

# PROFIBUS DP *RTU-PD01 Slave Communication Module* Operation Manual



DVP-0215820-01





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## 1 Introduction to RTU-PD01

## 1.1 Product Introduction

- 1. Thank you for choosing Delta RTU-PD01 PROFIBUS DP Slave Communication Module. To ensure correct installation and operation of the product, please read this operation manual carefully before using it.
- This operation manual only provides introductory information on RTU-PD01. Detailed information about PROFIBUS DP protocol is not included in this manual. Please refer to relevant literatures for more information on PROFIBUS DP protocol.
- 3. RTU-PD01 is a PROFIBUS DP slave communication module for connecting Delta's Slim series special I/O modules, digital I/O modules and standard Modbus devices to PROFIBUS DP network.

## 1.2 Features

- 1. Supports PROFIBUS DP cyclic data transmission.
- 2. Auto-detects baud rates; supports max. 12Mbps.
- 3. Self-diagnosis
- Able to connect to max. 8 DVP-Slim type special I/O modules (i.e. analog I/O, temperature measurement, counter and positioning modules) and 16 digital I/O modules (max. 256 digital I/O points).
- 5. The RS-485 COM port is able to connect to max. 16 standard Modbus slave stations.
- 6. Supports max. 100 bytes of data input and 100 bytes of data output.

## 2 Profuct Profile and Outline

#### 2.1 Parts and Dimensions



Unit: mm

1. POWER indicator	2. NET indicator	3. RS-485 indicator
4. RUN/STOP switch	5. RUN indicator	6. ALARM indicator
7. Address setup switch	8. PROFIBUS DP COM port	9. I/O module positioning hole
10. Nameplate	11. I/O module connection port	12. DIN rail (35mm)
13. I/O module fixing clip	14. DIN rail fixing clip	15. RS-485 COM port
16. I/O module fixing notch	17. DC24V power supply interface	

#### 2.2 Specifications

#### **PROFIBUS DP Port**

Interface	DB9 connector
Transmission method	High-speed RS-485
Transmission cable	Shielded twisted pair cable
Electrical isolation	500VDC

#### Communication

Message type	Cyclic data exchange
Module name	RTU-PD01
GSD file	DELA09B9.GSD
Product ID	09B9 (HEX)

Serial transmission speed supported (auto-detection)	9.6kbps; 19.2kbps; 93.75kbps; 187.5kbps; 500kbps; 1.5Mbps; 3Mbps; 6Mbps; 12Mbps (bits per second)

#### **Electrical Specification**

Power supply voltage	24VDC
Insulation voltage	500VDC
Power consumption	2.5W
Weight	90g

#### Environment

	ESD (IEC 61131-2,IEC 61000-4-2): 8kV Air Discharge
	EFT (IEC 61131-2,IEC 61000-4-4): Power Line:±2kV,Digital Input:±2kV
Noise immunity	Comunication I/O: ±2kV
	Conducted Susceptibility Test (EN61000-4-6, IEC 61131-2 9.10): 150kHz ~ 80MHz,10V/m
	RS (IEC 61131-2, IEC 61000-4-3): 26MHz ~ 1GHz, 10V/m
Storage/operation	Operation: $0^{\circ}$ C ~ $50^{\circ}$ C (temperature), 50 ~ 90% (humidity), pollution degree 2 Storage: $-25^{\circ}$ C ~ $70^{\circ}$ C (temperature), 5 ~ 95% (humidity)
Shock/vibration immunity	International standards: IEC 61131-2,IEC 68-2-6 (TEST Fc)/IEC 61131-2& IEC 68-2-27 (TEST Ea)

#### 3 Installation

#### 3.1 Definition of PROFIBUS DP Port

PIN	PIN name	Definition
1		N/C
2		N/C
3	RxD/TxD-P	Sending/receiving data P(B)
4		N/C
5	DGND	Data reference potential (C)
6	VP	Power voltage – positive
7		N/C
8	RxD/TxD-N	Sending/receiving data N(A)
9		N/C



#### 3.2 Connecting to PROFIBUS DP Port

Insert PROFIBUS DP bus connector into PROFIBUS DP port on RTU-PD01 (see the figure below) Screw it tight to ensure RTU-PD01 and PROFIBUS DP bus are properly connected.



- 3.3 Installing RTU-PD01 and I/O Module on DIN Rail
  - Use 35mm DIN rail.
  - Open the DIN rail clips on RTU-PD01 and I/O module. Insert RTU-PD01 and I/O module on the DIN rail.
  - Clip up the DIN rail clips on RTU-PD01 and I/O module to fix them on the DIN rail (see the figure below).



## 4 Components

#### 4.1 RUN/STOP Switch

	Status	Description		
	RUN => STOP	1. Special I/O module switches from RUN to STOP.		
		2. All Y points on digital output module turn OFF.		
RUN		3. Modbus function switch		
$\bigcap$		4. RUN LED turns off.		
		<ol> <li>RTU-PD01 re-detects the number of digital I/O points and specialI/O modules.</li> </ol>		
STOP		2. Special I/O module switches from STOP to RUN.		
	STOP => RUN	3. Enable digital I/O modules.		
		4. Enable Modbus function.		
		5. RUN LED turns on.		

#### 4.2 Address Setup Switch

The two rotary address setup switches,  $x16^{\circ}$  and  $x16^{1}$ , set up the node address of RTU-PD01 on PROFIBUS DP network in hex form. The range for rotation is  $0 \sim F$ .

Address	Definition	
H'1~ H'7D	Valid PROFIBUS address	sa Costa x16
H'0 or H'7E ~ H'FF	Invalid PROFIBUS address. NET LED will flash in red color if the node address falls within this range.	<sup>ل</sup> و x16°

Example: If you need to set the node address of RTU-PD01 to 26 (decimal), simply switch  $x16^{1}$  switch to "1" and  $x16^{0}$  to "A". 26 (decimal) = 1A (hex) =  $1x16^{1} + Ax16^{0}$ .

Note:

- Switch off the power supply before setting up the node address of RTU-PD01. Re-power the module after the setup is completed.
- Changing the value on the switch during the operation of RTU-PD01 is invalid.
- Use slot type screwdriver to set up the switch. Be careful not to scratch the module.

## 5 Establishing PROFIBUS DP Network by RTU-PD01

The right-side interface on RTU-PD01 is connectable to DVP-Slim series special I/O modules and digital I/O modules. The RS-485 port is connectable to standard Modbus devices. See the figure below for the connection of Slim series I/O modules and Modbus devices and into the PROFIBUS DP network.



## 6 Transmission Distance and Baud Rate

The baud rate range for PROFIBUS DP is 9.6kbps ~ 12Mbps, and the length of transmission cable varies upon the transmission speed. The transmission distance ranges from 100m to 1,200m. See the table below for the baud rates RTU-PD01 supports and their corresponding communication distance.

