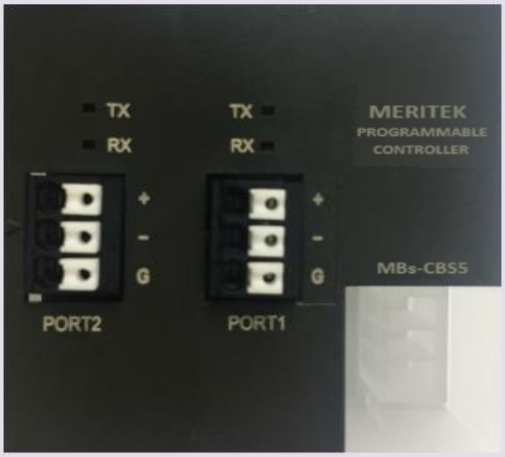
MBs-CBS5

Sankyo SD3 Special Interface Expansion Board



Features

- **Port 1 is equipped with SD3 special communication mode . This makes MBS PLC have the ability to communicate with Sankyo SD3**

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℃ ~ 60℃
Storage Temperature- -20℃ ~ 80℃
***Need to open the terminal resistance to communicate**

Connection method

Step 1:

Hardware configuration:

Port 1 is CBS5 special communication port, used to communicate with 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).

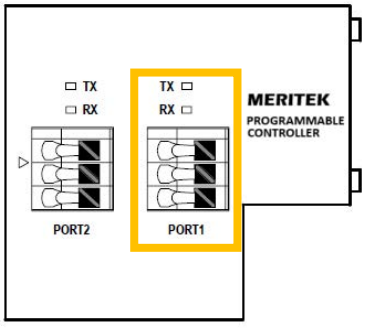


Figure 1

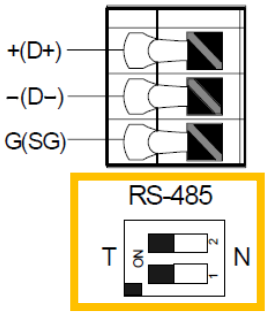


Figure 2

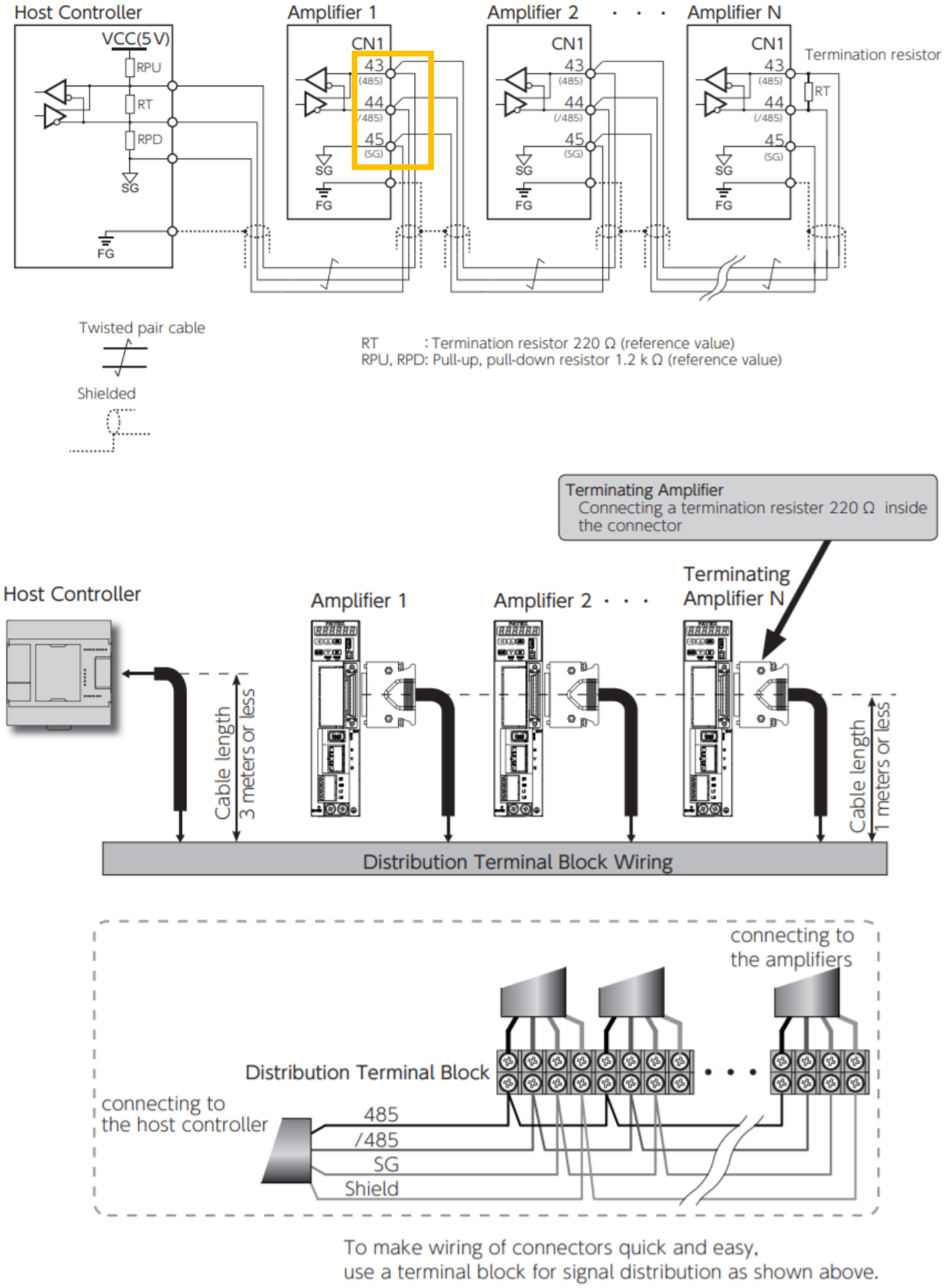

Host Controller
VCC(5 V)
RPU
RT
RPD
SG
FG
Amplifier 1
Amplifier 2
Amplifier N
CN1
43
(485)
44
(/485)
45
(SG)
SG
FG
Termination resistor
RT
Twisted pair cable
Shielded
RT : Termination resistor 220 Ω (reference value)
RPU, RPD: Pull-up, pull-down resistor 1.2 k Ω (reference value)
Terminating Amplifier
Connecting a termination resister 220 Ω inside the connector
Terminating Amplifier N
Cable length 3 meters or less
Cable length 1 meters or less
Distribution Terminal Block Wiring
connecting to the amplifiers
Distribution Terminal Block
connecting to the host controller
485
/485
SG
Shield
To make wiring of connectors quick and easy,
use a terminal block for signal distribution as shown above.

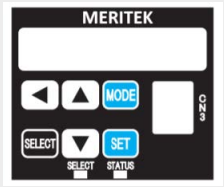
Figure 3

Step 2:

