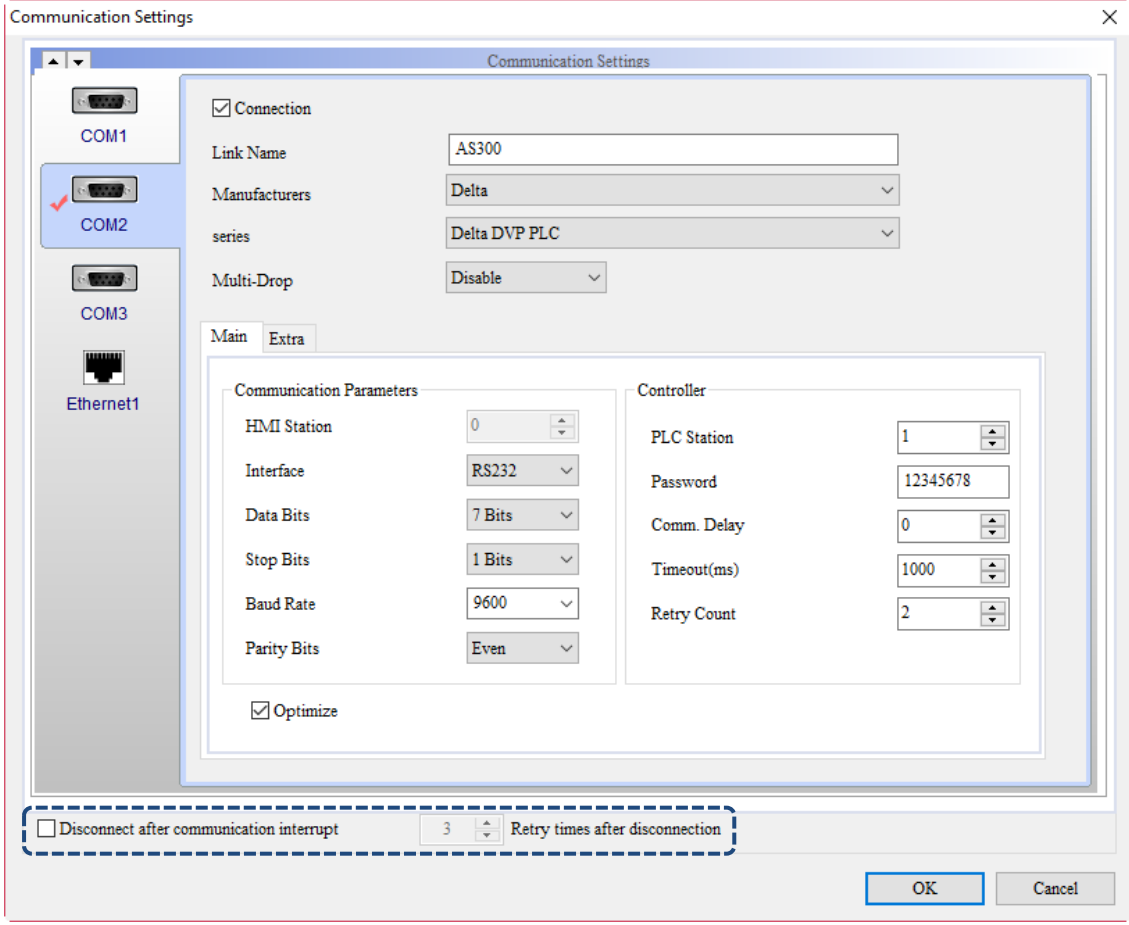
- IPON (activate IP address)

Expression	Meaning of variable		Note	
Var1 = IPON(Var2, Var3, Var4, Var5, Var6)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	IP1		
	Var3	IP2		
	Var4	IP3		
	Var5	IP4		
	Var6	Port		
	Description of action			
	Activate IP Var2, Var3, Var4, Var5, and Port Var6, and the HMI can communicate with the station controller.			

24

Note:

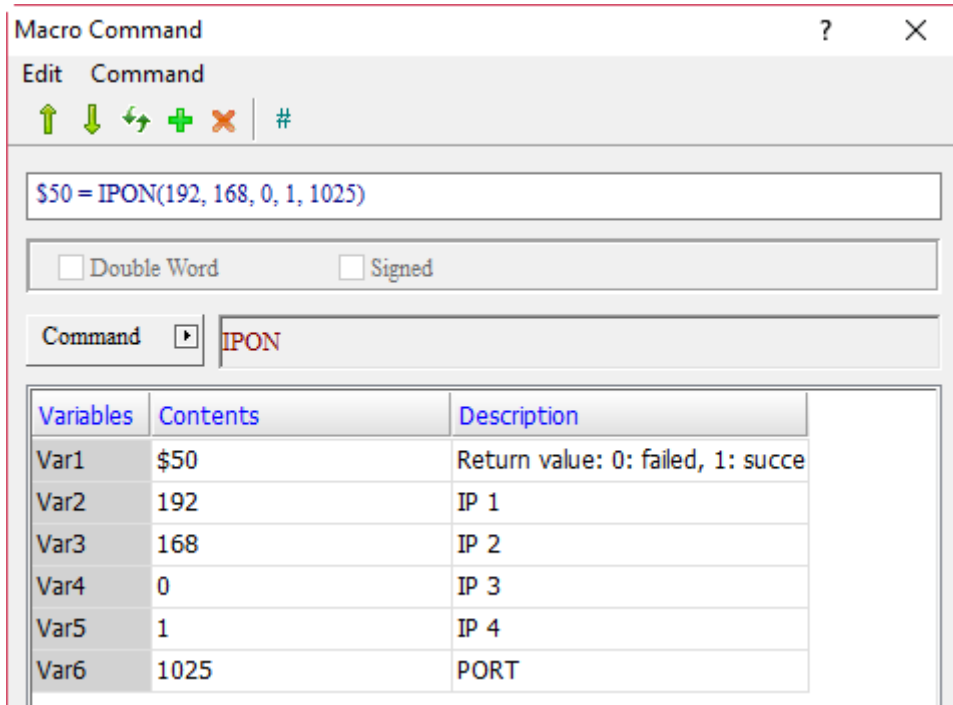
1. Using Var6 is not necessary. All ports under this IP will be activated when it is not in use.
2. The IPON macro and the [Disconnect after communication interrupt] of [Options] > [Communication Settings] cannot be used at the same time.



Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	v
Var5	v	v	v
Var6	v	v	v

Example

- Var1 is the internal memory address, and Var2 to Var6 are constants. Activate IP 192.168.0.1 Port: 1025.



- If you are not using Var6, enter \$50 = IPON(192, 168, 0, 1), and all ports of IP 192.168.0.1 will be activated after the macro operation.

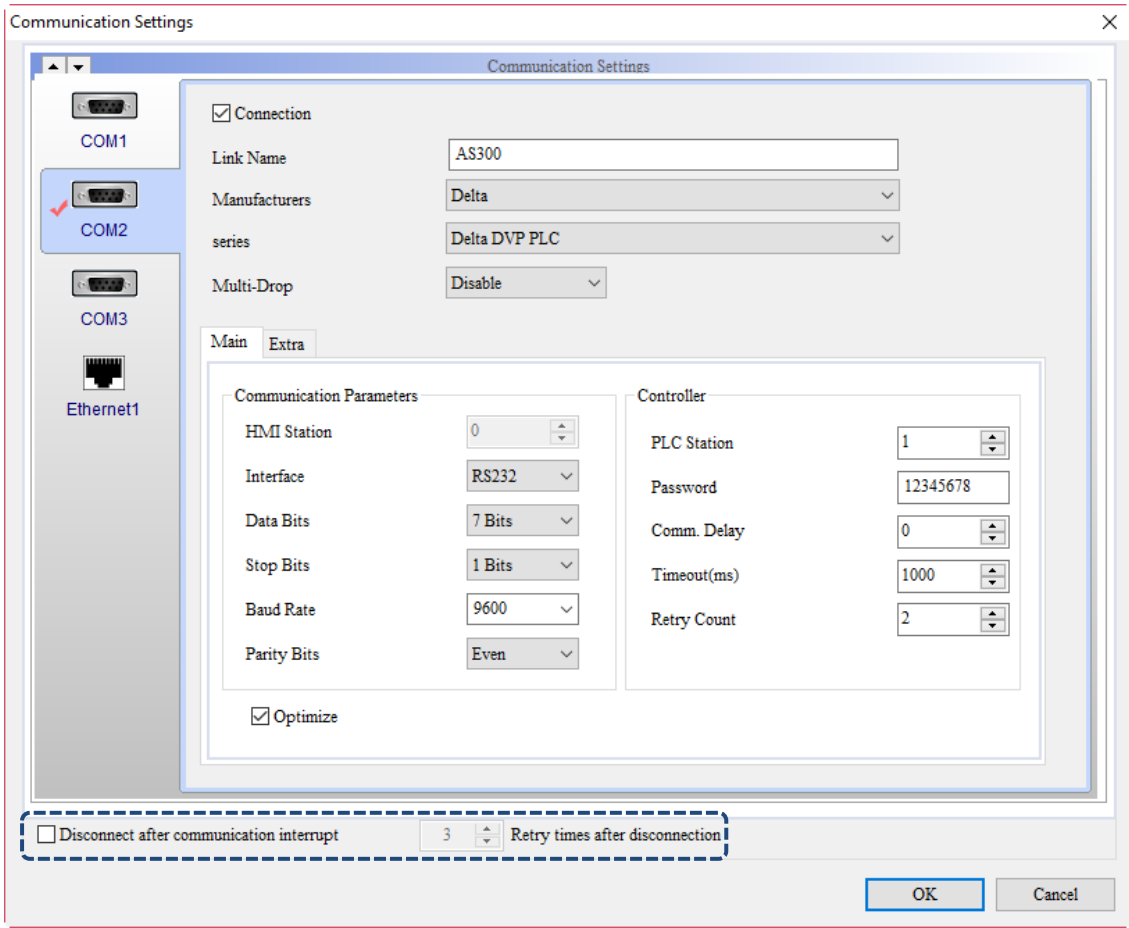
24

■ IPOFF (disable IP address)

Expression	Meaning of variable		Note	
Var1 = IPOFF(Var2,Var3,Var4,Var5,Var6) (W)	Var1	Return value		W: Word
		Failed	0	
	Succeeded	1		
	Var2	IP1		
	Var3	IP2		
	Var4	IP3		
	Var5	IP4		
	Var6	Port		
Description of action				
Disable IP Var2, Var3, Var4, Var5, and Port Var6, and the HMI cannot communicate with the station controller.				

Note:

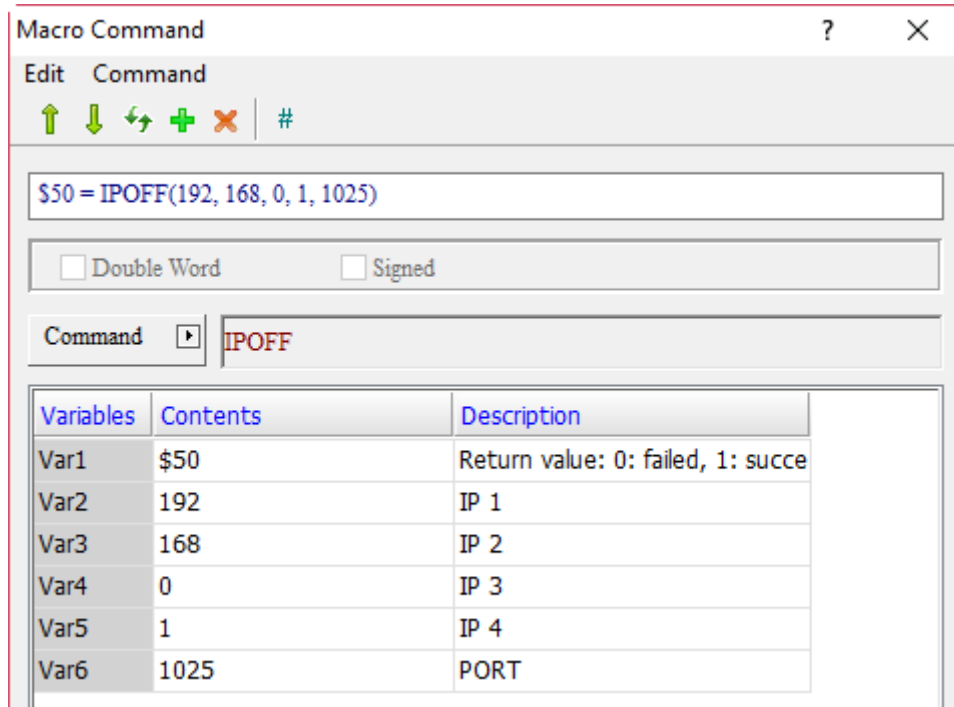
- Using Var6 is not necessary. All ports under this IP will be disabled when it is not in use.
- The IPOFF macro and the [Disconnect after communication interrupt] of [Options] > [Communication Settings] cannot be used at the same time.



Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	v
Var5	v	v	v
Var6	v	v	v

Example

- Var1 is the internal memory address, and Var2 to Var6 are constants. Disable IP 192.168.0.1 Port: 1025.



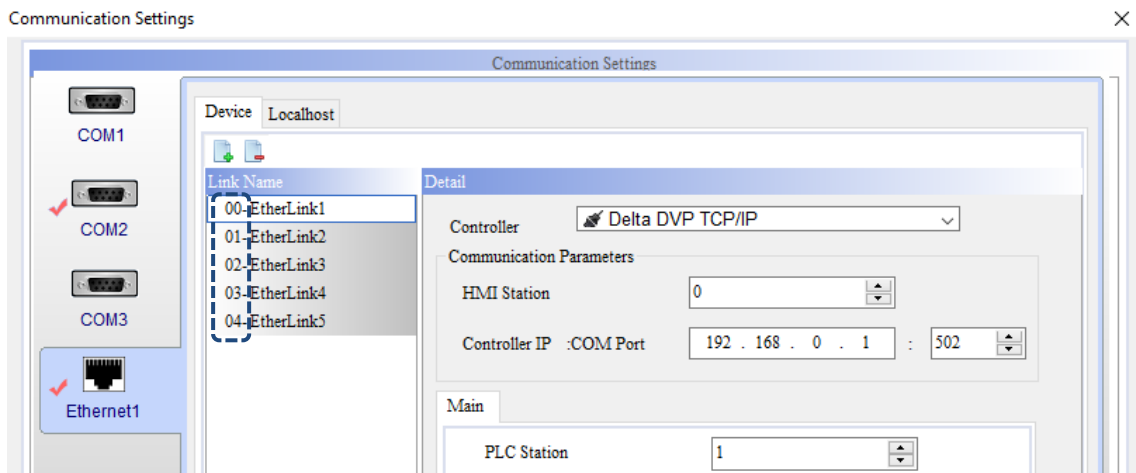
- If you are not using Var6, enter \$50 = IPON(192, 168, 0, 1), and all ports in IP 192.168.0.1 will be disabled after the macro operation.

24

- IPCHANGE (change the connection IP and communication port of the connection controller)

Expression	Meaning of variable		Note	
Var1 = IPCHANGE(Var2, Var3, Var4, Var5, Var6, Var7) (W)	Var1	Return value		W: Word
		Failed	0	
	Succeeded	1		
	Var2	Link No		
	Var3	IP1		
	Var4	IP2		
	Var5	IP3		
	Var6	IP4		
	Var7	Port		
Description of action				
Change the IP setting of PLC connection, Var3, Var4, Var5, Var6, and Port Var7, and the HMI can dynamically change the information of Link for the HMI to reconnect with another PLC.				

Note: Link No. starts from 0.



Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	v
Var5	v	v	v
Var6	v	v	v
Var7	v		

Example

- Var1 is the internal memory address, and Var2 to Var7 are constants.

The screenshot shows a 'Macro Command' dialog box with a title bar containing a question mark and a close button. Below the title bar is a menu bar with 'Edit' and 'Command'. A toolbar contains icons for undo, redo, insert, delete, and a '#' symbol. The main text area contains the command: `$50 = IPCHANGE(0, 192, 168, 123, 250, 502)`. Below this are two checkboxes: 'Double Word' and 'Signed', both of which are unchecked. A 'Command' dropdown menu is set to 'IPChange'. At the bottom is a table with three columns: 'Variables', 'Contents', and 'Description'.

Variables	Contents	Description
Var1	\$50	Return value: 0: failed, 1: succe
Var2	0	Link No
Var3	192	IP 1
Var4	168	IP 2
Var5	123	IP 3
Var6	250	IP 4
Var7	502	PORT

- Change the IP of PLC connection to 192.168.123.250 Port: 502.

24.3.9 Drawing

Drawing includes commands such as RECTANGLE, LINE, POINT, CIRCLE, etc., which allow you to draw figures. The commands are described in detail below.

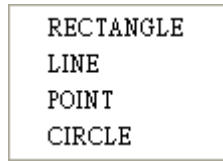


Figure 24.3.9.1 Drawing

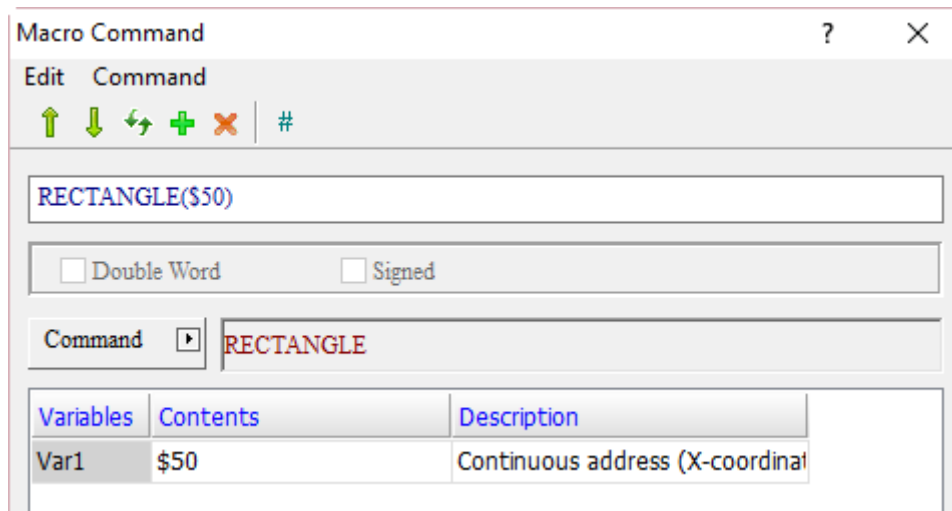
■ RECTANGLE (rectangle)

Expression	Meaning of variable		Note
RECTANGLE(Var1)(W)	Var1	Upper-left X-coordinate	W: Word
	Var1+ 1	Upper-left Y-coordinate	
	Var1+ 2	Rectangle width	
	Var1+ 3	Rectangle height	
	Var1+ 4	Rectangle color	
	Description of action		
Draw a rectangle with continuous addresses.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

- Var1 is the internal memory address.



Example

```
Screen_1 [Screen Cycle Macro]
1 RECTANGLE ($50)
2 $50 = 100
3 $51 = 200
4 $52 = 300
5 $53 = 300
6 $54 = 2416
```

24

RECTANGLE(\$50)



100	\$50
200	\$51
300	\$52
300	\$53
2416	\$54

24

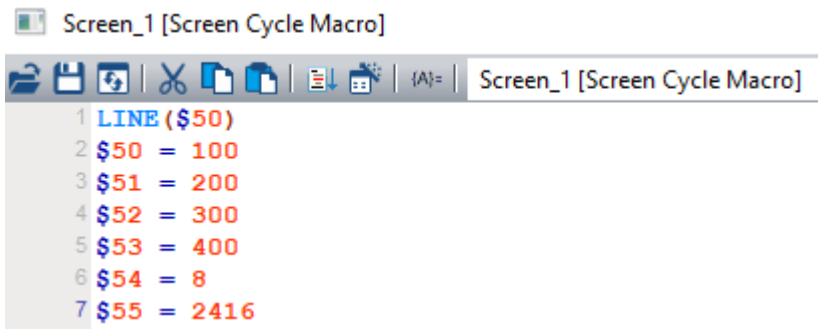
■ LINE (line)

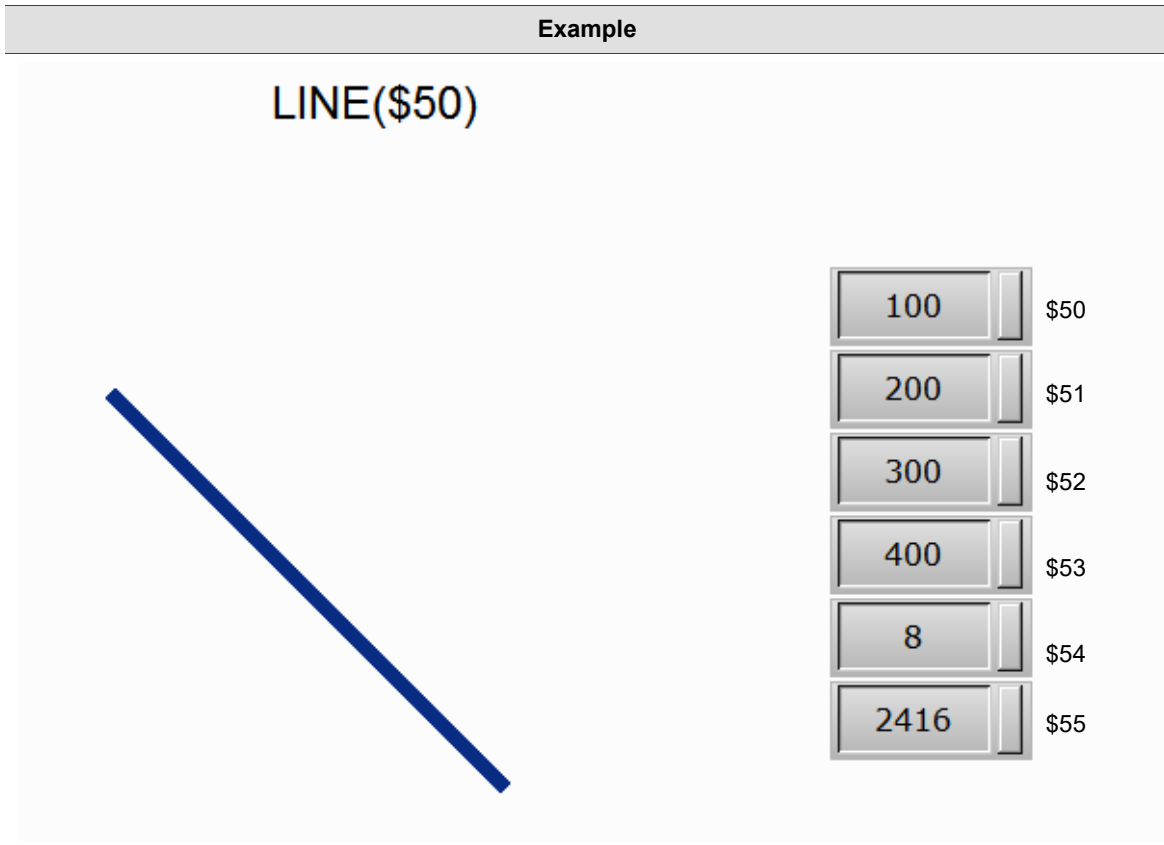
Expression	Meaning of variable		Note
LINE(Var1) (W)	Var1	X-coordinate of starting point	W: Word
	Var1+ 1	Y-coordinate of starting point	
	Var1+ 2	X-coordinate of end point	
	Var1+ 3	Y-coordinate of end point	
	Var1+ 4	Line width	
	Var1 + 5	Line color	
	Description of action		
Draw a line with continuous addresses.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

- Var1 is the internal memory address.





■ POINT (point)

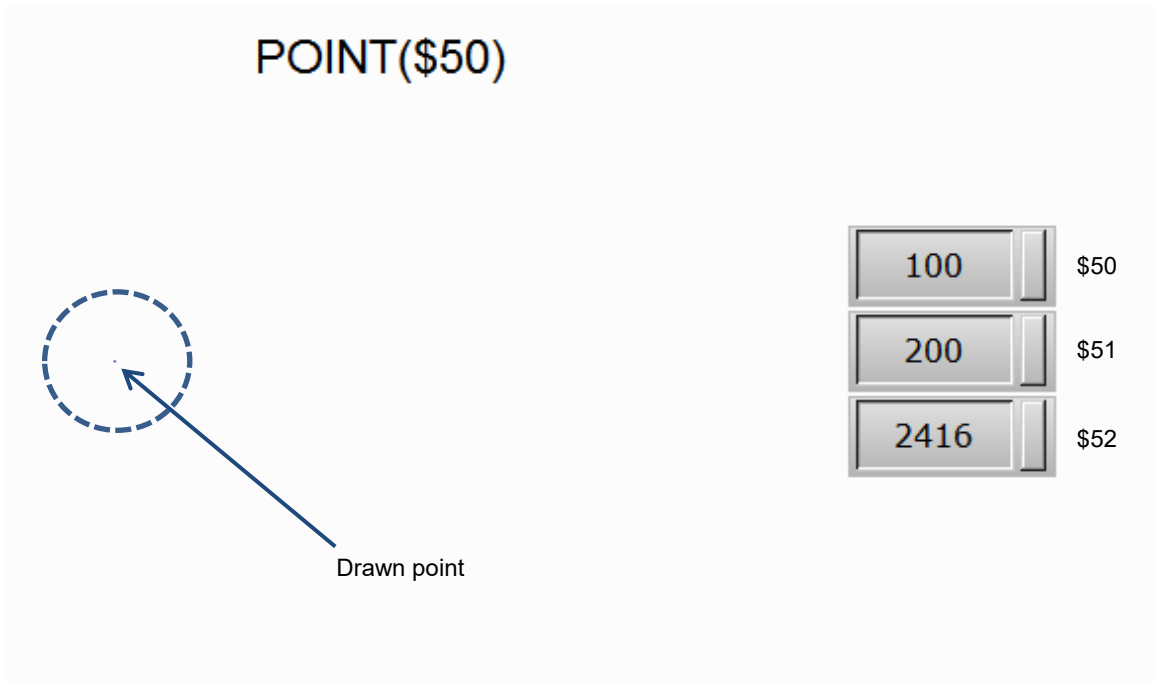
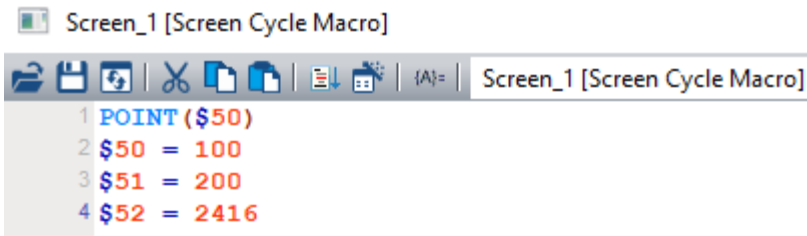
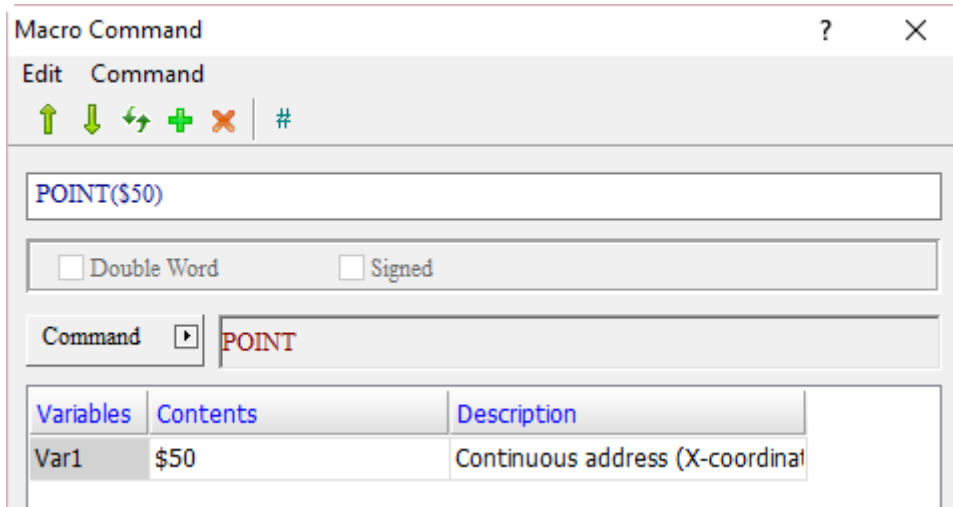
Expression	Meaning of variable		Note
POINT(Var1) (W)	Var1	X-coordinate	W: Word
	Var1+ 1	Ycoordinate	
	Var1+ 2	Point color	
	Description of action		
Draw a point with continuous addresses.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

24

Example

- Var1 is the internal memory address.



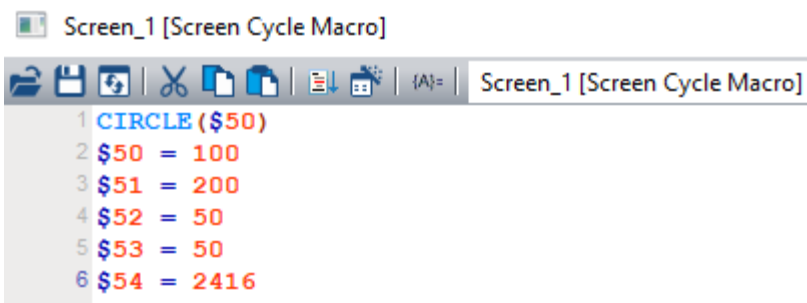
■ CIRCLE (circle)

Expression	Meaning of variable		Note
CIRCLE(Var1) (W)	Var1	X-coordinate at the center of a circle	W: Word
	Var1+ 1	Y-coordinate at the center of a circle	
	Var1+ 2	Circle length	
	Var1+ 3	Circle width	
	Var1+ 4	Circle color	
	Description of action		
Draw a circle with continuous addresses.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

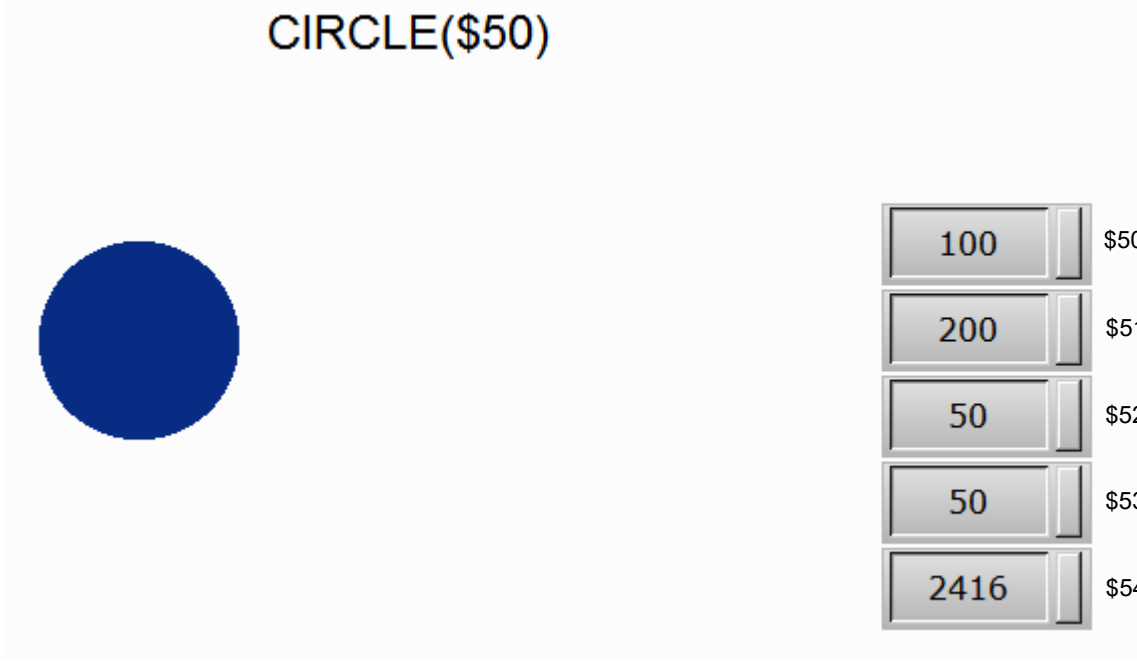
- Var1 is the internal memory address.



24

Example

CIRCLE(\$50)



100	\$50
200	\$51
50	\$52
50	\$53
2416	\$54

24.3.10 File Access

File Access includes FileSlotRead, FileSlotWrite, FileSlotRemove, FileSlotGetLength, FileSlotExport, FileSlotImport and other FileSlot related instructions. The commands are described in detail below.

FileSlotRead
FileSlotWrite
FileSlotRemove
FileSlotGetLength
FileSlotExport
FileSlotImport

24.3.10.1 File Access

■ FileSlotRead (read the file)

Expression	Meaning of variable		Note	
Var1 = FileSlotRead (Var2, Var3, Var4, Var5) (W)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	FileSlot ID		
	Var3	Destination		
	Var4	FileSlot content start address (DW)		
	Var5	Word data length		
	Description of action			
Read FileSlot contents of Var2 for Var5 Word data starting from Var4 to Var3 destination address and return the results to Var1.				

Note: if the specified FileSlot file does not exist yet, use the FileSlotWrite command to create the file.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	
Var4	v	v	v
Var5	v	v	v

24

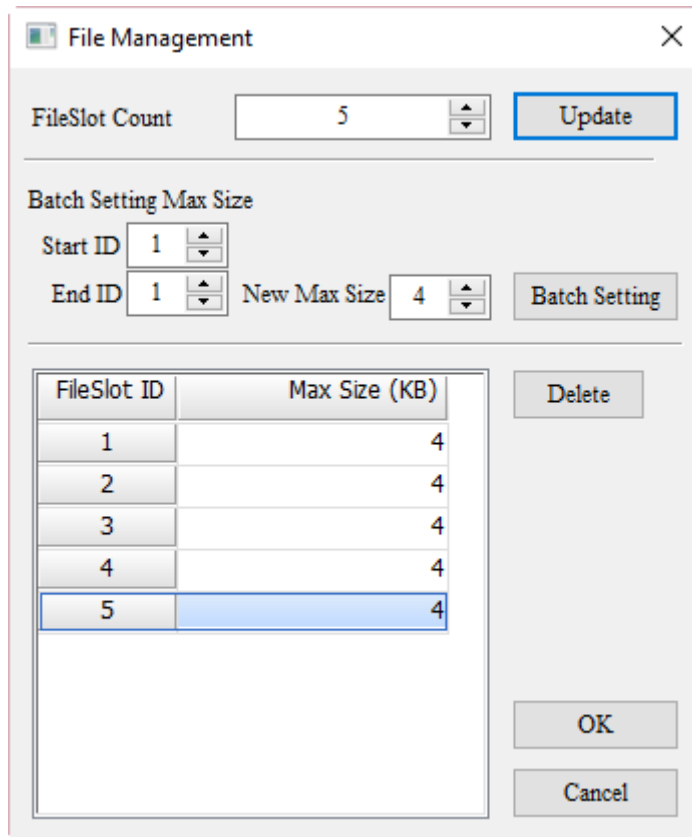
■ FileSlotWrite (write the file)

Expression	Meaning of variable		Note	
Var1 = FileSlotWrite (Var2, Var3, Var4, Var5) (W)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	FileSlot ID		
	Var3	Source		
	Var4	FileSlot content start address (DW)		
	Var5	Word data length		
	Description of action			
Read Var5 Word data starting from Var3, write in Var2 FileSlot from Var4 start address, and return the results to Var1.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	
Var4	v	v	v
Var5	v	v	v

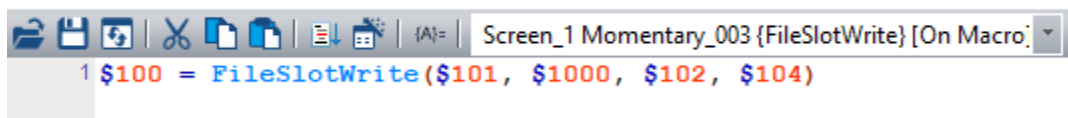
Example

- Use FileSlotWrite to create a file before using FileSlotRead to read data. The procedures are introduced below.
1. Go to [Options] > [File Management] to set FileSlot.

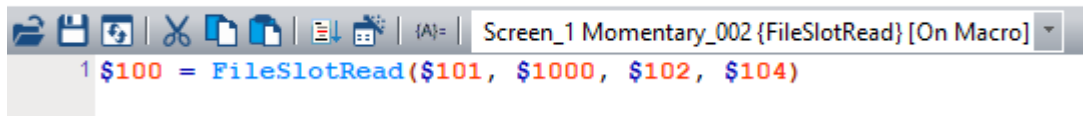


2. Create two Momentary buttons and write On macros.

Screen_1 Momentary_003 {FileSlotWrite} [On Macro]



Screen_1 Momentary_002 {FileSlotRead} [On Macro]



24

Example

- After compiling the screen and downloading it to the HMI, edit 10 Word files from \$1000 as the start address. Set \$101 as 1, \$102 as 0, and \$104 as 10. By triggering FileSlotWrite, data of \$1,000 - \$1009 will be written to the FileSlot ID 1 starting from address 0.

FileSlotRead

FileSlotWrite

FileSlotRemove

FileSlotGetLength

FileSlotEXPORT

FileSlotIMPORT

Return(\$100) 1

FileSlot ID(\$101) 1

Start Add(\$102) 0

Data Len(\$104) 10

Return Len(\$106) 0

Device(\$108) 0 2:USB, 3:SD

FileName Len(\$110) 0

FileName(\$120)

Data Area(\$1000)

1	2	3	4	5	6	7
8	9	10	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Export

Import

- Reset the data of \$1000 - \$1009 to zero. Set \$104 as 8 and by triggering FileSlotRead, the 8 Word data starting from the 0th address of the FileSlot ID 1 will be written in \$1000 to \$1007.

FileSlotRead

FileSlotWrite

FileSlotRemove

FileSlotGetLength

FileSlotEXPORT

FileSlotIMPORT

Return(\$100) 1

FileSlot ID(\$101) 1

Start Add(\$102) 0

Data Len(\$104) 8

Return Len(\$106) 0

Device(\$108) 0 2:USB, 3:SD

FileName Len(\$110) 0

FileName(\$120)

Data Area(\$1000)

1	2	3	4	5	6	7
8	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Export

Import

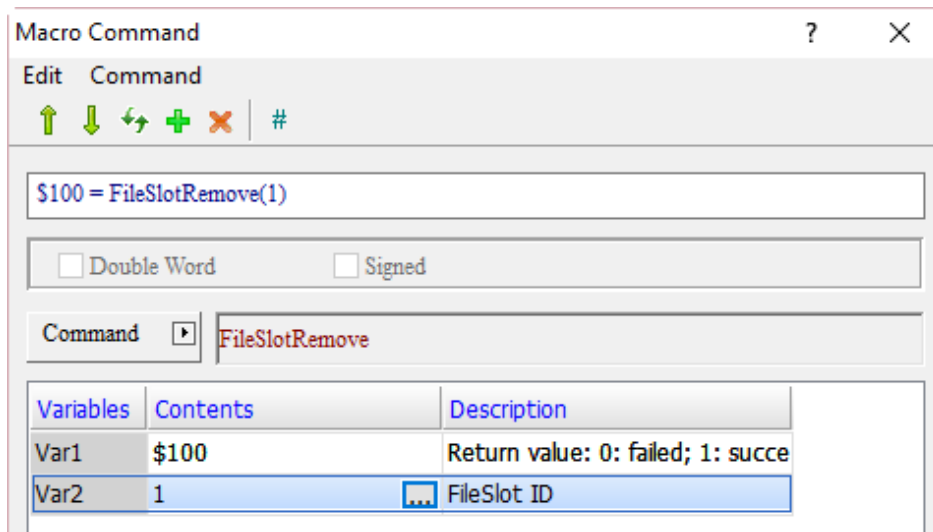
■ FileSlotRemove (remove the file)

Expression	Meaning of variable		Note	
Var1 = FileSlotRemove (Var2) (W)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	FileSlot ID		
	Description of action			
Remove FileSlot of Var2 and return the result to Var1.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v

Example

- Var1 is the internal memory address and Var2 is a constant. Remove FileSlot ID 1 (Var2) and put the return value in \$100 (Var1).



■ FileSlotGetLength (read the file length)

Expression	Meaning of variable		Note	
Var1 = FileSlotGetLength (Var2, Var3) (W)	Var1	Return value		W: Word
		Failed	0	
		Succeeded	1	
	Var2	FileSlot ID		
	Var3	FileSlot length return value(DW)		
Description of action				
Store the length of the Var2 FileSlot to Var3 and return the result to Var1.				

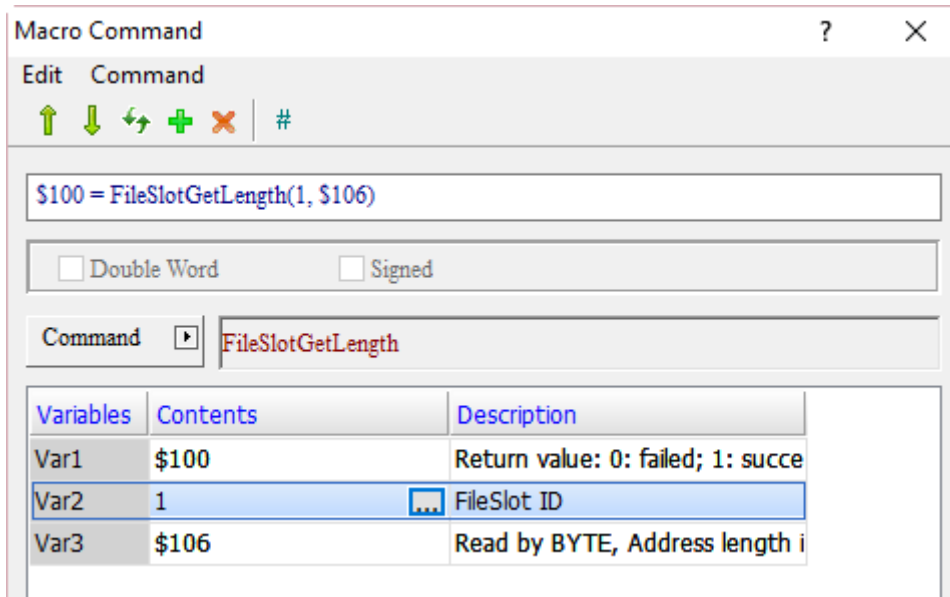
Note: unit of read length is Byte.

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	

Example

- Var1 and Var3 are internal memory addresses, and Var2 is a constant. Get the length of FileSlot ID 1 (Var2) and save it to \$106, and put the return value in \$100 (Var1). If the FileSlot length is 10 words, the value returned to \$106 is 20 (Byte).



- FileSlotExport (export the file)

Expression	Meaning of variable			Note	
Var1 = FileSlotExport (Var2, Var3, Var4, Var5) (W)	Var1	Return value		W: Word	
		Failed	0		
		Succeeded	1		
	Var2	FileSlot ID			
	Var3	File export device	USB Disk		2
			SD Card		3
	Var4	Name of the file exported			
	Var5	Name length of the file exported			
Description of action					
Export the Var2 FileSlot to the external storage device Var3, name the file as Var4, and return the result to Var1.					

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	
Var5	v	v	v

Example

- Var1, Var4, and Var5 are internal memory addresses, and Var2 and Var3 are constants. Export FileSlot ID 1 (Var2) to USB Disk (Var3), which name length of the file is 2 (Var5) and file name is Slot (Var4), and put the return value in \$100 (Var1).

FileName Len(\$110)

FileName(\$120)

Macro Command ? X

Edit Command

↑ ↓ ↔ + × #

`$100 = FileSlotEXPORT(1, 2, $120, $110)`

Double Word Signed

Command FileSlotExport

Variables	Contents	Description
Var1	\$100	Return value: 0: failed; 1: succe
Var2	1	FileSlot ID
Var3	2	External Device ID 2:USB, 3:SD,
Var4	\$120	External Filename
Var5	\$110	Filename length (character)

- FileSlotImport (import the file)

Expression	Meaning of variable			Note	
Var1 = FileSlotImport (Var2, Var3, Var4, Var5) (W)	Var1	Return value		W: Word	
		Failed	0		
	Succeeded	1			
	Var2	FileSlot ID			
	Var3	File import device	USB Disk		2
			SD Card		3
	Var4	Name of the file imported			
	Var5	Name length of the file imported			
Description of action					
Import the file named Var4 in the external storage device Var3 to the Var2 FileSlot and send the return value to Var1.					

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	
Var5	v	v	v

Example

- Var1, Var4, and Var5 are internal memory addresses, and Var2 and Var3 are constants. Import the file named Slot (Var4) with the length of 2 (Var5) in USB Disk (Var3) to the FileSlot ID 1 (Var2), and put the return value in \$100 (Var1).

FileName Len(\$110)

 FileName(\$120)

Macro Command ? X

Edit Command

↑
↓
↔
+
×
#

`$100 = FileSlotIMPORT(1, 2, $120, $110)`

Double Word
 Signed

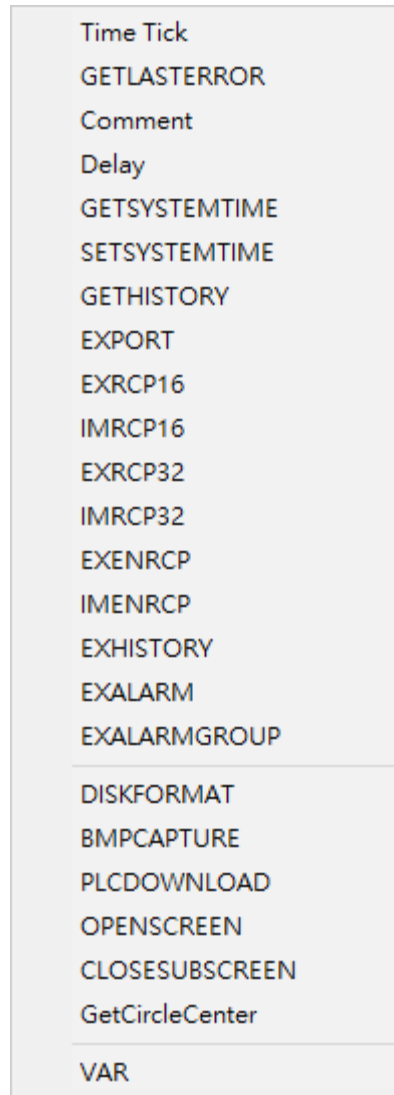
Command FileSlotImport

Variables	Contents	Description
Var1	\$100	Return value: 0: failed; 1: succe
Var2	1	FileSlot ID
Var3	2	External Device ID 2:USB, 3:SD.
Var4	\$120	External Filename
Var5	\$110	Filename length (character)

24.3.11 Others

Others include Time Tick, GETLASTERROR, Comment, Delay, GETSYSTEMTIME, SETSYSTEMTIME, EXPORT, EXRCP, IMRCP, EXENRCP, IMENRCP, EXHISTORY, EXALARM, DISKFORMAT, BMPCAPTURE, PLCDOWNLOAD, GetCircleCenter, and other commands.

The commands are described in detail below.



Time Tick
GETLASTERROR
Comment
Delay
GETSYSTEMTIME
SETSYSTEMTIME
GETHISTORY
EXPORT
EXRCP16
IMRCP16
EXRCP32
IMRCP32
EXENRCP
IMENRCP
EXHISTORY
EXALARM
EXALARMGROUP
DISKFORMAT
BMPCAPTURE
PLCDOWNLOAD
OPENSUBSCREEN
CLOSESUBSCREEN
GetCircleCenter
VAR

Figure 24.3.11.1 Others

24

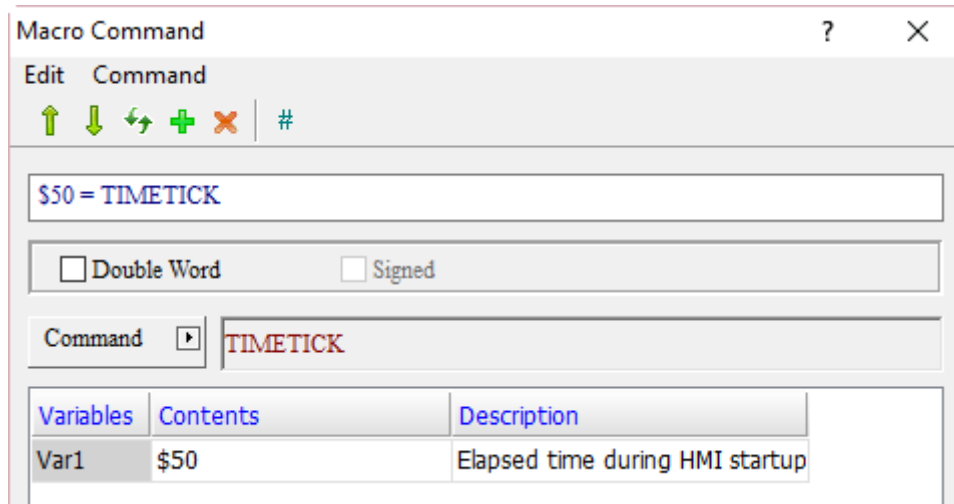
- Time Tick (get the time from the start of the system up to now)

Expression	Meaning of variable		Note
Var1 = TIMETICK (W) Var1 = TIMETICK (DW)	Var1	Elapsed time during HMI startup	W: Word DW: Double Word
	Description of action		
	Get the time from the start of the system up to now and put it in Var1 (unit: ms).		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

- Var1 is the internal memory address. Put elapsed time during the HMI startup in \$50.



- GETLASTERROR (get error value of previous command)

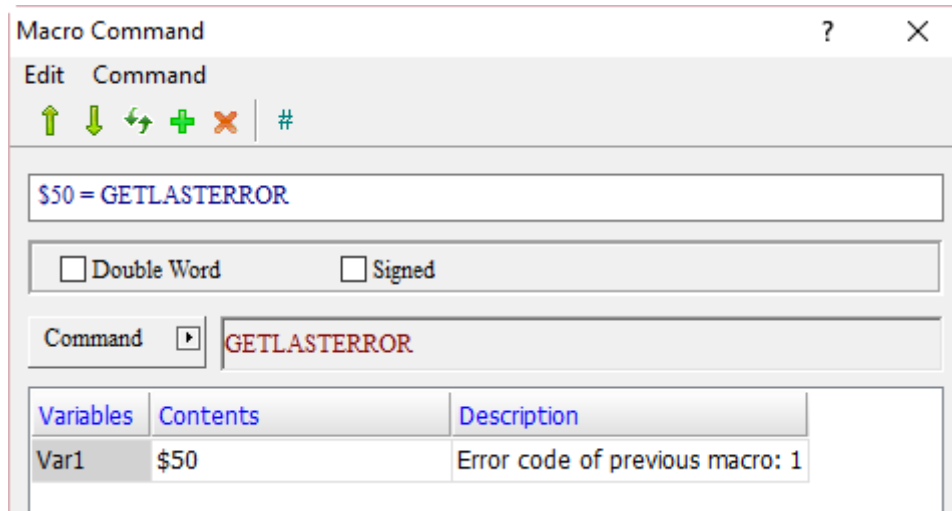
Expression	Meaning of variable	Note
Var1 = GETLASTERROR (W) Var1 = GETLASTERROR (DW) Var1 = GETLASTERROR (Signed W) Var1 = GETLASTERROR (Signed DW)	Error code of previous macro 1: Succeeded	W: Word DW: Double Word Signed: signed number
	Negative value: error (See Section 24.4 Macro error codes for the meaning of negative value.)	
	Description of action	
	Get the error value of the previous macro command and put the result in Var1.	

Note: this command must follow a macro command with an error in order to obtain its error value.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

- Var1 is the internal memory address. Get the result of the error value of the previous macro command and put it in \$50.



24

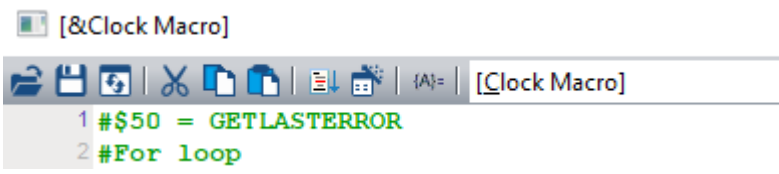
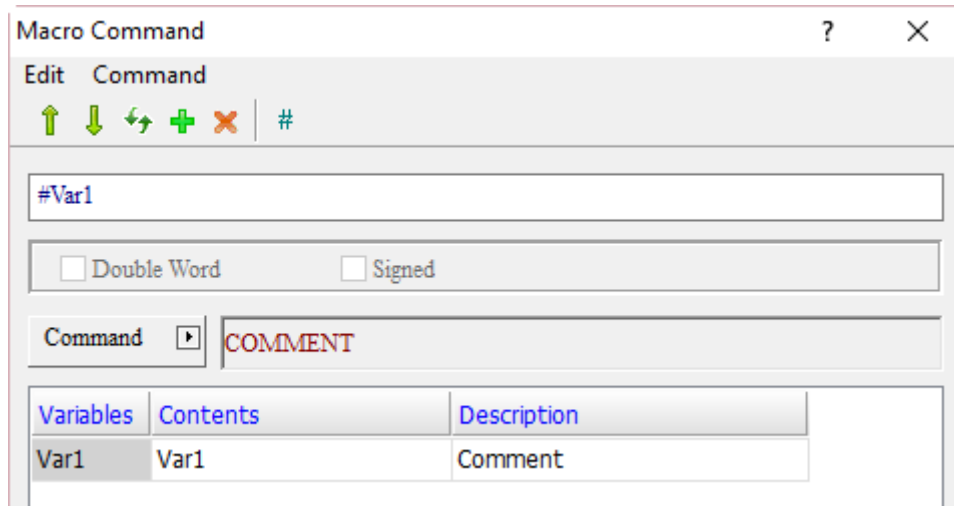
■ COMMENT (comments)

Expression	Meaning of variable		Note
#Var1 (W)	Var1	Contents of command	W: Word
	Description of action		
	Comment Var1.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

Add # before the command to make a comment on the command. # can also be used for describing the purpose of a macro.



■ Delay (delay)

Expression	Meaning of variable		Note
Delay(Var1) (W)	Var1	Delay time	W: Word
	Description of action		
	Delay the time of Var1 before executing commands of the next line. The unit is ms.		

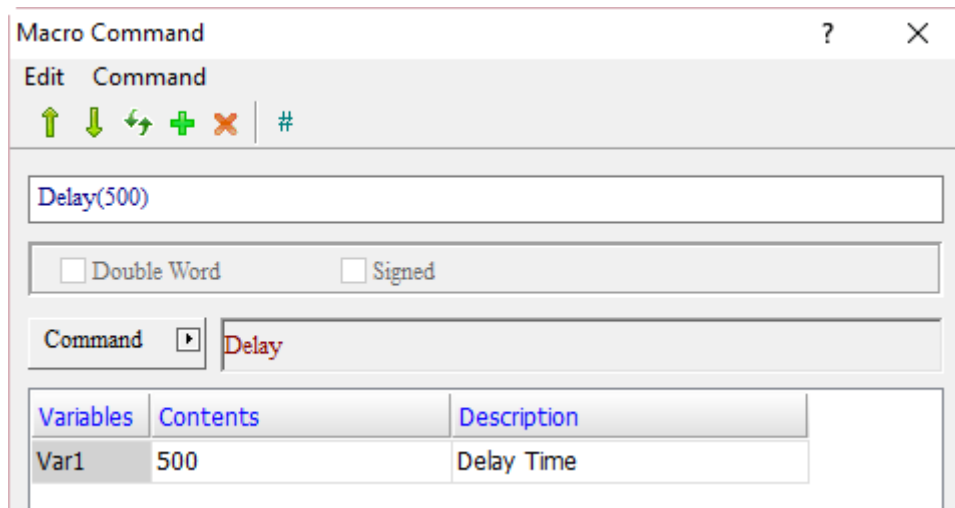
Note:

1. Due to the multitasking of the HMI, a system delay may occur by default. If you set this Delay command, the delay time may increase because of the busy operations of the system, and the command will not be executed in advance.
2. Excessive Delay setting will result in slow response of the HMI.
3. When the Delay command is executed, the HMI will suspend all actions until the Delay time is over.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v

Example

- Var1 is a constant and set the Delay time to 500 ms.



24

■ GETSYSTEMTIME (get system time)

Expression	Meaning of variable		Note
Var1 = GETSYSTEMTIME (W)	Var1	Year	W: Word
	Var1 + 1	Month	
	Var1 + 2	Day	
	Var1 + 3	Week	
	Var1 + 4	Hour	
	Var1 + 5	Minute	
	Var1 + 6	Second	
Description of action			
Get the system time from Var1 to Var7 for 7 consecutive Words address.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

- Var1 is the internal memory address. Put the current system time in \$50 to \$56.

The image shows a 'Macro Command' window with a toolbar containing icons for undo, redo, copy, paste, and delete. The command field contains '\$50 = GETSYSTEMTIME'. Below this are checkboxes for 'Double Word' and 'Signed'. A 'Command' dropdown menu is set to 'GETSYSTEMTIME'. A table below shows the variable 'Var1' with content '\$50' and description 'Continuous address (Year, Mont'. Below the editor is a toolbar with icons for file operations and a label 'Screen_1 [Screen Cycle Macro]'. The execution area shows the command '1 \$50 = GETSYSTEMTIME'.

Year	2017	\$50
Month	6	\$51
Day	8	\$52
Week	4	\$53
Hour	16	\$54
Minute	36	\$55
Second	54	\$56

24

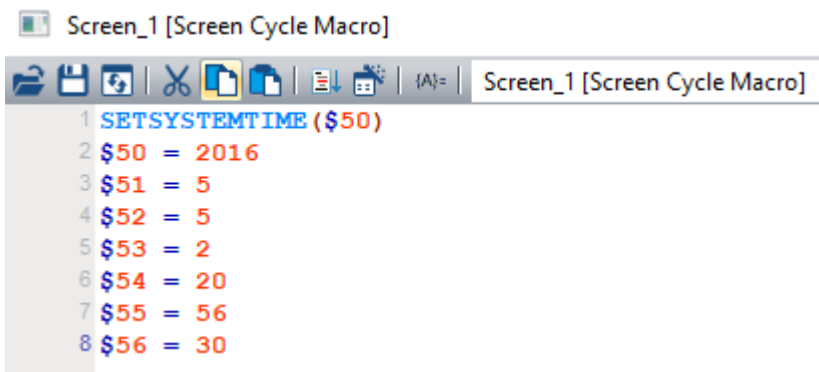
■ SETSYSTEMTIME (set system time)

Expression	Meaning of variable		Note
Var1 = SETSYSTEMTIME (W)	Var1	Year	W: Word
	Var1 + 1	Month	
	Var1 + 2	Day	
	Var1 + 3	Week	
	Var1 + 4	Hour	
	Var1 + 5	Minute	
	Var1 + 6	Second	
Description of action			
Set the system time from Var1 to Var7 for 7 consecutive Words address.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

- Var1 is the internal memory address. Set the current system time and put it in \$50 to \$56.



Year	2016	\$50
Month	5	\$51
Day	5	\$52
Week	2	\$53
Hour	20	\$54
Minute	56	\$55
Second	30	\$56

24

■ GETHISTORY (get history data)

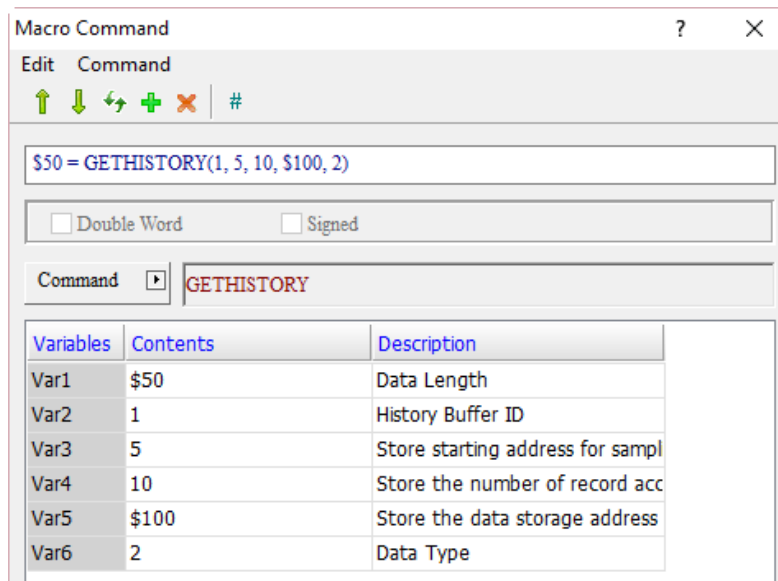
Expression	Meaning of variable			Note	
Var1 = GETHISTORY(Var2, Var3, Var4, Var5, Var6) (W)	Var1	Store Data Length		W: Word	
	Var2	History Buffer ID			
	Var3	Read starting address for sampling			
	Var4	Read the number of record accessing point			
	Var5	Data storage address			
	Var6	Data Type	Data		0
			Time		1
Data and time			2		
Description of action					
Get history data.					

Note: Double Word is recommended to be used for Var1, Var3, and Var4. If the continuous address of Word is used, data may be overwritten and the result may be affected.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v
Var4	v		v
Var5	v	v	
Var6	v		v

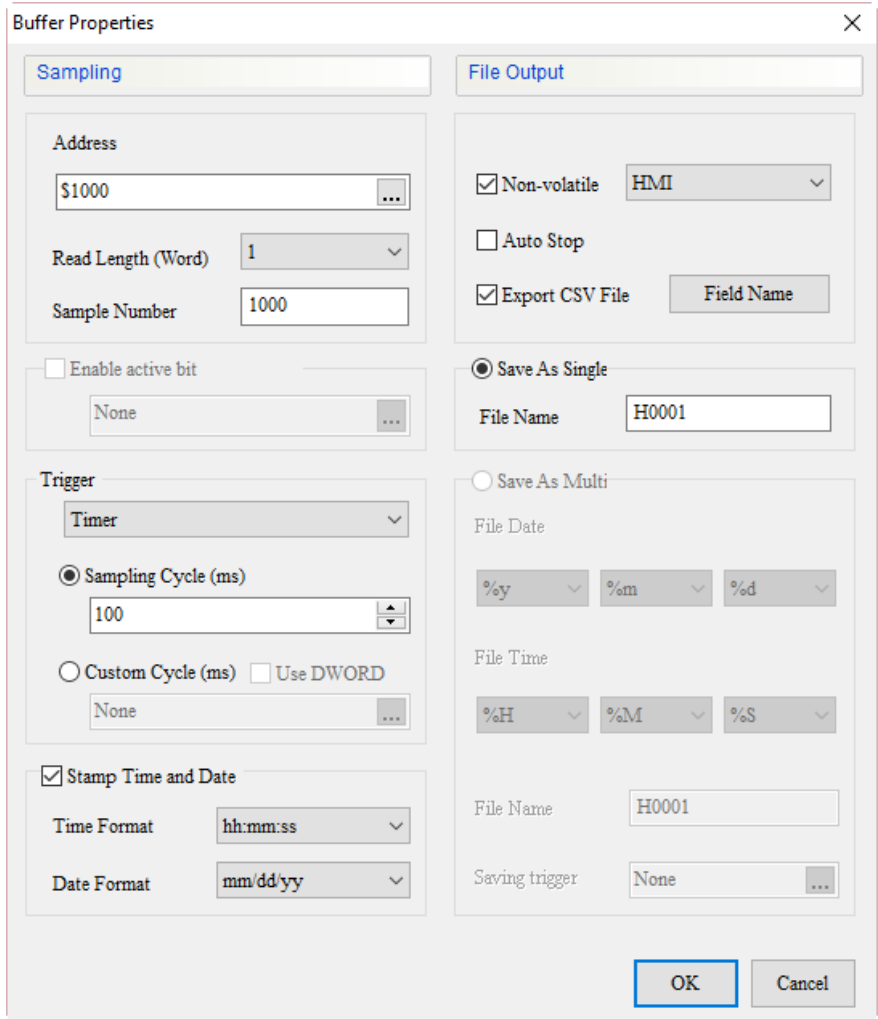
Example

- Var1 and Var5 are internal memory addresses, and Var2, Var3, Var4, and Var6 are constants. Set the History Buffer ID as 1 (Var2), sample from the fifth data (Var2) to the tenth data (Var3), put the data type (including time and data) set as 2 (Var6) in the continuous address (Var5) of \$100, and finally put the obtained data length in \$50 (Var1).

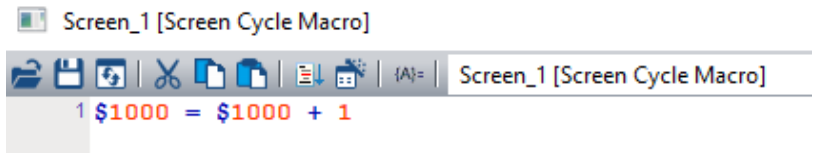


Example

- Set the Read Address \$1000 as the history buffer sampling data address.

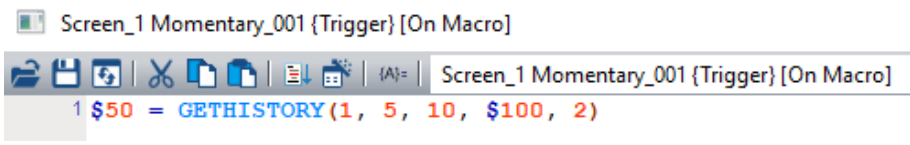
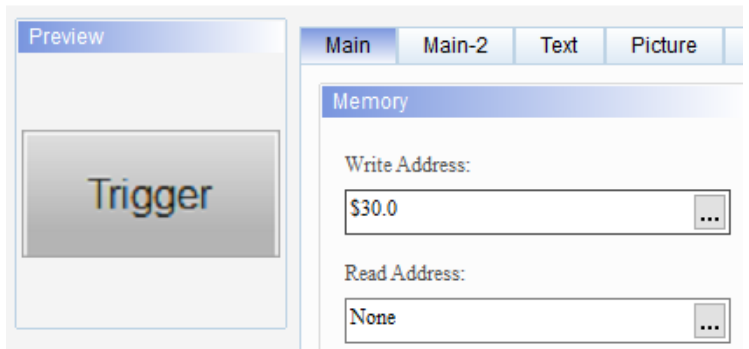


- Edit the Screen Cycle Macro to add up the history data of \$1000.



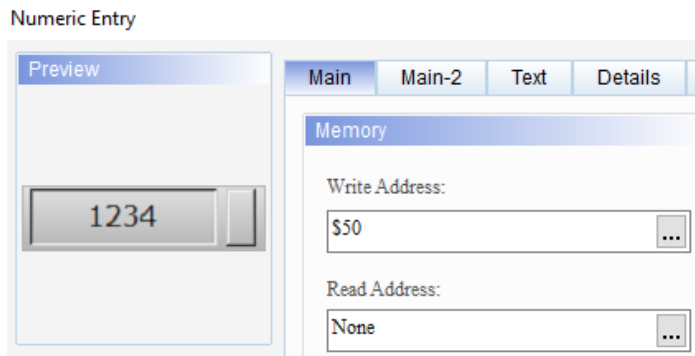
- Create a Momentary button, edit On macro, and set the GETHISTORY command as follows

Momentary

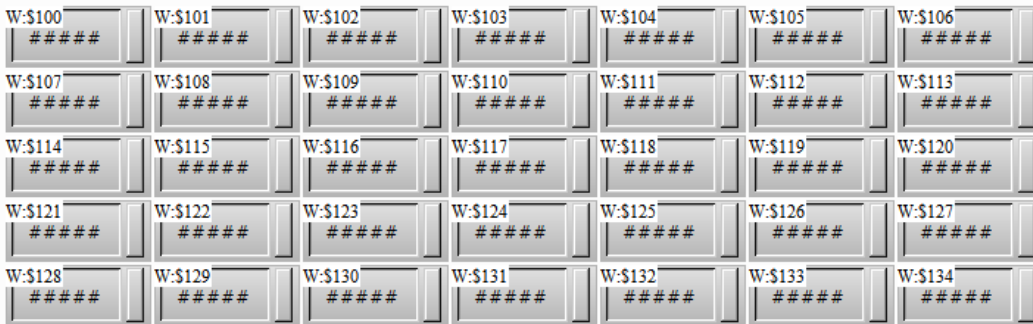


Example

- Create a Numeric Entry element and set the Write Address as \$50.



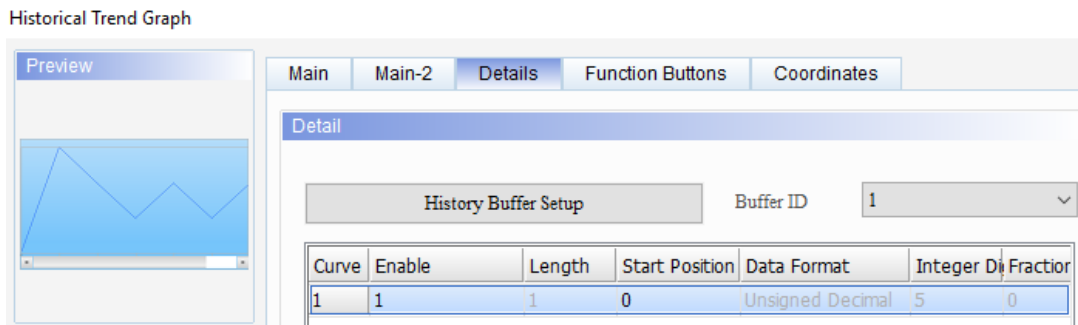
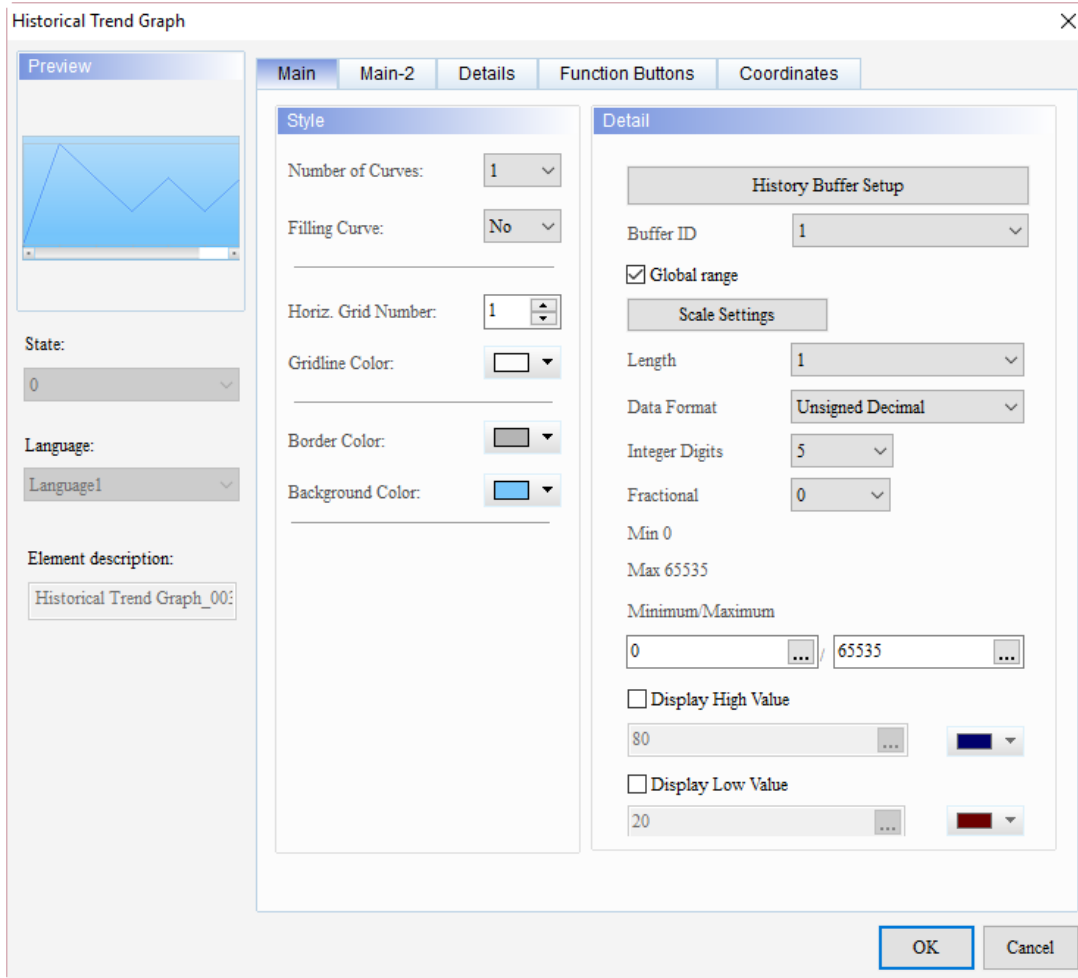
- Create Numeric Entry elements of \$100 to \$134, as shown below.



Example

- Create a Historical Trend Graph and enable it.

24



Example

- After compiling the screen, the execution result is as follows:

The screenshot shows a control panel with a table of data. The table has 7 columns and 5 rows. The first column contains the year '2017'. The second column contains the number '6'. The third column contains the number '8'. The fourth column contains the number '17'. The fifth column contains the number '27'. The sixth column contains the number '52'. The seventh column contains the numbers '439', '441', '442', '444', and '446' from top to bottom. A dashed blue box highlights the entire table. Below the table, there is a 'Time' label, a '\$50' value, a 'Trigger' button, and a 'History data' window. The 'History data' window shows a timestamp '17:31:05 06/08/2017' and a blue background.

- EXPORT (export data)

Expression	Meaning of variable				Note
EXPORT(Var1) (W)	Var1	Data export device	SD Card	0	W: Word
			USB Disk	1	
			Printer	2	
Description of action					
Export and print historical and alarm data to external storage device Var1.					

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v

Example

- Var1 is a constant. Export data to the USB Disk.

The screenshot shows the 'Macro Command' dialog box. It has a title bar with a question mark and a close button. Below the title bar, there are 'Edit' and 'Command' buttons. A toolbar contains icons for up, down, left, right, add, delete, and comment. The main area contains a text field with 'EXPORT(1)'. Below it are two checkboxes: 'Double Word' and 'Signed', both of which are unchecked. There is a 'Command' dropdown menu with 'EXPORT' selected. At the bottom, there is a table with three columns: 'Variables', 'Contents', and 'Description'. The table has one row with 'Var1' in the 'Variables' column, '1' in the 'Contents' column, and 'External Storage: 0:SD card, 1:l' in the 'Description' column.

■ EXRCP16 / EXRCP32 (export 16-bit Recipe / export 32-bit Recipe)

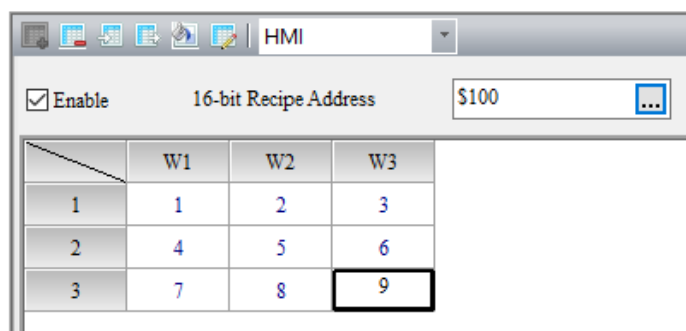
Expression	Meaning of variable			Note	
Var1 = EXRCP16(Var2, Var3) (W) Var1 = EXRCP32(Var2, Var3) (W)	Var1	Return value		W: Word	
		Failed	0		
		Succeeded	1		
	Var2	File name of the exported 16-bit Recipe / 32-bit Recipe			
	Var3	Recipe export storage device	USB Disk		2
			SD Card		3
Description of action					
Export the 16-bit Recipe / 32-bit Recipe and store in Var3, and return the result to Var1.					

Note: the exported 16-bit and 32-bit Recipe files will be stored in the root directory of the external storage device.

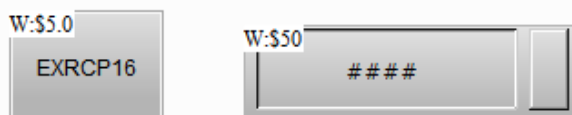
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v	v	v

Example

- The following example will show the export command of 16-bit Recipe which is the same as that of 32-bit Recipe.
 - Export 16-bit Recipe data to the USB Disk, and the file name is Delta. The steps are as follows:
1. Go to [Options] > [Recipe] and set the recipe data.



2. Create a Momentary button (\$5.0) and a Numeric Entry element (\$50).



3. Go to the Momentary button and write On macro as follows. Put the "Delta" string in \$200 and store the data in the USB Disk by exporting 16-bit Recipe, and the file name is Delta.

```

Screen_1 Momentary_001 {EXRCP16} [On Macro]
1 FILLASC($200, "Delta")
2 $50 = EXRCP16($200, 2)
    
```

Example

4. Trigger the \$5.0 button after compiling the screen and downloading the recipe data to the HMI, and \$50 will show 1 representing successful action and export the 16-bit Recipe data to the USB Disk.



Delta.csv			
	A	B	C
1	RCP16-1.0		
2			
3	3	3	
4	1	2	3
5	4	5	6
6	7	8	9

■ IMRCP16 / IMRCP32 (import 16-bit Recipe / Import 32-bit Recipe)

Expression	Meaning of variable			Note	
Var1 = IMRCP16(Var2, Var3) (W) Var1 = IMRCP32(Var2, Var3) (W)	Var1	Return value		W: Word	
		Failed	0		
		Succeeded	1		
	Var2	File name of the imported 16-bit Recipe / 32-bit Recipe			
	Var3	Recipe import storage device	USB Disk		2
			SD Card		3
Description of action					
Import the 16-bit Recipe / 32-bit Recipe from Var3 to the HMI, and return the result to Var1.					

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v	v	v

Example

- The following example will show the import command of 16-bit Recipe which is the same as that of 32-bit Recipe.
 - Import 16-bit Recipe data from the USB Disk to the HMI, and the file name is HMI. The steps are as follows:
1. Refer to the figure below, use Excel to make a recipe file called HMI.csv and store it to the USB Disk.

	A	B	C
1	RCP16-1.0		
2			
3		3	
4	11	12	13
5	14	15	16
6	17	18	19

2. Create a Momentary button (\$5.0), a Numeric Entry element (\$50), and recipe addresses RCP0 to RCP11. This is the default recipe content of the software.

3. Go to the Momentary button and write On macro as follows. Put the "HMI" string in \$200 and import 16-bit Recipe data from the USB Disk.

Screen_1 Momentary_001 {IMRCP16} [On Macro]

```

1 FILLASC($200, "HMI")
2 $50 = IMRCP16($200, 2)
    
```

4. Trigger the \$5.0 button after compiling the screen and downloading the recipe data to the HMI, then \$50 will show 1 representing successful action, and the 16-bit Recipe data will be imported to the HMI. The recipe data of the HMI will be changed to the HMI recipe file.

24

■ EXENRCP (export enhanced recipe)

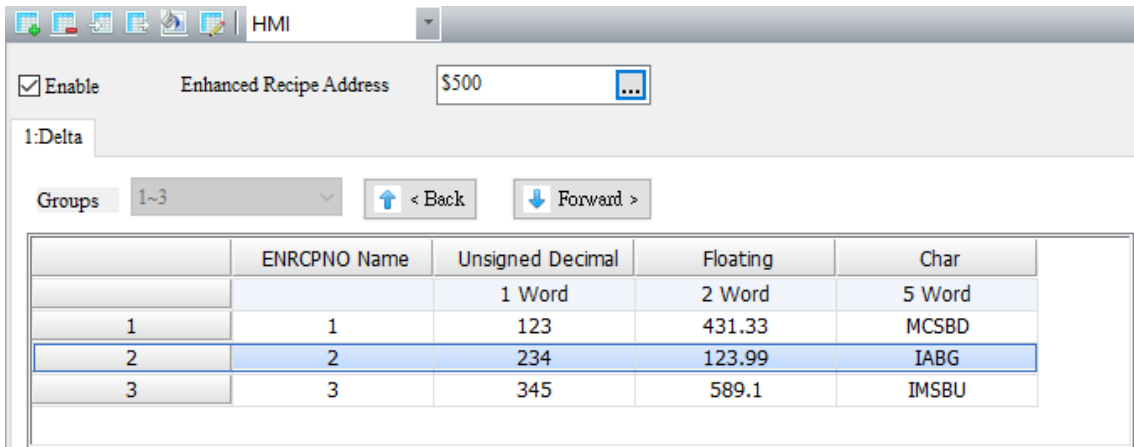
Expression	Meaning of variable			Note	
Var1 = EXENRCP(Var2, Var3) (W)	Var1	Return value		W: Word	
		Failed	0		
		Succeeded	1		
	Var2	File name of the exported enhanced recipe			
	Var3	Recipe export storage device	USB Disk		2
			SD Card		3
Description of action					
Export the enhanced recipe and store it in Var3, and return the result to Var1.					

Note: the exported enhanced recipe file will be stored in the root directory of the external storage device.

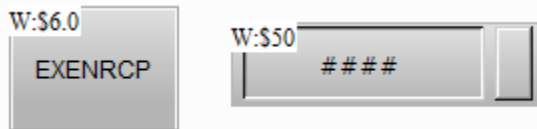
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v	v	v

Example

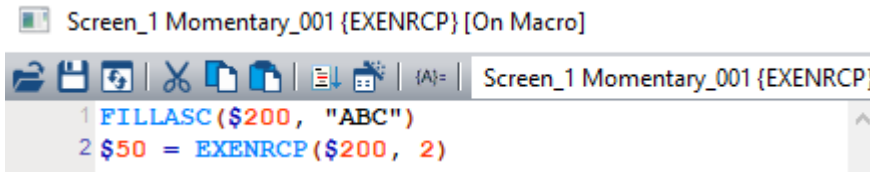
- Export the enhanced recipe data to the USB Disk, and the file name is ABC. The steps are as follows:
 - Go to [Options] > [Enhanced recipe] and set the recipe data.



- Create a Momentary button (\$5.0) and a Numeric Entry element (\$50).



- Go to the Momentary button to write On macro as follows. Put the "ABC" string in \$200 and store the data in the USB Disk by exporting the enhanced recipe, and the file name is ABC.



- Trigger the \$5.0 button after compiling the screen and downloading the recipe data to the HMI, then \$50 will show 1 representing successful action and export the enhanced recipe data to the USB Disk.



	A	B	C	D
1	ENRCP-2.0			
2	Delta	3	3	
3	2	1	0	0
4	5	2	3	2
5	8	5	0	0
6	123	431.33	MCSBD	
7	234	123.99	IABG	
8	345	589.1	IMSBU	

Example

- For each Data Format and the corresponding defined value, refer to the following table.

Data Format	DOPSoft defined value
BCD	0
Signed Decimal	1
Unsign Decimal	2
Hexdecimal	3
Binary	4
Floating	5
Char	8

- Each cell of the exported CSV file is explained as follows:

	A	B	C	D
1	ENRCP-2.0			
2	Delta	3	3	
3	2	1	0	0
4	5	2	3	2
5	8	5	0	0
6	123	431.33	MCSBD	
7	234	123.99	IABG	
8	345	589.1	IM\$BU	

Excel cell	Definition	Content
A-1	Version	ENRCP-2.0
A-2	Enhanced recipe group name	Delta
B-2	Column number	3
C-2	Group number	3
A-3	Data Format of Column 1	2 (Unsigned Decimal)
B-3	Data Length of Column 1	1 (Word)
C-3	Integer Digits of Column 1	0
D-3	Fractional (Digits) of Column 1	0
A-4	Data Format of Column 2	5 (Floating)
B-4	Data Length of Column 2	2 (Word)
C-4	Integer Digits of Column 2	3
D-4	Fractional (Digits) of Column 2	2
A-5	Data Format of Column 3	8 (Char)
B-5	Data Length of Column 3	5 (Word)
C-5	Integer Digits of Column 3	0
D-5	Fractional (Digits) of Column 3	0

■ IMENRCP (import enhanced recipe)

Expression	Meaning of variable			Note	
Var1 = IMENRCP(Var2, Var3) (W)	Var1	Return value		W: Word	
		Failed	0		
	Succeeded	1			
	Var2	File name of the imported enhanced recipe			
	Var3	Recipe import storage device	USB Disk		2
			SD Card		3
Description of action					
Import the enhanced recipe from Var3 to the HMI and return the result to Var1.					

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v	v	v

Example

- Import the enhanced recipe from the USB Disk to the HMI, and the file name is DEF. The steps are as follows:
 1. Refer to the figure below, use Excel to make a recipe file called DEF.csv and store it to the USB Disk.

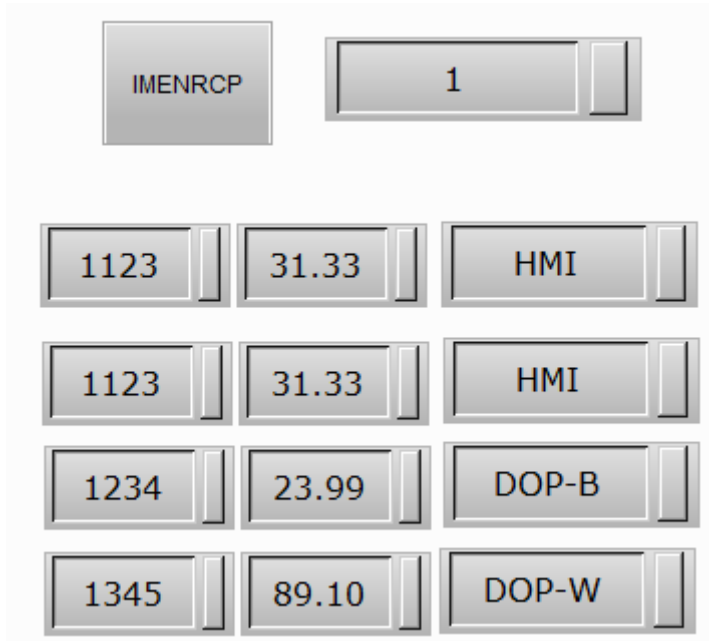
2. Create a Momentary button (\$5.0), a Numeric Entry element (\$50), and recipe addresses RCP0 to RCP11.

Example

- 3. Go to the Momentary button to write On macro as follows. Put the "DEF" string in \$100 and import the enhanced recipe from the USB Disk.

```
Screen_1 Momentary_001 {IMENRCP} [On Macro]
1 FILLASC($200, "DEF")
2 $50 = IMENRCP($200, 2)
```

- 4. Trigger the \$5.0 button after compiling the screen and downloading the recipe data to the HMI, then \$50 will show 1 representing the successful action, and the enhanced recipe data will be imported to the HMI. The recipe data of the HMI will be changed to the DEF recipe file.



■ EXHISTORY (export history data)

Expression	Meaning of variable				Note
Var1 = EXHISTORY(Var2, Var3, Var4)	Var1	Return value			
		Failed	0		
		Succeeded	1		
	Var2	History Buffer ID			
	Var3	Exported file name			
	Var4	External storage device	USB Disk	2	
			SD Card	3	
	Description of action				
Export history data to an external storage device.					

Note:

1. The Export CSV File in the Buffer Properties setting must be checked. If not, execution of this macro will only export .dat file.
2. When you input 0 to the buffer number, it means to export all history buffers. If 3 history buffers are opened, 3 files will be exported after execution. The file names are "Export file name 1.csv", "Export file name 2.csv," and "Export file name 3.csv" respectively. When you input a non-0 number, it represents that the specified number of history buffers will be exported. After execution, one file will be exported with the name of "Export file name.csv"
3. File extension ".csv" will be added automatically after exporting. The file name cannot contain characters such as \, /, :, *, ?, ", <, >, and |. x00 indicates the end of the file name string.

Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v	v		
Var2	v	v		v
Var3	v	v		
Var4	v	v		v

Example

Step 1: set three history buffers as follows:

1. For History data buffer 1, set the Address to \$1000, Read Length (Word) to 10, and check Export CSV File.

24

The screenshot shows the 'Buffer Properties' dialog box with the following settings:

- Sampling:**
 - Address: \$1000 (highlighted with a dashed blue box)
 - Read Length (Word): 10
 - Sample Number: 1000
 - Enable active bit: (None)
 - Trigger: Timer
 - Sampling Cycle (ms): 100 (Selected)
 - Custom Cycle (ms): (None)
 - Use DWORD:
 - Stamp Time and Date:
 - Time Format: hh:mm:ss
 - Date Format: mm/dd/yy
- File Output:**
 - Non-volatile: (HMI)
 - Auto Stop:
 - Export CSV File: (Field Name)
 - Save As Single: (File Name: H0001)
 - Save As Multi:
 - File Date: %y %m %d
 - File Time: %H %M %S
 - File Name: H0001
 - Saving trigger: None

Buttons: OK, Cancel

Example

- 2. For History data buffer 2, set the Address to \$1100, Read Length (Word) to 5, and check Export CSV File.

The screenshot shows the 'Buffer Properties' dialog box with two tabs: 'Sampling' and 'File Output'. The 'Sampling' tab is active and contains the following settings: Address is '\$1100', Read Length (Word) is '5', Sample Number is '1000', 'Enable active bit' is unchecked, 'Trigger' is set to 'Timer', 'Sampling Cycle (ms)' is '100', 'Custom Cycle (ms)' is 'None', and 'Stamp Time and Date' is checked with 'Time Format' as 'hh:mm:ss' and 'Date Format' as 'mm/dd/yy'. The 'File Output' tab contains: 'Non-volatile' is checked with 'HMI' selected, 'Auto Stop' is unchecked, 'Export CSV File' is checked with 'Field Name' selected, 'Save As Single' is selected with 'File Name' as 'H0002', 'Save As Multi' is unselected, 'File Date' is '%y %m %d', 'File Time' is '%H %M %S', and 'Saving trigger' is 'None'. 'OK' and 'Cancel' buttons are at the bottom right.

Example

- 3. For History data buffer 3, set the Address to \$1200, Read Length (Word) to 1, and check Export CSV File.

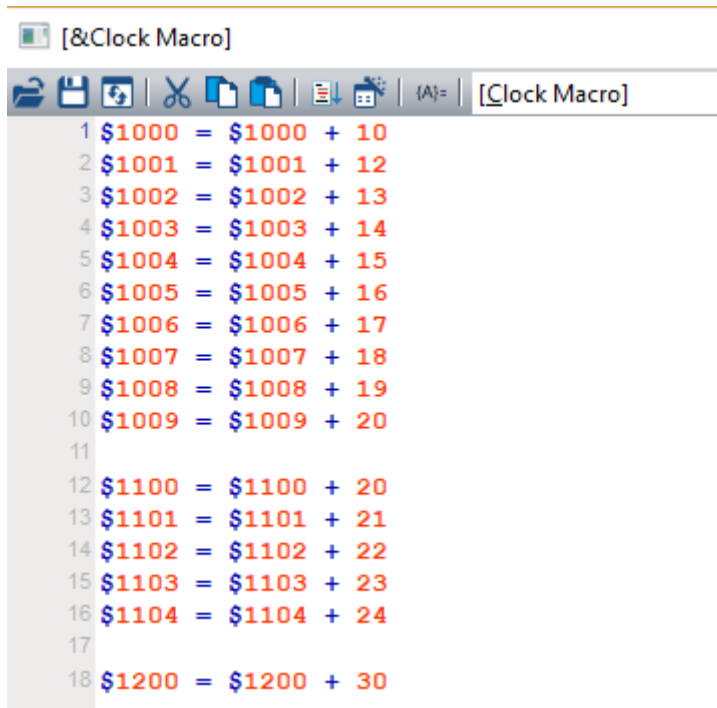
The screenshot shows the 'Buffer Properties' dialog box with the following settings:

- Sampling:** Address: \$1200, Read Length (Word): 1, Sample Number: 1000.
- File Output:** Non-volatile (HMI), Auto Stop, Export CSV File (Field Name), Save As Single (File Name: H0003), Save As Multi.
- Trigger:** Enable active bit (None), Custom Cycle (ms) (None), Sampling Cycle (ms) (100), Use DWORD.
- Stamp Time and Date:** Stamp Time and Date, Time Format: hh:mm:ss, Date Format: mm/dd/yy.
- File Date:** %y, %m, %d.
- File Time:** %H, %M, %S.
- File Name:** H0003.
- Saving trigger:** None.

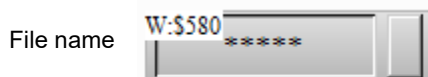
Buttons: OK, Cancel.

Example

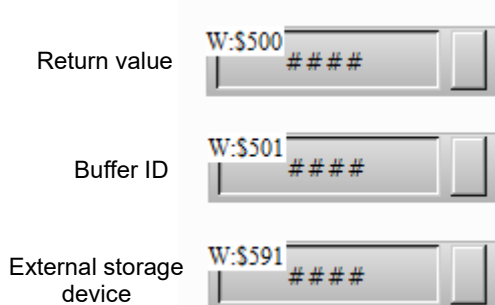
Step 2: add up history data in the Clock Macro.



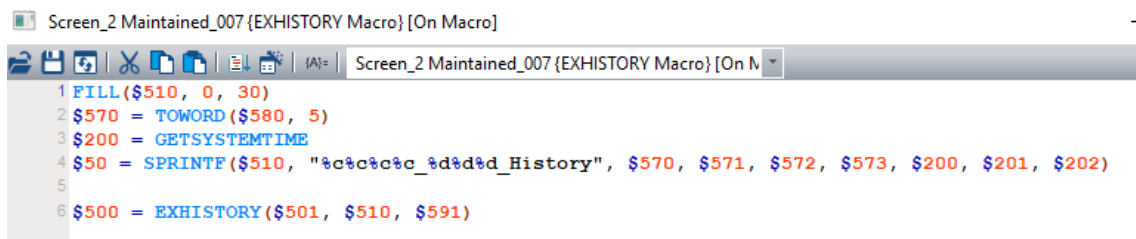
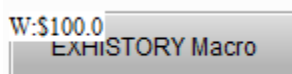
Step 3: create a Character Entry element on the screen with the address as \$580 and string length as 5.



Step 4: create 3 Numeric Entry elements on the screen with the addresses of \$500, \$591, and \$501.



Step 5: create a Maintained button element on the screen with the address of \$100.0, and add the On macro.



24

Example

Macro commands description:

Line 1: clear \$510 - \$539.

Line 2: convert the unit of \$580 (file name string) from byte to word.

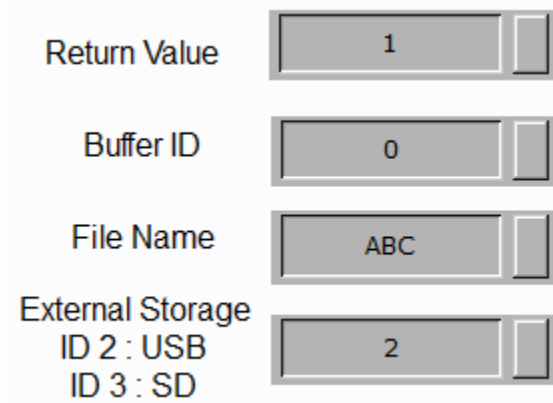
Line 3: move the system time to \$200 - \$206 (year, month, day, week, hour, minute, second).