Baud rate (bps)	9.6k	19.2k	93.75k	187.5k	500k	1.5M	3M	6M	12M
Distance (m)	1,200	1,200	1,200	1,000	400	200	100	100	100

## 7 GSD File

The GSD file is a text file and can be used to identify PROFIBUS DP device (master or slave). A GSD file usually contains the supplier's information, baud rates supported and applicable I/O messages. When using RTU-PD01, you have to first import the GSD file to the configuration software for PROFIBUS DP master. After the import of the file, the configuration software for master will display RTU-PD01 and its configuration settings. You can download the GSD file for RTU-PD01 at Delta's website: <u>http://www.delta.com.tw/</u>

## 8 RTU-PD01 Settings and Configurations

#### 8.1 RTU-PD01 Settings

When you set up RTU-PD01 in the configuration software for PROFIBUS DP master, there will be plenty of setup items for you to choose from, which adds flexibility to the manipulation of RTU-PD01. See the figure below for RTU-PD01 settings.

Properties - DP slave						
General Parameter Assignment						
Parameters	Value					
E Station parameters						
Device-specific parameters						
—≡ Acceleration mode	Disable					
—	8,N,2					
— 🖺 Modbus baudrate	19200 bps					
- 🖾 Modbus mode	RTU					
— E Loss comm with master	Hold I/O data					
—	Ignore & continue I/O exchange					
- 🖺 Loss modbus slave	Ignore & continue I/O exchange					
–)≝ IO module error	Ignore & continue I/O exchange					
—	200					
Diagnose cycle (s)	10					
+ 🔄 Hex parameter assignment						
OK Cancel Help						

#### Definitions of settings:

Setup item	Setting	Definition
Acceleration mode	Enable	When the Modbus device is configured with many addresses and the addresses are consecutive, all contents in the consecutive addresses can be read or written at a time.
	Disable	When the Modbus device is configured with many addresses, only contents in a single address can be read or written.

Setup item	Setting	Definition
Modbus protocol	7, E, 1       7, O, 2       8, N, 1         7, O, 1       8, E, 1       8, N, 2         7, E, 2       8, O, 1       8, N, 2	Modbus communication format (including data bit, stop bit and parity bit)
Modbus baudrate	1,200bps19,200bps2,400bps38,400bps4,800bps57,600bps9,600bps115,200bps	Modbus serial transmission speed
Modbus mode	RTU/ASCII	Modbus communication mode
Loss communication	Hold I/O data	RTU-PD01 retains the I/O data before getting offline after getting offline from the master.
with master	Clear I/O data	RTU-PD01 reset all the I/O data to 0 after getting offline from the master.
Modbus slave error	Ignore & continue I/O exchange	RTU-PD01 continues exchanging data with the master even when Modbus read/write error occurs.
	Stop I/O exchange &report fault	RTU-PD01 stops exchanging data with the master when Modbus read/write error occurs.
	Ignore & continue I/O exchange	RTU-PD01 continues exchanging data with the master even when the Modbus slave is disconnected.
Loss modbus slave	Continue & report alarm	RTU-PD01 continues exchanging data with the master and alarms it when there is Modbus slave getting disconnected.
	Stop I/O exchange & report fault	RTU-PD01 stops exchanging data with the master and reports error to it when there is Modbus slave getting disconnected.
	Ignore & continue I/O exchange	RTU-PD01 continues exchanging data with the master even when error occurs in the right-side special I/O module.
IO module error	Continue & report alarm	RTU-PD01 continues exchanging data with the master and alarms it when error occurs in the right-side special I/O module.
	Stop I/O exchange & report fault	RTU-PD01 stops exchanging data with the master and reports error to it when error occurs in the right-side special I/O module.
Modbus timeout setting (ms)	0 ~ 65535	Modbus communication timeout. Unit: ms
Diagnose cycle (s)	1 ~ 20	Cycle for RTU-PD01 to diagnose the right-side special I/O module. Unit: s

## 8.2 Configuration Items

RTU-PD01 offers every flexible configuration method when being configured in PROFIBUS DP master configuration tool, for example, you can configure digital I/O modules or special I/O modules by the actual name of the module, or self-define the cofiguration.

## PROFIBUS DP Slave Communication Module RTU-PD01

Configuration item	Configurable device	Configuration method
Modbus 1 read address		
Modbus 2 read address		
Modbus 4 read address		
Modbus 8 read address		
Modbus 1 write address		
Modbus 2 write address	Modeus dovisos connected to PTU PD01	Modbus
Modbus 4 write address	Noubus devices connected to 1410-1 Do 1	Modbus
Modbus 8 write address		
Modbus 1 read & write address		
Modbus 2 read & write address		
Modbus 4 read & write address		
Modbus 8 read & write address		
DVP08SM11N	DVP08SM11N connected to RTU-PD01	
DVP08SN11R/T	DVP08SN11R or DVP08SN11T connected to RTU-PD01	
DVP08SP11R/T	DVP08SP11R or DVP08SP11T connected to RTU-PD01	method for digital I/O
DVP16SP11R/T	DVP16SP11R or DVP16SP11T connected to RTU-PD01	
DVP08ST	DVP08ST module connected to RTU-PD01	
8 DI		
8 DO		
8 DIDO		
16 DI		
16 DO		
16 DIDO	Digital I/O modules connected to PTU PD01	Self-defined
32 DI		for digital I/O module
32 DO		
32 DIDO		
64 DI		
64 DO		
64 DIDO		
DVP04AD	DVP04AD-S connected to RTU-PD01	
DVP06AD	DVP06AD-S connected to RTU-PD01	
DVP02DA	DVP02DA-S connected to RTU-PD01	Standard configuration
DVP04DA	DVP04DA-S connected to RTU-PD01	method for special I/O
DVP06XA	DVP06XA-S connected to RTU-PD01	
DVP04PT	DVP04PT-S connected to RTU-PD01DVP04TC-S connected to RTU-PD01	
DVP04TC		

Configuration item	Configurable device	Configuration method	
1 AI			
2 AI			
4 AI			
8 AI			
1 AO			
2 AO	Special I/O modules connected to PTU PD01	Self-defined	
4 AO	for special I/O modules connected to RTO-PD01 for special		for special I/O module
8 AO			
1 AIAO			
2 AIAO			
4 AIAO			
8 AIAO			

#### 8.3 Settings of Configuration Items

#### 8.3.1 Settings of Configuration Items for Digital I/O Modules

There are 2 types of configuration items for digital I/O modules, standard configuration and self-defined configuration. By standard configuration, the digital I/O module is named after its actual name, whereas it is named after the number of points by self-defined configuration. You do not have to set up parameters in the configuration. The digital I/O can correspond to the master directly after the configuration

#### 8.3.2 Settings of Configuration Items for Special I/O Modules

The special I/O module is named after its actual name in the configuration. You can configure special I/O module by standard configuration items. Detailed configuration methods will be explained in the following paragraphs.

• Configuration method for DVP06AD-S and DVP04AD-S

Refer to the figure below for the relevant parameters to configure DVP06AD-S. DVP04AD-S and DVP06AD-S have the same parameters to set, except that DVP06AD-S has two more parameters for input channels to set than does DVP04AD-S (Therefore, only the parameter settings for DVP06AD-S are introduced in this section).

