



Features

- FBS-CBS5 integrates SD3 communication for port 1 and standard RS485 for port 2. This gives FBS PLC the ability to monitor the working status of Sankyo SD3 while performing industrial control applications.

Specifications

Electrical- EIA RS485 standard specification

Communication Method - Universal Asynchronous Receiver/Transmitter (half-duplex)

Baud Rate- 4800,9600,19200,38400,57600bps

Parity Check- None

Data Bit- 8bit

Stop Bit- 1bit

Checksum- CRC-CCITT

Communication length - 35 bytes

Port1 connector- For SD3 Servo RS485 signal.

Port2 connector- For RS485 signal.

Operating Temperature- 0°C ~ 60°C

Storage Temperature- -20°C ~ 80°C

***Please make sure the terminal resistance to be applied at all times.**

Connection method

Step 1:

Hardware configuration:

The port 1 of FBs-CBS5 is a special communication port and is designed specifically for Sankyo SD3 servo. The pins are D+, D-, SG (Figure 3). Please turn on the terminal resistance to prevent communication errors (Figure 2). Port 2 is a standard RS 485 com port. The SD3 Servo com port is on the CN1_50pin of the drive, the pins are 43 (D+), 44 (D-), 45 (SG) (Figure 3).

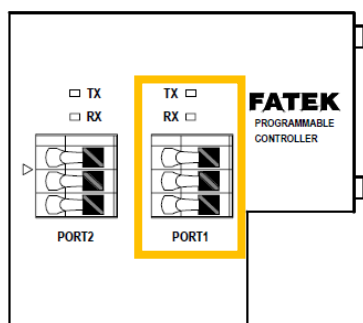


Figure 1

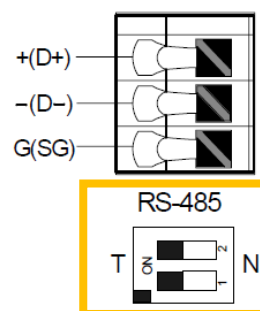
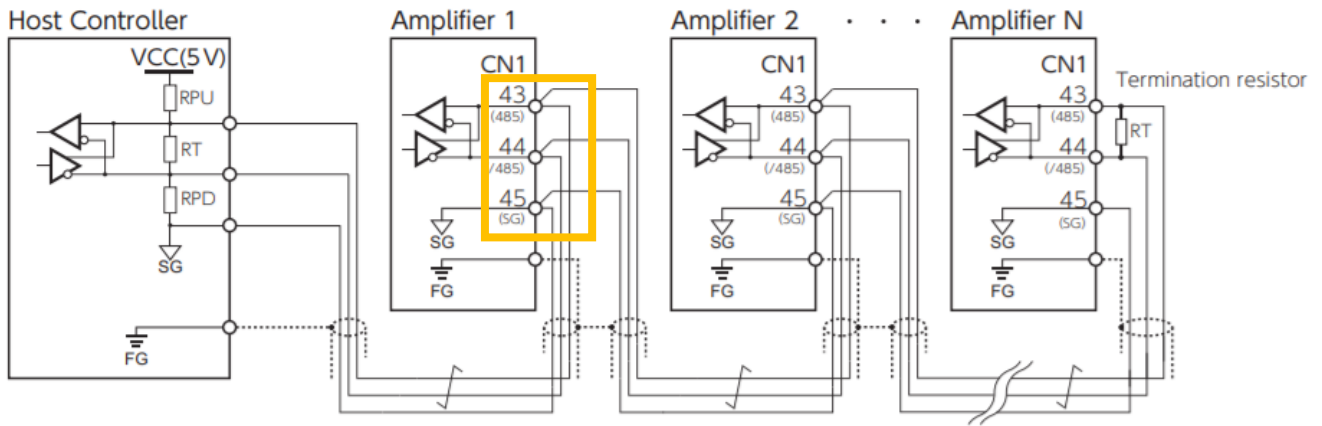