Line 4: add "_year, month, day" and "_History" to "three characters of device name" to form a continuous string and assign it to the \$510 start address.

Line 6: export the history data to the specified external device and file name.

Step 6: download the editing screen to the HMI and insert the USB Disk into the HMI.

Step 7: enter the device name as "ABC" on the screen, and select "2" to use the USB Disk for the external storage device. Set the buffer ID as 0 (export all) and press the **EXHISTORY** button. The return value becomes 1 after the action.



Step 8: after the USB Disk is removed, the files exported to the USB Disk are as follows:



■ EXALARM (export alarm data)

Expression	Meaning of variable			Note	
Var1 = EXALARM(Var2, Var3)	Var1	Return value			
		Failed	0		
		Succeeded	1		
	Var2	Exported file name			
	Var3	External storage device	USB Disk	2	
			SD Card	3	
	Description of action				
	Export alarm data to external storage devices.				

Note:

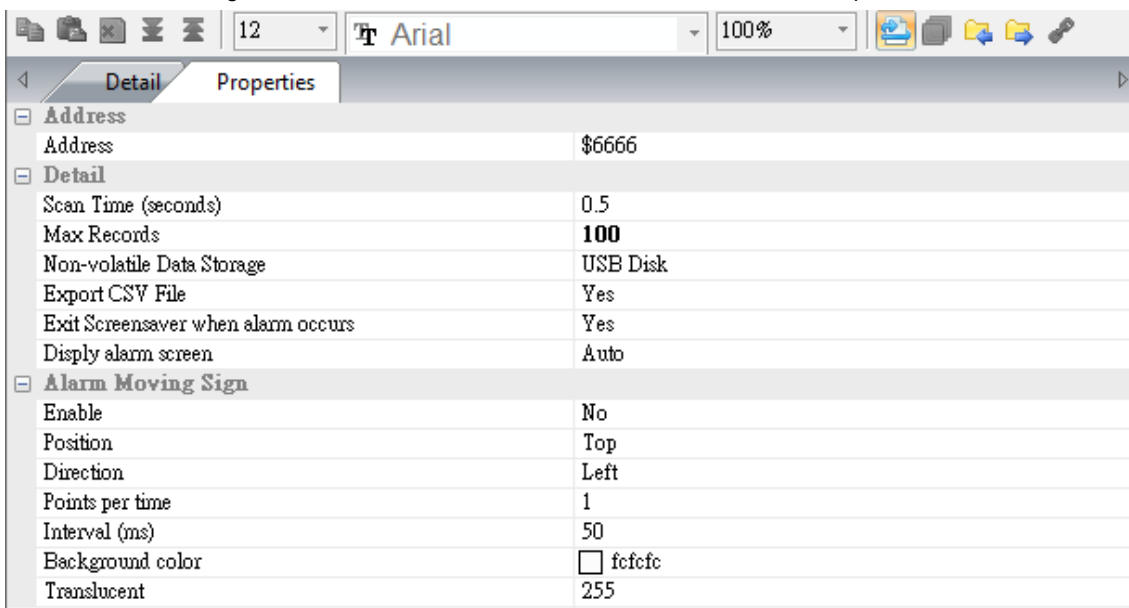
1. Export CSV File must be checked in the alarm setting.
2. File extension ".csv" will be added automatically after exporting. The file name cannot contain characters such as \, /, :, *, ?, ", <, >, and |. x00 indicates the end of the file name string.

Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v	v		
Var2	v	v		
Var3	v	v		v

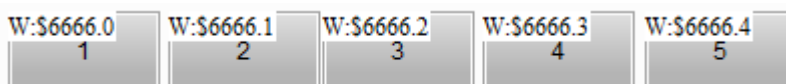
Example

■ The steps are as follows:

1. The alarm settings are as follows. Set the Address as \$6666 and set the Export CSV File to Yes.



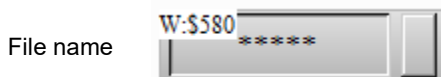
2. Create Maintained elements that trigger alarm bits on the screen to trigger alarms. Set the addresses as \$6666.0, \$6666.1, \$6666.2, \$6666.3, and \$6666.4 in sequence.



3. Create an Alarm History Table element on the screen to display the current history alarm.

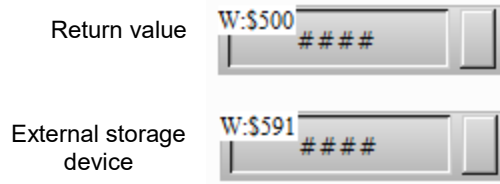
No	Trigger	Message	Recovery	Frequency
1	hh:mm:ss mm/dd/yy	####	hh:mm:ss mm/dd/yy	#

4. Create a Character Entry element on the screen with the address as \$580 and string length of 5.

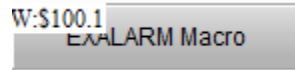


Example

5. Create 2 Numeric Entry elements on the screen with the addresses as \$500 and \$591.



6. Create a Maintained button element on the screen with the address as \$100.1, and add the On macro.



```

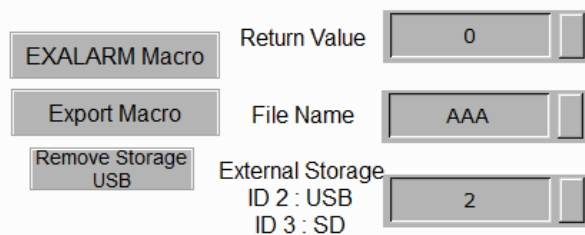
Screen_3 Maintained_005 {EXALARM Macro} [On Macro]
1 FILL($510, 0, 30)
2 $570 = TOWORD($580, 5)
3 $200 = GETSYSTEMTIME
4 $50 = SPRINTF($510, "%c%c%c%c_%d%d_Alarm", $570, $571, $572, $573, $200, $201, $202)
5
6 $500 = EXALARM($510, $591)
    
```

The macro commands are described as follows:

- Line 1: clear \$510 - \$539.
- Line 2: convert the unit of \$580 (device name string) from byte to word.
- Line 3: move the system time to \$200 - \$206 (year, month, day, week, hour, minute, second).
- Line 4: add "_ year, month, day" and "_ Alarm" to "three characters of device name" to form a continuous string and assign to the \$510 start address.
- Line 6: export the history alarm to the specified external device and file name.

7. Download the editing screen to the HMI and insert the USB Disk into the HMI.
8. Trigger the alarm and enter the device name as "AAA" on the screen, and select "2" to use the USB Disk for the external storage device.

No	Message	Trigger	Recovery	Ack
0001	Alarm 1	15:11:37 06/13/2018		
0002	Alarm 2	15:11:37 06/13/2018		
0003	Alarm 3	15:11:38 06/13/2018		
0004	Alarm 4	15:11:39 06/13/2018		
0005	Alarm 5	15:11:39 06/13/2018		



Example

9. Press the **EXALARM Macro** button and the return value becomes 1 after the action.

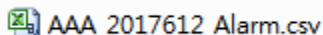
No	Message	Trigger	Recovery	Ack
0001	Alarm 1	15:11:37 06/13/2018		
0002	Alarm 2	15:11:37 06/13/2018		
0003	Alarm 3	15:11:38 06/13/2018		
0004	Alarm 4	15:11:39 06/13/2018		
0005	Alarm 5	15:11:39 06/13/2018		

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

512 1024 2048

Return Value
 File Name
 External Storage ID 2 : USB
 ID 3 : SD

10. After the USB Disk is removed, the file exported to the USB Disk is as follows:



■ EXALARMGROUP (export group data specified by alarm)

Expression	Meaning of variable			Note	
Var1 = EXALARMGROUP(Var2, Var3, Var4)	Var1	Return value			
		Failed	0		
		Succeeded	1		
	Var2	Alarm group number			
	Var3	Exported file name			
	Var4	External storage device	USB Disk	2	
			SD Card	3	
	Description of action				
Export the alarm data to the external storage device in accordance with the specified group.					

Note:

- Export CSV File must be checked in the alarm settings.
- File extension of "- group number" and ".csv" will be added automatically after exporting. The file name cannot contain characters such as \, /, :, *, ?, ", <, >, and |. x00 indicates the end of the file name string.

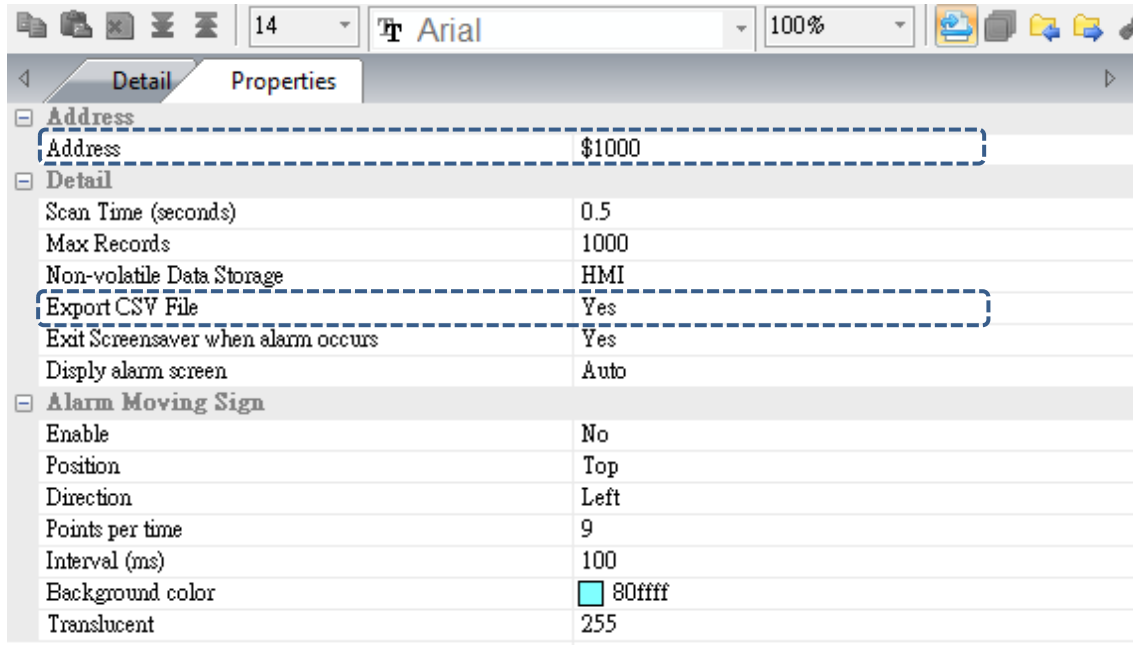
24

Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v	v		
Var2	v	v		v
Var3	v	v		
Var4	v	v		v

Example

The steps are as follows:

- The alarm settings are as follows. Set the Address to \$1000 and set the Export CSV File to Yes. Set Alarms 1 - 3 as Group 1, Alarms 4 - 6 as Group 2, and Alarms 7 - 9 as Group 3.



No.	Message Content	Category	Trigger Condition
1*	Alarm 1	1	On
2*	Alarm 2	1	On
3*	Alarm 3	1	On
4*	Alarm 4	2	On
5*	Alarm 5	2	On
6*	Alarm 6	2	On
7*	Alarm 7	3	On
8*	Alarm 8	3	On
9*	Alarm 9	3	On
10*	Alarm 10	0	On
11*	Alarm 11	0	On
12*	Alarm 12	0	On
13*	Alarm 13	0	On
14*	Alarm 14	0	On
15*	Alarm 15	0	On

Example

2. Create Maintained elements that trigger alarm bits on the screen to trigger alarms. Set the Write addresses as \$1000.0, \$1000.1, \$1000.2 to \$1000.9 in sequence.



3. Create an Alarm History Table element on the screen to display the current history alarm and set the group number as variable and the read address as \$302.

No	Trigger	Message	Recovery	Gr
1	hh:mm:ss m...	####	hh:mm:ss m...	

Alarm History Table ✕

Preview
Main
Main-2
Details
Details-2
Function Buttons
Coordinates

State:

Language:

Element description:

Event

Action Control Addr.

Sort

Use header controls to sort

Sorting Control Addr.

Sorting Order Address

Filter

Filter control address

Alarm counter display

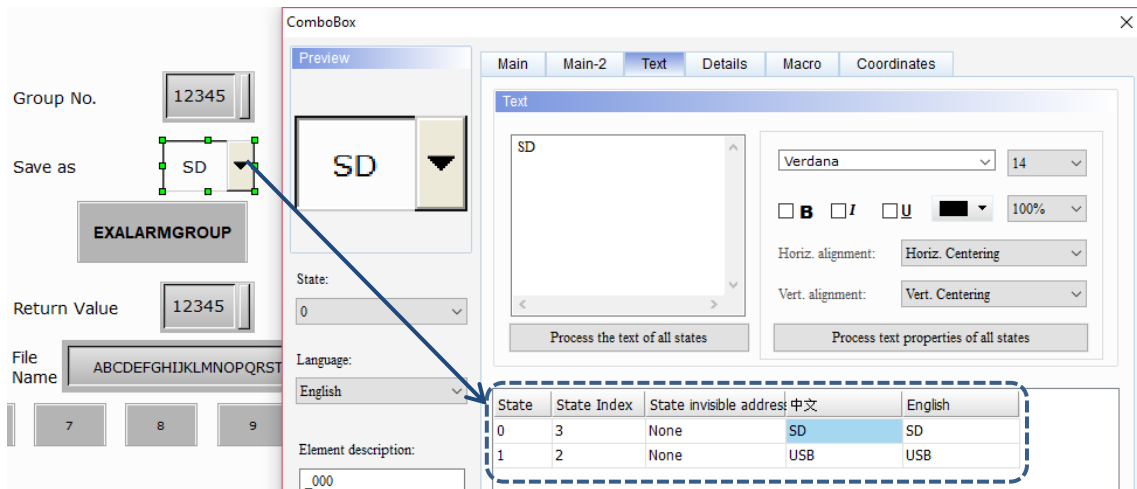
Alarm category start addr.

Alarm category end addr.

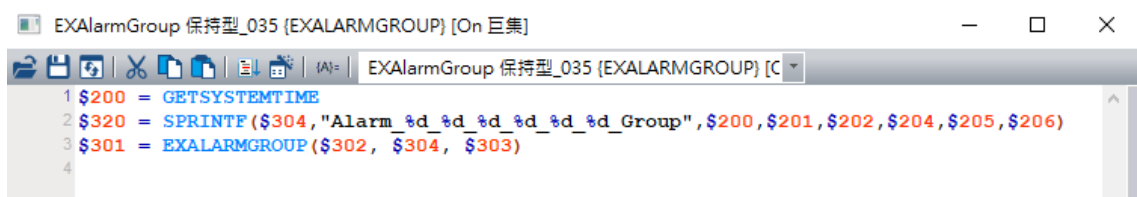
24

Example

4. Create a Character Display element on the screen with the address as \$304 and the string length as 20; create 2 Numeric Entry elements with the addresses as \$302 and \$301; create a ComboBox with the address as \$303. The total number of State is 2, the State Index of State 1 is 3, the text is SD, the State Index of State 2 is 2, and the text is USB.



5. Create a Maintained button element on the screen with the address as \$300.0, and add the On macro.



The macro commands are described as follows:

- Line 1: record the system time to \$200 - \$206 (year, month, day, week, hour, minute, second).
- Line 2: add "_ year, month, day, hour, minute, second" and "_ Group" to "Alarm" to form a continuous string and assign to the \$304 start address as file name.
- Line 3: export history alarm to the specified external device according to the specified group number and file name.

6. Download the editing screen to the HMI and insert the USB Disk into the HMI.
7. Trigger Alarm 1 to Alarm 10, enter group number "1" on the screen, and select USB for the external storage device.

Example

No	Trigger	Message	Recovery
0001	11:00:17 06/14/2018	Alarm 1	
0002	11:00:18 06/14/2018	Alarm 2	
0003	11:00:18 06/14/2018	Alarm 3	
0004	11:00:19 06/14/2018	Alarm 4	
0005	11:00:20 06/14/2018	Alarm 5	
0006	11:00:20 06/14/2018	Alarm 6	
0007	11:00:20 06/14/2018	Alarm 7	
0008	11:00:21 06/14/2018	Alarm 8	
0009	11:00:22 06/14/2018	Alarm 9	
0010	11:00:24 06/14/2018	Alarm 10	

Group No.

Save as

EXALARMGROUP

Return Value

File Name

1 2 3 4 5 6 7 8 9 10

8. Press the **EXALARMGROUP** button and the file name will be displayed, and the return value will become 1 after the action.

No	Trigger	Message	Recovery
0001	11:00:17 06/14/2018	Alarm 1	
0002	11:00:18 06/14/2018	Alarm 2	
0003	11:00:18 06/14/2018	Alarm 3	
0004	11:00:19 06/14/2018	Alarm 4	
0005	11:00:20 06/14/2018	Alarm 5	
0006	11:00:20 06/14/2018	Alarm 6	
0007	11:00:20 06/14/2018	Alarm 7	
0008	11:00:21 06/14/2018	Alarm 8	
0009	11:00:22 06/14/2018	Alarm 9	
0010	11:00:24 06/14/2018	Alarm 10	

Group No.

Save as

EXALARMGROUP




Return Value

File Name

1 2 3 4 5 6 7 8 9 10

9. Then, set group numbers as 2 and 3 as in Step 8, and press the button **EXALARMGROUP** respectively.

10. After the USB Disk is removed, the files exported to the USB Disk are as follows:

 Alarm_2018_6_14_11_18_33_Group-1.csv	6/14/2018 11:18 AM	Microsoft Excel Comma Separated Values File	2 KB
 Alarm_2018_6_14_11_18_46_Group-2.csv	6/14/2018 11:18 AM	Microsoft Excel Comma Separated Values File	2 KB
 Alarm_2018_6_14_11_18_55_Group-3.csv	6/14/2018 11:18 AM	Microsoft Excel Comma Separated Values File	2 KB

24

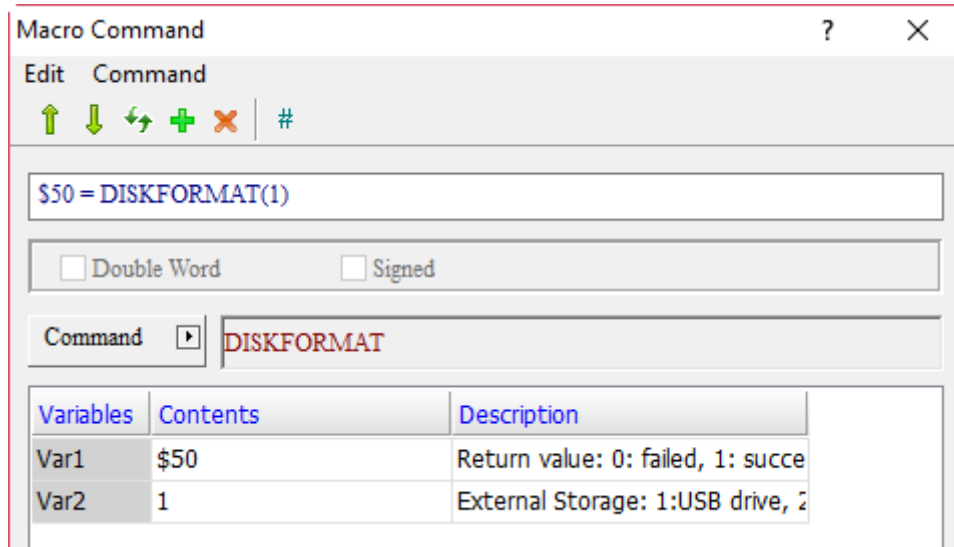
■ DISKFORMAT (disk format)

Expression	Meaning of variable			Note	
Var1 = DISKFORMAT(Var2) (W)	Var1	Return value		W: Word	
		Failed	0		
	Succeeded	1			
	Var2	External storage device	USB Disk		1
			SD Card		2
Description of action					
Select Var2 device to be formatted and return the result value to Var1.					

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

Example

- Var1 is the internal memory address and Var2 is a constant. Format the USB Disk and put the return value in \$50.



■ BMPCAPTURE (screen capture)

Expression	Meaning of variable				Note
Var1 = BMPCAPTURE(Var2) (W)	Var1	Return value			W: Word
		Failed	0		
	Succeeded	1			
	Var2	External storage device	USB Disk	1	
			SD Card	2	
Description of action					
Store the captured screen file in the Var2 device and return the result value to Var1.					

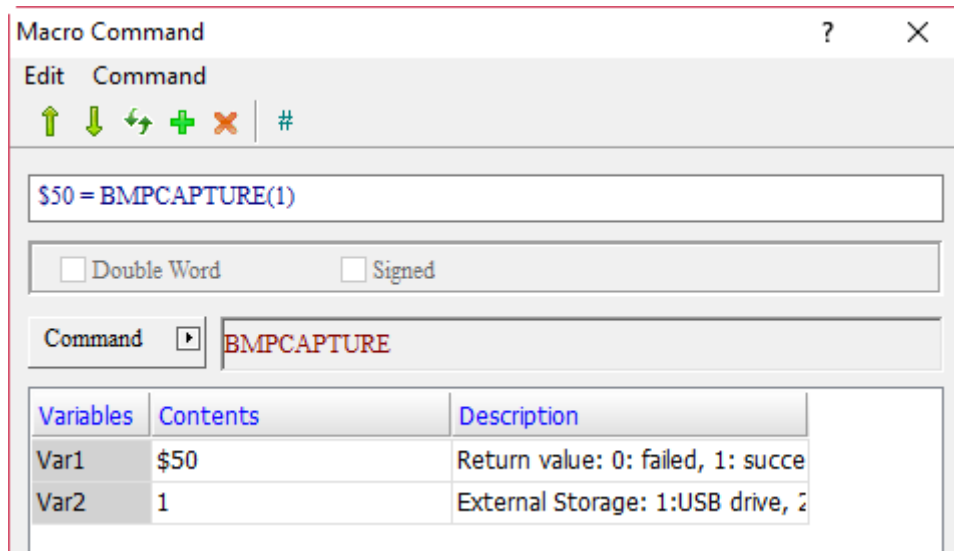
Note:

1. All formats of the exported files are .BMP.
2. The exported path is the folder with the current date in the root directory of the external storage device, and the current screen file is saved in hour, minute and second.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

Example

- Var1 is the internal memory address and Var2 is a constant. Save the captured screen to the USB Disk and put the return value in \$50.



24

■ PLCDOWNLOAD (PLC file download)

Expression	Meaning of variable				Note
Var1 = PLCDOWNLOAD(Var2, Var3, Var4, Var5, Var6) (W)	Var1	Return value			W: Word
		Failed	0		
		Succeeded	1		
	Var2	COM Port	COM1	0	
			COM2	1	
			COM3	2	
	Var3	PLC station number			
	Var4	DELTA PLC file name (i.e. delta.dvp, delta.isp)			
	Var5	External storage device	USB Disk	1	
			SD Card	2	
Var6	PLC password				
Description of action					
Download PLC file to PLC.					

Note:

1. Only support Delta PLC.
2. Support .dvp and .isp file formats.
3. Please use Character Entry elements for Var6 password.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v
Var4	v	v	
Var5	v	v	v
Var6	v	v	

Example

- Store the DVP or ISP file to be downloaded to the USB Disk or SD Card and put the return value in \$50.

Variables	Contents	Description
Var1	\$50	Return value: 0: failed, 1: succe
Var2	0	COM Port: 0: COM1, 1: COM2, 2
Var3	1	PLC Station
Var4	\$100	Delta PLC Filename, Ex: ""Test.c
Var5	1	External Storage: 1:USB drive, 2
Var6	\$200	PLC Password

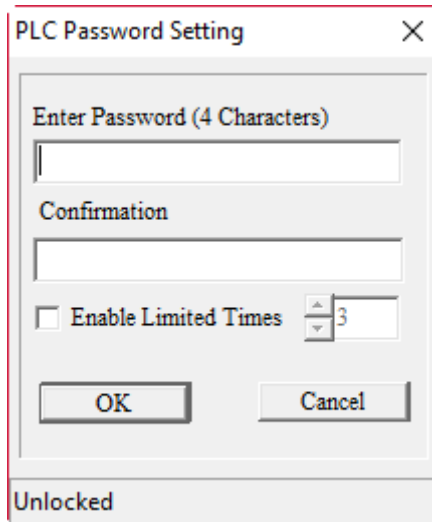
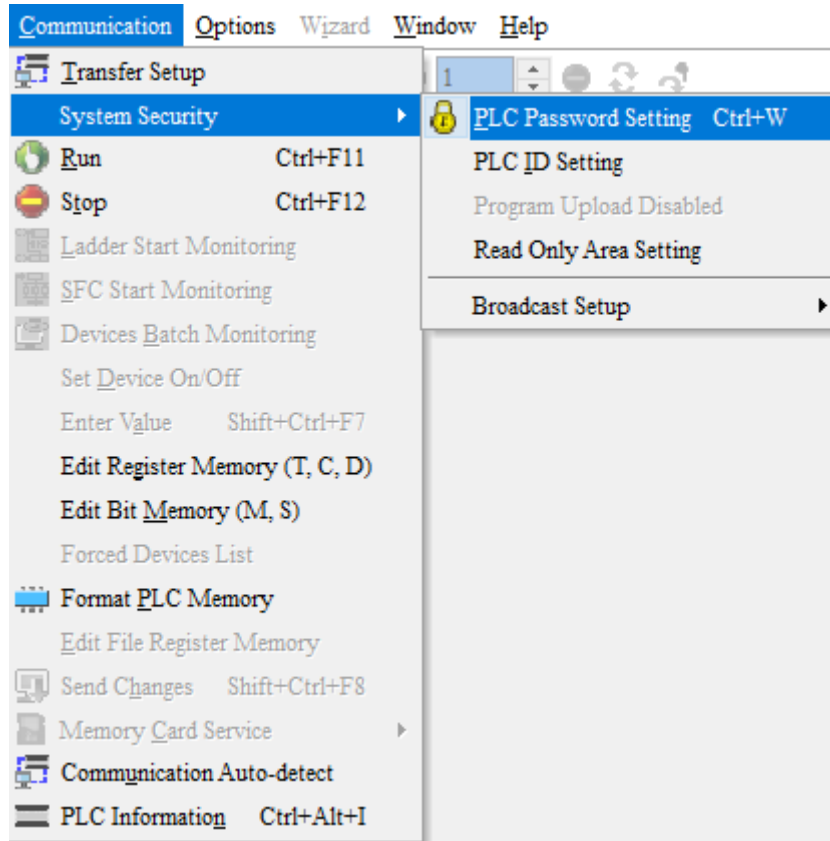
- Var4 is the PLC file name. First, the name string of the file to be downloaded must be put in a register address with the FILLASC command provided by the software. Then fill in the register address \$100 with Var4 of PLCDOWNLOAD.

```
1 FILLASC($100, "delta.dvp")
2 $50 = PLCDOWNLOAD(0, 1, $100, 1, $200)
```

- The PLC password of Var6 must be set by going to [System Security] > [Password Setting] of the WPL and ISP software. After the setting is finished, enter the password with the Character Entry element of the HMI, then the PLC files can be downloaded to the PLC.

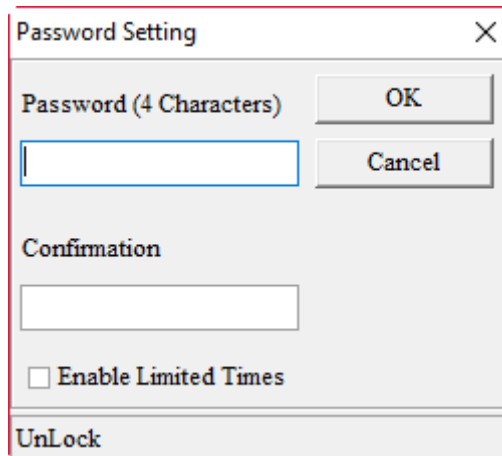
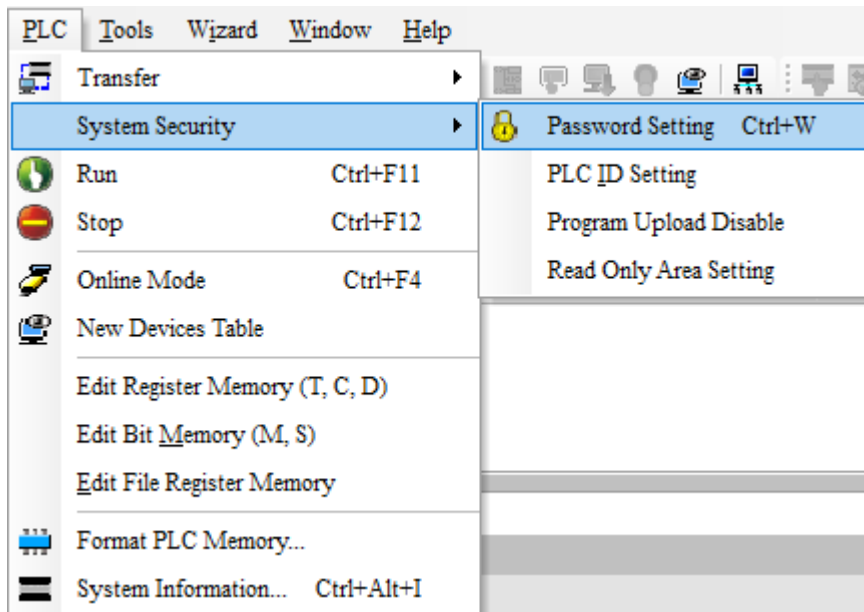
Example

- WPL password setting.



Example

- ISP password setting.



24

■ OPENSREEN

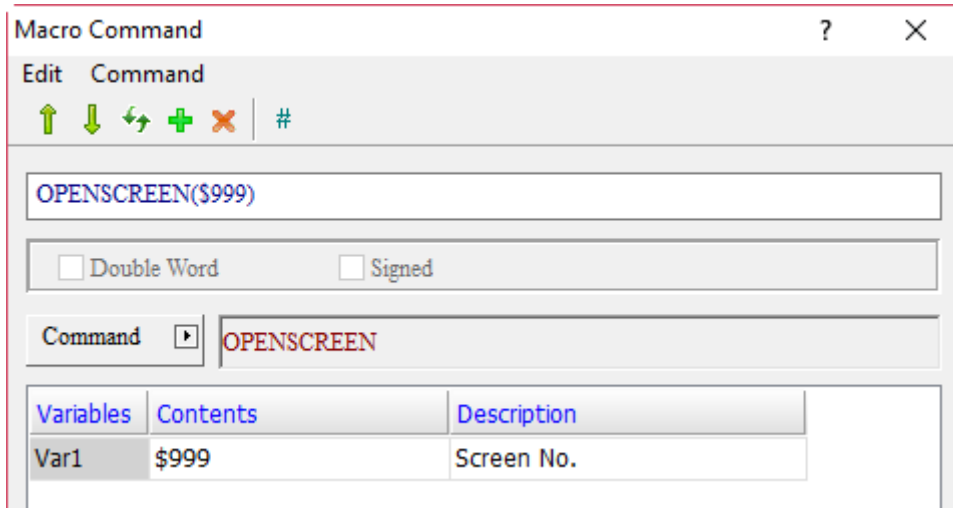
Expression	Meaning of variable		Note
OPENSREEN(Var1) (W)	Var1	Screen number	W: Word
	Description of action		
	Open the screen number specified by Var1.		

Note: this macro does not support Screen Cycle Macro, Screen Open Macro, and Screen Close Macro.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	v

Example

- Var1 is the internal memory address. When \$999 = 2, the macro switches the screen to Screen 2.



■ CLOSESUBSCREEN

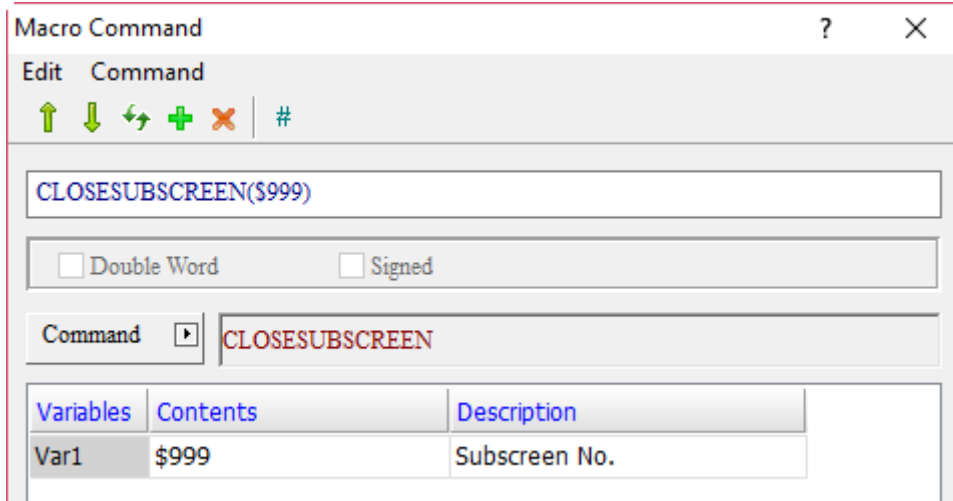
Expression	Meaning of variable		Note
CLOSESUBSCREEN(Var1) (W)	Var1	Subscreen number	W: Word
	Description of action		
	Close the subscreen number specified by Var1.		

Note: this macro does not support Screen Cycle Macro, Screen Open Macro, and Screen Close Macro.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	v

Example

- Var1 is the internal memory address. When \$999 = 2, the macro closes Subscreen No. 2.



24

- GetCircleCenter (calculate coordinates of the center of a circle)

Expression	Meaning of variable		Note	
Var1 = GetCircleCenter (Var2, "Var3)	Var1	Return value		DW: Double Word
		Failed	0	
		Succeeded	1	
	Var2	Input coordinates of the 3 points (Note 1)		
	Var3	Center coordinates after calculation (Note 2)		
	Description of action			
Enter the calculated coordinates of 3 points to calculate the center coordinates. (Note 3)				

Note:

1. Input coordinates of the 3 points:

Set the 3 points as P1(x1, y1), P2(x2, y2), and P3(x3, y3), and the length of each point is Signed DW.

If Var2 is \$100:

- Save LOW WORD of x1 in \$100, HIGH WORD in \$101
- Save LOW WORD of y1 in \$102, HIGH WORD in \$103
- Save LOW WORD of x2 in \$104, HIGH WORD in \$105
- Save LOW WORD of y2 in \$106, HIGH WORD in \$107
- Save LOW WORD of x3 in \$108, HIGH WORD in \$109
- Save LOW WORD of y3 in \$110, HIGH WORD in \$111

2. Center coordinates after calculation:

Set the center coordinates as P4(x4, y4), and the length of each point is Signed DW.

If Var 3 is \$200:

- Save LOW WORD of x4 in \$200, HIGH WORD in \$201
- Save LOW WORD of y4 in \$202, HIGH WORD in \$203

3. Formulas:

$$x = \Delta x / \Delta$$

$$y = \Delta y / \Delta$$

$$\text{where } \Delta = 2(xa - xb) * (yc - yb) - 2(ya - yb) * (xc - xb)$$

$$\Delta x = (yc - yb) * (xa^2 + ya^2 - xb^2 - yb^2) - (ya - yb) * (xc^2 + yc^2 - xb^2 - yb^2)$$

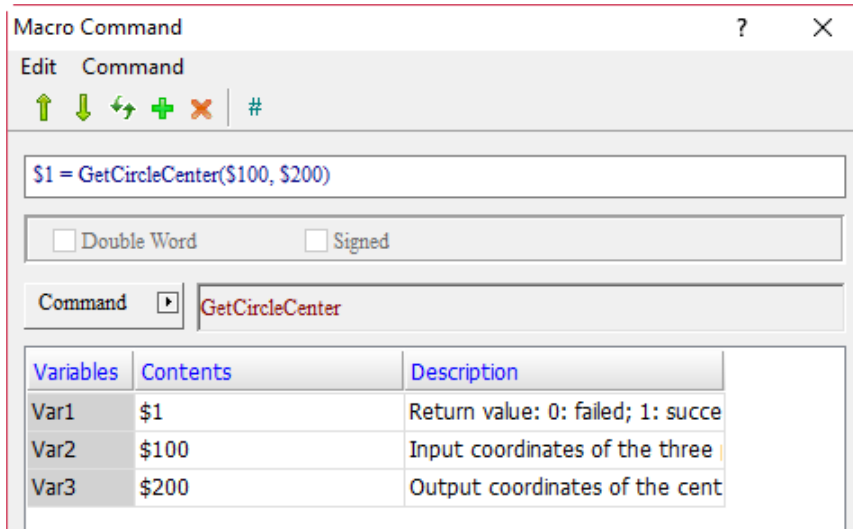
$$\Delta y = (xa - xb) * (xc^2 + yc^2 - xb^2 - yb^2) - (xc - xb) * (xa^2 + ya^2 - xb^2 - yb^2)$$

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		

Example

■ **Example**

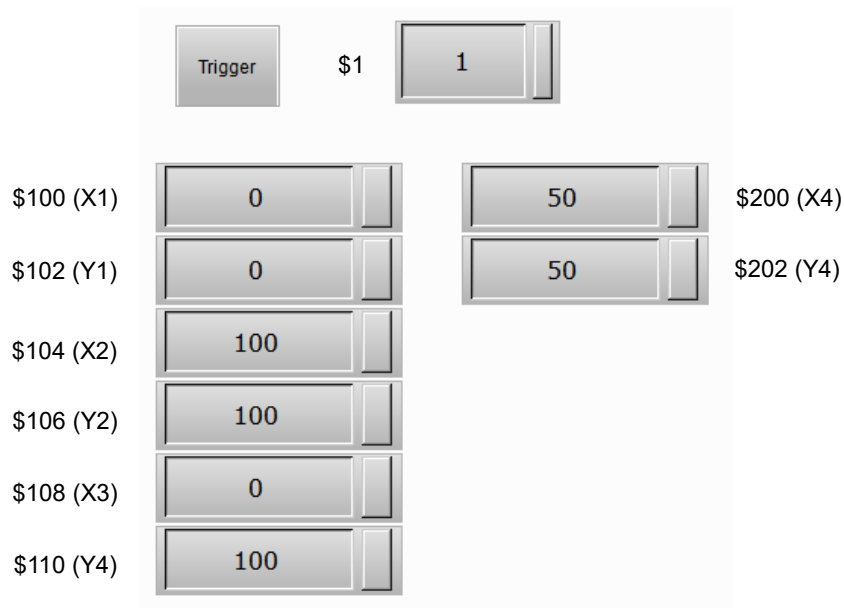
\$1 = GetCircleCenter(\$100, \$200)



The steps are as follows:

1. Create a Numeric Display element as \$1 and the Data Type is Word.
2. Create Numeric Entry elements of \$100, \$102, \$104, \$106, \$108, and \$110, and the Data Type is Double Word.
Enter the following values:
 \$100 = 0
 \$102 = 0
 \$104 = 100
 \$106 = 100
 \$108 = 0
 \$110 = 100
3. Create Numeric Display elements of \$200 and \$202, and the Data Type is Double Word.

After executing the macro, the screen is as follows:



24

■ VAR

Expression	Meaning of variable		Note
VAR Var1 (W)	Var1	Variable Name	W: Word
	Description of action		
	Specify a name as a global variable.		

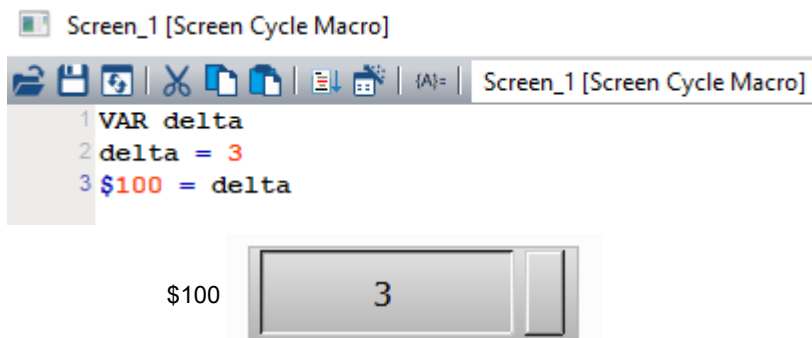
Variable	Type			
	Internal memory	PLC register	String	Constant
Var1			v	

Example

- Var1 is a word string. Declare DELTA as a variable.



- Set the value of the variable "delta" as 3, then move the value to \$100, and execute \$100 = 3.



24.4 Macro error codes

Error codes will be listed in the output field for easier troubleshooting while compiling the macros. If you miss out a command, the software will also prompt error messages to notify syntax errors.

24

■ Error message during editing

Code	Code name	Cause of error
-100	LABEL cannot be found	This error message indicates that the LABEL requested by GOTO cannot be found.
-101	Recursion occurred	This error message indicates the occurrence of recursion which mostly occurs in submacros. The reason is that if a submacro calls itself, whether directly or indirectly, it is the occurrence of recursion. Technically, submacros cannot be recursively edited, but if this is unavoidable, use GOTO or For (infinite loop) instead.
-102	More than 10 nested FOR are used	This error message indicates that more than 10 nested FOR commands have been used. The purpose is to prevent excessive use of nested FOR and insufficient memories. You can use GOTO or IF when necessary.
-103	Submacro does not exist	This error message indicates that the submacro called does not exist. For example, a line of CALL 5 means to CALL Submacro 5, but you have not edited Submacro 5. In order to avoid unpredictable consequences caused by these mistakes (i.e. input error or you forgot to edit the corresponding submacro), this editing error message will pop up to remind you.
-104	The number of NEXT is less than the number of FOR	This error message indicates that the number of NEXT operand does not match the number of FOR operand. Because FOR and NEXT need to be used in pairs, if a NEXT is missing, an error will occur while the program is running.
-105	The number of FOR is less than the number of NEXT	This error message indicates that the number of NEXT operand does not match the number of FOR operand. Because FOR and NEXT need to be used in pairs, if there is one extra NEXT, an error will occur while the program is running.
-106	Repeated LABEL	This error message indicates a LABEL is set repeatedly in the same macro. This means GOTO will generate two different results. In order to avoid unpredictable mistakes, this editing error message will pop up to remind you.
-107	There is RET in macro	This error message indicates the use of RET in a macro. Since RET is designed for the submacro to return to the next command called, which means the program is not finished. END should be used to end a program if it is necessary to mark the end of a macro.

■ Macro error messages in the HMI

The GETLASTERROR macro command can be used to read an error message on the HMI, but if a new correct command is executed before the error message is read, the error message will be changed. The execution of a macro will not change the error messages of other macros.

Code	Code name	Cause of error
-10	GOTO error	There is a GOTO error in the macro.
-11	Stack overflow	This error message indicates that you called too many submacros, so the stacks are not enough as a result of many different macros executing at the same time. This is a protection to avoid memory insufficiency.
-12	Empty submacro	This is a call submacro error. Since the command of CALL can call the submacro ID represented by the value in the internal memory of CALL, if you enter the value of this memory address while there is no corresponding submacro to call, this error message occurs.
-13	Data read error	Data read error may be an error of the internal memory data, but it mostly represents data read error of the controller.
-14	Data write error	Data write error may be an error of the internal memory data, but it mostly represents data write error of the controller.
-15	Divisor is 0	The divisor is 0 during the division or remainder operation.
-16	Data process error with BCD format	An error occurred while executing the BCD macro command.
-17	Data process error while converting ASCII to HEX	An error occurred while executing the TOHEX macro.
-18	NEXT OFFSET processing error	The macro data error results in errors while executing the NEXT macro command.
-19	Character command error	An error occurred while executing FILLASC.
-20	Data process error with BIN format	An error occurred while executing the BIN command.
-21	Submacro data error	The macro data error results in errors while calling submacros.
-22	FOR loop has OFFSET error	The macro data error results in errors while executing the FOR macro command.
-23	INITIAL ERROR	An error occurred while executing the INICOM macro command.
-24	Memory allocation error	The HMI memory is insufficient to execute macros.
-25	COM Port error	An error occurred in COM Port resulting in execution failure of the COM Port related communication macros.
-26	Print Port error	Print Port selection error when printing.
-27	Read value error	An error occurred when macros read parameter data that are out of range.
-28	IF ELSE ENDIF error	An error occurred while executing the IF ELSE ENDIF macro command.
-29	Pen width setting error	An error occurred while setting the pen width for the drawing macro.
-30	History data error	An error occurred while executing the GETHISTORY macro.
-31	Export option error	An error occurred while executing the EXPORT macro.
-32	Disk reading error	An error occurred in the external or internal disk resulting in execution error in the associated macros (EXPORT, DISKFORMAT...).

Code	Code name	Cause of error
-33	Print error	An error occurred while the macro is executing printing.
-34	Stack overflow in IF ELSE ENDIF	An error occurred due to stack overflow when the IF ELSE ENDIF macro command is executing.
-35	Password error	Password confirmation is required when executing the macro, and the password entered is incorrect.
-36	Password lock error	Password confirmation is required when executing the macro, and you have reached the password attempt limit.
-37	ID code identification error	ID password confirmation is required when executing the macro, and the ID password entered is incorrect.
-38	Syntax error	Syntax error occurred after downloading the PLC program.
-39	Connection failure / no response	The connection fails or does not respond when the PLC program is downloaded.

■ **PLC related file error description, including file formats of DVP and ISP.**

Code	Code name	Cause of error
-40	This file name is not supported	The file name to be opened by the macro execution is not supported.
-41	This version is not supported	The file version to be opened by the macro execution is not supported.
-42	File open error	There is an action to open file when the macro is executed, and the action failed.
-43	File Handle error	Index error in the file opened by the macro.
-44	File read error	The file opened by the macro execution cannot be read properly.
-45	File Seek error	The content of the file opened by the macro execution cannot be moved properly.
-46	File write error	The file opened by the macro execution cannot be written properly.
-47	File removal error	There is an action to remove file when the macro is executed, and the action failed.
-48	File Rename error	There is an action to rename the file when the macro is executed, and the action failed.
-49	File length error	A file length error is found when the macro is executed.
-50	File data error	A file data error is found when the macro is executed.

(This page is intentionally left blank.)

24

Multi-language

25

This chapter illustrates how to use the multi-language function.



25.1 Multi-language setup..... 25-2

25.1 Multi-language setup

The Multi-language function supports all languages and you can select up to 32 languages at the same time. The Multi-language setup example is described below.

25

Go to [Options] > [Configuration] > [Multi-language] to set the Multi-language parameters.

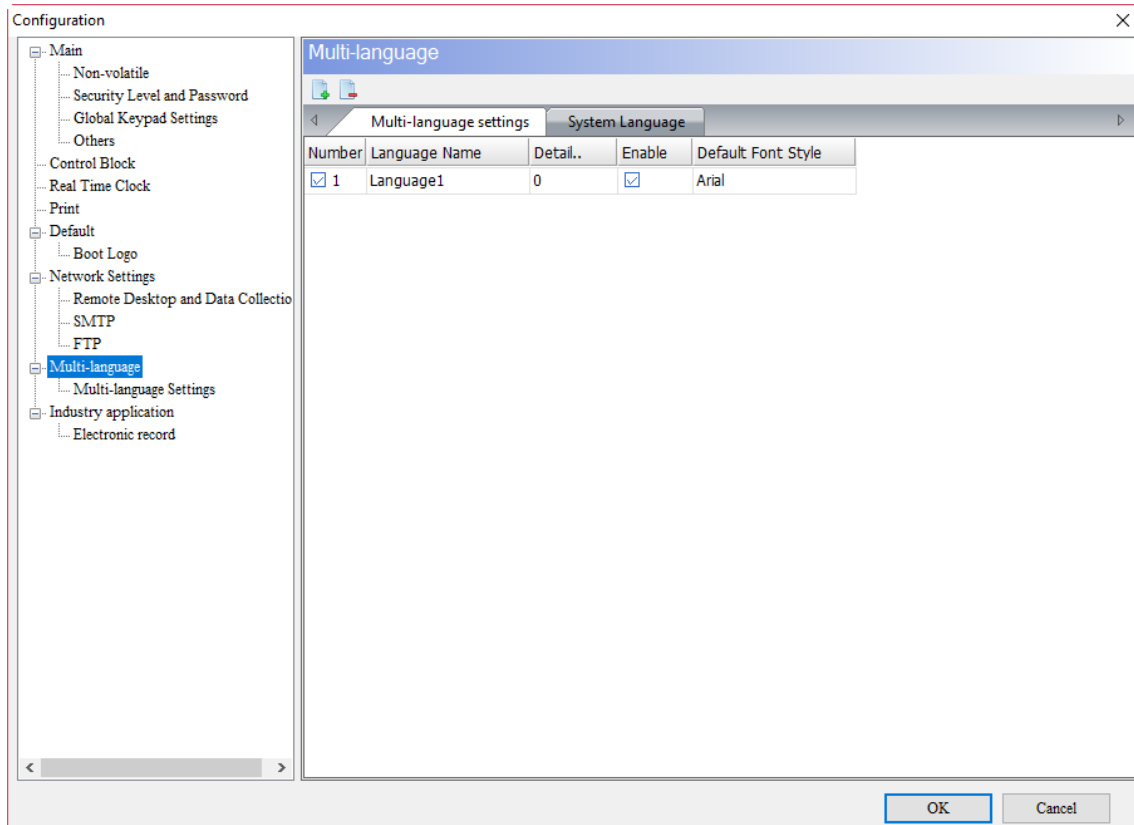

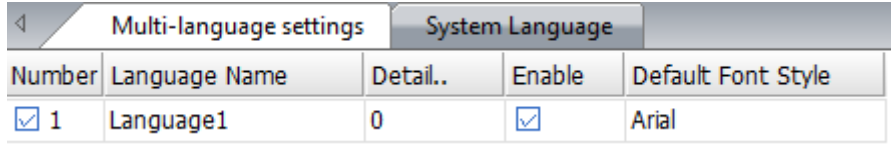

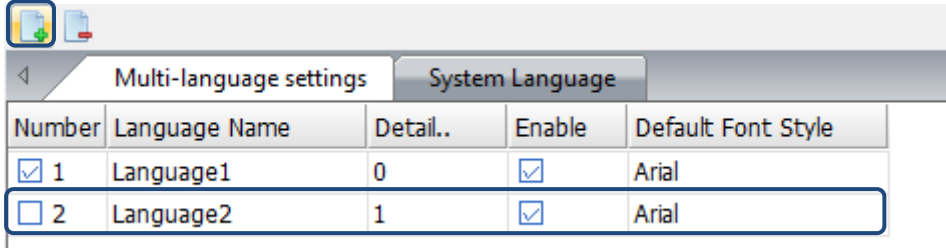


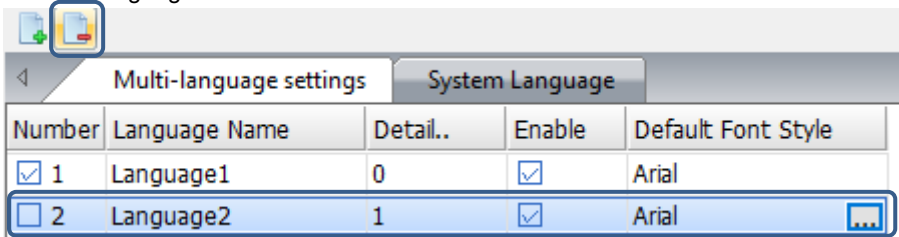
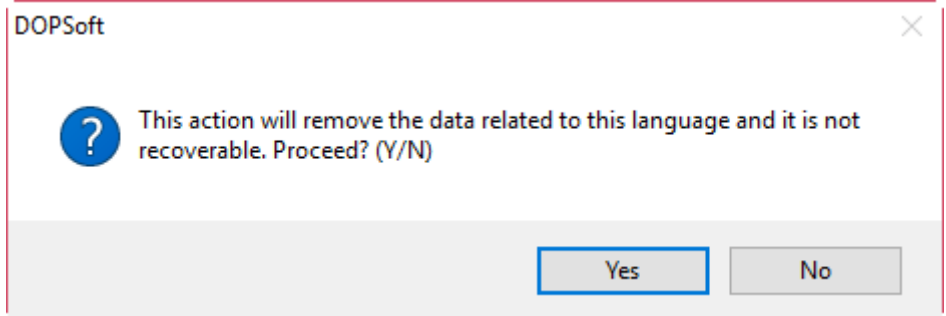



Figure 25.1.1 Multi-language setup interface

Table 25.1.1 Multi-language setup

Multi-language setup																										
<p>Add</p> 	<ul style="list-style-type: none"> Multi-language settings allow users to add, modify, and delete the language settings. [Language 1] is the default setting, which you can change its Language Name and Detail as desired.  <table border="1"> <thead> <tr> <th>Number</th> <th>Language Name</th> <th>Detail..</th> <th>Enable</th> <th>Default Font Style</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>Language1</td> <td>0</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> </tbody> </table> <ul style="list-style-type: none"> You can click  to add a new language, as shown in the figure below.  <table border="1"> <thead> <tr> <th>Number</th> <th>Language Name</th> <th>Detail..</th> <th>Enable</th> <th>Default Font Style</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>Language1</td> <td>0</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> <tr> <td><input type="checkbox"/> 2</td> <td>Language2</td> <td>1</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> </tbody> </table>	Number	Language Name	Detail..	Enable	Default Font Style	<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial	Number	Language Name	Detail..	Enable	Default Font Style	<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial	<input type="checkbox"/> 2	Language2	1	<input checked="" type="checkbox"/>	Arial
Number	Language Name	Detail..	Enable	Default Font Style																						
<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial																						
Number	Language Name	Detail..	Enable	Default Font Style																						
<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial																						
<input type="checkbox"/> 2	Language2	1	<input checked="" type="checkbox"/>	Arial																						
<p>Delete</p> 	<ul style="list-style-type: none"> To delete a language, select the language to be deleted and click  to delete the selected language.  <table border="1"> <thead> <tr> <th>Number</th> <th>Language Name</th> <th>Detail..</th> <th>Enable</th> <th>Default Font Style</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>Language1</td> <td>0</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> <tr> <td><input type="checkbox"/> 2</td> <td>Language2</td> <td>1</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> </tbody> </table> <ul style="list-style-type: none"> When executing the delete function, a pop-up window will appear asking to confirm the deletion.  <div style="border: 1px solid red; padding: 10px;"> <p>DOPSoft</p> <p> This action will remove the data related to this language and it is not recoverable. Proceed? (Y/N)</p> <p style="text-align: right;"> <input type="button" value="Yes"/> <input type="button" value="No"/> </p> </div>	Number	Language Name	Detail..	Enable	Default Font Style	<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial	<input type="checkbox"/> 2	Language2	1	<input checked="" type="checkbox"/>	Arial										
Number	Language Name	Detail..	Enable	Default Font Style																						
<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial																						
<input type="checkbox"/> 2	Language2	1	<input checked="" type="checkbox"/>	Arial																						

25

Multi-language Setup

	Language Name	<p>You can set the Language Name based on the name of the language or your preference.</p>																				
Modify	Detail	<ul style="list-style-type: none"> The Detail column is used to switch between languages. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th colspan="2">Multi-language settings</th> <th colspan="3">System Language</th> </tr> <tr> <th>Number</th> <th>Language Name</th> <th>Detail..</th> <th>Enable</th> <th>Default Font Style</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>Language1</td> <td>0</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> <tr style="background-color: #e0e0ff;"> <td><input type="checkbox"/> 2</td> <td>Language2</td> <td>1</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> </tbody> </table> <ul style="list-style-type: none"> The software switches the language to the corresponding setting using the [System Control] in the [Control Block]. The [Language Change] in the Button element also switches the language to the corresponding language based on the set Detail. <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Configuration</p> <ul style="list-style-type: none"> [-] Main <ul style="list-style-type: none"> ... Non-volatile ... Security Level and Password ... Global Keypad Settings ... Others ... Control Block ... Real Time Clock ... Print [-] Default <ul style="list-style-type: none"> ... Boot Logo [-] Network Settings <ul style="list-style-type: none"> ... Remote Desktop and Data Collectio ... SMTP ... FTP [-] Multi-language <ul style="list-style-type: none"> ... Multi-language Settings [-] Industry application <ul style="list-style-type: none"> ... Electronic record </div> <div style="width: 45%;"> <p>Control Block</p> <p>Control Block</p> <p>Start Address <input type="text" value="{Link2}1@D0"/></p> <p><input type="checkbox"/> Screen No. ...</p> <p><input type="checkbox"/> General Control ...</p> <p><input type="checkbox"/> Curve Control ...</p> <p><input type="checkbox"/> Sampling History Buffer ...</p> <p><input type="checkbox"/> Clearing History Buffer ...</p> <p><input type="checkbox"/> Recipe Control ...</p> <p><input type="checkbox"/> Recipe Group Number ...</p> <p><input checked="" type="checkbox"/> System Control D0</p> <p><input type="checkbox"/> Enhanced Recipe ...</p> <p><input type="checkbox"/> Enhanced Recipe ...</p> </div> </div>	Multi-language settings		System Language			Number	Language Name	Detail..	Enable	Default Font Style	<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial	<input type="checkbox"/> 2	Language2	1	<input checked="" type="checkbox"/>	Arial
Multi-language settings		System Language																				
Number	Language Name	Detail..	Enable	Default Font Style																		
<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial																		
<input type="checkbox"/> 2	Language2	1	<input checked="" type="checkbox"/>	Arial																		
Enable		<ul style="list-style-type: none"> You can determine whether to enable the added languages. As shown in the figure below, you can enable the added No. 2 language. <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th colspan="2">Multi-language settings</th> <th colspan="3">System Language</th> </tr> <tr> <th>Number</th> <th>Language Name</th> <th>Detail..</th> <th>Enable</th> <th>Default Font Style</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>Language1</td> <td>0</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> <tr style="background-color: #e0e0ff;"> <td><input type="checkbox"/> 2</td> <td>Language2</td> <td>1</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> </tbody> </table> <ul style="list-style-type: none"> If you attempt to uncheck the [Enable] for [Language 1], a pop-up warning message will appear to inform users that this language cannot be disabled. <div style="border: 1px solid red; padding: 10px; margin-top: 10px;"> <p style="text-align: center;">DOPSoft ✕</p> <p style="text-align: center;">✕ The language can not be disabled.</p> <p style="text-align: center; margin-top: 10px;">OK</p> </div>	Multi-language settings		System Language			Number	Language Name	Detail..	Enable	Default Font Style	<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial	<input type="checkbox"/> 2	Language2	1	<input checked="" type="checkbox"/>	Arial
Multi-language settings		System Language																				
Number	Language Name	Detail..	Enable	Default Font Style																		
<input checked="" type="checkbox"/> 1	Language1	0	<input checked="" type="checkbox"/>	Arial																		
<input type="checkbox"/> 2	Language2	1	<input checked="" type="checkbox"/>	Arial																		

Multi-language Setup

Default Font Style

- Default Font Style provides you with the option to apply the font name and size based on the language selected.

Font Name: Arial Apply to all

Font Size: 16 Apply to all

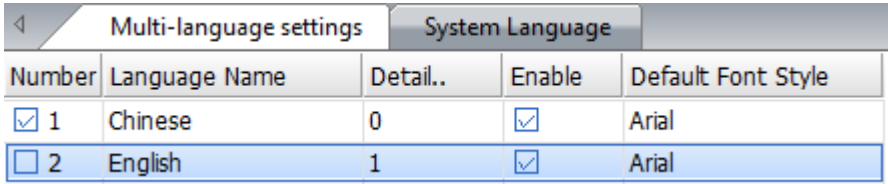
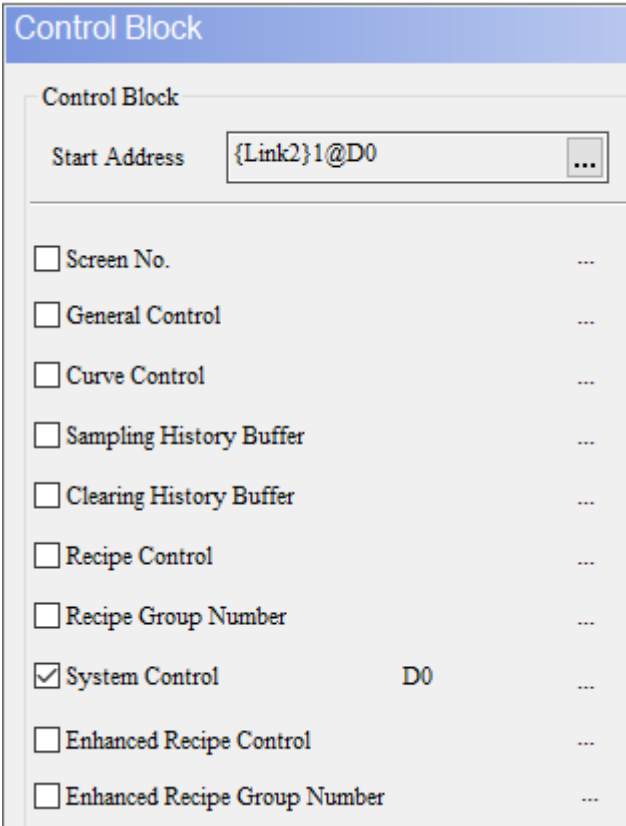
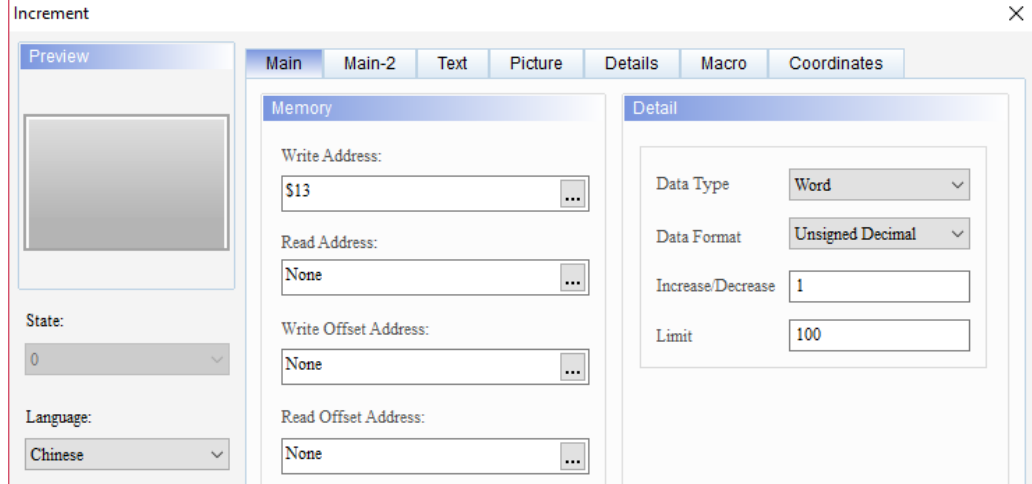
OK Cancel

- When you choose to apply either the Font Name or Font Size, the font setting only applies to the newly created elements after you make a change to the font setting.
- When you choose to apply both Font Name and Font Size, the font setting applies to both newly- and already-created elements.

Note: the Font Name and Font Size settings are applied to the elements that users can input text by themselves.

Table 25.1.2 Multi-language example

25

Multi-language																
Step 1	<p>Go to [Options] > [Configuration] > [Multi-language] to add a language named “English”, and change the name of the existing Language 1 to “Chinese”.</p>  <table border="1"> <thead> <tr> <th>Number</th> <th>Language Name</th> <th>Detail..</th> <th>Enable</th> <th>Default Font Style</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>Chinese</td> <td>0</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> <tr> <td><input type="checkbox"/> 2</td> <td>English</td> <td>1</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> </tbody> </table>	Number	Language Name	Detail..	Enable	Default Font Style	<input checked="" type="checkbox"/> 1	Chinese	0	<input checked="" type="checkbox"/>	Arial	<input type="checkbox"/> 2	English	1	<input checked="" type="checkbox"/>	Arial
Number	Language Name	Detail..	Enable	Default Font Style												
<input checked="" type="checkbox"/> 1	Chinese	0	<input checked="" type="checkbox"/>	Arial												
<input type="checkbox"/> 2	English	1	<input checked="" type="checkbox"/>	Arial												
Step 2	<p>Go to [Options] > [Configuration] > [Control Block] to check System Control.</p>  <p>Control Block</p> <p>Control Block</p> <p>Start Address: <input type="text" value="{Link2}1@D0"/></p> <p><input type="checkbox"/> Screen No. ...</p> <p><input type="checkbox"/> General Control ...</p> <p><input type="checkbox"/> Curve Control ...</p> <p><input type="checkbox"/> Sampling History Buffer ...</p> <p><input type="checkbox"/> Clearing History Buffer ...</p> <p><input type="checkbox"/> Recipe Control ...</p> <p><input type="checkbox"/> Recipe Group Number ...</p> <p><input checked="" type="checkbox"/> System Control D0 ...</p> <p><input type="checkbox"/> Enhanced Recipe Control ...</p> <p><input type="checkbox"/> Enhanced Recipe Group Number ...</p>															
Step 3	<p>■ Create an Increment button with the Write Address as \$13, and set the other required parameters.</p>  <p>Increment</p> <p>Preview</p> <p>State: <input type="text" value="0"/></p> <p>Language: <input type="text" value="Chinese"/></p> <p>Memory</p> <p>Write Address: <input type="text" value="\$13"/></p> <p>Read Address: <input type="text" value="None"/></p> <p>Write Offset Address: <input type="text" value="None"/></p> <p>Read Offset Address: <input type="text" value="None"/></p> <p>Detail</p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>Increase/Decrease: <input type="text" value="1"/></p> <p>Limit: <input type="text" value="100"/></p>															

Multi-language

- Enter the Chinese and English texts to be displayed in the Text page as shown below.

Step 3

State: 0
Language: English

State	Chinese	English
0	ROC	English

- Write the following instructions in the [After Execute Macro] of the Increment button.

```

Screen_1 Increment_001 {ROC} [After Execute Macro]
1 IF $13 > 1
2 $13 = 0
3 ENDIF
4 {Link2}1@D0 = $13
    
```







Create a static text. Enter the Chinese and English texts to be displayed in the Text page as shown below.

Step 4

State: 0
Language: English

State	Chinese	English
0	台達電子	DELTA

25

Multi-language				
Step 5	<p>Execute compile and download the screen to the HMI.</p>  <p>The screenshot shows a window titled 'Screen_1' with a button labeled 'ROC' and the text '台達電子' (Delta Electronics) to its right.</p>			
	<p>After downloading to the HMI, click ROC to switch the language to English and the static text changes to DELTA.</p> <table border="1"><tbody><tr><td>Before switching</td><td></td></tr><tr><td>After switching</td><td></td></tr></tbody></table>	Before switching		After switching
Before switching				
After switching				

Print Setup

26

This chapter explains the Screen Print function and introduces how to use ePrinter to print.

26.1	Screen print setup	26-4
26.2	ePrinter.....	26-10
26.2.1	PrnServer	26-11
26.2.2	HMI link settings.....	26-14
26.3	Error code of printer.....	26-19

26

Selection of a printer driver is required to set the print function. You can go to [Options] > [Configuration] > [Print] page to select the printer to be used.

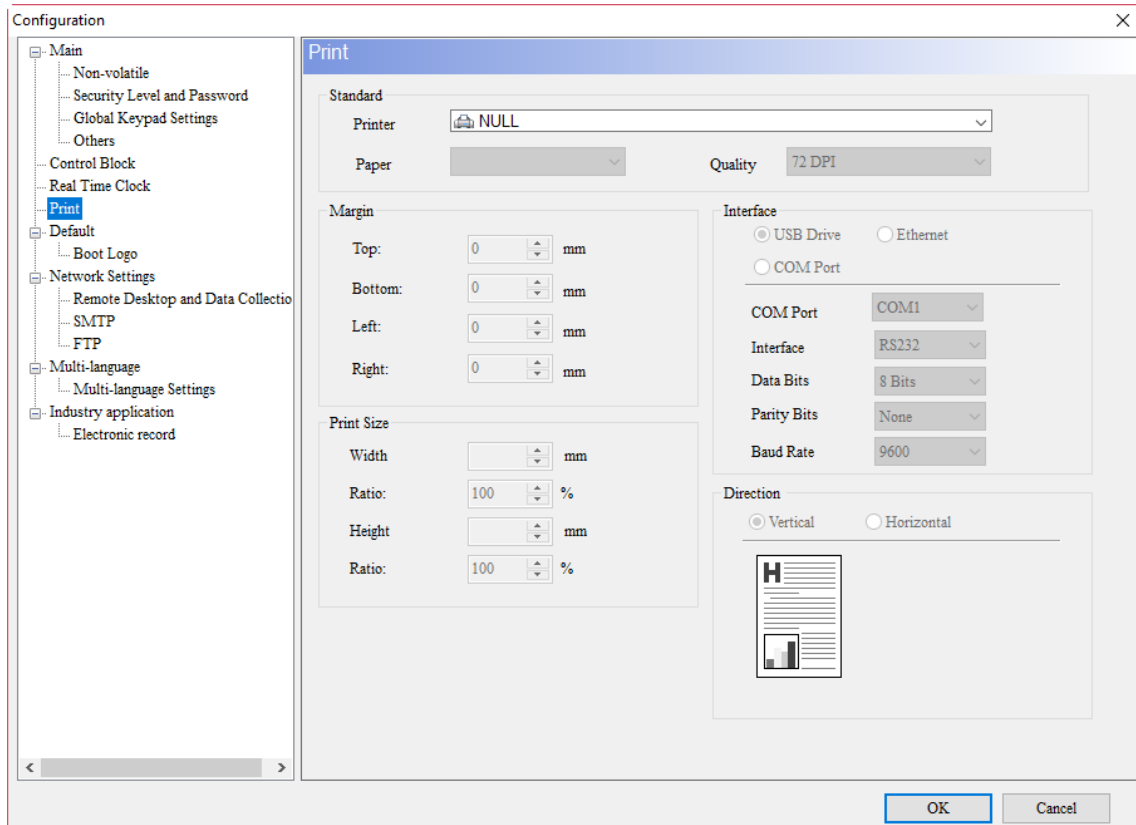
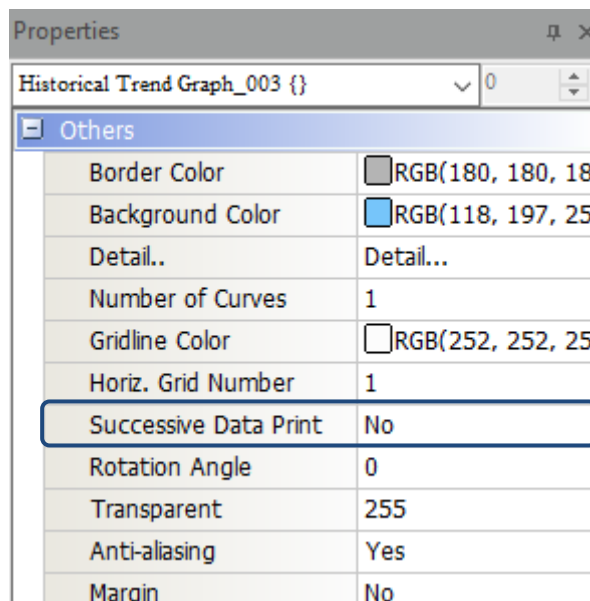


Figure 26.1.1 Printer driver

The print function provides the Successive Data Print option, but it is available only when the printer to be used has been selected. This option is applicable only to the Sampling elements, Alarm elements, and Curve elements (excluding Curve Input elements). When the current screen is printed out and the data recorded for the screen element are not completely sampled, you can use this option to print the rest of the data until the sampling is completed.



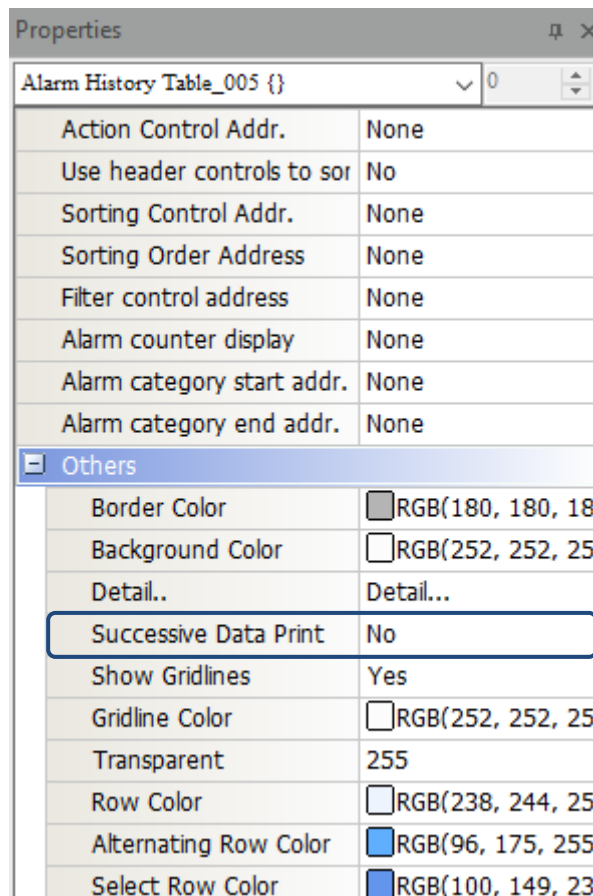
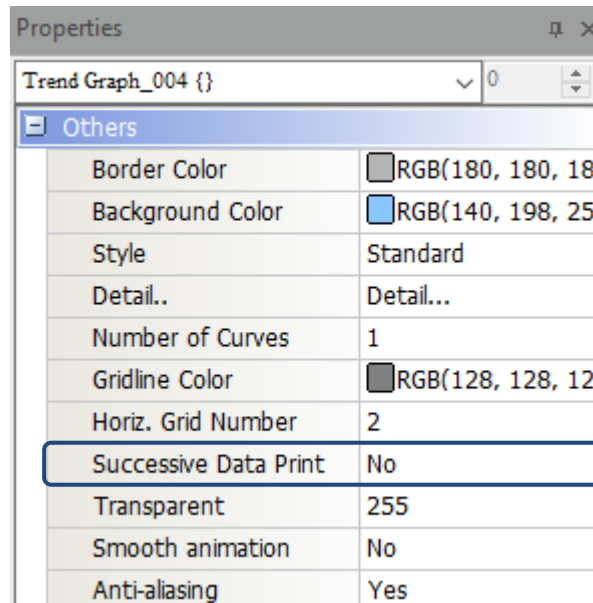
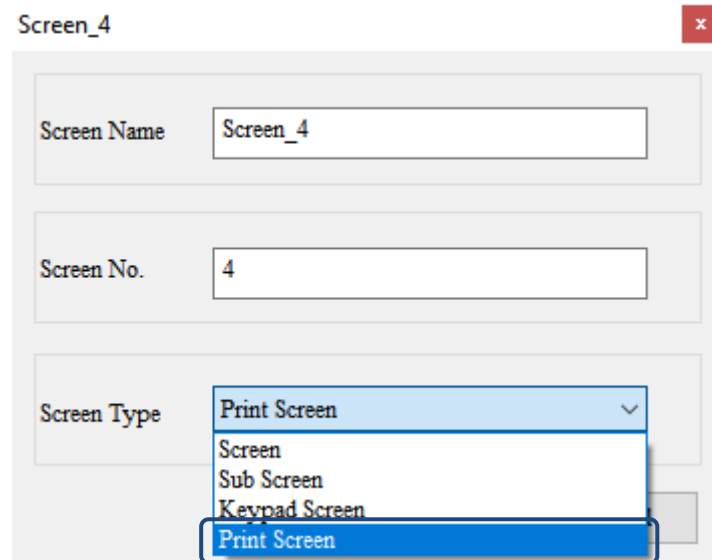


Figure 26.1.2 Successive data print

26

26.1 Screen Print Setup

The Screen Print Setup function enables the user to print multiple pages, set the print layout, and print history data. You need to create the Print Screen view before using the Screen Print function.



The screenshot shows a window titled 'Screen_4' with a close button in the top right corner. It contains three input fields: 'Screen Name' with the value 'Screen_4', 'Screen No.' with the value '4', and 'Screen Type' with a dropdown menu. The dropdown menu is open, showing options: 'Print Screen', 'Screen', 'Sub Screen', 'Keypad Screen', and 'Print Screen' (highlighted in blue).

Figure 26.1.3 Print Screen view

The following instructions must be observed before executing the Print Setup:

- The screen specified by the Goto Screen cannot be set as the print screen.
- Cannot change to the print screen via Goto Screen.
- The print screen cannot be the default screen.
- The print screen cannot be the base screen.
- The print screen cannot be the subscreen.
- The print screen cannot be the screensaver screen.

All screens that you dragged to the Print Screen on the right side for printing will be printed out. History data can also be printed out using this option. You can select the screen to be printed, set the printing sequence, or delete the screen that does not need to be printed.

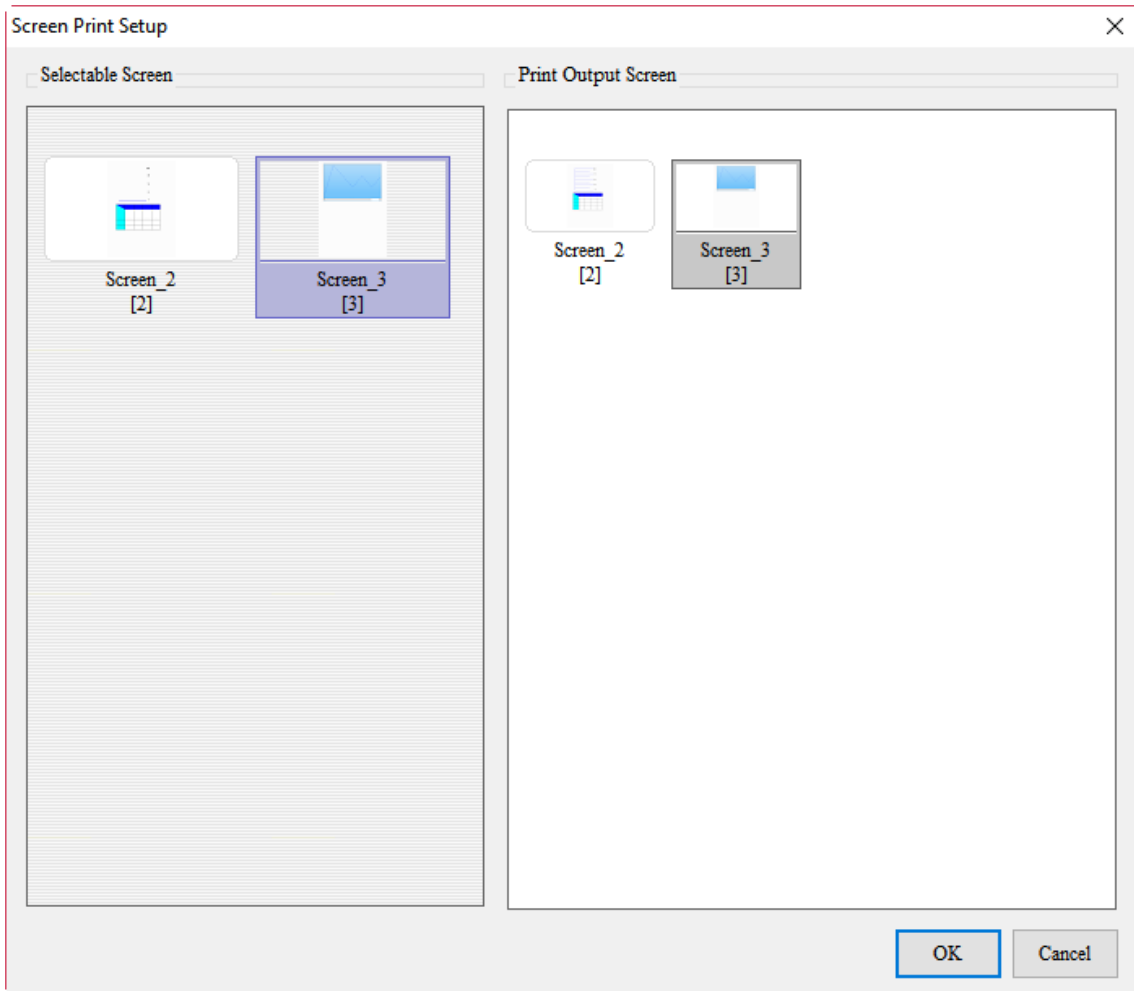


Figure 26.1.4 Screen Print Setup view

With all functions and properties for Screen Print Setup introduced, the following section provides an example for Screen Print Setup.

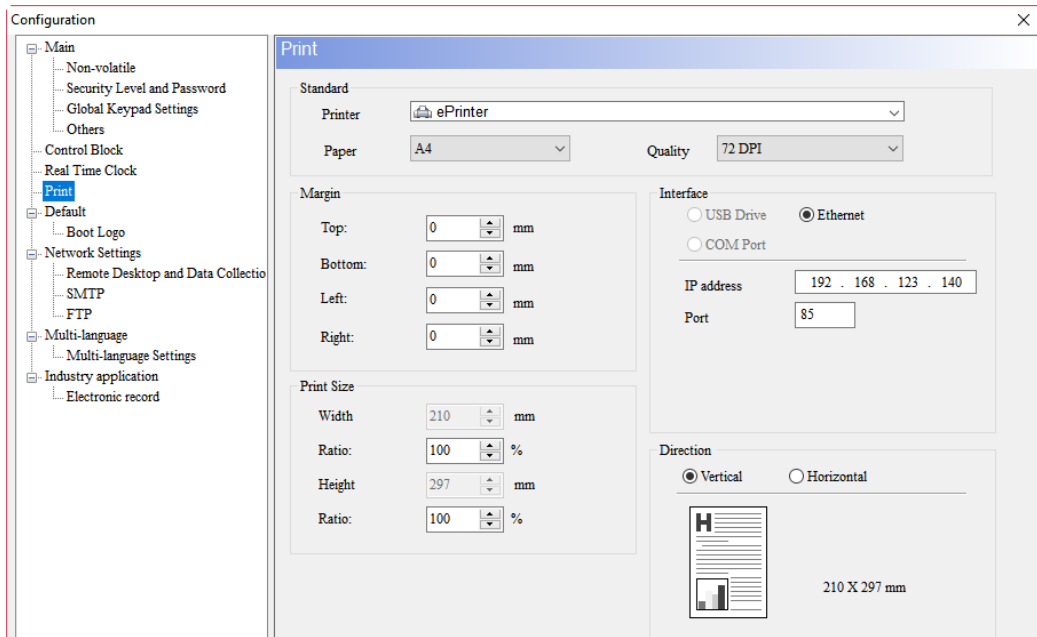
Table 26.1.2 Screen Print Setup example

26

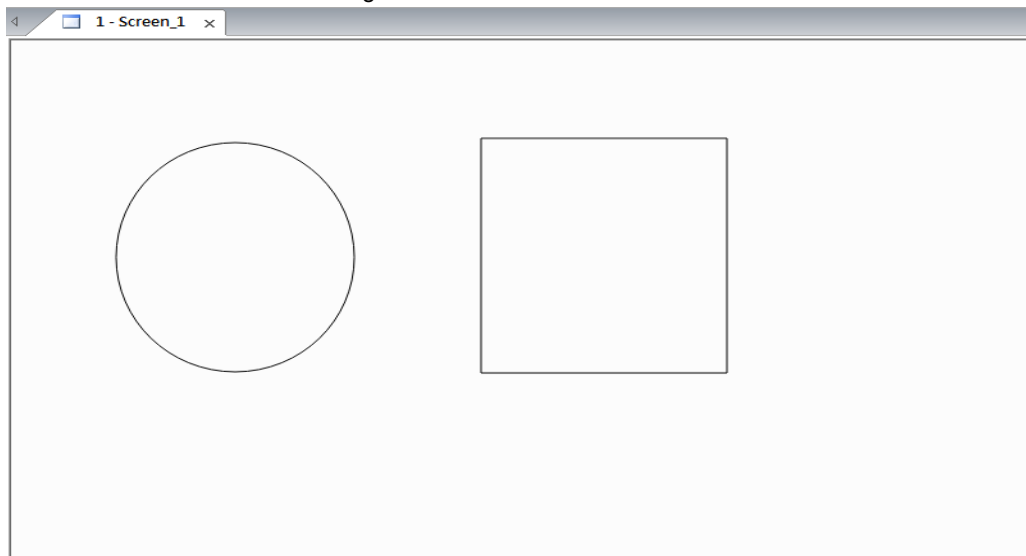
Screen Print Setup

- Create a new project. Select ePrinter as the printer, set the IP address to the IP address of the PC and the Port as 85, and add 3 new screens.

Step 1

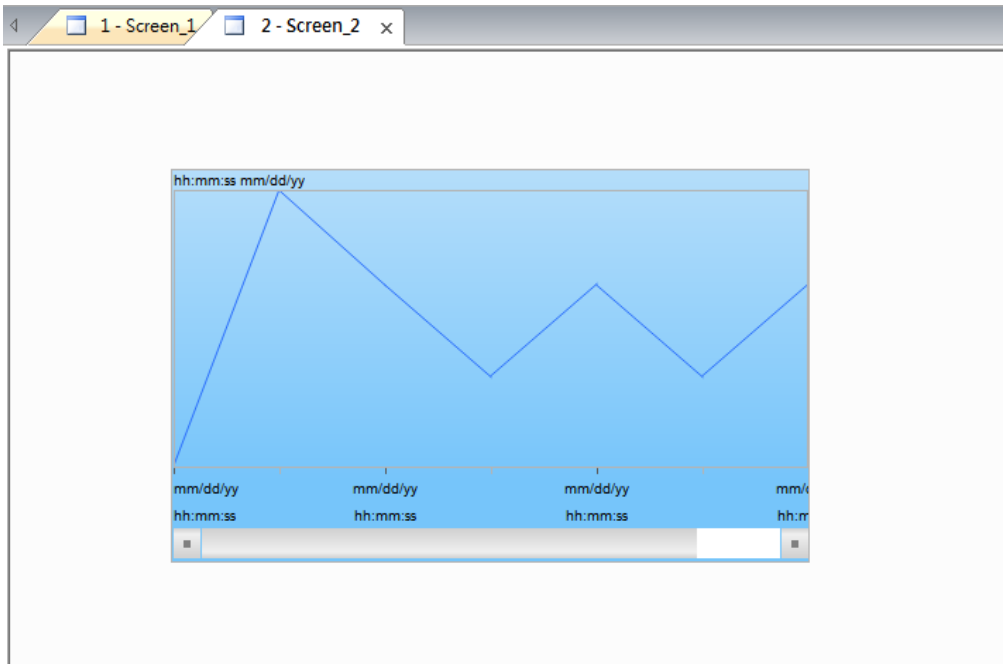


- Create a Circle and a Rectangle element on Screen 1.



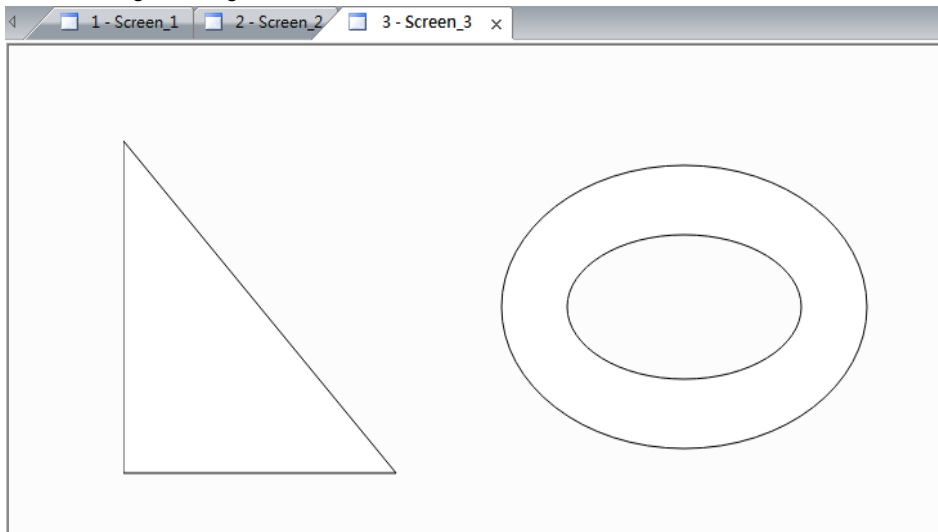
Screen Print Setup

- Create a Historical Trend Graph on Screen 2 as shown below.



Step 1

- Create a Right Triangle and a Hollow Circle element on Screen 3 as shown below.

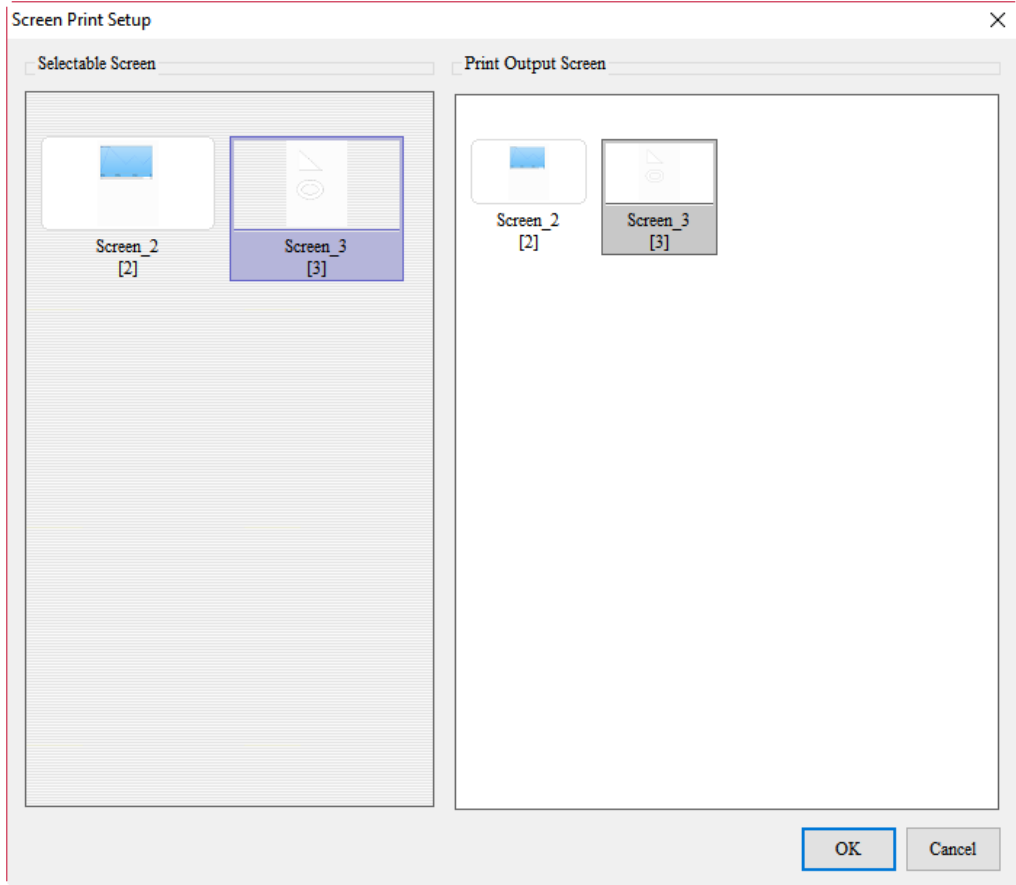


26

Screen Print Setup

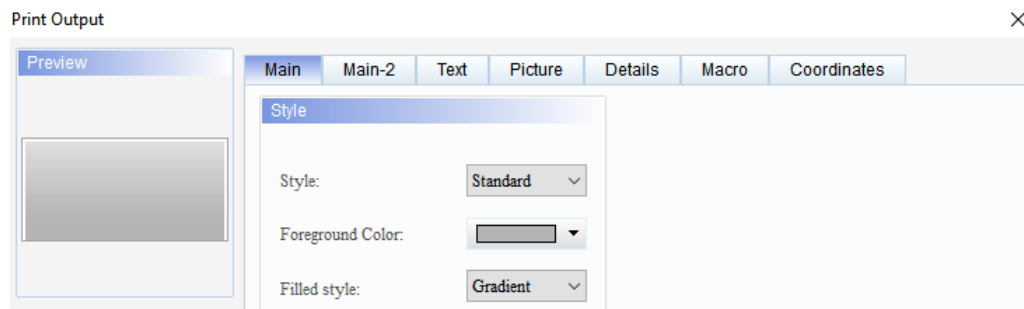
Go to [Options] > [Screen Print Setup] to drag Screen 2 and Screen 3 to the Print Output Screen window on the right side. Click **OK** to exit the Screen Print Setup screen.

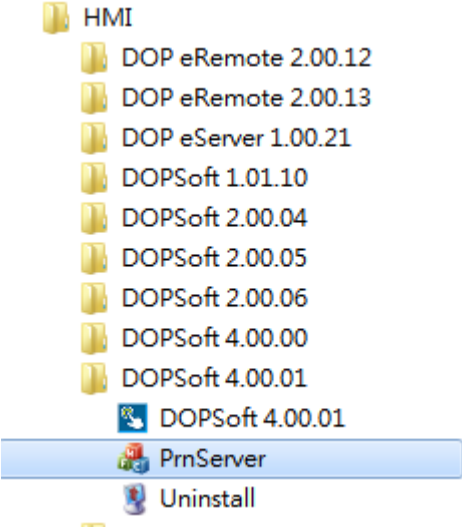
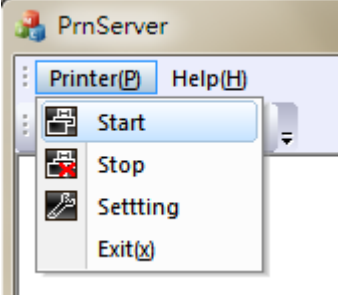
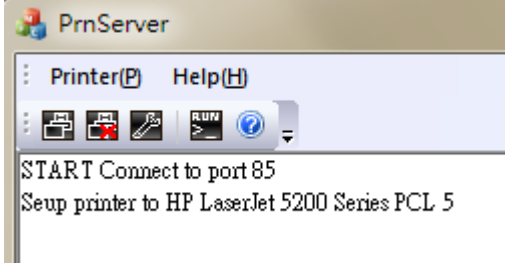
Step 2



Create a Print Output button.

Step 3



Screen Print Setup	
<p>Step 4</p>	<ul style="list-style-type: none"> ■ Configure IP address and ePrinter to be under the same network segment. Then, execute compile and download the screen to the HMI. ■ Open PrnServer. <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ■ Select Start. <div style="text-align: center;">   </div>
<p>Step 5</p>	<p>Once PrnServer is connected to port 85, click on Report List to print out the Screen Print Setup screen you set up previously. It takes more time for the HMI to print out the data if there are many screens or sampling data sets for printing.</p>

26

26.2 ePrinter

ePrinter enables users to print directly via network without the need to connect the HMI to a physical printer, which saves space for the hardware equipment and makes the printing convenient. Refer to the following diagram for the structure of the ePrinter network.

With a PC as a medium, ePrinter opens PrnServer on the PC and then configures the IP address for the PLC through the HMI that triggers **Report List** button element to transfer the print file via the network to any printer connected to the PC.