Properties - DP slave	
Address / ID Parameter Assignment	
Parameters	Value
E 🔄 Station parameters	
Device-specific parameters	
_≝ Location	0
–	-10V~+10V
– CH2 input mode	-10V~+10V
– CH3 input mode	-10V~+10V
– ≝ CH4 input mode	-10V~+10V
_≝ CH5 input mode	-10V~+10V
– ≝ CH6 input mode	-10V~+10V
–≝ Input value mode	Current value
Average times	10
🕂 🧰 Hex parameter assignment	
OK	Cancel Help

Parameter	Value	Definition
Location	0~7	The location of DVP06AD-S at the right side of RTU-PD01. The location of the first special I/O module at the right side of RTU-PD01 is 0, the second is 1 and so forth. This rule is only applicable on special I/O modules.
CH1 input mode	-10V ~ +10V	The input channel on DVP06AD-S is set to mode 0: Voltage input mode. Input range: -10V ~ +10V
CH2 input mode CH3 input mode	-6V ~ +10V	The input channel on DVP06AD-S is set to mode 1: Voltage input mode. Input range: -6V ~ +10V.
CH4 input mode CH5 input mode	-12mA ~ +20mA	The input channel on DVP06AD-S is set to mode 2: Current input mode. Input range: -12mA ~ +20mA
CH6 input mode	-20mA ~ +20mA	The input channel on DVP06AD-S is set to mode 3: Current input mode. Input range: -20mA ~ +20mA
Input value mode	Current value	Current value of the input signal in all channels on DVP06AD-S
mput value mode	Average value	Average value of the input signals in all channels on DVP06AD-S
Average times	1 ~ 4096	The average times

#### • Configuration method for DVP04DA-S and DVP02DA-S

Refer to the figure below for the relevant parameters to configure DVP04DA-S. DVP04DA-S and DVP02DA-S have the same parameters to set, except that DVP04DA-S has two more parameters for input channels to set than does DVP02DA-S (Therefore, only the parameter settings for DVP04DA-S are introduced in this section).

Properties - DP slave		X
Address / ID Parameter Assignment		1
Parameters  Station parameters  Constraint of the second s	Value           0           0V~10V           0V~10V           0V~10V           0V~10V	
OK	Cancel Help	

Parameter	Value	Definition
Location	0 ~ 7	The location of DVP04DA-S at the right side of RTU-PD01. The location of the first special I/O module at the right side of RTU-PD01 is 0, the second is 1 and so forth. This rule is only applicable on special I/O modules.
	0V ~ 10V	The output channel on DVP04DA-S is set to mode 0: Voltage output mode. Output range: 0V ~ +10V
CH1 output mode CH2 output mode	2V ~ 10V	The output channel on DVP04DA-S is set to mode 1: Voltage output mode. Output range: 2V ~ 10V
CH3 output mode CH4 output mode	4mA ~ 20mA	The output channel on DVP04DA-S is set to mode 2: Current output mode. Output range: 4mA ~ 20mA
	0mA ~ 20mA	The output channel on DVP04DA-S is set to mode 3: Current output mode. Output range: 0mA ~ 20mA

## • Configuration method for DVP06XA-S

Refer to the figure below for the relevant parameters to configure DVP06XA-S.

Properties - DP slave	
Address / ID Parameter Assignment	
Parameters         Station parameters         Image: Device-specific parameter assignment	Value           0           -10V~+10V           -10V~+10V           -10V~+10V           -10V~+10V           -10V~+10V           -10V~+10V           -10V~+10V           -10V~+10V           -10V~+10V           -10V           -10V           0V~10V           0V~10V           0V-10V           0V           10
OK	Cancel Help

Parameter	Value	Definition
Location	0~7	The location of DVP06XA-S at the right side of RTU-PD01. The location of the first special I/O module at the right side of RTU-PD01 is 0, the second is 1 and so forth. This rule is only applicable on special I/O modules.
	-10V ~ +10V	The input channel on DVP06XA-S is set to mode 0: Voltage input mode. Input range: -10V ~ +10V
CH1 input mode CH2 input mode	-6V ~ +10V	The input channel on DVP06XA-S is set to mode 1: Voltage input mode. Input range: -6V ~ +10V
CH3 input mode CH4 input mode	-12mA ~ +20mA	The input channel on DVP06XA-S is set to mode 2: Current input mode. Input range: -12mA ~ +20mA
	-20mA ~ +20mA	The input channel on DVP06XA-S is set to mode 3: Current input mode. Input range: -20mA ~ +20mA
CH5 output mode CH6 output mode	0V ~ 10V	The output channel on DVP06XA-S is set to mode 0: Voltage output mode. Output range: 0V ~ +10V
	2V ~ 10V	The output channel on DVP06XA-S is set to mode 1: Voltage output mode. Output range: 2V ~ 10V
	4mA ~ 20mA	The output channel on DVP06XA-S is set to mode 2: Current output mode. Output range: 4mA ~ 20mA
	0mA ~ 20mA	The output channel on DVP06XA-S is set to mode 3: Current output mode. Output range: 0mA ~ 20mA
Input value mode	Current value	Current value of the input signal in CH1 ~ CH4 on DVP06XA-S
	Average value	Average value of the input signals in CH1 ~ CH4 on DVP06XA-S
Set average times	1 ~ 4096	The average times

• Configuration method for DVP04PT-S

Refer to the figure below for the relevant parameters to configure DVP04PT-S.

Properties - DP slave	×
Address / ID Parameter Assignment	
Parameters Station parameters Cocation Temperature mode Input value mode Average times Hex parameter assignment	Value 0 Centigrade (°C ) Current value 10
OK	Cancel Help

Definitions of configuration items:

Parameter	Value	Definition
Location	0 ~ 7	The location of DVP04PT-S at the right side of RTU-PD01. The location of the first special I/O module at the right side of RTU-PD01 is 0, the second is 1 and so forth. This rule is only applicable on special I/O modules.
Temperature mode	Centigrade (°C)	Collecting temperature in Centigrade by CH1 ~ CH4 on DVP04PT-S
	Fahrenheit (°F)	Collecting temperature in Fahrenheit by CH1 ~ CH4 on DVP04PT-S
Input value mode	Current value	Current value of the collected temperature at CH1 ~ CH4 on DVP04PT-S
	Average value	Average value of the collected temperatures at CH1 ~ CH4 on DVP04PT-S
Average times	1 ~ 4096	The average times.

• Configuration method for DVP04TC-S

Refer to the figure below for the relevant parameters to configure DVP04TC-S.

Properties - DP slave	
Address / ID Parameter Assignment	1
Parameters Station parameters Pevice-specific parameters CH1 input mode CH2 input mode CH3 input mode CH4 input mode CH4 input mode CH4 input wode CH4 input mode CH4 input mode	Value   U U U U U U U U U U U U U U U U U U
ОК	Cancel Help

Parameter	Value	Definition
Location	0 ~ 7	The location of DVP04TC-S at the right side of RTU-PD01. The location of the first special I/O module at the right side of RTU-PD01 is 0, the second is 1 and so forth. This rule is only applicable on special I/O modules.
CH1 input mode	J, K, R, S, T	Thermocouple type for CH1 on DVP04TC-S
CH2 input mode	J, K, R, S, T	Thermocouple type for CH2 on DVP04TC-S
CH3 input mode	J, K, R, S, T	Thermocouple type for CH3 on DVP04TC-S
CH4 input mode	J, K, R, S, T	Thermocouple type for CH4 on DVP04TC-S
	Current value	Current value of the collected temperature at CH1 ~ CH4 on DVP04TC-S
input value mode	Average value	Average value of the collected temperatures at CH1 ~ CH4 on DVP04TC-S
average times	1 ~ 4096	The average times
Temperature modo	Centigrade (°C)	Collecting temperature in Centigrade by CH1 ~ CH4 on DVP04TC-S
	Fahrenheit (°F)	Collecting temperature in Fahrenheit by CH1 ~ CH4 on DVP04TC-S

#### 8.3.3 Self-Defined Configuration Settings for Special I/O Modules

In self-defined configuration, special I/O modules are named after their configurable number of control registers (CR). You can choose the CR in the special I/O module to be read or written when configuring. See the following paragraphs for the meanings of each configuration item.