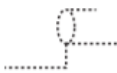
Figure 2



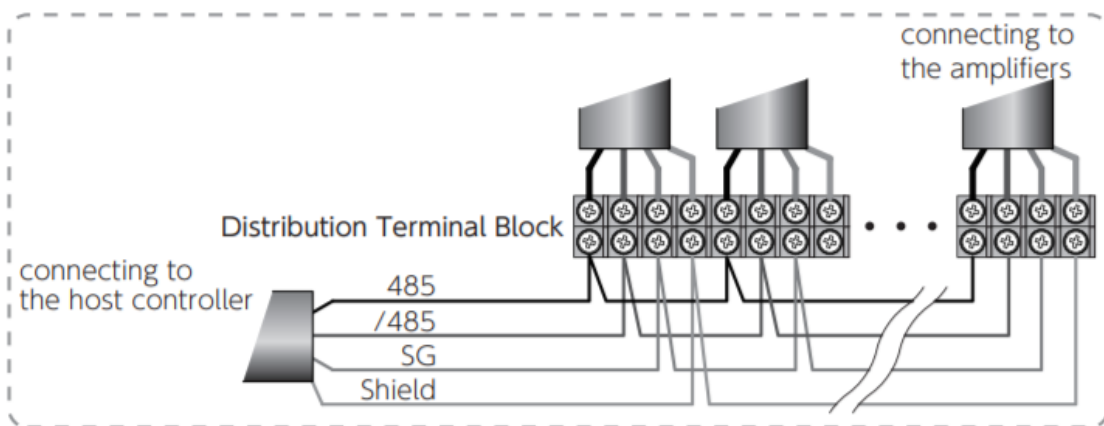
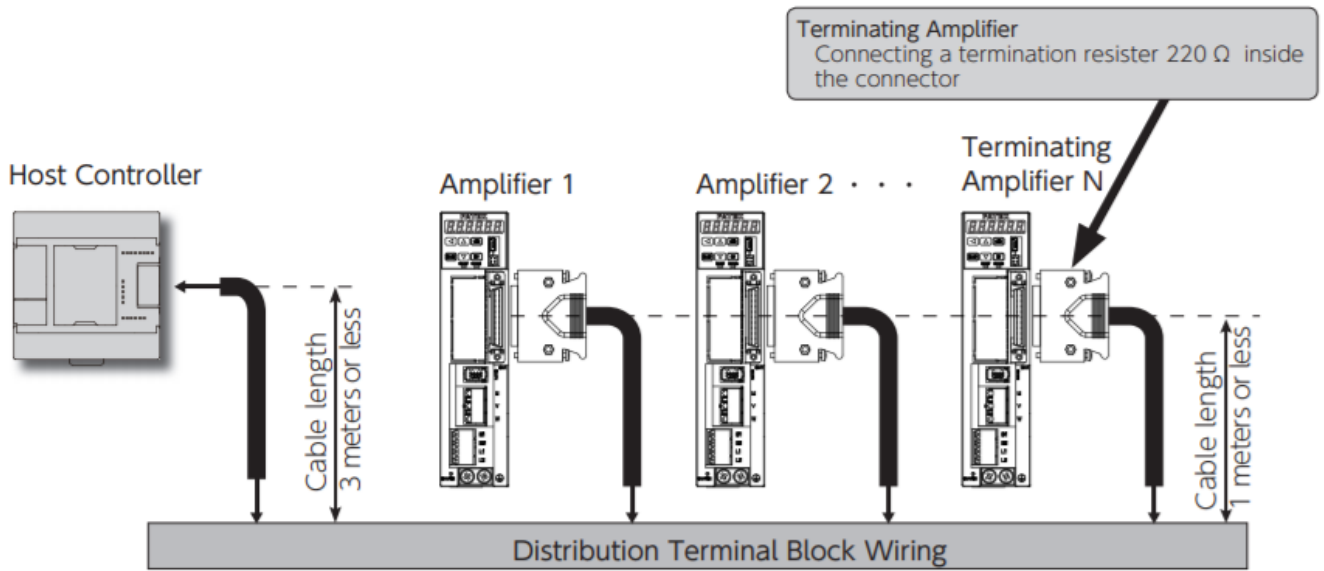
Twisted pair cable



Shielded



RT : Termination resistor 220 Ω (reference value)
 RPU, RPD: Pull-up, pull-down resistor 1.2 k Ω (reference value)



To make wiring of connectors quick and easy, use a terminal block for signal distribution as shown above.