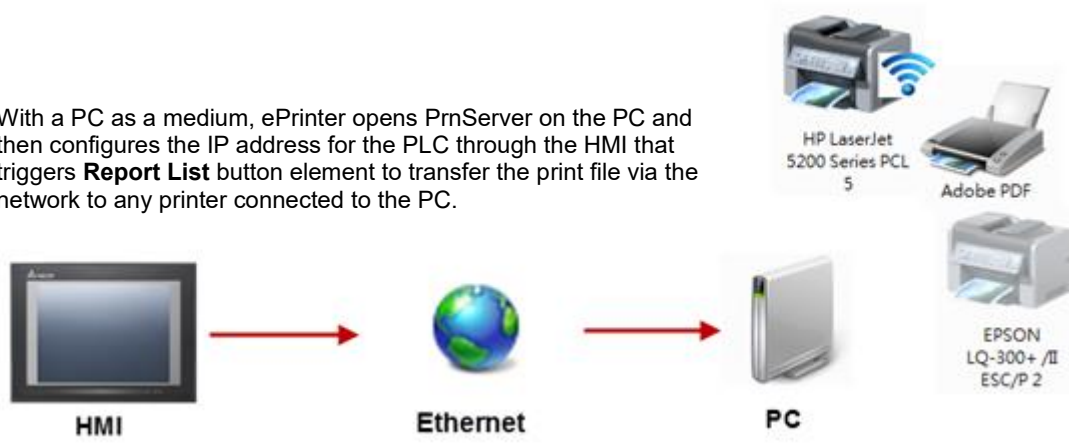


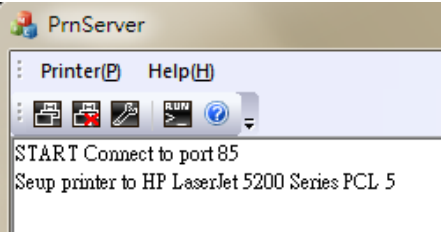


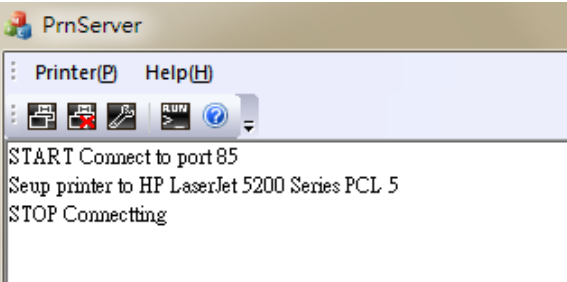

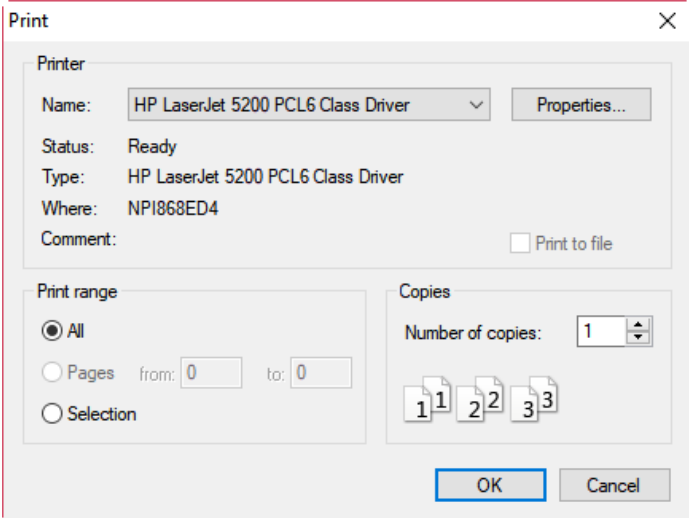
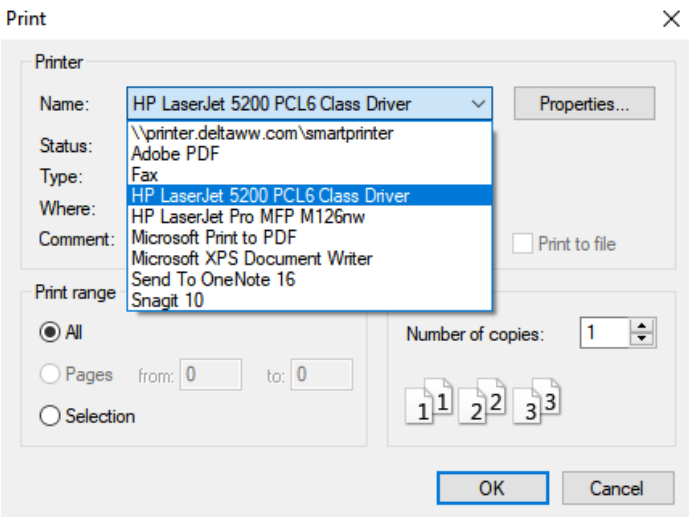
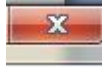
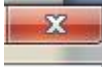
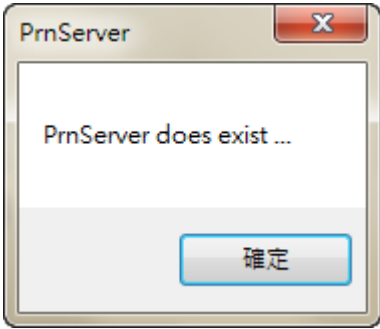

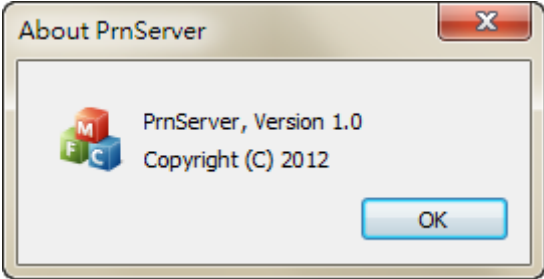


Figure 26.2.1 ePrinter structure

The ePrinter functions are described in two areas: one is introduction to PrnServer, and the other is explanation on how to set up the connection between the HMI and ePrinter to carry out network printing.

Table 26.3.1 ePrinter function explanation

<p>Connect</p> 	<ul style="list-style-type: none"> Before using the HMI to carry out printing, you need to click on  to start connecting to the printer. The default connecting port for the printer connected is 85. It will automatically connect to the default printer for the PC. 
<p>Disconnect</p> 	<p>Once clicking , PrnServer will display the following message.</p> 
<p>Printer</p> <p>Settings</p> 	<ul style="list-style-type: none"> Display printer-related settings.  <ul style="list-style-type: none"> You can change the printers to be connected here. 

<p>Printer</p>	<p>Exit</p>	<ul style="list-style-type: none"> ■ Click on Exit to end PrnServer. ■ You must exit when you do not need to use the network printing anymore. <p>Closing the PrnServer window by clicking  directly will not terminate the connection. If you click on  to close the PrnServer window and when you run PrnServer again, the following message will be displayed.</p> 
<p>Description</p>	<p>About </p>	<p>Display current version of PrnServer.</p> 

26

26.2.2 HMI link settings

HMI settings help users learn about how to set up the ePrinter function on the HMI screen and use the HMI to trigger printing. Please follow the steps below:

1. Create a project. Select 107WV and set ePrinter as the Printer (as shown in Figure 26.2.2.1). Then click on **Next**.

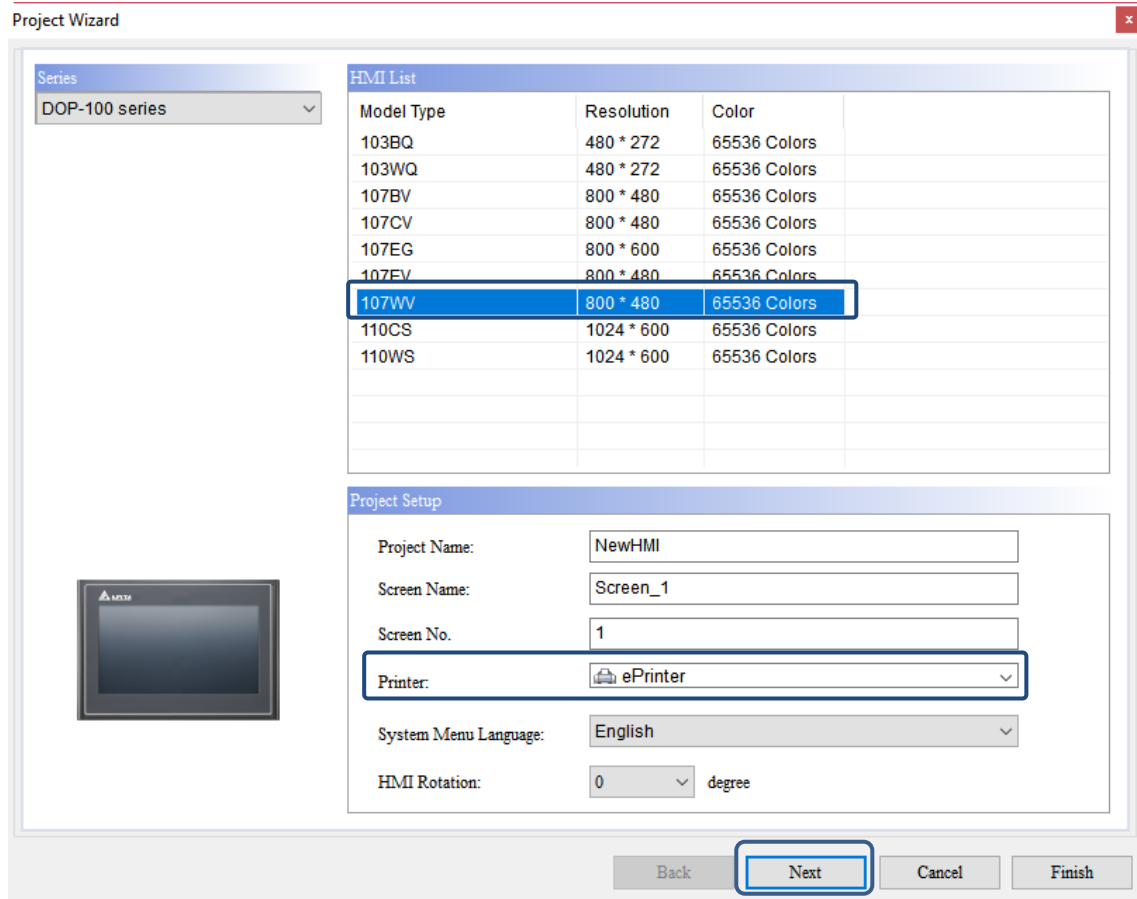


Figure 26.2.2.1 HMI screen setting I

2. Complete the communication and network settings.

26

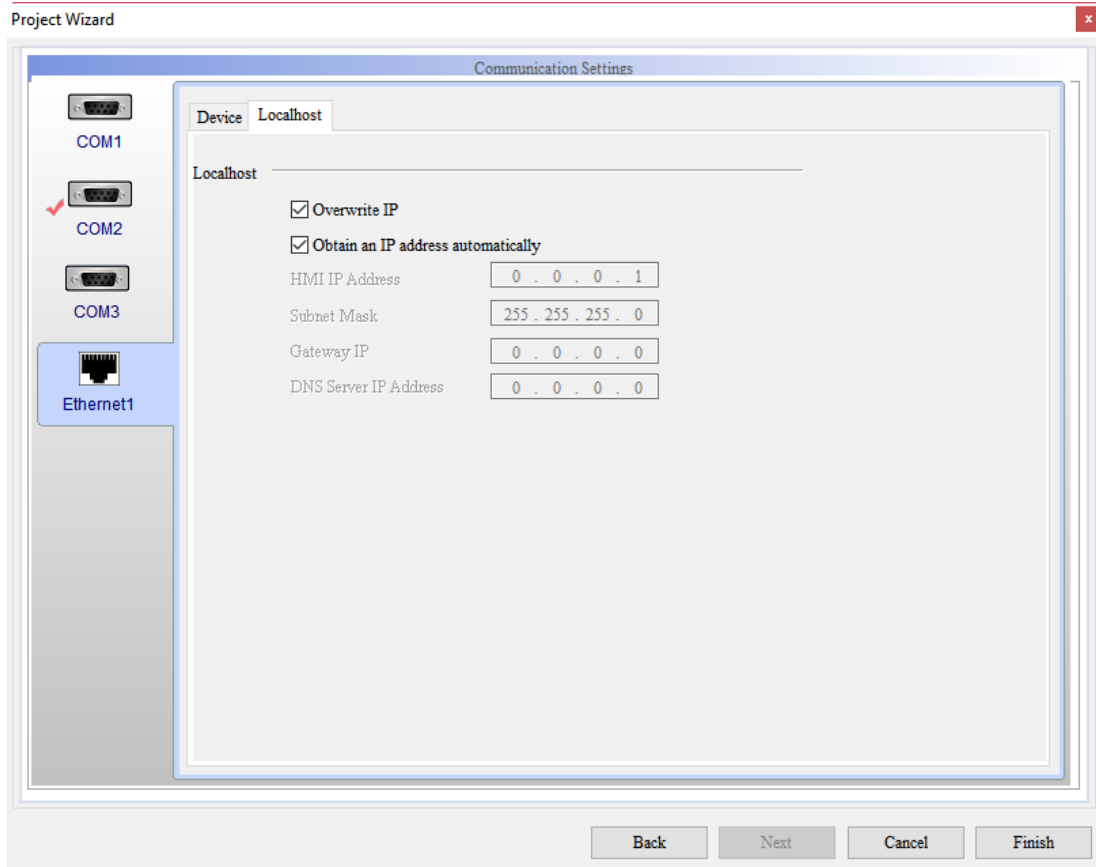
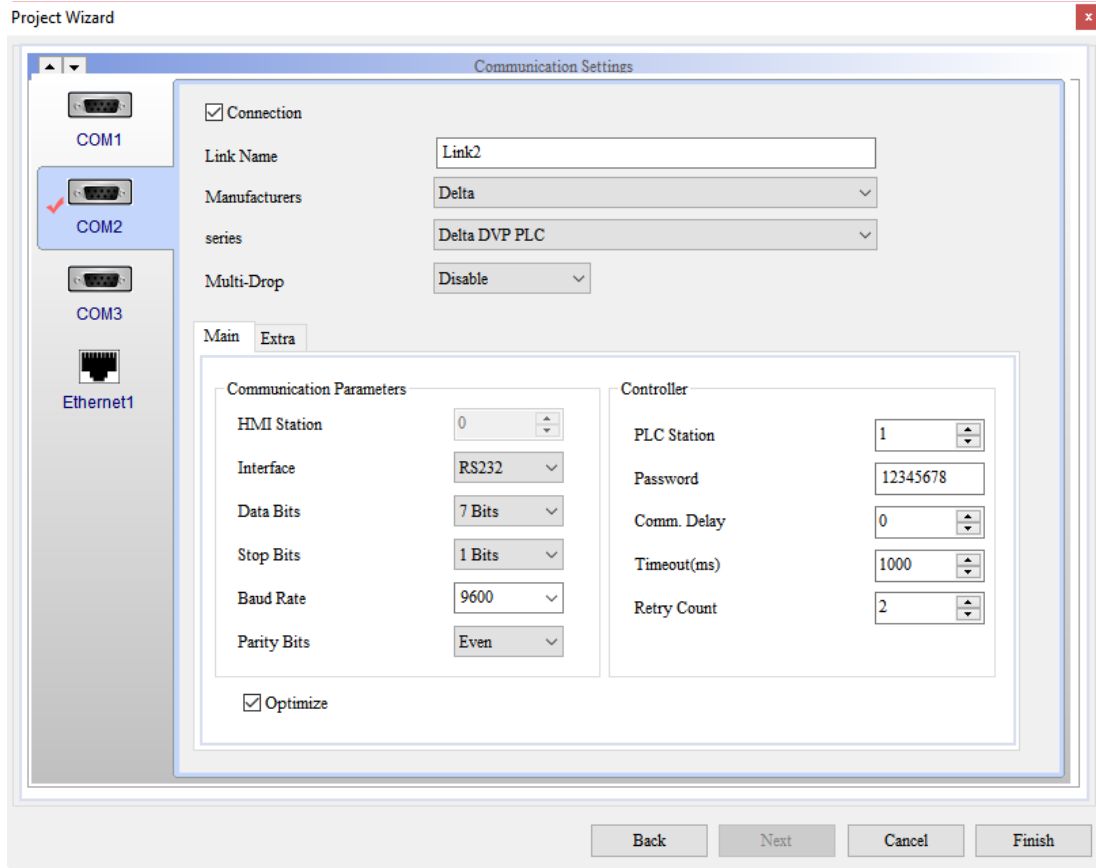


Figure 26.2.2.2 HMI screen setting II

26

3. Set up the Print settings. Go to [Options] > [Configuration] > [Print]. Select Ethernet as Interface and fill in the IP address and Port info.

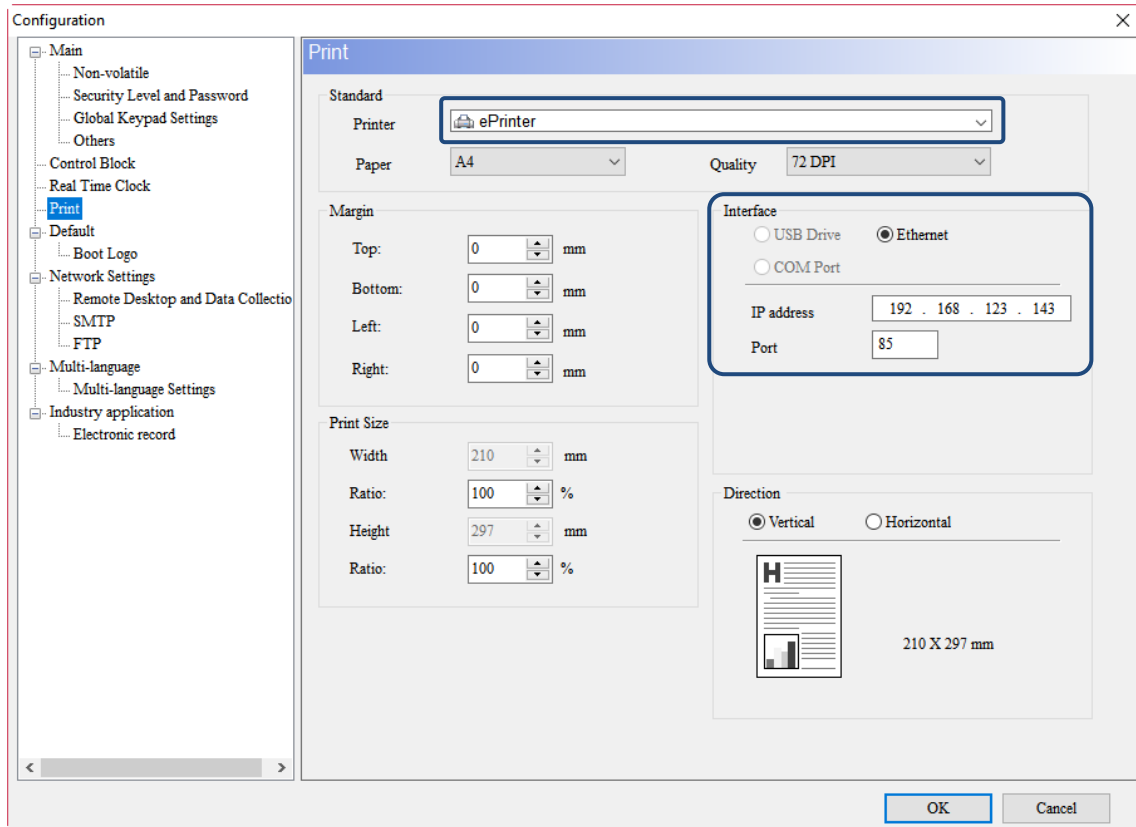



Figure 26.2.2.3 HMI screen setting III

4. IP address: This address is filled in for the IP address of the PC to start PrnServer. You can use ipconfig of the command mode to lookup the IP address of the PC. This is an example with an address of 192.168.123.143.

Note: this IP address needs to be under the same network segment as the IP address of the HMI screen.

 **Command Prompt**

```

Ethernet adapter 乙太網路:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::6029:d2c0:9756:c241%2
    IPv4 Address. . . . . : 192.168.123.143
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.123.1

Ethernet adapter 藍牙網路連線:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
  
```

Figure 26.2.2.4 Lookup for IP address of the PC

- 5. Port: the default connecting port for the printer is 85, which is also the printer port to be connected to when starting the PrnServer connection.

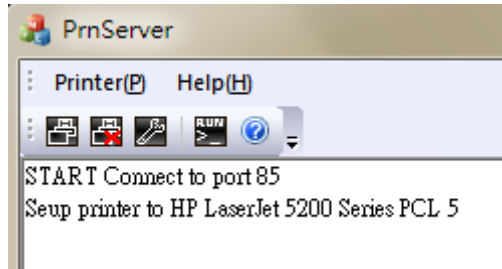


Figure 26.2.2.5 ePrinter connecting port

- 6. Create a Print Output element. Create a Rectangle and a Circle element on the DOPSoft editing screen.

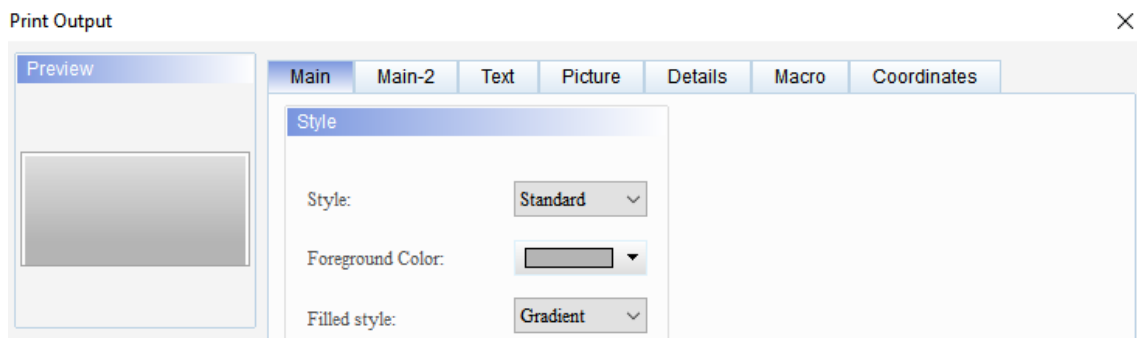


Figure 26.2.2.6 Create Print Output element

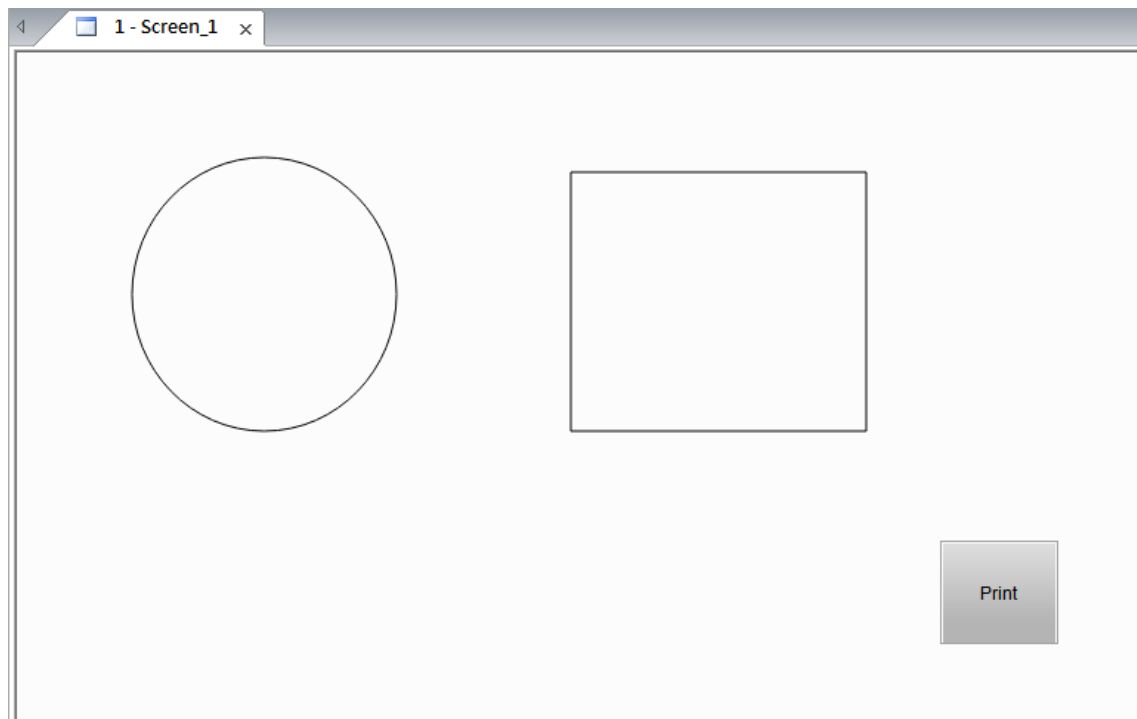


Figure 26.2.2.7 Create Rectangle and Circle elements

26

- 7. Run compile and download the screen data to the HMI.
- 8. Before running the Print Output (Print) element, start PrnServer and run connection.

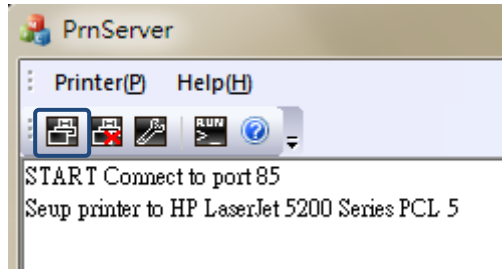


Figure 26.2.2.8 Run PrnServer

- 9. Then trigger the **Print** button on the HMI to complete printing.

26.3 Error code of printer

If an error occurs when executing the printing function, you could use the error code displayed by the printer to understand and troubleshoot the error.

26

Code	Code definition	Reason	Troubleshooting
-2	ERROR_PRINT_PORT Printer Port error	Error in selecting USB, parallel port, and COM port.	Please check if the transfer port setting is correct.
-3	ERROR_MEMORY_NULL Memory allocation error	HMI memory insufficient, unable to process print data.	Delete screens to be printed or replace with a model with larger memory capacity for the printing.
-4	ERROR_USB Unable to print because of an error with the printer	Unable to print because of printer malfunctioning, resulting in this error message.	The malfunctioning might be caused by the printer is out of ink or paper jam. Print again after troubleshooting.
-5	ERROR_USB_NOT_SELECT Printer starting failed, unable to connect	The printer is connected, but it cannot recognize the device.	Printer driver cannot connect with the HMI. Please contact our customer service for help.
-6	ERROR_USB_PAPER Printer unable to print because it is out of paper	Printer responded with the error of no printing paper.	This issue can be solved by adding paper to the printer.
-7	ERROR_USB_NOT_CONNECT Failed to connect to the printer	USB cable is not connected to the printer.	Check if the USB cable is connected to the printer correctly.
-8	ERROR_USB_OPEN Failed to open USB	Failed to open USB when starting to print.	Restart the HMI. If still unable to print, please contact our customer service for help.
-9	ERROR_USB_CLOSE Failed to close USB	Failed to close USB when printing ended.	Restart the HMI. If still unable to print, please contact our customer service for help.
-11	ERROR_NOT_OK Printer initialization not yet completed	Printer will initialize upon starting up. When printing at this moment, the printer will respond with this error message.	Some printers require longer time to initialize. Wait until initialization is complete to carry out the printing.
-14	PRINTER ERROR Printer printing failed	CTS pin status error.	Check if CTS communication pin is correctly connected. If still unable to print, please contact our customer service for help.

(This page is intentionally left blank.)

26

Parameter Settings

27

This chapter provides the descriptions of the module parameters, communication parameters, change model and environment settings.

27.1	Configuration	27-2
27.2	Communication Settings	27-46
27.3	Change model	27-59
27.4	Environment settings	27-60

27

27.1 Configuration

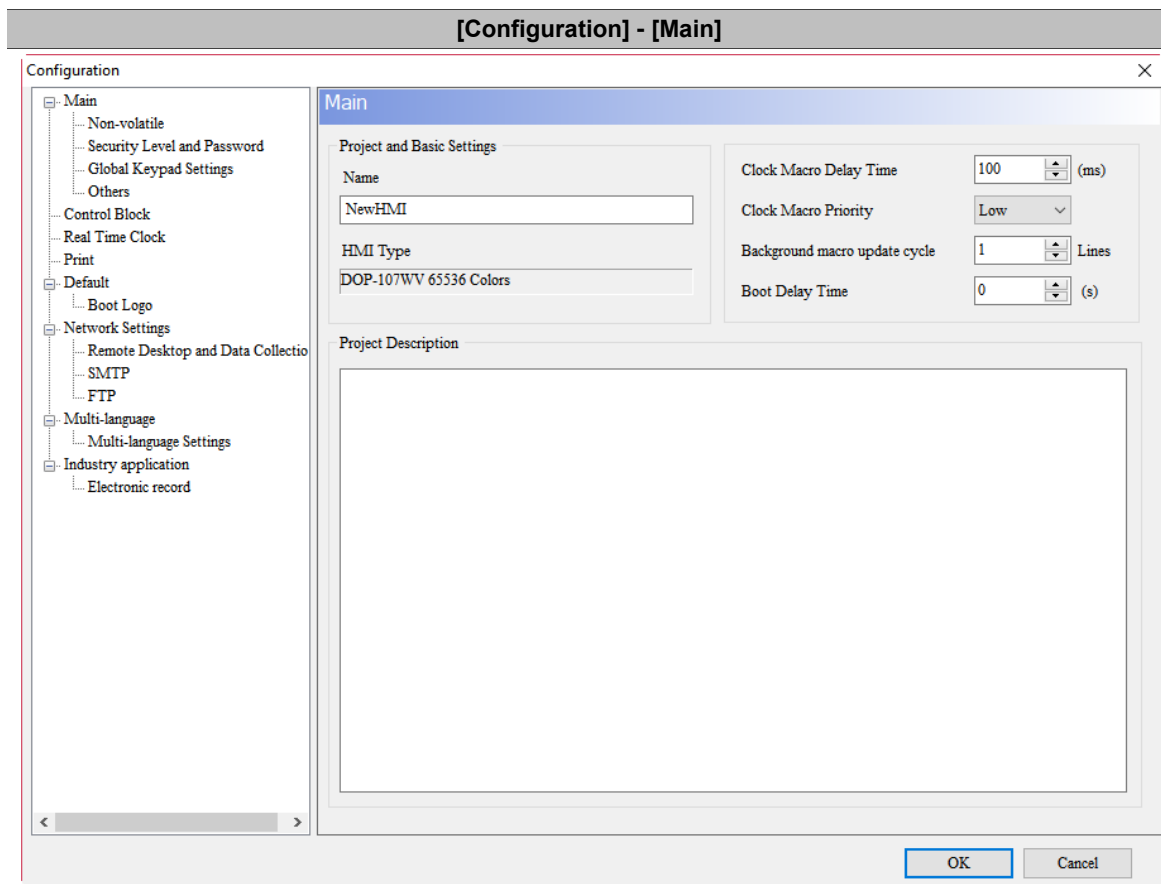
Configuration includes seven parts: Main, Control Block, Real Time Clock, Print, Default, Network Settings and Multi-language.

Main, Real Time Clock, Print, Default, Network Settings and Multi-language Settings are described below.

For detailed settings of Control Block, please refer to Control Block and Status Block in chapter 4.

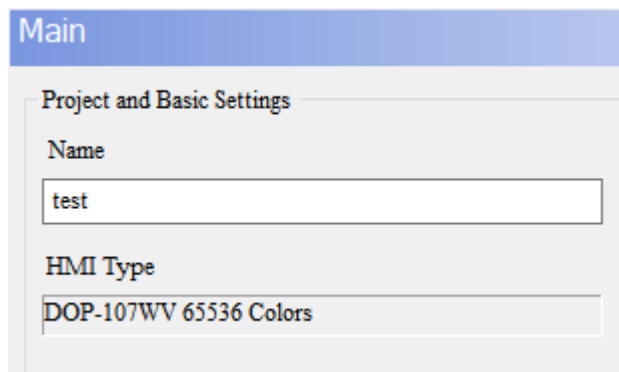
For settings of multi-language, please refer to chapter 25.

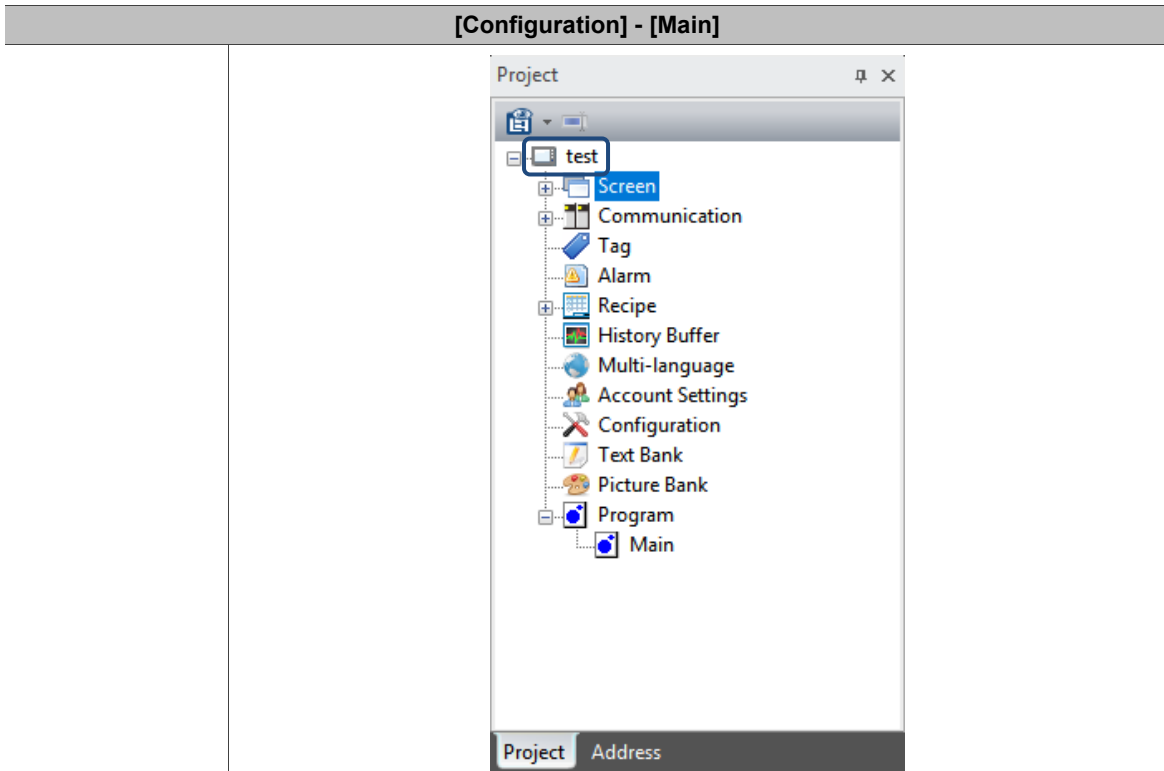
Table 27.1.1 Configuration- Project and Basic Settings



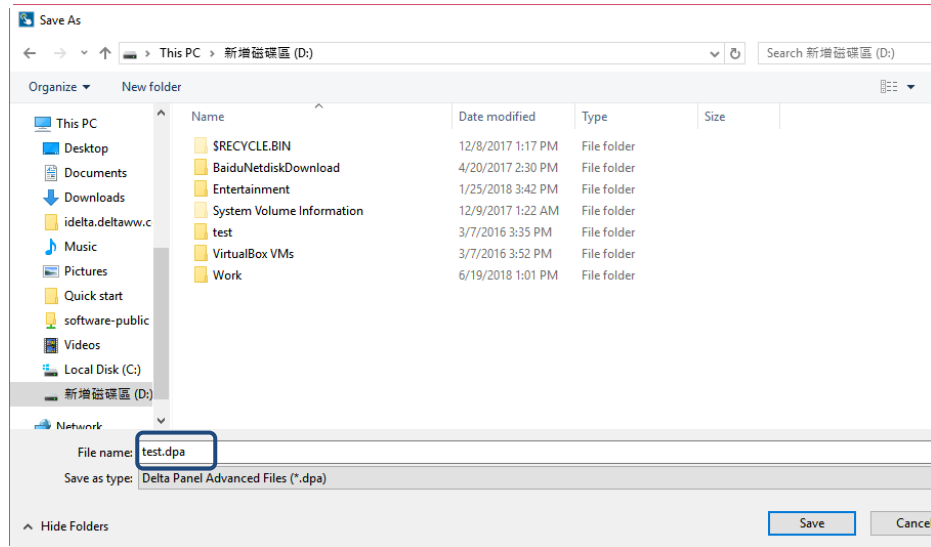
- You can change the name of the project and the new name will be displayed in the project tree on the left.

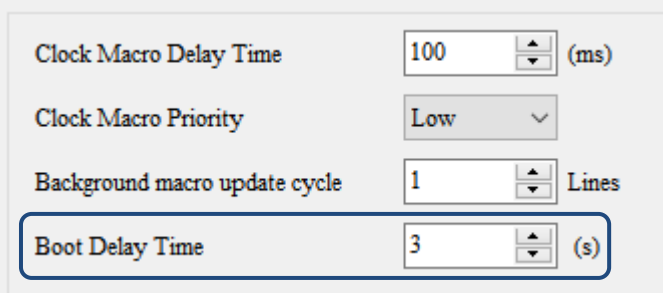
Name





- This name will be the default name of the file to be saved.



HMI Type	It displays the HMI model being used.
Boot Delay Time	<ul style="list-style-type: none"> ■ Set Boot Delay Time to wait for the start of the controller within the range of 0 - 255 seconds. ■ If the Boot Delay Time is set to be 3 seconds, after downloading the screen to the HMI, the HMI counts down from 3 seconds to 0 before displaying the HMI screen, as shown in the following figure.  <p>The figure shows a configuration panel with several settings: "Clock Macro Delay Time" set to 100 (ms), "Clock Macro Priority" set to Low, "Background macro update cycle" set to 1 Lines, and "Boot Delay Time" set to 3 (s). The "Boot Delay Time" field is highlighted with a blue selection box.</p>

27

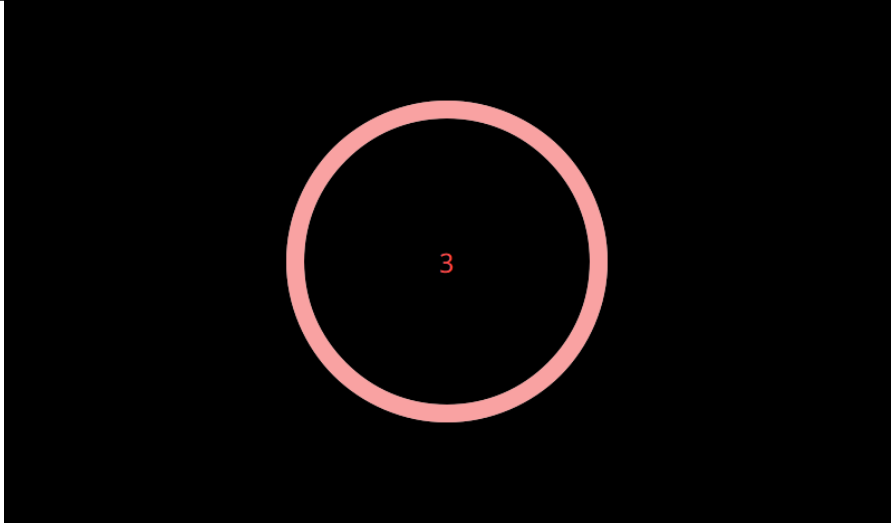
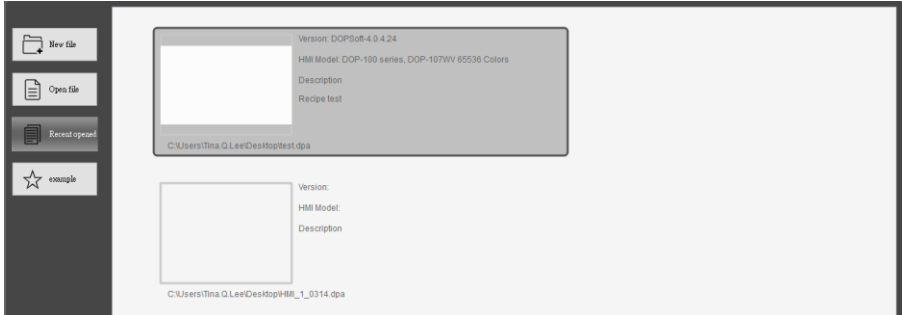
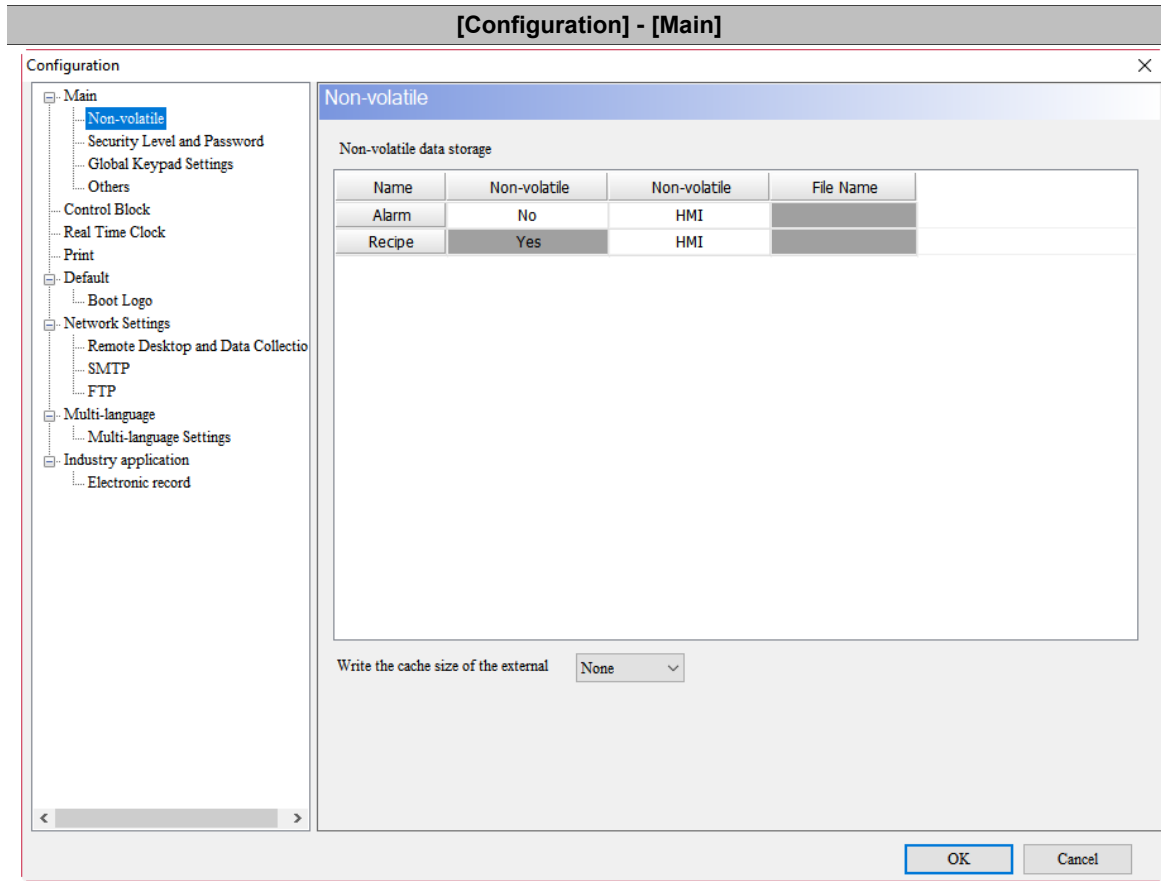
[Configuration] - [Main]	
	
Clock Macro Delay Time	Clock Macro Delay Time ranges from 50 to 65535 ms. This is the interval time between an execution of Clock macro and the next one.
Clock Macro Priority	<ul style="list-style-type: none"> ■ Clock Macro Priority can be divided into Low, Medium and High. ■ The higher the priority of execution of the Clock macro, the more accurate the delay time of the Clock macro will be.
Background macro update cycle	Set the number of lines executed per cycle for the Background macro, which ranges from 1 to 512.
Project Description	<ul style="list-style-type: none"> ■ It can be used to describe the purpose and description of the HMI screen. <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p style="margin: 0;">Project Description</p> <p style="margin: 0;">Recipe test</p> </div> <ul style="list-style-type: none"> ■ After executing the software, when you select this file, you can view the project description to better understand the purpose of the project. <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;">  </div>

Table 27.1.2 Configuration - Non-volatile



27

Non-volatile data storage location

- Non-volatile data storage can be categorized as three parts: Alarm, Recipe and History Buffer.
- The storage location for the History data depends on whether the client has created a history buffer.

Non-volatile data storage			
Name	Non-volatile	Non-volatile	File Name
Alarm	No	HMI	
Recipe	Yes	HMI	

- If you need to use data of the three parts, you can choose the data storage location, which includes HMI, USB Disk, and SD Card.
- You can directly click on the Storage Location to set the location for saving the non-volatile data of Alarm, Recipe and History buffer.

27

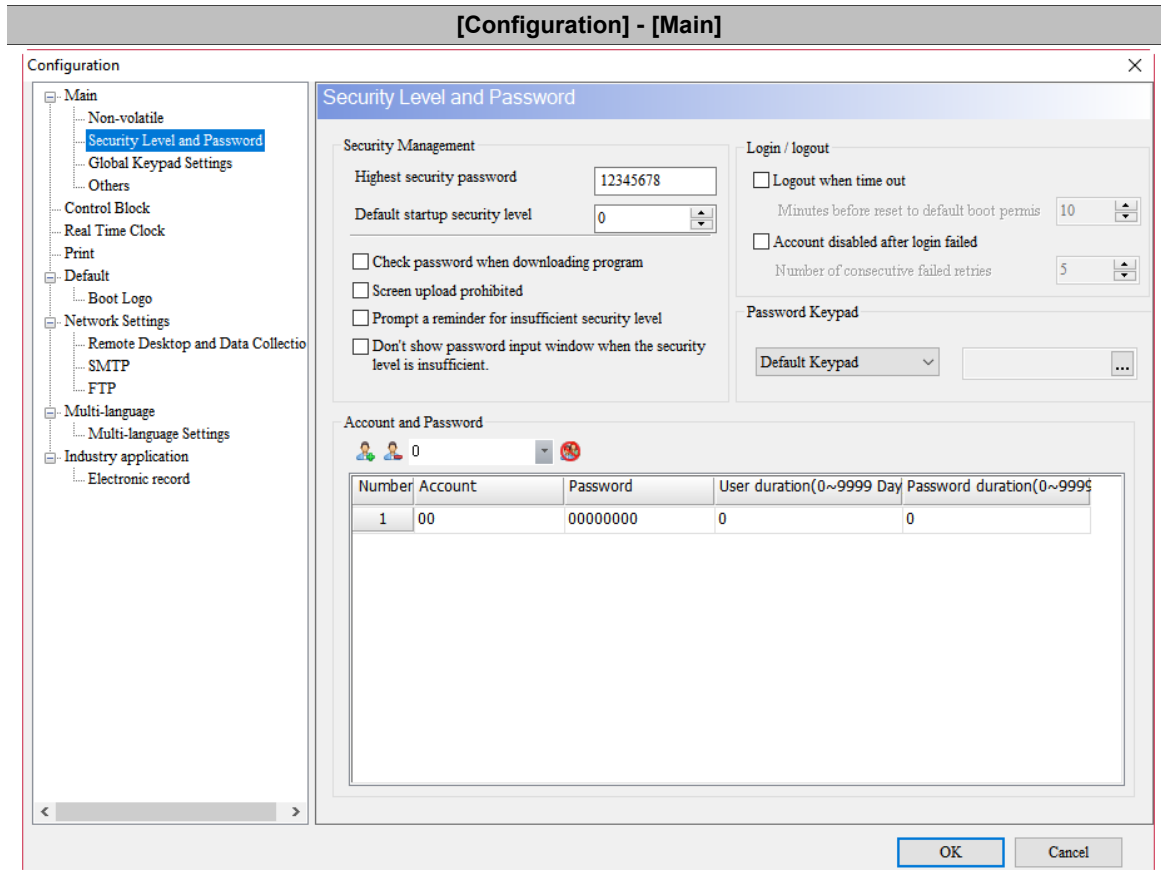
Write the cache size of the external storage device

[Configuration]-[Main]

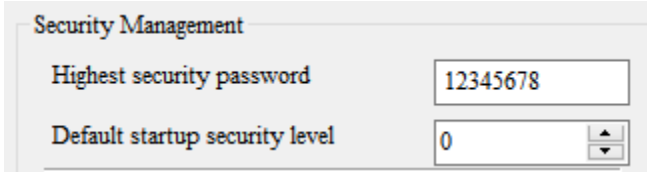

- External storage devices include USB Disk and SD Card.
- The data written to an external storage device by the HMI is temporarily placed in the cache. [Write the cache size of the external] is for setting the cache size. Data is not actually written to the external storage device until the cache size is reached. This can prevent damage to the external storage device due to continuous writing. If the data size to be accessed is less than the buffer capacity or the HMI power is unexpectedly cut off, some of the data may be lost. To avoid data loss, you can set to force trigger Bit 5 of the Control Block (External storage device cache write flag) to write the data to the external device in a cyclic pattern to ensure the data is saved.

Write the cache size of the external	None ▾
	None
	Default
	64 KB
	32 KB
	16 KB
	8 KB
	2 KB
	1 KB
	512 B

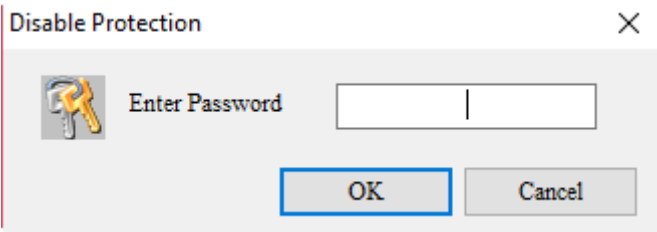
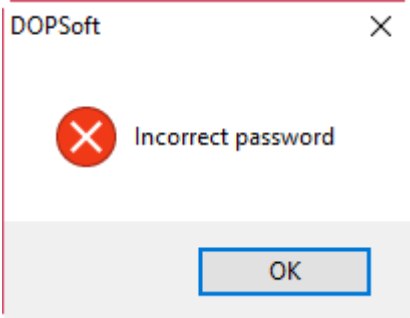
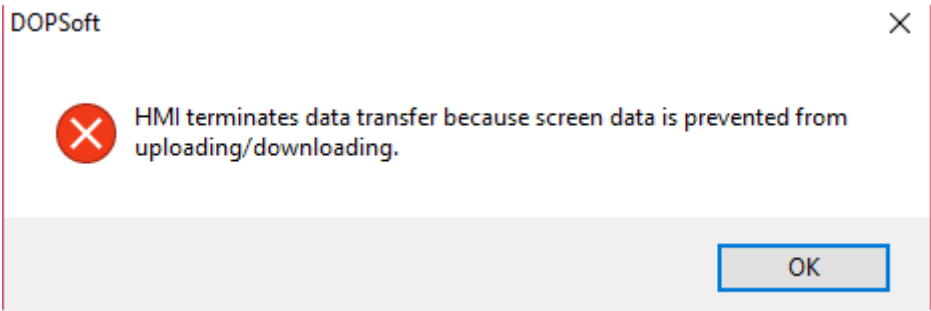
Table 27.1.3 Configuration -- Security Level and Password



27

<p>Highest security password</p>	<p>Highest security password is the password of highest level of the HMI which is level 8. The default value for Highest security password is “12345678”. This password is used for screen and recipe data upload/download (please check the password verification first), password protection, system formatting, system file encryption and file copy (check the update cycle of the screen first). The password text format is in hexadecimal, 0 - F.</p> 
<p>Default startup security level</p>	<ul style="list-style-type: none"> ■ If you want to use the default startup security level, set it with the User Security Level of the element properties. ■ The default startup security level is the permission level of HMI startup, which ranges from 0 to 7.
<p>Minutes before reset to default boot permission</p>	<p>If you do not operate the HMI for a period of time after logging in through the user permission, the HMI logs out and resets to the default boot permission.</p>
<p>Prompt a reminder for insufficient security level</p>	<p>Suppose that the user permission set by the element is higher than the default boot permission and this option is checked, the element will prompt a reminder for insufficient security level after downloading data to the HMI.</p> 
<p>Don't show password input window when the security level is insufficient</p>	<p>If this option is checked, password input keypad does not appear when the security level is insufficient.</p>

27

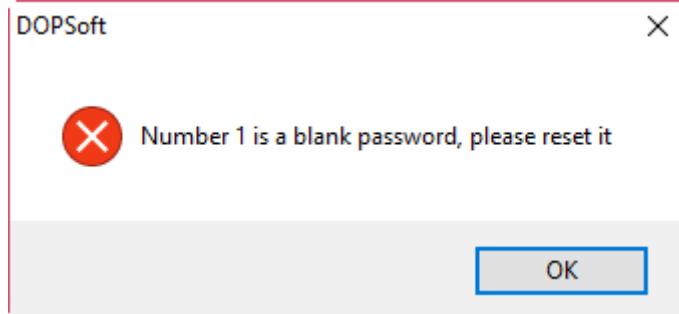
[Configuration] - [Main]	
<p>Check password when downloading program</p>	<ul style="list-style-type: none"> ■ If you check this option, you must first download this setting to the HMI, and then download the screen data and recipe for the second time, only in this way will the software require you to enter the highest security password. <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;">  </div> <ul style="list-style-type: none"> ■ You can download the screens to the HMI only when the password is correct; if not, a warning window will pop up to inform you that the password entered is incorrect and you cannot download the screens. <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;">  </div>
<p>Buzzer ON/OFF</p>	<ul style="list-style-type: none"> ■ The buzzer is on when this option is checked, and off when unchecked. ■ Buzzer sound of the HMI includes the sound of triggering button, the sound of message popping out and the sound when an error occurs. Therefore, once the buzzer is off, the HMI will not make any sound.
<p>Screen upload prohibited</p>	<p>When you try to upload all the data after downloading the screen to the HMI, DOPSoft will display the following message to inform you that screen data cannot be uploaded.</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;">  </div>

[Configuration] - [Main]

The password list setting is used to distinguish the HMI permission levels. There are 8 permission levels, from 0 to 7, and each level has a default password. The DOP-100 series models provide multiple accounts and passwords for multiple users to log in at the same time.

Note:

1. The password cannot be blank.

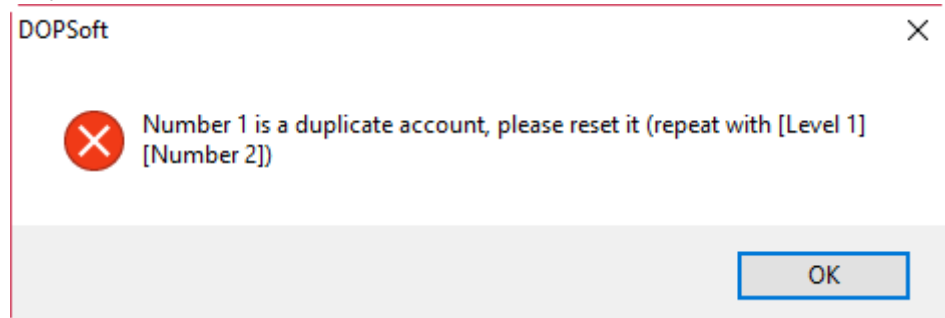


2. Passwords can be the same but account names cannot be the same with the same permission level.
3. Account names can be the same for different permission levels, for example, the account name of level 0 is 123, the account name of level 1 can also be 123.
4. The length of the account and password is limited to 24 characters.
5. The account and password are case-insensitive; they are displayed in uppercase only.

Account and Password list Settings

Permission level 0	No protection function, anyone can operate it.
Permission levels 1 - 7	You need to input the corresponding password or password of higher permission level before operation.
Permission level 8	The highest permission password. The permission level 8 is higher than levels 1- 7, and the highest permission password is also used for protecting the saved project, password verification for download, and formatting system files.

- When you use the same account with the same permission level, the HMI will inform you that the account is duplicate.



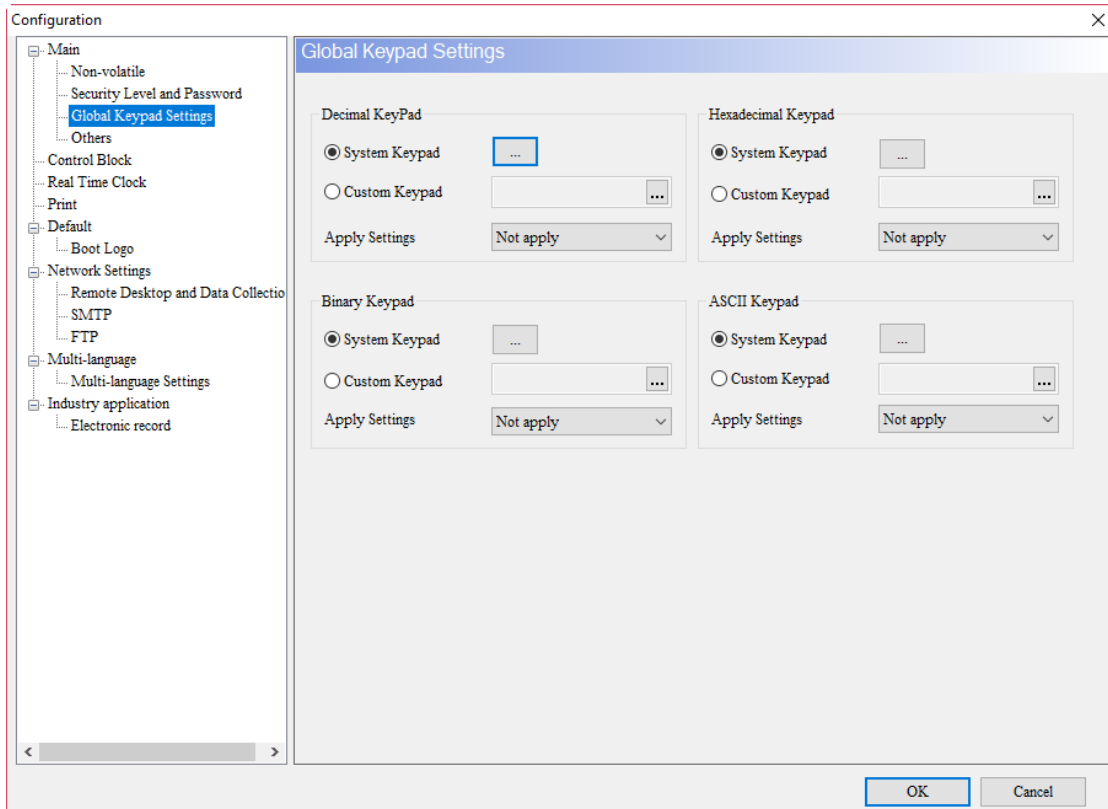
- You can also change the password and account through the button element "Password Table Setup" or by going to the system screen to select [System Settings] > [Password].
- The account supports Unicode input and you can log in with the Multi-language elements for different user permissions.

Table 27.1.4 Configuration - Global Keypad Settings

27

[Configuration] - [Main]

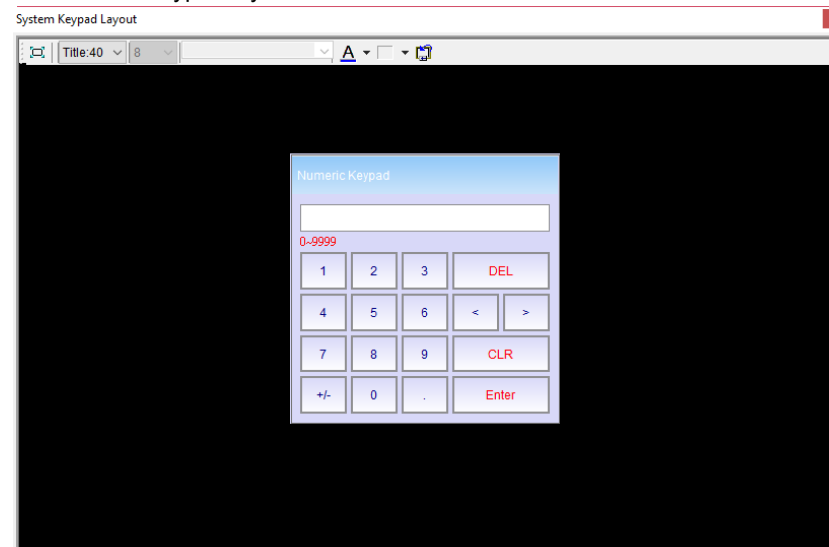
The Global Keypad Settings provide decimal, hexadecimal, binary and ASCII keypads for users to choose. This function can be used to edit the screen with multiple Numeric Entry or Character Entry elements. Set decimal, hexadecimal, binary or ASCII keypads through Global Keypad Settings and then execute the application, the system keypad can be updated into the custom format. You do not need to worry that the keypad style of multiple Numeric Entry or Character Entry elements on the previous screen cannot apply. Global Keypad Settings provide the function of "Apply to all", which can replace all the previous keypad styles with the new one. If it is a new element, the software also provides the function of "Apply to new", which only applies the format to the keypad newly created. Therefore, you can easily update the customized keypad format on the new or old ones.

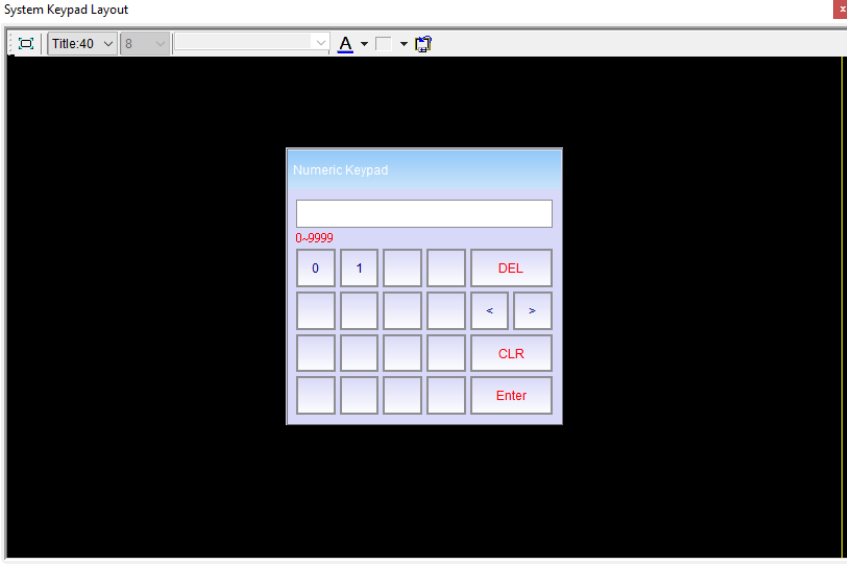
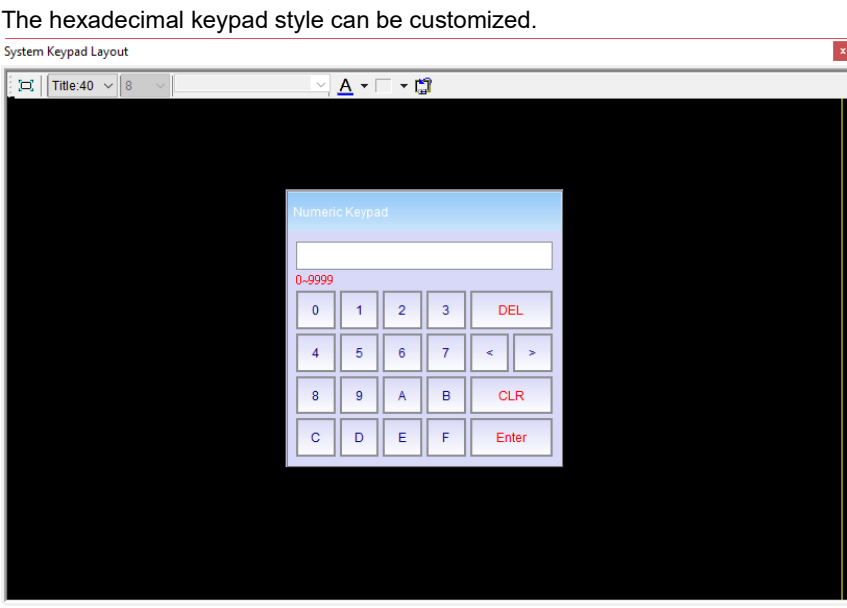


The decimal keypad style can be customized.

Decimal Keypad

System keypad



[Configuration]-[Main]			
Decimal Keypad	Apply Settings	Not apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.
		Apply to all	Replace the old keypad styles altogether with the new style.
		Apply to new	Only apply to the keypad newly created.
Binary Keypad	System keypad	Binary keypad style can be customized.	
			
		Not apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.
		Apply to all	Replace the old keypad styles altogether with the new style.
	Apply to new	Only apply to the keypad newly created.	
Hexadecimal Keypad	System keypad	The hexadecimal keypad style can be customized.	
			
		Not apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.
		Apply to all	Replace the old keypad styles altogether with the new style.
	Apply to new	Only apply to the keypad newly created.	

27

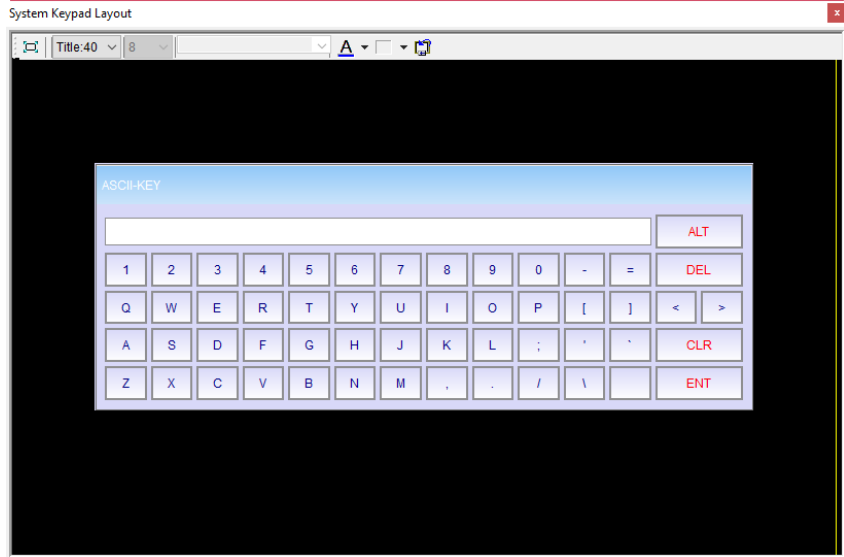
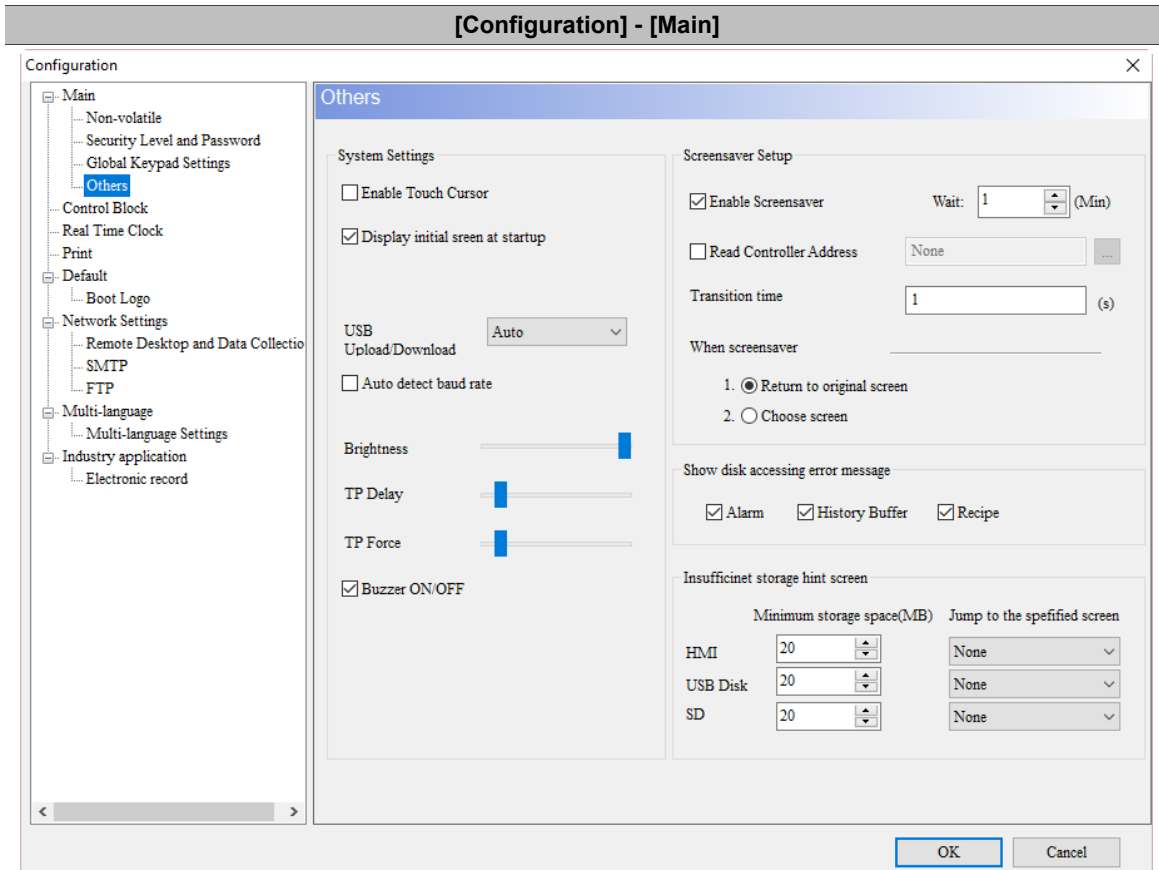

[Configuration] - [Main]			
Hexadecimal Keypad	Apply Settings	Not apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.
		Apply to all	Replace the old keypad styles altogether with the new style.
		Apply to new	Only apply to the keypad newly created.
ASCII keypad	System keypad	The ASCII keypad can be customized.	
		 <p>The screenshot shows a window titled "System Keypad Layout" with a toolbar at the top. Inside the window, there is a smaller window titled "ASCII-KEY" which displays a custom keypad layout. The keypad has a search bar at the top, followed by rows of keys: 1-0, Q-P, A-L, and Z-M. Special keys like ALT, DEL, CLR, and ENT are also visible.</p>	
		Not apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.
		Apply to all	Replace the old keypad styles altogether with the new style.
	Apply to new	Only apply to the keypad newly created.	

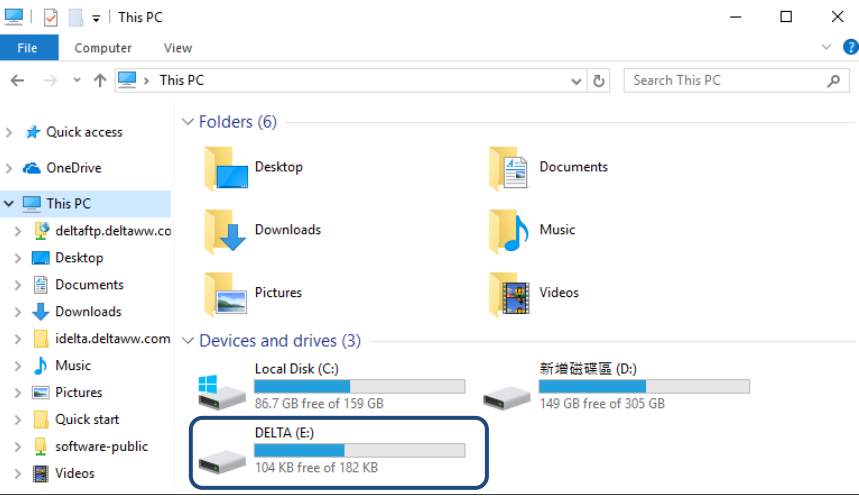
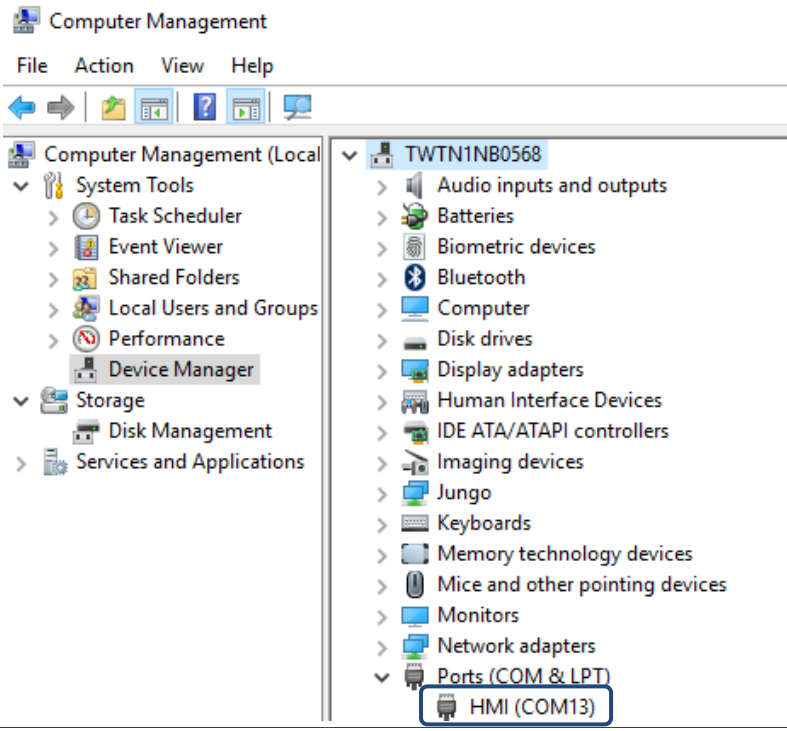
Table 27.1.5 Configuration - Others

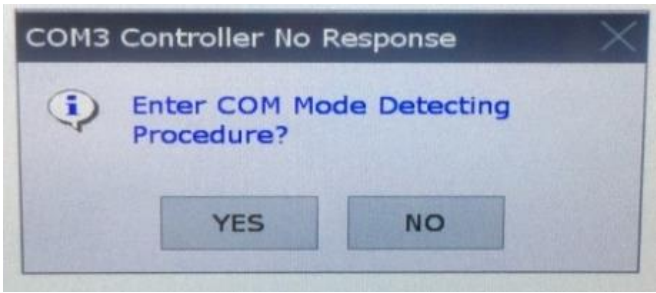
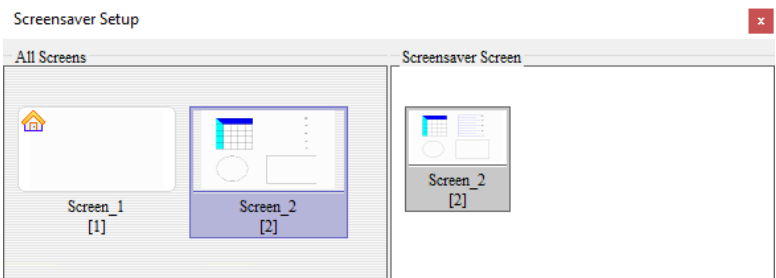


27

System Settings	
Enable Touch Cursor	<ul style="list-style-type: none"> The HMI provides the same mouse cursor as the Windows system. When you touch the HMI screen, the icon of the mouse cursor will appear. The HMI supports wireless mouse with a Unifying receiver.
Display initial screen at startup	<p>[Display initial screen at startup] means that the initial screen will be displayed at each startup, as shown in the following figure. You can set whether to display the initial screen.</p> 
USB Upload/Download mode	<p>Auto</p> <ul style="list-style-type: none"> “Auto” is the main mode for USB Upload/Download of the HMI. If USB Upload/Download mode is set to AUTO, the HMI will maintain the current mode of USB Upload/Download after the project is downloaded. If USB Upload/Download mode is set to Disk (USBCommMode is 1), the HMI will upload and download the data with Disk mode after the project is downloaded; If USB Upload/Download mode is set to CDC (USBCommMode 2), the HMI will still upload and download the data with CDC mode after downloading the project. Except for the B05S100, B05S101, B07S201 and B07S211 models, the factory defaults of all the other HMI models are Auto.

27

[Configuration] - [Main]	
System Settings	
Disk	<p>The Disk mode is the same as USBCommMode 1. A removable storage device named "DELTA" in [This PC] can be checked after downloading to the HMI through Disk mode.</p> 
USB Upload/Download mode	<p>The CDC mode is the same as USBCommMode 2. When CDC is set, you can go to [This PC] and right-click on the mouse to go to [Contents] > [Device Manager] to check whether there is a device named "HMI" in [Ports] after downloading to the HMI.</p> 
Enable auto detect baud rate	<ul style="list-style-type: none"> When this function is enabled, the baud rate of the HMI is adjusted automatically the same as the PLC.

[Configuration] - [Main]	
	 <ul style="list-style-type: none"> ■ The condition for adjustment is that the baud rate of the HMI is different from that of the PLC.
Backlight Brightness	You can adjust the backlight brightness.
TP Delay	Set the delay time of HMI processing the touch and movement data. The farther to the right, the shorter the delay time, which means the speed is faster; the farther to the left, the longer the delay time, which means the speed is slower.
TP Force	Set the sensitivity to the touch force of the HMI screen. The farther to the left, the more sensitive the HMI detects the force, it means it's easier to tap; the farther to the right, the more insensitive the HMI detects the force, it means you need to tap the screen harder.
Screensaver Setup	
Enable screensaver	<ul style="list-style-type: none"> ■ The Screensaver Setup is enabled only when you check Enable screensaver. ■ After the screensaver is activated, you can exit the screensaver mode simply by touching the screen again. ■ If Enable screensaver is checked, but there is no screensaver set in [Screen] > [Screensaver], the screen is displayed in all black. ■ If Enable screensaver is not checked, but you have edited the screensaver screen in [Screen] > [Screensaver], the screensaver remains disabled.
Wait Time	If Enable screensaver is checked, you can set the wait time for the HMI to enter the screensaver mode. The time range is 1 - 100 min., and the default value is 10 min.
Transition time	If Enable screensaver is checked, you can set the transition time. It is the interval time when screens switch. The time range is 1- 255 s and the default time is 1 second.
Return to original screen	If Enable screensaver is checked, you can select the next screen to go to after exiting the screensaver. [Return to original screen] means that the HMI goes to the original screen after exiting the screensaver.
After exiting the screensaver	<p>Choose screen</p> <ul style="list-style-type: none"> ■ If Enable screensaver is checked, you can also select the screen to go to by specifying its number, so the HMI switches to the designated screen after it exits the screensaver. Note: if you select [Choose screen], you must set the screensaver.  <ul style="list-style-type: none"> ■ The flowchart of the screensaver is shown as follows:

27

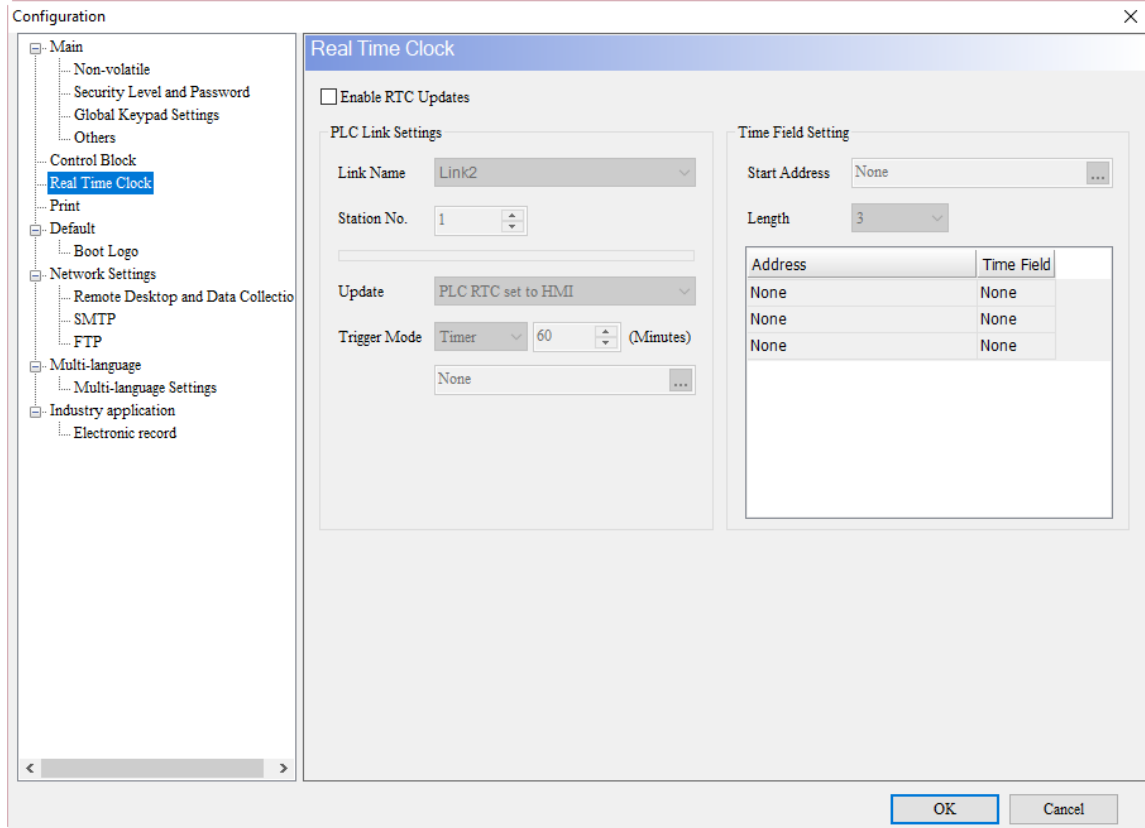
[Configuration] - [Main]	
	<pre> graph TD S1([Screen 1]) --> D{Enable Screensaver?} D -- No --> SD([Screensaver disabled]) D -- Yes --> R[Return to original screen] R --> S1 D -- Yes --> CS[Choose Screen] CS --> S10([Screen 10]) </pre>
<p>Show disk accessing error message</p>	<ul style="list-style-type: none"> ■ When Alarm, History Buffer, and Recipe are stored as non-volatile data in the USB Disk or SD Card, you can use this option to determine whether to display the warning message if DOPsoft fails to access the external storage. ■ The disk access failure occurs when the History Buffer is set to be stored in the USB Disk as non-volatile data, but the HMI cannot detect the USB Disk to write the data. Therefore, if [Show disk accessing error message] is not checked, when the HMI cannot detect the USB Disk to write the data, no error messages will pop up.

Table 27.1.6 Configuration - Real Time Clock

[Configuration] - [Real Time Clock]

Some PLC controllers do not have a built-in clock (real-time clock, RTC), so you cannot use it for operations related to time setting, such as the timer switch to turn on/off the machine on a daily basis and access control. If a PLC controller has a built-in RTC and the HMI provides synchronization function, you can synchronize the HMI RTC time with the PLC or vice versa. To use the RTC update settings, you must first check Enable RTC Updates. RTC update settings include PLC Link Settings and Time Field Setting.

27



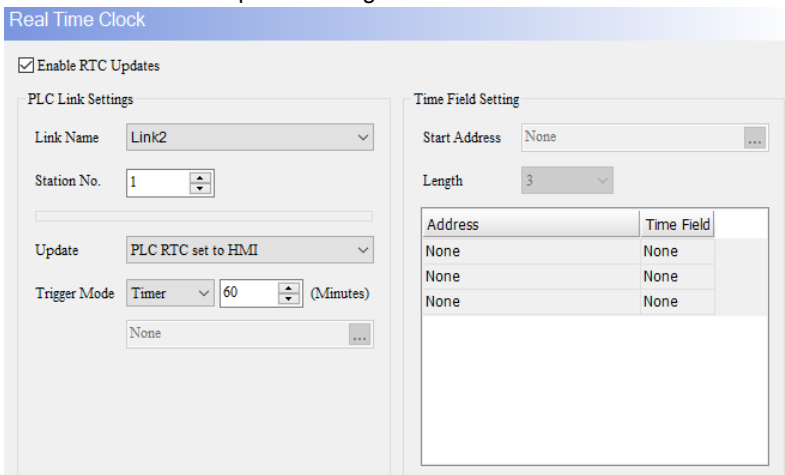
Note:

1. If you are using a Delta PLC, you do not need to set the Time Field Setting. The setting fields are grayed out by DOPSoft and PLC's special RTC register D1319 - D1313 are set automatically.
2. Some old Delta PLC models (ES/SS/EC) do not support RTC update.

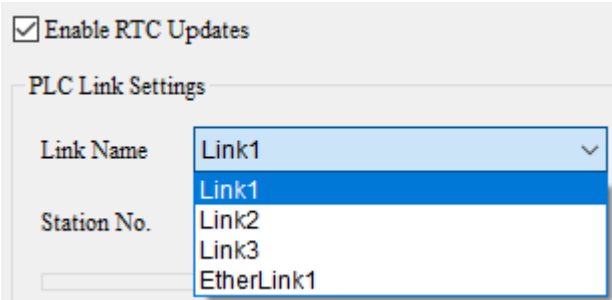
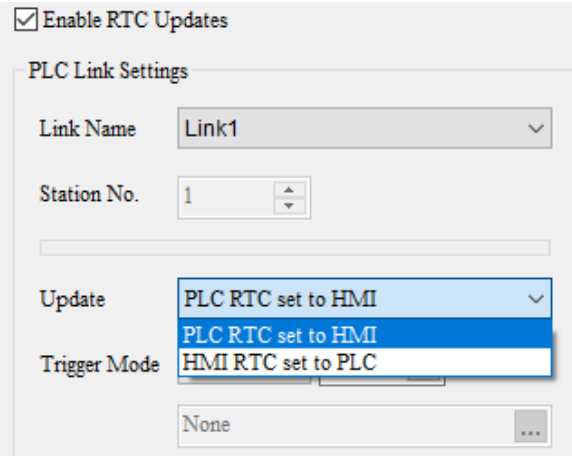
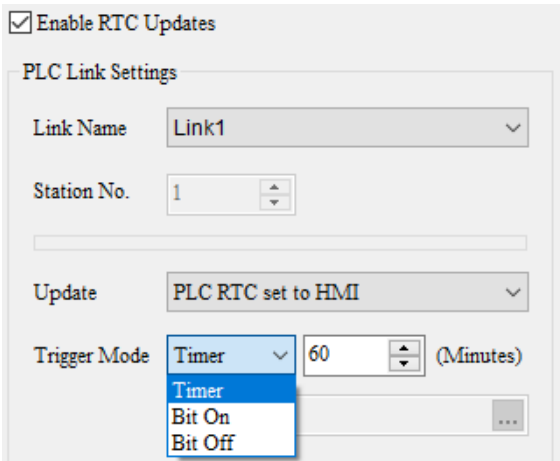
PLC Link Settings

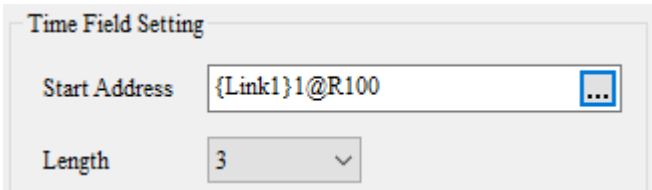
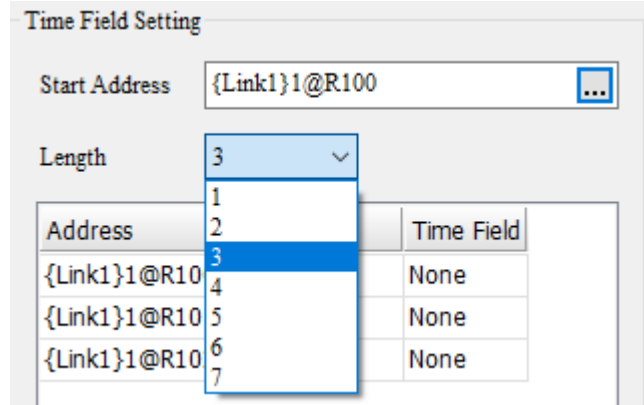
Check it to enable the RTC update settings.

Enable RTC Updates



27

[Configuration]-[Real Time Clock]	
PLC Link Settings	
Link Name	<p>You can select any of the link names, whether the controller connects to COM1 / COM2 / COM3 or Ethernet.</p> 
Station No.	<ul style="list-style-type: none"> You can set the PLC station number for the time update. If the selected controller does not support the station number setting, this option is unavailable.
Update settings	<p>There are two modes available: [HMI RTC set to PLC] and [PLC RTC set to HMI].</p> 
Trigger Mode	<ul style="list-style-type: none"> There are three modes of triggering: Timer, Bit On, and Bit Off.  <ul style="list-style-type: none"> If you choose the Timer mode, you can set how often the auto update is executed. The minimum time is 1 minute and the maximum is 1440 minutes (1 day). The system default is 60 minutes. If you select Bit On, the update setting is activated when the bit is on. If you select Bit Off, the update setting is activated when the bit is off. Either you select Bit On or Bit Off, you need to set the trigger address additionally, which can be an internal memory or a controller register.

[Configuration] - [Real Time Clock]									
Time Field Setting									
Start Address	<ul style="list-style-type: none"> Set the controller register address for RTC time synchronization. 								
<ul style="list-style-type: none"> If you are using Delta PLCs, the start address setting is not required. 									
Length	<ul style="list-style-type: none"> You can choose the length based on the number of time fields you want to synchronize. The minimum length is 1 and the maximum is 7.  <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Address</th> <th>Time Field</th> </tr> </thead> <tbody> <tr> <td>{Link1}1@R10</td> <td>None</td> </tr> <tr> <td>{Link1}1@R10</td> <td>None</td> </tr> <tr> <td>{Link1}1@R10</td> <td>None</td> </tr> </tbody> </table>	Address	Time Field	{Link1}1@R10	None	{Link1}1@R10	None	{Link1}1@R10	None
Address	Time Field								
{Link1}1@R10	None								
{Link1}1@R10	None								
{Link1}1@R10	None								
<ul style="list-style-type: none"> If you are using Delta PLCs, setting the length is not required. 									
Example									
RTC update steps	<p>Step 1: go to [Options] > [RTC Update Settings].</p> <p>Step 2: set the properties associated with RTC update.</p> <ol style="list-style-type: none"> Enable RTC Auto Updates. Select Link name: Link3 (Mitsubishi-FX3U and FX3GA). Select [PLC RTC set to HMI] for Update setting. Set Bit On for Trigger Mode. Set the trigger address to \$11.0. Set Start Address to {Link3}1@D8013. Set the Length to 6. Select Second for the Time Field corresponding to {Link3}1@D8013. Select Minute for the Time Field corresponding to {Link3}1@D8014. Select Hour for the Time Field corresponding to {Link3}1@D8015. Select Day for the Time Field corresponding to {Link3}1@D8016. Select Month for the Time Field corresponding to {Link3}1@D8017. Select Year for the Time Field corresponding to {Link3}1@D8018. <p>Step 3: after setting is complete, click OK to exit the RTC Update settings. Please refer to the following figure.</p>								

27

[Configuration] - [Real Time Clock]

- Since the Mitsubishi-FX3U controller does not require station number setting, neither does it require in RTC update settings.

RTC update steps

Real Time Clock

Enable RTC Updates

PLC Link Settings

Link Name:

Station No.:

Update:

Trigger Mode: (Minutes)

Time Field Setting

Start Address:

Length:

Address	Time Field
{Link3}0@D8013	Second
{Link3}0@D8014	Minute
{Link3}0@D8015	Hour
{Link3}0@D8016	Day
{Link3}0@D8017	Month
{Link3}0@D8018	Year

Connection

Link Name:

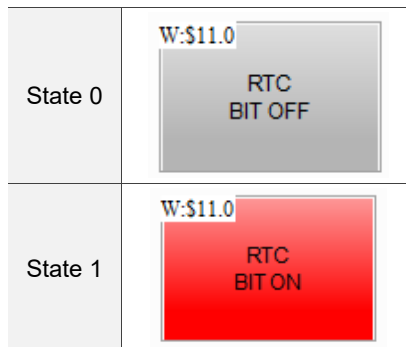
Manufacturers:

series:

Multi-Drop:

Create Maintained button element

- Step 1: create a Maintained button and set its write address to \$11.0.
 Step 2: input the text of the Maintained button as "RTC BIT OFF" for State 0 and set the foreground color of State 1 to red with the text as "RTC BIT ON", which is the state when the bit is on.



Create Numeric Entry elements

- Step 1: create 6 Numeric Entry elements, and set the address as {Link3}1 @d8013 - {Link3}1 @d8018 in order.
 Step 2: create another 6 Numeric Entry elements and set the internal system parameters as TIME_YEAR, TIME_MONTH, TIME_DAY, TIME_HOUR, TIME_MINUTE and TIME_SECOND in order.

PLC Address

W:{Link3}0@D8018	W:{Link3}0@D8017	W:{Link3}0@D8016	W:{Link3}0@D8015	W:{Link3}0@D8014	W:{Link3}0@D8013
#####	#####	#####	#####	#####	#####

Internal system parameters

W:TIME_YEAR	W:TIME_MONTH	W:TIME_DAY	W:TIME_HOUR	W:TIME_MINUTE	W:TIME_SECOND
#####	#####	#####	#####	#####	#####

[Configuration] - [Real Time Clock]

After creating all the elements, please compile and download the elements to the HMI. When the RTC Maintained button (BIT ON) is triggered, the system will set the HMI time as the PLC's RTC time, so the HMI internal system parameters TIME_YEAR, TIME_MONTH, TIME_DAY, TIME_HOUR, TIME_MINUTE and TIME_SECOND will synchronize with the PLC's RTC.