• Configuration method for 8AI, 4AI, 2AI and 1AI modules

Refer to the figure below for the relevant parameters to configure an 8AI module. 8AI, 4AI, 2AI and 1AI modules have the same parameters to set, except that the number of configurable CRs in 1AI, 2AI and 4AI modules is different from that of 8AI module (Therefore, only the parameter settings for 8AI are introduced in this section).

Properties - DP slave	
Address / ID Parameter Assignment	1
Parameters  Station parameters  Station parameters  Content of the second secon	Value 0 0 0 0 0 1 2 3 10 11 12 13
Hex parameter assignment	Cancel Help

Parameter	Value	Definition
Location	0~7	The location of the special I/O module at the right side of RTU-PD01. The location of the first special I/O module at the right side of RTU-PD01 is 0, the second is 1 and so forth. This rule is only applicable on special I/O modules.
Module	DVP04ADDVP06XADVP06ADDVP04PTDVP02DADVP04TCDVP04DADVP01PU	Special I/O module in use
Input CR number 1: Slave $\rightarrow$ Master	0~48	
Input CR number 2	0 ~ 48	
Input CR number 3	0 ~ 48	
Input CR number 4	0 ~ 48	No. of the CR in special I/O module to be read by
Input CR number 5	0 ~ 48	
Input CR number 6	0 ~ 48	
Input CR number 7	0 ~ 48	
Input CR number 8	0 ~ 48	

• Configuration method for 8AO, 4 AO, 2AO and 1AO modules

Refer to the figure below for the relevant parameters to configure an 8AI module. 8AO, 4AO, 2AO and 1AO modules have the same parameters to set, except that the number of configurable CRs in 1AO, 2AO and 4AO modules is different from that of 8AO module (Therefore, only the parameter settings for 8AO are introduced in this section).

Properties - DP slave	
Address / ID Parameter Assignment	
Parameters	Value
🖃 🔄 Station parameters	
Device-specific parameters	
– 🗐 Location	0
_≝ Module	DVP-04AD
– Output CR number 1:Master->Slave	0
– Output CR number 2	0
– Output CR number 3	0
– Output CR number 4	0
– 🗐 Output CR number 5	0
– 🗐 Output CR number 6	0
– 🗐 Output CR number 7	0
Lie Output CR number 8	0
🕂 🧰 Hex parameter assignment	
OK	Cancel Help

Parameter	Value		Definition
Location	0~7		The location of the special I/O module at the right side of RTU-PD01. The location of the first special I/O module at the right side of RTU-PD01 is 0, the second is 1 and so forth. This rule is only applicable on special I/O modules.
Module	DVP04AD DVP06AD DVP02DA	DVP06XA DVP04PT DVP04TC	Special I/O module in use
	DVP04DA	DVP01PU	
Output CR number 1: Master $\rightarrow$ Slave	0 ~ 48		
Output CR number 2	0 ~ 48		
Output CR number 3	0 ~ 48		
Output CR number 4	0 ~ 48		No. of the CR in special I/O module to be written by PROFIBUS DP master
Output CR number 5	0 ~ 48		
Output CR number 6	0~48		
Output CR number 7	0 ~ 48		
Output CR number 8	0 ~ 48		

• Configuration method for 8AIAO, 4AIAO, 2AIAO and 1AIAO modules

Refer to the figure below for the relevant parameters to configure an 8AIAO module. 8AIAO, 4AIAO, 2AIAO and 1AIAO modules have the same parameters to set, except that the number of configurable CRs in 1AIAO, 2AIAO and 4AIAO modules is different from that of 8AIAO module (Therefore, only the parameter settings for 8AIAO are introduced in this section).

Properties - DP slave		×
Address / ID Parameter Assignment		
Parameters	Value	<u>^</u>
🖃 🔄 Station parameters		
🔁 🔁 Device-specific parameters		
– 🖺 Location	0	
–≝) Module	DVP-04AD	
–≝] Input CR number 1:Slave->Master	0	
–≝] Input CR number 2	0	_ =
–≝Input CR number 3	0	
– ≝ Input CR number 4	0	
– ≝ Input CR number 5	0	
–≝Input CR number 6	0	
– ≝ Input CR number 7	0	
– ≝ Input CR number 8	0	
—	0	
─	0	
─	0	
	0	<b>_</b>
I I I I≅1 Output CR number 5		
OK	Cancel	Help

Parameter	Value		Definition
Location	0~7		The location of the special I/O module at the right side of RTU-PD01. The location of the first special I/O module at the right side of RTU-PD01 is 0, the second is 1 and so forth. This rule is only applicable on special I/O modules.
Module	DVP04AD DVP06AD DVP02DA DVP04DA	DVP06XA DVP04PT DVP04TC DVP01PU	Special I/O module in use
Input CR number 1: Slave $\rightarrow$ Master	0 ~ 48		
Input CR number 2	0 ~ 48		
Input CR number 3	0 ~ 48		
Input CR number 4	0 ~ 48		No. of the CR in special I/O module to be read
Input CR number 5	0 ~ 48		
Input CR number 6	0 ~ 48		
Input CR number 7	0 ~ 48		
Input CR number 8	0~48		

Parameter	Value	Definition
Output CR number 1: Master → Slave	0 ~ 48	
Output CR number 2	0 ~ 48	
Output CR number 3	0 ~ 48	
Output CR number 4	0 ~ 48	No. of the CR in special I/O module to be written
Output CR number 5	0 ~ 48	
Output CR number 6	0 ~ 48	
Output CR number 7	0 ~ 48	
Output CR number 8	0 ~ 48	

#### 8.3.4 Modbus Configuration Settings

In Modbus configuration, parameters are named after the address of configurable Modbus device. See the following paragraphs for the meanings of each configuration item.

 Configuration method for Modbus 8 read address, Modbus 4 read address, Modbus 2 read address and Modbus 1 read address

Refer to the figure below for the relevant parameters to configure Modbus 8 read address. Modbus 8 read address, Modbus 4 read address, Modbus 2 read address and Modbus 1 read address have the same parameters to set, except that the addresses of configurable Modbus device for Modbus 4 read address, Modbus 2 read address and Modbus 1 read address are different from that of Modbus 8 read address (Therefore, only the parameter settings for Modbus 8 read address are introduced in this section).