Figure 3

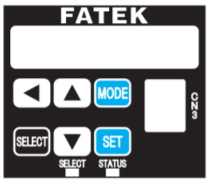

Step 2:

SD3 Parameters

Set the communications address and communications parameters to the amplifier according to the host controller. You must set the following parameters.

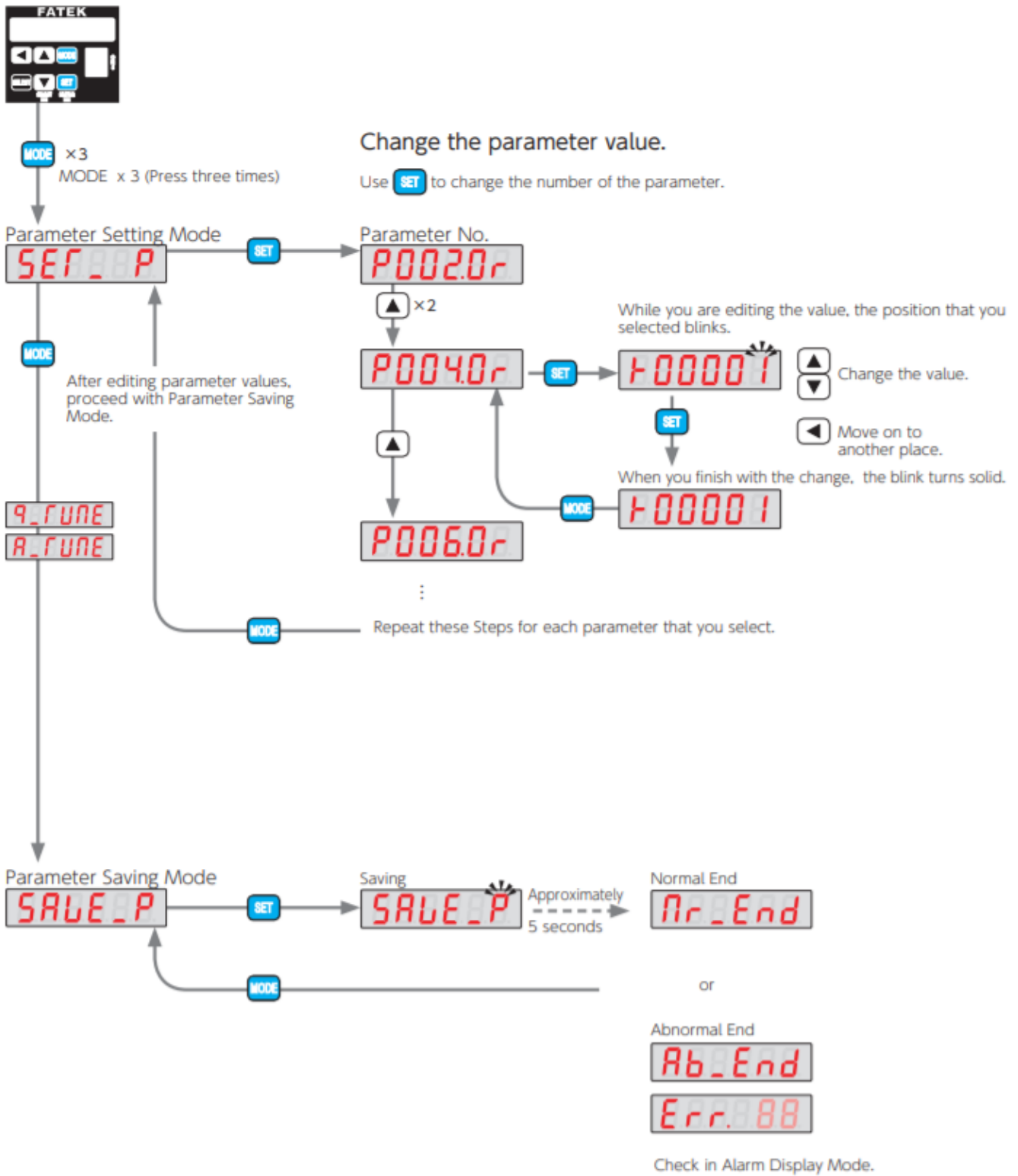
Parameter No.	Parameter	Setting
4.0	RS-485 communication: Address	Range: 1 to 32 Default: 1
6.0	RS-485 transmission: Speed	0: 2,400 bps 1: 4,800 bps 2: 9,600 bps 3: 19,200 bps 4: 38,400 bps 5: 57,600 bps (Default)
6.1	RS-485 communication: Stop bit	0: 1 bit (Default) 1: 2 bits
6.2	RS-485 communication: Parity	0: None (Default) 1: Even 2: Odd
8.0	RS-485 communication: Switch	Set to 1 0: Disable (Default) 1: Enable
11.0	RS-485 communication: Minimum response time	Range: 0 to 255ms Default: 3ms