Execution result

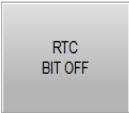

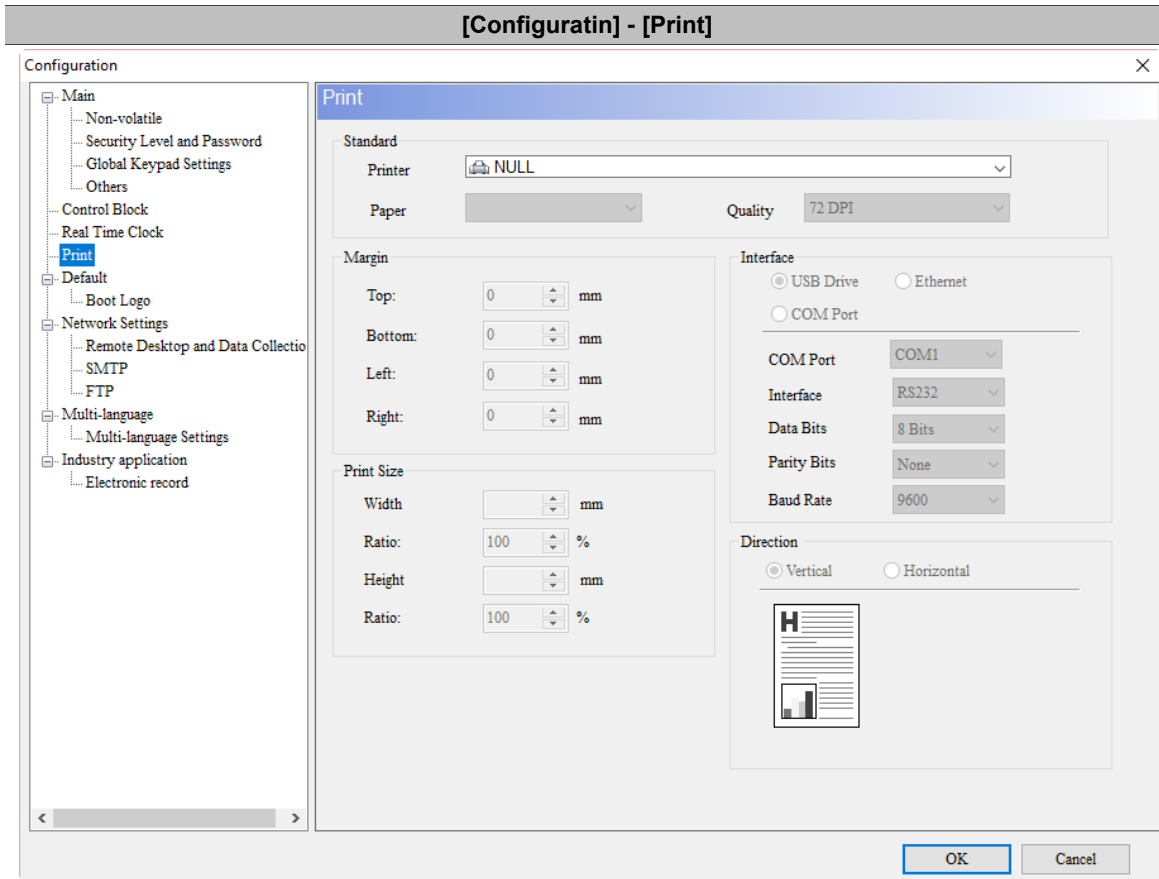
BIT OFF						
	D8013 <input type="text" value="2013"/>	D8014 <input type="text" value="10"/>	D8015 <input type="text" value="30"/>	D8016 <input type="text" value="15"/>	D8017 <input type="text" value="4"/>	D8018 <input type="text" value="20"/>
HMI_Year HMI_Month HMI_Day HMI_Hour HMI_Minute HMI_Second						
<input type="text" value="2017"/> <input type="text" value="6"/> <input type="text" value="16"/> <input type="text" value="16"/> <input type="text" value="55"/> <input type="text" value="33"/>						
BIT ON						
	D8013 <input type="text" value="2013"/>	D8014 <input type="text" value="10"/>	D8015 <input type="text" value="30"/>	D8016 <input type="text" value="15"/>	D8017 <input type="text" value="4"/>	D8018 <input type="text" value="20"/>
HMI_Year HMI_Month HMI_Day HMI_Hour HMI_Minute HMI_Second						
<input type="text" value="2013"/> <input type="text" value="10"/> <input type="text" value="30"/> <input type="text" value="15"/> <input type="text" value="4"/> <input type="text" value="20"/>						

Table 27.1.7 Configuration - Print

27



The Print setting includes typesetting printing and general printing (Hard Copy). Please refer to chapter 26 for details of printing methods.

<p>Printer</p>	<p>DOP-100 supports HP and ePrinter.</p>
<p>Paper</p>	<p>The paper varies depending on the printer you choose. It generally includes A4, Letter, Custom and other settings.</p>
<p>Quality</p>	<ul style="list-style-type: none"> ■ Quality refers to the printing resolution. ■ At present, only 72 DPI is available.
<p>Margin</p>	<ul style="list-style-type: none"> ■ You can set the top, bottom, left, and right margin of the paper which is reserved for blank. ■ The unit of the margin is mm, and the range is 0 - 550 mm.
<p>Print Size</p>	<p>You can set the scaling of the width and height in the Print Size setting. The maximum scaling ratio is 400%, the minimum is 10%, and the default is 100%.</p>



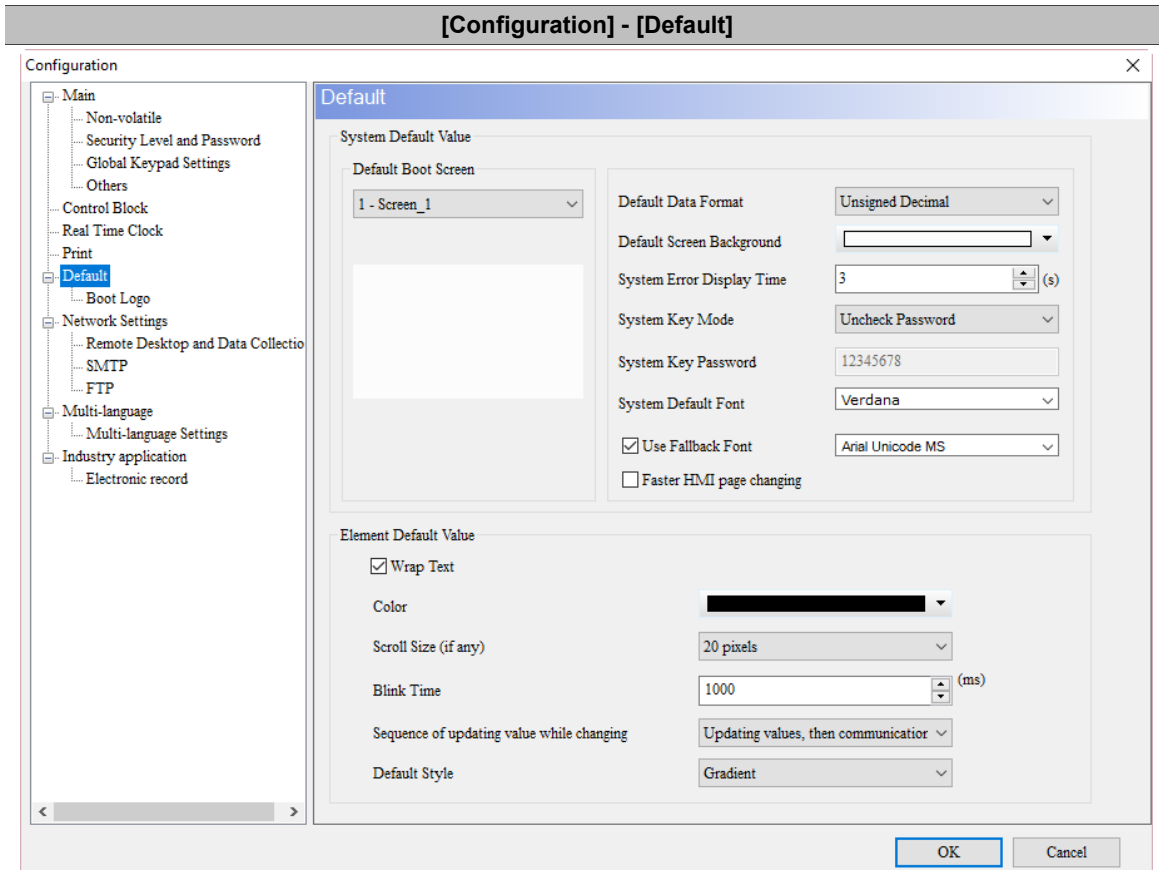
[Configuratin]-[Print]	
Transmission Interface	<p>■ The DOP-100 supports HP and ePrinter, and the transmission interface of this printer includes USB and Ethernet.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Standard</p> <p>Printer: <input type="text" value="ePrinter"/></p> <p>Paper: <input type="text" value="A4"/> Quality: <input type="text" value="72 DPI"/></p> <p>Margin: Top: <input type="text" value="0"/> mm, Bottom: <input type="text" value="0"/> mm, Left: <input type="text" value="0"/> mm, Right: <input type="text" value="0"/> mm</p> <p>Interface: <input type="radio"/> USB Drive <input checked="" type="radio"/> Ethernet <input type="radio"/> COM Port IP address: <input type="text" value="0 . 0 . 0 . 0"/> Port: <input type="text" value="0"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Standard</p> <p>Printer: <input type="text" value="HP LASERJET M101-M106"/></p> <p>Paper: <input type="text" value="A4"/> Quality: <input type="text" value="72 DPI"/></p> <p>Margin: Top: <input type="text" value="0"/> mm, Bottom: <input type="text" value="0"/> mm, Left: <input type="text" value="0"/> mm, Right: <input type="text" value="0"/> mm</p> <p>Print Size: Width: <input type="text" value="210"/> mm</p> <p>Interface: <input checked="" type="radio"/> USB Drive <input type="radio"/> Ethernet <input type="radio"/> COM Port COM Port: <input type="text" value="COM1"/> Interface: <input type="text" value="RS232"/> Data Bits: <input type="text" value="8 Bits"/> Parity Bits: <input type="text" value="None"/> Baud Rate: <input type="text" value="9600"/></p> </div> <p>■ If you select ePrinter, you need to input the PC's IP address and printer port 85.</p>
Print Direction	<p>Print Direction includes vertical printing and horizontal printing.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Direction</p> <p><input checked="" type="radio"/> Vertical <input type="radio"/> Horizontal</p>  <p style="text-align: right;">210 X 297 mm</p> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Direction</p> <p><input type="radio"/> Vertical <input checked="" type="radio"/> Horizontal</p>  <p style="text-align: right;">297 X 210 mm</p> </div>
Auto Flip	<p>Auto Flip means that the printer can automatically return the paper and print the next page. If this option is checked, when a page is printed, the printer will automatically change to the next page to continue printing; if not checked, after a page is printed, the printer returns the paper and you must manually change to the next page.</p>

Table 27.1.8 Configuration – Default

27



System Default Value

Default Boot Screen	It is the initial screen when the HMI boots up. You can choose another screen as the boot screen, and the default is Screen 1.						
Default Data Format	It is the default data format while creating an element. The default data format is Unsigned Decimal.						
Default Screen Background	It is the background color while editing a screen. The default background color is white.						
System Error Display Time	It is the error message displaying time when an error occurs. The default is 3 seconds and the setting range is 0 - 5 seconds. Note: when it is set to 0 second, the HMI will not display the message if an error occurs.						
System Key Mode	System Key Mode sets the response of the HMI when you press the system key. The software provides three options: Disabled, Enable password check, and Uncheck password. <div> </div> <table border="1"> <tr> <td>Disabled</td> <td>When setting to [Disabled], the HMI is unable to enter the HMI system screen when you press the system key.</td> </tr> <tr> <td>Enable password check</td> <td>When setting to [Enable password check], you will be asked to enter the system key password after pressing the system key.</td> </tr> <tr> <td>Uncheck Password</td> <td>When setting to [Uncheck Password], the system key password is not required to enter the HMI system screen after you press the system key.</td> </tr> </table>	Disabled	When setting to [Disabled], the HMI is unable to enter the HMI system screen when you press the system key.	Enable password check	When setting to [Enable password check], you will be asked to enter the system key password after pressing the system key.	Uncheck Password	When setting to [Uncheck Password], the system key password is not required to enter the HMI system screen after you press the system key.
Disabled	When setting to [Disabled], the HMI is unable to enter the HMI system screen when you press the system key.						
Enable password check	When setting to [Enable password check], you will be asked to enter the system key password after pressing the system key.						
Uncheck Password	When setting to [Uncheck Password], the system key password is not required to enter the HMI system screen after you press the system key.						

[Configuration] - [Default]	
System Default Value	
System Key Password	System Key Password is the password required when the System Key Mode is set as [Enable password check]. You can change the system key password. The default system key password is 12345678.
System Default Font	The system default font is Verdana, and you can change the font. <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> System Default Font Verdana </div>
Faster HMI page changing	<ul style="list-style-type: none"> ■ Enabling Faster HMI page changing will speed up the switching between pages, but it also occupies the memory space of the project screen. ■ This function is mainly used to speed up the switching between pages when the screen has a large number of graphics and static texts.
Element Default Value	
Wrap Text	<ul style="list-style-type: none"> ■ If you check Wrap Text and enter the text in an element, the text automatically wraps so it appears on multiple lines in an element, as shown in the figure below. <div style="border: 1px solid #ccc; padding: 10px; margin: 10px auto; width: 150px; text-align: center;"> mmmmmmmmmmmmmmm mmmmmmmmmmmmmmm mmmmmmm </div> ■ If Wrap Text is not checked, the text extends beyond the element edge instead of wrapping automatically, as shown in the figure below. <div style="border: 1px solid #ccc; padding: 10px; margin: 10px auto; width: 150px; text-align: center;"> mmmmmmmmmmmmmmm </div> ■ In addition, if you need to convert the.dop file (B series program) for the DOP-100 models to edit, the software also provides the Wrap Text option for you. <div style="border: 1px solid #ccc; padding: 10px; margin: 10px auto; width: 400px;"> <div style="border: 1px solid #ccc; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> HMI Selection ✕ </div> <div style="margin-top: 10px;"> <div style="display: flex; align-items: center;"> HMI <div style="border: 1px solid #ccc; padding: 2px;"> DOP-107WV 65536 Colors </div> </div> </div> <div style="margin-top: 10px;"> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block;"> <input type="checkbox"/> Wrap Text </div> </div> <div style="text-align: right; margin-top: 10px;"> <div style="border: 1px solid #ccc; padding: 2px 10px;">OK</div> </div> </div> </div>
Element Font/Size/Color	The font, size and color of the text when creating an element. The default font, size and color of element are Arial, 12, and black respectively.
Scroll Size	This is for elements with scrolls, such as history data, alarm and other related tables. The default scroll size is 20 pixels and the range is 20 - 60 pixels. <div style="border: 1px solid #ccc; padding: 5px; margin: 10px auto; width: 150px;"> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block;">20 pixels</div> <div style="border: 1px solid #ccc; padding: 2px; margin-left: 5px;"> 20 pixels 30 pixels 40 pixels 60 pixels </div> </div>

27

[Configuration]-[Default]																			
Element Default Value																			
Blink Time	<ul style="list-style-type: none"> This function is operable only when an element has the property of Blink. <table border="1" style="margin: 10px 0;"> <thead> <tr> <th colspan="2" style="background-color: #cccccc;">Others</th> </tr> </thead> <tbody> <tr> <td>Foreground Color</td> <td><input type="checkbox"/> RGB(180, 180, 180)</td> </tr> <tr> <td>Filled style</td> <td>Gradient</td> </tr> <tr> <td>Style</td> <td>Standard</td> </tr> <tr> <td>Function</td> <td>Set to On</td> </tr> <tr style="border: 2px solid blue;"> <td>Blink</td> <td>Yes</td> </tr> <tr> <td>Min. Press Time (s)</td> <td>0</td> </tr> <tr> <td>User Security Level</td> <td>0</td> </tr> <tr> <td>Set Low Security</td> <td>No</td> </tr> </tbody> </table> The Blink Time setting is valid only when Blink is set to Yes. The default value is 1000 ms and the range is 500 - 5000 ms. 	Others		Foreground Color	<input type="checkbox"/> RGB(180, 180, 180)	Filled style	Gradient	Style	Standard	Function	Set to On	Blink	Yes	Min. Press Time (s)	0	User Security Level	0	Set Low Security	No
Others																			
Foreground Color	<input type="checkbox"/> RGB(180, 180, 180)																		
Filled style	Gradient																		
Style	Standard																		
Function	Set to On																		
Blink	Yes																		
Min. Press Time (s)	0																		
User Security Level	0																		
Set Low Security	No																		
Sequence of updating value while changing screens	<ul style="list-style-type: none"> Sometimes the HMI displays the value after the communication completes due to multitask execution. To avoid confusion, DOPSoft provides options for you to set the value display timing. The options are [Updating values, then communication] and [Communication, then updating values]. <div style="border: 1px solid #cccccc; padding: 5px; margin-top: 10px;"> <p style="margin: 0;">Element Default Value</p> <p><input checked="" type="checkbox"/> Wrap Text</p> <p>Color [Color Picker]</p> <p>Scroll Size (if any) 20 pixels</p> <p>Blink Time 1000 (ms)</p> <p>Sequence of updating value while changing Updating values, then communication</p> <p>Default Style Updating values, then communication Communication, then updating values</p> </div>																		

[Configuration] - [Default]																															
Element Default Value																															
<p>Sequence of updating value while changing screens</p>	<p>■ The elements supporting this function are as follows:</p> <table border="1"> <tr> <td rowspan="3">Input element</td> <td>Numeric Entry</td> </tr> <tr> <td>Character Entry</td> </tr> <tr> <td>Barcode Input</td> </tr> <tr> <td rowspan="5">Button element</td> <td>Set to On button</td> </tr> <tr> <td>Set to Off button</td> </tr> <tr> <td>Momentary button</td> </tr> <tr> <td>Maintained button</td> </tr> <tr> <td>Multistate button</td> </tr> <tr> <td rowspan="3">Indicator element</td> <td>Multistate Indicator</td> </tr> <tr> <td>Range Indicator</td> </tr> <tr> <td>Simple Indicator</td> </tr> <tr> <td>Meter element</td> <td>Meter(1), Meter(2), Meter(3), Meter(4)</td> </tr> <tr> <td rowspan="4">Data Display element</td> <td>Numeric Display</td> </tr> <tr> <td>Character Display</td> </tr> <tr> <td>General Message Display</td> </tr> <tr> <td>Moving Sign Display</td> </tr> <tr> <td rowspan="2">Graph Display element</td> <td>State Graph Display</td> </tr> <tr> <td>Animated Graphic</td> </tr> <tr> <td>Curve Graph element</td> <td>Curve Input</td> </tr> <tr> <td>Pipe element</td> <td>Pipe(1), Pipe(2)</td> </tr> <tr> <td>Analog element</td> <td>Slider</td> </tr> </table>	Input element	Numeric Entry	Character Entry	Barcode Input	Button element	Set to On button	Set to Off button	Momentary button	Maintained button	Multistate button	Indicator element	Multistate Indicator	Range Indicator	Simple Indicator	Meter element	Meter(1), Meter(2), Meter(3), Meter(4)	Data Display element	Numeric Display	Character Display	General Message Display	Moving Sign Display	Graph Display element	State Graph Display	Animated Graphic	Curve Graph element	Curve Input	Pipe element	Pipe(1), Pipe(2)	Analog element	Slider
	Input element		Numeric Entry																												
			Character Entry																												
		Barcode Input																													
	Button element	Set to On button																													
		Set to Off button																													
		Momentary button																													
		Maintained button																													
		Multistate button																													
	Indicator element	Multistate Indicator																													
		Range Indicator																													
		Simple Indicator																													
	Meter element	Meter(1), Meter(2), Meter(3), Meter(4)																													
	Data Display element	Numeric Display																													
		Character Display																													
General Message Display																															
Moving Sign Display																															
Graph Display element	State Graph Display																														
	Animated Graphic																														
Curve Graph element	Curve Input																														
Pipe element	Pipe(1), Pipe(2)																														
Analog element	Slider																														
<p>Updating values, then communication</p>	<p>■ Here's the difference.</p> <p>If this option is selected, after the screen switches, the reading of values is normal without being affected by the communication.</p>																														
	<pre> graph TD A[Screen 1 D0 = 1] --> B[Switch to Screen 2 and set D0 to 123] B --> C[Screen 2 Numeric Entry element D0 displays "123"] C --> D[Obtain the updated value and then complete the communication] D --> E[Numeric Entry element D0 displays "123"] </pre>																														

27

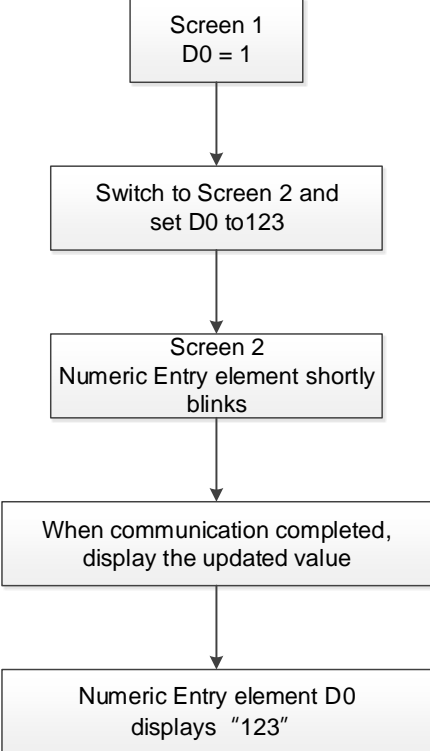
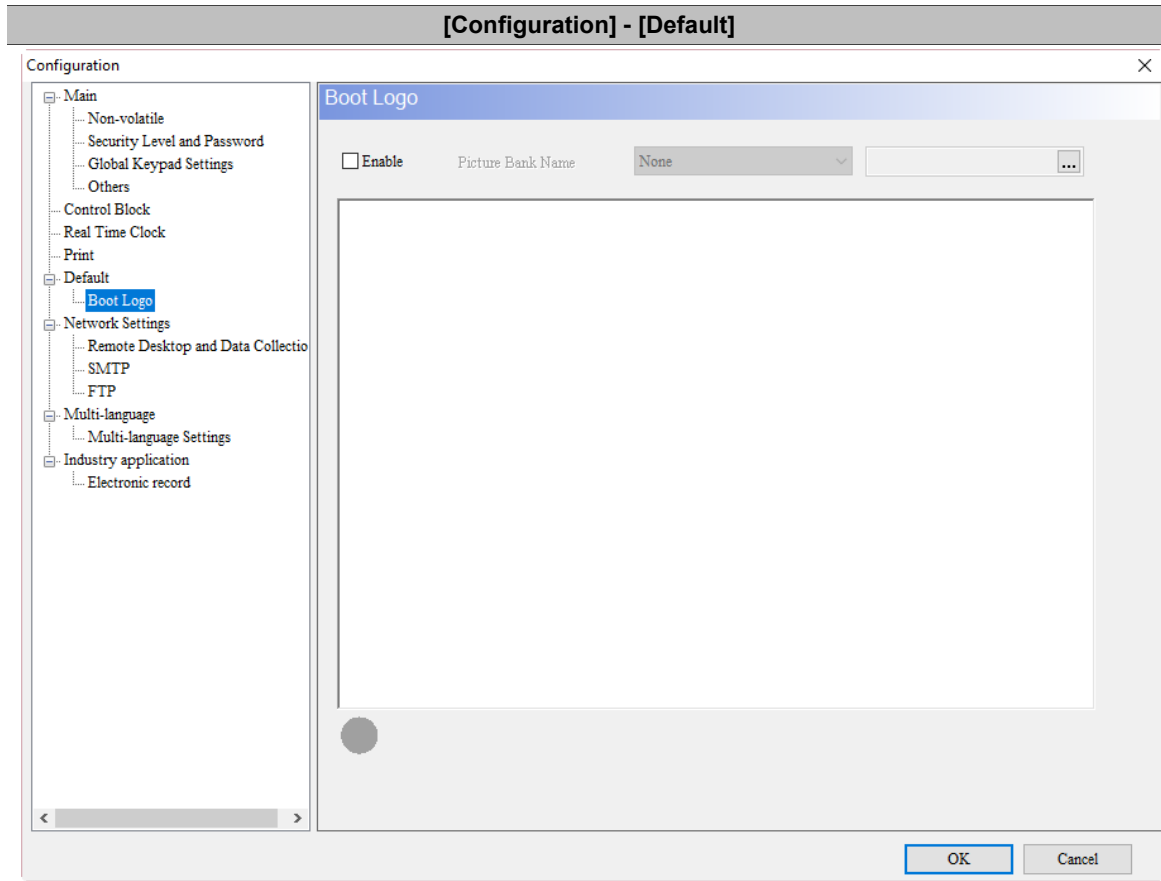
[Configuration]-[Default]		
Element Default Value		
Sequence of updating value while changing screens	Communication, then updating values	<p>The display of the Numeric Entry element lags due to screen switching.</p>  <pre>graph TD; A[Screen 1 D0 = 1] --> B[Switch to Screen 2 and set D0 to 123]; B --> C[Screen 2 Numeric Entry element shortly blinks]; C --> D[When communication completed, display the updated value]; D --> E[Numeric Entry element D0 displays "123"];</pre>

Table 27.1.9 Configuration - Boot Logo



27

Enable



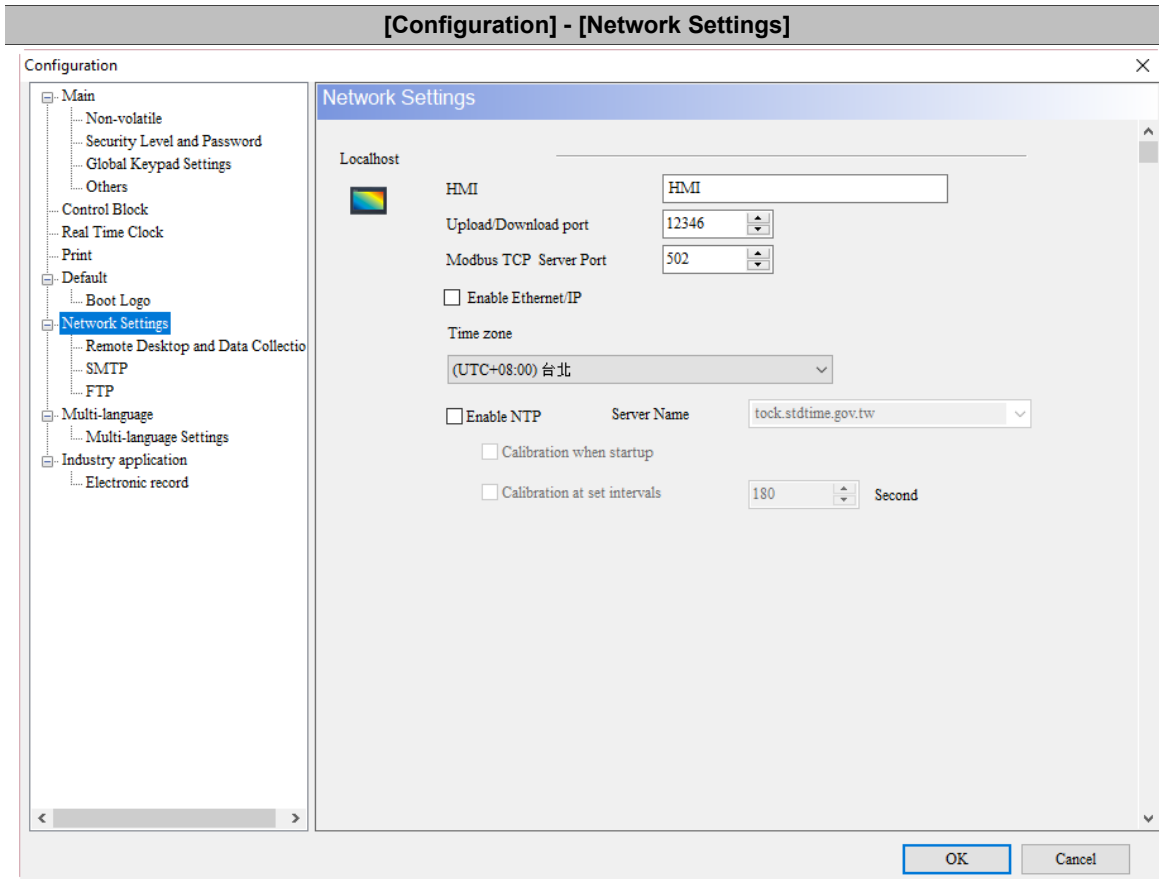
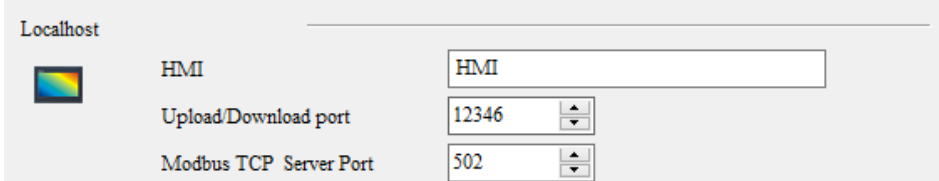
- After you check Enable, you may select the boot screen from the picture bank.
 - To use files not in the picture bank, you can import the image files into the picture bank.
- 
- If you select a GIF image file and the gray circle below appears as , it indicates that the GIF preview is available on the software.
 - When the Boot Screen is enabled, you can replace the HMI boot screen from [Tools] > [Download Boot Screen]. Or you can use Download All Data to download the boot screen.
- Note:
1. After downloading the boot screen, please cycle power on the HMI.
 2. Supported image file formats include BMP, JPG, GIF, ICO, and PNG.
 3. The HMI animated boot screen playing time for GIF image files is 3 seconds.

Table 27.1.10 Configuration - Network Settings

27



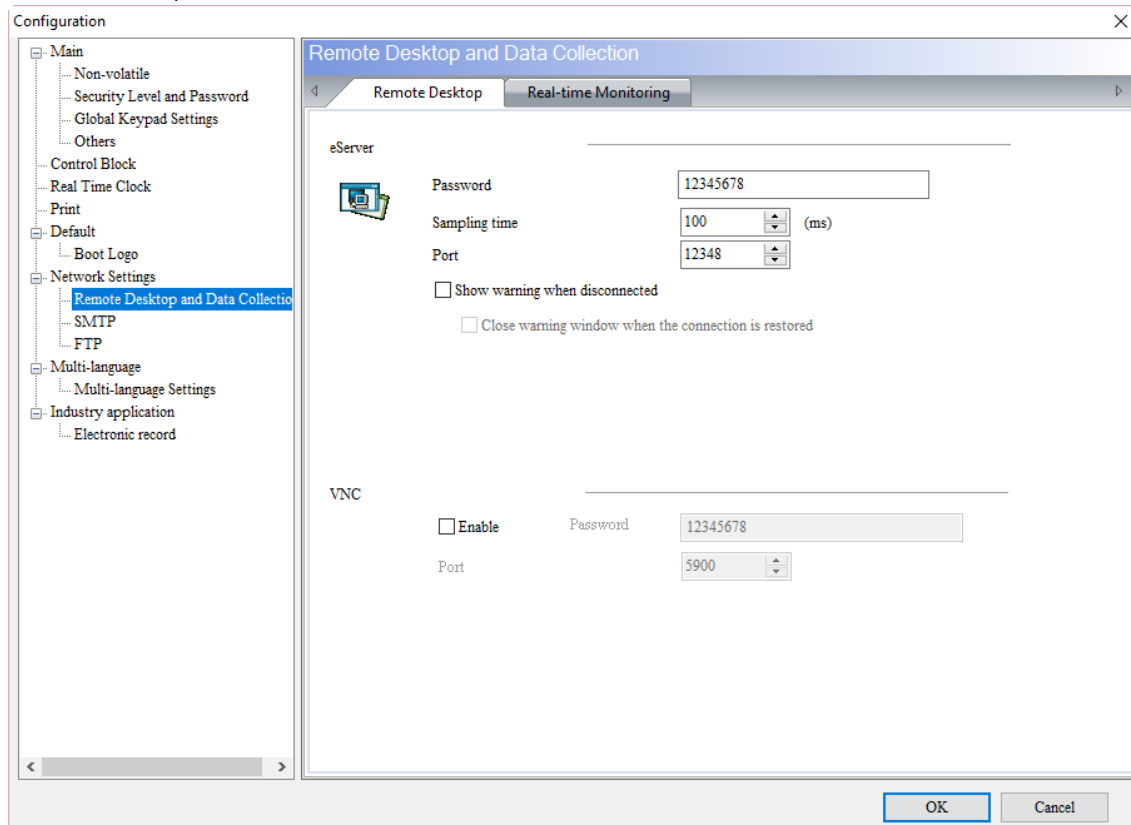
HMI name	You can set the HMI name for identification. If you use remote network monitoring or data sampling, you can easily identify which HMI is being monitored or accessed by the name.	
Upload/Download Port	<ul style="list-style-type: none"> The communication port is a specified connection address that allows programs on different computers to communicate. There are 65,536 ports, and some specific ports are reserved for specific programs. The default Upload/Download Port of the HMI is 12346. 	
Modbus TCP Server Port	<ul style="list-style-type: none"> The default Port of Modbus TCP Server is 502. This port must be consistent with that of the Modbus TCP/IP controller.  <ul style="list-style-type: none"> You can also customize the port numbers, but the settings must be the same. If the HMI is communicating with Modbus software on the PC, please change the port here instead of changing the port of the controller by going to [Options] > [Communication Settings] > [Ethernet1] > [Device]. 	
Enable Ethernet IP	<ul style="list-style-type: none"> This function is not enabled by default. When it is enabled, the other controllers can search for the HMI under the Ethernet IP protocol. Whether it is enabled or not does not affect the Ethernet IP function in communication parameters. 	
Time Zone	You can choose the time according to the time zone of the HMI.	
NTP	Enable NTP	<ul style="list-style-type: none"> After it is checked, the HMI can correct its time according to the network time. If you want to enable NTP, make sure the network is unobstructed.
	Server Name	Users can select the server provided in the software, or enter the name of the local NTP server.
	Calibration when startup	If it is checked, the HMI corrects its time when booting.

	Calibration at set intervals	<ul style="list-style-type: none"> After it is checked, you need to set the time in the unit of second. The time calibration starts after the HMI enters the boot screen with the time you set. The time is 180 seconds by default, with a minimum of 10 seconds and a maximum of 99,999 seconds.
--	------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Table 27.1.11 Configuration - Remote Desktop and Data Collection

[Configuration] - [Network Settings]

Remote Desktop

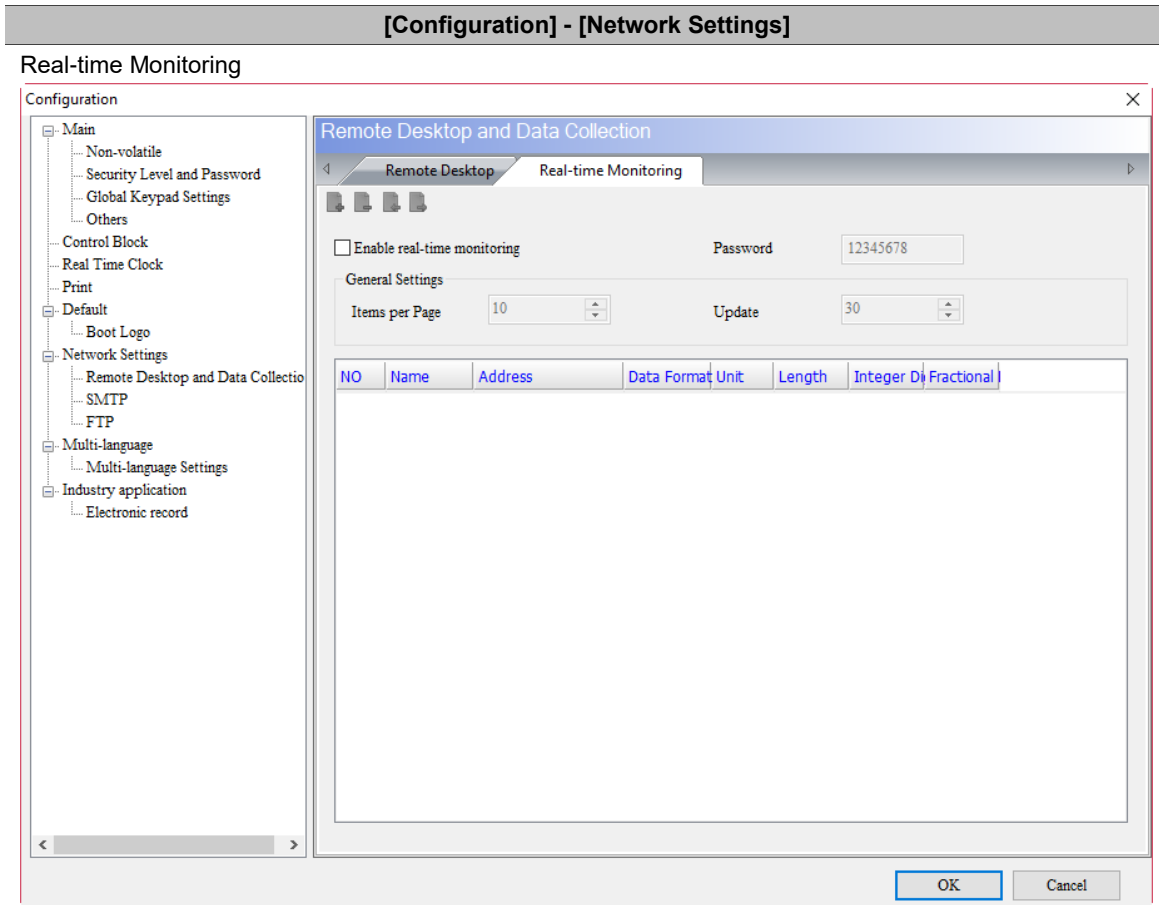


eServer

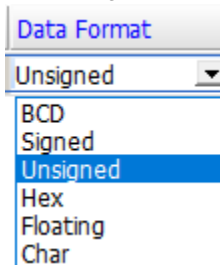
	Enable	<p>Check Enable to set the Password, Sampling time, Port and [Show warning when disconnected].</p>
Password		<ul style="list-style-type: none"> You can change the password. The default is 12345678. After eServer and eRemote are executed, you need to enter the password to monitor or access the data.
Sampling time		<p>This is the frequency the eServer and eRemote execute sampling. The range is 100 - 5000 ms, and default is 100 ms.</p>

27

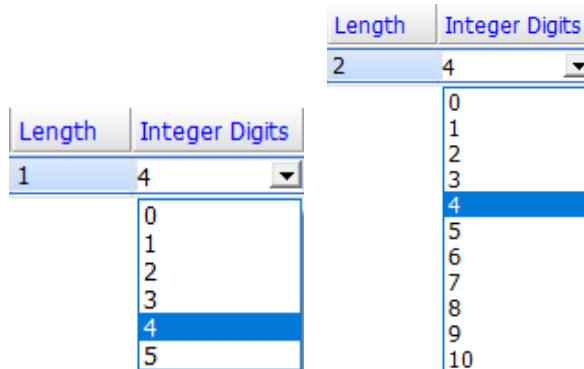
[Configuration] - [Network Settings]	
Port	The connection port of eServer and eRemote is set to 12348. This Port of eServer is different from the HMI Upload/Download Port; ports are different for different programs.
Show warning when disconnected	<ul style="list-style-type: none"> ■ Check to enable this option. ■ When the HMI and eServer or eRemote are disconnected, the HMI will display the warning message of disconnection.
Close warning window when the connection is restored	<ul style="list-style-type: none"> ■ Check [Close warning window when the connection is restored] to enable this function. ■ If this option is checked, the warning window will not be closed until the connection between the HMI and eServer / eRemote is restored. ■ If this option is not checked, the warning window for disconnection will only pop out once.
VNC	
<ul style="list-style-type: none"> ■ VNC (Virtual Network Computing) is a software that can monitor and operate the HMI remotely. This software can transmit the movement data of the keyboard and mouse and real-time images through the network. ■ To use the VNC on a web page, the browser must support Java installation, or it cannot be enabled. ■ Java versions below 1.7.0_45 (inclusive) are recommended. 	
Enable	Check Enable to remotely monitor and operate the HMI via VNC.
Password	You can change the password. The default is 12345678.
Port	<ul style="list-style-type: none"> ■ The default Port is 5900. If you set the software connection port to 5902, you need to change the Port of VNC to 5902 as well when connecting with the VNC Viewer. ■ Do not use 5800 while setting the software connection port. If you set 5800, the following message will appear to remind you to change the VNC Port after you download the screen to the HMI. <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p style="text-align: center; background-color: #333; color: white; padding: 5px;">The port has been occupied by VNC Http Server. ✕</p> <div style="display: flex; align-items: center; justify-content: center;"> <p style="color: blue; font-weight: bold; font-size: 1.2em;">Please change the setting of VNC Server port!</p> </div> <div style="text-align: right; margin-top: 10px;"> <input type="button" value="OK"/> </div> </div> <ul style="list-style-type: none"> ■ The VNC Viewer provides web page operation, which you can enable the connection by setting the HMI IP Address and the port as 5800 for the browser. If the software link port default is not 5900, please enter 5800 for the connection port when operating with the browser. For example, http://192.168.123.148:5800.



- Network real-time monitoring allows you to write values from the web page to the HMI; or when you write values to the HMI, you can monitor the values from the web page.
- The real-time monitoring interface provides multiple data formats. Supported data formats include BCD, Signed Decimal, Unsigned Decimal, Hex, Floating and Char.



- You can set the read length of each data format to determine whether to read Word or Double Word. When the read length is 1, the integer can be set up to 5 digits, meaning the data format is Word. When the read length is 2, the integer can be set up to 10 digits, meaning the data format is Double Word.



- You can input Word and Bit data for the address and internal memory address and external PLC address are supported.
- To use the Real-time Monitoring, check [Enable real-time monitoring] and set the address in the software. Next, type **http://[HMI IP]/RemoteMon/** in the browser. Then, you can see the following login screen. Enter the network password to log in. Capitalize R and M, otherwise you cannot connect to the

[Configuration] - [Network Settings]

HMI through the web.



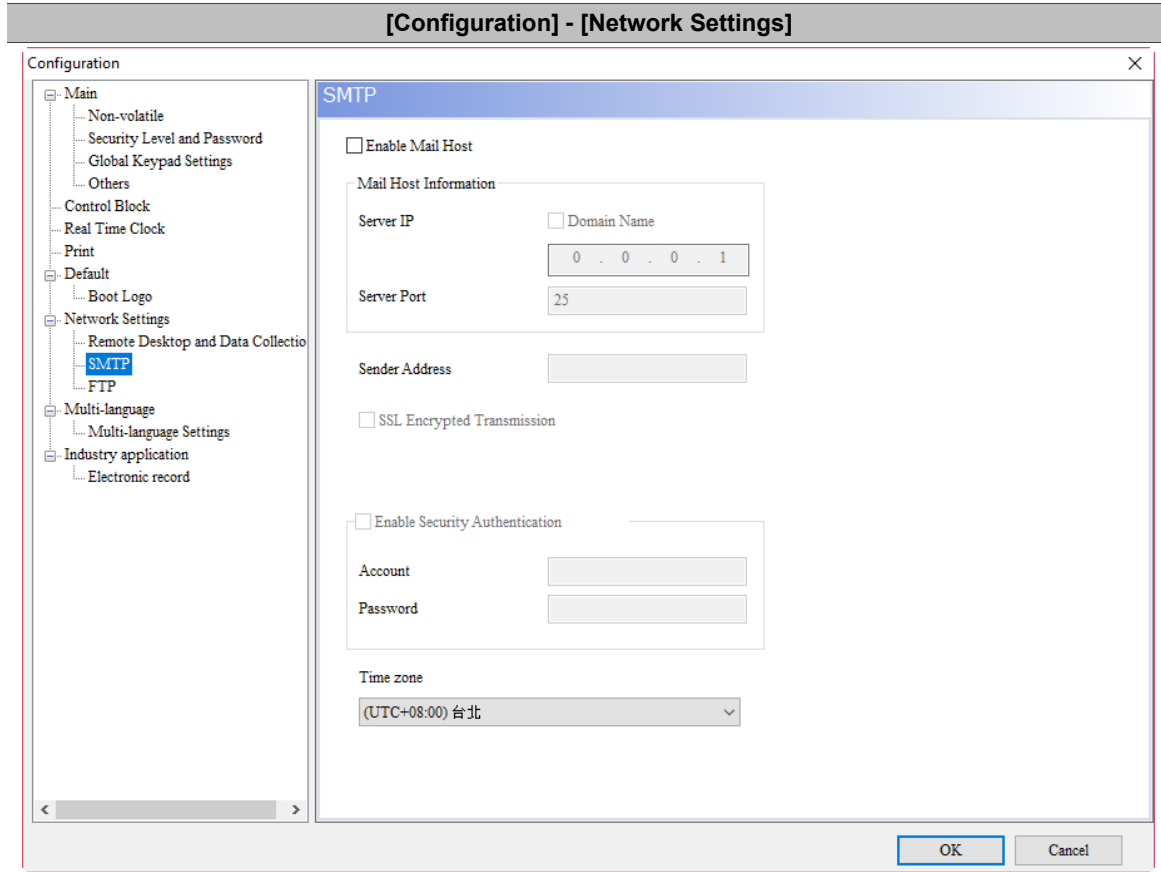
Delta HMI Remote Monitoring

Password:

27

<p>Enable real-time monitoring</p>	<p>Check [Enable real-time monitoring] to add and delete monitoring addresses.</p>																																								
<p>Add monitoring address </p>	<ul style="list-style-type: none"> Click to add a new monitoring address. <table border="1"> <thead> <tr> <th>NO</th> <th>Name</th> <th>Address</th> <th>Data Format</th> <th>Unit</th> <th>Length</th> <th>Integer Digits</th> <th>Fractional</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>None</td> <td>Unsigned</td> <td>Word</td> <td>2</td> <td>4</td> <td>0</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Users can name the address. The name length can be up to 30 characters. <table border="1"> <thead> <tr> <th>NO</th> <th>Name</th> <th>Address</th> <th>Data Format</th> <th>Unit</th> <th>Length</th> <th>Integer Digits</th> <th>Fractional</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Delta</td> <td>\$100</td> <td>Unsigned</td> <td>Word</td> <td>2</td> <td>10</td> <td>0</td> </tr> <tr> <td>2</td> <td>HMI</td> <td>{Link2}1@D100</td> <td>Unsigned</td> <td>Word</td> <td>1</td> <td>5</td> <td>0</td> </tr> </tbody> </table>	NO	Name	Address	Data Format	Unit	Length	Integer Digits	Fractional	1		None	Unsigned	Word	2	4	0	NO	Name	Address	Data Format	Unit	Length	Integer Digits	Fractional	1	Delta	\$100	Unsigned	Word	2	10	0	2	HMI	{Link2}1@D100	Unsigned	Word	1	5	0
NO	Name	Address	Data Format	Unit	Length	Integer Digits	Fractional																																		
1		None	Unsigned	Word	2	4	0																																		
NO	Name	Address	Data Format	Unit	Length	Integer Digits	Fractional																																		
1	Delta	\$100	Unsigned	Word	2	10	0																																		
2	HMI	{Link2}1@D100	Unsigned	Word	1	5	0																																		
<p>Delete monitoring address </p>	<p>Select the number of monitoring address for deletion, then click to delete it.</p>																																								
<p>Import CSV contents </p>	<p>After making changes to the exported CSV file, click to import the monitoring address parameters.</p>																																								
<p>Export CSV contents </p>	<p>Export monitoring address contents to a CSV file.</p> <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Define Name</td> <td>Address</td> <td>Memory</td> <td>F Type</td> <td>Read Coun</td> <td>Integer</td> <td>Fraction</td> </tr> <tr> <td>2</td> <td>Delta</td> <td>\$100</td> <td>Unsigned</td> <td>Word</td> <td>2</td> <td>10</td> <td>0</td> </tr> <tr> <td>3</td> <td>HMI</td> <td>{Link2}1@D100</td> <td>Unsigned</td> <td>Word</td> <td>1</td> <td>5</td> <td>0</td> </tr> </tbody> </table>		A	B	C	D	E	F	G	1	Define Name	Address	Memory	F Type	Read Coun	Integer	Fraction	2	Delta	\$100	Unsigned	Word	2	10	0	3	HMI	{Link2}1@D100	Unsigned	Word	1	5	0								
	A	B	C	D	E	F	G																																		
1	Define Name	Address	Memory	F Type	Read Coun	Integer	Fraction																																		
2	Delta	\$100	Unsigned	Word	2	10	0																																		
3	HMI	{Link2}1@D100	Unsigned	Word	1	5	0																																		
<p>Password</p>	<ul style="list-style-type: none"> The default password is 12345678. This password is required after entering the link address through web page. 																																								
<p>Items per page</p>	<ul style="list-style-type: none"> You can set the number of addresses to be monitored per page. The default setting is 10, the minimum is 1 and maximum 20. 																																								
<p>Update frequency (second)</p>	<p>It refers to the update frequency of screens after values are changed. The default setting is 30 seconds, the minimum is 1 second and maximum 30 seconds.</p>																																								

Table 27.1.12 Configuration - SMTP

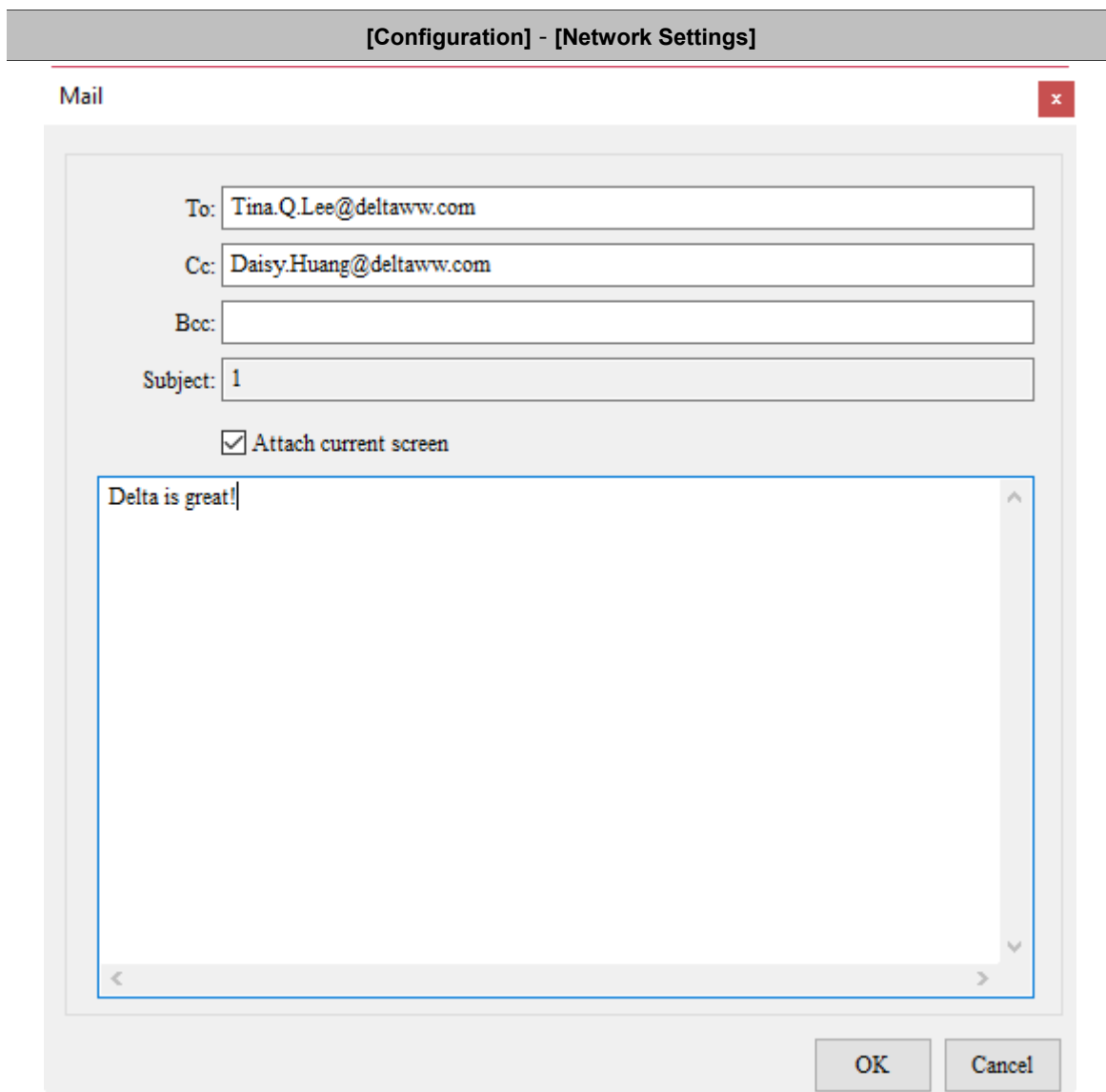


27

- SMTP is short for Simple Mail Transport Protocol. This server is for sending messages. SMTP is a set of rules for sending mail from a source address to a destination address, and it controls the way mails are transferred.
- DOPSoft provides the SMTP function to notify you with an e-mail when an alarm occurs.
- After setting the SMTP parameters, you must also go to [Options] > [Alarm Settings] to fill in the recipient email and other alarm information in the Mail column.

No.	Message Content	Category	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1*	1	0	On	None	RGB(0, 0, 0)	None	

27



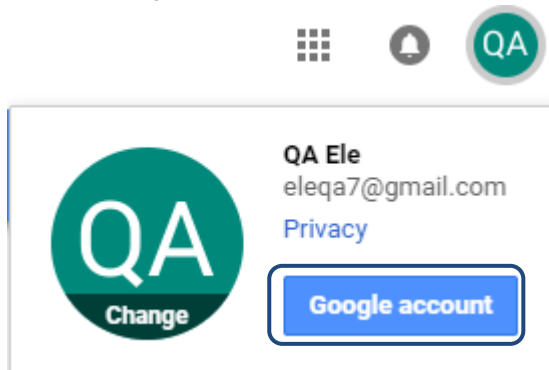
To enable SMTP, please check Enable Mail Host, then you can set the Server IP address, Server Port, and security authentication of the account and password.

<p>Server IP</p>	<ul style="list-style-type: none"> ■ This IP address is the Mail Server IP created by the user. Please set up Mail Server environment or search for free Mail Server on the Internet before using SMTP. ■ Other than entering the IP address, you can also check the Domain Name function to enter the domain name. <p><input checked="" type="checkbox"/> Enable Mail Host</p> <div style="border: 1px solid gray; padding: 5px; margin: 5px 0;"> <p>Mail Host Information</p> <p>Server IP <input type="text" value=""/></p> <p style="text-align: right;"><input checked="" type="checkbox"/> Domain Name</p> <p style="text-align: right;"><input type="text" value="smtp.gmail.com"/></p> </div>
<p>Server Port</p>	<p>The default server port is 25 which is the general SMTP communication port.</p>
<p>Sender Address</p>	<p>Please enter the sender's email address.</p>
<p>SSL Encrypted Transmission</p>	<ul style="list-style-type: none"> ■ SSL is short for Secure Sockets Layer which provides secure transmission over the Internet. SSL was first proposed by Netscape with the goal of ensuring the confidentiality and integrity of the communication between two applications, as well as to verify the identity of the server. ■ To use SSL encryption, your e-mail must also support this feature.

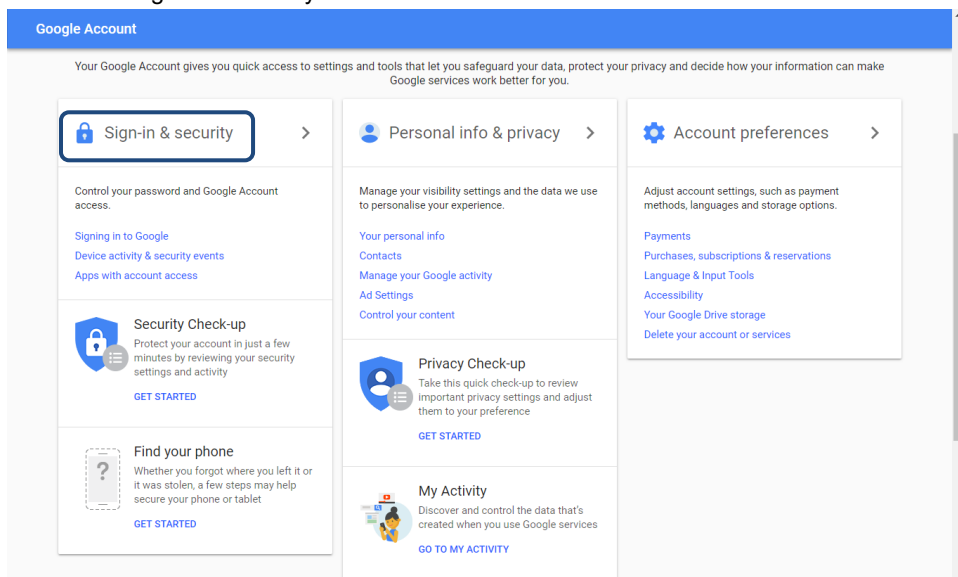
[Configuration] - [Network Settings]

■ Gmail itself also requires SSL encryption. To send a message using Gmail, you need to make the following settings.

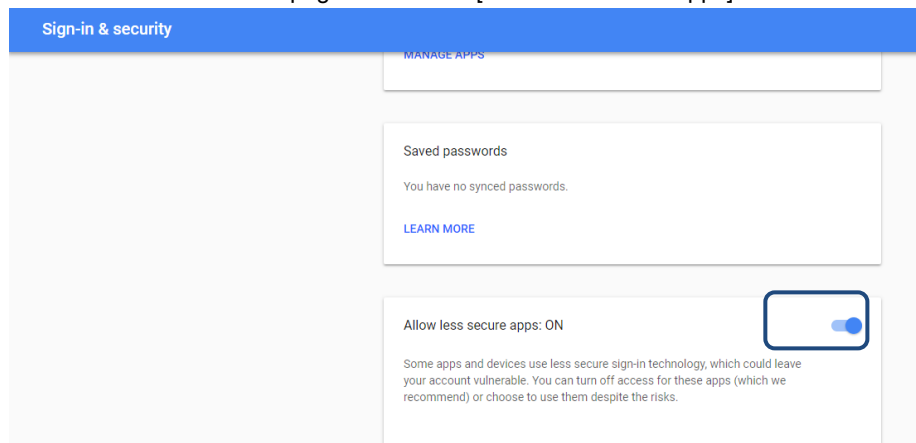
1. Login Gmail and select Google account.



2. Select Sign-in & security



3. Go to the bottom of the page and enable [Allow less secure apps].



■ After finishing the above 3 settings, you can use the Gmail to receive alarm messages.

27

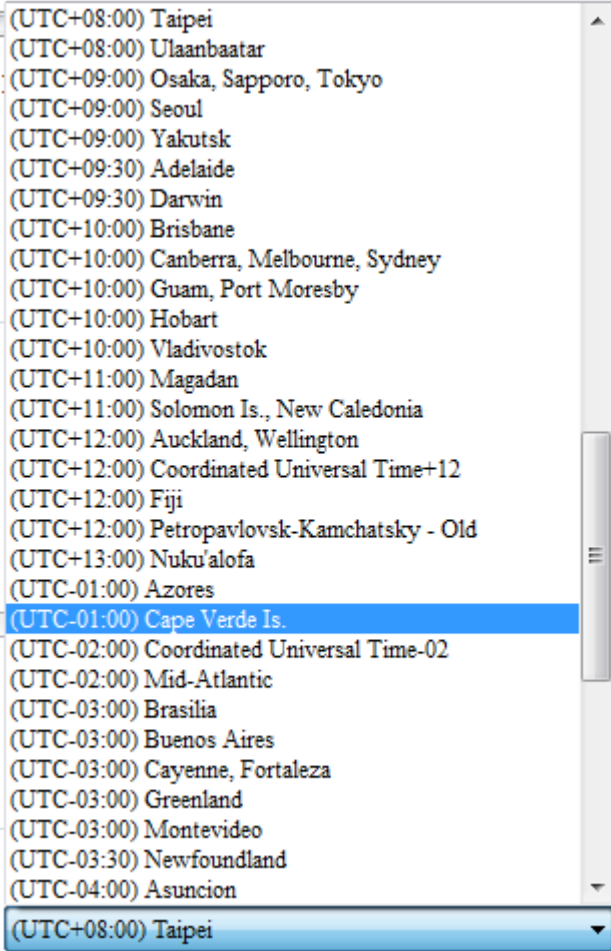
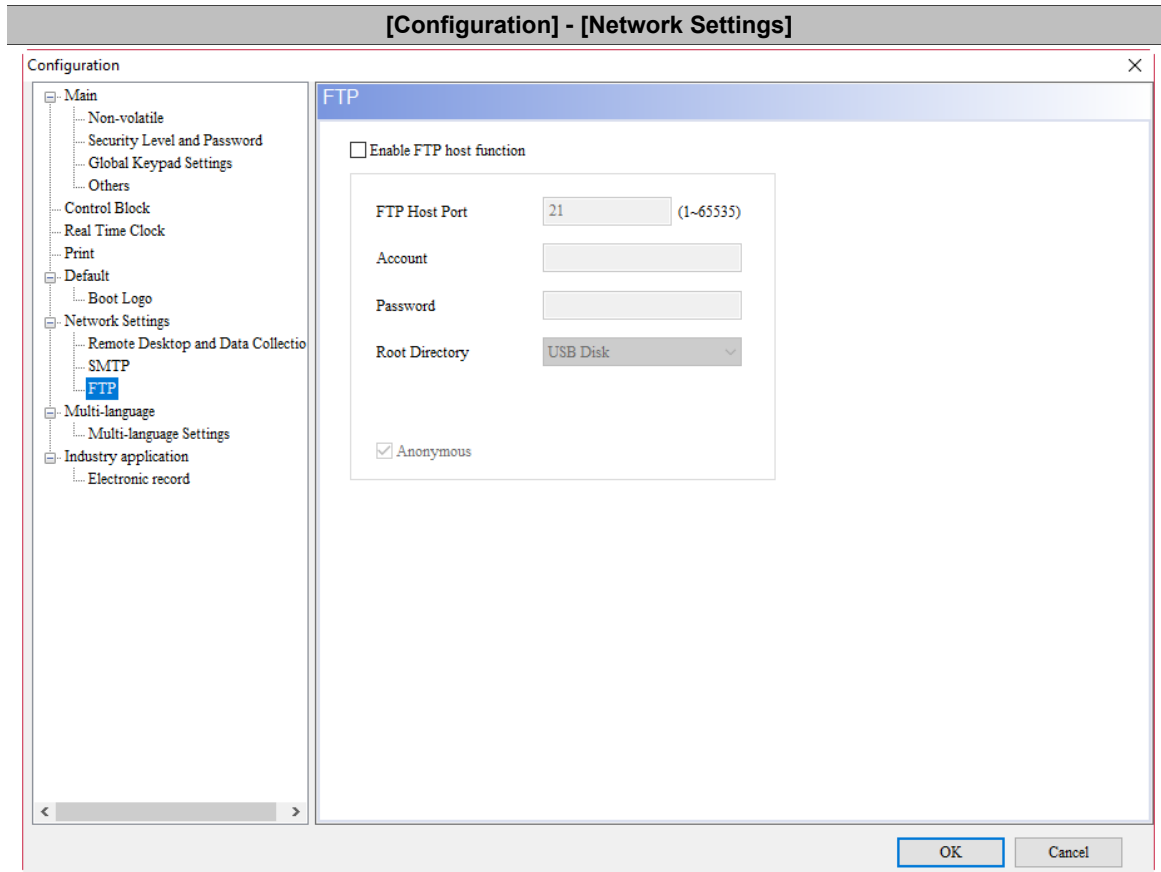
[Configuration] - [Network Settings]	
Enable Security Authentication	<ul style="list-style-type: none"> ■ Before enabling the security authentication function, you must check Enable Mail Host first to set the account and password. ■ If you have set the authentication of the account and password when setting up the SMTP server, you need to check this option.
Account	<ul style="list-style-type: none"> ■ The account and password are based on the account and password required by the SMTP server. When you set up the SMTP Mail Server, you must first enter a set of account and password if you checked the [Enable Security Authentication] option. This set of account and password is used to check whether the recipient is a legitimate backend email user. This avoids unattended emails taking up spaces in the system and creating potential security issues. ■ Please note that the format of the account will be different because of the different formats required by each SMTP Mail Server. Please ask your MIS regarding the guidelines.
Password	
Time Zone	<p>The HMI provides a time zone feature that allows you to select the local time zone so that the HMI does not have time differences between places and the time it sends the alarm message is also more precise.</p>  <p>The screenshot shows a dropdown menu with the following items (from top to bottom):</p> <ul style="list-style-type: none"> (UTC+08:00) Taipei (UTC+08:00) Ulaanbaatar (UTC+09:00) Osaka, Sapporo, Tokyo (UTC+09:00) Seoul (UTC+09:00) Yakutsk (UTC+09:30) Adelaide (UTC+09:30) Darwin (UTC+10:00) Brisbane (UTC+10:00) Canberra, Melbourne, Sydney (UTC+10:00) Guam, Port Moresby (UTC+10:00) Hobart (UTC+10:00) Vladivostok (UTC+11:00) Magadan (UTC+11:00) Solomon Is., New Caledonia (UTC+12:00) Auckland, Wellington (UTC+12:00) Coordinated Universal Time+12 (UTC+12:00) Fiji (UTC+12:00) Petropavlovsk-Kamchatsky - Old (UTC+13:00) Nuku'alofa (UTC-01:00) Azores (UTC-01:00) Cape Verde Is. (UTC-02:00) Coordinated Universal Time-02 (UTC-02:00) Mid-Atlantic (UTC-03:00) Brasilia (UTC-03:00) Buenos Aires (UTC-03:00) Cayenne, Fortaleza (UTC-03:00) Greenland (UTC-03:00) Montevideo (UTC-03:30) Newfoundland (UTC-04:00) Asuncion (UTC+08:00) Taipei

Table 27.1.13 Configuration - FTP



27

- The FTP Server function allows you to download the alarms, history data, recipes, and operation logs saved in the USB Disk or SD Card through the Internet to read on the PC; you can also upload the files in the PC to the USB Disk or SD Card.

FTP rules	Description	
Supported HMI	Net-based HMI	
Supported connections	File transfer software	
	Windows Explorer	
	DOS Command Line	
Connection limit	Allows 3 FTP clients to connect at the same time	
	Disconnect automatically while being idle for more than 90 seconds	
Login method	Anonymous login	Unable to add directories
		Unable to upload files
		Unable to download files
		Unable to delete files
	Account login	Can change file names
		Can add directories
		Can upload files
		Can download files
	Can delete files	
	Can change file names	

27

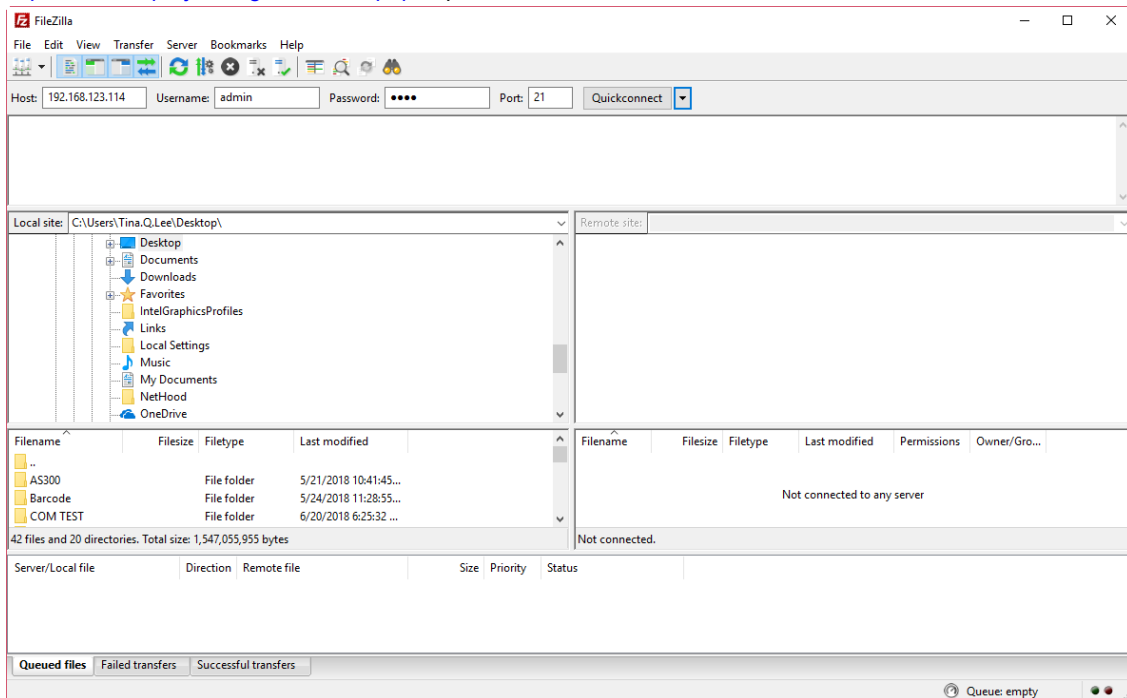
[Configuration] - [Network Settings]	
FTP rules	Description
File transfer rules	Unlimited traffic
	Support resume download
	Unlimited transfer file size
	Maximum file name length is 260 bytes
	Can change file names
	Support Chinese file names
	Encryption is not supported
	Support active mode / passive mode connection
When the FTP is transferring files, you can access the system directory	

■ The FTP supports three connection methods. Please refer to the following for more information.

1. File transfer software

It is necessary to use an FTP client software to upload or download files from the FTP Server provided by the HMI, or use the Windows Explorer or DOS Command line to connect to the FTP Server. The file transfer software in this example is FileZilla. This is a free software which you can download from:

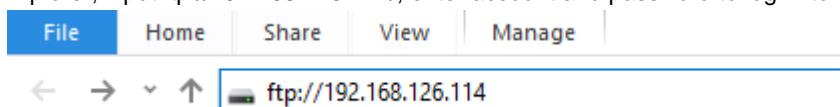
<https://filezilla-project.org/download.php>. Open FileZilla after installation.



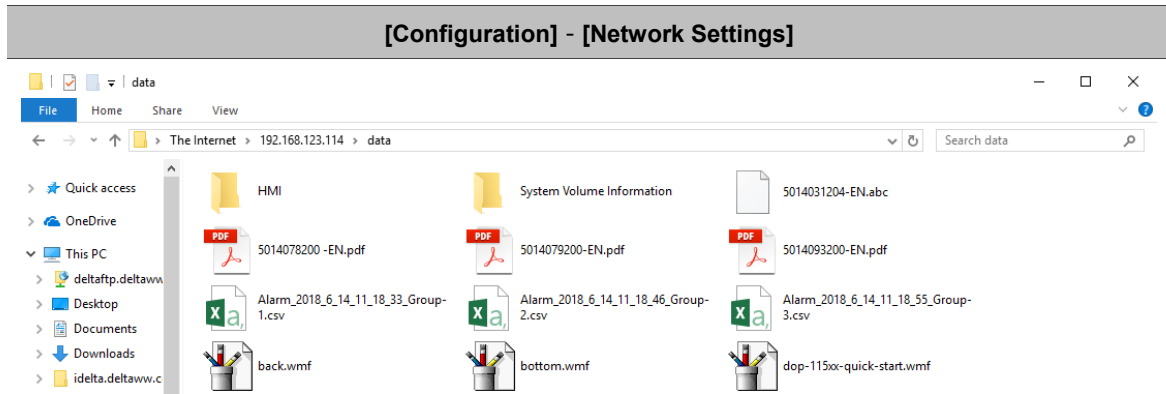
Name	Action description
Host	Enter the HMI IP address. The IP address in this example is 192.168.123.114.
Username	Enter the same username as the software setting, which is admin.
Password	Enter the same password as the software setting, which is 1234.
Port	Enter the same port as the software setting, which is 21.
Quickconnect	Before executing this button, please make sure the above four settings are complete.

2. Windows Explorer

Please open Explorer, input ftp://192.168.123.114/, enter account and password to log in to the FTP.

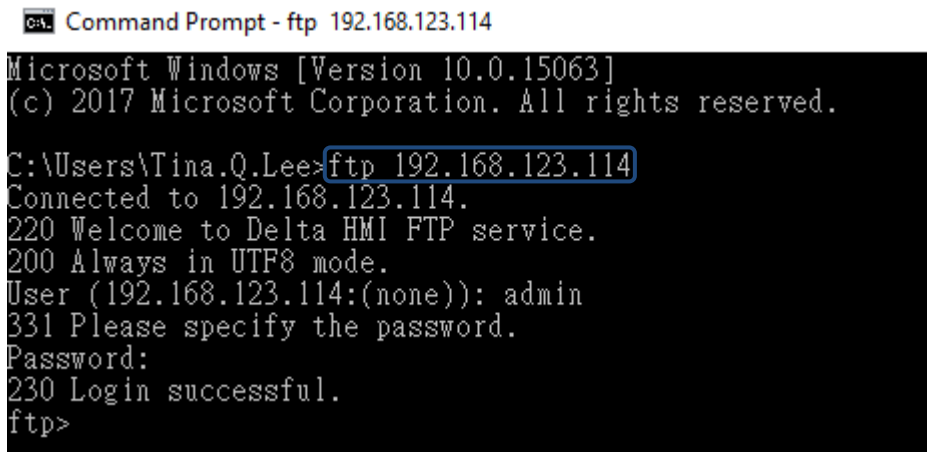


Once you are logged in, you can see all the files in the USB Disk.

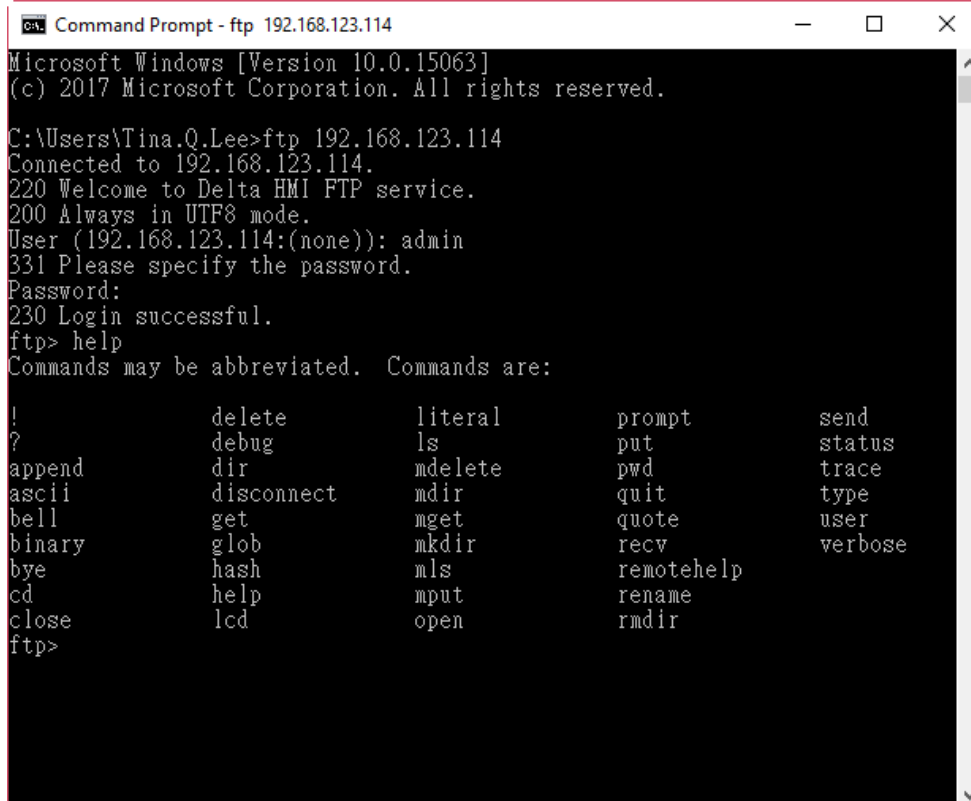


3. DOS Command Line

Enter ftp 192.168.123.114 under the command prompt, and enter user account “admin” and password “1234” to connect to the FTP.



In the ftp command, you can enter “help” to see the supported commands.



[Configuration] - [Network Settings]

Enter "dir" command to see the list of all the files currently in the USB Disk.

27

```

Command Prompt - ftp 192.168.123.114
ftp> help
Commands may be abbreviated.  Commands are:
!                delete          literal        prompt         send
?                debug           ls             put            status
append          dir             mdelete       pwd            trace
ascii          disconnect     mdir          quit           type
bell           get            mget          quote          user
binary         glob           mkdir         recv          verbose
bye            hash           mls           remotehelp
cd             help           mput          rename
close         lcd            open          rmdir
ftp> dir
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rwxrwxrwx  1 0      0      481517 Jan 09  2018 5014031204-EN.abc
-rwxrwxrwx  1 0      0      511544 May 28  2018 5014078200 -EN.pdf
-rwxrwxrwx  1 0      0      550702 Mar 15  2018 5014079200-EN.pdf
-rwxrwxrwx  1 0      0      317449 Apr 09  2018 5014093200-EN.pdf
-rwxrwxrwx  1 0      0        1728 Jun 14  2018 Alarm_2018_6_14_11_18_33_Group-1.csv
-rwxrwxrwx  1 0      0        1728 Jun 14  2018 Alarm_2018_6_14_11_18_46_Group-2.csv
-rwxrwxrwx  1 0      0        1728 Jun 14  2018 Alarm_2018_6_14_11_18_55_Group-3.csv
drwxrwxrwx  3 0      0        4096 May 23  2018 HMI
drwxrwxrwx  2 0      0        4096 May 23  2018 System Volume Information
-rwxrwxrwx  1 0      0      80922 May 31  2018 back.wmf
-rwxrwxrwx  1 0      0      29074 May 31  2018 bottom.wmf
-rwxrwxrwx  1 0      0     123314 May 31  2018 dop-115xx-quick-start.wmf
226 Directory send OK.
ftp: 947 bytes received in 0.03Seconds 33.82Kbytes/sec.
ftp>

```

If you want to download files from the USB Disk or SD Card, enter "get" command. If you want to upload files to the USB Disk or SD Card from the PC, enter "put" command.

[Configuration] - [Network Settings]

The properties for the software interface are introduced below.

Enable FTP host function

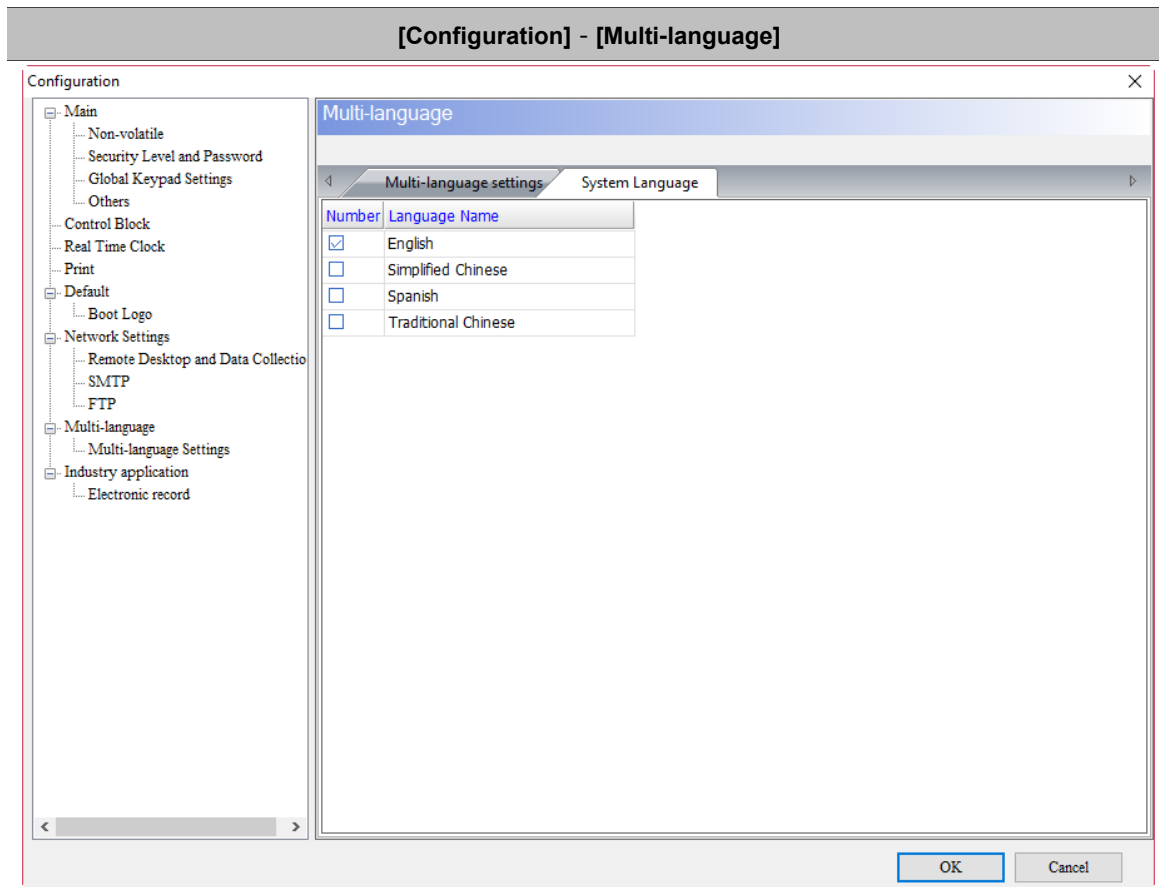
FTP Host Port	<input type="text" value="21"/>	(1~65535)
Account	<input type="text" value="admin"/>	
Password	<input type="text" value="1234"/>	
Root Directory	<input type="text" value="USB Disk"/>	▼
<input checked="" type="checkbox"/> Anonymous		

27

Enable FTP host function	Check this option to use the FTP function.
FTP Host Port	The FTP Host Port default is 21.
Account	You can enter the account name you want to use.
Password	You can enter the password you want to use.
Root Directory	The root directory is the location where the HMI files are stored. The default is USB Disk. You can also select SD Card as the storage location.
Anonymous	<ul style="list-style-type: none"> ■ If you check this option, you can access the FTP without logging in with an account. ■ If you access the FTP anonymously, you cannot upload / download files, delete files, or add directories.

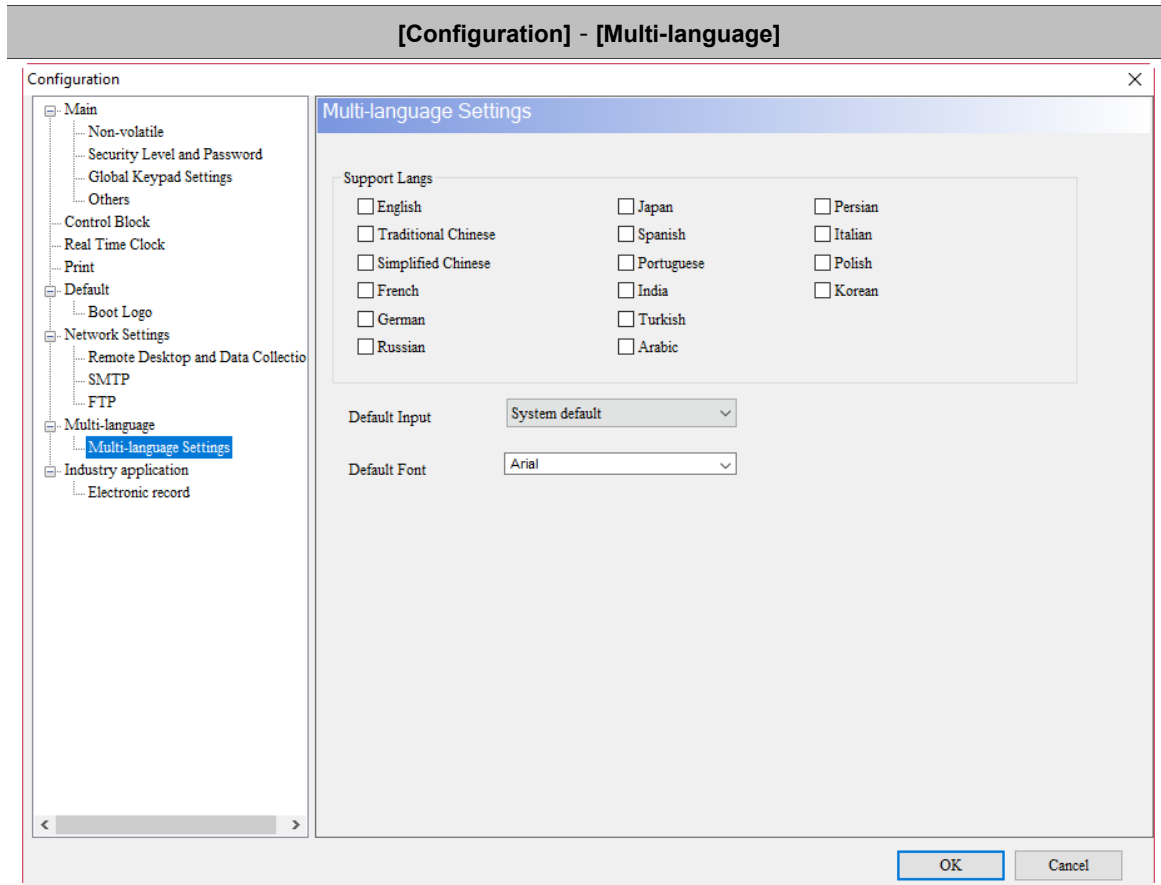
Table 27.1.14 Configuration - Multi-language

27



- The system language refers to the language displayed in the system directory screen, the error message and warning message displayed by the HMI.
- You can set the system language to Traditional Chinese, Spanish, Simplified Chinese, and English.

Table 27.1.15 Configuration - Multi-language Settings



27

- The multi-language input function supports up to 15 languages and you can choose the language for editing texts.
- Go to [Options] > [Configuration] > [Multi-language Settings] to check the preferred language. Then, with the Multi-language Input element in the Entry Element, you can use the multi-language input function.
- Multi-language Input function does not support online and offline simulations.
- The multi-language input function is only available on DOP-103WQ, DOP-107WV and DOP-110WS models.
- Please refer to chapter 13 for instructions on multi-language input of elements.

27.2 Communication Settings

Users can set related communication parameters of COM 1, COM 2, COM 3, and Ethernet through [Options] > [Communication Settings].

27

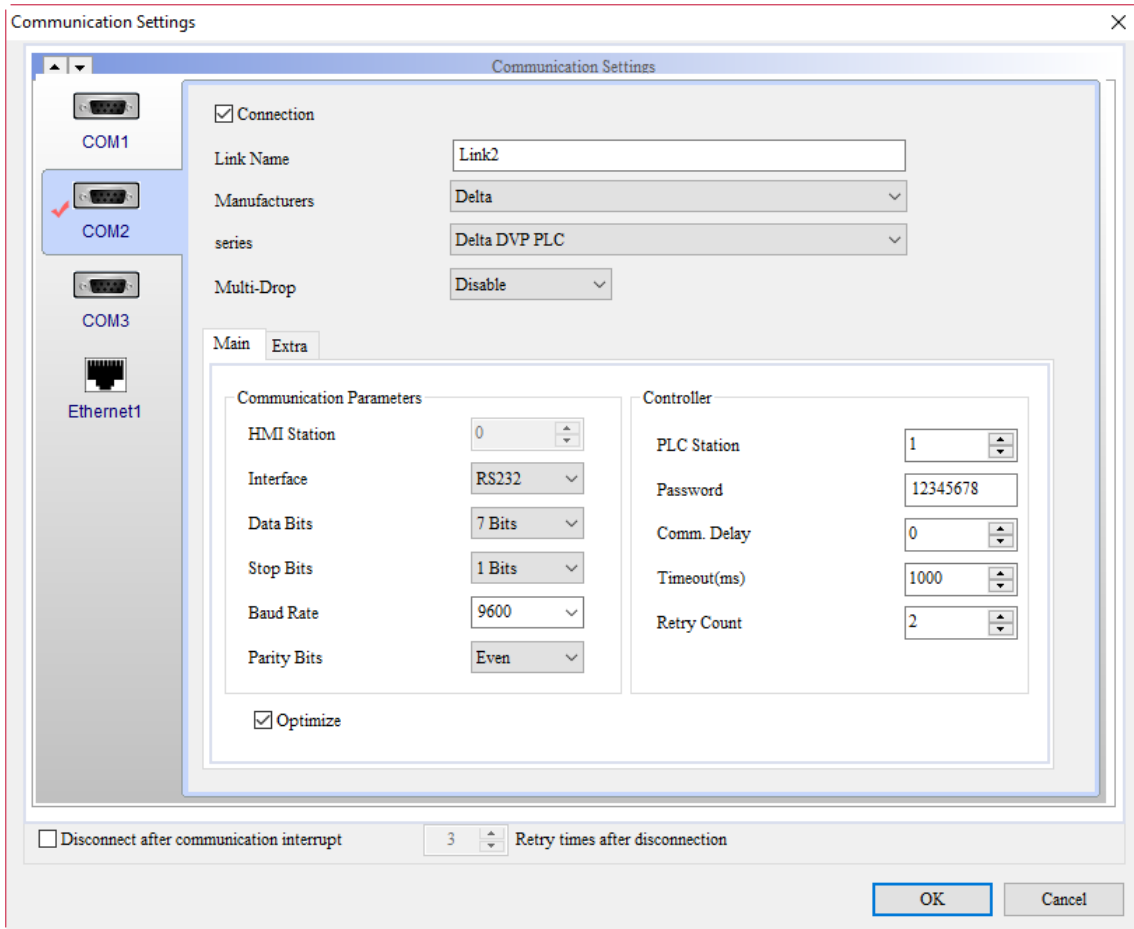
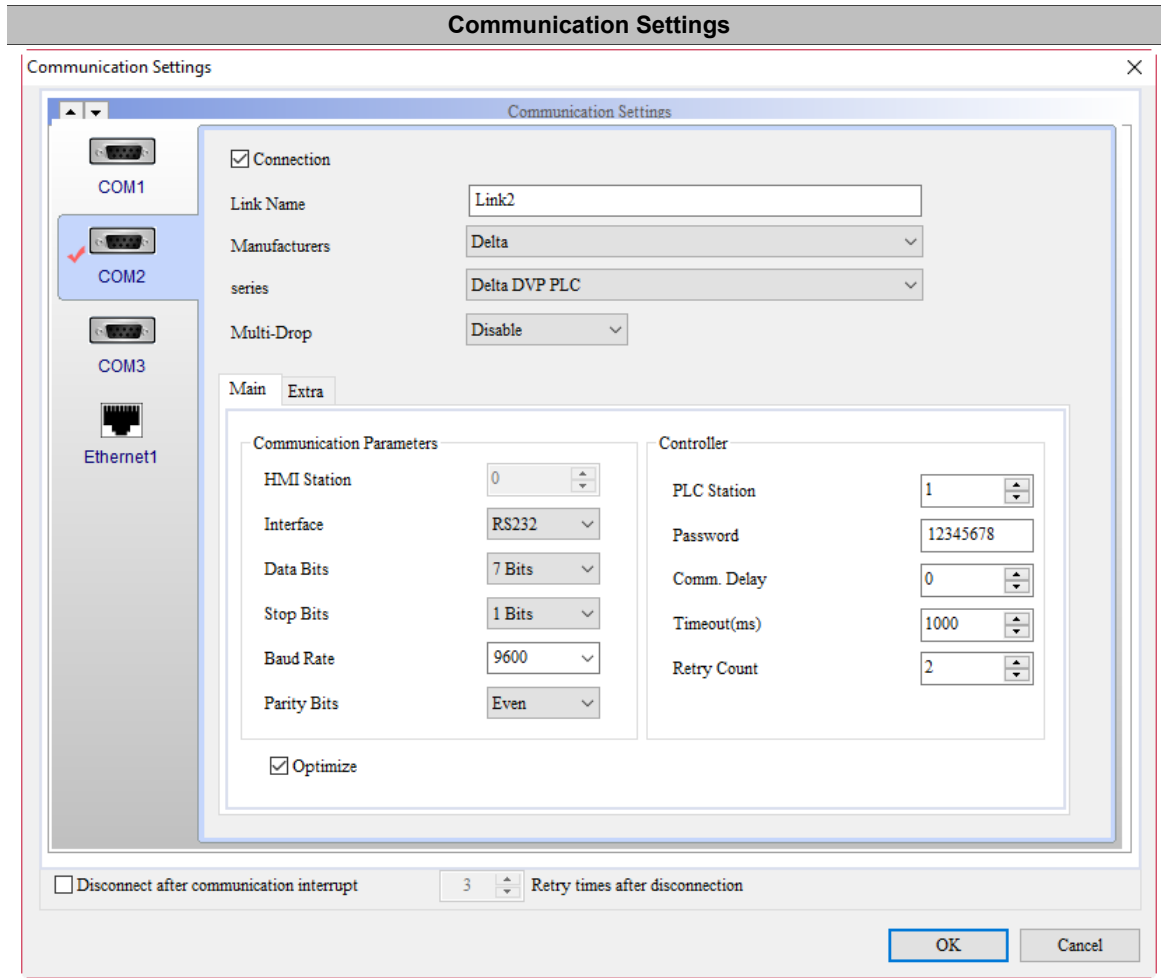


Figure 27.2.1 Communication Settings

Communication parameters of each COM port and controller settings as well as Ethernet parameter settings are described below.