SD3 Parameters

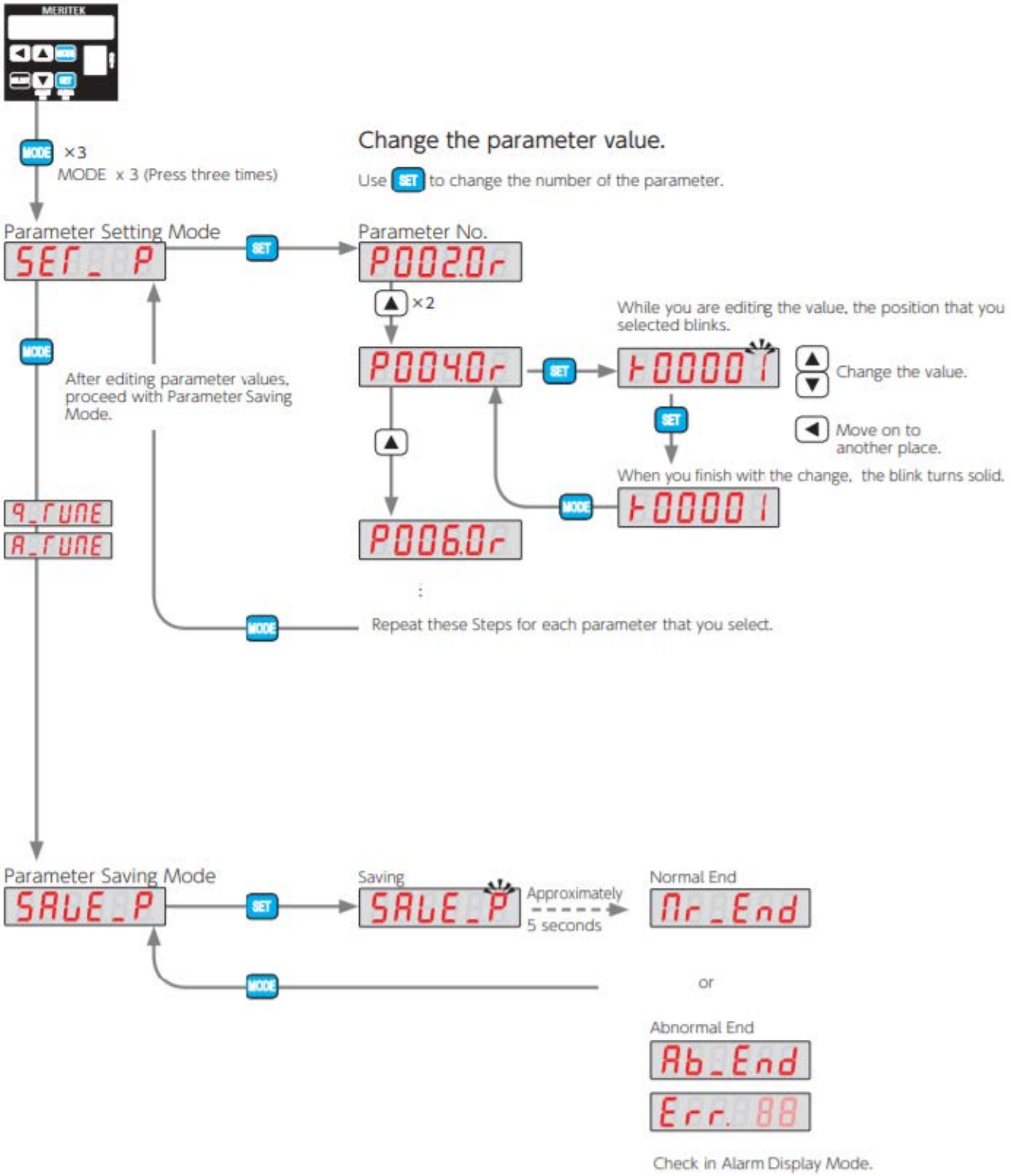
Set the communications address and communications parameters to the amplifier according to the host controller. You must set the following parameters.