Setting the parameters

	Use the Setup Panel on the amplifier front.
	Tuning with the setup software "Servo Studio". Install it on the user-supplied computer.

Parameter setting method

Method 1



Method 2

Step1 Start

Double-click on



1. Select the Communication Setup tab (initial display)

2. List of the compatible amplifiers
 → Select the amplifier that you are connecting
 → If you don't see your amplifier, Click Get to display new versions and select your amplifier version.

3. Click

Get Connect Disconnect

Connection Status : Online Offline



Step2 Set parameters

1. Select the Parameter Tab.

2. In the row of the parameter to edit, click on the cell in the Value column to edit.
 → When you make a change in a value cell, *(asterisk) will appear in the Change settings column.

3. Click Set to write to RAM.
 → The *(asterisk) in the Change settings column will disappear.

4. Click Write to save to the amplifier EEPROM.

No.	Name	Restart the servo amplifier	Unit	Value	Change settings
7.0	Control mode	Necessary	0	0	
8.0	Command mode	Necessary	0	0	
8.1	RS-485 Command	Necessary	0	0	
8.2	Operator mode	Necessary	0	0	
32.0	Pulse train command	Necessary	0	0	
32.1	Pulse train command - Auto interpolation for speed zero	Necessary	0	0	
32.2	Pulse train command - Input logic	Necessary	0	0	
33.0	Pulse train command - Input filter selection	Necessary	0	4	
34.0	Pulse train command - Pulse width (duration)	Necessary	0	32768	
35.0	Pulse train command - Input filter (duration)	Necessary	0	0	
40.0	Analog speed - Input filter (duration)	Necessary	0	0	

Get Set Write Read Save Connect Stop



Step3 Finish

Method 1
 Click Disconnect under the quick tool bar.

Method 2
 1. Select the Communication Settings tab.
 2. Click Disconnect

Get Connect Disconnect

Method 1, 2
 Cycle control-power to finish so that the change that you just made will take effect.

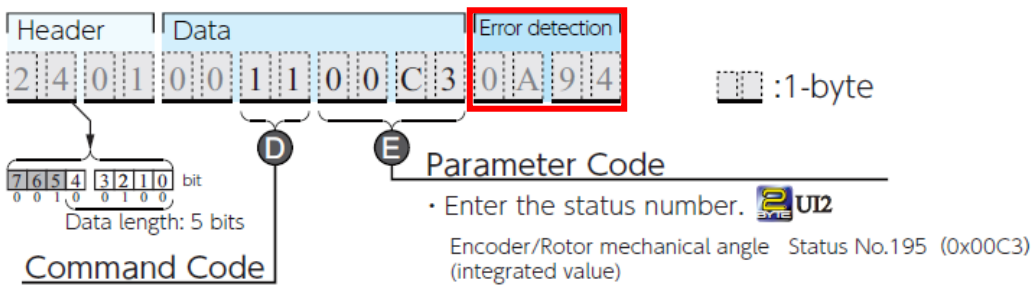
Step3:

FBs PLC uses FUN151CLINK to communicate with SD3 Servo.