Table 27.2.1 Communication Settings

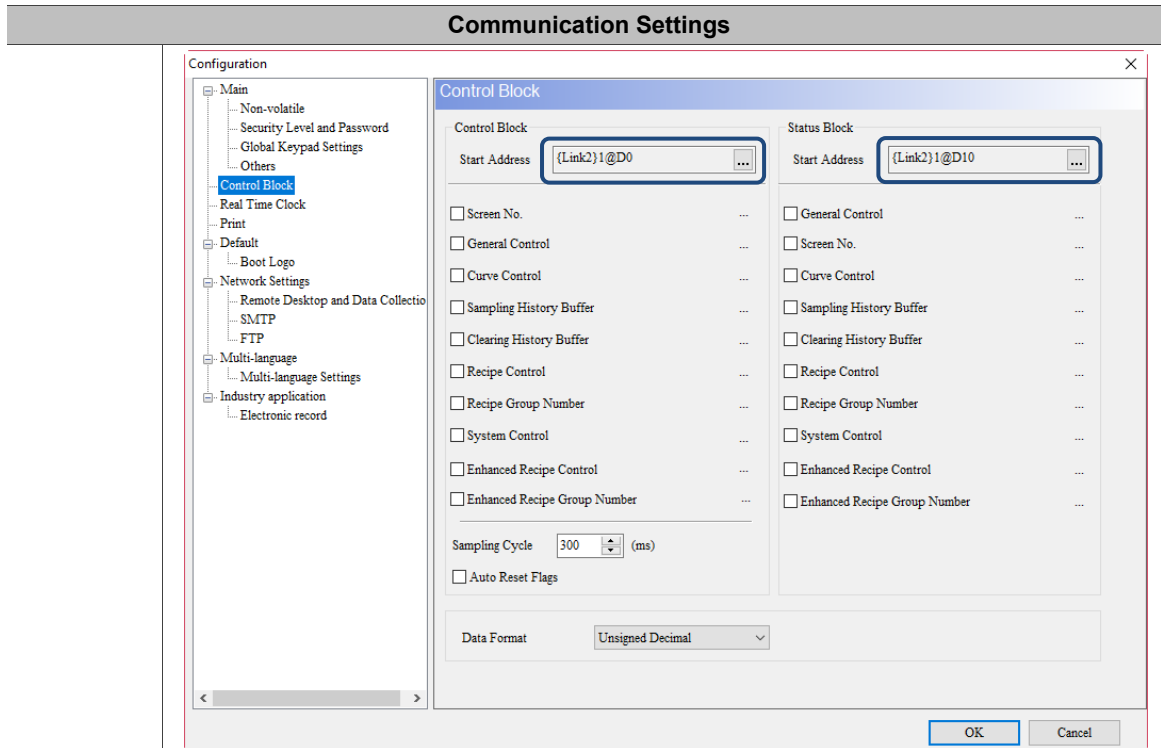


27

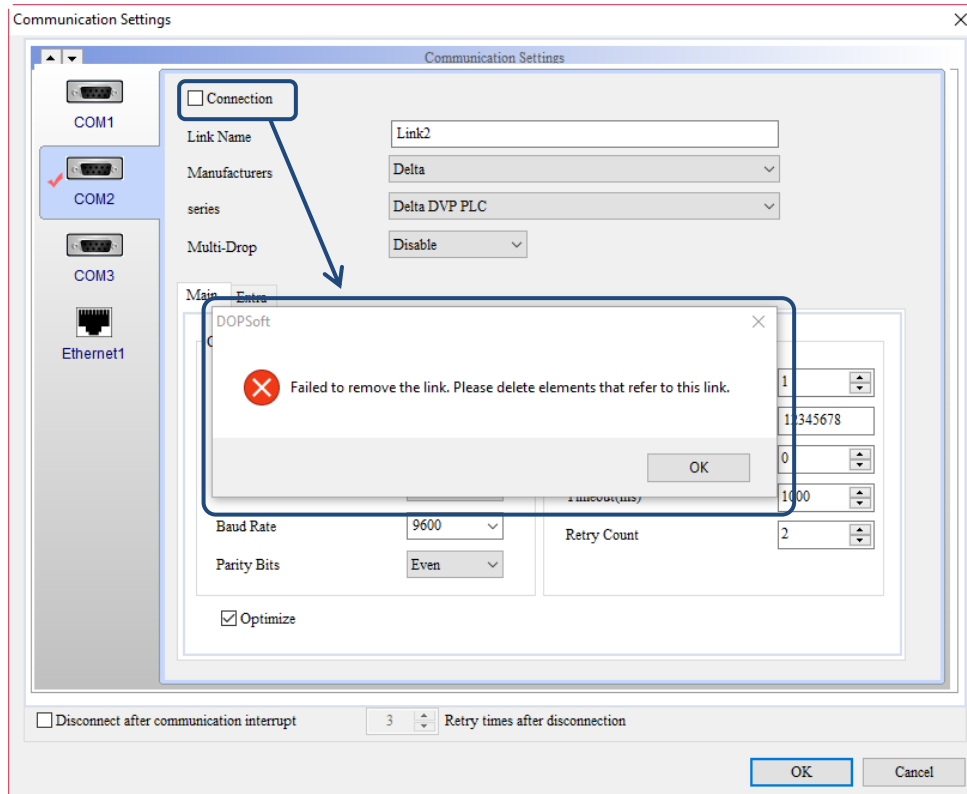
Communication parameter of COM 1, COM 2 and COM 3 and controller settings are detailed as follows.

Connection	<ul style="list-style-type: none"> ■ If you check Connection, it means the communication of COM port is enabled. You can select the COM port as required, such as COM 1, COM 2, and COM 3. ■ You must check Connection before you set the Link Name and Controller (PLC) to be used. Please refer to the connection manual for the selection and use of the controller. ■ If Connection is unchecked, the software will detect that the current Link2 has been used by the Control Block and Status Block, so it prompts a warning message to remind users that the link cannot be removed because there are elements referring to Link2.
------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

27




Connection



- Users can adopt the following methods to cancel this Link2 of COM 2.
 1. Add new controller for COM 3
 1. Add a new Link for COM 3 and click **OK** to complete the setting.
 2. Next, uncheck Connection for COM 2 and a message of deletion failure will pop up. Click **OK** to enter the Address List to change the address of the Link. Select the link name (Link3) to be converted to, and then click **Change**.

Communication Settings

DOPSoft ✕

 Failed to remove the link. Please delete elements that refer to this link.

OK

Address List ✕

Changing Link
Link2 to Link3 Change

Word devices

Link2	Link3
X	DM-
Y	CM-
M	TM-
S	EM-
T	FM-
C	Z-
D	ZD-

Bit devices

Link2	Link3
X	CR-
Y	MR-
M	LR-
S	R-
T	CTC-
C	T-
D	C-

Address	Description
{Link2}1@D0	Control area
{Link2}1@D10	Status Block
Link2	RTC Start Address

Connection

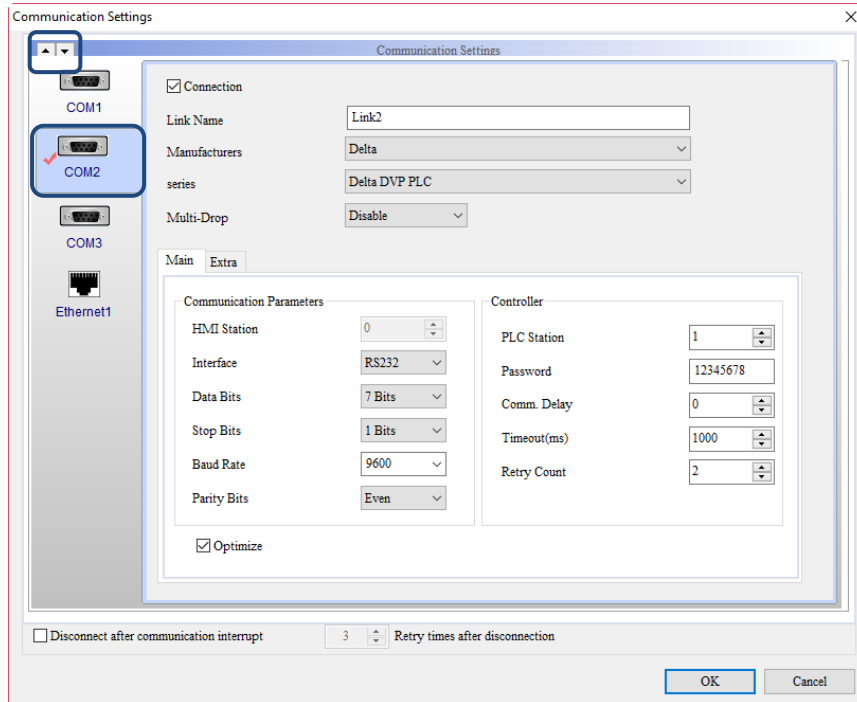
According to the Word devices table, Link2 on the left is the controller register address to be cancelled, and Link3 on the right is the controller register address to be changed to. You can change the address in accordance with the default order or specify the address to change.

Communication Settings

- II. Move Link2 to COM 1 by using the up and down arrows at the upper left corner. Next, go to COM 2 to check if the Link name has been changed to Link1. The arrows allow you to directly move the Link to the other communication ports.

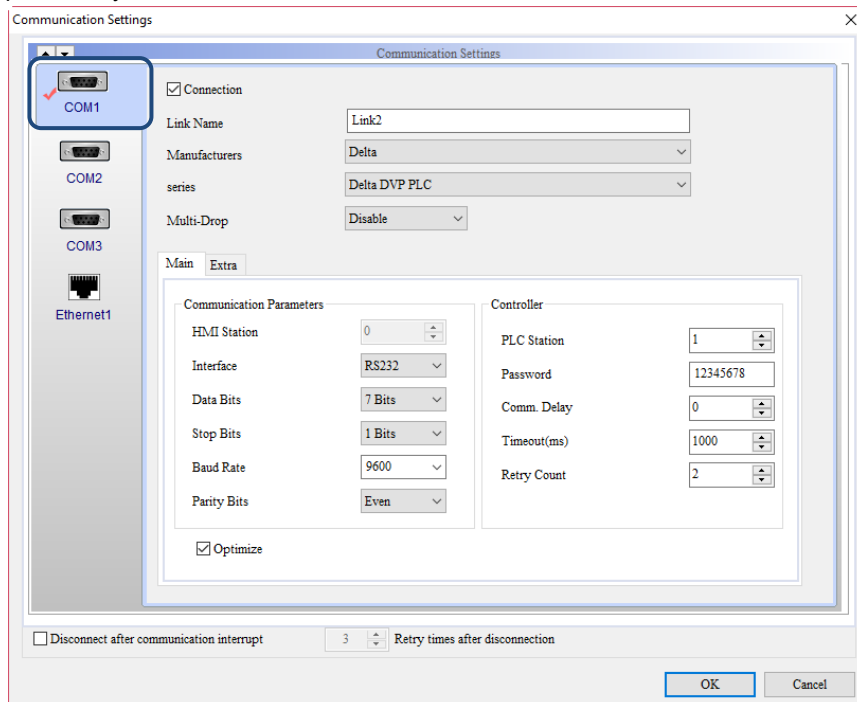
Please refer to the steps below.

Step 1: Go to COM2 and click the up arrow.



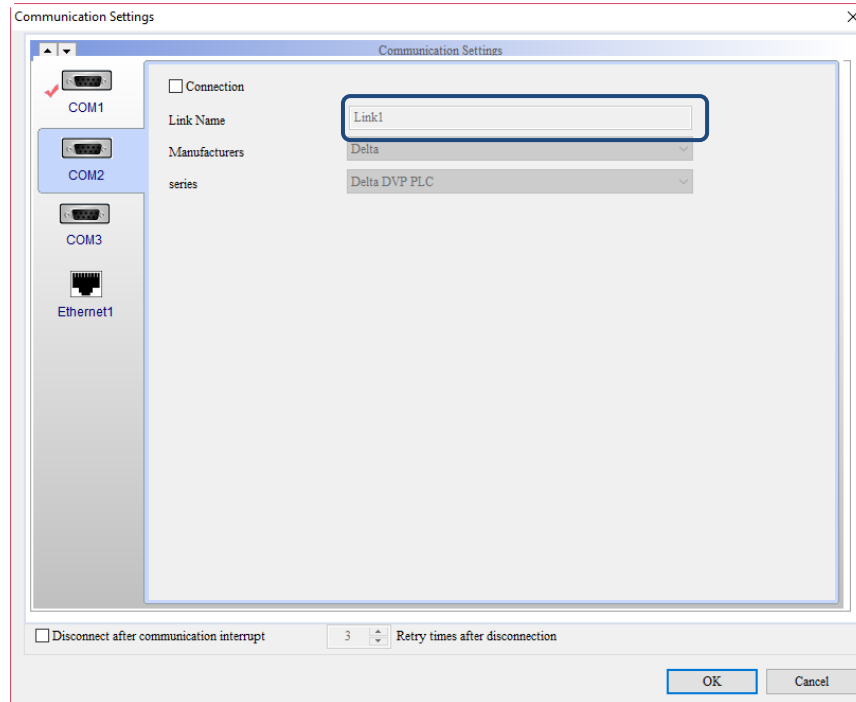
Connection

Step 2: then, you can see Link 2 is moved to COM 1.



Communication Settings

Step 3: go to COM 2 to check the setting. The Link name of COM 2 is changed to Link 1.

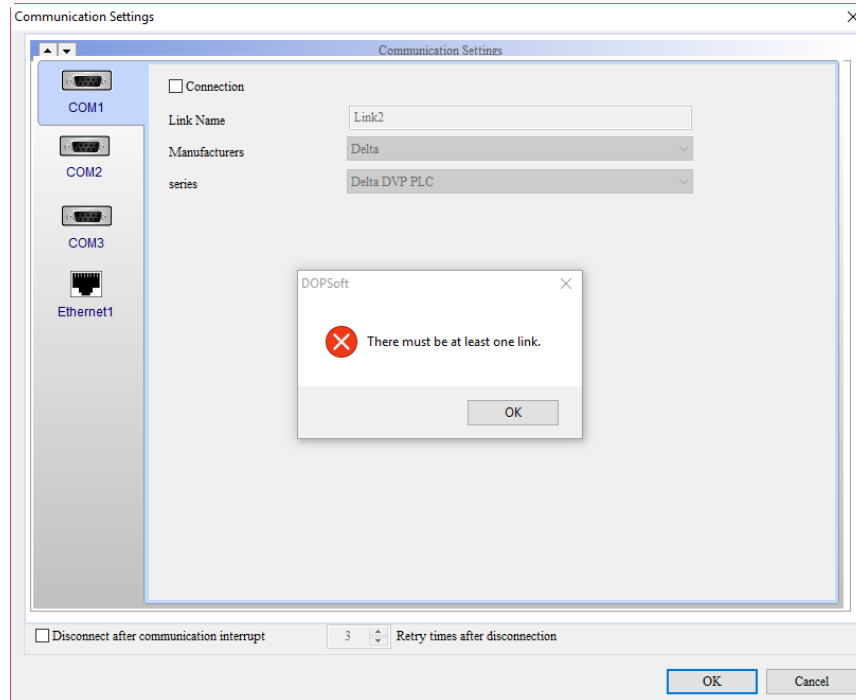


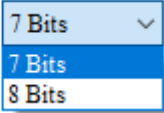
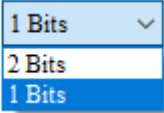
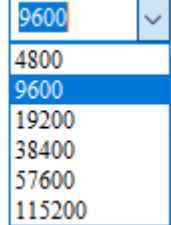
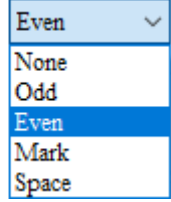
27

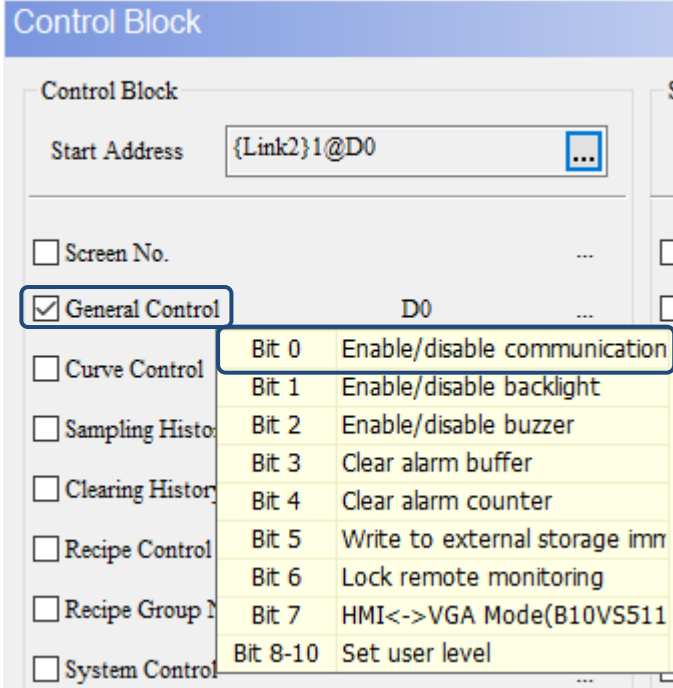
Connection

Note:

1. The default setting of COM 1 is Link 1, COM 2 is Link 2 and COM 3 is Link 3.
 2. When you use the arrow to move the Link 2 to COM 1, and COM 2 becomes Link 1; similarly, when Link 2 is moved to COM 3, COM 2 becomes Link 3.
 3. This movement action does not change the Link name, so the warning message will not pop up. The up and down arrows work the same way as the up and down function in the previous Screen Editor.
- When you cancel all the links, the software prompts you to set at least one link.



Communication Settings																		
Communication Parameters	HMI Station No.	You can set the HMI Station No. within the range of 1 - 255 and the default is 0.																
	Communication Interface	<ul style="list-style-type: none"> Communication interface is the transmission mode, which includes RS232, RS422 and RS485. When you select COM 1, only RS232 is selectable for the communication interface; when you select COM 2 and COM 3, selectable options are RS232, RS422 and RS485. <table border="1"> <thead> <tr> <th></th> <th>COM 1</th> <th>COM 2</th> <th>COM 3</th> </tr> </thead> <tbody> <tr> <td>RS232</td> <td>V</td> <td>V</td> <td>V</td> </tr> <tr> <td>RS422</td> <td></td> <td>V</td> <td>V</td> </tr> <tr> <td>RS485</td> <td></td> <td>V</td> <td>V</td> </tr> </tbody> </table>		COM 1	COM 2	COM 3	RS232	V	V	V	RS422		V	V	RS485		V	V
		COM 1	COM 2	COM 3														
	RS232	V	V	V														
	RS422		V	V														
	RS485		V	V														
Data Bits	<p>The available options for Data Bits are 7 Bits and 8 Bits. This is also the data type and the received packet length.</p> <p>Data Bits</p> 																	
Stop Bits	<p>The available options for Stop Bits are 1 Bit and 2 Bits. This is for notifying the the data receiving is complete.</p> <p>Stop Bits</p> 																	
Baud Rate	<p>The available options for Baud Rate are 4800, 9600, 19200, 38400, 57600 and 115200.</p> <p>Baud Rate refers to the data transmission speed in the unit of bps.</p> <p>Baud Rate</p> 																	
Parity Bits	<p>Parity Bits are for checking the errors when data is transmitted, which options include None, Odd, Even, Mark and Space.</p> <p>Parity Bits</p> 																	
Controller Settings	PLC Station No.	<ul style="list-style-type: none"> The default PLC station number is the number automatically generated by the software after you select the controller to be used. You can also adjust the station number within the range of 0 - 255. 																
	Password	<p>If the PLC you set needs password verification, you must set the corresponding password for the communication in the software setting.</p> <p>The default is 12345678.</p>																
	Comm. Delay Time(ms)	<p>It refers to the time interval after each communication.</p> <p>The range is 0 - 255 ms and the default is 0 ms.</p>																

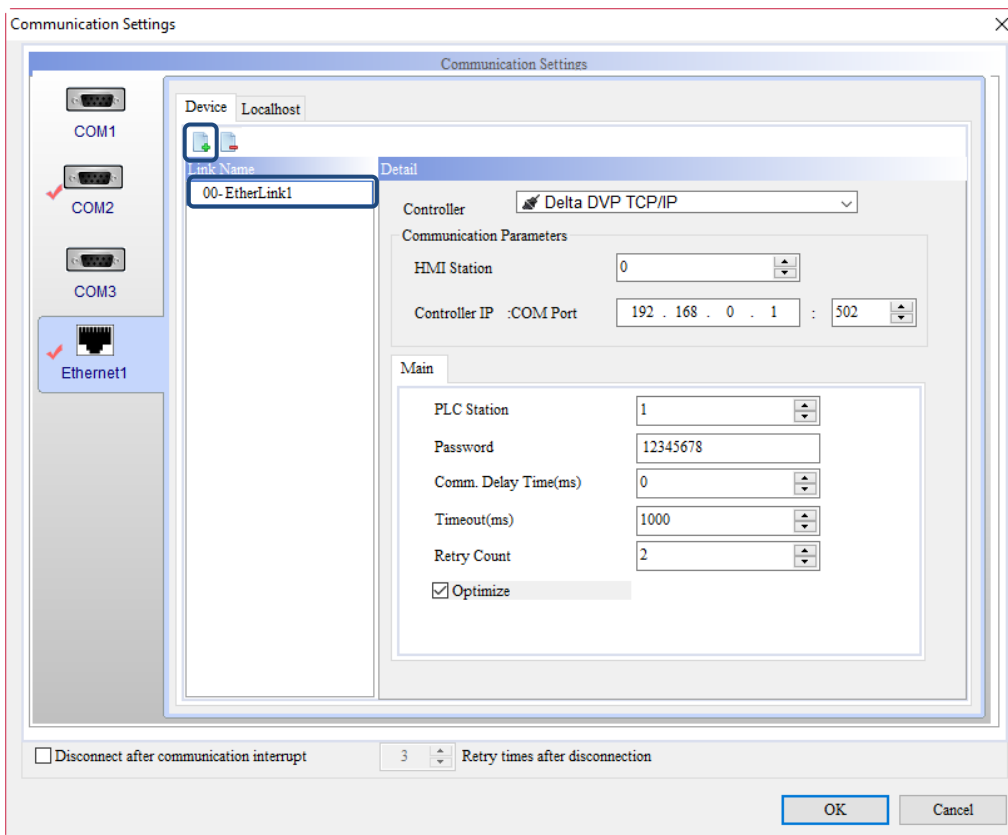
Communication Settings		
Controller Settings	Timeout (ms)	The interval of time passed without the PLC's response after the communication starts. The range is 10 - 2000 ms and the default is 1000 ms.
	Retry Counts	If the PLC does not respond after the communication starts, the HMI sends the communication command again. If the number of attempts reaches the set Retry Counts, a warning message of abnormal communication pops up. The range is 0 - 15 times and the default is 2 times.
Optimize	<ul style="list-style-type: none"> Check Optimize to optimize the process of reading the elements and make the communication faster. If Optimize is unchecked, the Optimize function is disabled and the speed for reading the elements becomes slower. This option is checked by default, so all element read addresses referring to this link will be optimized. 	
Disconnect after communication interrupt	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <input type="checkbox"/> Disconnect after communication interrupt 3 Retry times after disconnection </div> <ul style="list-style-type: none"> You must first check [Disconnect after a communication interrupt] to set [Retry times after disconnection]. If [Disconnect after a communication interrupt] is checked, when communication is interrupted and the retry times setting is reached, the HMI stops trying to connect to the controller. The range is 0 - 255 times and the default is 3 times. When the communication between HMI and the controller stops because the set retry times is reached, you can use Bit 0 in the Control Block to enable/disable the communication. 	

Communication Settings


The detailed operation settings for Ethernet are described below.

27

Device

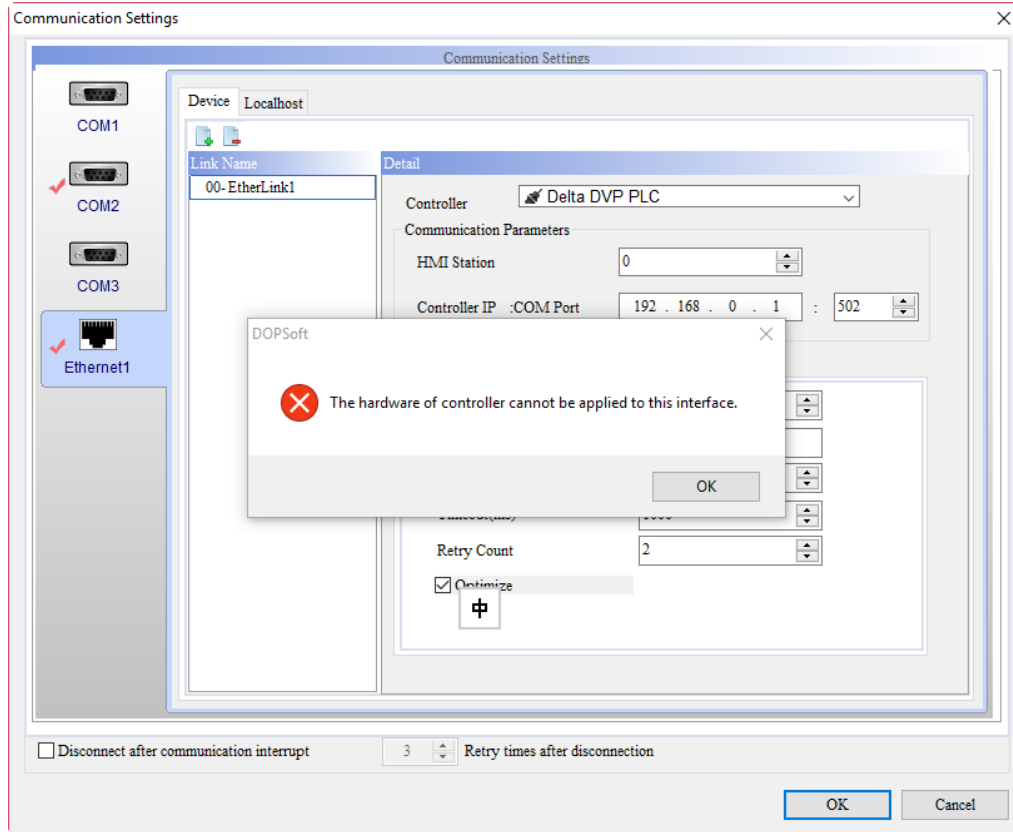


Communication Settings

- Click the icon  on the Device page to add an EtherLink1 link device. This link name EtherLink1 can be changed on demand by users.
- Please select the controller to be used after adding the link device. If you select a PLC that is not a network device, a warning message will pop up to inform you that the hardware of controller cannot be applied to this interface.

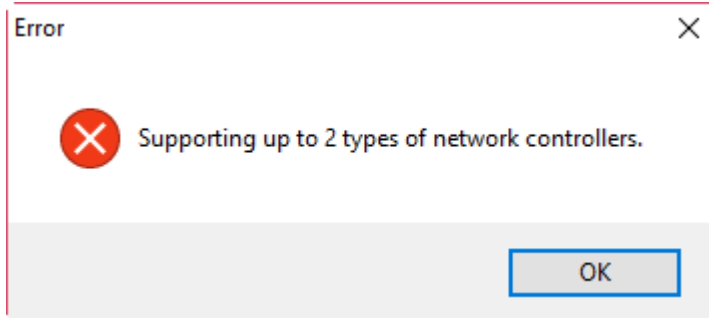
27

Device

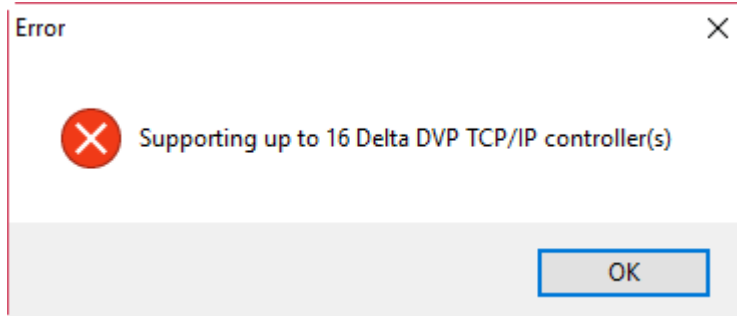


Communication Settings

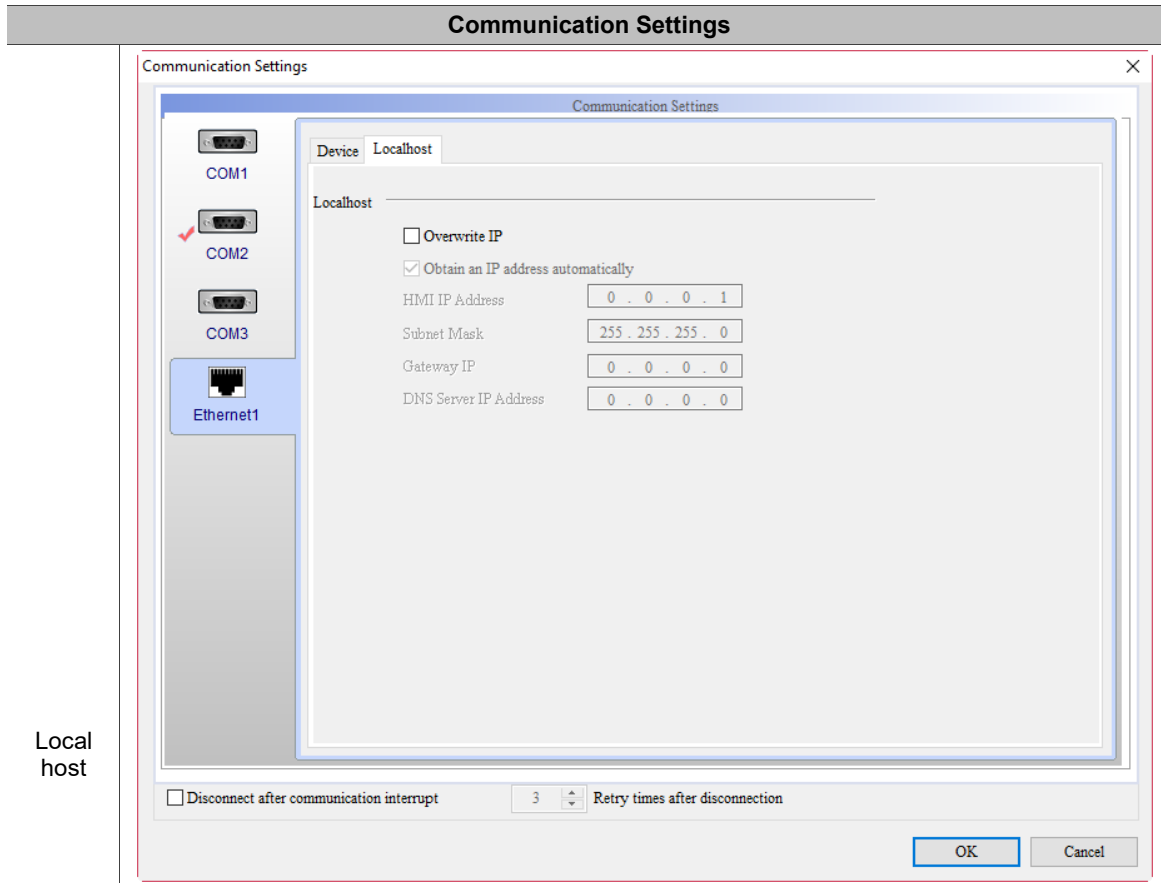
- After adding the new internet link device, you can set two protocols only; for example, Delta DVP TCP/IP and S7 300 (ISO TCP). If you add the third Protocol, the following message is displayed.



- Each protocol can only have 16 links. If a Protocol adds more than 16 links, a warning message will pop up to remind you that the number of controllers exceeds the range.



Device	Communication Parameters	HMI Station No.	Set the HMI station number. The range is 1 - 255 and the default station number is 0.
		Controller IP	You can set the IP address of the PLC here. Please set the address of the same network segment as the HMI IP to enable the communication between the PLC and HMI.
		COM Port	The COM Port varies depending on the controller you select. You can also set the COM Port corresponding to the PLC's port.
	Controller Settings	PLC Station	<ul style="list-style-type: none"> ■ The default PLC station number is the number automatically generated by the software after you select the controller to be used. ■ You can also adjust the station number within the range of 0 - 255.
		Password	If the PLC you set needs password verification, you must set the corresponding password for the communication in the software setting. The default is 12345678.
		Comm. Delay Time(ms)	It refers to the time interval after each communication. The range is 0 - 255 ms and the default is 0 ms.
		Timeout (ms)	The interval of time passed without the PLC's response after the communication starts. The range is 10 - 2000 ms and the default is 1000 ms.
		Retry Counts	If the PLC does not respond after the communication starts, the HMI sends the communication command again. If the number of attempts reaches the set Retry Counts, a warning message of abnormal communication pops up. The range is 0 - 15 times and the default is 2 times.
	Optimize	<ul style="list-style-type: none"> ■ Check Optimize to optimize the process of reading the element and make the communication faster. If Optimize is unchecked, the Optimize function is disabled and the speed for reading the elements becomes slower. ■ This option is checked by default, so all element read addresses referring to this link will be optimized. 	



Local host

HMI Localhost	Overwrite IP	<ul style="list-style-type: none"> ■ HMI Localhost represents the localhost's IP address of the HMI, which you can select [Overwrite IP] and [Obtain an IP address automatically]. ■ If Overwrite IP is not checked, the HMI uses the default IP address 0.0.0.0. If you choose not to write the IP address from the software, you can enter the system screen and go to [System Setting] > [Network] to change the IP address. ■ Check Overwrite IP to change the IP address through the software, and you can set parameters such as IP address and HMI name to be written.
	Obtain an IP address automatically	<ul style="list-style-type: none"> ■ To enable [Obtain an IP address automatically], you must check Overwrite IP first. ■ When both of the two options are checked, it means that HMI obtains the IP address through DHCP mode. You can enter the system screen and go to [System Setting] > [Network] to check the current IP address.
	HMI IP Address	The HMI IP address must be set in the same network segment as the controller IP address.

Communication Settings															
Localhost	HMI Localhost	Subnet Mask	<ul style="list-style-type: none"> The Subnet Mask is used for segment the network and identifying the destination address. Its format is the same as the IP address, which is also represented by four bytes separated by decimal points. <table border="1"> <thead> <tr> <th>IP Class</th> <th>Network Address</th> <th>Subnet Mask</th> </tr> </thead> <tbody> <tr> <td>Class A</td> <td>1.x.x.x - 126.x.x.x</td> <td>255.0.0.0</td> </tr> <tr> <td>Class B</td> <td>128.0.x.x - 191.255.x.x</td> <td>255.255.0.0</td> </tr> <tr> <td>Class C</td> <td>192.0.0.x - 223.255.255.x</td> <td>255.255.255.0</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Subnet mask must be set when IP address is set on each computer. Take Class C in the figure above for example, the first three bytes of the IP address are Network ID. Therefore, the first 3 bytes of the Subnet Mask are all 255, while the last byte is 0 the Host ID. 	IP Class	Network Address	Subnet Mask	Class A	1.x.x.x - 126.x.x.x	255.0.0.0	Class B	128.0.x.x - 191.255.x.x	255.255.0.0	Class C	192.0.0.x - 223.255.255.x	255.255.255.0
		IP Class	Network Address	Subnet Mask											
Class A	1.x.x.x - 126.x.x.x	255.0.0.0													
Class B	128.0.x.x - 191.255.x.x	255.255.0.0													
Class C	192.0.0.x - 223.255.255.x	255.255.255.0													
Gateway	<ul style="list-style-type: none"> The Gateway is mostly used to connect local-area network and large computer host system. Generally, a gateway is required as long as there are two systems with different levels to be connected. The gateway is the exit of the local-area network. All packets to be sent to the Internet are first sent to the gateway and are then transmitted to other hosts on the Internet and finally to the host at the destination. If you need to connect to the external network, you can set the gateway address according to the network rules. The default is 0.0.0.0. 														

27.3 Change model

DOPSoft 4.0 only supports the DOP-100 series HMIs. You can change to other models of 100 series with this function.

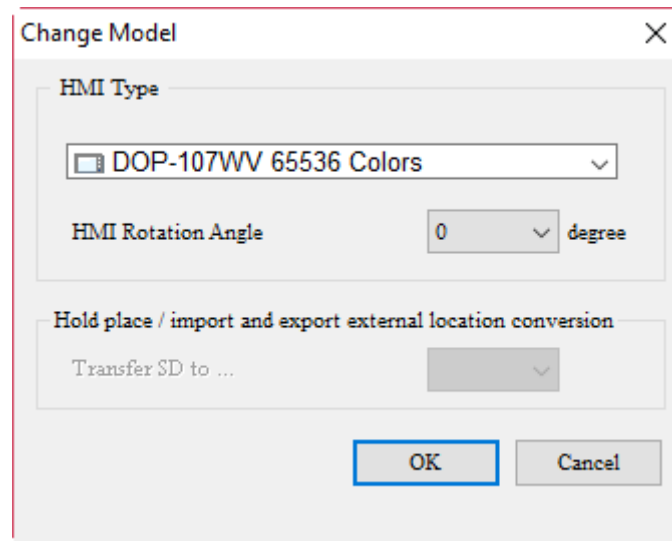


Table 27.3.1 Change Model

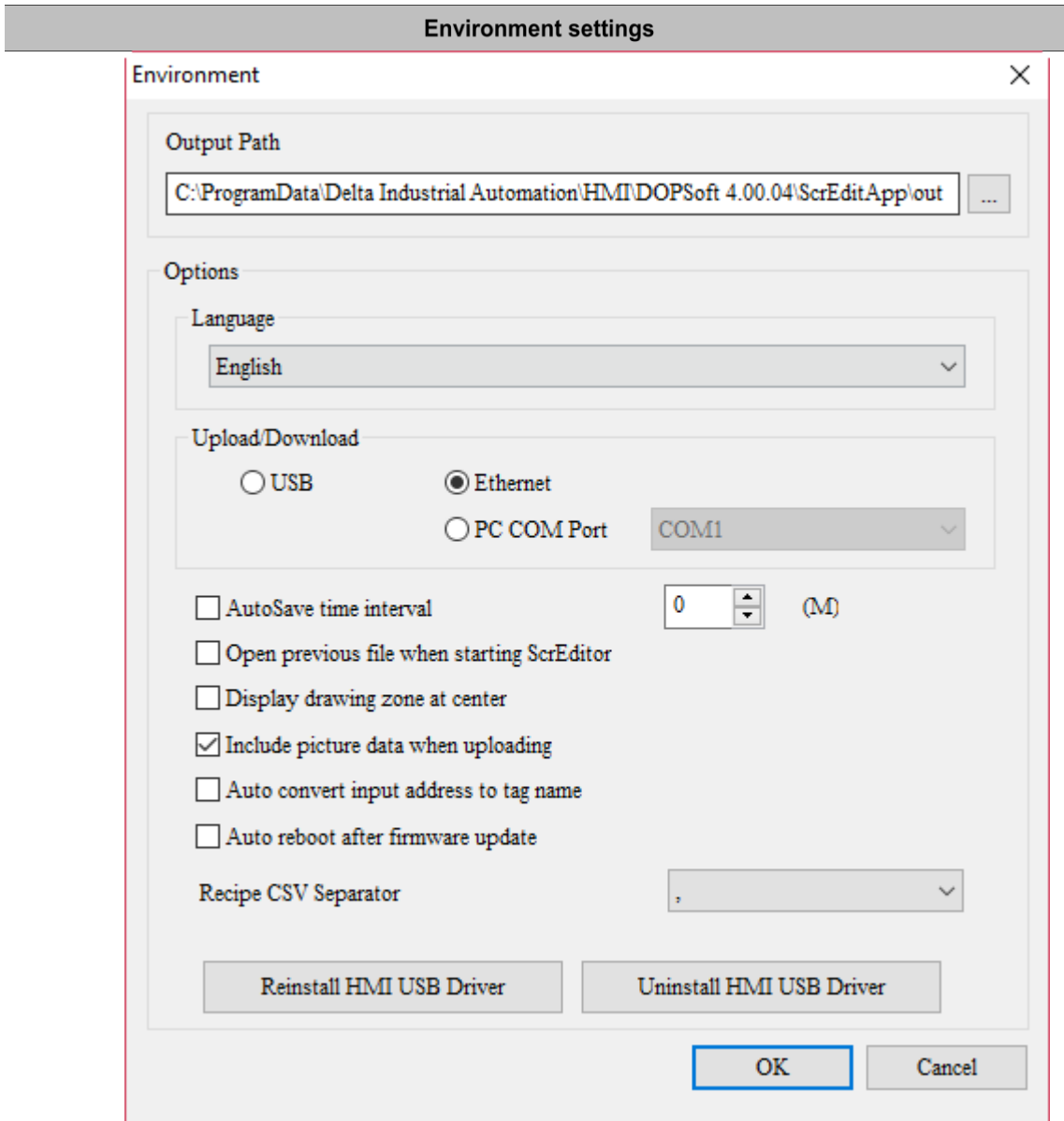
The software enables you to open the screens of the DOP-B, DOP-W, and HMC models and convert the screens into the compatible format for the DOP-100 models to edit

27

27.4 Environment settings

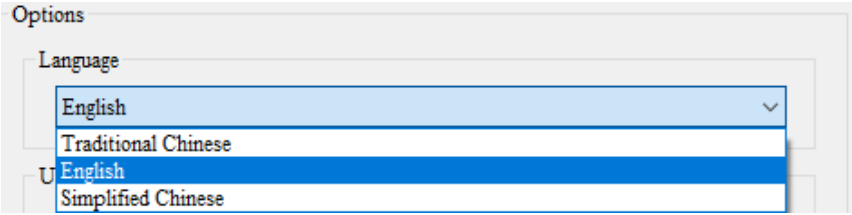
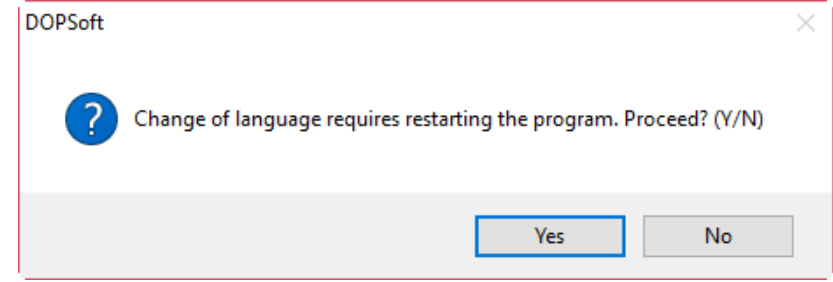
You can set environment parameters related to the HMI system with the Environment settings, including the software language and download mode. The parameters in the Environment settings are described below.

Table 27.4.1 Description of environment setting properties



In the Environment settings, you can view the system path and output path, set the system environment parameters for the Upload/Download setting and USB driver installation.

Output path	It refers to the output path of a CIN file generated after screen compilation. Software functions such as the on-line and offline simulation, file upload/download will refer to the data of this path. So, do not change this path unless necessary, otherwise program execution may error or the software cannot find the file.
-------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

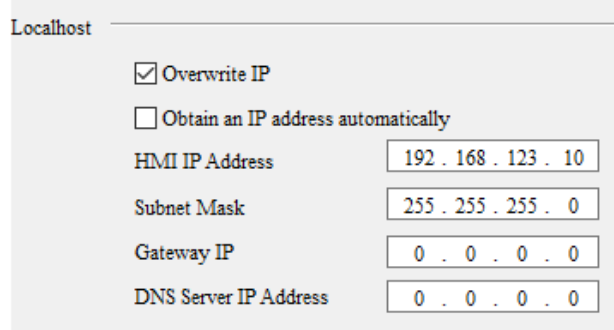
Environment settings		
Language	Traditional Chinese	<ul style="list-style-type: none"> The software provides the interface in three languages: Traditional Chinese, English and Simplified Chinese. 
	English	<ul style="list-style-type: none"> Select one of the languages, click OK and a message will pop up, which displays “Change of language requires restarting the program. Proceed? (Y/N)”. Click Yes to close the message box and the software is restarted automatically. Then, you can find the language is changed.
	Simplified Chinese	
Upload/ Download settings	USB	<ul style="list-style-type: none"> The default transmission mode for data upload/download between the software and HMI is USB. There are four types of USB transmission modes. The first one is the general upload/download type (Normal = USBCommMode 0) and you must manually install the driver. The second one is the USB Disk type (Disk = USBCommMode 1), which allows you to upload/download HMI programs without installing the driver. The third one is the USB CDC type (CDC = USBCommMode 2), which you need to install additional driver for transmission. The fourth one is the Auto type; the HMI remains using the current USB upload/download mode. USBCommMode 1 and USBCommMode 2 are compatible with Windows XP / Windows Vista / Windows 7 / Windows 8 operating systems.
	Ethernet	<ul style="list-style-type: none"> The Ethernet options is for HMI data upload/download over the network. If you use Ethernet to upload/download the data, you must set the IP address of both the HMI and the computer on the same network segment. You can set the HMI IP by checking [Overwrite IP] or [Obtain an IP address automatically].

Environment settings

■ HMI

To set the IP address, you can go to [Options] > [Communication Settings] > [Ethernet1] > [Localhost], or enter the System screen and go to [System Setting] > [Network].

The setting interface provided the software is shown in the figure below:



Localhost	
<input checked="" type="checkbox"/> Overwrite IP	
<input type="checkbox"/> Obtain an IP address automatically	
HMI IP Address	192 . 168 . 123 . 10
Subnet Mask	255 . 255 . 255 . 0
Gateway IP	0 . 0 . 0 . 0
DNS Server IP Address	0 . 0 . 0 . 0

Overwrite IP

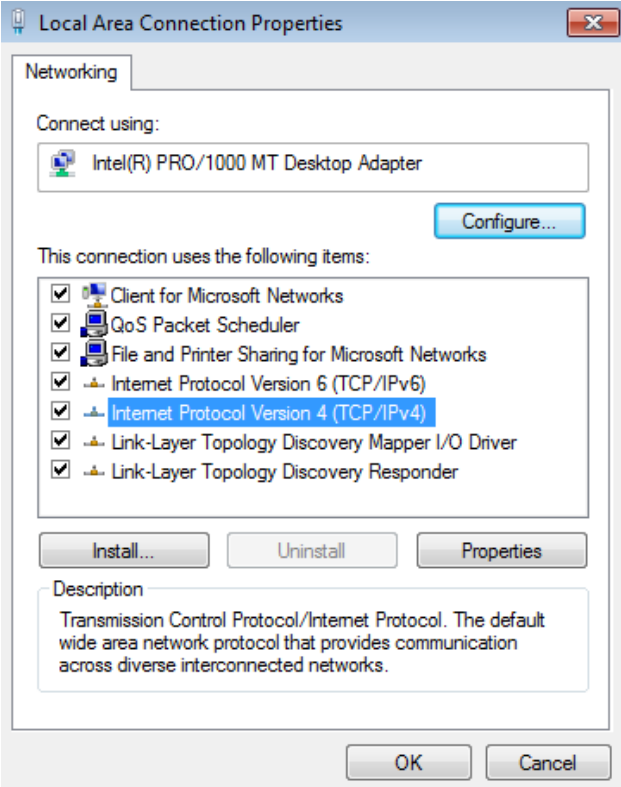
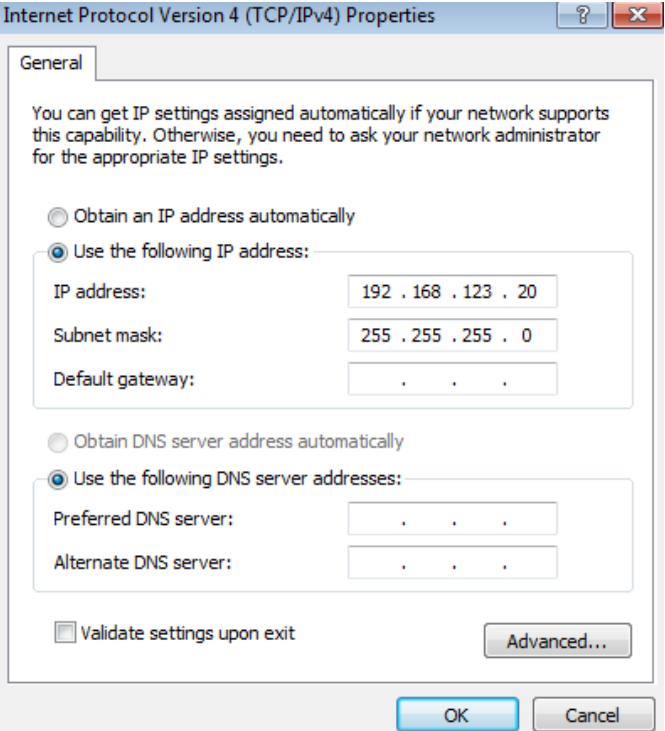
The setting interface of the system screen is shown in the figure below:

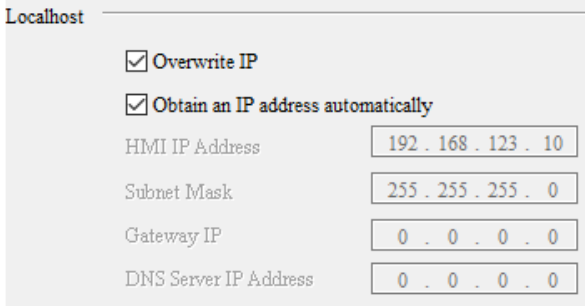
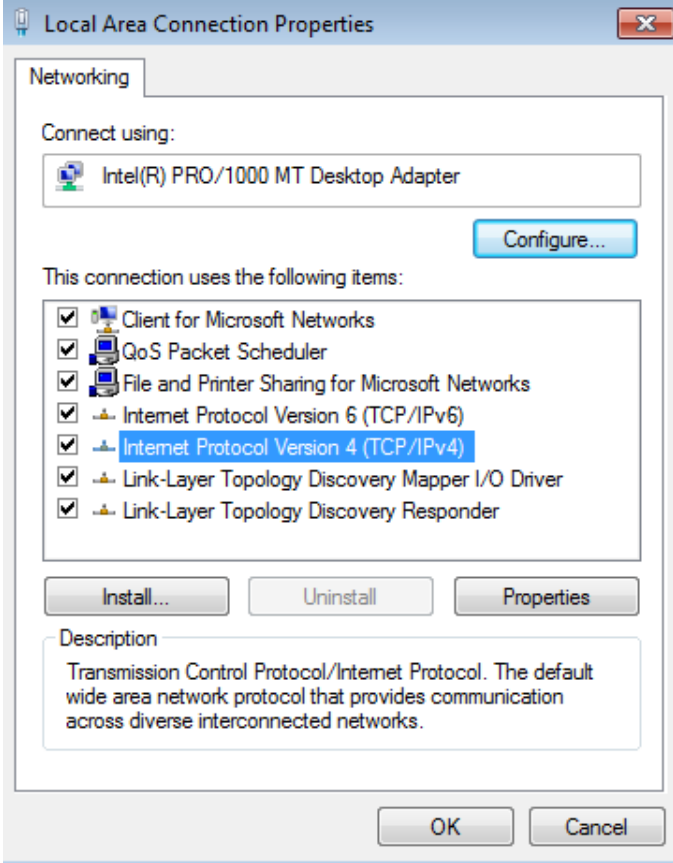


DOP-100 • System Setting

LAN 1

HMI Name: HMI
Mode: Static
IP: 192.168.123.10
Mask: 255.255.255.0
Gateway: 0.0.0.0
DNS: 0.0.0.0
MAC: 0A:00:27:00:00:0F

Environment settings		
Upload/ Download settings	Ethernet	Overwrite IP
<p>■ Computer In Windows, go to [Start] > [Control panel] > [Network and Sharing Center] > [Local area connection] > [Local Area Connection] > [Networking] > [Internet Protocol (TCP/IP)].</p>  <p>Click Properties to enter the TCP/IP setting page, as shown below.</p> 		

Environment settings		
Upload/ Download settings	Ethernet	<p>Obtain an IP address automatically</p> <p> ■ HMI: When you check [Obtain an IP address automatically], you do not need to set the IP address; DHCP dynamically assigns the IP address to the HMI instead. You can also enter the System screen and go to [System Setting] > [Network] and set DHCP to ON. The interface set by the software is shown in the figure below: </p>  <p>The setting interface of the system screen is shown in the figure below..</p> <p> ■ Computer In Windows, go to [Start] > [Control panel] > [Network and Sharing Center] > [Local area connection] > [Local Area Connection] > [Networking] > [Internet Protocol (TCP/IP)]. </p> 

Environment Settings

Click **Properties** to enter the TCP/IP setting page, as shown below.

Internet Protocol Version 4 (TCP/IPv4) Properties

General Alternate Configuration

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

Obtain an IP address automatically

Use the following IP address:

IP address: . . .

Subnet mask: . . .

Default gateway: . . .

Obtain DNS server address automatically

Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

Validate settings upon exit

Advanced...

OK Cancel

Obtain an IP address automatically

Upload/Download settings

Ethernet

After the IP addresses of the HMI and computer are set in the same network segment, the HMI upload/download can be done via Ethernet. When you click **Download Screen Data** or **Upload Screen Data**, the software will automatically search for the HMI with the same network segment and you can click **OK** to start the transmission.

IP address

Static IP 0.0.0.0 : 12346


Auto Search Update

HMI	Model type	Source IP Address	Port
HMI	DOP-B07E415	192.168.123.65	12346
HMI	DOP-112MX	192.168.123.168	12346
HMI	DOP-B08E515	192.168.123.69	12346
W_Long Test	DOP-107WV	192.168.123.29	12346
HMI	DOP-110WS	192.168.123.120	12346
HMI	DOP-B07E415	192.168.123.145	12346

OK Cancel

27

Environment Settings	
Upload/Download settings	<div style="display: flex; justify-content: space-between;"> <div style="width: 15%;">PC COM Port</div> <div style="width: 85%;"> <ul style="list-style-type: none"> ■ PC COM Port is for data upload/download between the PC COM port and HMI. If you select PC COM Port to upload/download, you must first enter the HMI system screen and go to [Up/Download] > [Standard Mode] and choose COM 1 or 2 COM. ■ Next, set the port number for the PC COM Port in the software. <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p style="margin: 0;">Upload/Download</p> <p style="margin: 0;"> <input type="radio"/> USB <input type="radio"/> Ethernet <input checked="" type="radio"/> PC COM Port COM7 </p> </div> <ul style="list-style-type: none"> ■ Right-click on [This Computer] > [Manage] > [Ports (COM & LPT)] to see the COM Port number of the computer. <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p style="margin: 0;">Open</p> <p style="margin: 0;">Pin to Quick access</p> <p style="margin: 0; border: 1px solid #0070c0;">Pin to Start</p> <p style="margin: 0;">Map network drive...</p> <p style="margin: 0;">Disconnect network drive...</p> <hr/> <p style="margin: 0;">Create shortcut</p> <p style="margin: 0;">Delete</p> <p style="margin: 0;">Rename</p> <hr/> <p style="margin: 0;">Properties</p> </div> <div style="margin-top: 10px;"> <ul style="list-style-type: none"> ▼ TWTN1NB0568 <ul style="list-style-type: none"> > Audio inputs and outputs > Batteries > Biometric devices > Bluetooth > Computer > Disk drives > Display adapters > Human Interface Devices > IDE ATA/ATAPI controllers > Imaging devices > Jungo > Keyboards > Memory technology devices > Mice and other pointing devices > Monitors > Network adapters ▼ Ports (COM & LPT) <ul style="list-style-type: none"> Prolific USB-to-Serial Comm Port (COM7) </div> </div> </div>
AutoSave time interval	<p>You can set the time interval for the software to save the project automatically. If you set it to 0 min, it means this option is unchecked (function disabled). The default minimum is 3 min. and the maximum is 120 min.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <input type="checkbox"/> AutoSave time interval 0 (M) </div>
Open previous file when starting ScrEditor	<p>If you check this option, the HMI automatically displays the last edited project the next time you start DOPSoft.</p>

Environment Settings	
■ If you check [Display drawing zone at center], the editing screen is displayed in the center.	
Display drawing zone at center	■ If it is not checked, the editing screen is at the upper left corner by default.
Include picture data when uploading	If the edited project has graphic data, but this option is not checked, the graphic content will be empty after uploading the screen data to the HMI.

27

Environment Settings

- This function automatically converts the element memory address into a tag name according to the tag name list, so the address of the element to be created will be displayed with a tag name.
- The steps to check [Auto convert input address to tag name] are as follows:
Step 1: go to [Options] > [Tag name list] to edit the data.

No.	Name	Type	Address	Description
1	DELTA	WORD	\$100	

- Step 2: go to [Options] > [Environment], and check [Auto convert input address to tag name]. Create a Numeric Entry element and set the Write Address to \$100.

Auto convert input address to tag name

- Step 3: after you input the data, the memory address is automatically converted to the tag "DELTA".

Numeric Entry

Auto reboot after firmware update

When this option is checked, the HMI automatically reboots once the firmware is updated, instead of prompting a message "Update Firmware Succeed!!!".

Environment Settings											
Reinstall HMI USB Driver	<ul style="list-style-type: none"> After executing [Reinstall HMI USB Driver], the system reinstalls the USB driver for the HMI. 										
Uninstall HMI USB Driver	<ul style="list-style-type: none"> After executing [Uninstall HMI USB Driver], the system uninstalls the USB driver for the HMI. These two options are used when you are unable to upload/download data through USB transmission. In this case, you can uninstall and then reinstall the HMI USB driver to ensure normal transmission between the HMI and the software. This method is applicable in Nomral and CDC USB transmission mode. 										
CSV Separator	<ul style="list-style-type: none"> Four separators are provided. You can set the displaying separator in the CSV files to be exported. <div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p>Recipe CSV Separator</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid gray; padding: 2px;">Reinstall HMI USB Driver</div> <div style="border: 1px solid gray; padding: 2px;">Uninstall HMI USB Driver</div> </div> <div style="margin-top: 5px;"> <div style="border: 1px solid gray; padding: 2px; display: inline-block;"> ▼ </div> <div style="border: 1px solid gray; padding: 2px; margin-top: 2px;"> , ; TAB SPACE </div> </div> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Separator</th> <th style="width: 80%;">Preview</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">,</td> <td> <pre>RCP16-1.0 4,4 11,12,13,14, 15,16,17,18, 19,20,21,22, 0,0,0,0,</pre> </td> </tr> <tr> <td style="text-align: center;">;</td> <td> <pre>RCP16-1.0 4;4 11;12;13;14; 15;16;17;18; 19;20;21;22; 0;0;0;0;</pre> </td> </tr> <tr> <td style="text-align: center;">TAB</td> <td> <pre>RCP16-1.0 4 4 11 12 13 14 15 16 17 18 19 20 21 22 0 0 0 0</pre> </td> </tr> <tr> <td style="text-align: center;">SPACE</td> <td> <pre>RCP16-1.0 4 4 11 12 13 14 15 16 17 18 19 20 21 22 0 0 0 0</pre> </td> </tr> </tbody> </table> <ul style="list-style-type: none"> You can use WordPad to check whether the separators in the exported CSV file are correct. 	Separator	Preview	,	<pre>RCP16-1.0 4,4 11,12,13,14, 15,16,17,18, 19,20,21,22, 0,0,0,0,</pre>	;	<pre>RCP16-1.0 4;4 11;12;13;14; 15;16;17;18; 19;20;21;22; 0;0;0;0;</pre>	TAB	<pre>RCP16-1.0 4 4 11 12 13 14 15 16 17 18 19 20 21 22 0 0 0 0</pre>	SPACE	<pre>RCP16-1.0 4 4 11 12 13 14 15 16 17 18 19 20 21 22 0 0 0 0</pre>
Separator	Preview										
,	<pre>RCP16-1.0 4,4 11,12,13,14, 15,16,17,18, 19,20,21,22, 0,0,0,0,</pre>										
;	<pre>RCP16-1.0 4;4 11;12;13;14; 15;16;17;18; 19;20;21;22; 0;0;0;0;</pre>										
TAB	<pre>RCP16-1.0 4 4 11 12 13 14 15 16 17 18 19 20 21 22 0 0 0 0</pre>										
SPACE	<pre>RCP16-1.0 4 4 11 12 13 14 15 16 17 18 19 20 21 22 0 0 0 0</pre>										

(This page is intentionally left blank.)

27

Advanced Settings

28

This chapter explains the module parameters, communication parameters, model conversion, and environment setup.

28.1	Tag Table	28-2
28.2	HMI Identifier	28-13
28.3	FileSlot File Management	28-15
28.4	Device Data table.....	28-22
28.5	Picture Bank	28-27
28.6	Text Bank	28-31
28.7	Multi-Lang input character count calculation.....	28-35

28

28.1 Tag Table

Tag Table is used to help users set tags for the memory addresses. For example, with an address set as \$100 = DELTA, when entering \$100 later, DELTA can be used to replace \$100. Refer to the figure below.

No.	Name	Type	Address	Description
1	DELTA	WORD	\$100	

Figure 28.1.1 Tag Table

Input
✕

Link: Internal Memory

Type

Device (Word)

Device (Bit)

Internal Memory (Word)

Internal Memory (Bit)

Constant

Content

Device Type \$

Address/Value 100

Tag DELTA

Constant Types

Signed Decimal

Unsigned Decimal

Hexadecimal

Station No.

0 Default

B	C	D	E	F	Clear
6	7	8	9	A	Back
1	2	3	4	5	Enter
0	:	+	-	/	
.	None				

Figure 28.1.2 Set tags

Tag Table allows users to import and make use of the Symbol Table edited by WPL and ISPSOft, enhancing convenience of programming. The following section introduces each item on the Tag Table.

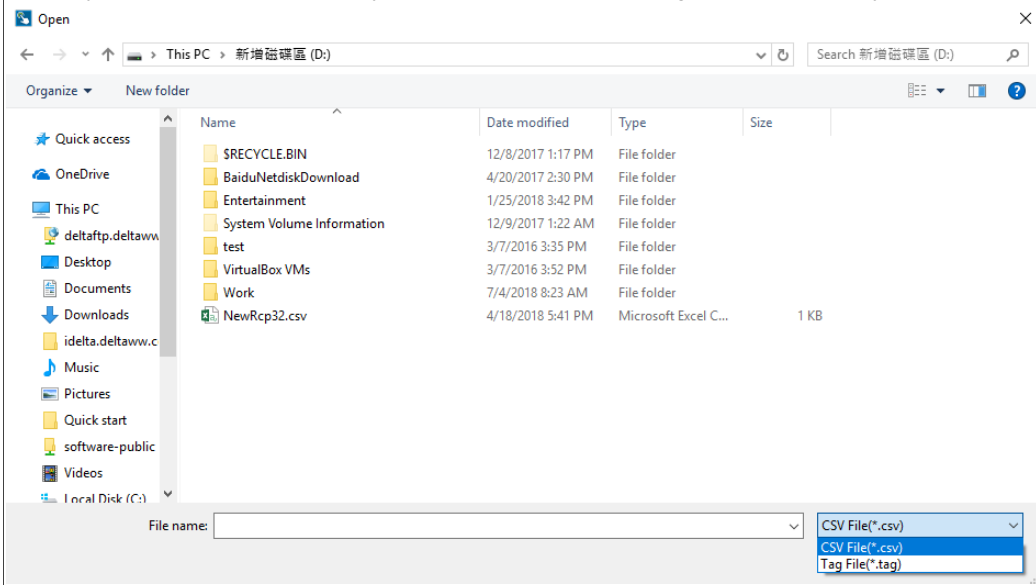
Table 28.1.1 Tag Table

Tag Table				
No.	Name	Type	Address	Description

28

You can open an already-created tag or CSV file in the Tag Table. The CSV file includes the Symbol Table file exported by WPL and ISPSOft or the Tag Table exported by DOPSoft.

Import Label

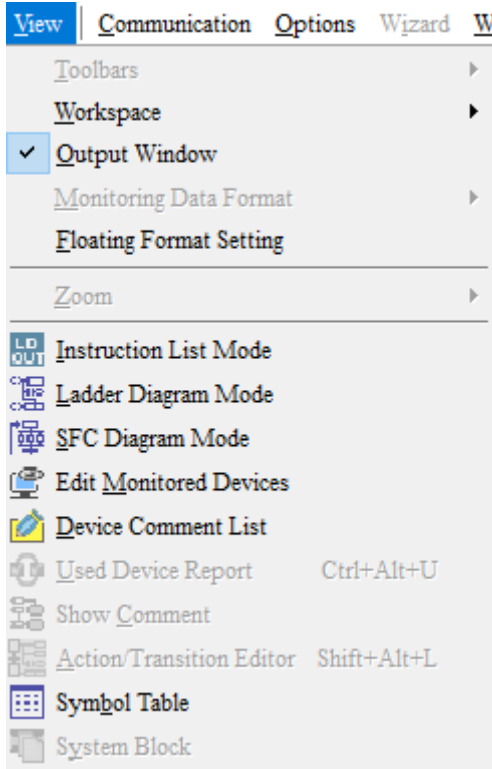


Tag Table

- Export a Symbol Table using WPL.

The steps are as follows:

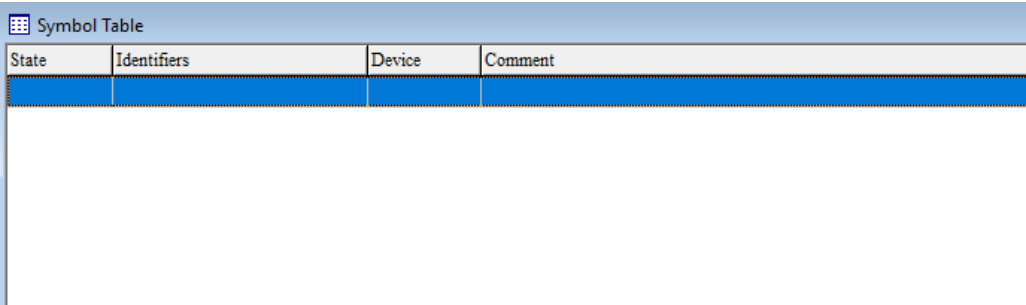
- Run the WPL software. Add a project and select [View] > [Symbol Table].



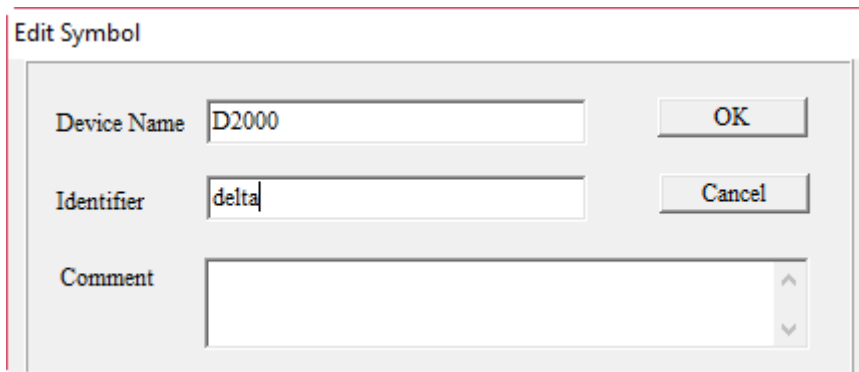
Import Label



- After entering the table, double-click the left mouse button.

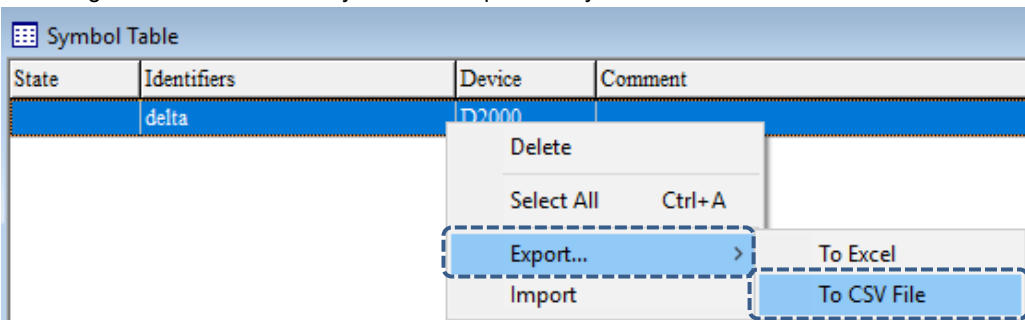


- Enter "D2000" for Device Name and "delta" for Identifier. Press **OK** to exit the Edit Symbol window.

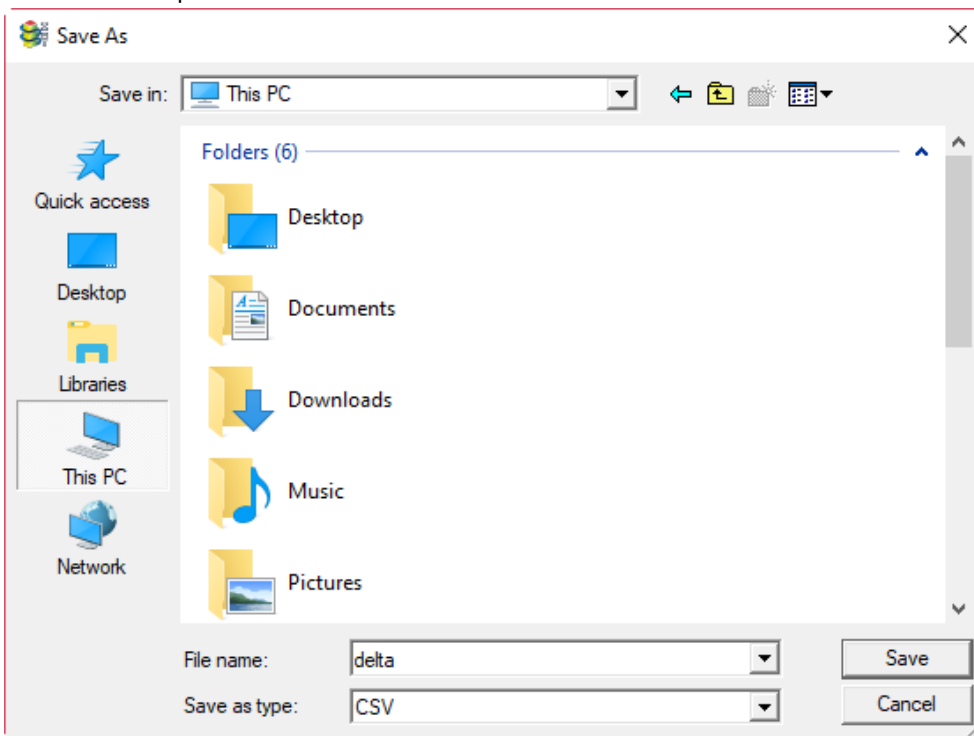


Tag Table


4. Right-click on the added symbol and export the symbol as a CSV file.

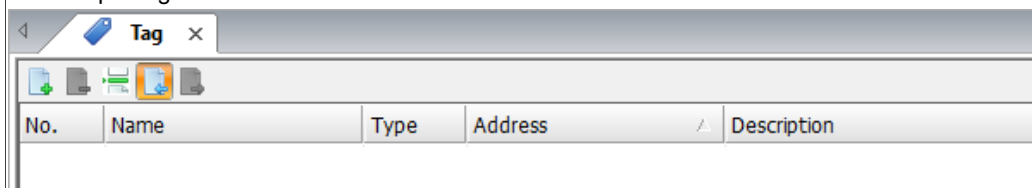


5. Name the exported CSV file as "delta.csv".



Import Label

6. Run DOPSoft. Select [Options] > [Tag Table]. Click  and select the "delta.csv" file for importing.

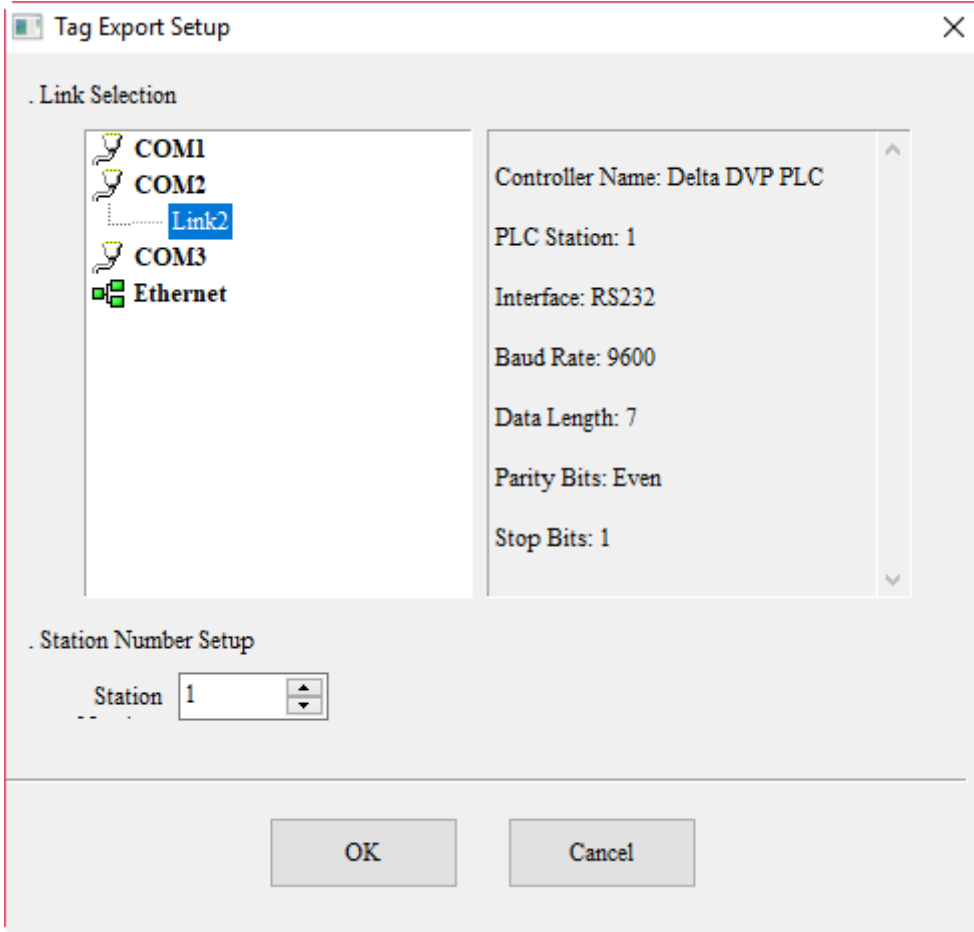


28

Import Label


Tag Table

7. Select the COM Port to import to and set Station number. The default station number is 0, but you can set the number as you like. Press **OK** once finishing the setup.



Tag Table

8. After pressing **OK**, the Symbol Table of WPL is imported to DOPSoft.

No.	Name	Type	Address	Description
1	DELTA	WORD	{Link2}1@D2000	

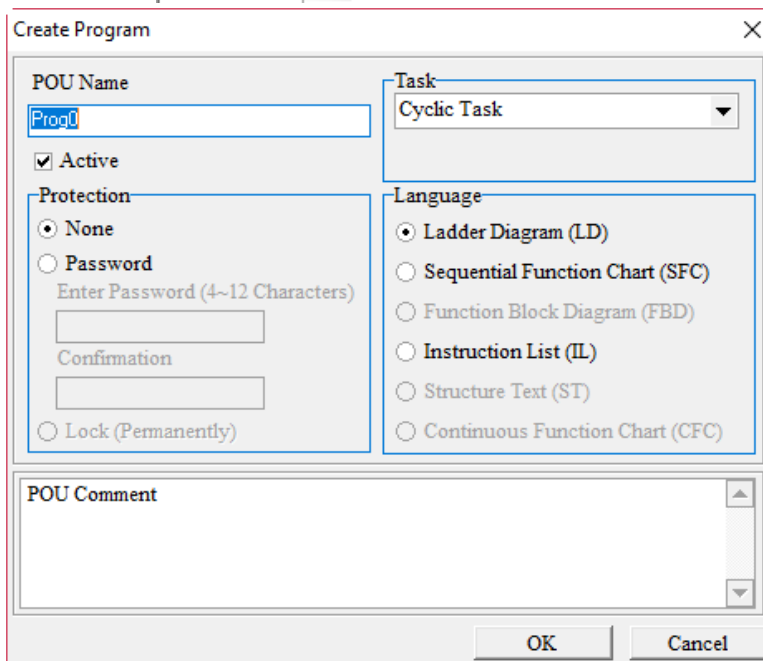
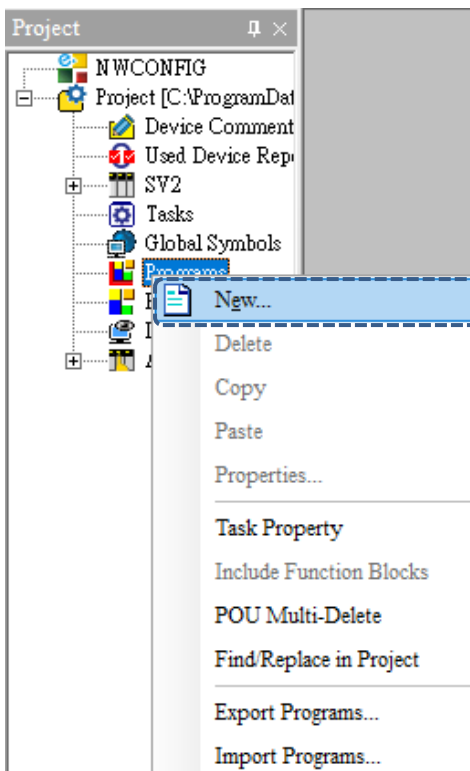
Note: the imported symbols are all recognized by DOPSoft as upper case letters. Thus, for the example above, the lower case symbols of "delta" edited in WPL are recognized as upper case symbols of "DELTA".

- Export a Symbol Table using ISPSOft.

The steps are as follows:

1. Run the ISPSOft software. Create a project. Right-click in the program to add a POU. Press **OK** to finish.

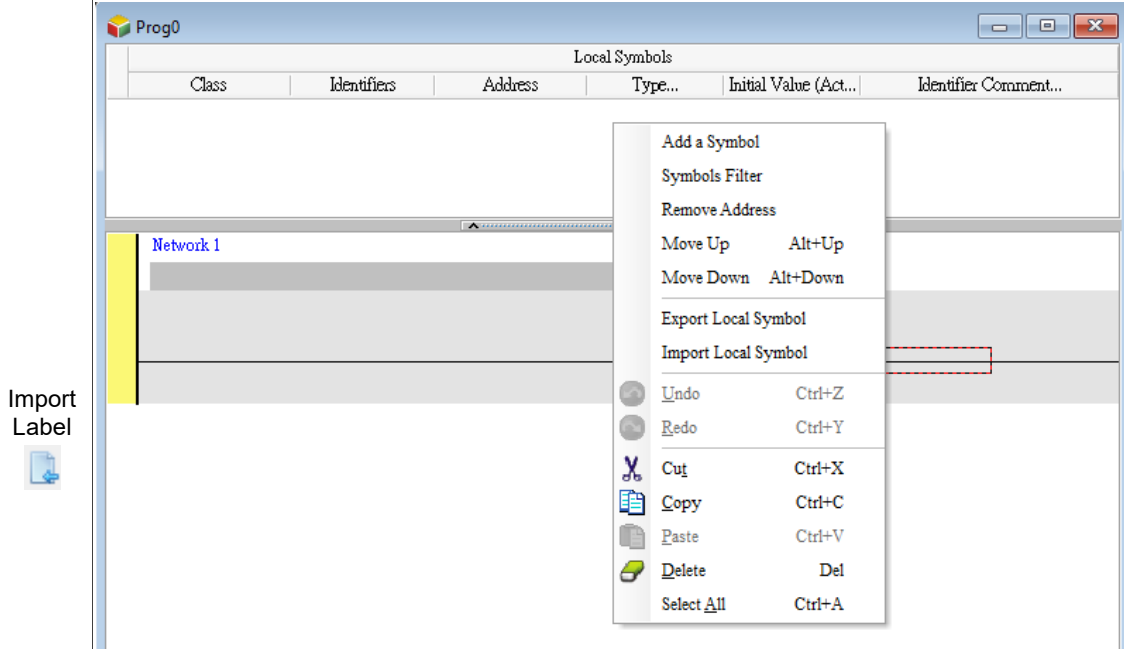
Import Label



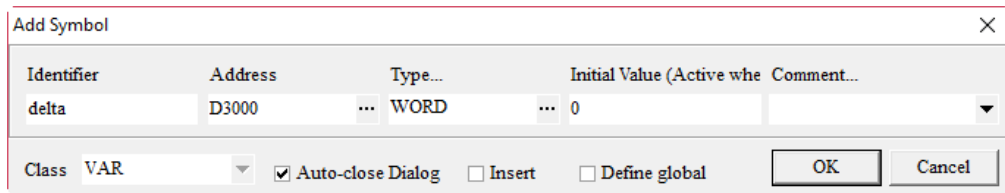
28

Tag Table

2. After adding a POU, right-click on a blank area in Local Symbols to add a symbol.

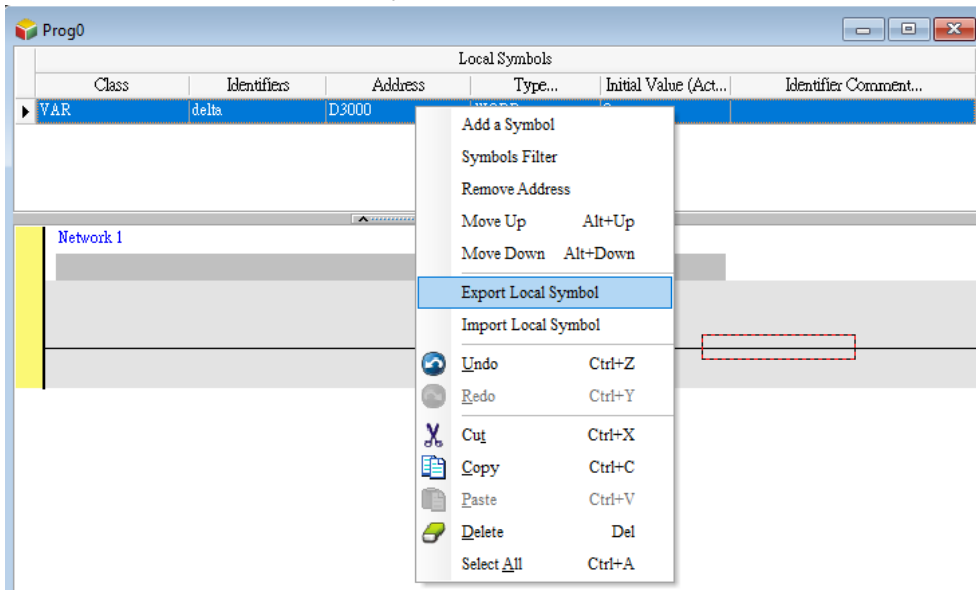


3. Enter "delta" for the Identifier and "D3000" for the Address. Once done, press **OK** to exit the window.

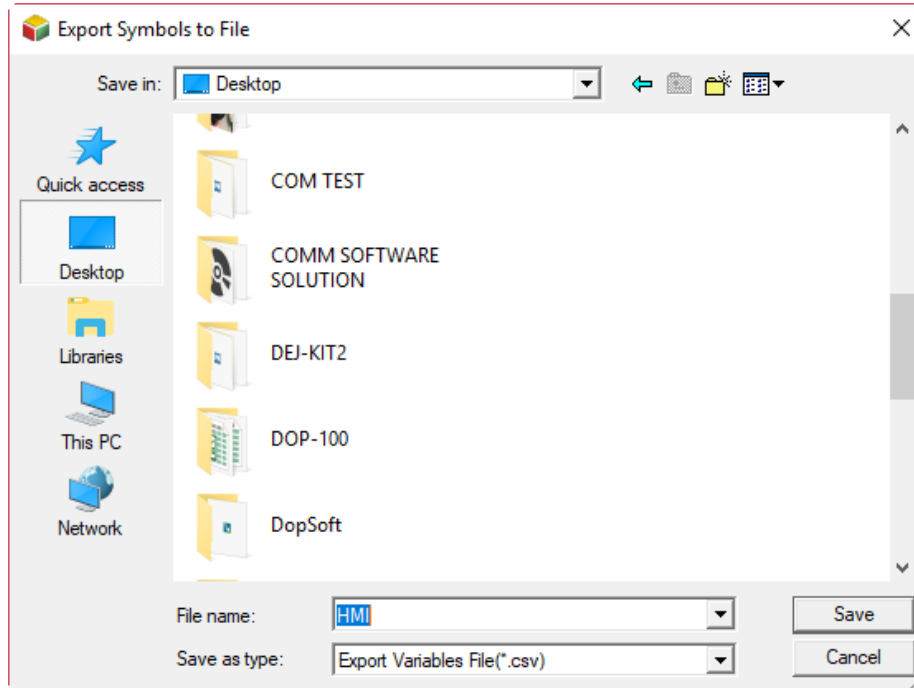


Tag Table


- Once done adding a symbol, enter the Local Symbols window. Right-click on the "delta" identifier to select Export Local Symbol and save it as a HMI.csv file.

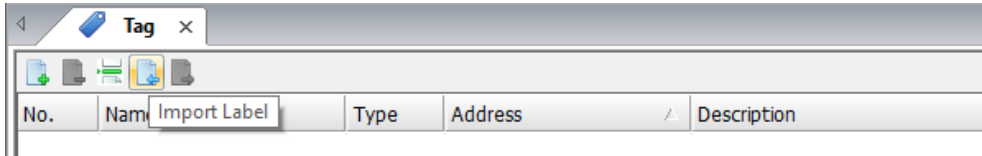


Import Label



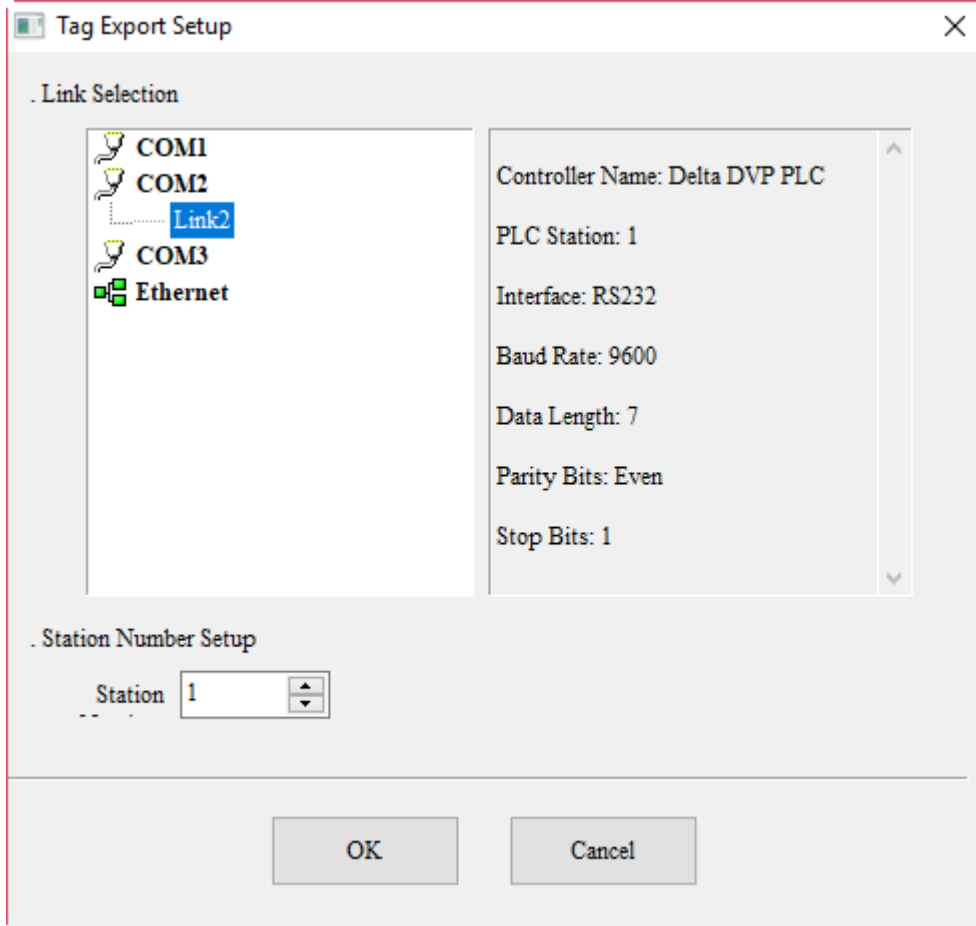
Tag Table

- Run DOPSoft. Select [Options] > [Tag Table]. Click  and select the "HMI.csv" file for importing.



No.	Name	Import Label	Type	Address	Description

- Select the COM Port to import to and set Station number. The default station number is 0, but you can set the number as you like. Press **OK** once finishing the setup.



Tag Export Setup

. Link Selection

- COM1
- COM2
- Link2**
- COM3
- Ethernet

Controller Name: Delta DVP PLC
 PLC Station: 1
 Interface: RS232
 Baud Rate: 9600
 Data Length: 7
 Parity Bits: Even
 Stop Bits: 1

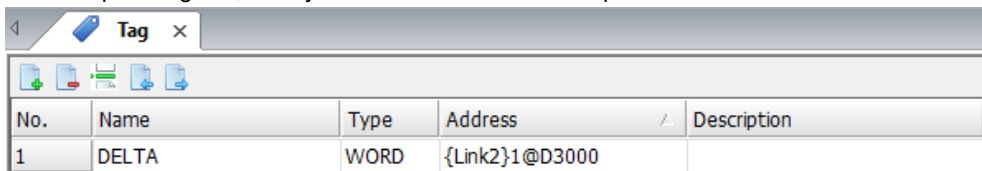
. Station Number Setup

Station: 1

OK Cancel

Import Label


- After pressing **OK**, the Symbol Table of ISPSOft is imported to DOPSoft.



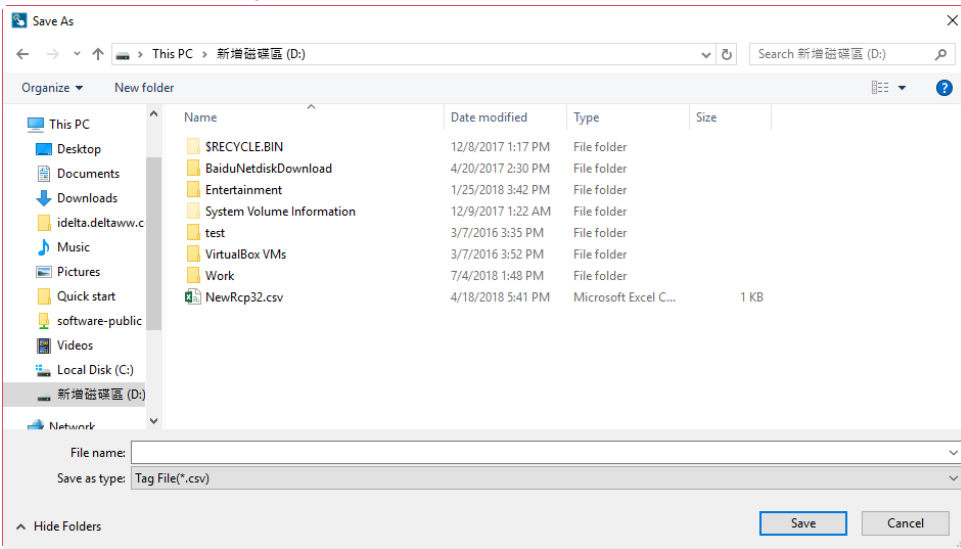
No.	Name	Type	Address	Description
1	DELTA	WORD	{[Link2]}1@D3000	

Note: the imported symbols are all recognized by DOPSoft as upper case letters. Thus, for the example above, the lower case symbols of "test" edited in ISPSOft are recognized as upper case symbols of "TEST".

Tag Table

You can save the edited tag as a CSV file.

Export Label



Add Label



Press to add a new tag data entry.

No.	Name	Type	Address	Description
1	DELTA	WORD	{Link2}1@D3000	
2		WORD		

Insert Label



When you press , the new data entry is inserted above the row of the selected data entry.

No.	Name	Type	Address	Description
1		WORD		
2	DELTA	WORD	{Link2}1@D3000	
3		WORD		

Delete Label

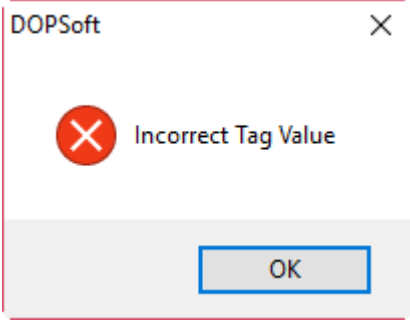


When you select a row of data entry, press to delete the selected data entry.

No.	Name	Type	Address	Description
1	Delete Label	WORD		
2	DELTA	WORD	{Link2}1@D3000	
3		WORD		

28

Exit the screen

Tag Table	
	<p>If you added or inserted a row of data entry, and exit this editing screen without filling in any data info, the following warning message will pop up to warn you that the tag value is incorrect.</p>  <p>The image shows a warning dialog box titled 'DOPSoft' with a close button (X) in the top right corner. The main content of the dialog is a red circle with a white 'X' inside, followed by the text 'Incorrect Tag Value'. At the bottom of the dialog is a button labeled 'OK'.</p>

28.2 HMI Identifier

This chapter explains the HMI Identifier setting provided in DOPSoft. When a HMI Identifier is set on the HMI, an error message will pop up when opening a screen that does not contain an identical HMI Identifier. This function restricts the users to only download the exclusive screen project to the user's exclusive HMI. When enabling the HMI Identifier function, the HMI will match the correct HMI Identifier for normal operation upon booting up. Thus, the HMI Identifier can be set separately for the HMI and screen.

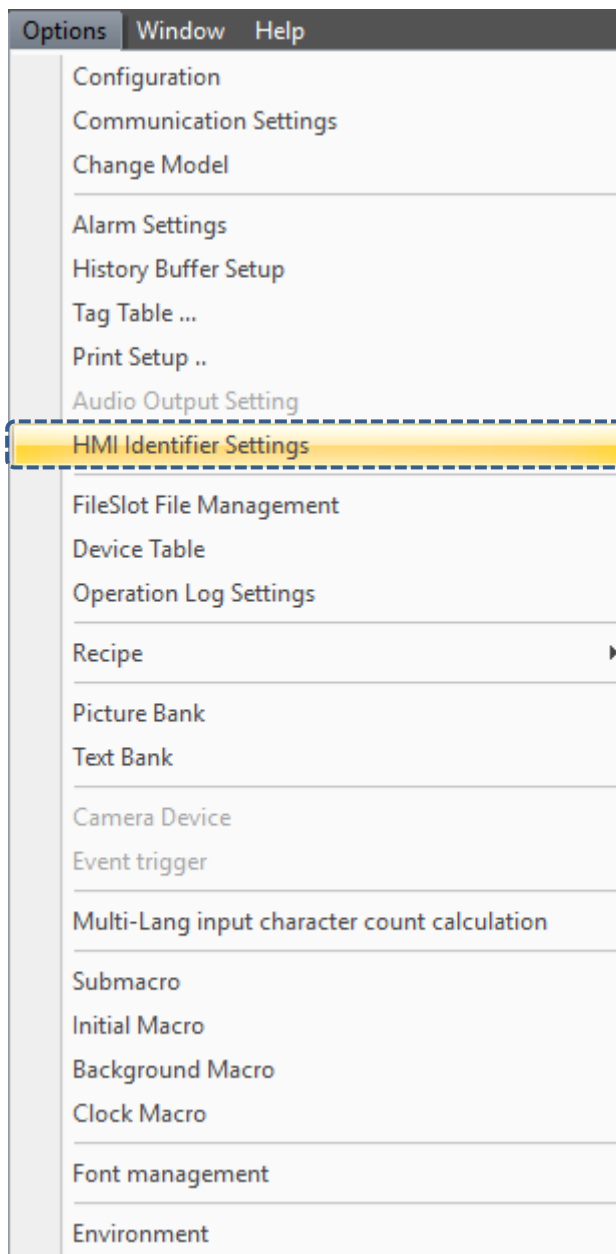
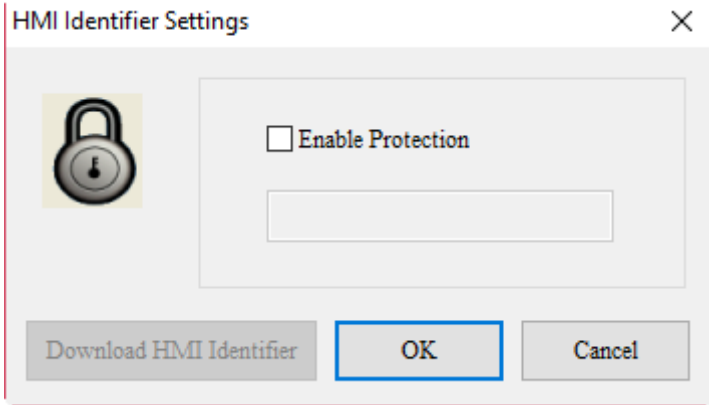


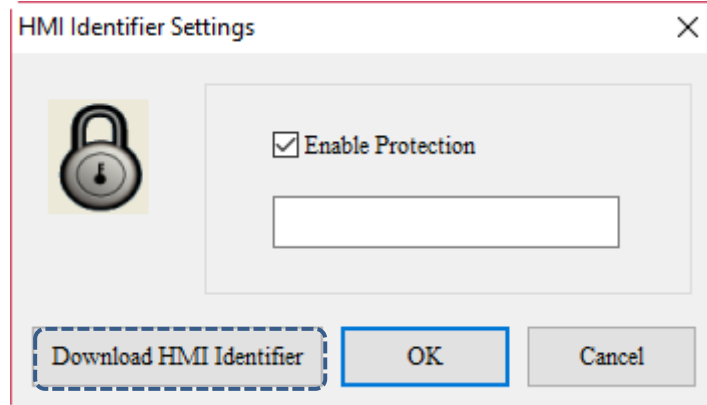
Figure 28.2.1 HMI Identifier Settings

Table 28.2.1 Properties of HMI Identifier Settings

Property of HMI Identifier Settings	
	
Enable Protection	Check to enable protection for the HMI Identifier. <div style="text-align: center;"> <input type="checkbox"/> Enable Protection </div>
Password	The input format for passwords is HEX that supports numerals 0 - 9 and alphabets A - F. Other characters and symbols cannot be correctly entered to the password field.
Download HMI Identifier	<ul style="list-style-type: none"> ■ Executing this button only writes the identifier to the HMI. ■ Once downloaded, the screen file and HMI Identifier will be compared every time when the HMI is turned on.