Properties - DP slave	
Address / ID Parameter Assignment	1
Parameters	Value
🖃 🔄 Station parameters	
🗗 🔁 Device-specific parameters	
–≝ Node ID	1
— Read address 1:Slave->Master	0
- Read address 2	0
– 🗐 Read address 3	0
–≝ Read address 4	0
–≝ Read address 5	0
- Read address 6	0
- Read address 7	0
∟ Read address 8	0
🗄 🧰 Hex parameter assignment	
,	
OK	Cancel Help

Parameter	Value	Definition
Node ID	1 ~ 254	Address of Modbus device connected to RTU-PD01
Read address 1: Slave $\rightarrow$ Master	0 ~ 65535	
Read address 2	0 ~ 65535	
Read address 3	0 ~ 65535	
Read address 4	0 ~ 65535	Parameter address of Modbus device to be read by
Read address 5	0 ~ 65535	
Read address 6	0 ~ 65535	
Read address 7	0 ~ 65535	
Read address 8	0 ~ 65535	

 Configuration method for Modbus8 write address, Modbus 4 write address, Modbus 2 write address, and Modbus 1 write address

Refer to the figure below for the relevant parameters to configure Modbus 8 write address. Modbus 8 write address, Modbus 4 write address, Modbus 2 write address and Modbus 1 write address have the same parameters to set, except that the addresses of configurable Modbus device for Modbus 4 write address, Modbus 2 write address and Modbus 1 write address are different from that of Modbus 8 write address (Therefore, only the parameter settings for Modbus 8 write address are introduced in this section).

Properties - DP slave	<b>X</b>
Address / ID Parameter Assignment	1
Parameters         □       □       Station parameters         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □         □       □       □	Value
<ul> <li>→ III Write address 3</li> <li>→ III Write address 4</li> <li>→ III Write address 5</li> <li>→ III Write address 6</li> <li>→ III Write address 7</li> <li>→ III Write address 8</li> </ul>	0 0 0 0 0 0
	Cancel Help

Parameter	Value	Definition
Node ID	1 ~ 254	Address of Modbus device connected to RTU-PD01
Write address 1 : Master $\rightarrow$ Slave	0 ~ 65535	
Write address 2	0 ~ 65535	
Write address 3	0 ~ 65535	
Write address 4	0 ~ 65535	Parameter address of Modbus device to be written by
Write address 5	0 ~ 65535	
Write address 6	0 ~ 65535	
Write address 7	0 ~ 65535	
Write address 8	0 ~ 65535	

Configuration method for Modbus 8 read & write address, Modbus 4 read & write address, Modbus 2 read & write address and Modbus 1 read & write address

Refer to the figure below for the relevant parameters to configure Modbus 8 read & write address. Modbus 8 read & write address, Modbus 4 read & write address, Modbus 2 read & write address and Modbus 1 read & write address have the same parameters to set, except that the addresses of configurable Modbus device for Modbus 4 read & write address, Modbus 2 read & write address and Modbus 1 read & write address are different from that of Modbus 8 read & write address (Therefore, only the parameter settings for Modbus 8 read & write address are introduced in this section).

Properties - DP slave		×
Address / ID Parameter Assignment		
Parameters	Value	<u>^</u>
🖃 🔄 Station parameters		
🕂 🔄 Device-specific parameters		
- 🖾 Node ID	1	
– 🖺 Read address 1:Slave->Master	0	
– 🗐 Read address 2	0	
– 🕮 Read address 3	0	
– 🖺 Read address 4	0	
– 🕮 Read address 5	0	
– 🖺 Read address 6	0	
– 🖺 Read address 7	0	
- 🖾 Read address 8	0	
—	0	
— 🗐 Write address 2	0	
— 🗐 Write address 3	0	
— 🗐 Write address 4	0	
→ ₩ Write address 5	0	
Write address 6	Ο	<u> </u>
	Current	II-l-
	Cancel	негр

Parameter	Value	Definition
Node ID	1 ~ 254	Address of Modbus device connected to RTU-PD01
Read address 1: Slave $\rightarrow$ Master	0 ~ 65535	
Read address 2	0 ~ 65535	
Read address 3	0 ~ 65535	
Read address 4	0 ~ 65535	Parameter address of Modbus device to be read by PROFIBUS DP master
Read address 5	0 ~ 65535	
Read address 6	0 ~ 65535	
Read address 7	0 ~ 65535	
Read address 8	0 ~ 65535	
Write address 1: Master $\rightarrow$ Slave	0 ~ 65535	
Write address 2	0 ~ 65535	
Write address 3	0 ~ 65535	
Write address 4	0 ~ 65535	Parameter address of Modbus device to be written by
Write address 5	0 ~ 65535	
Write address 6	0 ~ 65535	
Write address 7	0 ~ 65535	
Write address 8	0 ~ 65535	

## 9 LED Indicator and Trouble-shooting

There are 5 LED indicators on RTU-PD01: POWER, NET, RS-485, RUN and ALARM.

• POWER LED

POWER LED displays whether the power supply on RTU-PD01 is working normally.

LED status	Indication	How to correct
Green light on	Normal	
Off	No power supply	Check if the power supply is normal.

• NET LED

NET LED displays whether the communication between RTU-PD01 and PROFIBU DP master is working normally.

LED status	Indication	How to correct
Green light on	Normal	
Red light on	RTU-PD01 is not connected to the master.	<ol> <li>Check if RTU-PD01 is connected to PROFIBUS DP bus.</li> <li>Check if the communication cable between RTU-PD01 and PROFIBUS DP master is in normal status.</li> </ol>

LED status	Indication	How to correct
Red light on	RTU-PD01 is not connected to the master.	<ol> <li>Check if the actual address of RTU-PD01 is consistent with the one set in the master configuration software.</li> </ol>
Red light flashes	RTU-PD01 setting or configuration error	<ol> <li>Check if the PROFIBUS address of RTU-PD01 is between 1 and 125 (decimal).</li> <li>Check if the I/O modules actually connected to RTU-PD01 and their order are consistent with the software configuration.</li> </ol>

## • RS-485 LED

RS-485 LED displays whether the RS-485 communication between RTU-PD01 and the Modbus device connected is working normally.

LED status	Indication	How to correct
Green light on	Normal	
Green light flashes	The Modbus function has not been enabled, or no Modbus slave is configured.	
Red light on	All Modbus slaves are off-line	Check if the RS-485 cable is working normally, or the communication format is correct.
Red light flahses	The RS-485 communication with part of the Modbus devices connected is abnormal.	Check if part of the RS-485 devices connected have not responded or responded incorrectly.

#### • RUN LED

RUN LED displays whether RTU-PD01 is operating or in stop status.

RUN status	Indication
Green light on	RTU-PD01 is operating.
Off	RTU-PD01 is in stop status.

## ALARM LED

ALARM LED displays whether the right-side special I/O module is working normally and the power supply is sufficient.

LED status	Indication	How to correct
Off	Normal	
Red light on	DV24V power supply is insufficient.	Check if the power supply is overloaded.
Red light slowly flashes (on 0.5s and off 0.5s)	Error in special I/O module	Please refer to the explanations on error registersfor special I/O module in "DVP-PLC Application Manual – Special Modules".
Red light fast flashes (on 0.3s and off 0.3s)	Special I/O module is off-line.	<ol> <li>Check if the power supply on special I/O module is normal.</li> <li>Check if the connection between RTU-PD01 and special module is working normally.</li> </ol>

## **10** Application Example 1

### Mission:

Exchanging data between S7-300 (Siemens PLC) and RTU-PD01 through PROFIBUS DP network

## Connecting RTU-PD01 to PROFIBUS DP network:

1. S7-300 as the PROFIBUS DP master; RTU-PD01 as the slave. See the PROFIBUS DP network in the figure below.



- 2. Set the PROFIBUS address of RTU-PD01 to "1".
- Connect RTU-PD01 to DVP16SP, DVP08SP, DVP04AD-S and DVP02DA-S in order at its right hand side. Make sure the connection and wiring between RTU-PD01 and the special I/O modules and to the entire network is correct.