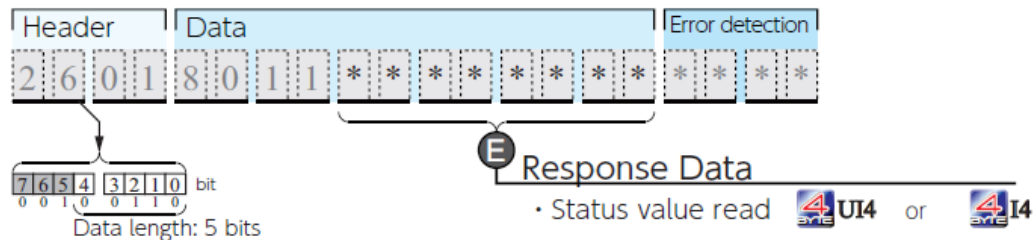
FUN151 CLINK	Convenient Instruction of FUN151: MD1 (Which makes PLC act as the communication sender through Port 1~4)	FUN151 CLINK																																				
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Ladder symbol</p> </div> <div style="width: 45%;"> <p>Pt : Assign the port, 1~4 MD : 1, link with intelligent peripherals that equipped with communication interface SR : Starting register for data transmission table WR : Starting register for instruction operation (see example for explanation). It controls 8 registers, the other programs cannot repeat in use.</p> </div> </div> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr> <td style="border: none;"></td> <td style="border: none;">Range</td> <td style="border: none;">HR</td> <td style="border: none;">ROR</td> <td style="border: none;">DR</td> <td style="border: none;">K</td> </tr> <tr> <td style="border: none;">Operand</td> <td style="border: none;"></td> <td style="border: none;">R0 R3839</td> <td style="border: none;">R5000 R8071</td> <td style="border: none;">D0 D3999</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">Pt</td> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;">1~4</td> </tr> <tr> <td style="border: none;">MD</td> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;">1</td> </tr> <tr> <td style="border: none;">SR</td> <td style="border: none;"></td> <td style="border: none;">○</td> <td style="border: none;">○</td> <td style="border: none;">○</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">WR</td> <td style="border: none;"></td> <td style="border: none;">○</td> <td style="border: none;">○*</td> <td style="border: none;">○</td> <td style="border: none;"></td> </tr> </table>				Range	HR	ROR	DR	K	Operand		R0 R3839	R5000 R8071	D0 D3999		Pt					1~4	MD					1	SR		○	○	○		WR		○	○*	○	
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WR		○	○*	○																																		

The following example sends 24H 01H 00H 11H 00H C3H. Port 1 will automatically generate CRC16-CCITT Checksum to communicate with SD3 Servo.

Command Message



Response Message



Fun151 MD1 Example:

1. Setting PLC Port 1 communication parameters.

Comm. Parameters Setting - Port1

Baud Rate: 57600

Parity: None

Data Bit: 8 bits

Stop Bit: 1 bit

This port is used for current programming.