Note:

1. After you check Enable Protection and set its password, if you download by using Download All Data without executing **Download HMI Identifier**, only the identifier for the screen will be downloaded.



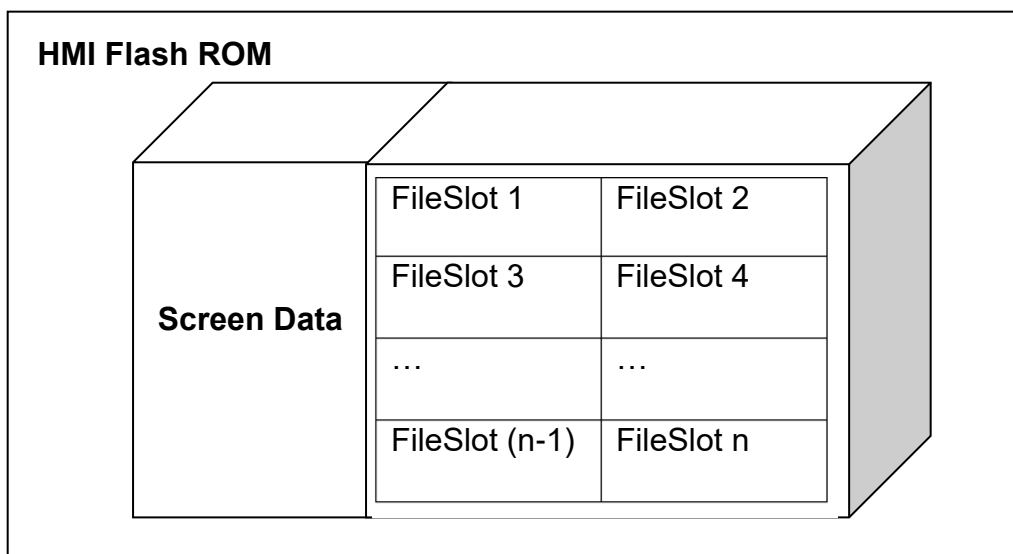
2. When there is an identifier for the HMI, but no identifier for the screen, the [Check HMI Machine ID Fail 1] message will appear.
3. When there is an identifier for the screen, but no identifier for the HMI, the [Check HMI Machine ID Fail 2] message will appear.
4. When there is an identifier for both the HMI and screen, but the comparison does not match, the [Check HMI Machine ID Fail 3] message will appear.
5. If you forget the set identifier, the HMI identifier can only be deleted by going to [Tools] > [Restore Factory Default]. However, all the screen files in the HMI will also be deleted.

28.3 FileSlot File Management

In the FileSlot File Management setup window, users can plan for the size and content of each FileSlot. FileSlot files offer users more flexibility and convenience in planning for storage and use of a large amount of data. After creating a FileSlot, you can use FileSlotRead to read the file content to the register. You can also store the register data in these files. For example, as the pickup arm program for each product is different, you can store the program for each product in a different FileSlot and quickly switch the program for the product by reading a different FileSlot.

Note:

1. After downloading the FileSlot to the HMI, a memory space required by the FileSlot will be reserved in the HMI memory ROM.

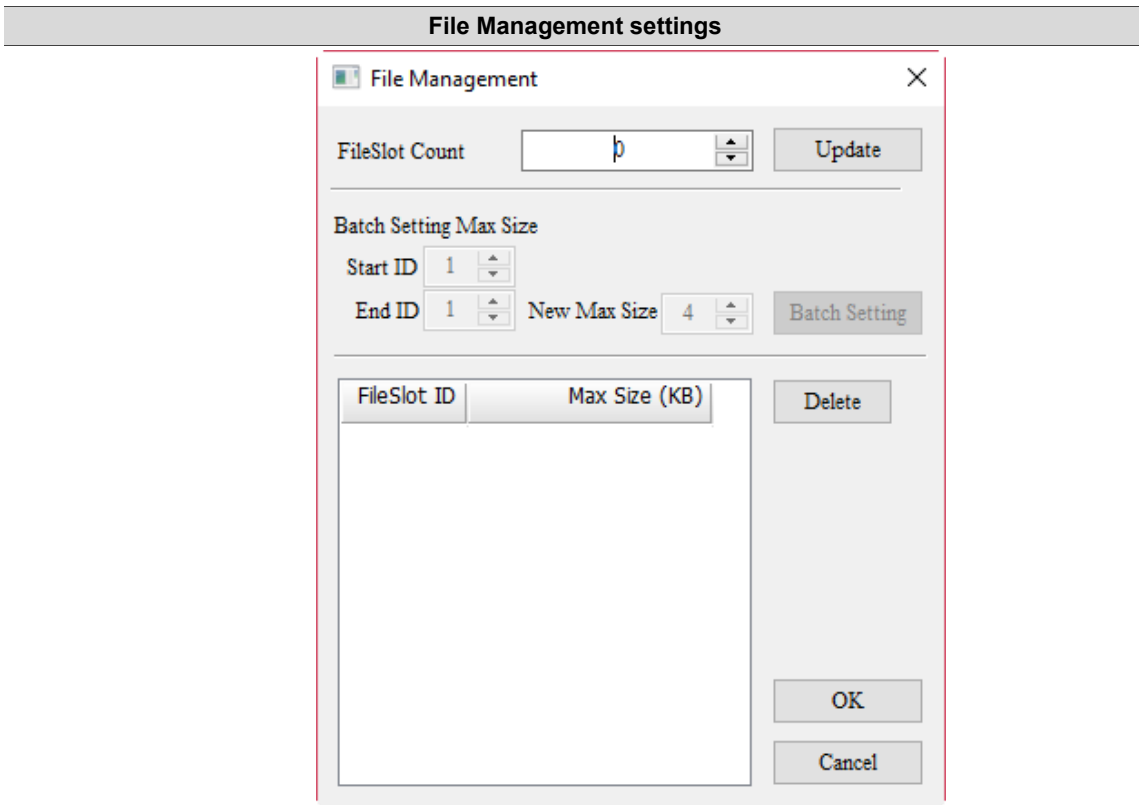


2. With efficiency of the HMI and characteristics of data storage in consideration, only memory space will be reserved when downloading screens with FileSlot to the HMI, instead of directly generating a file. The file macros such as FileSlotWrite and ImportFileSlot are needed in order to really generate the file.
3. To delete the FileSlot file on the HMI, use Format HMI, Restore Factory Default, or the FileSlotRemove macro command to remove the file.
4. When a FileSlot file is in the HMI, downloading the screen will not change the FileSlot file in the HMI. For screen files created using DOPSoft and auto update files for the screens, copying the screens through the File Copy option in the HMI system to the HMI that has the FileSlot file saved in will not change the FileSlot file in the HMI.
5. As updating screens will not change the FileSlot file, we advise that you execute Format HMI or Restore Factory Default before re-planning the screens and FileSlot size.
6. The File Copy function in the HMI system exports the FileSlot file. The exported file is stored in HMI-000\FILESLOT. Through this approach, you can import the FileSlot file to another HMI. If the FileSlot file is saved in the other HMI, the FileSlot file in this HMI will be overwritten.

The following section is the properties for File Management.

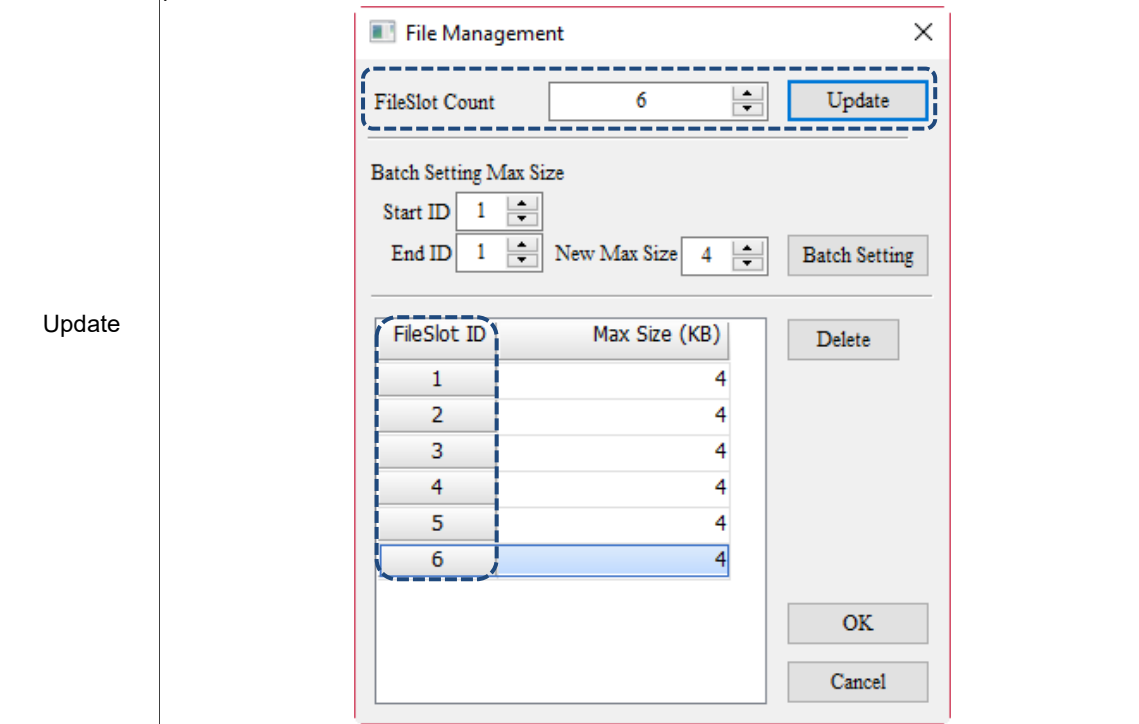
Table 28.3.1 Properties of File Management

28



FileSlot Count
You can input the count of FileSlots you need. You can use up to 1024 FileSlots in maximum.

Input the total FileSlot count, then click **Update** to plan for the set number of FileSlot. As shown in the figure below, if you set the total FileSlot count to 6, there will be 6 FileSlots planned.

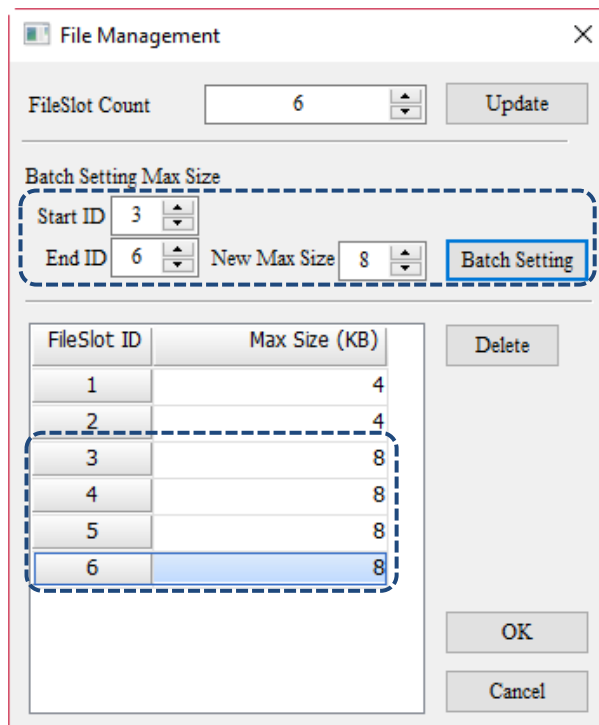


Update

File Management settings

You can set the Max Size for the FileSlot in batch. Enter the Start ID, End ID, and New Max Size. Click **Batch Setting** to set the New Max Size to the FileSlot with the assigned ID. As shown in the figure below, set the Start ID to 3, End ID to 6, and New Max Size to 8 to change the Max Size for the FileSlot of ID3 - ID6 to 8, with the Max Size for the remaining FileSlots kept to the default value of 4.

Batch Setting
Max Size

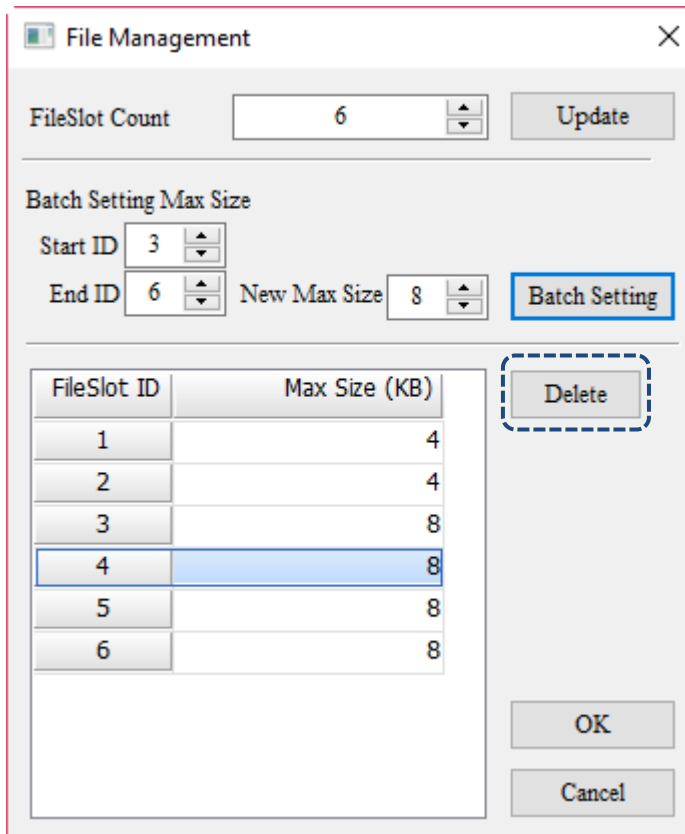


The **Delete** button deletes the FileSlots in the File Management window.

Delete

**Before
deletion**

Select one FileSlot and press **Delete**.



28

File Management settings

There were 6 FileSlots originally, with 5 remaining after the deletion.

File Management [X]

FileSlot Count: [Update]

Batch Setting Max Size

Start ID: [Batch Setting]

End ID: New Max Size: [Batch Setting]

FileSlot ID	Max Size (KB)
1	4
2	4
3	8
4	8
5	8

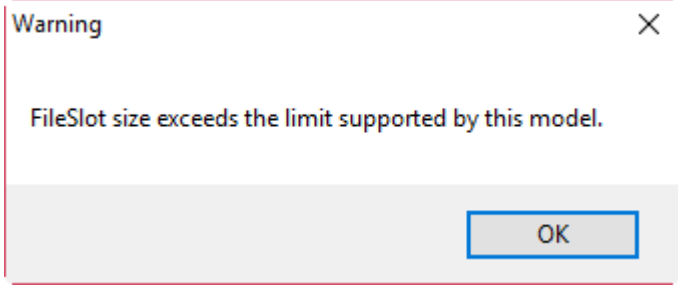

[Delete]

[OK] [Cancel]

After deletion

Each FileSlot can have its Max Size set individually. The maximum value for Max Size is 102400 KB and the minimum value is 4 KB, as listed in the table below.

Max Size	4 KB	DOP-103BQ
		DOP-103WQ
		DOP-107BV
		DOP-107CV
		DOP-107EV
		DOP-107EG
		DOP-107WV
		DOP-110CS
		DOP-110WS

File Management settings	
OK	<p>Once finished setting the FileSlot File Management properties, click OK to save the previous changes and then exit the File Management window. If the total FileSlot file size is larger than the User Application space in the Flash ROM provided for the model, a warning message will pop up, as shown in the figure below. For the size of the User Application space in the Flash ROM of each model, refer to the manual of each model.</p>  <p>The image shows a warning dialog box with a red border. The title bar says 'Warning' and has a close button (X) in the top right corner. The main text reads 'FileSlot size exceeds the limit supported by this model.' At the bottom right, there is an 'OK' button.</p>
Cancel	<p>When you click Cancel, there is no action of saving no matter if there is any change in the data. It is same as clicking  on the upper right corner of the window.</p>

The following section is the example of File Management.

Table 28.3.2 File Management example

28

File Management example	
<p>Add FileSlot</p>	<ul style="list-style-type: none"> ■ Go to [Options] > [File Management]. ■ Set the FileSlot Count to 5. Click Update to display the set FileSlot Count. You can set the maximum file size for each FileSlot, and when finished, click OK to exit the File Management window. <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> </div>
<p>Create the button for executing macro command</p>	<p>On the DOPSoft editing screen, create two Momentary buttons and set their Write Addresses to \$50.0 and \$50.1. In On Macro, enter the respective FileSlotRead command, \$100 = FileSlotRead(\$101, \$1000, \$102, \$104) and FileSlotWrite command, \$100 = FileSlotWrite(\$101, \$1000, \$102, \$104)</p> <div style="margin-top: 10px;"> <p>Screen_1 Momentary_003 {FileSlotWrite} [On Macro]</p> <p>Screen_1 Momentary_002 {FileSlotRead} [On Macro]</p> </div>

File Management example

Create Numeric Entry element

- On the screen, create Numeric Entry elements that correspond to the macro command parameters, as shown in the figure below.

Return(\$100)	W:\$100	12345	
FileSlot ID(\$101)	W:\$101	12345	
Start Add(\$102)	W:\$102	4567891	
Data Len(\$104)	W:\$104	12345	

- On the screen, create Numeric Entry elements (addresses of \$1000 - \$1048) to read the content of the FileSlot file, as shown in the figure below.

Data Area(\$1000)

W:\$1000	W:\$1001	W:\$1002	W:\$1003	W:\$1004	W:\$1005	W:\$1006
W:\$1007	W:\$1008	W:\$1009	W:\$1010	W:\$1011	W:\$1012	W:\$1013
W:\$1014	W:\$1015	W:\$1016	W:\$1017	W:\$1018	W:\$1019	W:\$1020
W:\$1021	W:\$1022	W:\$1023	W:\$1024	W:\$1025	W:\$1026	W:\$1027
W:\$1028	W:\$1029	W:\$1030	W:\$1031	W:\$1032	W:\$1033	W:\$1034
W:\$1035	W:\$1036	W:\$1037	W:\$1038	W:\$1039	W:\$1040	W:\$1041
W:\$1042	W:\$1043	W:\$1044	W:\$1045	W:\$1046	W:\$1047	W:\$1048

Execution result

- When all the elements are created, execute compile and download the screen to the HMI.
- Use the FileSlotWrite macro to write the data in the data area to the specified FileSlot file. The example in the figure below shows how to write the 10 Words in the data area to the FileSlot file with the ID as 1. When the data is written into the FileSlot, it can be read back using FileSlotRead.

FileSlotRead	Return(\$100)	1		Export
FileSlotWrite	FileSlot ID(\$101)	1		
FileSlotRemove	Start Add(\$102)	0		Import
FileSlotGetLength	Data Len(\$104)	10		
FileSlotEXPORT	Return Len(\$106)	0		
FileSlotIMPORT	Device(\$108)	0	2:USB, 3:SD	
Chinese	FileName Len(\$110)	0		
English	FileName(\$120)			

Data Area(\$1000)

1	2	3	4	5	6	7
8	9	10	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

- Before using the FileSlotRead, be sure to use FileSlotWrite or FileSlotIMPORT to create the actual files.

28

28.4 Device Data table

Device Data table enables the HMI to import or export non-volatile \$M data, but it does not enable downloading after editing of the data on the DOPSoft. To use the table, read the \$M data from HMI A. Use the upload function available on the DOPSoft to upload and export the data. Then, import the data to HMI B to get a shared content of \$M data.

With [Include device table] checked, you can update \$M data into the HMI when downloading all screen data, creating screen data files, or copying files, which enhances convenience when multiple HMIs need to share the same set of \$M data.

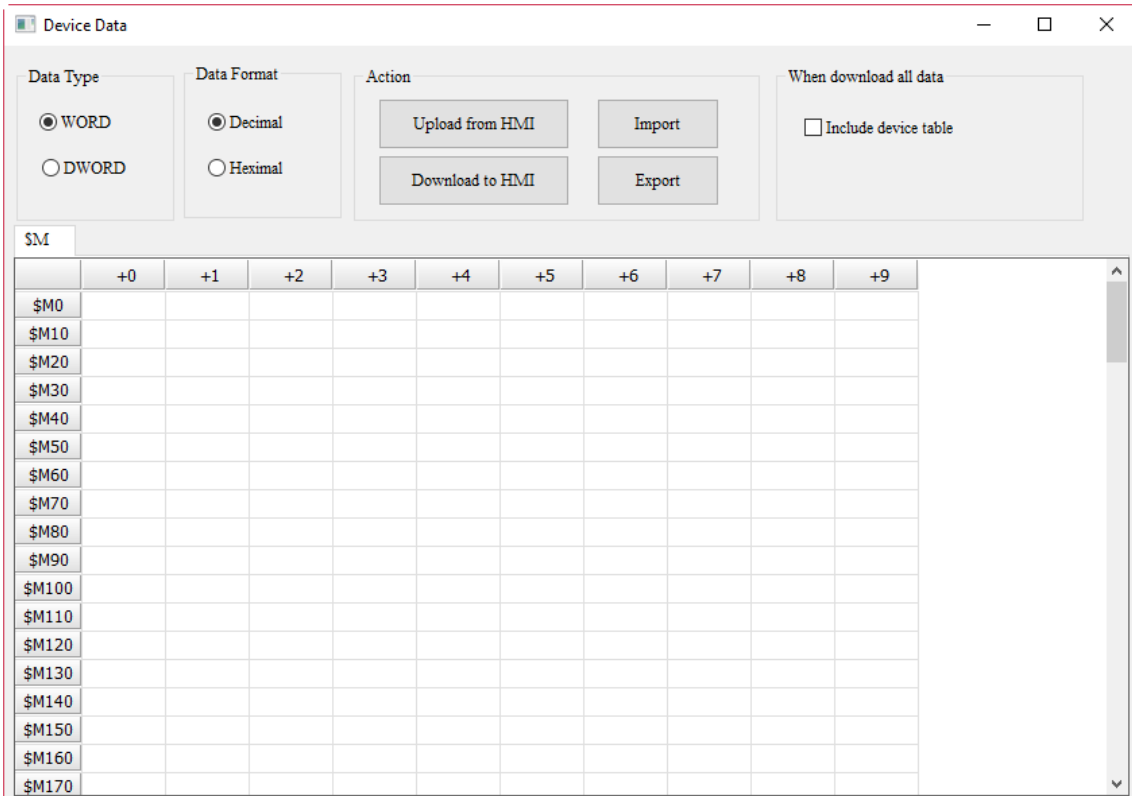
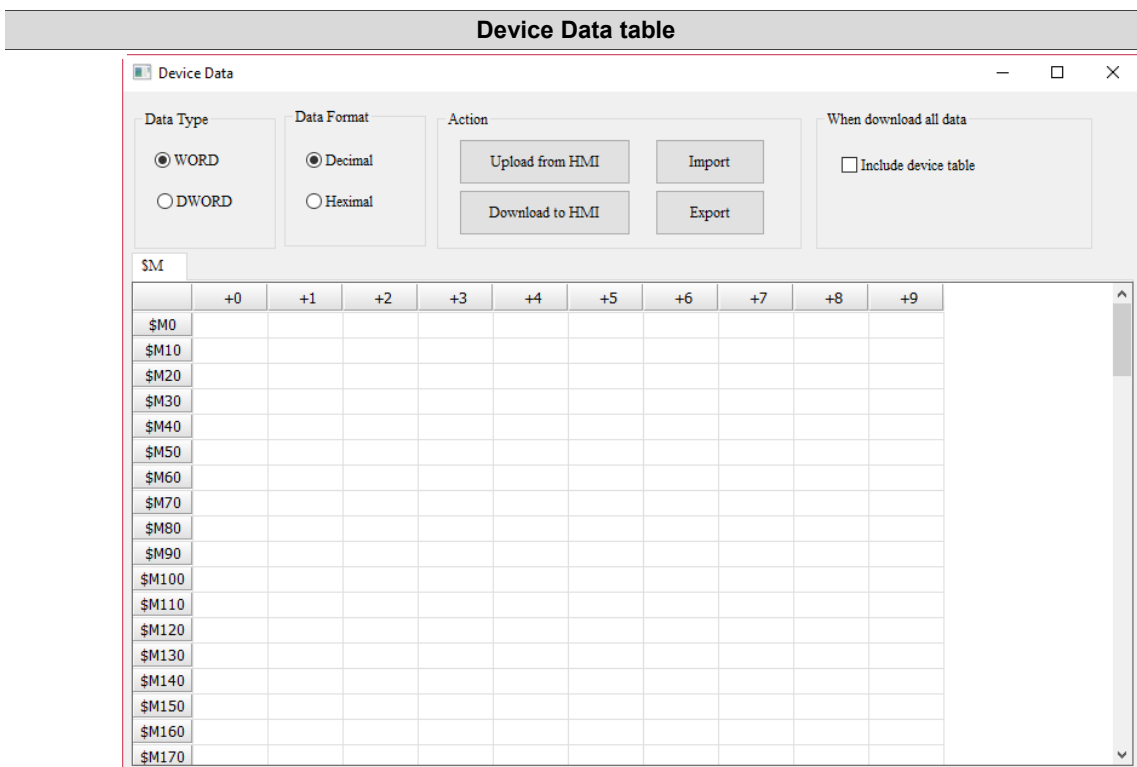


Figure 28.4.1 Device Data table

Table 28.4.1 Properties of Device Data table



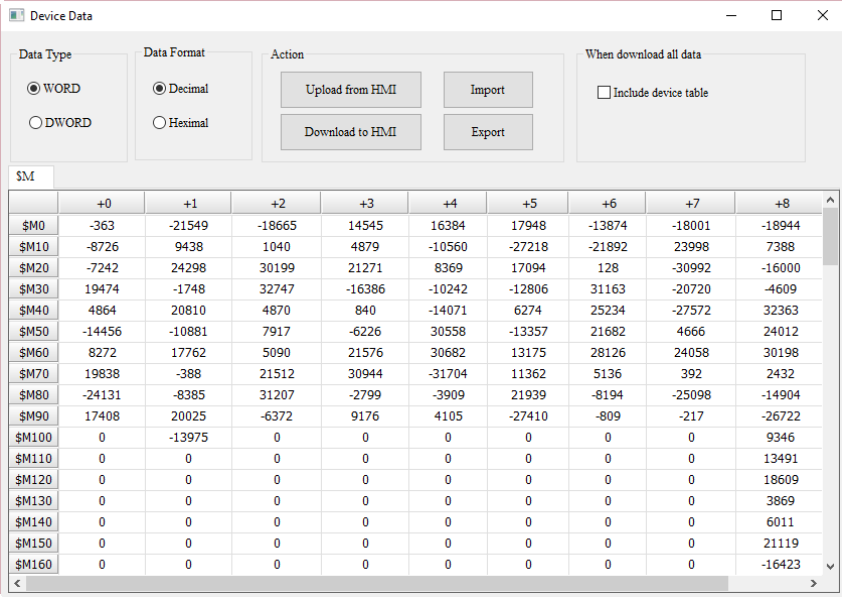
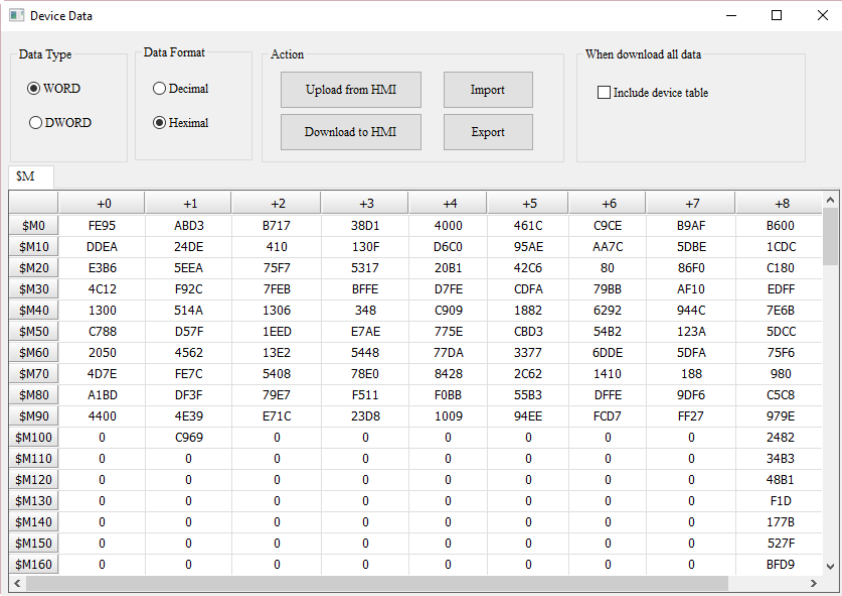
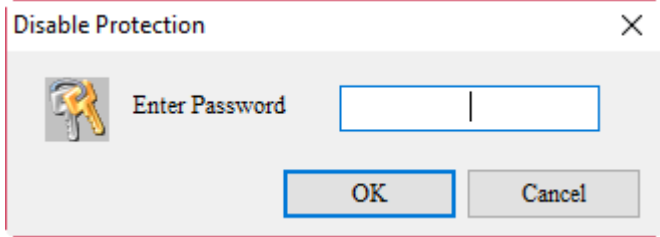
28

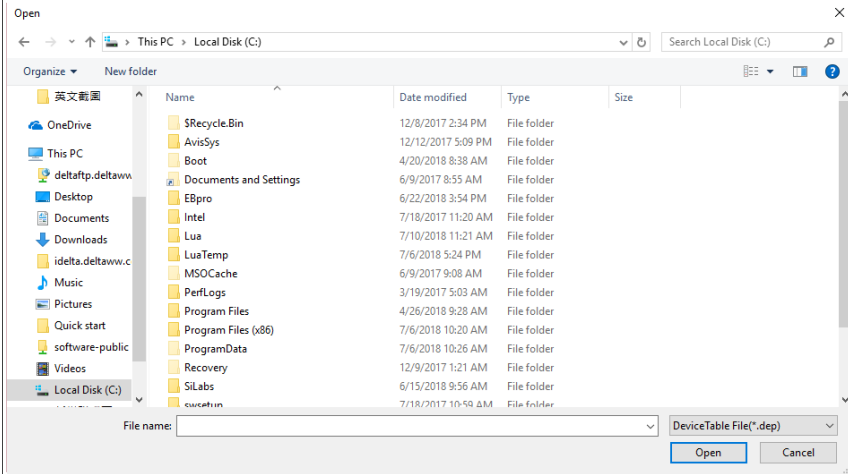
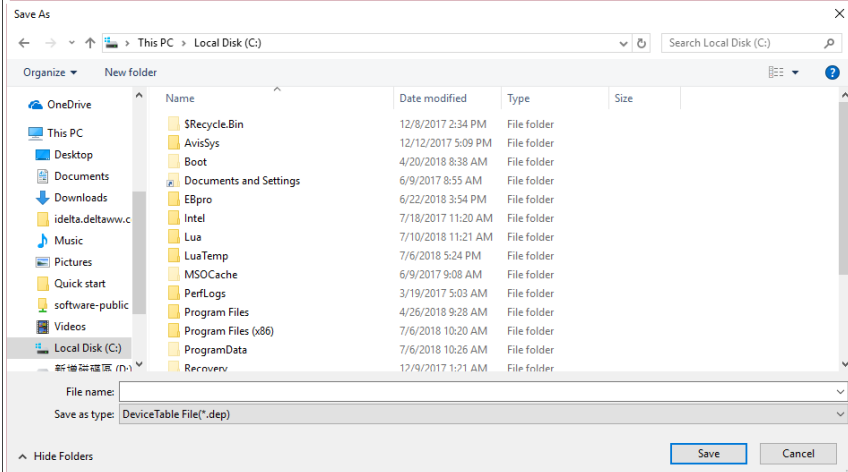
Device Data table displays \$M non-volatile data with a range of \$M0 - \$M1023. You can set the Data Type or Data Format for display.

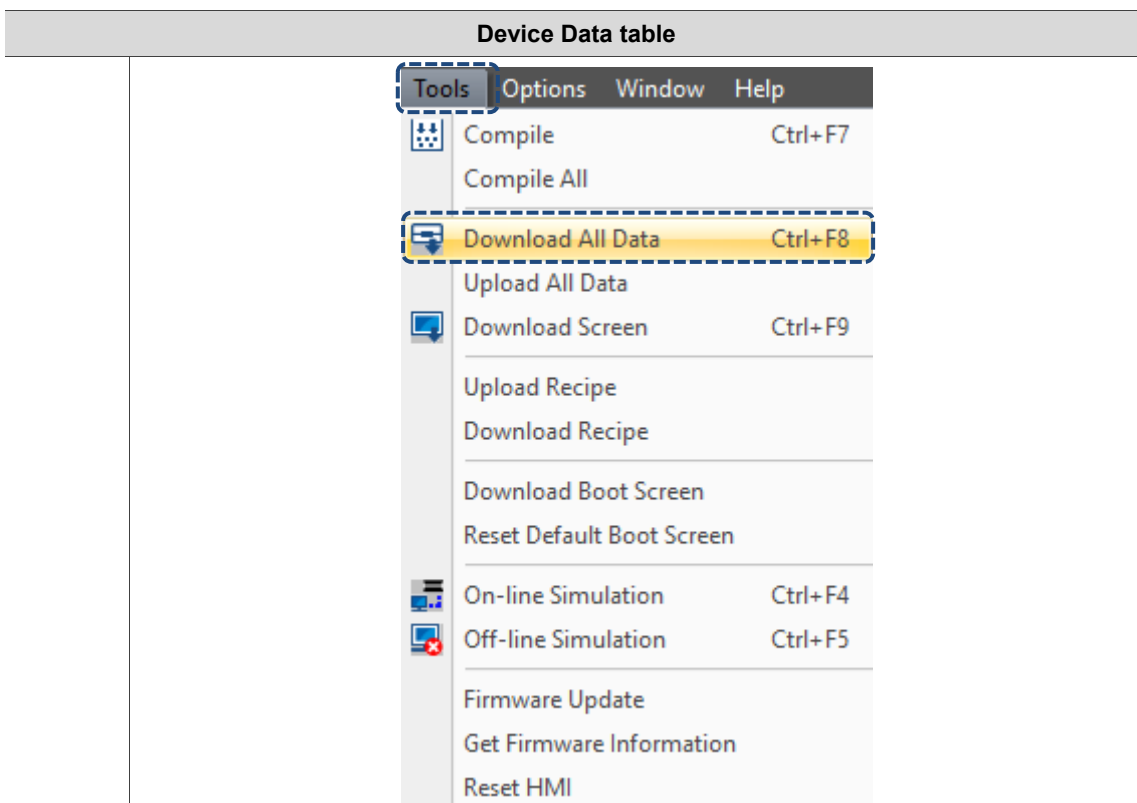
Data Type	WORD	The default Data Type displayed is WORD.
	DWORD	You can change the \$M data to the data type displayed for DWORD.

DWORD											
	\$M0	-1412170091	-1223185453	953267991	1073756369	1176256512	-909228516	-1179661874	-1241466449	-1044793856	
	\$M10	618585578	68166878	319751184	-692055281	-1783703872	-1434675794	1572776572	484203966	-536994596	
	\$M20	1592452022	1979145962	1394046455	548492055	1120280753	8405702	-2031091584	-1048541456	1562820992	
	\$M30	-114537454	2146171180	-1073840149	-671170562	-839198722	2042351098	-1357874757	-302010608	388886015	
	\$M40	1363809024	319181130	55055110	-922156216	411224329	1653741698	-1806933358	2120979532	-67535253	
	\$M50	-713046136	518903167	-408019219	2002708398	-875333794	1421003731	305812658	1573655098	1631477196	
	\$M60	1164058704	333596002	1414009826	2010797128	863467482	1843278711	1576693214	1979080186	-571312650	
	\$M70	-25408130	1409875580	2027967496	-2077722400	744653864	336604258	25695248	159383944	-1610086016	
	\$M80	-549477955	2045239103	-183404057	-256117487	1437855931	-536980045	-1644765186	-976708106	81446344	
	\$M90	1312375808	-417575367	601417500	269034456	-1796337655	-52980498	-14156585	-1751187673	-1376938082	
	\$M100	-915865600	51561	0	0	0	0	0	612499456	1560814722	
	\$M110	0	0	0	0	0	0	0	884146176	-1075170125	
	\$M120	0	0	0	0	0	0	0	1219559424	-1894037327	
	\$M130	0	0	0	0	0	0	0	253558784	-1493758179	
	\$M140	0	0	0	0	0	0	0	393936896	-122218629	
	\$M150	0	0	0	0	0	0	0	1384054784	2121552511	
\$M160	0	0	0	0	0	0	0	-1076297728	-26624039		

28

Device Data table																																																																																																																																																																																						
Data Format	Decimal	<p>The default Data Format displayed is Decimal.</p>  <p>The screenshot shows the 'Device Data' window with 'Data Format' set to 'Decimal'. The table below shows the values for registers \$M0 through \$M160.</p> <table border="1"> <thead> <tr> <th></th> <th>+0</th> <th>+1</th> <th>+2</th> <th>+3</th> <th>+4</th> <th>+5</th> <th>+6</th> <th>+7</th> <th>+8</th> </tr> </thead> <tbody> <tr><td>\$M0</td><td>-363</td><td>-21549</td><td>-18665</td><td>14545</td><td>16384</td><td>17948</td><td>-13874</td><td>-18001</td><td>-18944</td></tr> <tr><td>\$M10</td><td>-8726</td><td>9438</td><td>1040</td><td>4879</td><td>-10560</td><td>-27218</td><td>-21892</td><td>23998</td><td>7388</td></tr> <tr><td>\$M20</td><td>-7242</td><td>24298</td><td>30199</td><td>21271</td><td>8369</td><td>17094</td><td>128</td><td>-30992</td><td>-16000</td></tr> <tr><td>\$M30</td><td>19474</td><td>-1748</td><td>32747</td><td>-16386</td><td>-10242</td><td>-12806</td><td>31163</td><td>-20720</td><td>-4609</td></tr> <tr><td>\$M40</td><td>4864</td><td>20810</td><td>4870</td><td>840</td><td>-14071</td><td>6274</td><td>25234</td><td>-27572</td><td>32363</td></tr> <tr><td>\$M50</td><td>-14456</td><td>-10881</td><td>7917</td><td>-6226</td><td>30558</td><td>-13357</td><td>21682</td><td>4666</td><td>24012</td></tr> <tr><td>\$M60</td><td>8272</td><td>17762</td><td>5090</td><td>21576</td><td>30682</td><td>13175</td><td>28126</td><td>24058</td><td>30198</td></tr> <tr><td>\$M70</td><td>19838</td><td>-388</td><td>21512</td><td>30944</td><td>-31704</td><td>11362</td><td>5136</td><td>392</td><td>2432</td></tr> <tr><td>\$M80</td><td>-24131</td><td>-8385</td><td>31207</td><td>-2799</td><td>-3909</td><td>21939</td><td>-8194</td><td>-25098</td><td>-14904</td></tr> <tr><td>\$M90</td><td>17408</td><td>20025</td><td>-6372</td><td>9176</td><td>4105</td><td>-27410</td><td>-809</td><td>-217</td><td>-26722</td></tr> <tr><td>\$M100</td><td>0</td><td>-13975</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>9346</td></tr> <tr><td>\$M110</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>13491</td></tr> <tr><td>\$M120</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>18609</td></tr> <tr><td>\$M130</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>3869</td></tr> <tr><td>\$M140</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>6011</td></tr> <tr><td>\$M150</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>21119</td></tr> <tr><td>\$M160</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>-16423</td></tr> </tbody> </table>		+0	+1	+2	+3	+4	+5	+6	+7	+8	\$M0	-363	-21549	-18665	14545	16384	17948	-13874	-18001	-18944	\$M10	-8726	9438	1040	4879	-10560	-27218	-21892	23998	7388	\$M20	-7242	24298	30199	21271	8369	17094	128	-30992	-16000	\$M30	19474	-1748	32747	-16386	-10242	-12806	31163	-20720	-4609	\$M40	4864	20810	4870	840	-14071	6274	25234	-27572	32363	\$M50	-14456	-10881	7917	-6226	30558	-13357	21682	4666	24012	\$M60	8272	17762	5090	21576	30682	13175	28126	24058	30198	\$M70	19838	-388	21512	30944	-31704	11362	5136	392	2432	\$M80	-24131	-8385	31207	-2799	-3909	21939	-8194	-25098	-14904	\$M90	17408	20025	-6372	9176	4105	-27410	-809	-217	-26722	\$M100	0	-13975	0	0	0	0	0	0	9346	\$M110	0	0	0	0	0	0	0	0	13491	\$M120	0	0	0	0	0	0	0	0	18609	\$M130	0	0	0	0	0	0	0	0	3869	\$M140	0	0	0	0	0	0	0	0	6011	\$M150	0	0	0	0	0	0	0	0	21119	\$M160	0	0	0	0	0	0	0	0	-16423
		+0	+1	+2	+3	+4	+5	+6	+7	+8																																																																																																																																																																												
\$M0	-363	-21549	-18665	14545	16384	17948	-13874	-18001	-18944																																																																																																																																																																													
\$M10	-8726	9438	1040	4879	-10560	-27218	-21892	23998	7388																																																																																																																																																																													
\$M20	-7242	24298	30199	21271	8369	17094	128	-30992	-16000																																																																																																																																																																													
\$M30	19474	-1748	32747	-16386	-10242	-12806	31163	-20720	-4609																																																																																																																																																																													
\$M40	4864	20810	4870	840	-14071	6274	25234	-27572	32363																																																																																																																																																																													
\$M50	-14456	-10881	7917	-6226	30558	-13357	21682	4666	24012																																																																																																																																																																													
\$M60	8272	17762	5090	21576	30682	13175	28126	24058	30198																																																																																																																																																																													
\$M70	19838	-388	21512	30944	-31704	11362	5136	392	2432																																																																																																																																																																													
\$M80	-24131	-8385	31207	-2799	-3909	21939	-8194	-25098	-14904																																																																																																																																																																													
\$M90	17408	20025	-6372	9176	4105	-27410	-809	-217	-26722																																																																																																																																																																													
\$M100	0	-13975	0	0	0	0	0	0	9346																																																																																																																																																																													
\$M110	0	0	0	0	0	0	0	0	13491																																																																																																																																																																													
\$M120	0	0	0	0	0	0	0	0	18609																																																																																																																																																																													
\$M130	0	0	0	0	0	0	0	0	3869																																																																																																																																																																													
\$M140	0	0	0	0	0	0	0	0	6011																																																																																																																																																																													
\$M150	0	0	0	0	0	0	0	0	21119																																																																																																																																																																													
\$M160	0	0	0	0	0	0	0	0	-16423																																																																																																																																																																													
Action	Upload from HMI	<p>You can change the \$M data to the data format displayed for Hexadecimal.</p>  <p>The screenshot shows the 'Device Data' window with 'Data Format' set to 'Hexadecimal'. The table below shows the hexadecimal values for registers \$M0 through \$M160.</p> <table border="1"> <thead> <tr> <th></th> <th>+0</th> <th>+1</th> <th>+2</th> <th>+3</th> <th>+4</th> <th>+5</th> <th>+6</th> <th>+7</th> <th>+8</th> </tr> </thead> <tbody> <tr><td>\$M0</td><td>FE95</td><td>ABD3</td><td>B717</td><td>38D1</td><td>4000</td><td>461C</td><td>C9CE</td><td>B9AF</td><td>B600</td></tr> <tr><td>\$M10</td><td>DDEA</td><td>24DE</td><td>410</td><td>130F</td><td>D6C0</td><td>95AE</td><td>AA7C</td><td>5DBE</td><td>1CDC</td></tr> <tr><td>\$M20</td><td>E386</td><td>5EEA</td><td>75F7</td><td>5317</td><td>20B1</td><td>42C6</td><td>80</td><td>86F0</td><td>C180</td></tr> <tr><td>\$M30</td><td>4C12</td><td>F92C</td><td>7FEB</td><td>BFFE</td><td>D7FE</td><td>CDA</td><td>798B</td><td>AF10</td><td>EDFF</td></tr> <tr><td>\$M40</td><td>1300</td><td>514A</td><td>1306</td><td>348</td><td>C909</td><td>1882</td><td>6292</td><td>944C</td><td>7E6B</td></tr> <tr><td>\$M50</td><td>C788</td><td>D57F</td><td>1EED</td><td>E7AE</td><td>775E</td><td>CB03</td><td>54B2</td><td>123A</td><td>5DCC</td></tr> <tr><td>\$M60</td><td>2050</td><td>4562</td><td>13E2</td><td>5448</td><td>77DA</td><td>3377</td><td>6DDE</td><td>5DFA</td><td>75F6</td></tr> <tr><td>\$M70</td><td>4D7E</td><td>FE7C</td><td>5408</td><td>78E0</td><td>8428</td><td>2C62</td><td>1410</td><td>188</td><td>980</td></tr> <tr><td>\$M80</td><td>A18D</td><td>DF3F</td><td>79E7</td><td>F511</td><td>F0BB</td><td>55B3</td><td>DFFE</td><td>9DF6</td><td>C5C8</td></tr> <tr><td>\$M90</td><td>4400</td><td>4E39</td><td>E71C</td><td>23D8</td><td>1009</td><td>94EE</td><td>FCD7</td><td>FF27</td><td>979E</td></tr> <tr><td>\$M100</td><td>0</td><td>C969</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>2482</td></tr> <tr><td>\$M110</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>34B3</td></tr> <tr><td>\$M120</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>48B1</td></tr> <tr><td>\$M130</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>F1D</td></tr> <tr><td>\$M140</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>177B</td></tr> <tr><td>\$M150</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>527F</td></tr> <tr><td>\$M160</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>BFD9</td></tr> </tbody> </table>		+0	+1	+2	+3	+4	+5	+6	+7	+8	\$M0	FE95	ABD3	B717	38D1	4000	461C	C9CE	B9AF	B600	\$M10	DDEA	24DE	410	130F	D6C0	95AE	AA7C	5DBE	1CDC	\$M20	E386	5EEA	75F7	5317	20B1	42C6	80	86F0	C180	\$M30	4C12	F92C	7FEB	BFFE	D7FE	CDA	798B	AF10	EDFF	\$M40	1300	514A	1306	348	C909	1882	6292	944C	7E6B	\$M50	C788	D57F	1EED	E7AE	775E	CB03	54B2	123A	5DCC	\$M60	2050	4562	13E2	5448	77DA	3377	6DDE	5DFA	75F6	\$M70	4D7E	FE7C	5408	78E0	8428	2C62	1410	188	980	\$M80	A18D	DF3F	79E7	F511	F0BB	55B3	DFFE	9DF6	C5C8	\$M90	4400	4E39	E71C	23D8	1009	94EE	FCD7	FF27	979E	\$M100	0	C969	0	0	0	0	0	0	2482	\$M110	0	0	0	0	0	0	0	0	34B3	\$M120	0	0	0	0	0	0	0	0	48B1	\$M130	0	0	0	0	0	0	0	0	F1D	\$M140	0	0	0	0	0	0	0	0	177B	\$M150	0	0	0	0	0	0	0	0	527F	\$M160	0	0	0	0	0	0	0	0	BFD9
		+0	+1	+2	+3	+4	+5	+6	+7	+8																																																																																																																																																																												
\$M0	FE95	ABD3	B717	38D1	4000	461C	C9CE	B9AF	B600																																																																																																																																																																													
\$M10	DDEA	24DE	410	130F	D6C0	95AE	AA7C	5DBE	1CDC																																																																																																																																																																													
\$M20	E386	5EEA	75F7	5317	20B1	42C6	80	86F0	C180																																																																																																																																																																													
\$M30	4C12	F92C	7FEB	BFFE	D7FE	CDA	798B	AF10	EDFF																																																																																																																																																																													
\$M40	1300	514A	1306	348	C909	1882	6292	944C	7E6B																																																																																																																																																																													
\$M50	C788	D57F	1EED	E7AE	775E	CB03	54B2	123A	5DCC																																																																																																																																																																													
\$M60	2050	4562	13E2	5448	77DA	3377	6DDE	5DFA	75F6																																																																																																																																																																													
\$M70	4D7E	FE7C	5408	78E0	8428	2C62	1410	188	980																																																																																																																																																																													
\$M80	A18D	DF3F	79E7	F511	F0BB	55B3	DFFE	9DF6	C5C8																																																																																																																																																																													
\$M90	4400	4E39	E71C	23D8	1009	94EE	FCD7	FF27	979E																																																																																																																																																																													
\$M100	0	C969	0	0	0	0	0	0	2482																																																																																																																																																																													
\$M110	0	0	0	0	0	0	0	0	34B3																																																																																																																																																																													
\$M120	0	0	0	0	0	0	0	0	48B1																																																																																																																																																																													
\$M130	0	0	0	0	0	0	0	0	F1D																																																																																																																																																																													
\$M140	0	0	0	0	0	0	0	0	177B																																																																																																																																																																													
\$M150	0	0	0	0	0	0	0	0	527F																																																																																																																																																																													
\$M160	0	0	0	0	0	0	0	0	BFD9																																																																																																																																																																													
Action	Download to HMI	<ul style="list-style-type: none"> This action reads the current \$M data on the HMI and uploads it to this Device Data table for display. Before carrying out this action, you will be required to enter the highest security password. The default is 12345678. 																																																																																																																																																																																				
	Upload from HMI	<ul style="list-style-type: none"> This action downloads the \$M data displayed on the Device Data table to the HMI. You can check if the data is correct by creating registers \$M0 - \$M1023 on the HMI. 																																																																																																																																																																																				

Device Data table	
Import	<p>You can import the Device Data table stored on another HMI. The supported file format is .dep.</p> 
Action	<p>You can export the \$M data displayed on the current Device Data table. The file format saved is .dep.</p> 
When download all data	<p>■ When [Include device table] is checked, you can download \$M non-volatile data to the HMI by executing Downloading All Data.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid #ccc; padding: 10px; width: 45%;"> <p style="text-align: center; margin-bottom: 5px;">Action</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid #ccc; padding: 5px; width: 45%; text-align: center;">Upload from HMI</div> <div style="border: 1px solid #ccc; padding: 5px; width: 45%; text-align: center;">Import</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid #ccc; padding: 5px; width: 45%; text-align: center;">Download to HMI</div> <div style="border: 1px solid #ccc; padding: 5px; width: 45%; text-align: center;">Export</div> </div> </div> <div style="border: 1px solid #ccc; padding: 10px; width: 45%;"> <p style="text-align: center; margin-bottom: 5px;">When download all data</p> <div style="text-align: center; margin-top: 10px;"> <div style="border: 2px dashed #00aaff; padding: 5px; display: inline-block;"> <input checked="" type="checkbox"/> Include device table </div> </div> </div> </div>

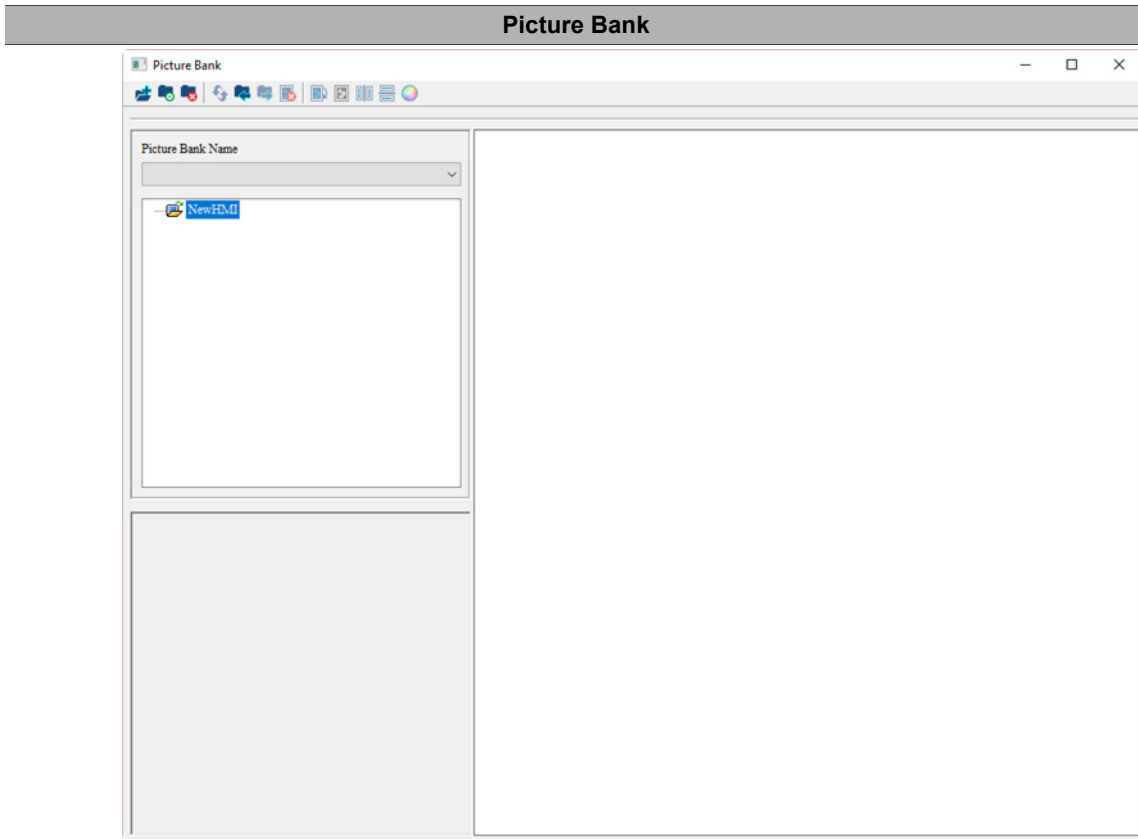














- When [Include device table] is checked, you can create the screen data file to sync the Device Data table to another HMI via file copying.



28.5 Picture Bank

Picture Bank enables users to quickly apply the pictures to the elements. It allows users to import pictures not provided by the system and perform simple processing on the pictures, such as Inverse, Convert to 256 Colors Grayscale, Horizontal Mirror, and Vertical Mirror.

Table 28.5.1 Properties of Picture Bank





Picture Bank provides functions including [Add Picture Bank ], [Open / Install Picture Bank ], [Remove Picture Bank ], [Update Picture Bank Content ], [Import Picture Data ], [Export Picture Bank Content to File ], [Delete ], [Inverse ], [Convert to 256 Colors Grayscale ], [Horizontal Mirror ], [Vertical Mirror ], and [Adjust Saturation ].

-  Click  and the software will require that you enter the name for the picture bank.

New Picture Bank ✕

Bank


-  After adding the picture bank, click  to import the picture to the picture bank.

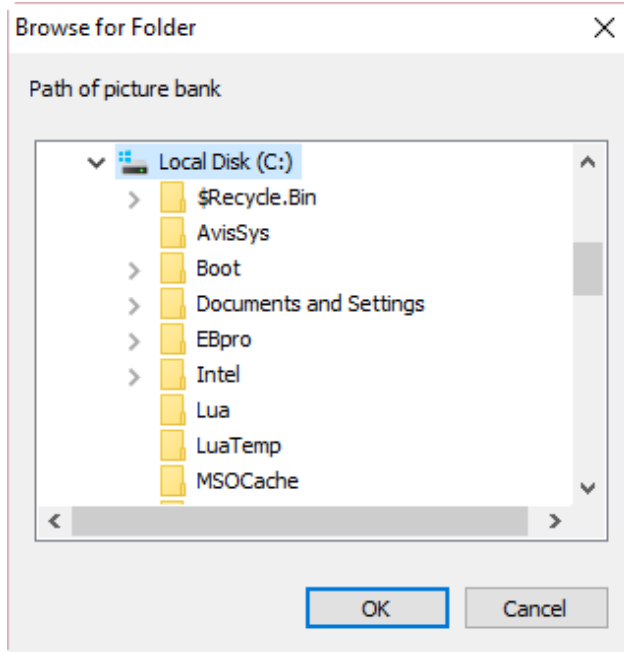
28

Picture Bank

Open / Install Picture Bank




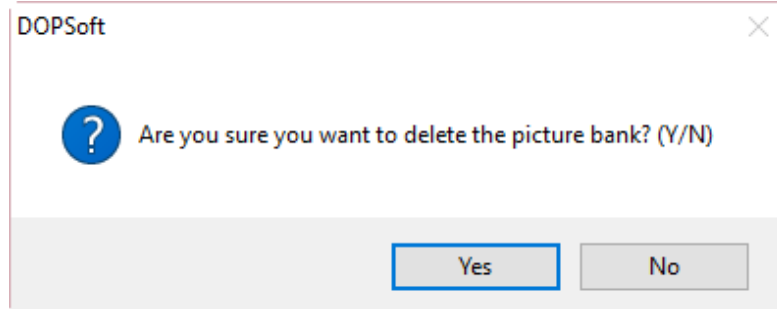
Open / Install Picture Bank enables users to use the picture bank created in another project after clicking  to have it installed. You need to select the path to the location where the old picture bank is stored.



Remove Picture Bank



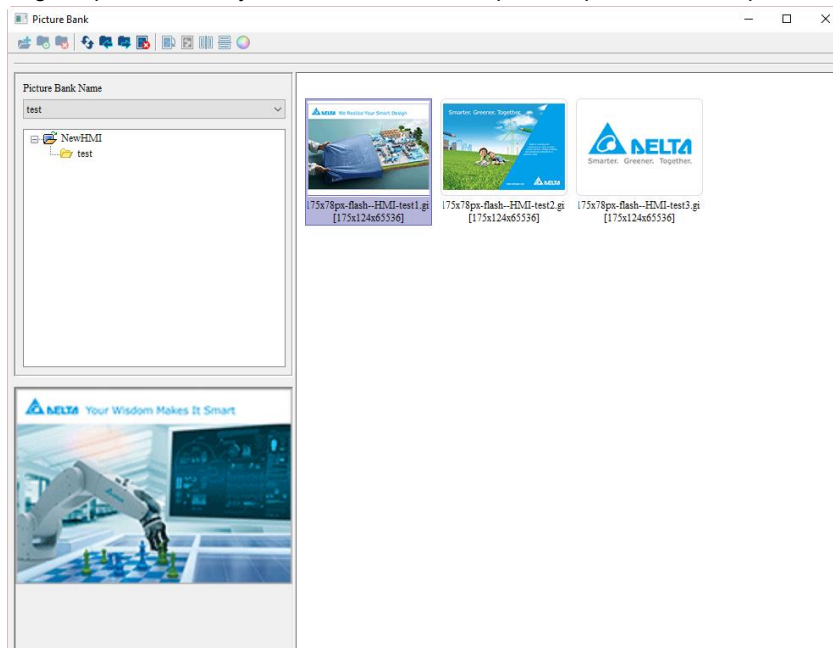
After you click , the software will ask if you would like to remove the picture bank.



Import Picture Data



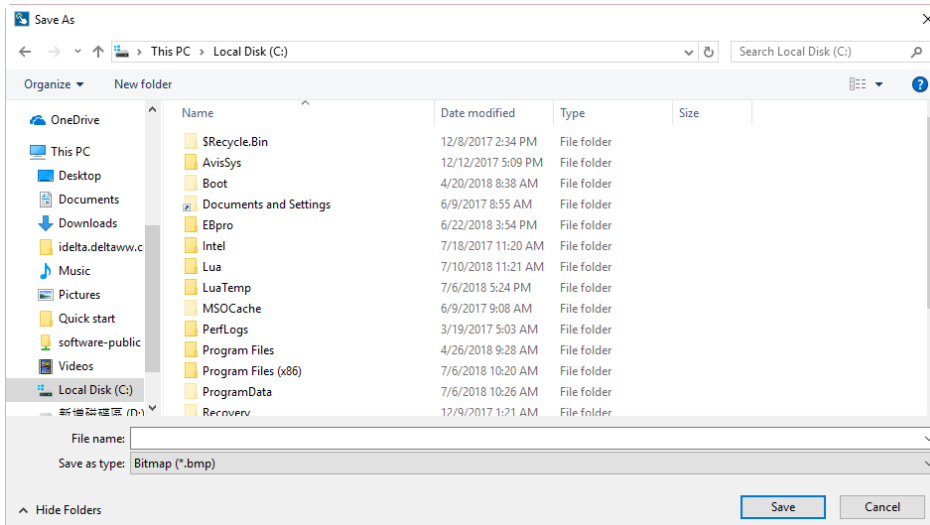
After adding the picture bank, you can click  to import the picture into the picture bank.



Picture Bank

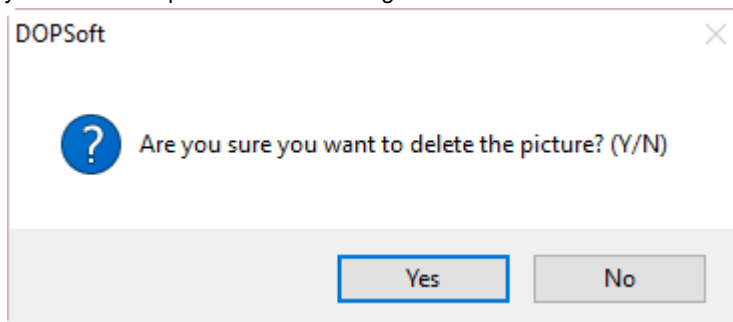
After importing the picture, the content of the picture bank can also be exported. The file will be exported according to the selected picture file format. Formats such as JPG and PNG will be saved in .bmp format; if the picture file format is GIF, it will be saved in .GIP format.

Export Picture Bank Content to File



This function is to delete the imported picture data and pictures. Before deleting, the program will confirm with you whether to proceed with deleting.

Delete



The Inverse function switches colors for the original picture to have it displayed in negatives.

Inverse
























The Grayscale 256 option converts original colors of the picture to have it displayed in grayscale (256 levels).

Convert to 256 Colors Grayscale



28

Picture Bank					
Horizontal Mirror creates a left / right mirror effect for the original picture.					
Horizontal Mirror 	<table border="1"> <thead> <tr> <th>Before</th> <th>After</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Before	After		
	Before	After			
					
Vertical Mirror creates an up / down mirror effect for the original picture.					
Vertical Mirror 	<table border="1"> <thead> <tr> <th>Before</th> <th>After</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Before	After		
	Before	After			
					
Adjust Saturation 	<ul style="list-style-type: none"> ■ Saturation is also known as chroma of the colors. It refers to the brightness of the colors or the amount of a single color within a specific color. The higher the amount, the higher the color saturation is for this color; whereas, the lower the amount, the lower the color saturation is for this color. ■ This function is to make the original pictures more vivid in color rendering. ■ The settings below adjust the saturation to 100. <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p>Detail</p> <p>Hue -100 <input type="range" value="0"/> 100 <input type="text" value="0"/></p> <p>Saturation -100 <input type="range" value="100"/> 100 <input type="text" value="100"/></p> </div> <table border="1"> <thead> <tr> <th>Before</th> <th>After</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Before	After		
	Before	After			
					

28.6 Text Bank

Users can edit some frequently used phrases and store them in the Text Bank. This way, when you need to input text to the element, you can directly import the previously edited string from the Text Bank with no need of re-entering the string. After the text string is created in the Text Bank, the [Edit] > [Text Process] function enables users to connect to the Text Bank and import the already-created text directly to the selected element, as shown in the figure below.

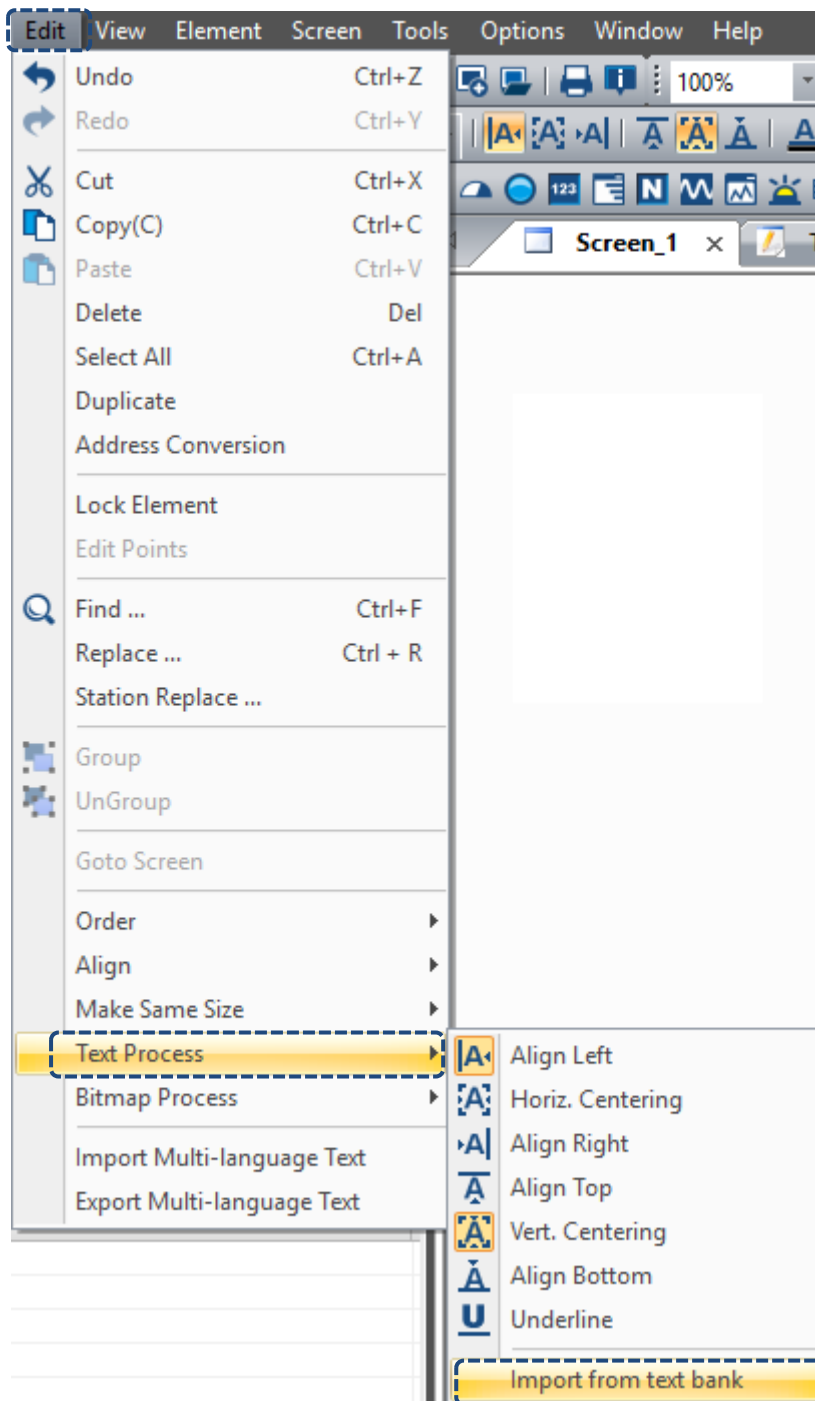


Figure 28.6.1 Import from Text Bank

If you have set multiple languages, you can also edit the texts in different languages in the Text Bank.

28

Table 28.6.1 Multi-language Text Bank content



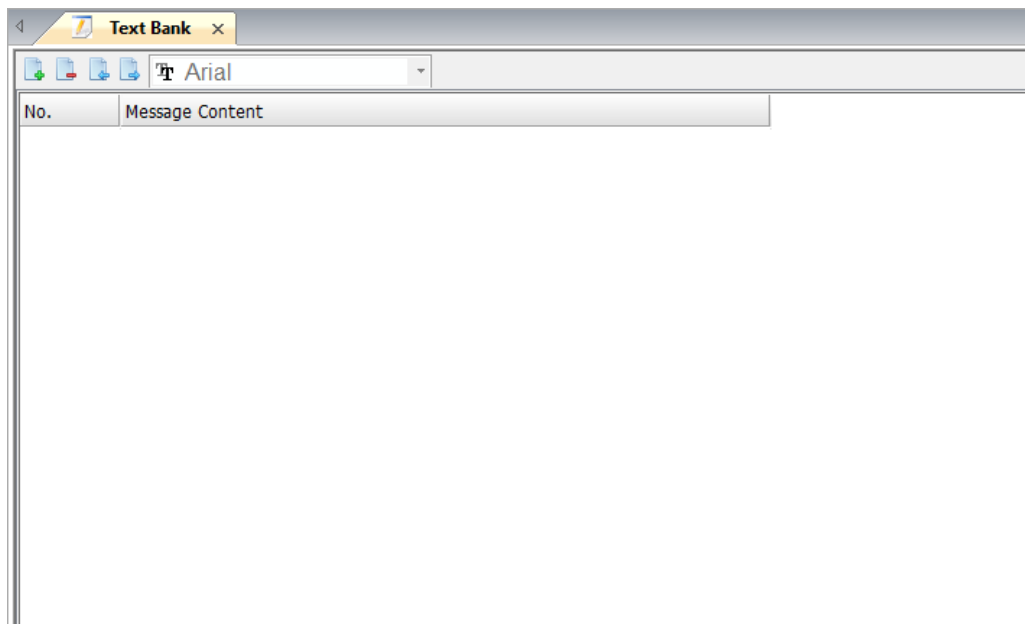


Chinese		
	No.	Message Content
	1	台達電子
English		
	No.	Message Content
	1	Delta

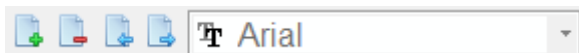
Table 28.6.2 Properties of Text Bank

Text Bank

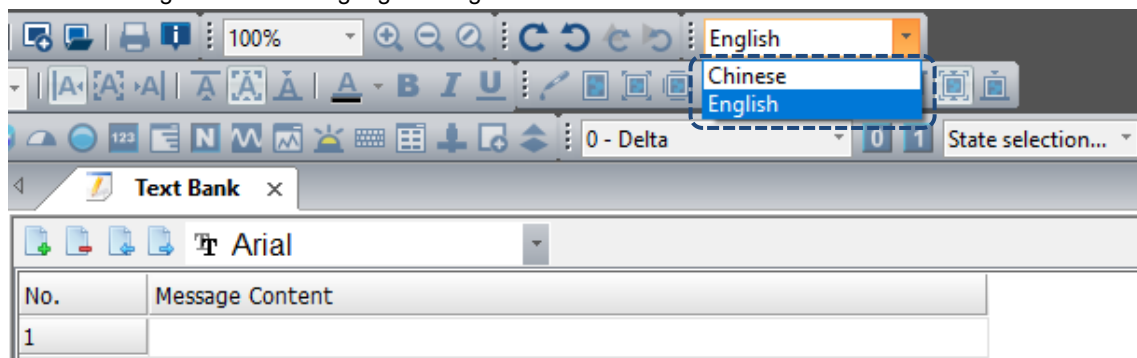



Text Bank


- The Text Bank functions include [Add a text bank ], [Delete selected text bank ], [Open text bank file], and [Save].
- You can also change the font for the entered text in the Text Bank.





- When you have created multiple languages, the corresponding language screen will be added according to the multi-language setting.



Add a text bank 

Press  to add a data row for you to enter the Message Content.

Delete selected text bank 

To delete a data row, click on the data to be deleted and press .

Open text bank file

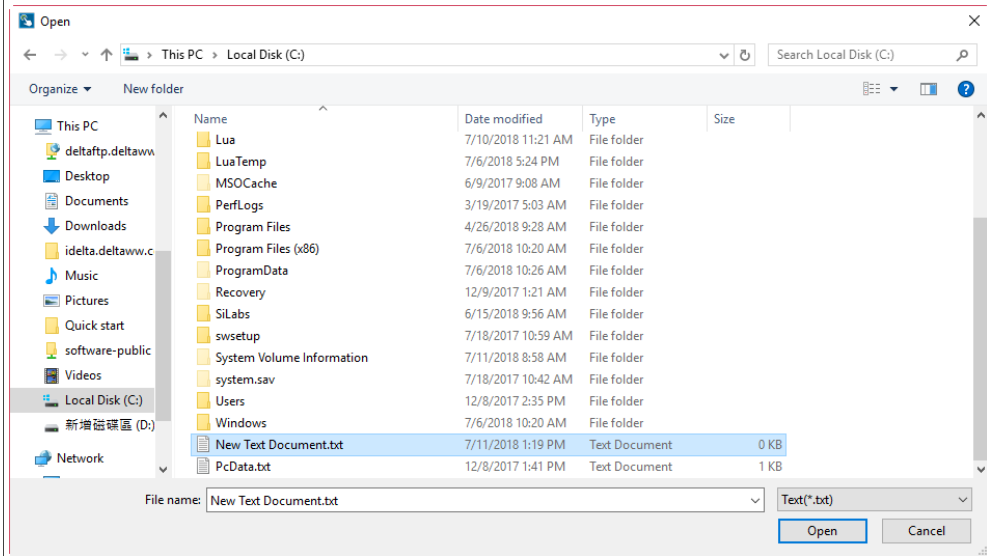
- You can directly use the open function to import data from the already-created text file (.txt).
- The figure below shows the created text file.

28

Open text bank file

Text Bank

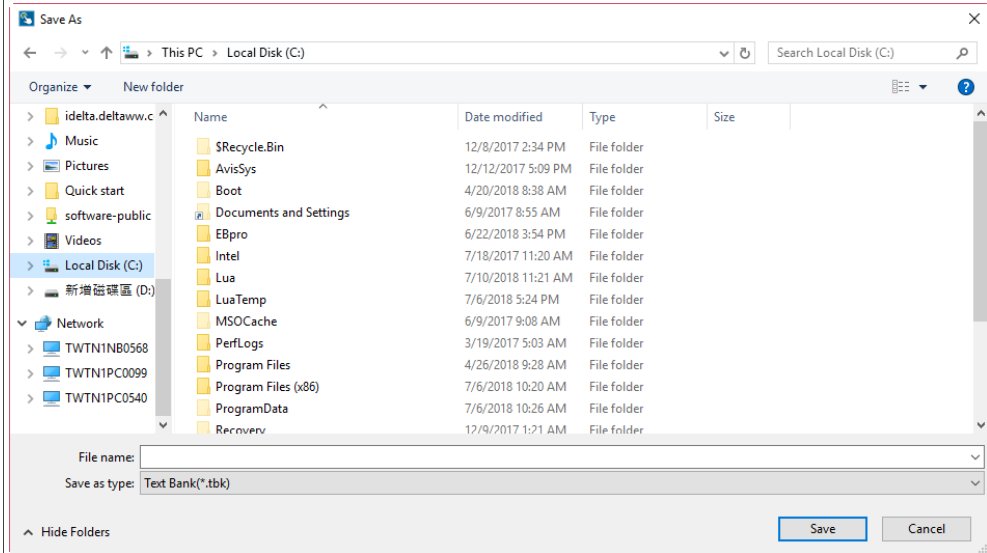
■ Press Open and select the text file to be imported.



■ After opening the text file, the text bank will import the data in the text file.

For the Save option, you can export the content in the text bank and save it to a file.

Save



28.7 Multi-Lang input character count calculation

This feature allows users to know the exact total bytes of the input characters. The number of bytes for different languages varies, so errors may occur when calculating the length. Thus, this tool can let you calculate the correct number of bytes for Unicode characters.

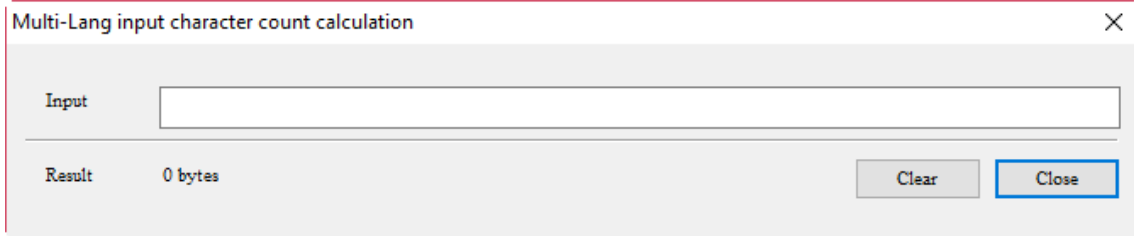
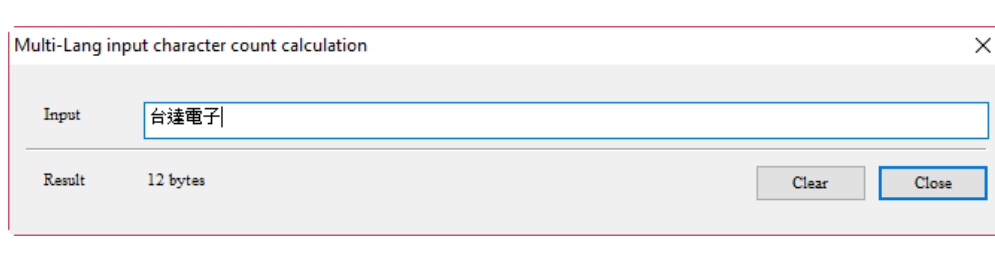
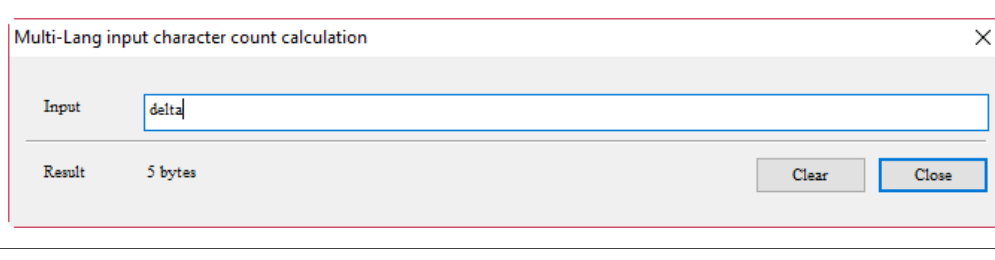



Figure 28.7.1 Multi-Lang input character count calculation tool

The following examples are the calculations of the byte numbers in three languages.

Table 28.7.1 Multi-Lang input character count calculation result

Traditional Chinese	
English	
Japanese	

(This page is intentionally left blank.)

28

System Screen



This chapter describes the functions that the HMI system screen provides, including System Setting, Up/Download, System Info, and HMI Doctor.

A.1	System screen overview	A-3
A.2	System Setting.....	A-8
A.3	Up/Download.....	A-29
A.4	System Info.....	A-38
A.5	HMI Doctor.....	A-39

Before entering the HMI system screen, DOPSoft allows users to set the language to be displayed on the system screen, including English, Simplified Chinese, Spanish, and Traditional Chinese. English will be used as an example for the description below.

A

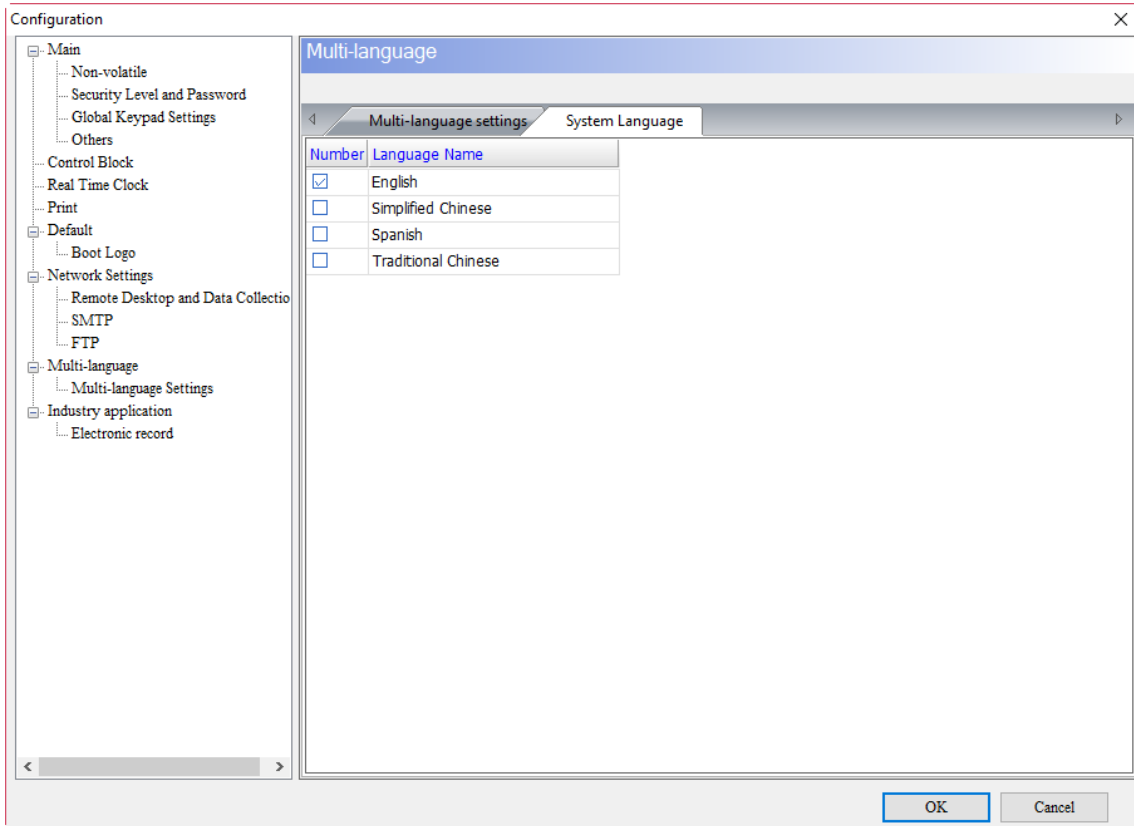


Figure A.1 System Language setup

A.1 System screen overview

■ How to enter the system screen

Step 1: press on a blank space for more than 3 seconds. You will then hear a buzzer sound.

Step 2: after hearing the buzzer sound, press the top left corner within 1 second to enter the system screen.

■ How to exit the system screen

Once in the system screen, press the button on the top right corner to exit the HMI system screen.

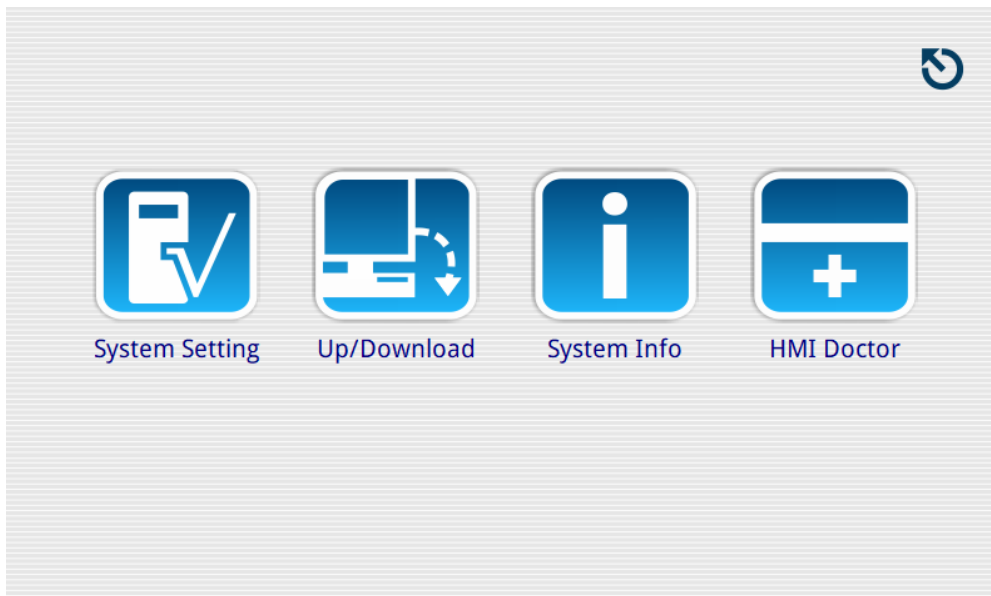


Figure A.1.1 Press the top right corner to exit the system screen

■ How to operate the system screen

You can press the icon on the screen to access the corresponding function options. The following section introduces each of the functions on the system screen.

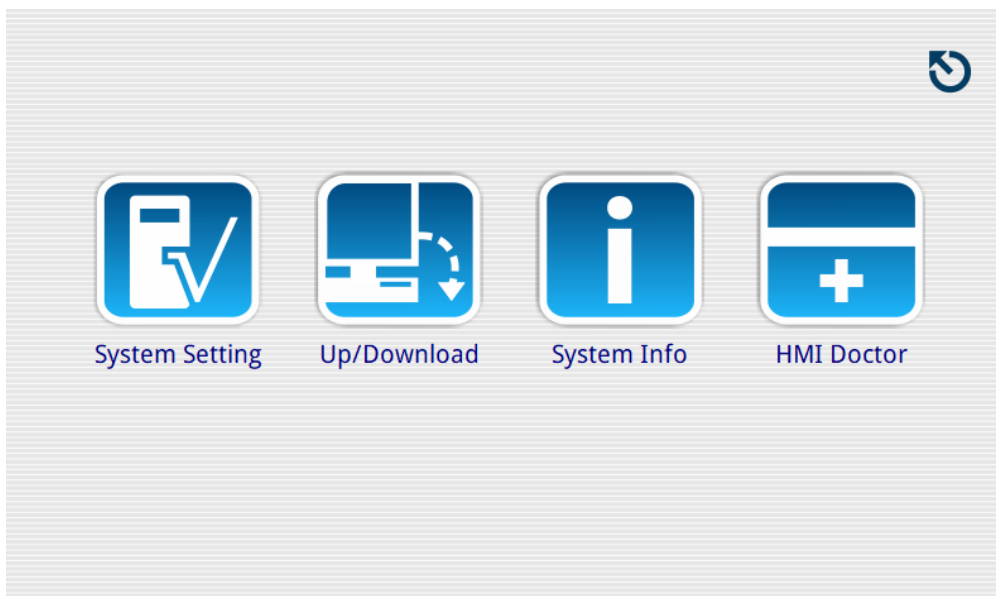









Figure A.1.2 System screen

Table A.1.1 System screen function list












A







System screen function list			
 <p>System Setting</p>	<p>Display</p> 	<p>Brightness</p>  <p>Adjust brightness.</p>	
	<p>Date/Time</p> 	<p>Date</p>  <p>Set system date.</p>	
		<p>Time</p>  <p>Set system time.</p>	
	<p>Touch panel</p> 	<p>Delay</p>  <p>Set delay time for the touch panel.</p>	
		<p>Force</p>  <p>Set pressing force on the touch panel.</p>	
		<p>Calibration</p>  <p>Calibrate the touch panel.</p>	
	<p>Network</p> 	<p>HMI name</p> <p>Display the name set for the HMI.</p>	
		<p>Mode</p>	<p>DHCP</p> <p>Auto-acquire IP address.</p>
			<p>Static</p> <p>Customize IP address.</p>
			<p>BOOTP</p> <p>Auto-acquire IP address.</p>
<p>IP</p> <p>Set IP address.</p>			
<p>Mask</p> <p>Set network mask.</p>			
<p>Gateway</p> <p>Set gateway.</p>			
<p>DNS</p> <p>Set domain name.</p>			
<p>MAC</p> <p>Display MAC address for the HMI.</p>			

System screen function list							
<p>System Setting</p> 	<p>Network App</p> 	VNC	<table border="1"> <tr> <td>Enable</td> <td>Enable or disable VNC.</td> </tr> <tr> <td>Password</td> <td>Set connection password.</td> </tr> </table>	Enable	Enable or disable VNC.	Password	Set connection password.
		Enable	Enable or disable VNC.				
	Password	Set connection password.					
	eRemote / eServer	<table border="1"> <tr> <td>Enable</td> <td>Enable or disable eRemote / eServer.</td> </tr> <tr> <td>Password</td> <td>Set connection password.</td> </tr> </table>	Enable	Enable or disable eRemote / eServer.	Password	Set connection password.	
	Enable	Enable or disable eRemote / eServer.					
	Password	Set connection password.					
	<p>COM Port</p> 	COM 1	Set COM Mode, Baud Rate, Stop Bits, Data Bits, Parity Bits, Communication Delay, Communication Timeout, Communication Retry Times, HMI Station, PLC Station, Multi-Drop, and Baud Rate Tuning for COM 1 - COM 3.				
		COM 2					
		COM 3					
	<p>Audio</p> 	<p>Buzzer</p> 	Adjust HMI key tone and buzzer volume.				
	<p>Password</p> 	Set the Password Table for Levels 0 - 7. The highest security password is needed for setting up the Password Table.					
	<p>MISC.</p> 	Touch Cursor	Set up display of touch cursor.				
ScreenSaver Time		Set up the time after which the screensaver is enabled.					
Boot Delay Times		Set up delay time for booting the device.					
Default Language		Select multi-language ID.					
Boot Display		Set up display of boot screen when starting up.					
	USB Comm. Mode	Set USB upload / download mode.					

A

A

System screen function list			
<p>System Setting</p> 	<p>File Manager</p> 	<p>Format</p> 	<p>Formatting is available for HMI, USB Disk, and SD Card. The file system is cleared after formatting.</p>
		<p>File Copy</p> 	<p>Copy the screen to external storage (USB Disk or SD Card).</p>
		<p>Multi-Screen File</p> 	<p>Set up multiple boot screens.</p>
		<p>FW Update</p> 	<p>Update HMI firmware from USB Disk or SD Card.</p>
<p>Up/Download</p> 	<p>Standard Mode</p> 	<p>COM 1</p>	<p>When using COM Port for up- and downloading, COM 1 or COM 2 in the Standard Mode must be selected for up- and downloading screen data.</p>
		<p>COM 2</p>	
	<p>Bypass Mode</p> 	<p>Mode 1 COM 1 → COM 2</p>	<p>The HMI is used as a bridge in the Bypass Mode to transmit data between PC and PLC.</p>
		<p>Mode 2 COM 2 → COM 1</p>	
	<p>Transfer Mode</p> 	<p>Upload</p>	<p>Upload and download DVP files used in the PLC.</p>
		<p>Download</p>	
<p>System Info</p> 	<p>Display HMI-related data, including firmware version, model, battery capacity, memory space, CPU rate, test data, current time, PLC driver in use, and connection to external storage.</p>		

System screen function list		
 <p>HMI Doctor</p>	<p>Network</p> 	<p>Network test.</p>
	<p>Color</p> 	<p>Red</p> <p>Red screen test.</p>
		<p>Green</p> <p>Green screen test.</p>
		<p>Blue</p> <p>Blue screen test.</p>
		<p>Black</p> <p>Black screen test.</p>
		<p>White</p> <p>White screen test.</p>
		<p>Color</p> <p>Color saturation test.</p>
<p>ADC</p> 	<p>ADC test.</p>	
<p>Buzz/LED</p> 	<p>Buzzer / LED test.</p>	
<p>Draw Line</p> 	<p>Line drawing test for the touch panel.</p>	

A

A.2 System Setting

The System Setting operation is described below.