## Configuring RTU-PD01 in PROFIBUS DP network (the software configuration):

- Create a new project by software wizard
- 1. Open SIMATIC Manager.



2. Select "File" => "New Project Wizard".

SIMATIC Manager		
File PLC View Options Window Help		
New	Ctrl+N	
'New Project' Wizard		
Open	Ctrl+O	
S7 Memory Card	+	
Memory Card File	•	
Delete		
Reorganize		
Manage		
Archive		
Retrieve		
Page Setup		
1 ELC-CAPBDP (Project) C:\\Siemens\Step7\s7proj\S7_Pro1		
Exit	Alt+F4	
Creates a new project step-by-step with the help of a wizard.		

3. Click "Next" in the wizard.

STEP 7 Wizard: "New Pr	oject"		
K Introduction		1(4)	
BasDa BasDa	STEP 7 Wizard: "New Project" You can create STEP 7 projects quickly and easily using the STEP 7 Wizard. You can then start programming immediately. Click one of the following options: "Next" to create your project step-by-step "Finish" to create your project according to the preview.		
✓ Display Wizard on starting	the SIMATIC Manager	Previe <u>w</u> <<	
S7_Pro1       SIMATIC 300 Station       SIMATIC 300 Station       CPU312C(1)       S7 Program(1)       Blocks			
< <u>B</u> ack <u>N</u> ext >	Finish	Cancel Help	

4. Select "CPU315-2 DP" for CPU as we are using the S7-300 model. Click "Next".

STEP 7 Wizard: "New Project"			
Which CPU are you usin	ng in your project?		2(4)
CP <u>U</u> : <u>C</u> PU name: MPI <u>a</u> ddress:	CPU Type CPU314C-2 PIP CPU315-2 DP CPU316-2 DP CPU316-2 DP CPU318-2 DP CPU315-2 DP(1) 2 Vork me instruction	Order No 6ES7 314-6BF00-0AB0 6ES7 315-1AF03-0AB0 6ES7 315-2AG10-0AB0 6ES7 318-2AG00-0AB0 6ES7 318-2AJ00-0AB0 6ES7 318-2AJ00-0AB0 6ES7 412 1VE03 0AB0 emory 128KB; 0.1ms/1000 ons; MPI+ DP connection (DP Previe;	×
S7_Pro1           ⊡         SIMATIC 300 Station           ⊡         Image: CPU315-2 DP(1)           Image: CPU315-2 DP(1)         Image: CPU315-2 DP(1)           Image: CPU315-2 DP(1)         Image: CPU315-2 DP(1)	Block Name	Symbolic Name Cycle Execution	
< Back Next >	Finish	Cancel H	elp

5. Select the block we need and click "Next".

STEP 7 Wizard: "New Project"				
🕀 Which blocks do you v	vant to add?		3(4)	
Bloc <u>k</u> s:	Block Name OB1 OB10 OB11 OB12 OB13 Select <u>A</u> ll Language for Se C S <u>I</u> L	Symbolic Name Cycle Execution Time of Day Interrupt ( Time of Day Interrupt 1 Time of Day Interrupt 2 Time of Day Interrupt 2 Iected Blocks	Help on QB	
Create with <u>s</u> ource files			Previe <u>w</u> <<	
S7_Pro1 SIMATIC 300 Station SIMATIC 300 Station S7 Program(1 S7 Program(1 Blocks	Block Nar OB1	ne Symbolic Name Cycle Execution		
< <u>B</u> ack <u>N</u> ext >	Finish	Cancel	Help	

6. Enter the project name and click "Finish".

STEP 7 Wizard: "New Project"					
🟐 What do you want to ca	ll your project?	4(4)			
Project name:	RTU-PD01	_			
Existing projects:	CMC-PD01 ELC-CAPBDP				
Check your new project in the preview. Click "Finish" to create the project with the displayed structure. Preview<<					
RTU-PD01	Block Name Symbolic Name	_			
SIMATIC 300 Station	OB1 Cycle Execution				
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help				

7. A new window will appear after the project is created.

SIMATIC Manager - RTU-PD01	
File Edit Insert PLC View Options Window Help	
🗋 😂 器 🐖 👗 🛍 😰 🏪 🏝 📴 🔛 🗰 🗈 🛛 < No Filter >	💽 🏆   🔡 🏐
🔊 RTU-PD01 C:\Program Files\Siemens\Step7\s7proj\RTU-PD01	
RTU-PD01     SIMATIC 300 Station     CPU315-2 DP(1)     Sources     Blocks	
Press F1 to get Help.	

- Add PROFIBUS DP bus
- 1. Select "SIMATIC 300 Station" in the project created. Double click "Hardware", and a new window (HW-Config) will appear.

SIMATIC Manager - RTU-PD01	
File Edit Insert PLC View Options Window Help	
🗅 🧀 🎥 🐖 🐰 🛍 🖻 🏜 😨 🏪 🏪 🏣 🚟 🛍 🔍 < No Filter >	💽 🏹   🔡 🥮
🗃 RTU-PD01 C:\Program Files\Siemens\Step7\s7proj\RTU-PD01	
RTU-PD01     SIMATIC 300 Station     STATIC 300 Station     Sources     Blocks	
Press F1 to get Help.	1

2. In the "HW Config" window, double click "DP" in the left-hand side column and a dialog box will appear.

💐 HW Config - [SIMATIC 300 Station (Configuration) RTU-PD01]	
💵 Station Edit Insert PLC View Options Window Help	_ @ ×
D 🍃 💱 🛢 🖏   🚭   🛍 💼   🏙 🎰   🛐 🗔   🎇 🕅	
□     0     UR       1     ▲       2     ■       2     ■       2     ■       2     ■       2     ■       2     ■       3     ■       4     ■       5     ■       6     ■       7     ■	Eind: Erofile: Standard Profile: Standard ProFIBUS DP PROFIBUS PA PROFINET IO SIMATIC 300 SIMATIC 400 SIMATIC PC Based Control 300/400 SIMATIC PC Station
(0) UR	
Slot         Module         Ord         Fi         M         I         Q         Comment           1	
2 CPU315-2 DP(1) 6ES7 V2.0 2	PROFIBUS-DP slaves for SIMATIC S7, ₹_
Press F1 to get Help.	

acticidi   Addlesse	Dperating Mode Configuration	
Short Description:	DP	
Name:	DF	
- Interface	,	
Туре:	PROFIBUS	
Address:	2	
Networked:	No Properties	
Comment:		

3. Click "Properties" in the dialog box, leading to another dialog box.

4. Select "Address" in the dialog box to be the address of the master. Then Click "New" to go to the next dialog box.

Properties	- PROFIBU	S interface	DP (R0/S2.1	)			×
General	Parameters						_
Address:			l	f a subnet is se he next availat	elected, ble addi	ress is suggested.	
Subnet:							
not i	networked					New	
						Delete	i
ОК					Car	ncel Help	