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

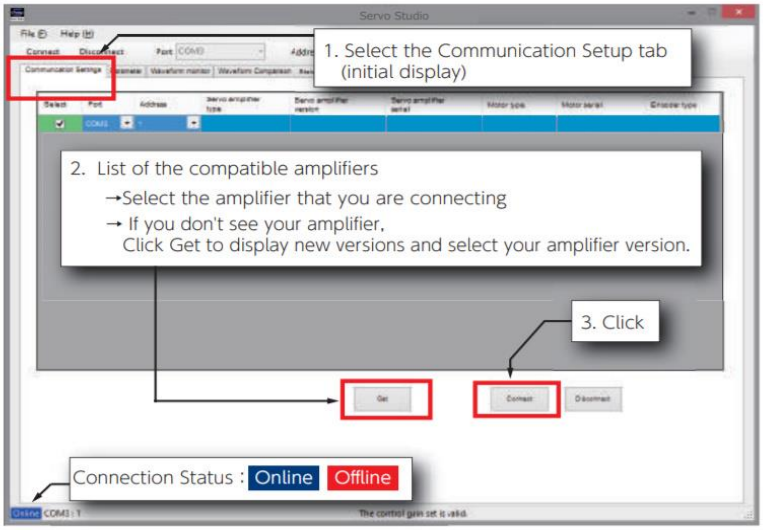
Method 1



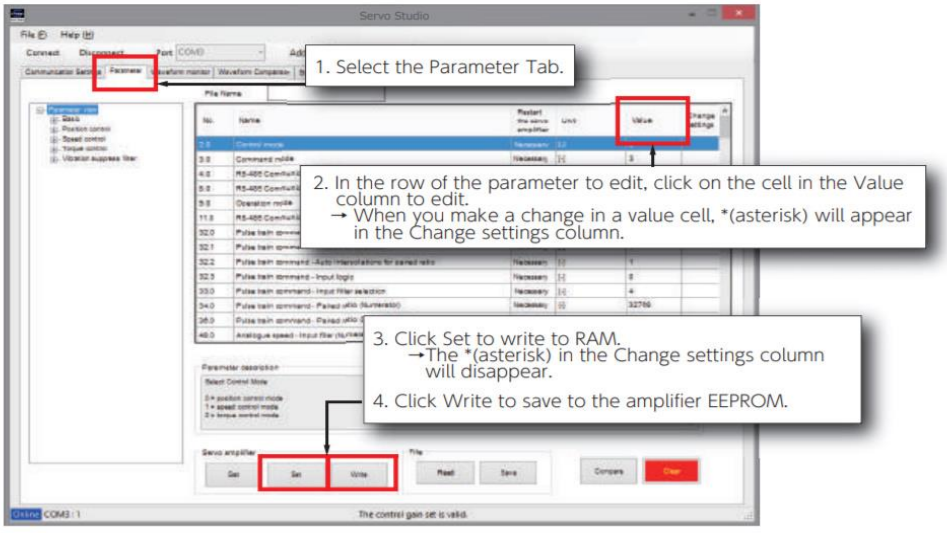
Method 2

Step1 Start

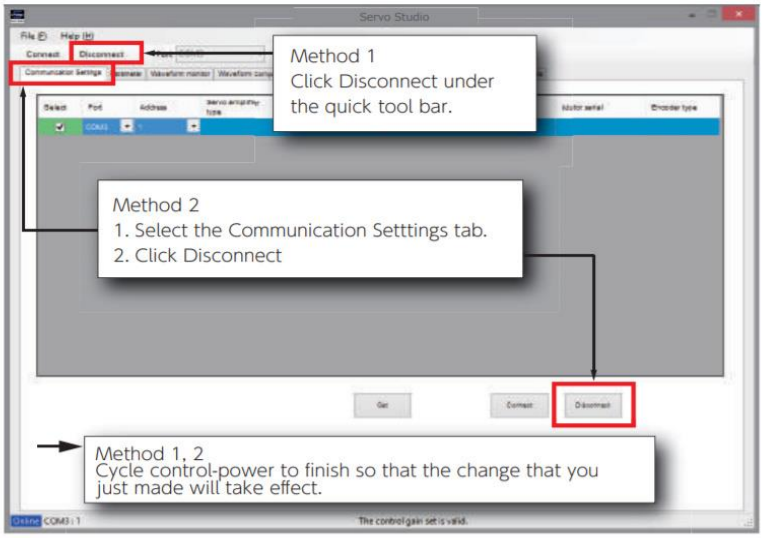
Double-click on



Step2 Set parameters



Step3 Finish



Step3:

MBs 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

Ladder symbol

Pt : Assign the port, 1~4

MD : 1, link with intelligent peripherals that equipped with communication interface

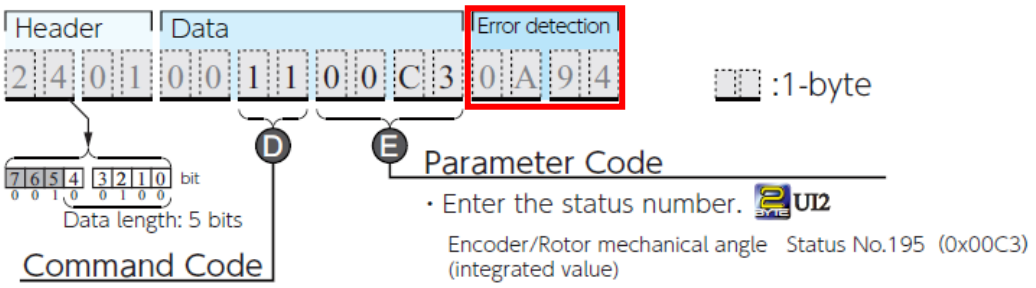
SR : Starting register for data transmission table

WR : Starting register for instruction operation (see example for explanation). It controls 8 registers, the other programs cannot repeat in use.

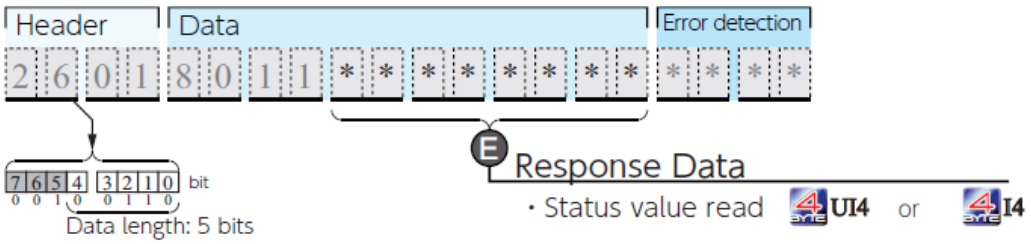
Range / Operand	HR R0 | R3839	ROR R5000 | R8071	DR D0 | D3999	K
Pt				1~4
MD				1
SR	○	○	○	
WR	○	○*	○	