Reply delay time: 3 mS

Transmission Delay: 0 x10mS

Receive Time-out interval time: 0 x10mS

Without checking of station number

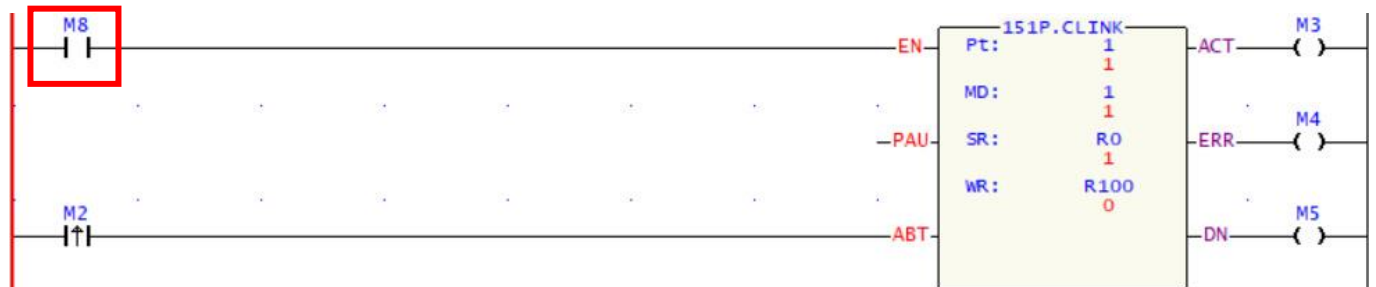
Protocol: Fatek Communication Protocol

Port_1 through Modem Interface Setting

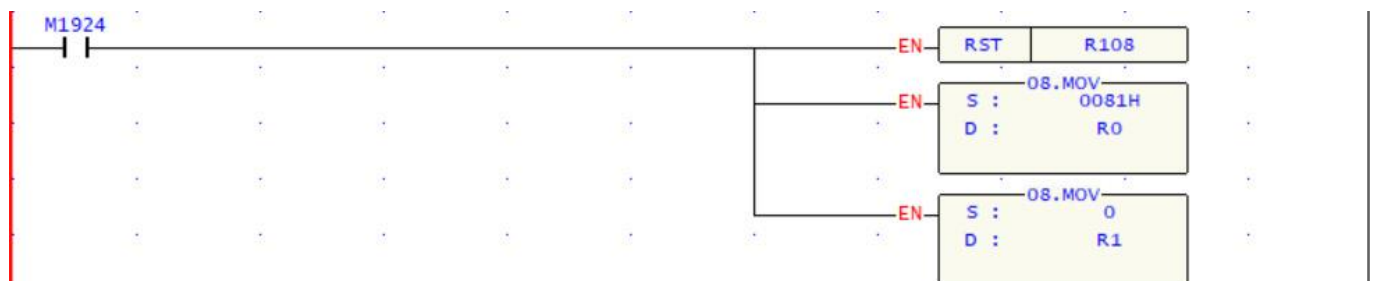
- Without above function
- Remote CPU Link
- Remote diagnosis