5. Select communication speed and bus type, then click "OK".

Pr	opertie	s - New subnet	PROFIBUS			×
ρ	General	Network Settings				
	Highes Addres	at PROFIBUS ss:	126 💌	🗖 Change	Optio	ns
	Transn	nission Rate:	9.6 Kbps 19.2 Kbps 45.45 (31.25) Kbps 93.75 Kbps 187.5 Kbps 500 Kbps			
	Profile:		DP Standard Universal (DP/FMS) User-Defined		Bus Para	meters
	OK				Cancel	Help

6. Confirm the communication speed and master address for PROFIBUS DP bus, then click "OK".

Propertie	s - PROFIBU	S interface	DP (R0/S2.1)					×
General	Parameters							
Address Highest Transmi:	address: 126 ssion rate: 9.6 K	2 💌	lf th	a subnet is s e next availa	elected, ble addi	ress is su	uggested.	
Subnet:	t networked		96Kbps		_	N	lew	]
			0.0 1000			Pro	perties	
						0	)elete	
OK					Car	ncel	Help	

Properties - DP - (R0/S2.1)	×
General Addresses Operating Mode Configuration	
Short Description: DP	
	<ul> <li></li> </ul>
Name: DP	
Interface	
Address: 2	
Networked: Yes Properties	
Comment:	
ОК	Cancel Help

7. Confirm the information on the PROFIBUS DP bus in the dialog box and click "OK".

8. Once all the parameters are set, a PROFIBUS DP bus will appear after the UR window.

Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: Station Edit Insert PLC View Options Window Help     Image: PROFIBUS PL   Image:	💐 HW Config - [SIMATIC 300 Station (Configuration) RTU-PD01]	
Image:	💵 Station Edit Insert PLC View Options Window Help	_ 8 ×
Image: CPU315-2 DP(1)       PROFIBUS(1): DP master system (1)         Image: CPU315-2 DP(1)       PROFIBUS(1): DP master system (1)         Image: CPU315-2 DP(1)       PROFIBUS(1): DP master system (1)         Image: CPU315-2 DP(1)       Image: CPU315-2 DP(1)         Image: CPU315-2 DP(1)	D 🍃 🖫 🖉 🖏 🎒 🗎 🛍 💼 👘 🗂 🔀 💦	
Image: Constraint of the second se	I     Image: CPU315-2 DP(1)       X2     DP       3     Image: PROFIBUS(1): DP master system (1)       4     Image: System Image: Syste	Eind: Standard Profile: Standard PROFIBUS DP PROFIBUS-PA PROFIBUS-PA PROFINET IO SIMATIC 300 SIMATIC 400 SIMATIC PC Based Control 3 SIMATIC PC Station
(0) UR Slot Module Ord Fi M 1 Q Comment 1 2 CPU315-2 DP(1) 6ES7 V2.0 2 X2 DP 3 2 2247 CPU315-2 DP(1) 6ES7 V2.0 2 CPU315-2 DP(1) 6ES7 V2.0 2 CP		
	(0) UR Slot Module Ord Fi M I Q Comment CPU315-2 DP(1) 6ES7 V2.0 2 X2 DP 3 2000 2000 2000 2000 2000 2000 2000 20	► SIMATIC S7, M7, and C7 (distributed rack)

- Add GSD file
- 1. Select "Options" => "Install New GSD" in the HW Config window.

🖳 HW Config - [SIMATIC 300 Sta	tion (Configuration) RTU-PD01]	
💵 Station Edit Insert PLC View	Options Window Help	_ 8 ×
D 🚅 🔓 🖩 🖫 🚑 🛯 🛱 E	Customize Ctrl+Alt+E	
	Specify Module Configure Network Symbol Table Ctrl+Alt+T Report System Error	Find:
X2 DP	Edit Catalog Profile Update Catalog	=
5	Install HW Updates Install GSD File	PROFINET IO
<u>↓</u>	Find in Service & Support Create GSD file for I-Device	SIMATIC 400      SIMATIC PC Based Control 3      SIMATIC PC Station
(0) UR		
Slot Module Ord	. Fi M I Q Comment	
2 CPU315-2 DP(1) 6ES7 X2 DP 3	2007 V2.0 2 2007 2007 2007 2007 2007 2007 2007	PROFIBUS-DP slaves for SIMATIC S7, M7, and C7 (distributed rack)
ı Installs new GSD files in the system and u	pdates the contents of the catalog.	Chg /

2. Find the path of the GSD file, select it and click "Install" to add the GSD file needed.

Install GSD Files				
Install GSD Files:			from the directory	
E:\XP-ENG\Manual	RTU-PDC	1 Illustratio	ns	Browse
File	Release	Version	Languages	
DELA09B9.GSD			Default	
RTU-PD01 (RTU-PD	01)			
1				
Install	She	awl og		
L		JW LOg		
Close				Help

3. We can then see RTU-PD01 in the right-hand side column. RTU-PD01 is the module added.

- Add RTU-PD01 slave and set up parameters
- 1. Select PROFIBUS DP on the right-hand side column and double click "RTU-PD01" to open a dialog box.



2. In the dialog box, select the address of RTU-PD01 slave. The address has to be the same as the setting of address setup switch on RTU-PD01. Click "OK".

Properties - PROFIBUS interface RTU-PD01		×
General Parameters		
Address:		
Transmission rate: 9.6 Kbps		
Subnet:		
not networked PROFIBUS(1) 9.6 Kbos		New
	Pro	operties
	[	Delete

3. Add PROFIBUS DP bus to RTU-PD01.

💐 HW Config - [SIMATIC 300 Station (Configuration) RTU-PD01]	
🖫 Station Edit Insert PLC View Options Window Help	_ @ ×
D 😅 🖫 🖳 🐘 🎒 🖻 🛍 🕍 🎒 📼 🞇 🕅	
Image: CPU315-2 DP(1)       PROFIBUS(1): DP master system (1)         Image: CPU315-2 DP(1)       Image: CPU315-2 DP(1)         Image: CPU315-2 DP(1)       Image: CPU315	Find:

4. Select Slot 0 and double click "DVP16SP11R/T" in the right-hand side column.

5. Configure DVP16SP11R/T to Slot 0.



 Configure other slots as configuring Slot 0. To configure, select one of the slots and double click on the items to be configured in the right-hand side column. Apply it to configure Slot 0 ~ Slot 4.