A

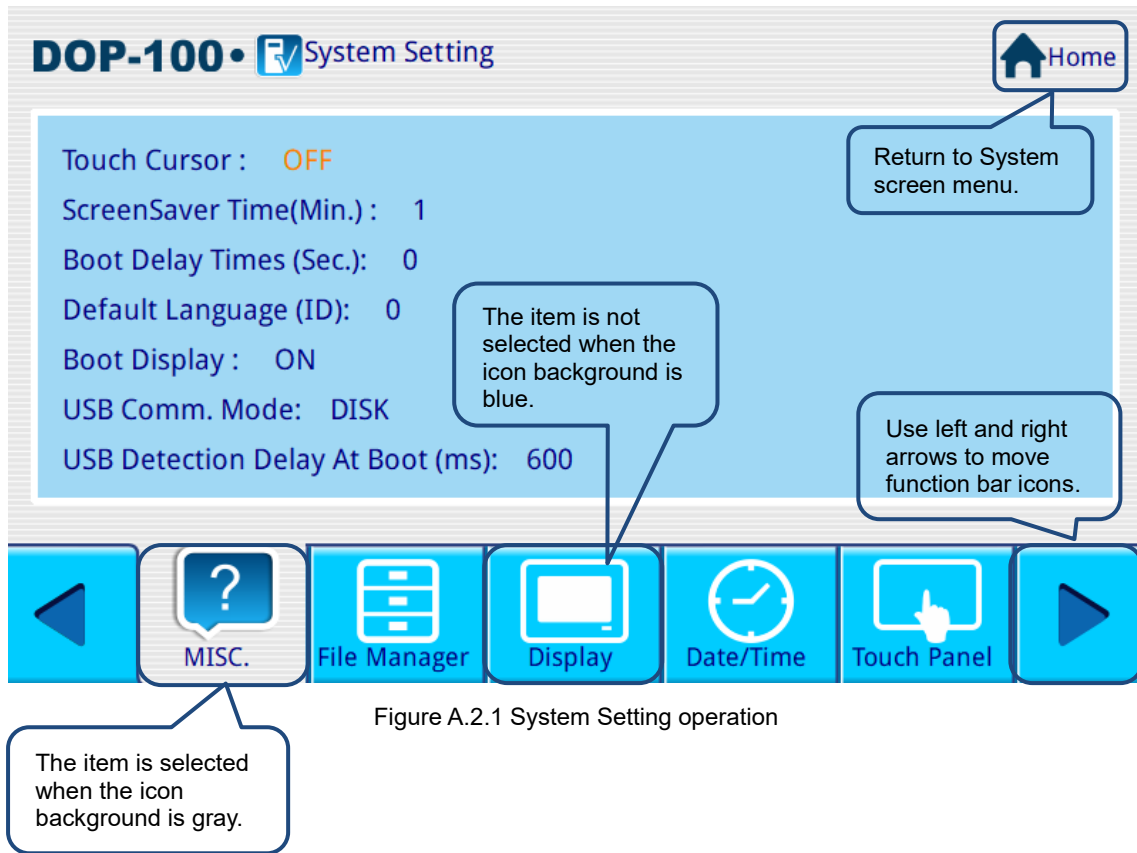
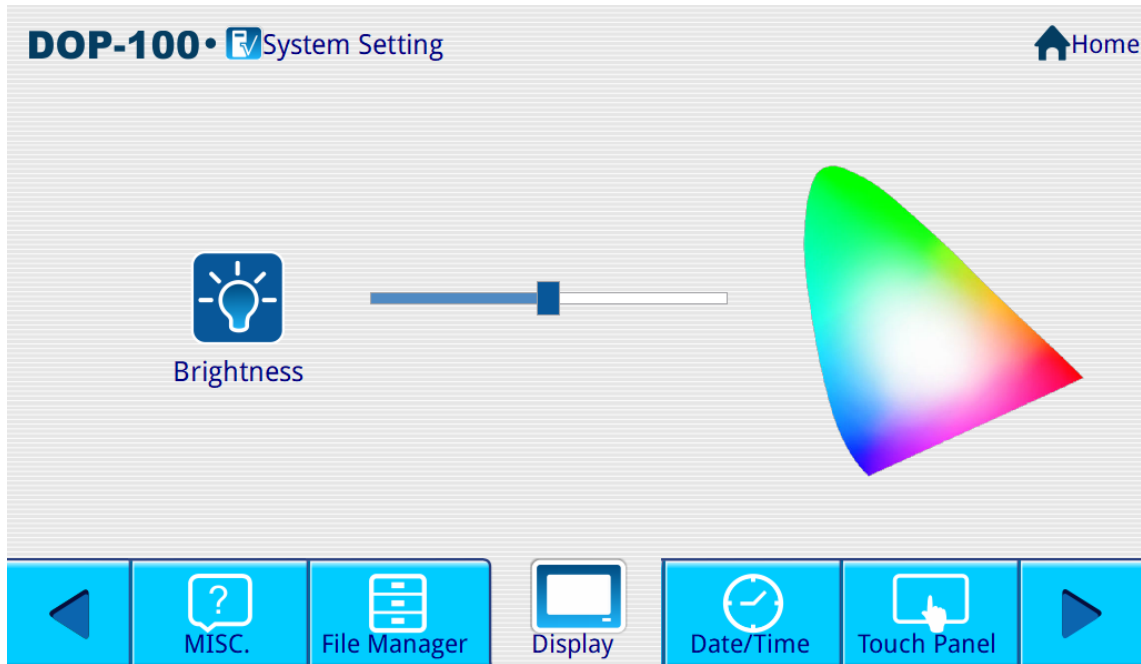


Figure A.2.1 System Setting operation



■ Display



A

Figure A.2.2 Display

Set up LCD display

<p>Display</p> 	<p>Brightness</p> 	<p>You can adjust the brightness of the HMI.</p>
----------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------	--------------------------------------------------

■ Date/Time

A

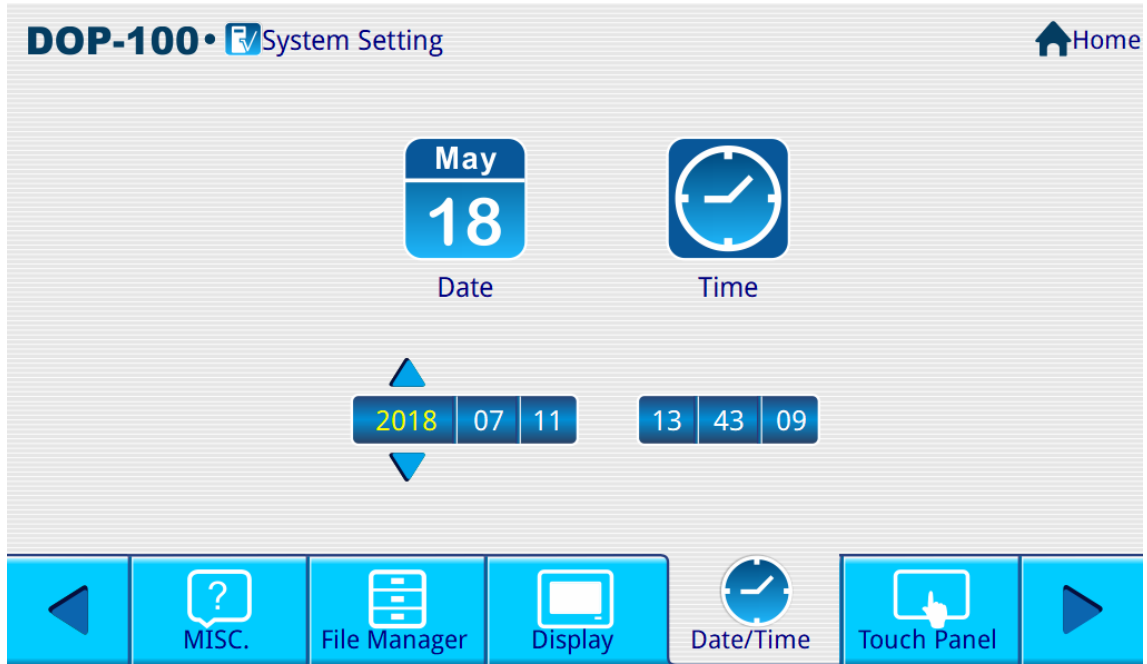



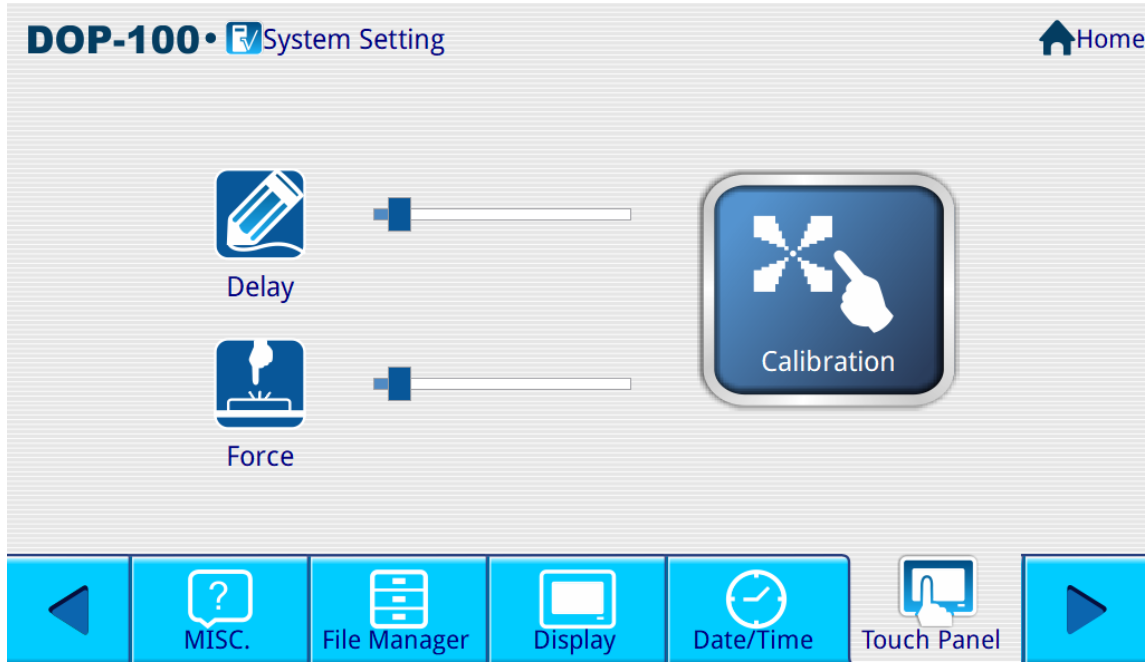


Figure A.2.3 Date/Time

Set date and time (year, month, day, hour, minute, second) for the HMI system.

 <p>Date/Time</p>	<p>Date</p> 	<p>Set HMI system date with the year, month, and day.</p>
	<p>Time</p> 	<p>Set HMI system time with the hour, minute, and second.</p>





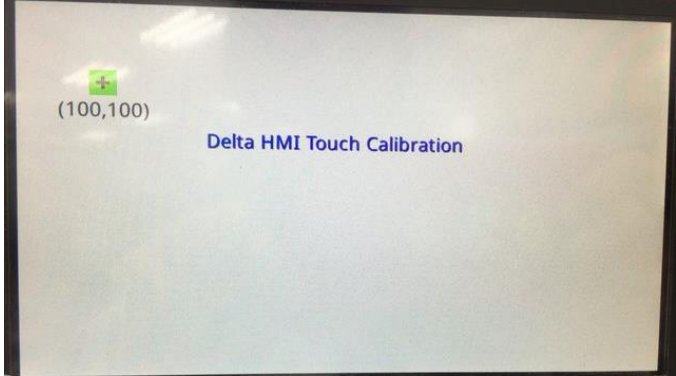
■ Touch Panel



A

Figure A.2.4 Touch Panel

Set the touch panel, including the Delay time, pressing Force, and Calibration.

<p>Touch Panel</p> 	<p>Delay</p> 	<p>Set delay time for the HMI to process touch and movement of messages. Move the slider right to reduce the delay time for quicker movement; move the slider left to increase the delay time for slower movement.</p>
	<p>Force</p> 	<p>Set the pressing force for the HMI panel. Move the slider left to reduce the force, meaning the HMI is more sensitive to forces, therefore requires less force for the touch operation; move the slider right to increase the force, meaning the HMI is less sensitive to forces, therefore requires more force for the touch operation.</p>
	<p>Calibration</p> 	<p>Follow the instructions and touch the center of the calibration icon to conduct five-point calibration for the HMI touch panel. A significant deviation may occur to the touch panel if you touch a point far away from the center point in the calibration area. It is suggested that you use a dedicated stylus for the calibration.</p> 

■ Network

A

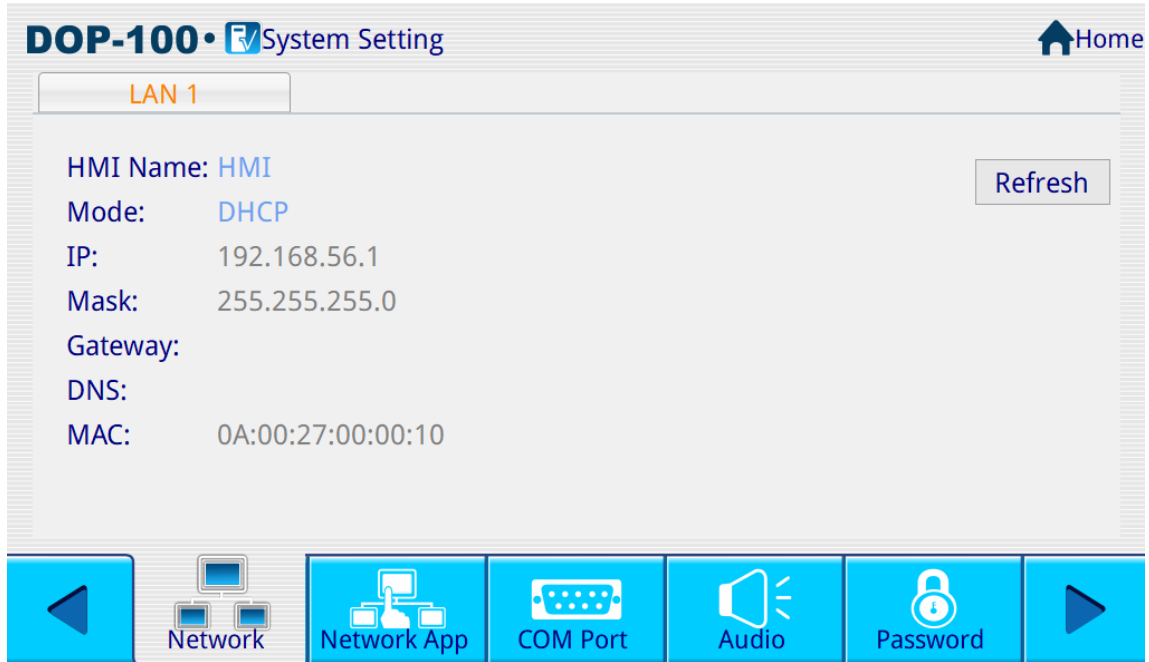
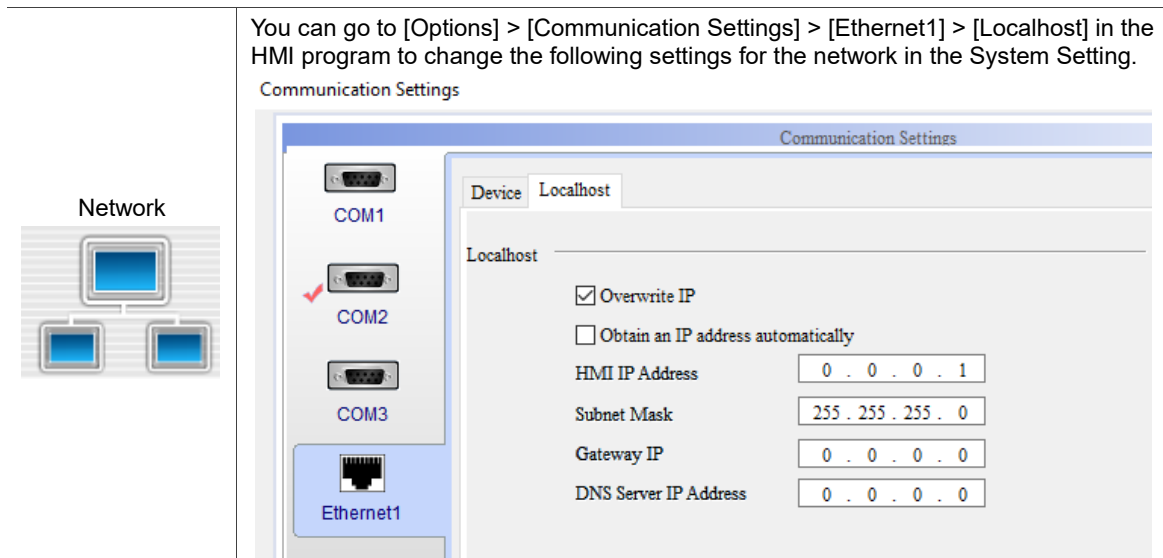
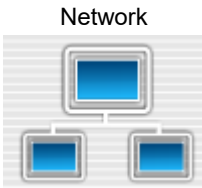


Figure A.2.5 Network

You can use this option to set network IP access mode, IP, Mask, Gateway, and DNS.



 <p>Network</p>	HMI Name	Display the name set for the HMI. This name is set up by the HMI, and to change its name, go to [Options] > [Configuration] > [Main].		
	Mode	DHCP	Auto-acquire IP address for the HMI.	
		Static	Manually set IP address for the HMI.	
		BOOTP	Auto-acquire IP address for the HMI, but there is no lease period for this IP address.	
	Mask	Set network mask. When DHCP is OFF, the mask can be set manually.		
	Gateway	Set gateway. When DHCP is OFF, the gateway can be set manually.		
	DNS	Set domain name server. When DHCP is OFF, DNS can be set manually.		
	MAC	Display the MAC address of the HMI. This setting cannot be changed.		

A

■ Network App

A

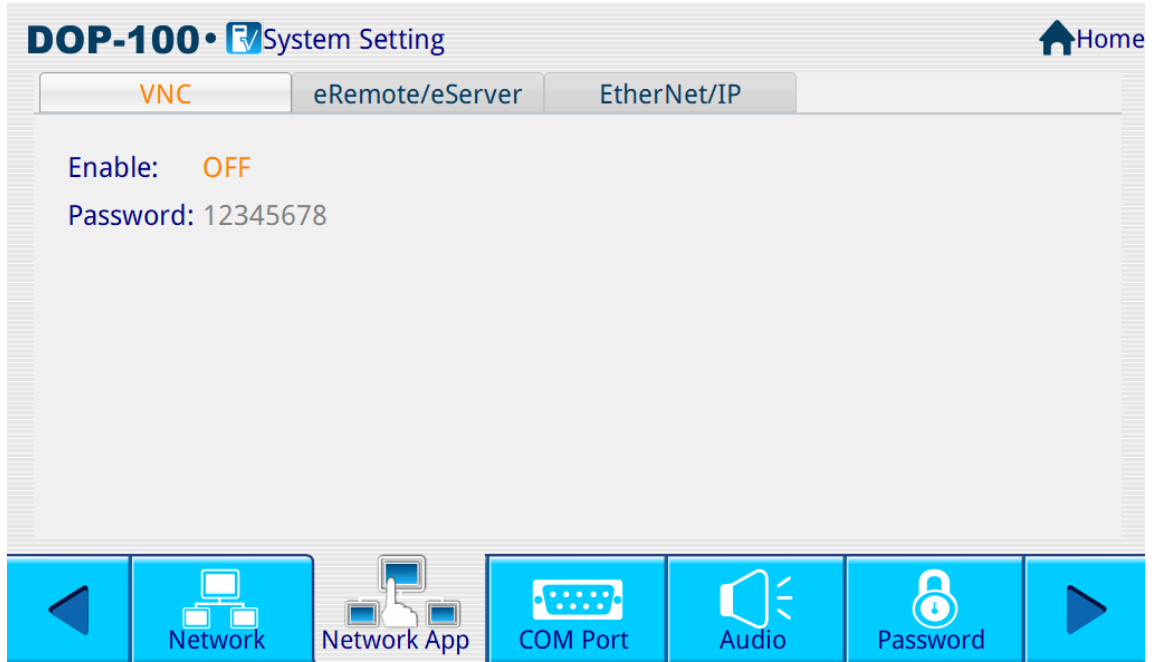
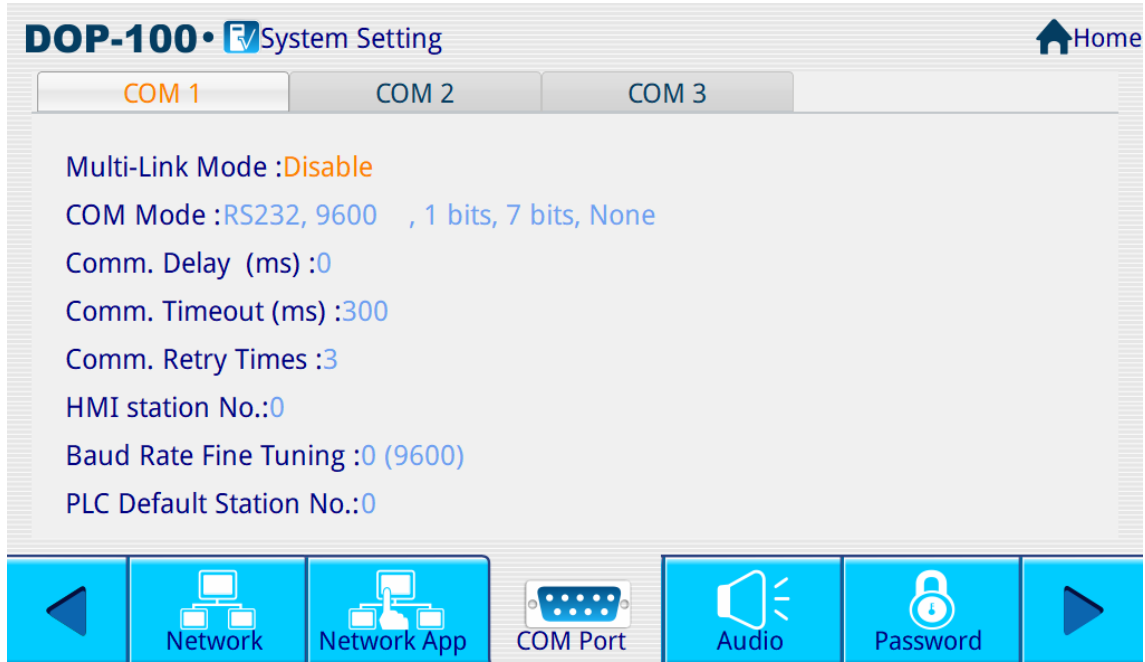


Figure A.2.6 Network App

Set to enable VNC and eRemote / eServer functions.

	VNC	Enable	<ul style="list-style-type: none"> ■ The default is OFF. ■ When set to ON, you can use VNC Viewer to remotely control the HMI.
		Password	<ul style="list-style-type: none"> ■ The default password is 12345678. ■ You can change the password.
	eRemote / eServer	Enable	<ul style="list-style-type: none"> ■ The default is OFF. ■ When set to ON, you can use eRemote to remotely control the HMI and use eServer to collect the HMI data.
		Password	<ul style="list-style-type: none"> ■ The default password is 12345678. ■ You can change the password.
	EtherNet/IP	Enable	<ul style="list-style-type: none"> ■ The default is OFF. ■ When set to ON, the host equipment can search and locate this HMI.


■ COM Port



A

Figure A.2.7 COM Port

Set COM 1, COM 2, and COM 3 parameters.

	COM 1	Set COM Mode, Baud Rate, Stop Bits, Data Bits, Parity Bits, Communication Delay, Communication Timeout, Communication Retry Times, HMI Station, PLC Station, Multi-Drop, and Baud Rate Tuning for COM 1 - COM 3
	COM 2	
	COM 3	

■ Audio

A

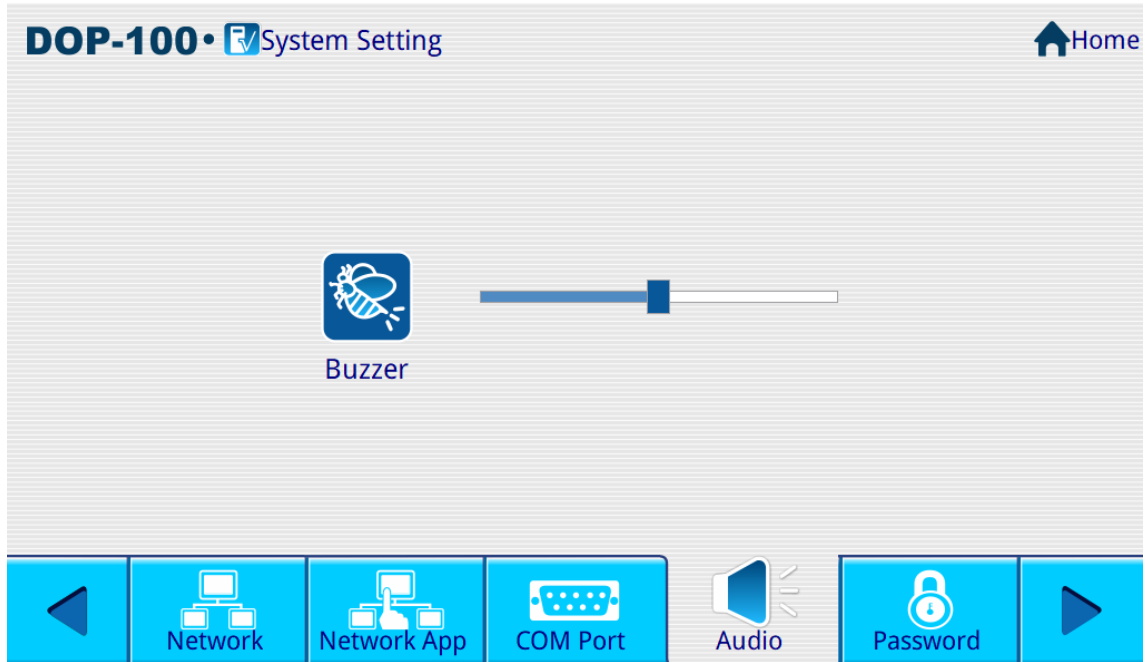


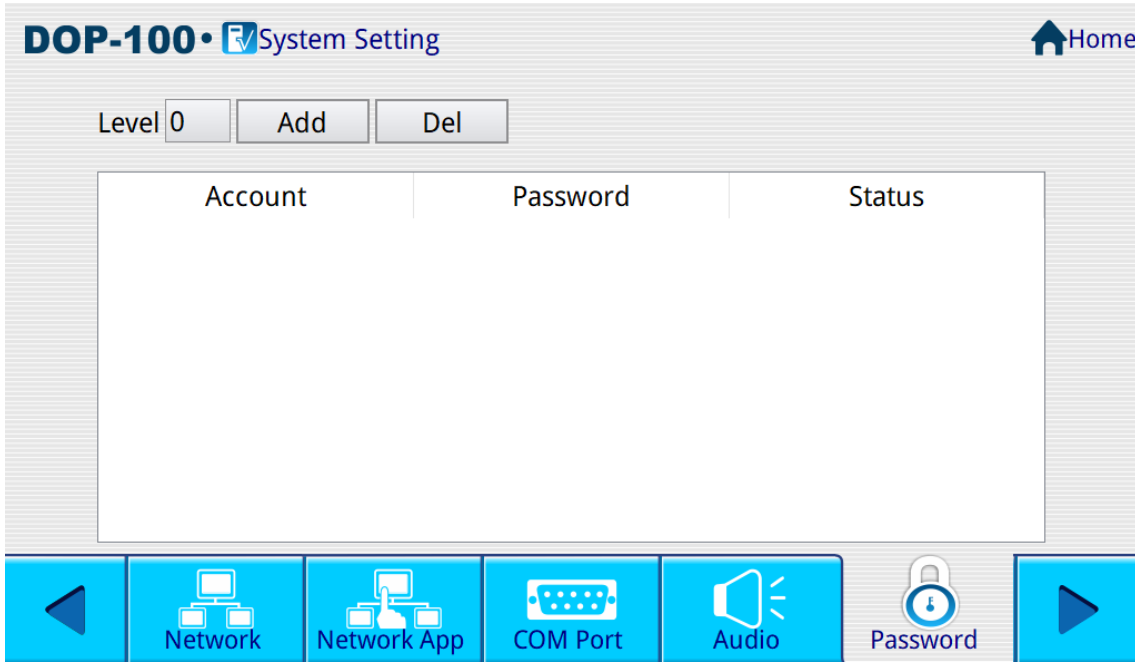


Figure A.2.8 Audio

Set volume for the speaker and buzzer.

<p>Audio</p> 	<p>Buzzer</p> 	<p>Adjust volume for the HMI buzzer. Move the slider left to decrease the volume; move the slider right to increase the volume.</p>
--------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------

■ Password



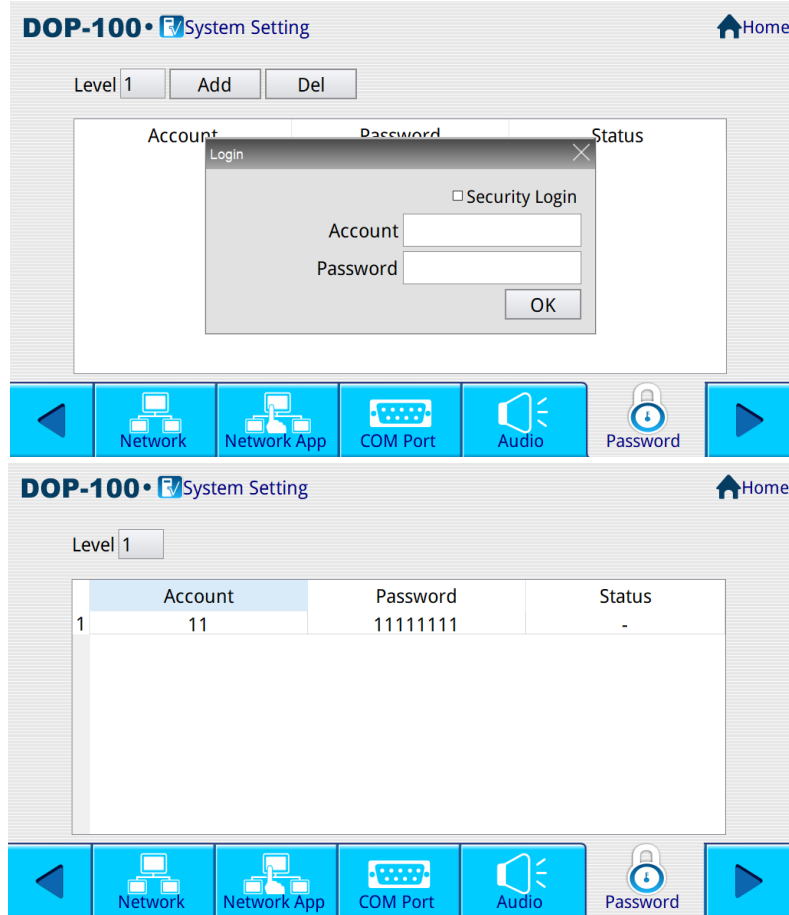
A

Figure A.2.9 Password

Set up HMI Password Table for passwords of Levels 0 - 7.

Set the Password Table for Levels 0 - 7. Select the level to log in with, then enter the account and password to set the password.

Password



■ MISC.

A

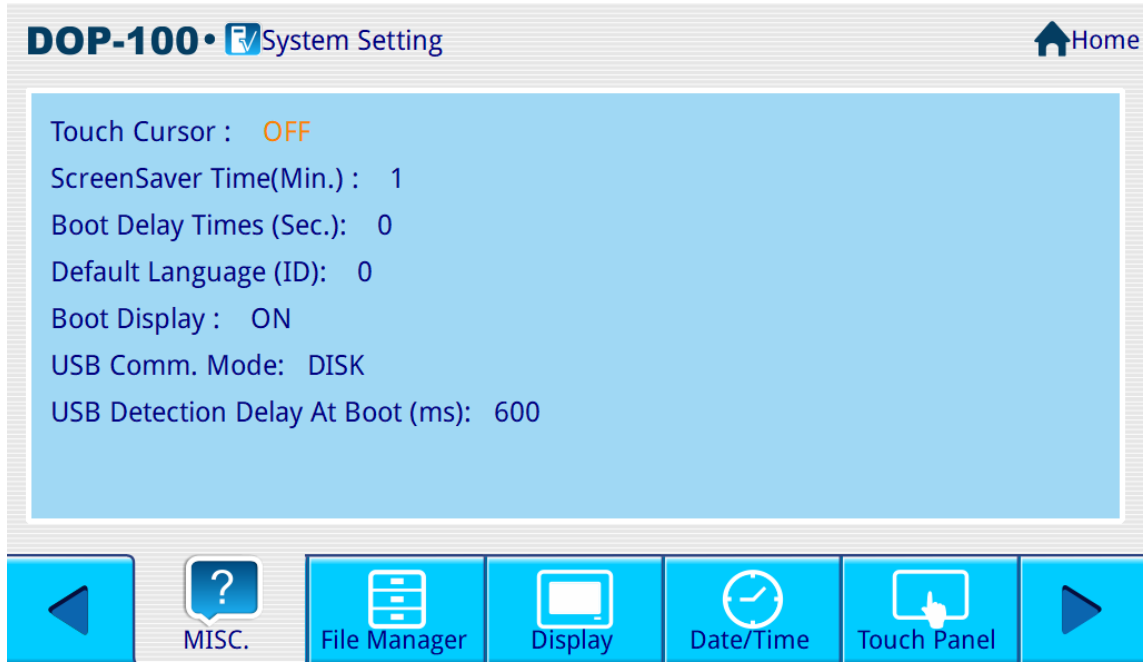

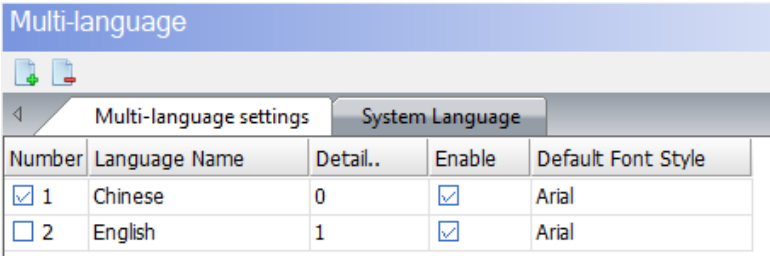

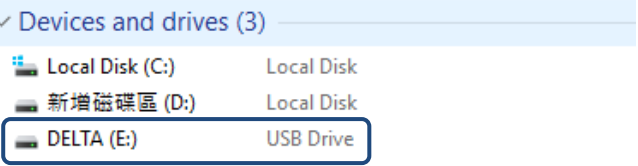
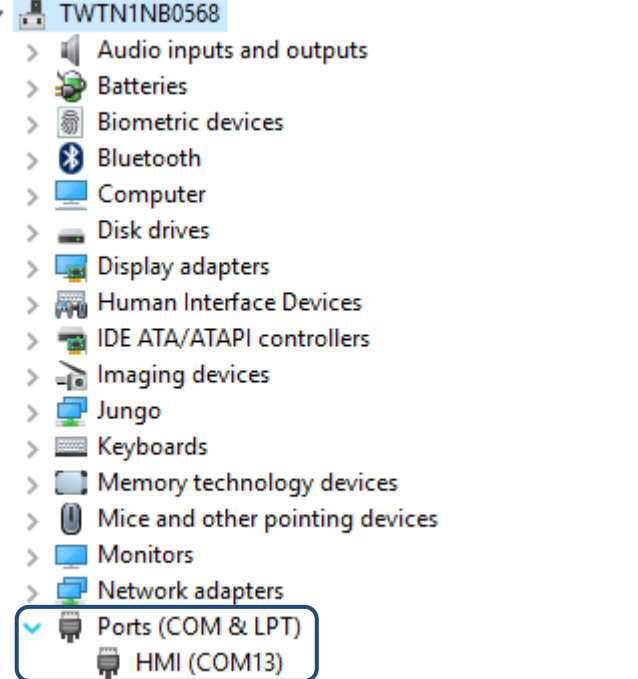


Figure A.2.10 MISC.

Set MISC. settings for the HMI, as listed below:

 <p>MISC.</p>	Touch Cursor	Set up display of touch cursor.
	ScreenSaver Time	Set up the time after which the screensaver is enabled.
	Boot Delay Times	Set up delay time for booting the device.
	Default Language	Select multi-language ID. 
	Boot Display	Set up display of boot screen when starting up.

<p>MISC.</p> 	<p>USB Comm. Mode</p>	<p>DISK</p> <p>Use this mode to look for a removable storage device named "DELTA" in Computer.</p> 
		<p>CDC</p> <p>Under this mode, go to My Computer > Right click and select Content > Go to Device Manager and see if the device named "HMI" is displayed under Ports.</p> 

A

■ File Manager

A

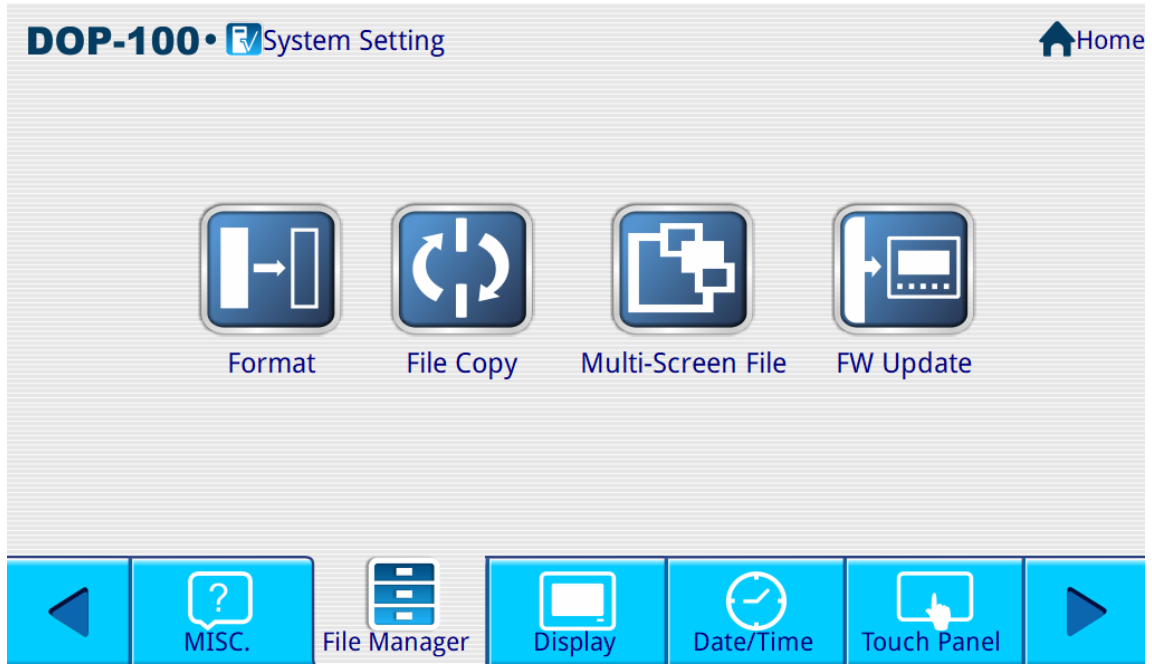







Figure A.2.11 File Manager

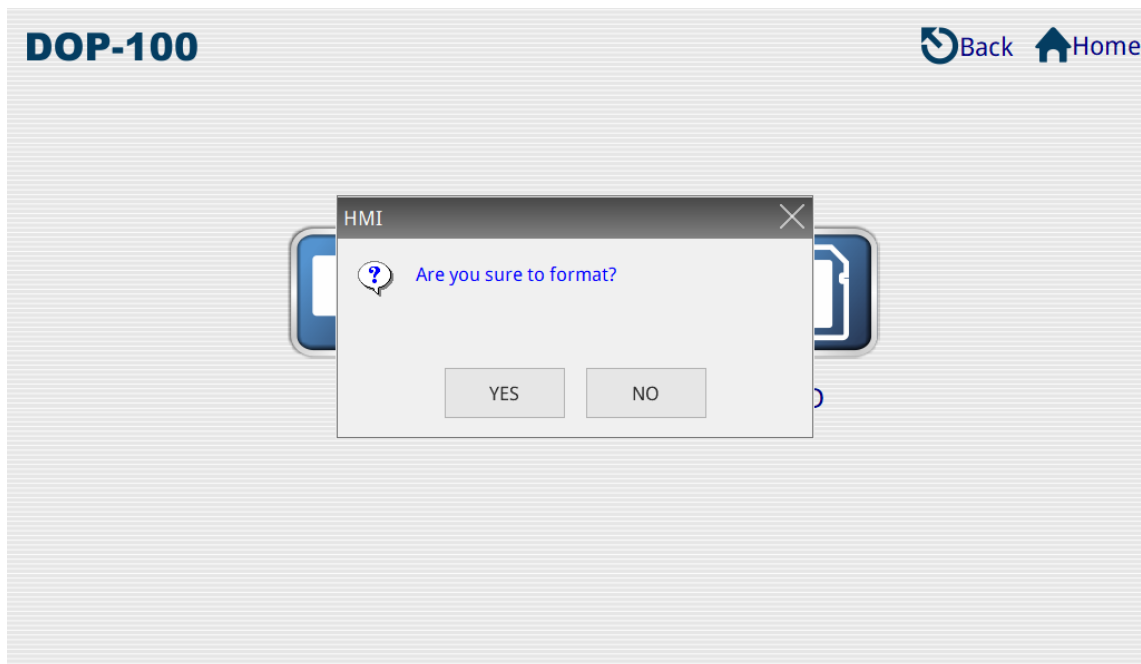
This setting is for formatting, copying files, selecting multiple boot screens, and updating firmware.

<p>File Manager</p> 	<p>Format</p> 	<p>Formatting is available for HMI, USB Disk, and SD Card. The file system is cleared after formatting.</p>
	<p>File Copy</p> 	<p>Copy the screen to external storage devices (USB Disk or SD Card).</p>
	<p>Multi-Screen File</p> 	<p>Set up multiple boot screens.</p>
	<p>FW Update</p> 	<p>Update HMI firmware from USB Disk or SD Card.</p>

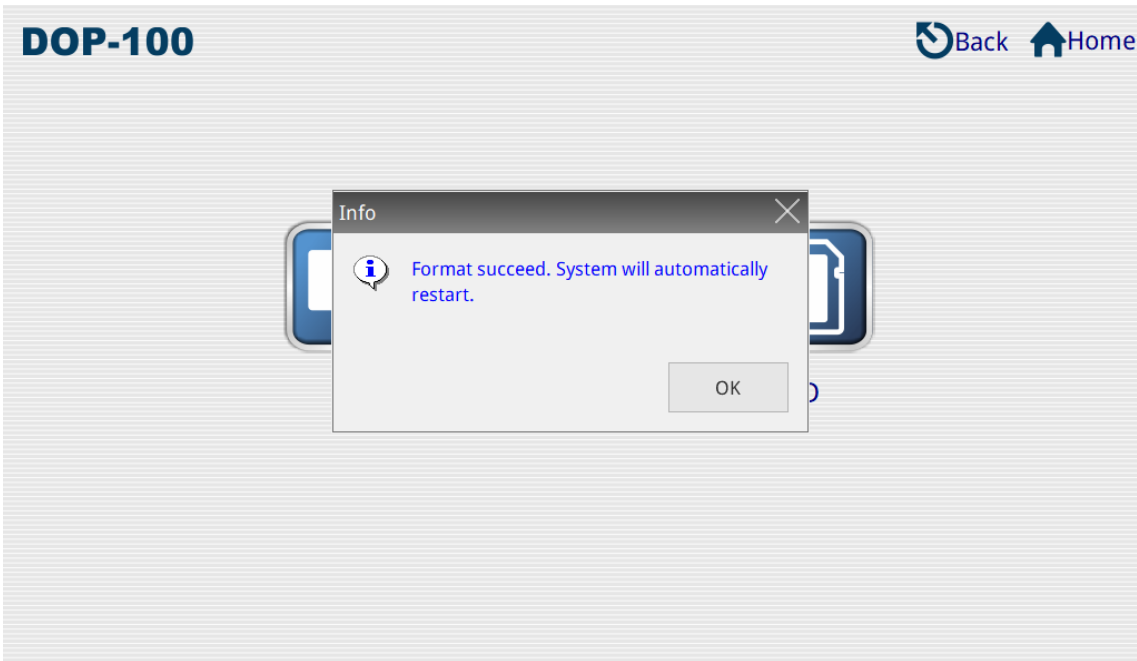
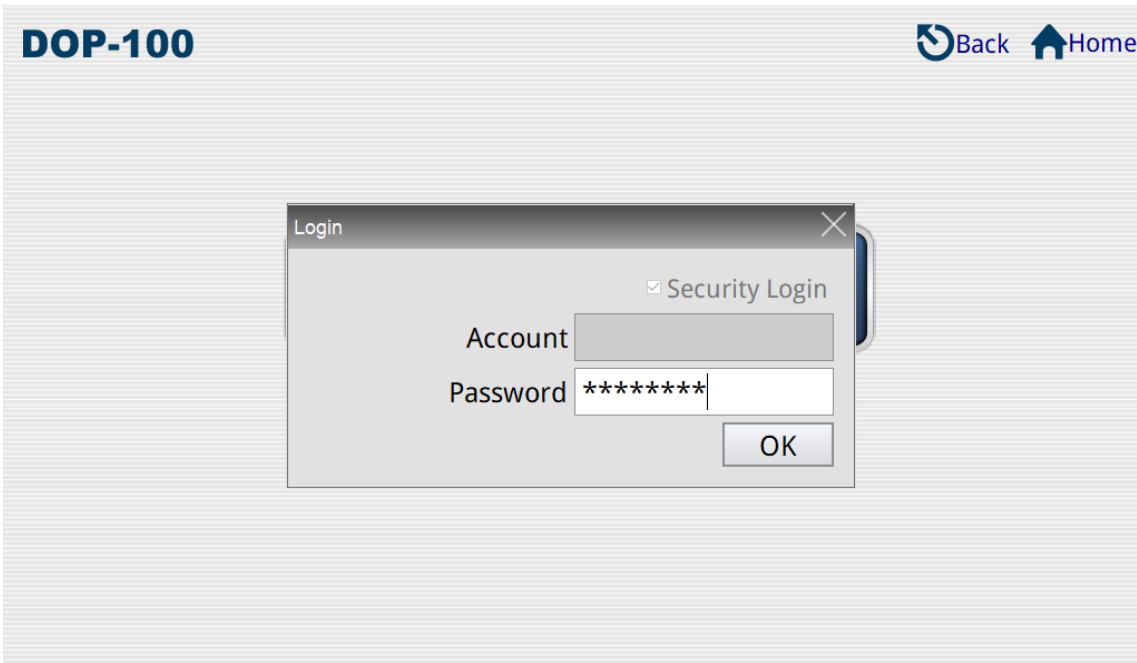
■ Format

You can format the HMI internal and external devices with this Format function, which include HMI, USB Disk, and SD Card. You cannot select the USB and SD options if the USB Disk and SD Card are not inserted into the HMI. After selecting the device to be formatted, enter the highest security password (default is 12345678), and the selected device will be formatted once the password is verified. When formatting is completed, the system prompts a reminder that the HMI will be rebooting.

A

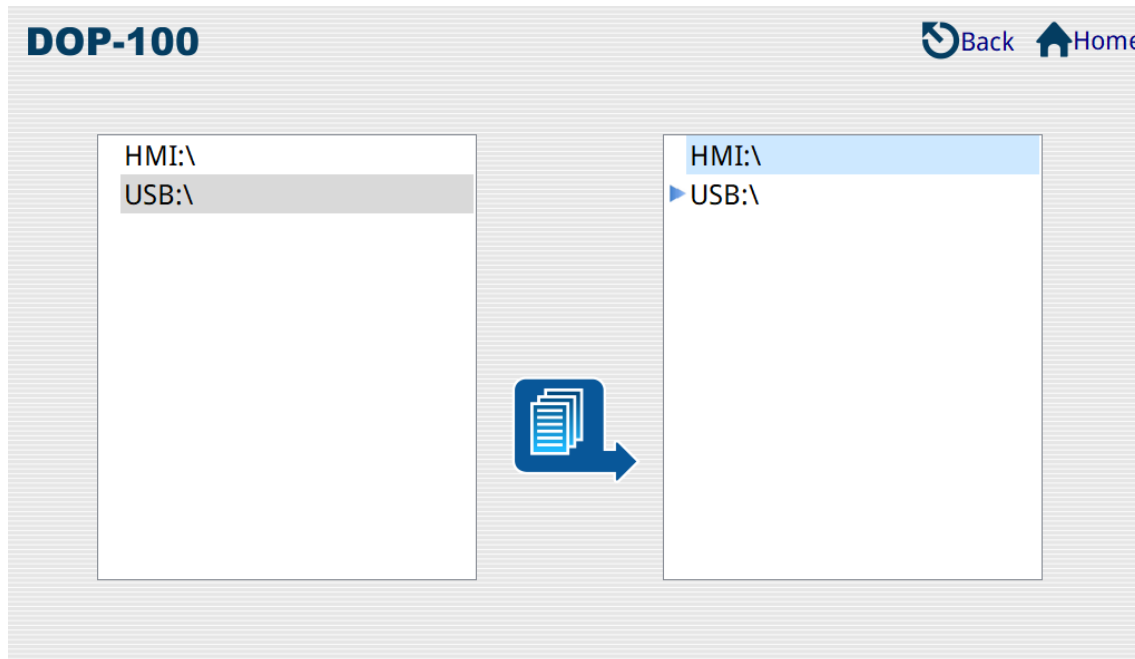


A



■ File Copy

You can select files in the source directory to copy to the destination directory.



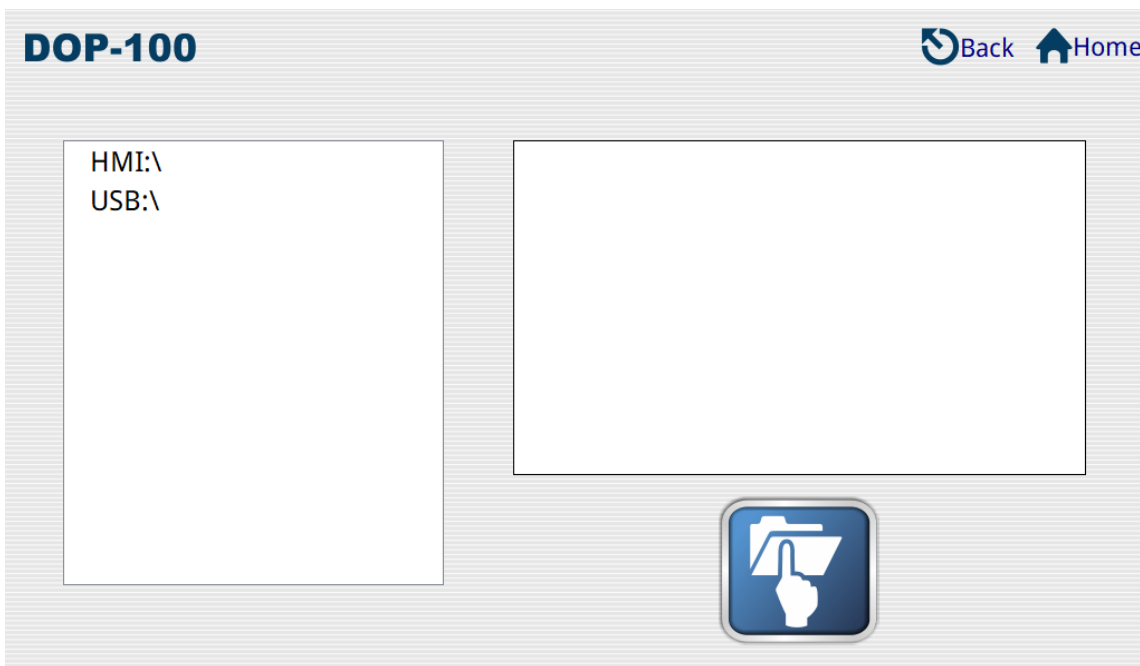
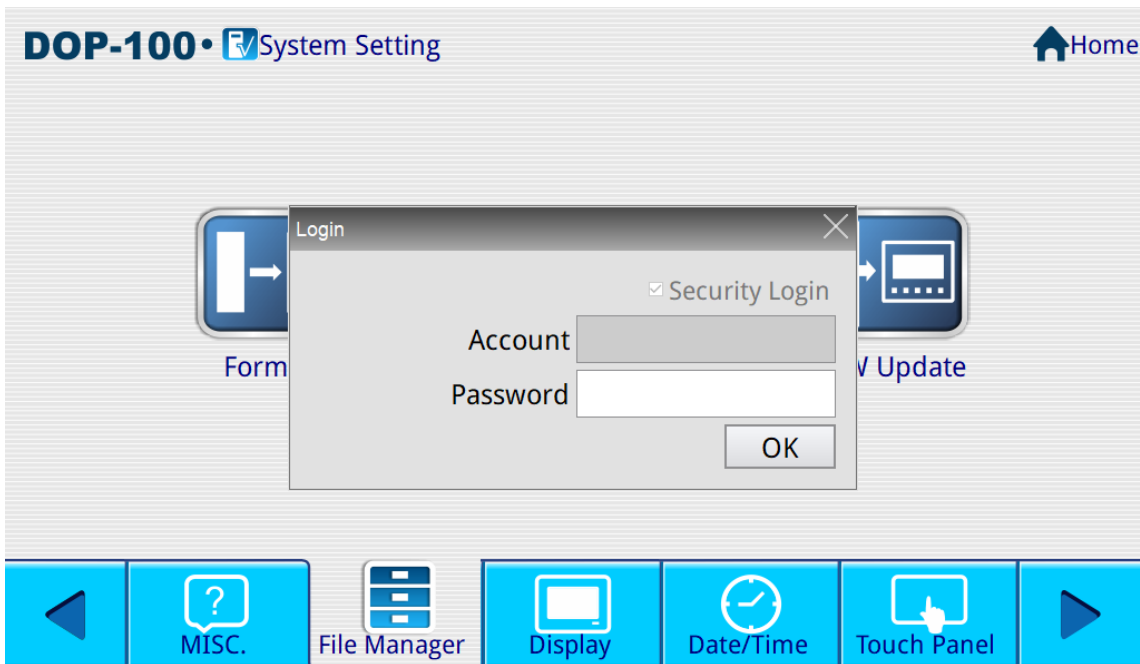
Note:

1. The HMI does not support direct copying between disks.
2. The HMI only supports the fixed directories HMI-000 to HMI-255.
3. If you select HMI as the destination directory, the original files will be removed before the files from the source directory are copied to the destination directory.
4. If you select **New...** as the destination directory, the HMI will look for a directory not used in HMI-000 to HMI-255 and create it as the destination directory.
5. If the screen file in the source directory is password protected, the HMI will prompt for the password. Enter the highest security password for the screen file of the source directory to perform the copy function.

■ Multi-Screen File

Multi-Screen File enables the user to select the startup screen file. You can set the boot screen file after entering the highest security password.

A

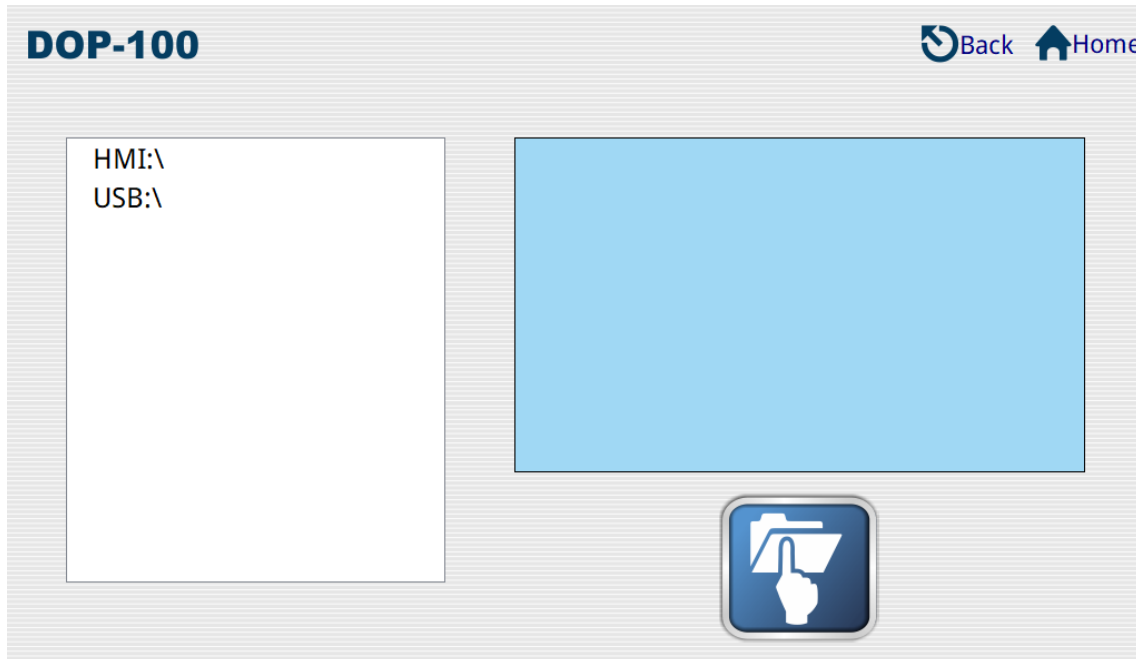


Note:

1. The HMI only supports the fixed directories HMI-000 to HMI-255.
2. If you find the boot directory of the external disk not existing when you boot the machine, the HMI will open the internal screen file instead of changing the path to the boot directory. Whereas, if the boot directory is found when you boot the machine, the originally assigned directory of the external disk will be used as the boot directory.
3. If the boot directory is in an external disk, the non-volatile data of this screen will be stored in this boot directory automatically, no matter the data is set to save in the internal or external disk.

■ FW Update

This function enables the user to perform firmware update using an external storage device (USB Disk or SD Card).



A

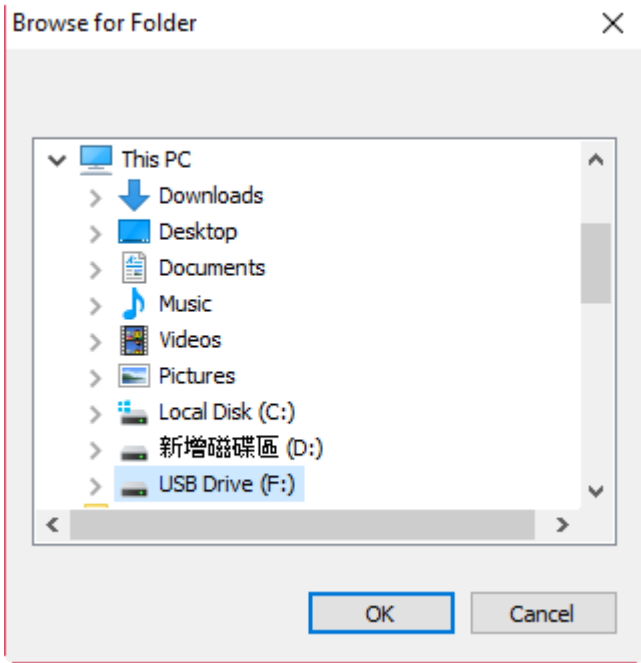
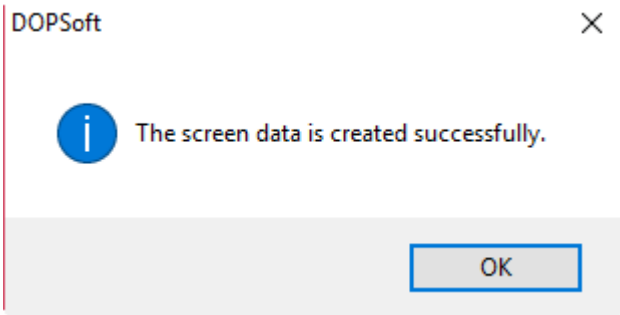
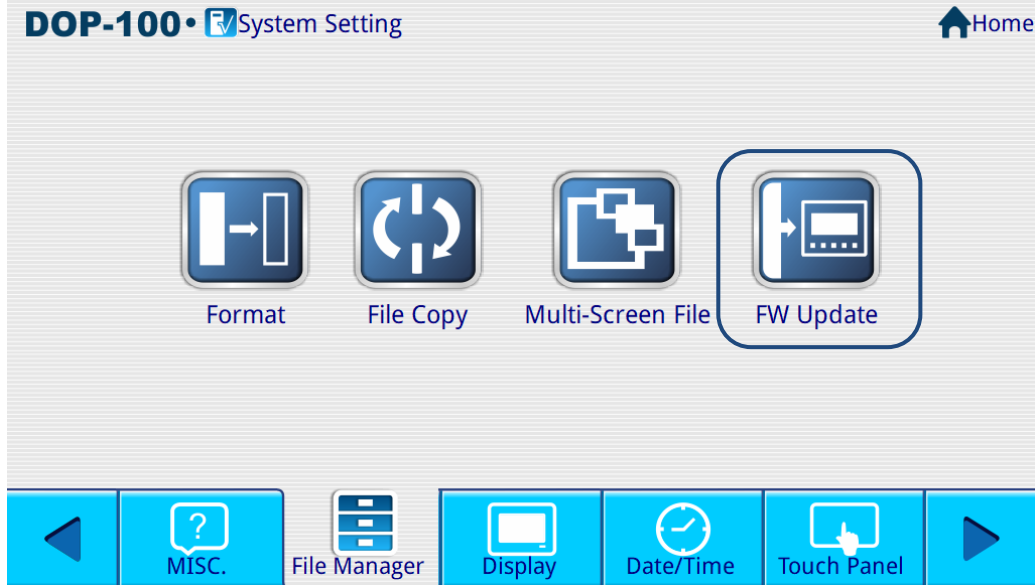
The following section presents an example for the firmware update.

Step 1

Select [File] > [Create Screen Data File].

The screenshot shows a software application menu. The menu items are: File, Edit, View, Element, Screen, Tools. The 'File' menu is open, showing options: New..., Open... (Ctrl+O), Close, Save (Ctrl+S), Save As..., Create Screen Data File ... (highlighted), Create Auto Update Data File, Open Screen Data File... (Ctrl+I), Creat Download Screen Exe. File..., Password Protect, Print(P) ... (Ctrl + PCtrl+P), Print Preview(V), Print settings (R), and Exit.

A

Step 2	<p>Select an external disk (USB Disk or SD Card) for creating the screen data and click OK.</p> 
Step 3	<p>When the screen data is created successfully, the following message appears.</p> 
Step 4	<p>Insert the external disk into the HMI.</p>
Step 5	<p>Enter the HMI system screen and select [System Setting] > [File Manager] > [FW Update].</p> 

Select source location of the firmware to be updated. The firmware version after the update will be displayed on the screen. Confirm the version and click the icon below to update the firmware.

Step 6

Step 7

After execution, the HMI will process and unzip the firmware file in the USB Disk or SD Card.

Processing FW Files...
20%

A

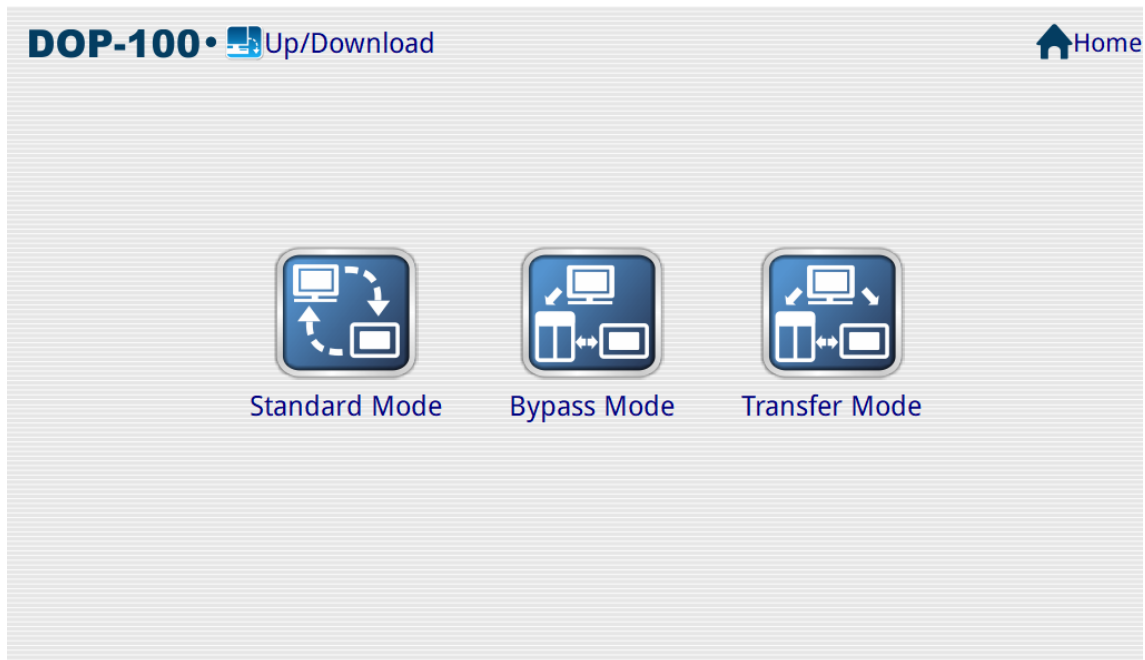
A

Step 8

Upon completing unzipping the firmware file, the HMI will automatically restart and proceed with the firmware updating.



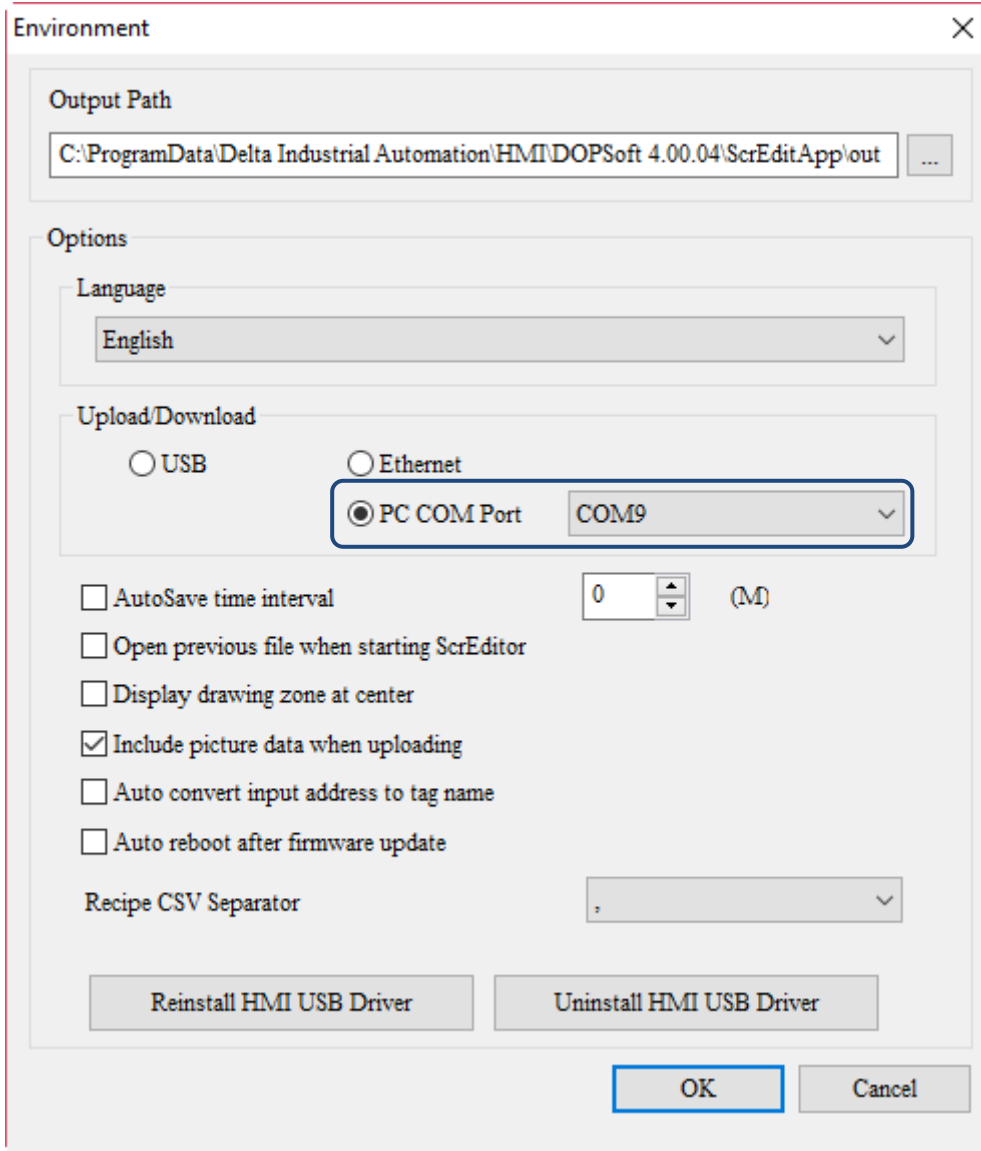
A.3 Up/Download



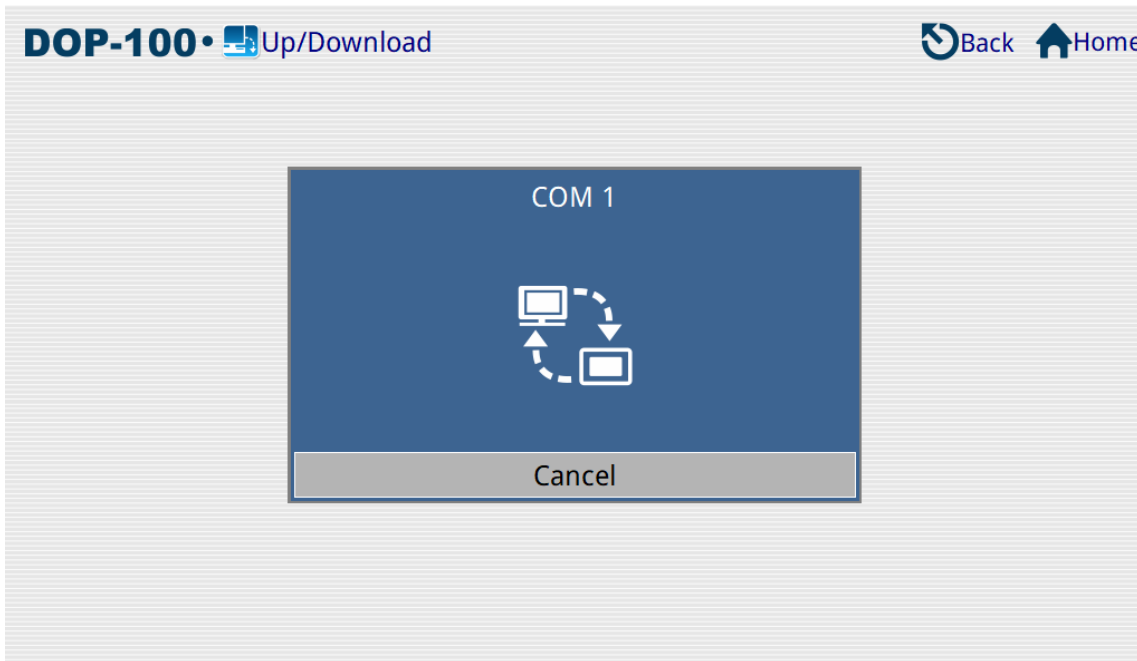
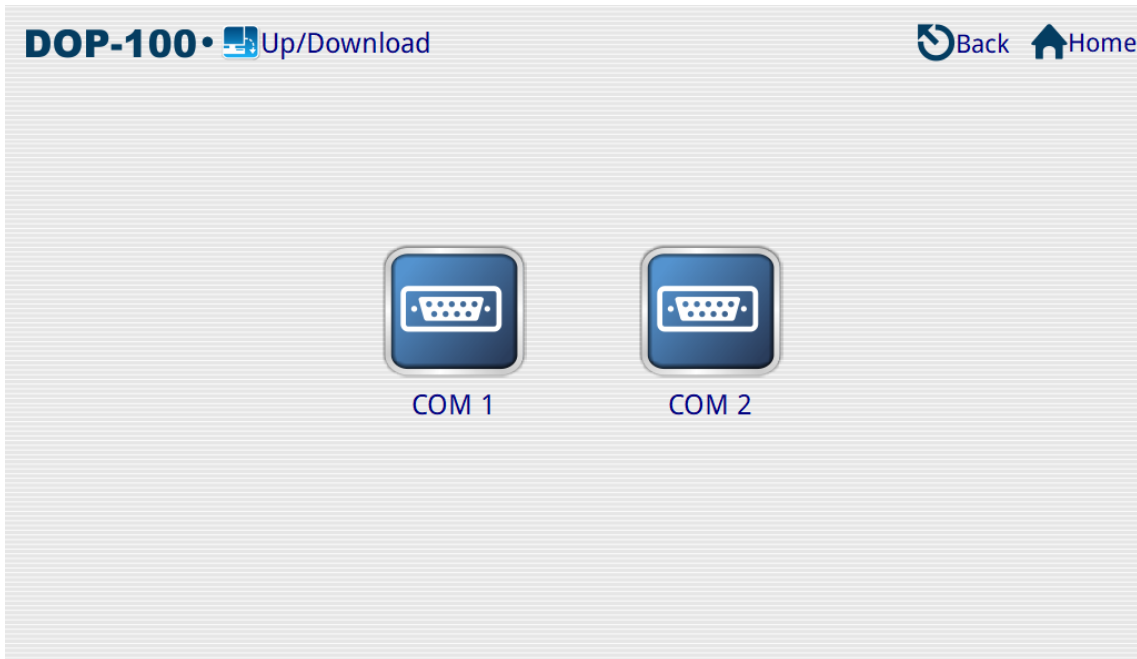
A


■ Standard Mode

Set the COM Port to the communication protocol setting for DOPSoft and wait for the DOPSoft to send the motion command and data packet for up/download. Standard Mode is used when you use the PC COM Port provided by the software to download ([Options] > [Environment]), and you need to go to the system screen to select [Up/Download] > [Standard Mode]. Select COM 1 or COM 2 ports and wait for the up/download of the screen data and recipe data.



A

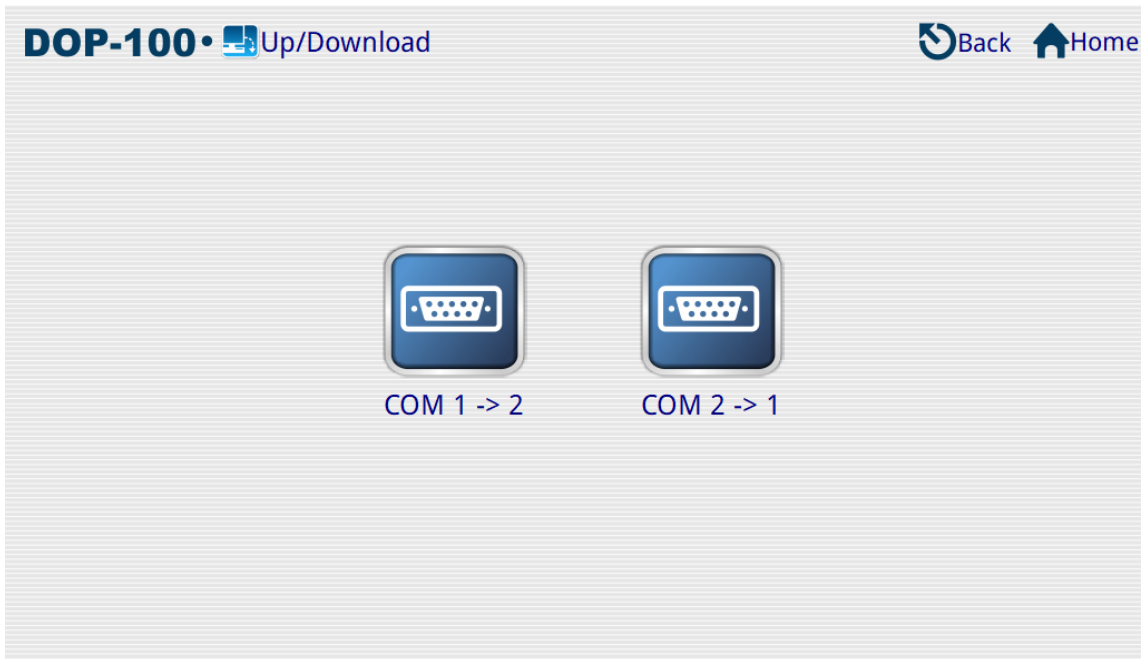



<p>Standard Mode</p> 	COM 1	COM 1 for up/download. Set COM 1 to transmit and receive the command data and data packet for the up/downloading of DOPSoft.
	COM 2	COM 2 for up/download. Set COM 2 to transmit and receive the command data and data packet for the up/downloading of DOPSoft.

■ Bypass Mode

With the HMI as an intermediary, it will transmit the data received from the source port to the destination port.

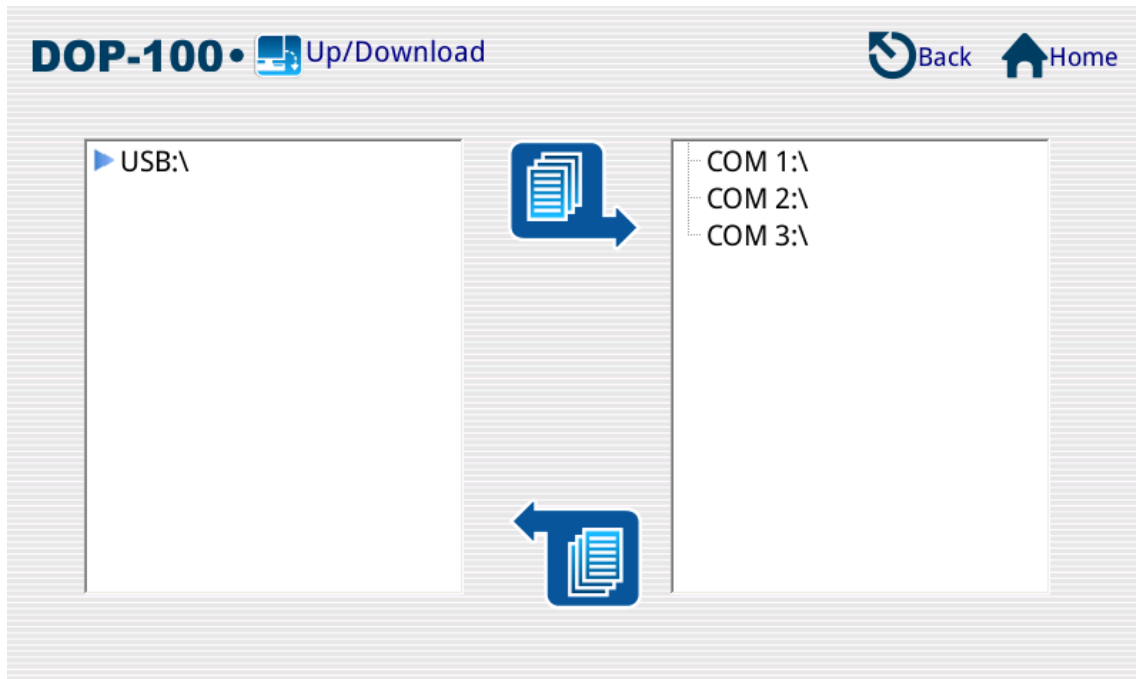
A



<p>Bypass Mode</p> 	<p>Mode 1 COM 1 → COM 2</p>	<p>With COM 1 as the source port and COM 2 as the destination port, the data that COM 1 received is transmitted using the COM 2 protocol.</p>
	<p>Mode 2 COM 2 → COM 1</p>	<p>With COM 2 as the source port and COM 1 as the destination port, the data that COM 2 received is transmitted using the COM 1 protocol.</p>

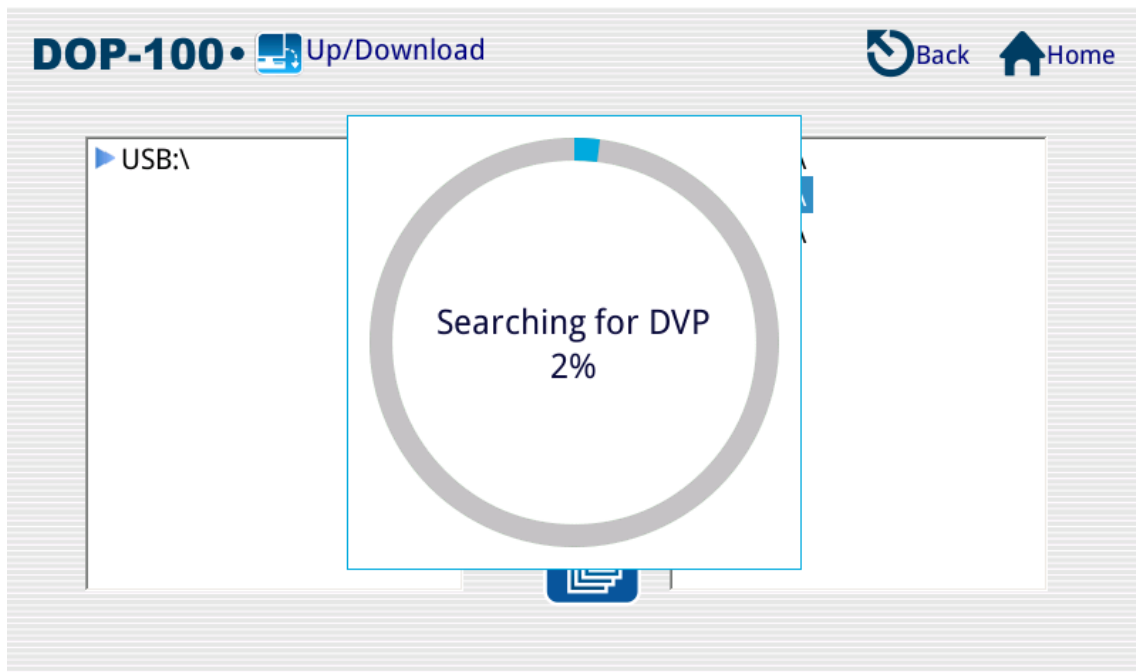
■ Transfer Mode

Transfer Mode is used for up/download of the DVP and ISP files in the PLC used by the HMI.



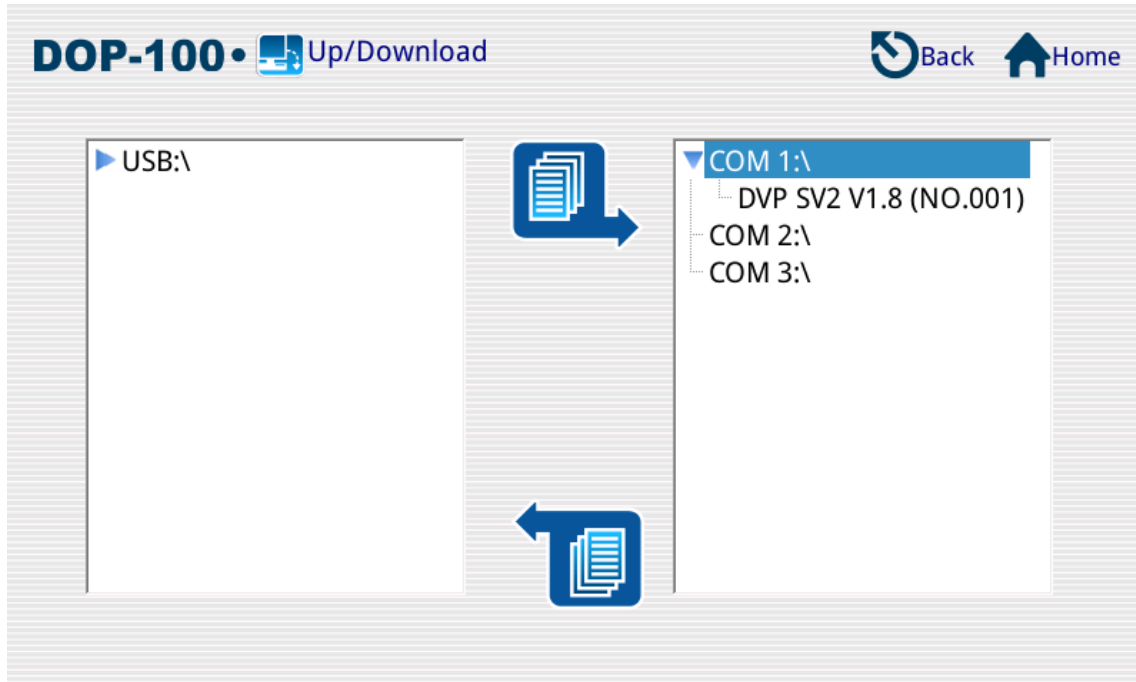
A


Select COM 1, and the HMI will automatically search for the PLC.



Once the search is complete, the DVP file found can be uploaded or downloaded from the external storage device to the PLC.

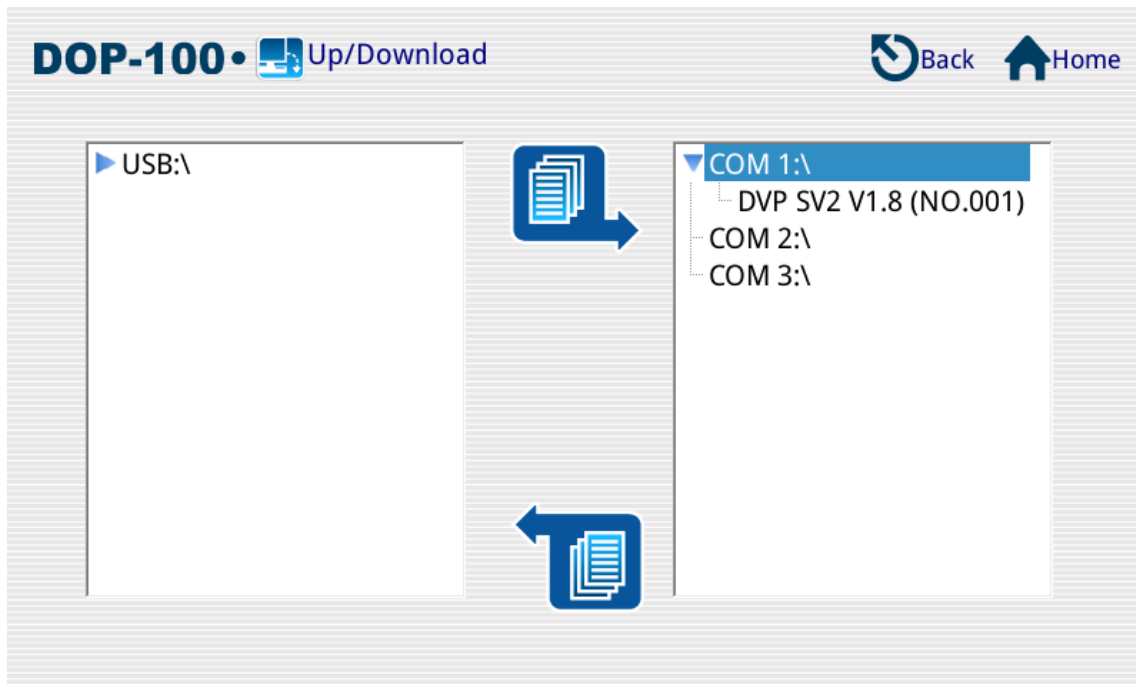
A



Transfer Mode		
	Upload	Upload and download the DVP and ISP files used in the PLC. When you press COM 1 - COM 3, the software will automatically search the currently connected PLC devices. Once done searching, the files found during the search can be uploaded to the storage device. To copy the DVP and ISP files from the storage device to the PLC, click the download button.
	Download	

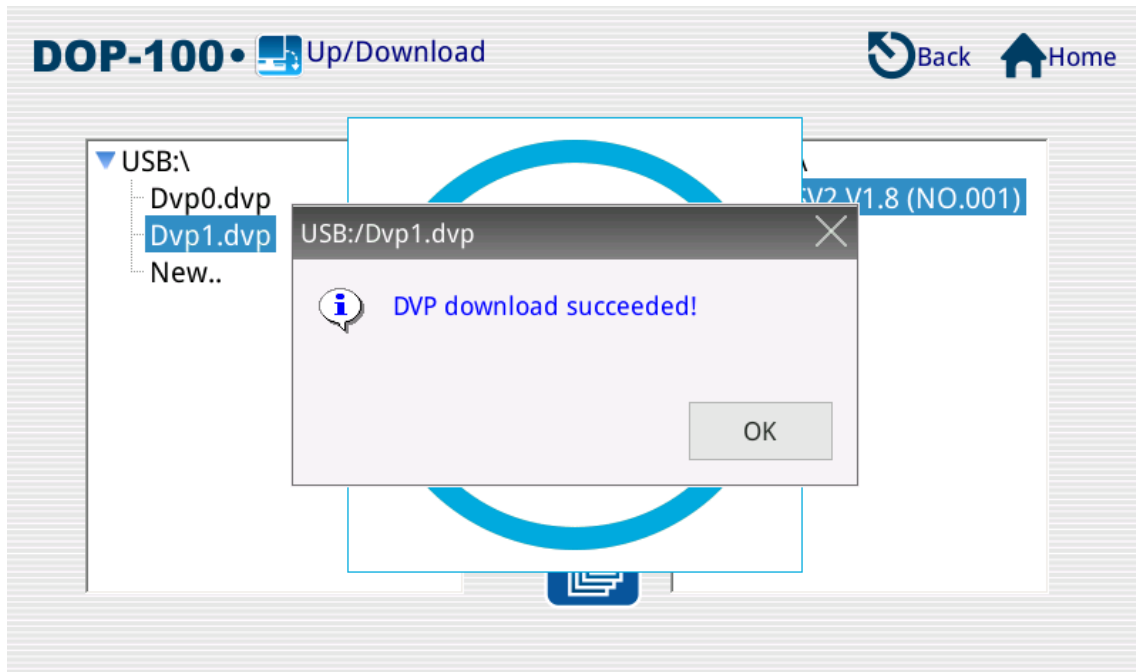
■ Download DVP file to PLC

Select the communication port that connects to the PLC. Then, the HMI will search for the files in the PLC.



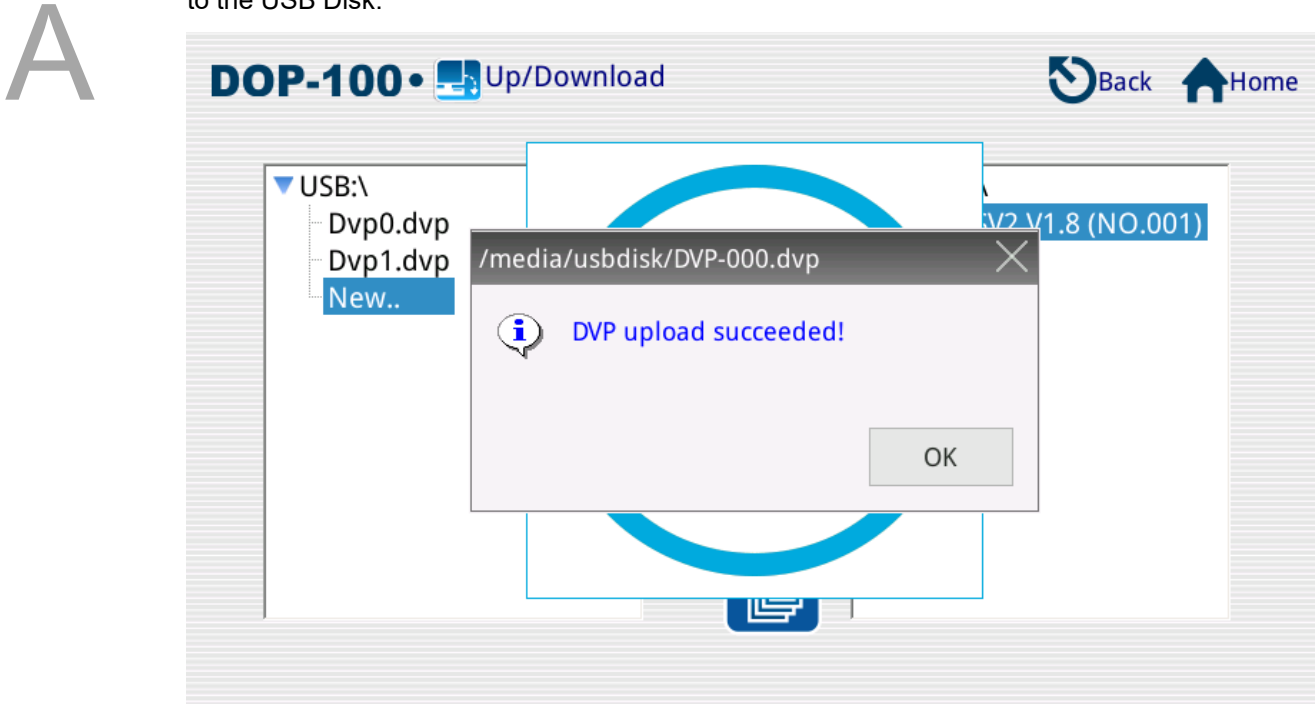
A

Select the Dvp1.dvp file in the external storage device, and click the download button to download the file to the PLC.



■ Upload DVP file in the PLC to the external storage device (USB Disk)

Select the DVP file in the PLC communication port and click the upload button to upload the file to the USB Disk.



Note:

1. If a PLC file is to be uploaded as a new file, select "New.." from the window on the left and press the upload button.
2. The program uploaded by the HMI will be saved in *.DVP format.
3. When downloading a PLC file, the HMI will ask for the project password and PLC password*.
4. When downloading a PLC file, both the program and PLC need IDs, and their IDs need to be identical to be allowed for downloading. Or, when both of them have no IDs, the downloading is also allowed.
5. When downloading a PLC file, the HMI prompts the pop-up window for the project password first and then the PLC password.
6. When uploading a PLC file, the HMI prompts the pop-up window for the PLC ID first and then the PLC password.
7. When uploading a file, the HMI will ask for the PLC ID and PLC password. If the PLC has a set PLC password, this PLC password will be placed in the program as the project password when uploading. For example, assume that the PLC password is set to 1234 and the project password is set to 5678, the password inquired by the HMI is the PLC password when uploading the file. The PLC password will be regarded as the project password for the program when opening the file after uploading. At this time, both the PLC password and the project password will be 1234.
8. When using a project edited by ISPSOFT, execute compile before downloading it to the PLC. Otherwise, the error message "IL code size is mismatch" will appear.
9. The Transfer Mode only supports *.dvp and *.isp up/download. It does not support the upload or download of Subroutine / Ladder Graphic Code / SFC Graph / Device Name Comment / Row Comment / Non-volatile Data / Label Structure / Symbol Structure... etc.

*PLC password is the password set in the WPL and ISP software by selecting [System Security Setting] > [Password Function].

See the table below for the functions supported on each version:



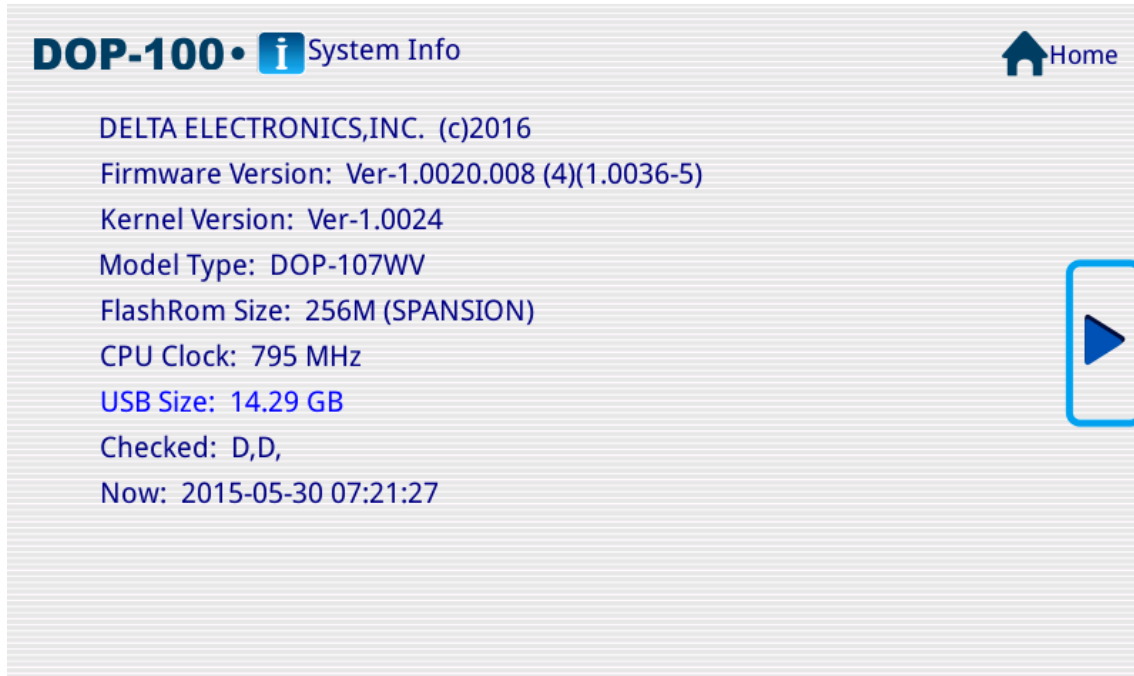
PLC series	PLC password	Limit on login attempts	Password for subroutines	PLC ID and program ID	Project password (set in editing software)
ES / EC / EC3	V	V8.20 or above	V8.20 or above	V8.20 or above	WPLSoft V2.20 and ISPSOft V1.60 or above versions support the project password function
SS	V	X	X	X	
EX	V	V8.20 or above	V8.20 or above	V8.20 or above	
SA	V	X	X	X	
SX	V	V3.00 or above	V3.00 or above	V3.00 or above	
SC	V	X	X	X	
EH	V	X	X	X	
EH2	V	V1.40 or above	V1.40 or above	V1.40 or above	
SV	V	V1.40 or above	V1.40 or above	V1.40 or above	
ES2 / EX2	V	V	V	V	
SS2	V	V	V	V	
SA2	V	V	V	V	
SX2	V	V	V	V	
SE	V	V	V	V	
MC	V	V	V	V	
EH3	V	V	V	V	
SV2	V	V	V	V	

AH series	PLC password	Limit on login attempts	Password for subroutines	PLC ID and program ID	Project password (set in editing software)
AHCPU510-EN	V	V	V	V	ISPSOft supports the Project Password function
AHCPU510-RS2	V	V	V	V	
AHCPU520-EN	V	V	V	V	
AHCPU520-RS2	V	V	V	V	
AHCPU530-EN	V	V	V	V	
AHCPU530-RS2	V	V	V	V	

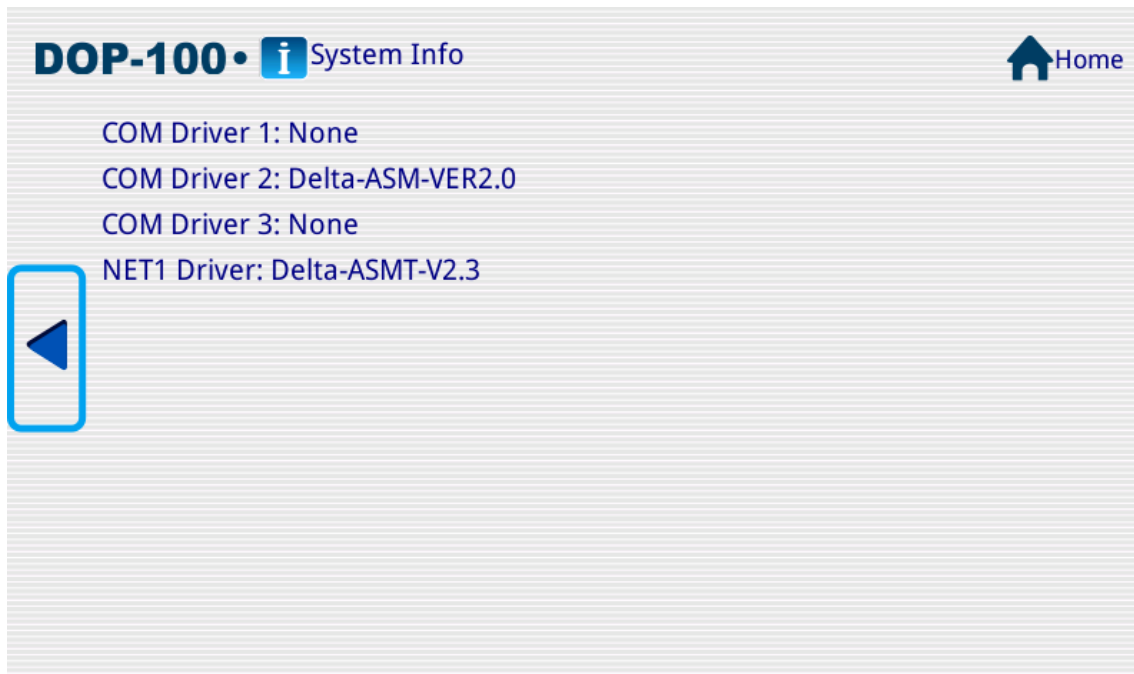
A.4 System Info

This function enables the user to view the HMI-related info including the firmware version, model, current battery capacity, size of internal Flash ROM, CPU clock, current system date and time, PLC device, and the external storage device.