OK Cancel

2. M8: Start communication



3. Clear R108 and R1 when PLC is turned on, and move 81H to R0.



FUN151 CLINK	Convenient Instruction of FUN151: MD1 (Which makes PLC act as the communication sender through Port 1~4)	FUN151 CLINK
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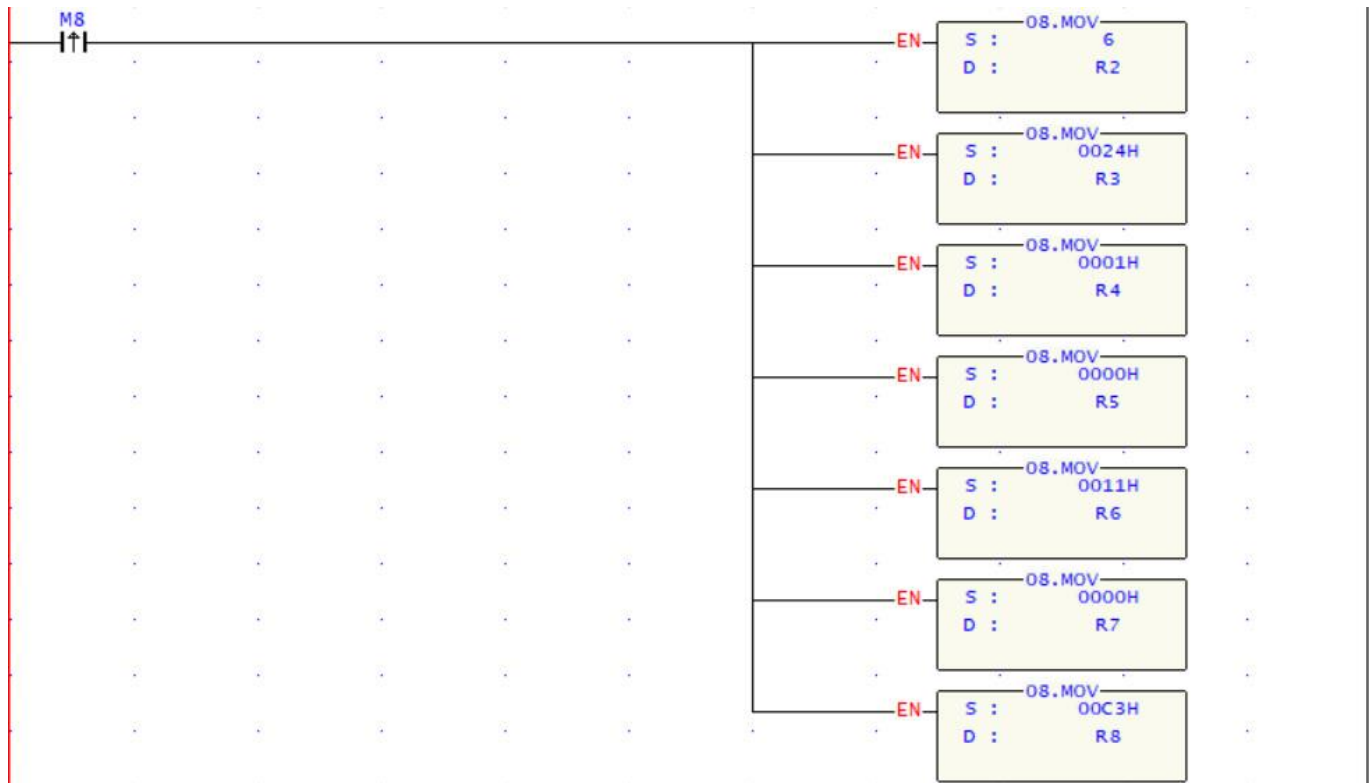
Explanation for the operand SR of FUN151: MD1

SR : Starting register of data transmission table

SR+0	Transmit only or Transmit then Receive	<ul style="list-style-type: none"> • Low byte is valid, =00H, transmit only, no response from the slave device =01H, transmit then receive the responding data (Receive only without error) =81H, transmit then receive the responding data (Receive even with error)
SR+1	Starting & Ending code for receiving	<ul style="list-style-type: none"> • High byte : Start of text for receiving. • Low byte : End of text for receiving.
SR+2	Length of Transmission	<ul style="list-style-type: none"> • The maximum length of data to be transmitted is 511
SR+3	Data 1	<ul style="list-style-type: none"> • Low byte is valid
SR+4	Data 2	<ul style="list-style-type: none"> • Low byte is valid
SR+5	Data 3	<ul style="list-style-type: none"> • Low byte is valid
SR+6	Data 4	<ul style="list-style-type: none"> • Low byte is valid
• • •	⋮	
	Data N	<ul style="list-style-type: none"> • Low byte is valid

4. R2 set the transmission length 6bytes, and move the command into R3 ~ R8.

R2 : Data length



5. If the transmission is correct, you will receive a Response message in R108 ~ R116.

Ref. No.	Status	Data	Ref. No.	Status	Data	Ref. No.	Status	Data
R0	Hexdecimal	0081H						
R1	Hexdecimal	0081H						
R2	Hexdecimal	0006H						
R3	Hexdecimal	0024H						
R4	Hexdecimal	0001H						
R5	Hexdecimal	0000H						
R6	Hexdecimal	0011H						
R7	Hexdecimal	0000H						
R8	Hexdecimal	00C3H						
R108	Hexdecimal	0008H						
R109	Hexdecimal	0026H						
R110	Hexdecimal	0001H						
R111	Hexdecimal	0080H						
R112	Hexdecimal	0011H						
R113	Hexdecimal	0000H						
R114	Hexdecimal	0001H						
R115	Hexdecimal	00F3H						
R116	Hexdecimal	0023H						