## **PROFIBUS DP Slave Communication Module RTU-PD01**

🖳 ни	🏨 HW Config - [SIMATIC 300 Station (Configuration) RTU-PD01]						
🛄 Sta	ation Edit Inser	t PLC View Options Window H	lelp				_ 8 ×
] 🗅 🛛	D 😅 🔐 🖉 🐘 🎒 🗈 💼 🚵 🎰 📳 🗁 👯 💦						
1 2 X 3 4 5 6 7	1     2     CPU315-2 DP(1)       3     0P       4     5       6     (1) RTU-PC       PROFIBUS(1): DP master system (1)					Eind: Profile: Standard Delta RMT IO BTU-PD01 Universal module Modbus 1 read addre Modbus 2 read addre Modbus 4 read addre Modbus 8 read addre	
<					<u>ن</u>	I [	Modbus 1 write addre
(1) RTU-PD01						Modbus 2 write ad Modbus 4 write ad Modbus 8 write ad	Modbus 2 write addre Modbus 4 write addre Modbus 8 write addre
Slot	🚺 DP ID	Order Number / Designation	I Address	Q Ad C.			Modbus 2 read & writ
1	8DX	DVP-16SP11R/T	0	0	^	🛉	Modbus 4 read & writ
$\frac{2}{2}$	8DX	DVP-8 DIDO	1	1		<	
$\frac{3}{4}$	441	DVP-04AD	256263	050.050			 ▼.
$\frac{4}{5}$	240	DVP-2AU	004 007	256259			<u></u>
5	113	Modbus 2 read & write address	264267	260263			
1.6					<b>•</b>		
Press F	L to get Help.						Chg //

- 7. Slot 0 and Slot 1 are for the configuration of digital I/O modules. The configuration of digital I/O modules does not require other parameter settings. When you configure digital I/O modules by self-defined method, and if the number of I/O points is less than 8, the calculation will be based on the number 8. For example, Slot 1 is configured 8DIDO, and its corresponding digital I/O module is DVP08SP (4 input points and 4 output points). See the following paragraph for detailed corresponding relations between slots and I/O modules.
- Double click the configured Slot 2 in "HW Config" window to open the dialog box in the figure below.
   Refer to 8.3.2 for the definition of every parameter in this dialog box.

Properties - DP slave	
Address / ID Parameter Assignment	
Parameters Station parameters Device-specific parameters Location CH1 input mode CH2 input mode CH3 input mode CH4 input mode CH4 input value mode CH4 input value mode Hex parameter assignment	Value           0           10V~+10V           10V~+10V           10V~+10V           10V~+10V           Current value           10
OK	Cancel Help

9. Double click the configured Slot 3 in "HW Config" window to open the dialog box in the figure below. Refer to 8.3.3 for the definition of every parameter in this dialog box.

Properties - DP slave	X
Address / ID Parameter Assignment	1
Parameters  Station parameters  Device-specific parameters  Module  Output CR number 1:Master->Slave  Output CR number 2:  Hex parameter assignment	Value
OK	Cancel Help

10. Double click the configured Slot 4 in "HW Config" window to open the dialog box in the figure below. Refer to 8.3.4 for the definition of every parameter in this dialog box.

Properties - DP slave	×
Address / ID Parameter Assignment	
Parameters         Station parameters         Image: Device-specific parameter         Image: Device-specit param	Value
OK	Cancel Help

11. After all the configuration items for RTU-PD01 are set, double click the RTU-PD01 slave on the PROFIBUS DP bus in "HW Config" window to open the dialog box in the figure below. Refer to 8.1 for the definition of every parameter in this dialog box.

Properties - DP slave	$\mathbf{X}$
General Parameter Assignment	
Parameters	Value
🖃 🔄 Station parameters	
🔁 🔄 Device-specific parameters	
<ul> <li>Acceleration mode</li> </ul>	Disable
– I Modbus protocol	8,N,2
–≝) Modbus baudrate	19200 bps
–≝) Modbus mode	RTU
— Loss comm with master	Hold I/O data
– Modbus slave error	Ignore & continue I/O exchange
– 🕮 Loss modbus slave	Ignore & continue I/O exchange
–) IO module error	Ignore & continue I/O exchange
— Modbus timeout setting (ms)	200
└── Diagnose cycle (s)	10
🕂 🧰 Hex parameter assignment	
OK	Cancel Help

12. After all the parameters are set, download the parameters, and once the master is connected to RTU-PD01, the NET indicator on RTU-PD01 will constantly be On in green color.

## **Data Mapping**

HW Config - SIM	It W Config - SIMATIC 300 Station    X       Station Edit Insert PLC View Options Window Help					
In SIMATIC 300 Static	on (Configuration) RTU_	PD01			Profile Standa	rd 💌
(1) RTU-PDO1		PROFIBUS(	1): DP mester s; IU-PT RM	ystem (1)	1         1           1         1	Universal module Modbus 1 read address Modbus 2 read address Modbus 4 read address Modbus 8 read address Modbus 1 write address Modbus 2 write address Modbus 4 write address Modbus 4 write address Modbus 2 read & write a Modbus 2 read & write a Modbus 4 read & write a Modbus 4 read & write a DVP-08SN11R/T DVP-08SN11R/T DVP-08SP11R/T
O SDX	DVP-16SP11R/T	1 Address	Q Address	Comment	-	DVP-08ST
1 8DX	DVP-8 DIDO	1	1		-	DVP-8 DI
2 4AI	DVP-04AD	256263				
3 2AO	DVP-2 AO		256259			DVP-16 DI
4 113	Modbus 2 read & write address	264267	260263		_	
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8					-	
Press F1 to get Help.						

See the table below for the data mapping relations under the parameter settings.

Register in S7-300 master	Data transmission direction in PROFIBUS DP network	Slave devices and addresses connected to RTU-PD01
QB0 bit 0 ~ bit 7		Y0 ~ Y7 on DVP16SP
QB1 bit 0 ~ bit 3		Y0 ~ Y3 on DVP08SP
PQW256		Output value in CH1 on DVP02DA-S
PQW258		Output value in CH2 on DVP02DA-S
PQW260		Modbus address 8192
PQW262		Modbus address 8193
IB0 bit 0 ~ bit 7	-	X0 ~ X7 on DVP16SP
IB1 bit 0 ~ bit 3		X0 ~ X3 on DVP08SP
PIW256		Input value in CH1 on DVP04AD-S
PIW258		Input value in CH2 on DVP04AD-S
PIW260		Input value in CH3 on DVP04AD-S
PIW262		Input value in CH4 on DVP04AD-S
PIW264		Modbus address 8449
PIW266		Modbus address 8450

## **Program Example**

- When M0.0 = ON, write 1 to Y0 ~ Y7 on DVP16SP and Y0 ~ Y3 on DVP08SP connected to RTU-PD01.
- When M0.1 = ON, read the status on X0 ~ X7 on DVP16SP connected to RTU-PD01 to MB0, and the status on X0 ~ X3 on DVP08SP to MB1.
- You can also read or write other devices connected to RTU-PD01 by using MOVE instruction.

LAD/STL/FBD - [OB1 test/SIMATIC 3	DO(1)\CPU 315-2 DP]			_ 🗆 ×
🔁 File Edit Insert PLC Debug View Optio	ns <u>W</u> indow <u>H</u> elp			_ 8 ×
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Address         Declaration         Name           OB1 : "Main Program Sweep (Cycle)"         Comment:	Тиве	Initial value Comment	<ul> <li>Hew network</li> <li>Hew netw</li></ul>	
Metwork 1:         Title:           Comment:         MOVE           W#16#FF         IN OUT           W#16#FF         IN OUT           W#16#FF         IN OUT			<ul> <li>Integer fct.</li> <li>Integer fct.</li> <li>Floating-point</li> <li>Move</li> <li>Im Shift/Rotate</li> <li>Shift/Rotate</li> <li>Shift/Rotate<td>fct. ol</td></li></ul>	fct. ol
Network 2: Title: Comment: MO.1 IBO IN OUT IBO IN OUT EN ENO IBO IN OUT				
	-MB1		<	₹ <u>&lt;</u> ?

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