A



After switching the screen, you can see the PLC Driver information of the HMI.



A.5 HMI Doctor

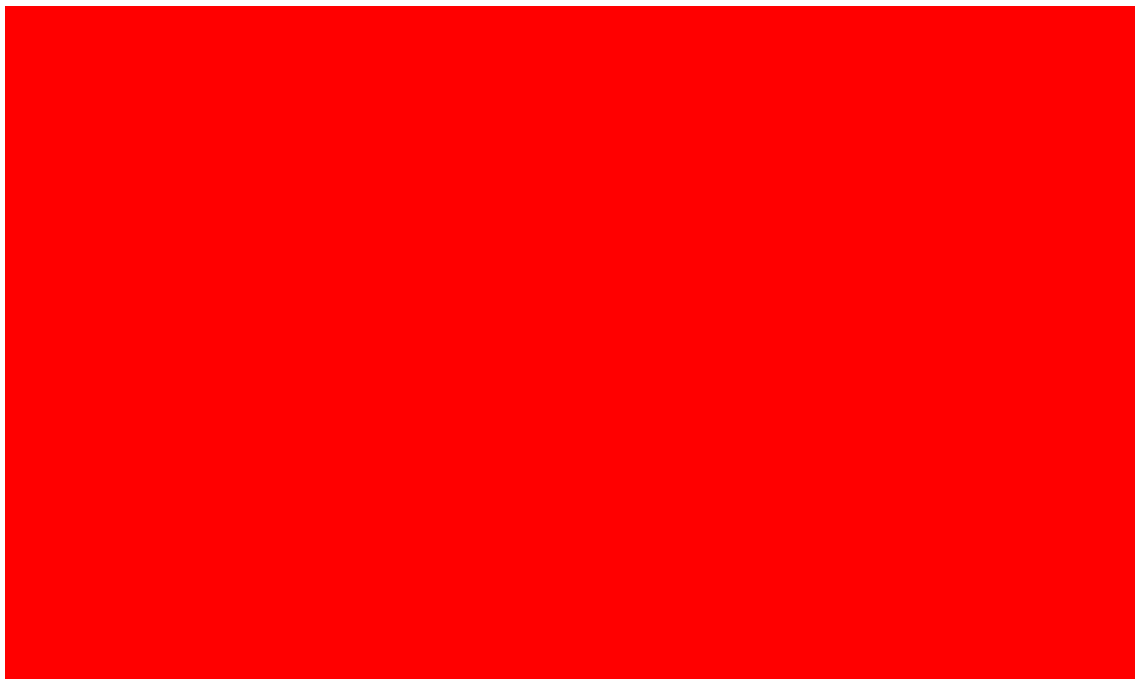
HMI Doctor is a simple application that enables the user to test the hardware interface. Functions currently available include Color (Red, Green, Blue, Black, and White), Draw Line, Buzz/LED, ADC, and Network.

A



- Red screen test

Check if there is any dark point or similar stain on the red screen of the LCD surface.



- Green screen test

Check if there is any dark point or similar stain on the green screen of the LCD surface.

A



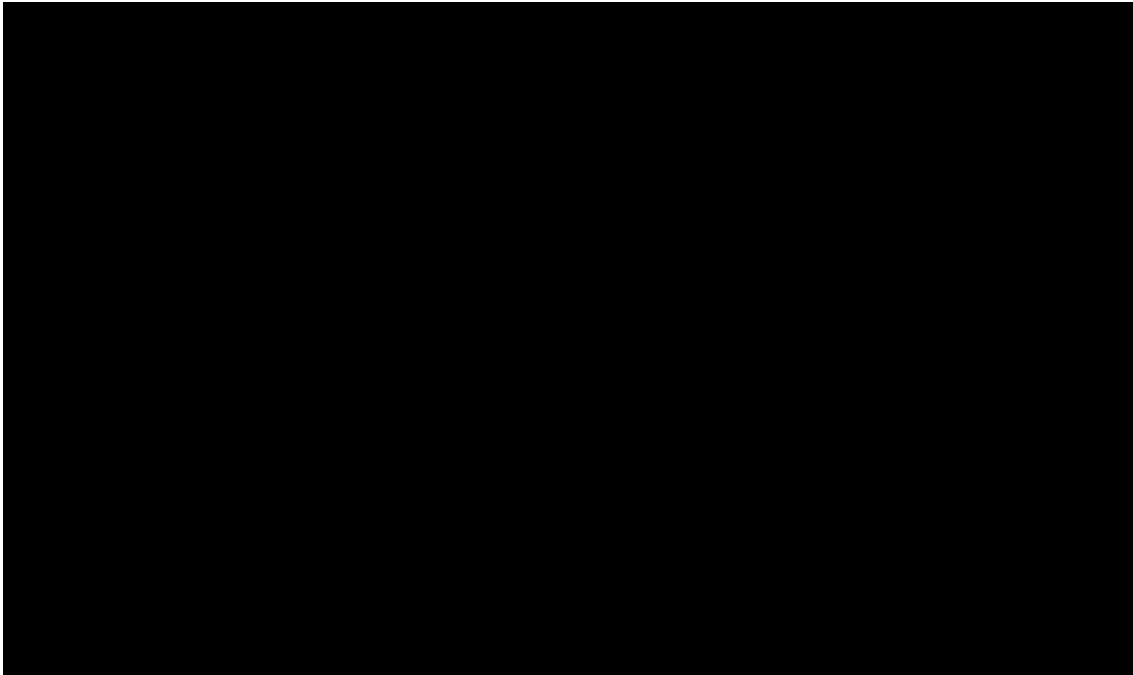
- Blue screen test

Check if there is any dark point or similar stain on the blue screen of the LCD surface.



- Black screen test

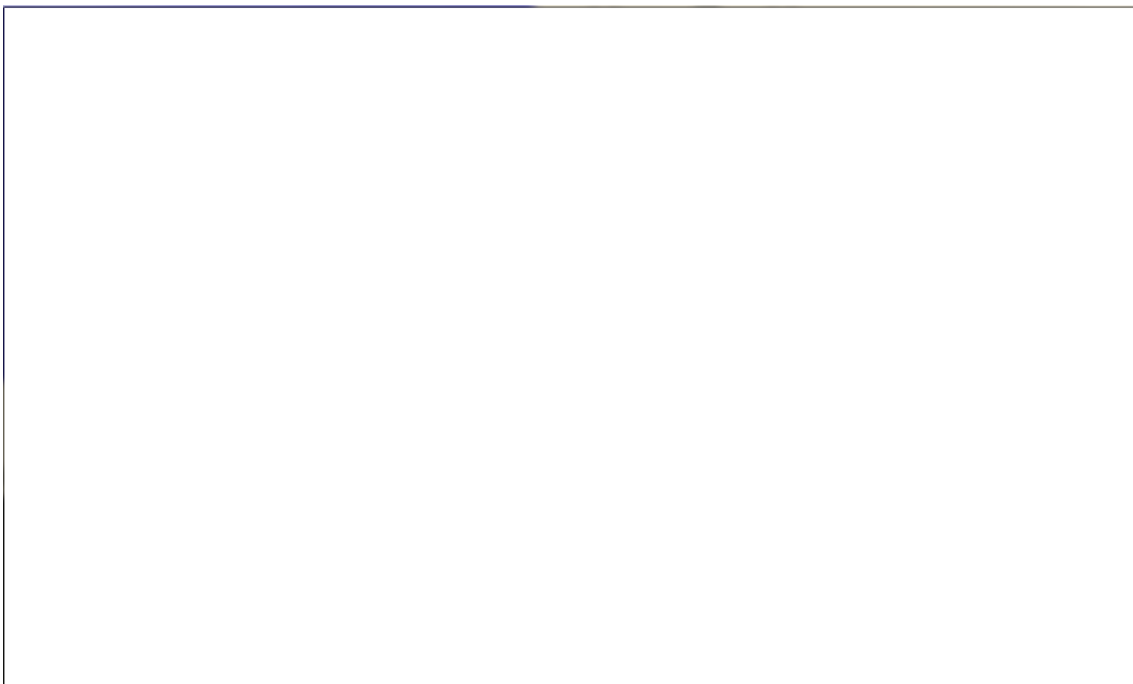
Check if there is any dark point or similar stain on the black screen of the LCD surface.



A

- White screen test

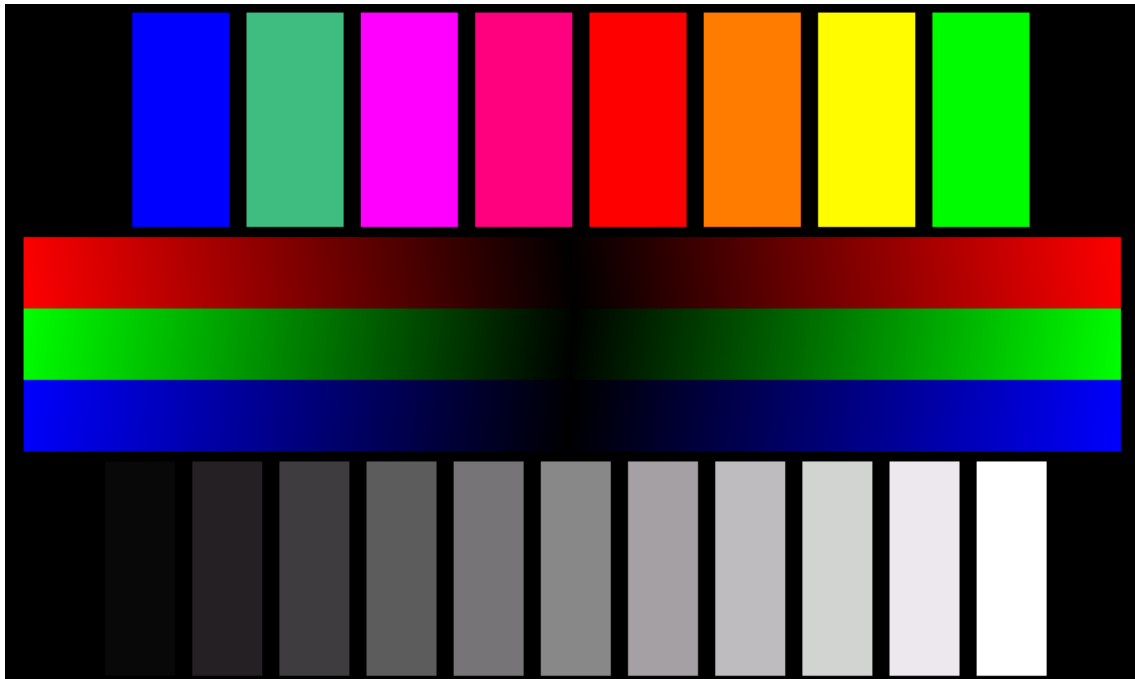
Check if there is any dark point or similar stain on the white screen of the LCD surface.



■ Color test

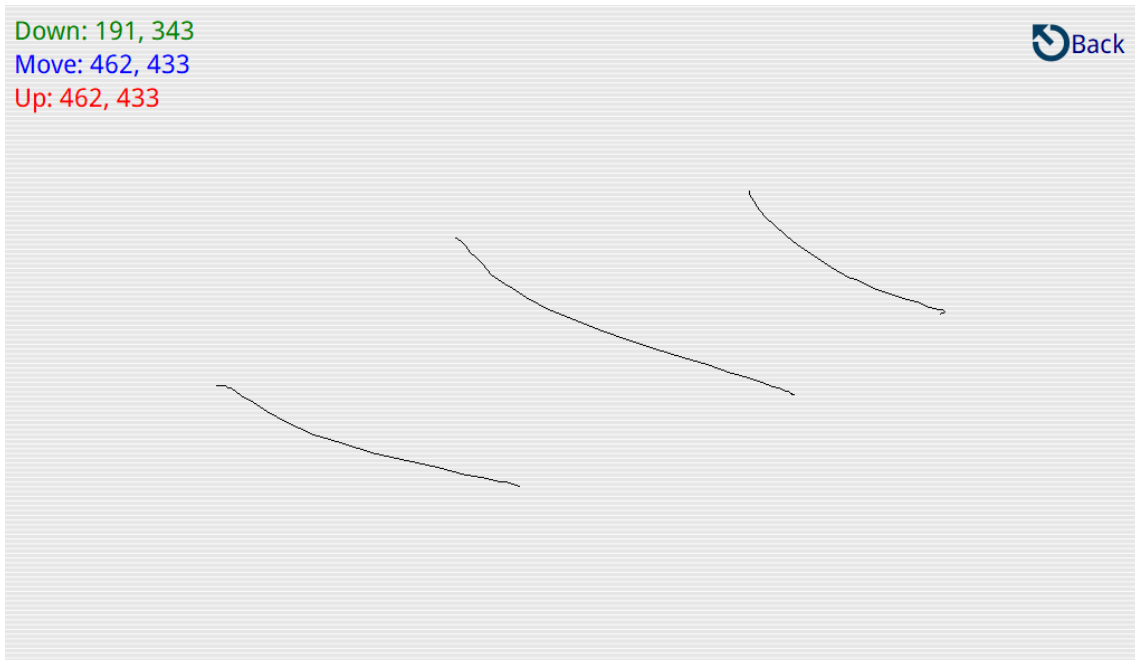
Check if the LCD color scale is displayed normally.

A



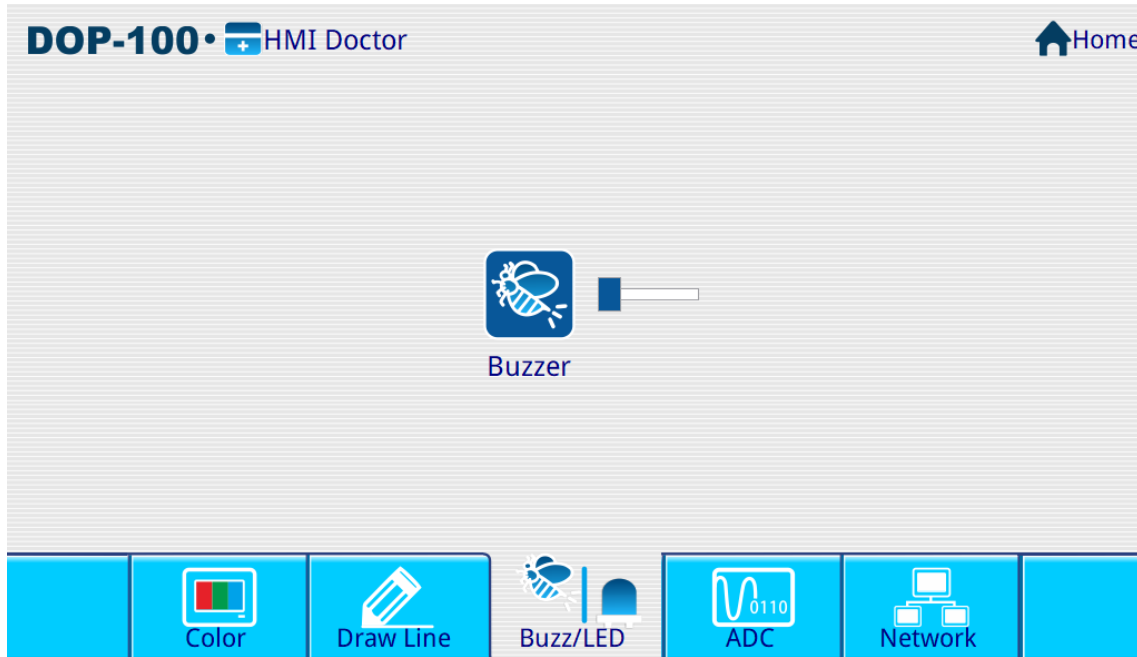
■ Draw Line

This function tests if there is deviation between the position where you draw the line and the actual position of the line displayed on the screen. If the deviation is significant, please re-calibrate the touch panel.



■ Buzz/LED

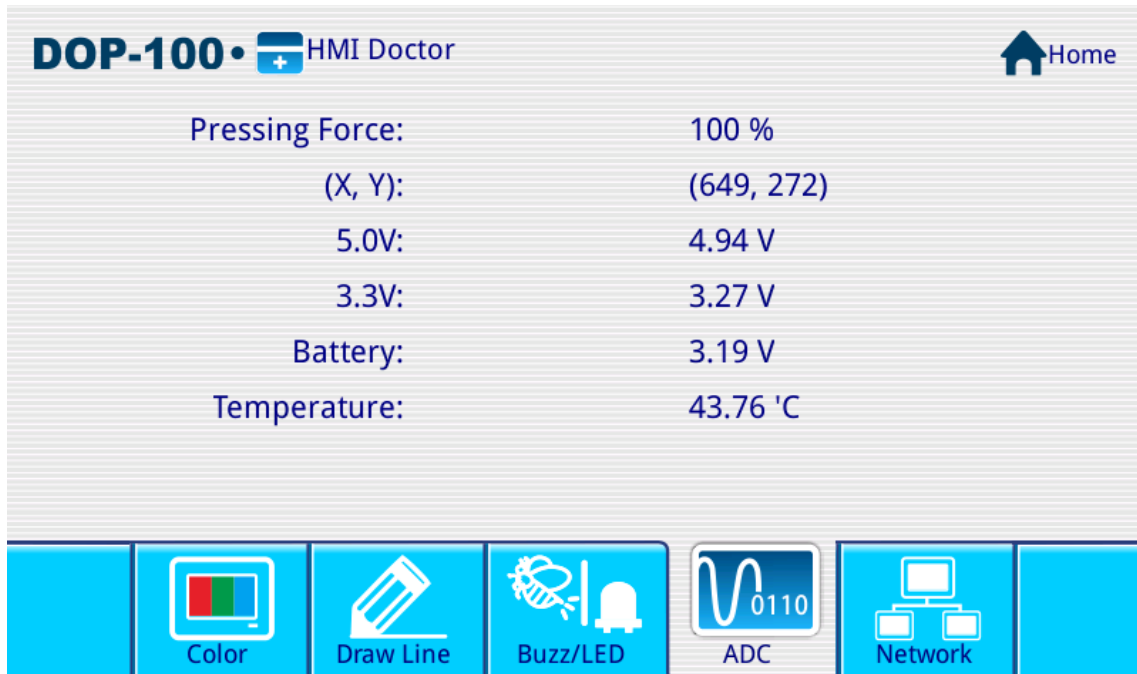
The Buzz/LED function tests if the buzzer would ring.



A

■ ADC test

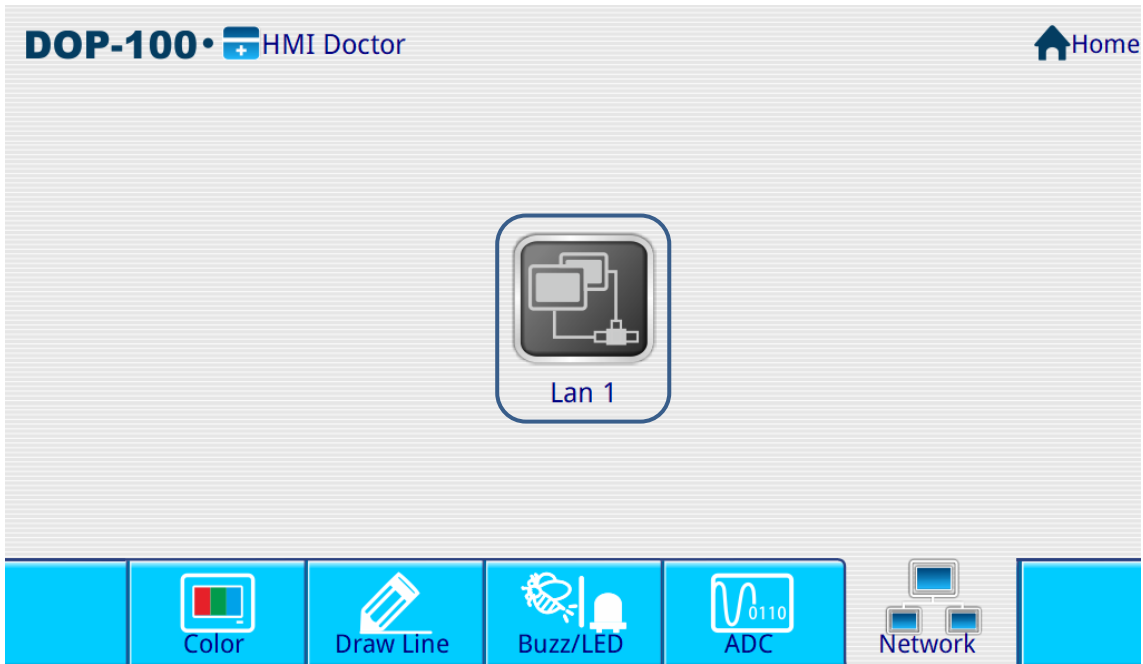
The ADC test function tests the Pressing Force, touch XY, system voltage, Battery, and Temperature.



■ Network test

This function tests to see if the network is successfully connected. At first, the Lan 1 icon displays in gray, and if the connection is successful, the icon will be displayed in color.

A



Multi-Drop

B

This appendix explains the multi-drop structure and limits, as well as the multi-drop setup steps.



B.1 Multi-drop exampleB-4

B

The multi-drop concept refers to the connection of multiple HMIs to one or more PLCs. When the host HMI is connected to a device, all client HMIs can create virtual connections via the network. Hence, you can operate a physical equipment using a single HMI in the multi-drop mode. Up to 12 links are available in the multi-drop structure, with every communication port added indicating a link for each of the 12 links. For example, if only one COM Port (using one PLC) is used, up to 12 HMIs can be connected. Assuming that each COM Port is connected to one PLC (using three PLCs), up to four HMIs can be connected. Refer to the figure below.

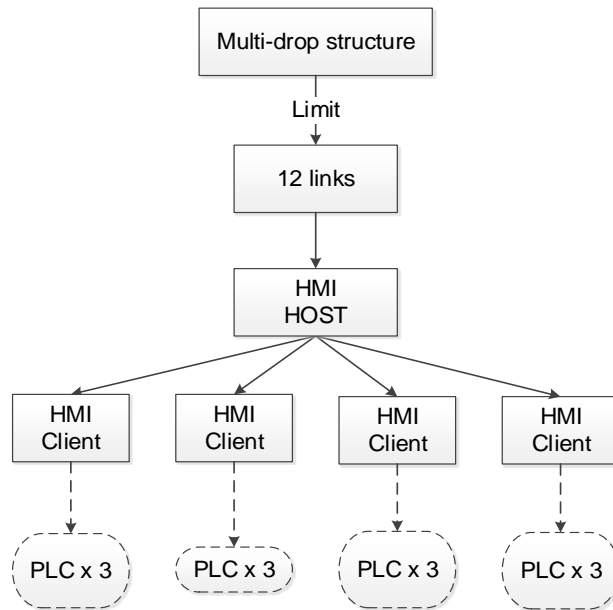


Figure B.1.1 Multi-drop structure I

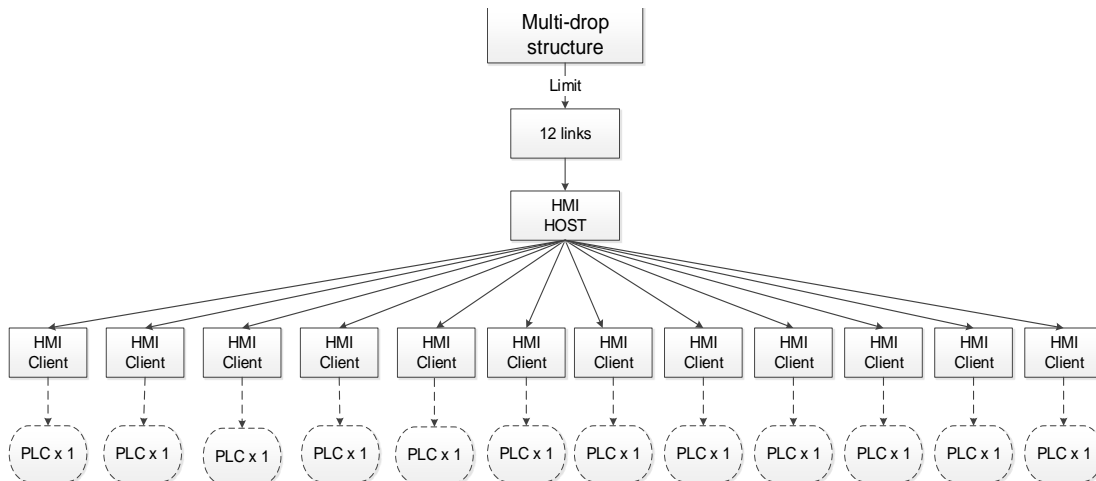
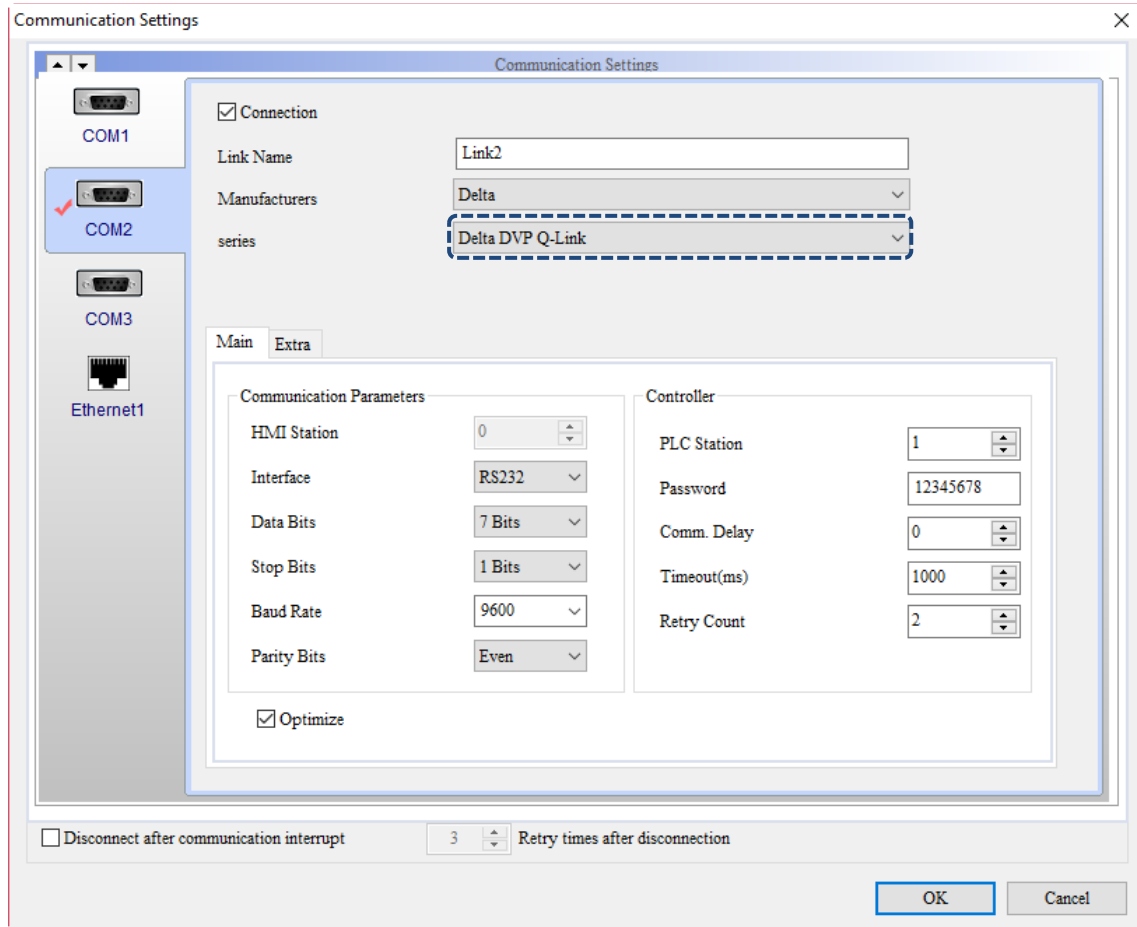


Figure B.1.2 Multi-drop structure II

The concept and limit of the multi-drop structure are described above, with the setup and operation of the multi-drop structure explained below.

The multi-drop mode is not supported if Delta DVP Q-Link is selected for the controller.



B

Figure B.1.3 Multi-drop mode

B.1 Multi-drop example

The following example is taken in an environment using 3 HMIs to test the multi-drop mode. HMI-HOST is the host end, while HMI-Client1 and HMI-Client2 are the client end. The HMI-HOST is physically connected to a Delta DVP PLC. Refer to the figure below.

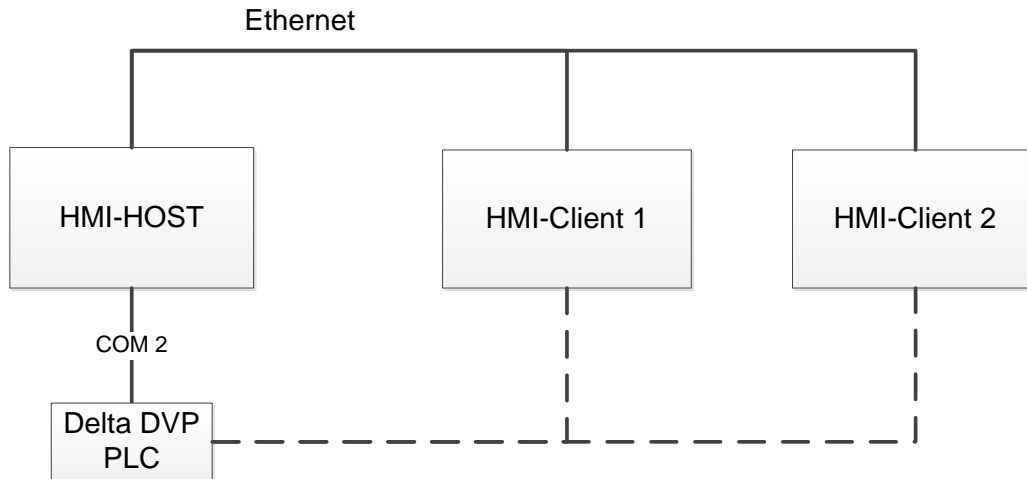
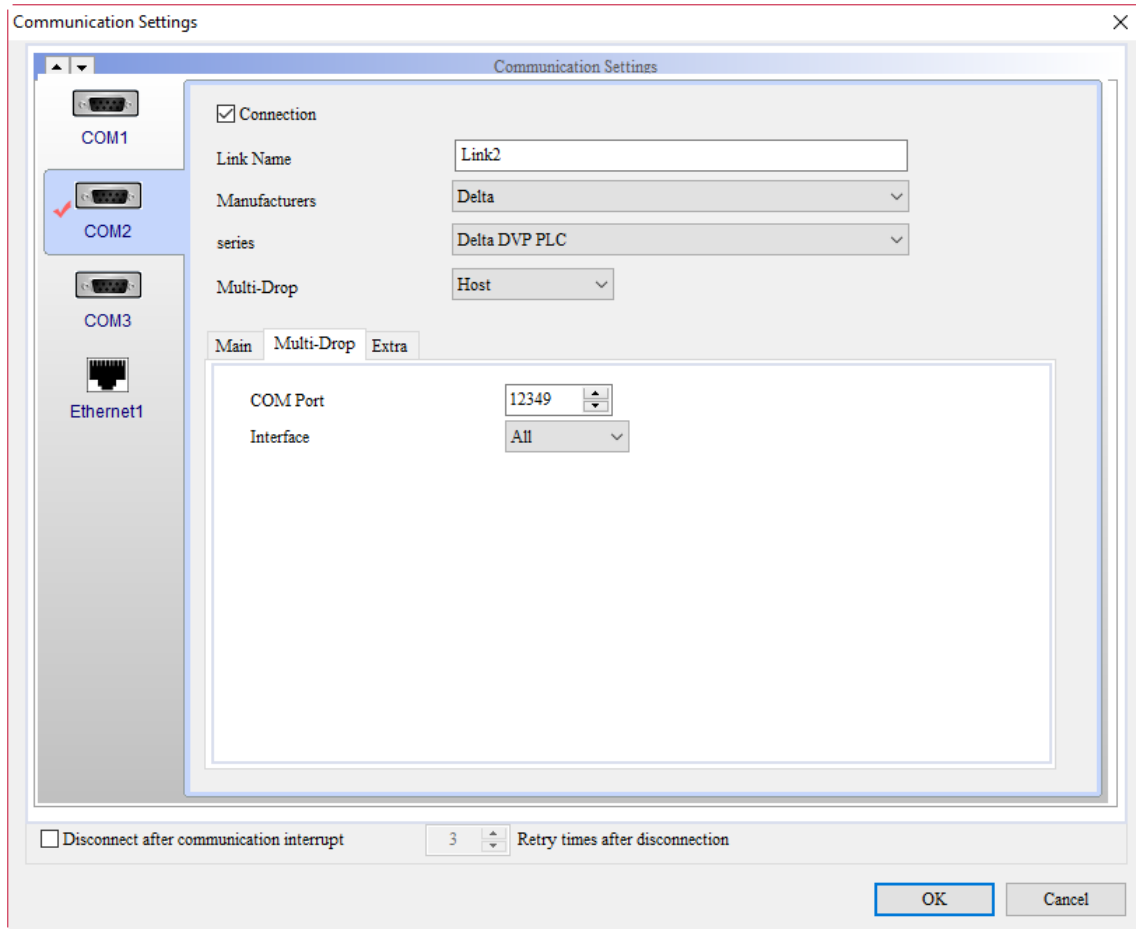


Figure B.1.4 Multi-drop environment

■ HMI-HOST setup

Create a project. Set the controller to “Delta DVP PLC” and select “Host” for Multi-Drop.



B

Figure B.1.5 Select "Host" for the Multi-Drop mode

Go to [Ethernet1] > [Localhost]. Check Overwrite IP and set HMI IP Address as 172.16.190.100.

Go to [Options] > [Configuration] > [Network Settings] to set the HMI name as HMI-HOST.

B

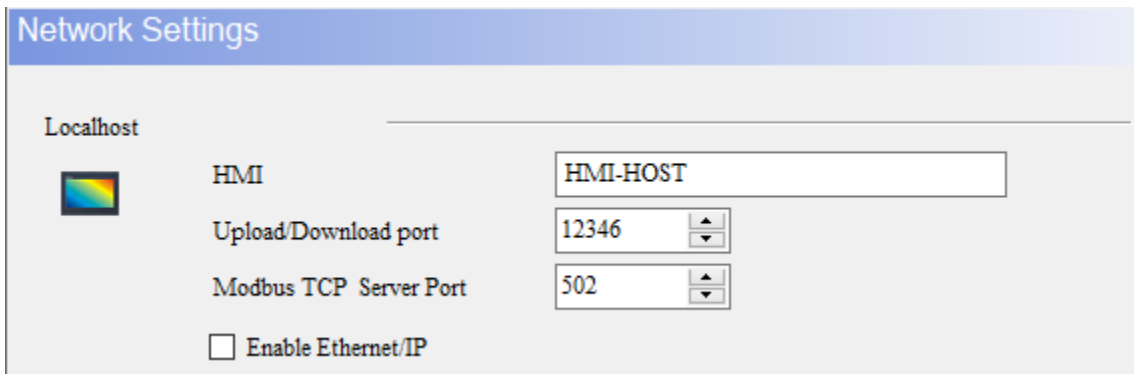
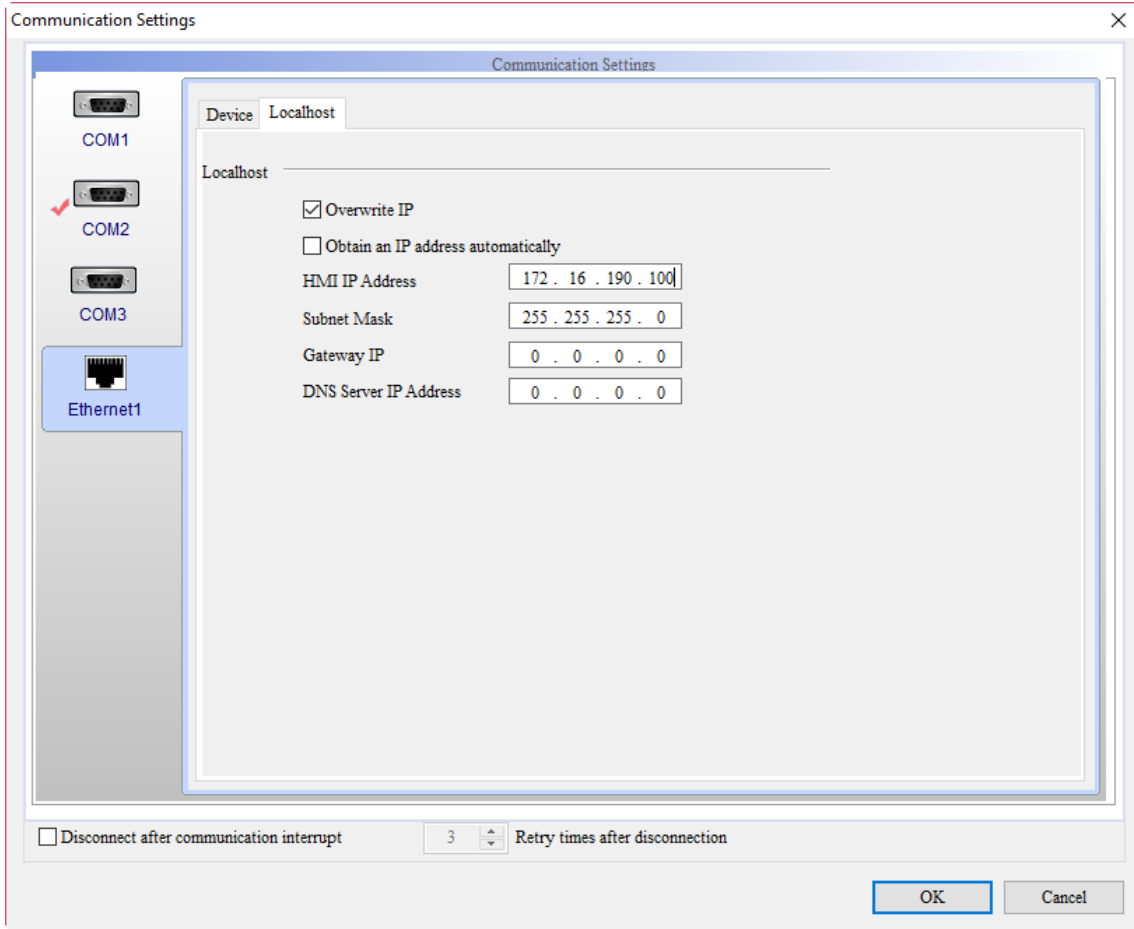
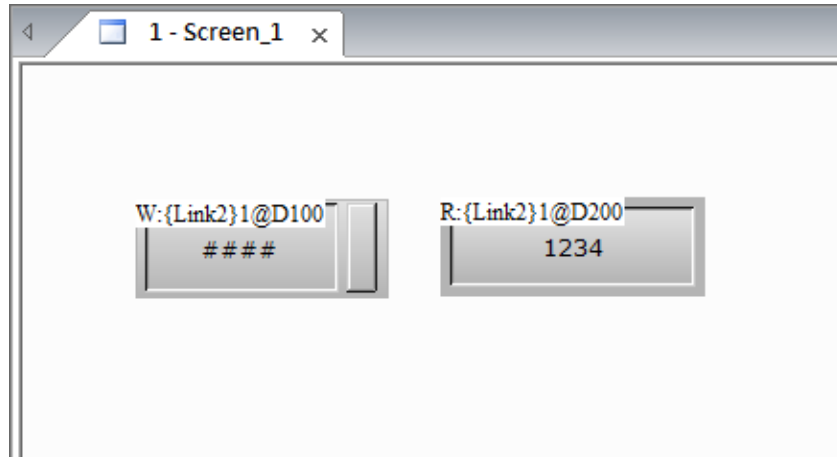


Figure B.1.6 HMI-HOST IP address setup

Create a Numeric Entry element on the editing screen and set its write address to "D100".
 Create a Numeric Display element and set its read address to "D200".



B

Figure B.1.7 Create elements

After the editing is completed, execute compiling and download the screen to the HMI.

■ HMI-Client 1 setup

Create a project. Set the controller to "Delta DVP PLC" and select "Client" for Multi-Drop.
 Enter "172.16.190.100" in the IP Address field, which is the HMI-HOST IP address.

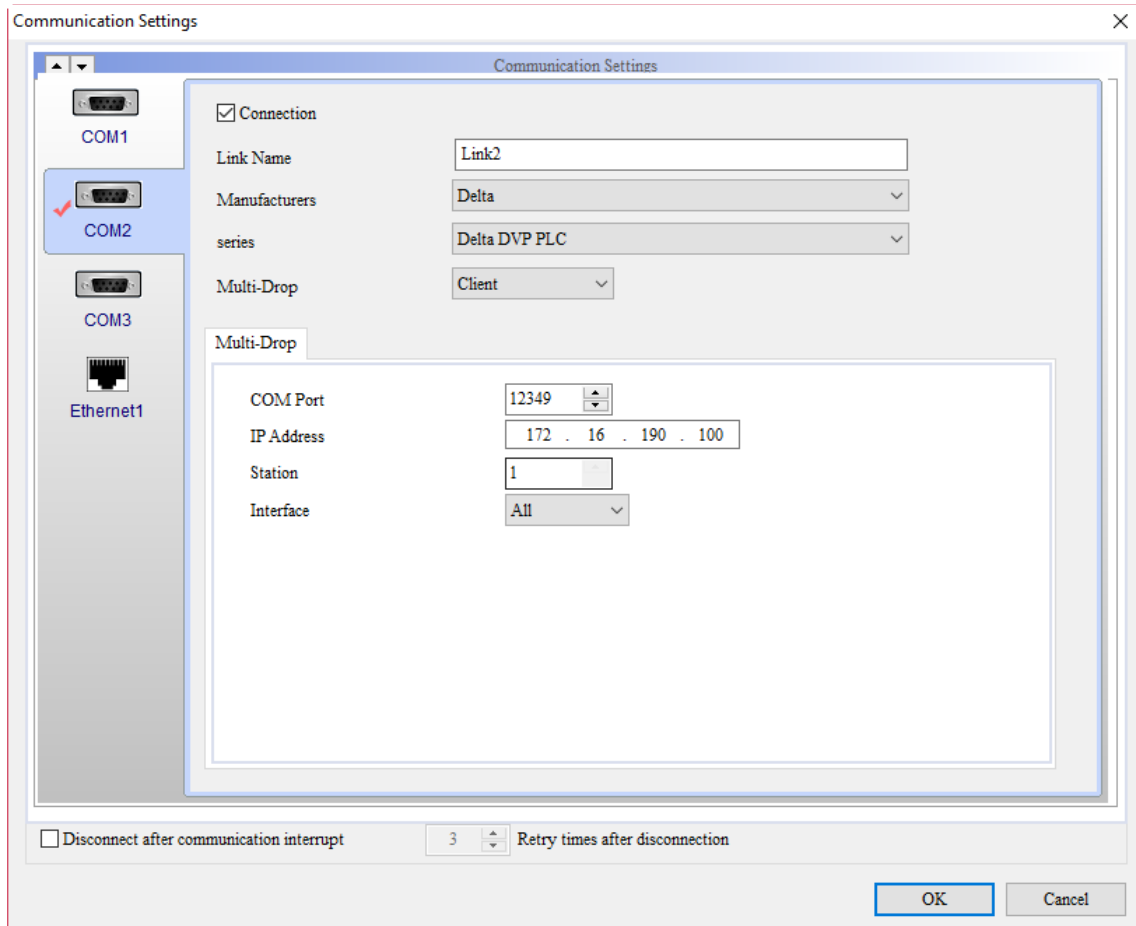


Figure B.1.8 Select "Client" for the Multi-Drop mode

Go to [Ethernet1] > [Localhost]. Check [Overwrite IP] and set HMI IP Address as 172.16.190.101.

Go to [Options] > [Configuration] > [Network Settings] to set the HMI name as HMI-Client1.

B

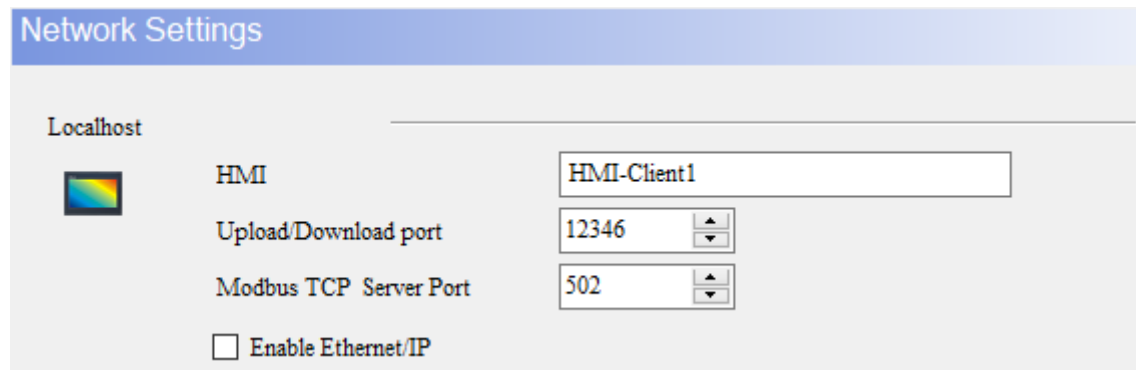
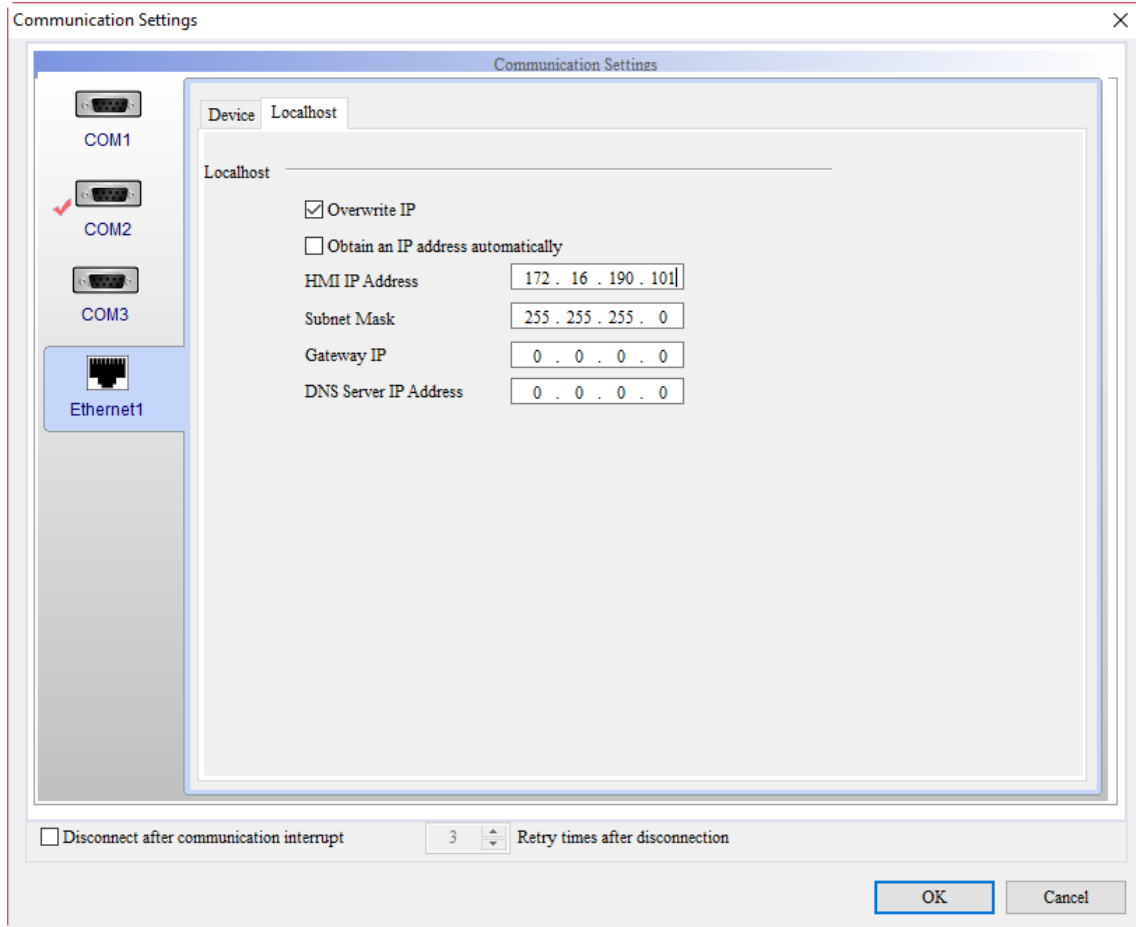
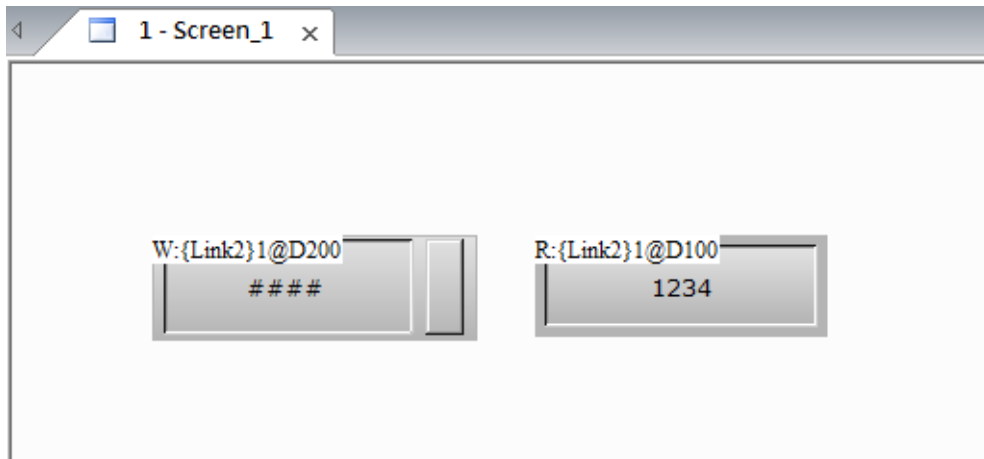


Figure B.1.9 HMI-Client1 IP address setup

Create a Numeric Entry element on the editing screen and set its write address to "D200".
 Create a Numeric Display element and set its read address to "D100".



B

Figure B.1.10 Create elements

After the editing is completed, execute compiling and download the screen to the HMI.

■ HMI-Client 2 setup

Create a project. Set the controller to "Delta DVP PLC" and select "Client" for Multi-Drop.
 Enter "172.16.190.100" in the IP Address field, which is the HMI-HOST IP address.

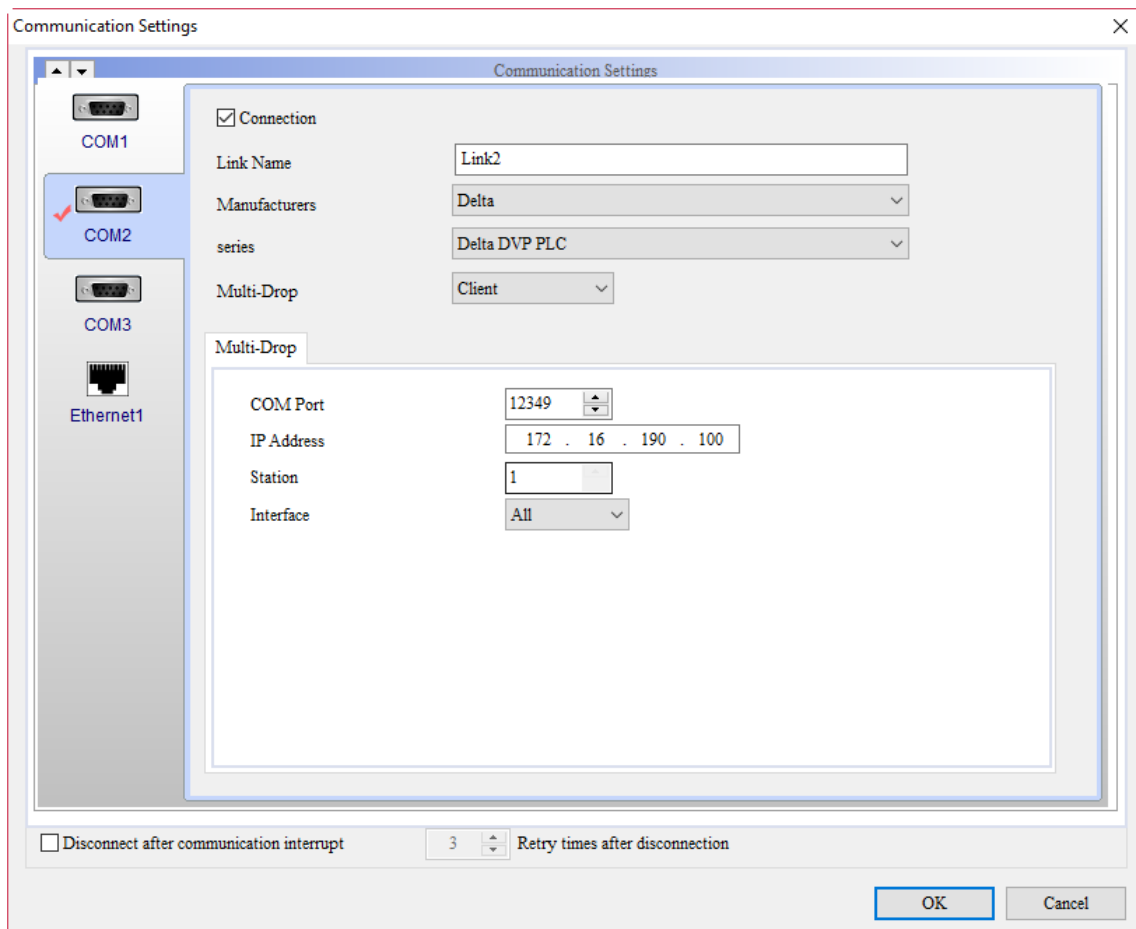


Figure B.1.11 Select "Client" for the Multi-Drop mode

Go to [Ethernet1] > [Localhost]. Check [Overwrite IP] and set HMI IP Address as 172.16.190.102.

Go to [Options] > [Configuration] > [Network Settings] to set the HMI name as HMI-Client2.

B

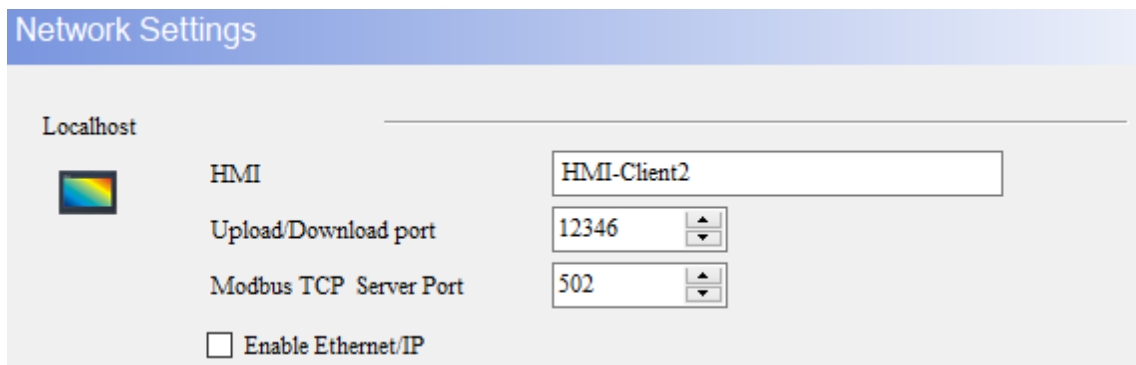
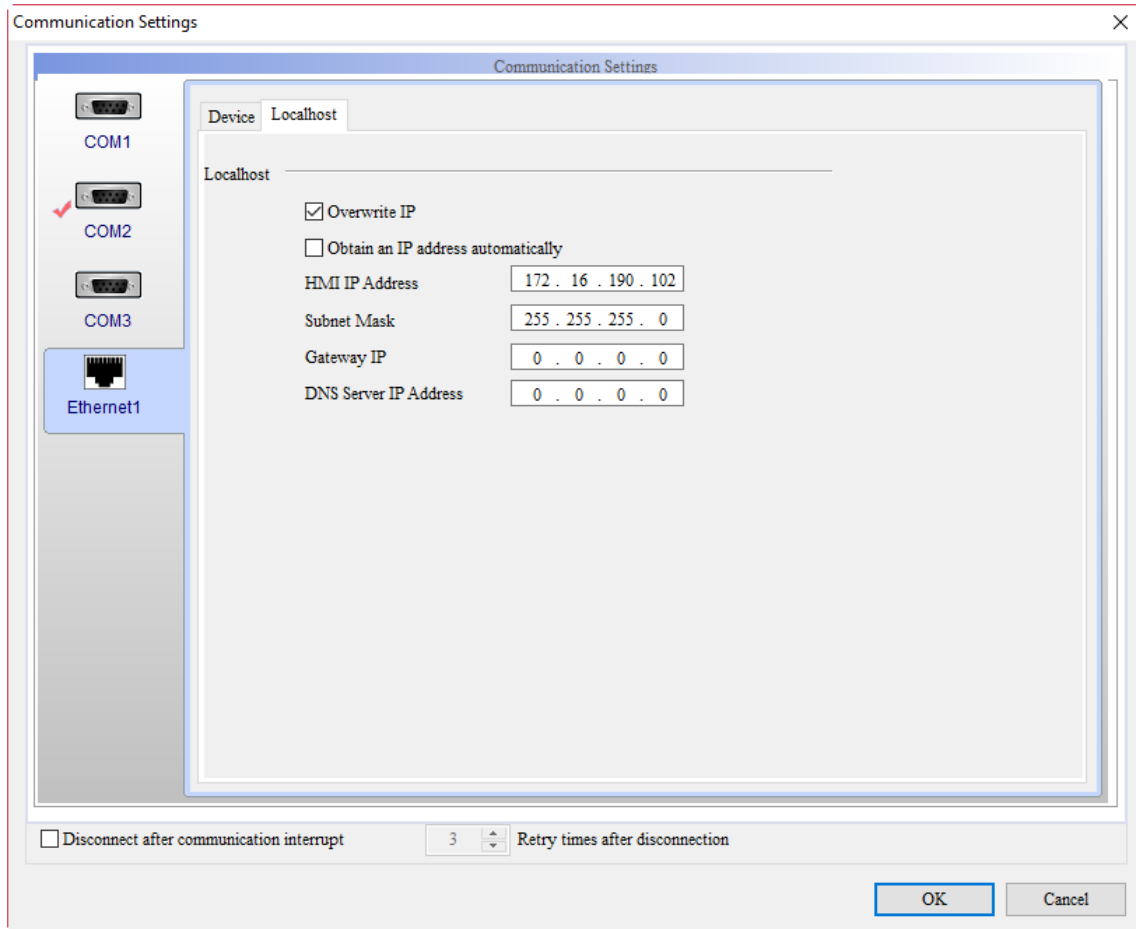
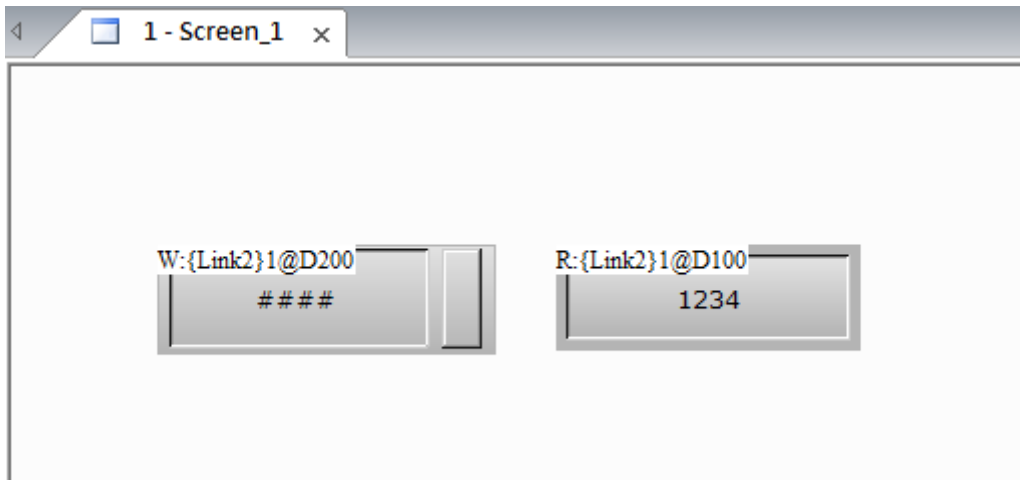


Figure B.1.12 HMI-Client2 IP address setup

Create a Numeric Entry element on the editing screen and set its write address to "D200".
Create a Numeric Display element and set its read address to "D100".



B

Figure B.1.13 Create elements

After the editing is completed, execute compiling and download the screen to the HMI.

After HMI-HOST, HMI-Client1, and HMI-Client2 are set up and downloaded to the HMI, you can use any HMI to operate the PLC. If D200 is used to input 36 in HMI-Client1, both the D200 addresses of the HMI-HOST and HMI-Client2 will show as 36. If D100 is used to input 99 in HMI-HOST, both the D100 addresses of the HMI-Client1 and HMI-Client2 will show as 99.

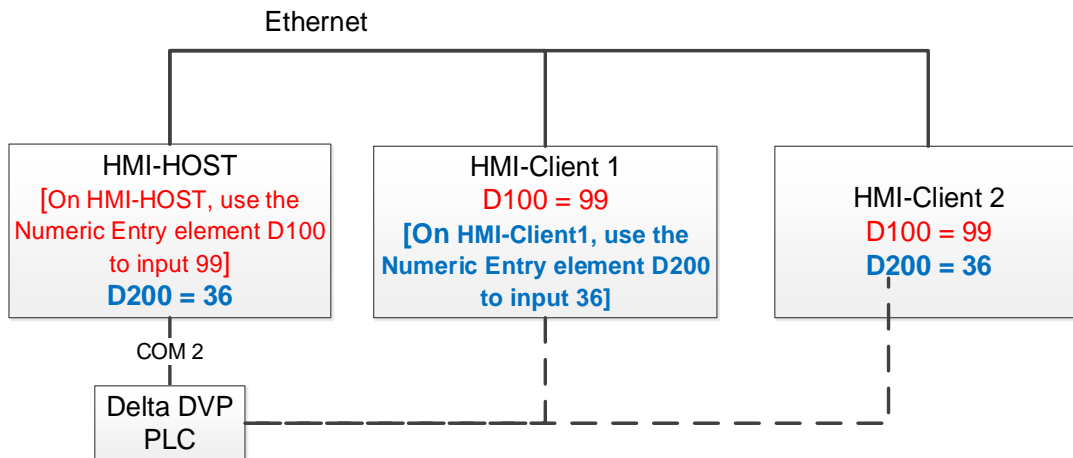


Figure B.1.14 Execution results

(This page is intentionally left blank.)

B

Communication Error Messages



This appendix describes the meanings of the communication error messages and the ways to troubleshoot these errors when a communication error occurs for the HMI.



C.1 Communication error messages C-2

C.1 Communication error messages

C

This appendix describes the meanings of the communication error messages and the ways to troubleshoot these errors when a communication error occurs for the HMI. COMMUNICATION ERROR 3 displayed in the screenshot below is the code for the error.

For communication error messages for DOP-100, a message has been added to display which register cannot access data normally, as can be seen in the screenshot below, the D100 address cannot be accessed normally.



Figure C.1.1 Example of the HMI communication error message

Through these codes, you can view the messages displayed and determine the reason why the HMI cannot be connected. The following table lists the communication error codes and messages, as well as the corresponding meanings of these error codes.

Table C.1.1 Communication error codes

Code	Communication error messages	Cause	Troubleshooting
0x02	Unknown	Noise interference.	Improve the anti-noise interference equipment and shielding for the transmission cable.
0x03	NoResponse	Incorrect communication cable wiring, PLC station number, and communication parameters including baudrate, parity, data bits, stop bit, and etc.	Check if the setting on the left is incorrect.
0x05	ControllerChecksumError	Error identified by HMI from checking the PLC CheckSum.	Check if PLC CheckSum has been enabled (usually requires use of PLC software for the checking).
0x06	CommandError	Read and write PLC command is in error.	Check if the read and write address for the HMI exceeded the address available for use by the PLC, or if this address cannot be written.
0x07	AddressError	Read and write PLC address is in error.	Check if the read and write address for the HMI exceeded the address available for use by the PLC, or if this address cannot be written.
0x08	ValueError	Error in data written to the PLC.	Check the range of value accepted by the PLC.
0x09	Controller busy	PLC busy and unable to process the given command.	PLC is busy, please try again later.
0x0A	NoCTS	HMI CTS pin did not receive PLC RTS signal.	Check if CTS pin on HMI end and RTS pin on PLC end are connected, or if the PLC has sent out RTS signal.
0x0E	HMIStationNumberError	HMI station number error.	Check if the HMI station number exceeded the range of valid station numbers, or if it is duplicated with other station numbers.
0x0F	PLCStationNumberError	PLC station number error.	Check if the PLC station number exceeded the range of valid station numbers, or if it is duplicated with other station numbers.
0x10	UARTCommunicateFail	Communication error occurred at the bottom layer of HMI. COM port was not opened correctly, or task overload on HMI causing abnormal COM port operation.	Make sure if the COM port could be used normally, or simplify HMI task load, for example, delete ALARM or MACRO command.
0x1A	RTCSYNCErrror	PLC does not support this command.	Use the PLC that supports this command.
0x1B	Receive Error	Data format sent by PLC is in error.	Make sure the data format is correct.



MPI communication error codes are created for Siemens' controllers, such as S7-300 series (Direct MPI), S7-300 series (Without PC Adaptor), and S7-200 series, when communication with the HMI fails.

C

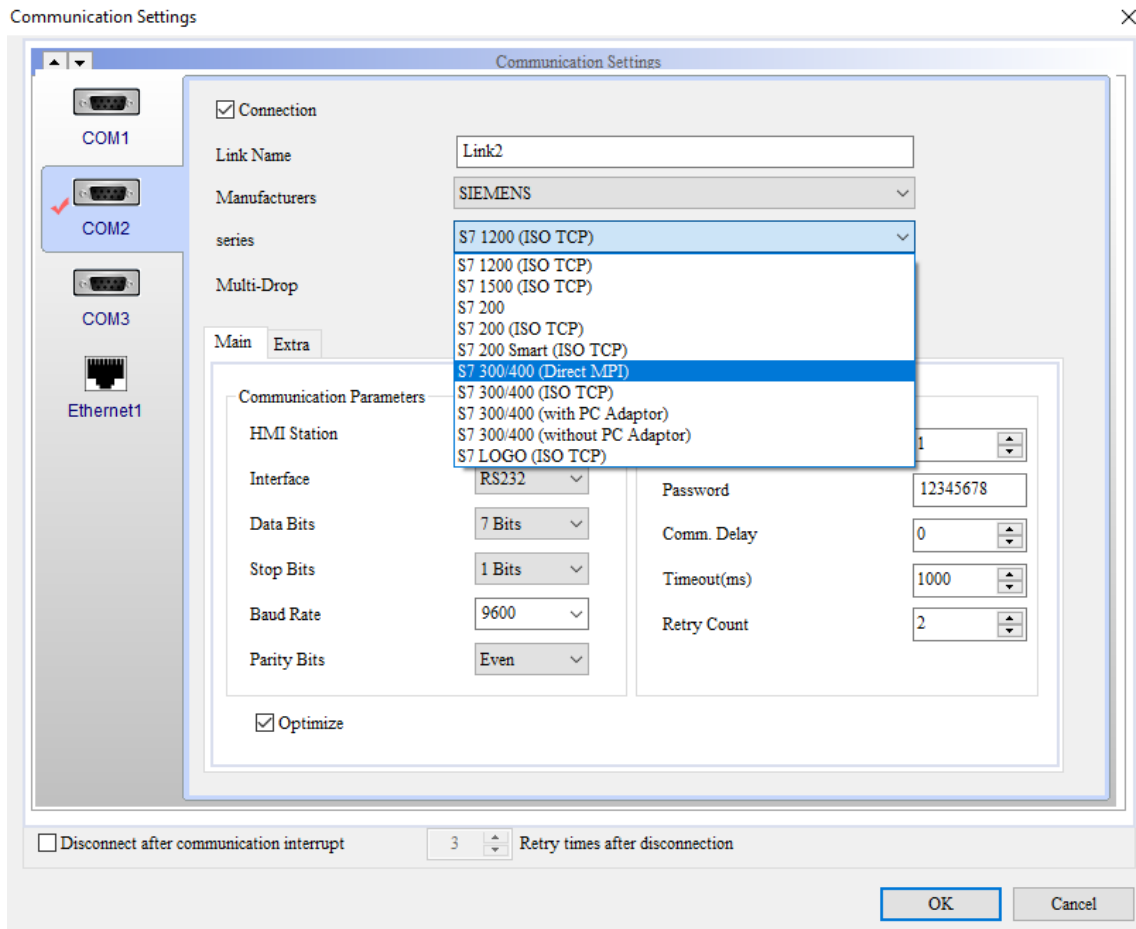


Figure C.1.2 Siemens controller

Table C.1.2 MPI communication error codes

Code	Communication error messages	Cause	Troubleshooting
0x11	MPI_IDLE (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. HMI cannot acquire packets under idle internet connection.	Check if there are too many connected modules causing insufficient bandwidth.
0x12	MPI_SN_COLLID (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. Station numbers are duplicated.	Make sure if there are modules with duplicated stations.
0x14	MPI_NO_SC (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. The number of connected stations is full, with no more connections available.	Check if the number of the connected modules exceeds the limit.
0x18	MPINoResponse (For S7 300 - without PC adaptor or S7 300 - Direct MPI)	This is a special error message for Siemens PLC. There is no response for the connection requested, as there is no resource allocated.	Check if the network cable is disconnected or if it has poor connection.
0x0B	NoResource (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. It is caused by task overload on the PLC.	This issue can be solved by simplifying the programs on the PLC to reduce task load.
0x0C	NoService (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. It is caused by task overload on the PLC.	This issue can be solved by simplifying the programs on the PLC to reduce task load.
0x3F	Read Error (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. The set PLC address exceeded the accessible range.	Set the PLC address within the accessible range.



If the connecting controller used for communication is Omron's C/CPM/CQM Series, please refer to the following Table C.1.3 for the applicable error code when an error occurred.

C

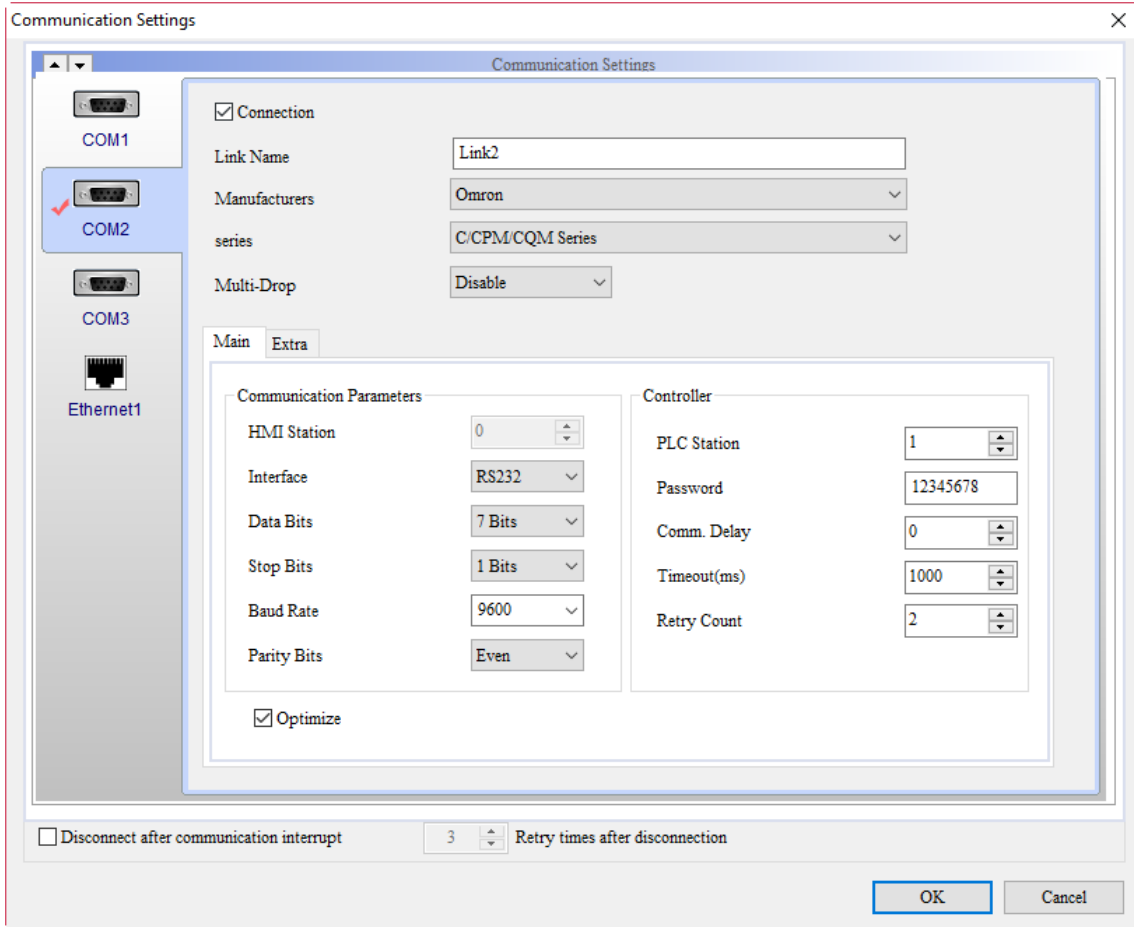


Figure C.1.3 Omron controller

Table C.1.3 Omron communication error codes

Code	Communication error messages	Cause	Troubleshooting
0x1F	NOTExecutableInRunMode	It means the HMI is already connected with the PLC, but PLC is in Run mode, so it cannot accept "write data" command.	The PLC must be in Monitor mode to accept "write data" command. This error message will only appear once because when the HMI notices an error with the mode, it will automatically change the PLC mode to Monitor mode.

Write and Read Offset Address

D

This appendix describes the method for writing and reading offset address.

D.1	Write and read offset address	D-2
-----	-------------------------------------	-----

D.1 Write and read offset address

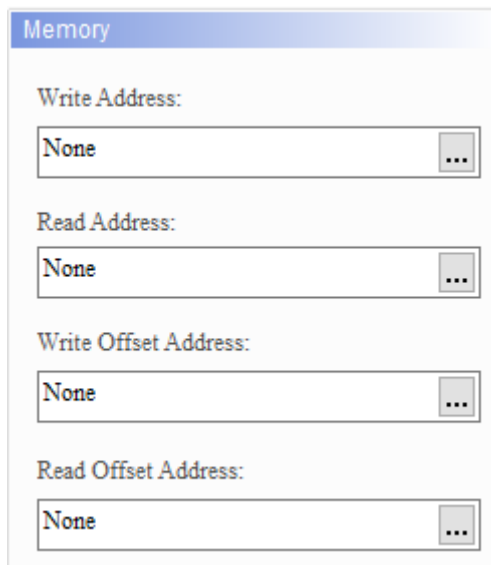
The offset address enables users to flexibly read and write the memory address without downloading the screen again when changing the address.

After setting the offset address:

Actual write address of the element: Write Address + Value in Write Offset Address × Element [Data Type].

Actual read address of the element: Read Address + Value in Read Offset Address × Element [Data Type].

If you have set the Write Offset Address but not the Read Offset Address, the Read Offset Address will be regarded the same as the Write Offset Address.



The image shows a dialog box titled "Memory" with four input fields. Each field is labeled and contains the text "None" followed by a three-dot menu icon. The labels are: "Write Address:", "Read Address:", "Write Offset Address:", and "Read Offset Address:".

Figure D.1.1 Offset address setup

Note:

1. Values in offset addresses have to be unsigned with ranges from 0 to 65535.
2. If the button element does not have the Data Type selection, its Data Type is Bit.
Data Type for the Character Display and Character Entry elements is Word, not String Length.
3. All elements that can be set with a write address can also be set with a write offset address.
The same applies to elements set with a read address can also be set with a read offset address.
Please refer to the following table for all the elements that can be set with write or read offset addresses.

D

Element		Offset address	
		Write	Read
Button	Set to On	v	v
	Set to Off	v	v
	Momentary	v	v
	Maintained	v	v
	Multistate	v	v
	Set Value	v	
	Set Constant	v	
	Increment	v	v
	Decrement	v	v
Meter (1)(2)(3)			v
Bar	Normal		v
	Differential		v
Pipe (1)(2)(6)(7)			v
Pie (1)(2)(3)(4)			v
Indicator	Multistate Indicator		v
	Range Indicator		v
	Simple Indicator		v
Data Display	Numeric Display		v
	Character Display		v
	General Message Display		v
	Moving Sign		v
Graph Display	State Graphic		v
	Animated Graphic		v
Input	Numeric Entry	v	v
	Character Entry	v	v
	Barcode Input	v	v
	Multi-language Input	v	v
Analog	Slider	v	v
List	ComboBox	v	v
	ListBox	v	v
Drawing	Line		v
	Rectangle		v
	Circle		v
	Text		v

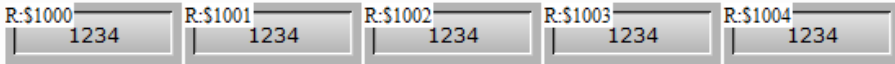
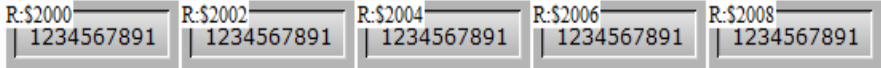
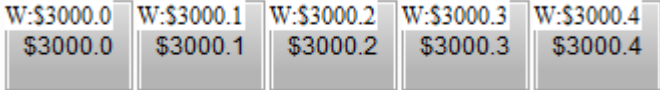
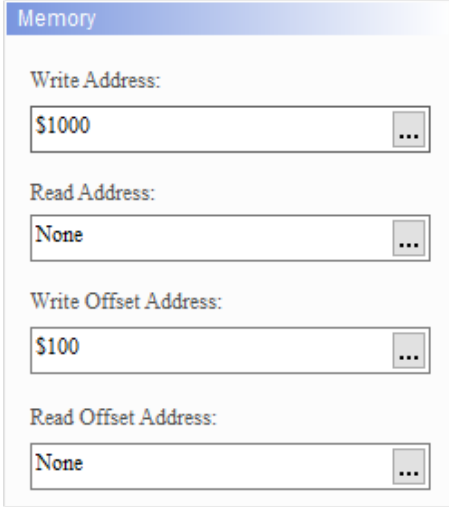
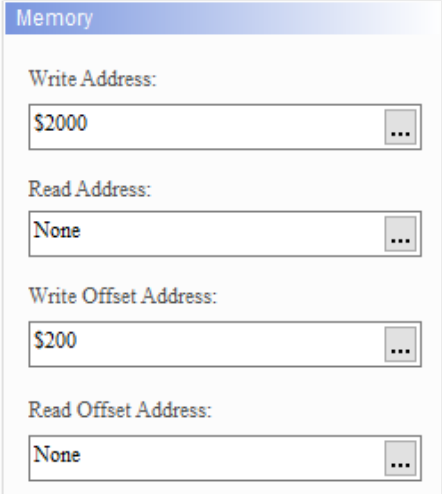
4. You can select the internal memory or controller register address as the Write / Read Address for the elements, but the controller register address which the Data Length is not Word is currently not supported. For example, C200 - C255 in Delta's DVP PLC is not supported because its Data Length is Double Word.

Variables	Type		
	Internal memory	PLC register	Constant
Write Offset Address	v	v	
Read Offset Address	v	v	

See the following examples of Offset Address.

Table D.1.1 Examples for applying offset address

D

Examples for applying offset address	
Create Numeric Entry elements	<p>Create three Numeric Entry elements and set the write addresses to \$100, \$200, and \$300, respectively.</p>
Create Numeric Display elements	<ul style="list-style-type: none"> Step 1: create five Numeric Display elements with the Data Type as Word and set the addresses from \$1000 to \$1004 in sequence.  <ul style="list-style-type: none"> Step 2: create five Numeric Display elements with the Data Type as Double Word and set the addresses from \$2000 to \$2004 in sequence. 
Create Maintained button elements	<p>Create five Maintained button elements and set the addresses from \$3000.0 to \$3000.4 in sequence.</p> 
Set offset addresses	<ul style="list-style-type: none"> Step 1: create one Numeric Entry element with the Data Type as Word and set the Write Address to \$1000 and Write Offset Address to \$100.  <ul style="list-style-type: none"> Step 2: create one Numeric Entry element with the Data Type as Double Word and set the Write Address to \$2000 and Write Offset Address to \$200. 

Examples for applying offset address

Set offset addresses

- Step 3: create one Maintained button element and set the Write Address to \$3000.0 and Write Offset Address to \$300.

Memory

Write Address:
 ...

Read Address:
 ...

Write Offset Address:
 ...

Read Offset Address:
 ...

D

After creating all the elements, please compile and download the elements to the HMI.

Download the screen to HMI

\$1000 Write Offset \$100 **WORD**

\$2000 Write Offset \$200 **DOUBLE WORD**

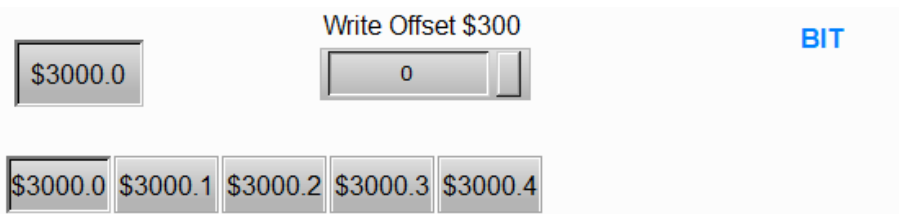
Write Offset \$300 **BIT**

D

Examples for applying offset address																	
Execution result when the Data Type is Word	<ul style="list-style-type: none"> When the Write Offset \$100 is 0, the actual write address of the Numeric Entry element Word is \$1000. <div style="border: 1px solid gray; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">\$1000</td> <td style="text-align: center;">Write Offset \$100</td> <td style="text-align: right; color: blue;">WORD</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="9999"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td></td> </tr> <tr> <td style="text-align: center;">\$1000</td> <td style="text-align: center;">\$1001</td> <td style="text-align: center;">\$1002</td> <td style="text-align: center;">\$1003</td> <td style="text-align: center;">\$1004</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="9999"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> </tr> </table> </div>	\$1000	Write Offset \$100	WORD	<input type="text" value="9999"/>	<input type="text" value="0"/>		\$1000	\$1001	\$1002	\$1003	\$1004	<input type="text" value="9999"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
	\$1000	Write Offset \$100	WORD														
	<input type="text" value="9999"/>	<input type="text" value="0"/>															
\$1000	\$1001	\$1002	\$1003	\$1004													
<input type="text" value="9999"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>													
<ul style="list-style-type: none"> When the Write Offset \$100 is 1, the actual write address of the Numeric Entry element is 1 Word address after \$1000, which is \$1001. <div style="border: 1px solid gray; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">\$1000</td> <td style="text-align: center;">Write Offset \$100</td> <td style="text-align: right; color: blue;">WORD</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="8888"/></td> <td style="text-align: center;"><input type="text" value="1"/></td> <td></td> </tr> <tr> <td style="text-align: center;">\$1000</td> <td style="text-align: center;">\$1001</td> <td style="text-align: center;">\$1002</td> <td style="text-align: center;">\$1003</td> <td style="text-align: center;">\$1004</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="9999"/></td> <td style="text-align: center;"><input type="text" value="8888"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> </tr> </table> </div>	\$1000	Write Offset \$100	WORD	<input type="text" value="8888"/>	<input type="text" value="1"/>		\$1000	\$1001	\$1002	\$1003	\$1004	<input type="text" value="9999"/>	<input type="text" value="8888"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	
\$1000	Write Offset \$100	WORD															
<input type="text" value="8888"/>	<input type="text" value="1"/>																
\$1000	\$1001	\$1002	\$1003	\$1004													
<input type="text" value="9999"/>	<input type="text" value="8888"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>													
<ul style="list-style-type: none"> When the Write Offset \$100 is 3, the actual write address of the Numeric Entry element is 3 Word addresses after \$1000, which is \$1003. <div style="border: 1px solid gray; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">\$1000</td> <td style="text-align: center;">Write Offset \$100</td> <td style="text-align: right; color: blue;">WORD</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="6666"/></td> <td style="text-align: center;"><input type="text" value="3"/></td> <td></td> </tr> <tr> <td style="text-align: center;">\$1000</td> <td style="text-align: center;">\$1001</td> <td style="text-align: center;">\$1002</td> <td style="text-align: center;">\$1003</td> <td style="text-align: center;">\$1004</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="9999"/></td> <td style="text-align: center;"><input type="text" value="8888"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="6666"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> </tr> </table> </div>	\$1000	Write Offset \$100	WORD	<input type="text" value="6666"/>	<input type="text" value="3"/>		\$1000	\$1001	\$1002	\$1003	\$1004	<input type="text" value="9999"/>	<input type="text" value="8888"/>	<input type="text" value="0"/>	<input type="text" value="6666"/>	<input type="text" value="0"/>	
\$1000	Write Offset \$100	WORD															
<input type="text" value="6666"/>	<input type="text" value="3"/>																
\$1000	\$1001	\$1002	\$1003	\$1004													
<input type="text" value="9999"/>	<input type="text" value="8888"/>	<input type="text" value="0"/>	<input type="text" value="6666"/>	<input type="text" value="0"/>													
Execution result when the Data Type is Double Word	<ul style="list-style-type: none"> When the Write Offset \$200 is 0, the actual write address of the Numeric Entry element Double Word is \$2000. <div style="border: 1px solid gray; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">\$2000</td> <td style="text-align: center;">Write Offset \$200</td> <td style="text-align: right; color: blue;">DOUBLE WORD</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="99999999"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td></td> </tr> <tr> <td style="text-align: center;">\$2000</td> <td style="text-align: center;">\$2002</td> <td style="text-align: center;">\$2004</td> <td style="text-align: center;">\$2006</td> <td style="text-align: center;">\$2008</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="99999999"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> </tr> </table> </div>	\$2000	Write Offset \$200	DOUBLE WORD	<input type="text" value="99999999"/>	<input type="text" value="0"/>		\$2000	\$2002	\$2004	\$2006	\$2008	<input type="text" value="99999999"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
	\$2000	Write Offset \$200	DOUBLE WORD														
	<input type="text" value="99999999"/>	<input type="text" value="0"/>															
\$2000	\$2002	\$2004	\$2006	\$2008													
<input type="text" value="99999999"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>													
<ul style="list-style-type: none"> When the Write Offset \$200 is 1, the actual write address of the Numeric Entry element is 1 Double Word address after \$2000, which is \$2002. <div style="border: 1px solid gray; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">\$2000</td> <td style="text-align: center;">Write Offset \$200</td> <td style="text-align: right; color: blue;">DOUBLE WORD</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="88888888"/></td> <td style="text-align: center;"><input type="text" value="1"/></td> <td></td> </tr> <tr> <td style="text-align: center;">\$2000</td> <td style="text-align: center;">\$2002</td> <td style="text-align: center;">\$2004</td> <td style="text-align: center;">\$2006</td> <td style="text-align: center;">\$2008</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="99999999"/></td> <td style="text-align: center;"><input type="text" value="88888888"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> </tr> </table> </div>	\$2000	Write Offset \$200	DOUBLE WORD	<input type="text" value="88888888"/>	<input type="text" value="1"/>		\$2000	\$2002	\$2004	\$2006	\$2008	<input type="text" value="99999999"/>	<input type="text" value="88888888"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	
\$2000	Write Offset \$200	DOUBLE WORD															
<input type="text" value="88888888"/>	<input type="text" value="1"/>																
\$2000	\$2002	\$2004	\$2006	\$2008													
<input type="text" value="99999999"/>	<input type="text" value="88888888"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>													
<ul style="list-style-type: none"> When the Write Offset \$200 is 3, the actual write address of the Numeric Entry element is 3 Double Word addresses after \$2000, which is \$2006. <div style="border: 1px solid gray; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">\$2000</td> <td style="text-align: center;">Write Offset \$200</td> <td style="text-align: right; color: blue;">DOUBLE WORD</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="66666666"/></td> <td style="text-align: center;"><input type="text" value="3"/></td> <td></td> </tr> <tr> <td style="text-align: center;">\$2000</td> <td style="text-align: center;">\$2002</td> <td style="text-align: center;">\$2004</td> <td style="text-align: center;">\$2006</td> <td style="text-align: center;">\$2008</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="99999999"/></td> <td style="text-align: center;"><input type="text" value="88888888"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> <td style="text-align: center;"><input type="text" value="66666666"/></td> <td style="text-align: center;"><input type="text" value="0"/></td> </tr> </table> </div>	\$2000	Write Offset \$200	DOUBLE WORD	<input type="text" value="66666666"/>	<input type="text" value="3"/>		\$2000	\$2002	\$2004	\$2006	\$2008	<input type="text" value="99999999"/>	<input type="text" value="88888888"/>	<input type="text" value="0"/>	<input type="text" value="66666666"/>	<input type="text" value="0"/>	
\$2000	Write Offset \$200	DOUBLE WORD															
<input type="text" value="66666666"/>	<input type="text" value="3"/>																
\$2000	\$2002	\$2004	\$2006	\$2008													
<input type="text" value="99999999"/>	<input type="text" value="88888888"/>	<input type="text" value="0"/>	<input type="text" value="66666666"/>	<input type="text" value="0"/>													

Examples for applying offset address

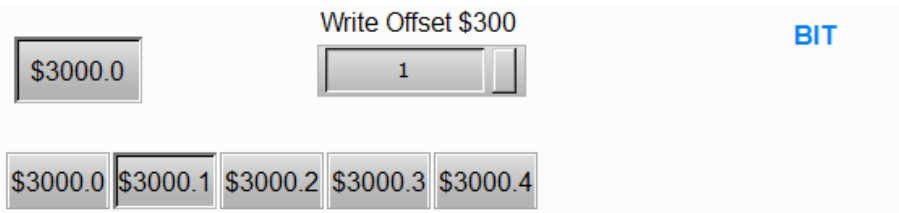
Execution result when the Data Type is Bit

- When the Write Offset \$300 is 0, the actual write address of the Maintained button element is \$3000.0.


Write Offset \$300 BIT

\$3000.0

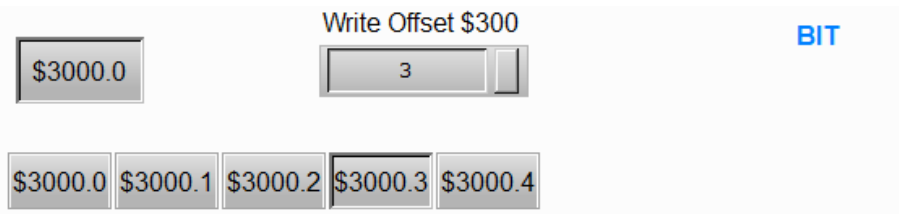
0

\$3000.0 \$3000.1 \$3000.2 \$3000.3 \$3000.4
- When the Write Offset \$300 is 1, the actual write address of the Maintained button element is 1 Bit address after \$3000.0, which is \$3000.1.


Write Offset \$300 BIT

\$3000.0

1

\$3000.0 \$3000.1 \$3000.2 \$3000.3 \$3000.4
- When the Write Offset \$300 is 3, the actual write address of the Maintained button element is 3 Bit addresses after \$3000.0, which is \$3000.3.


Write Offset \$300 BIT

\$3000.0

3

\$3000.0 \$3000.1 \$3000.2 \$3000.3 \$3000.4

D

(This page is intentionally left blank.)

D

Revision History

Release date	Version	Chapter	Revision contents
November, 2018	V1.0 (First edition)		

(This page is intentionally left blank.)