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

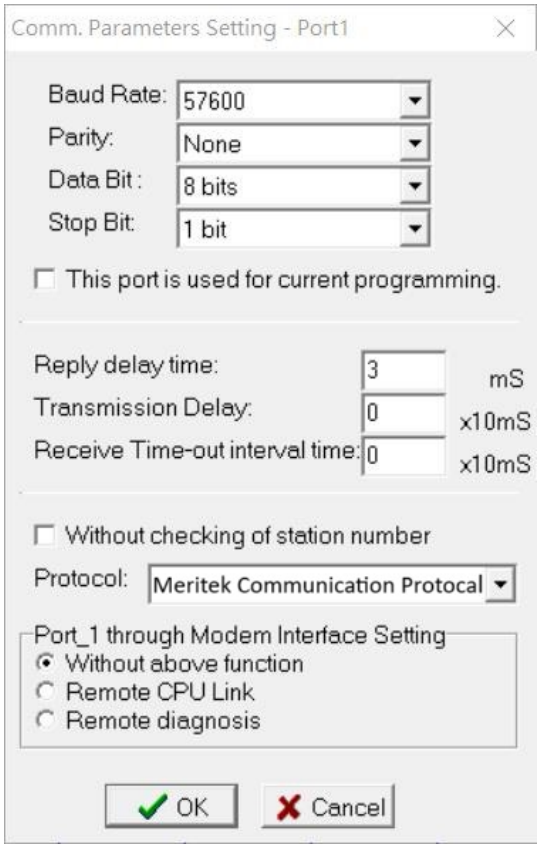


Response Message

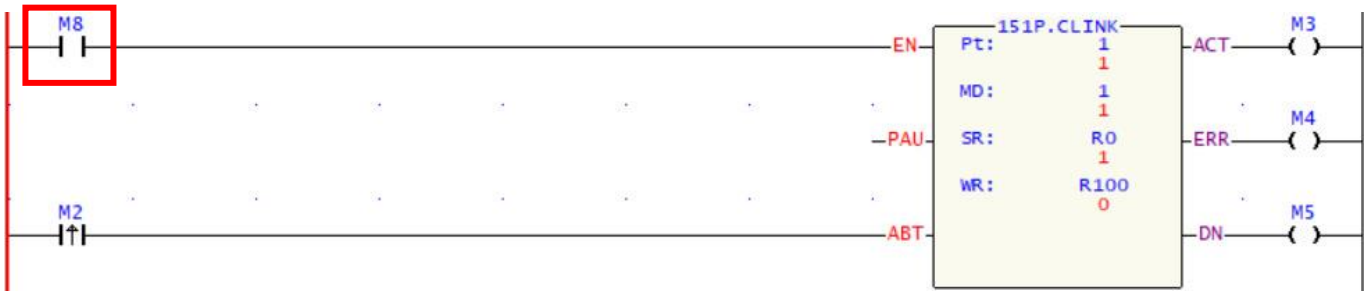


Fun151 MD1 Example:

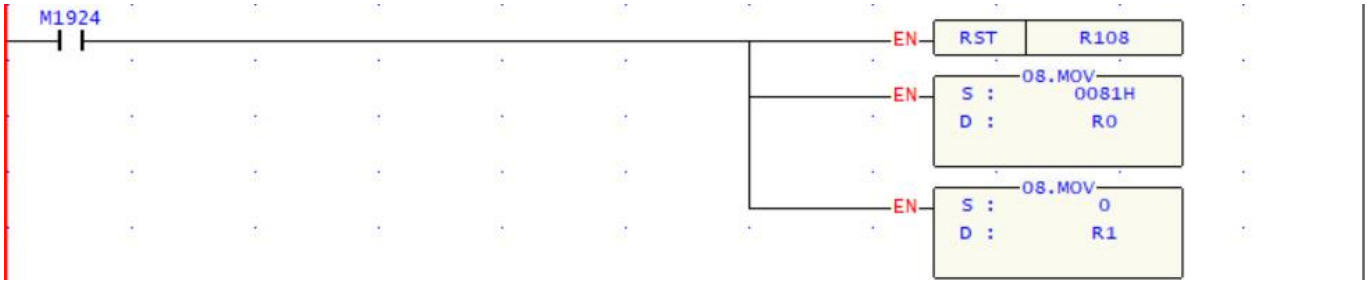
1. **Setting PLC Port 1 communication parameters.**



2. **M8: Start communication**



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

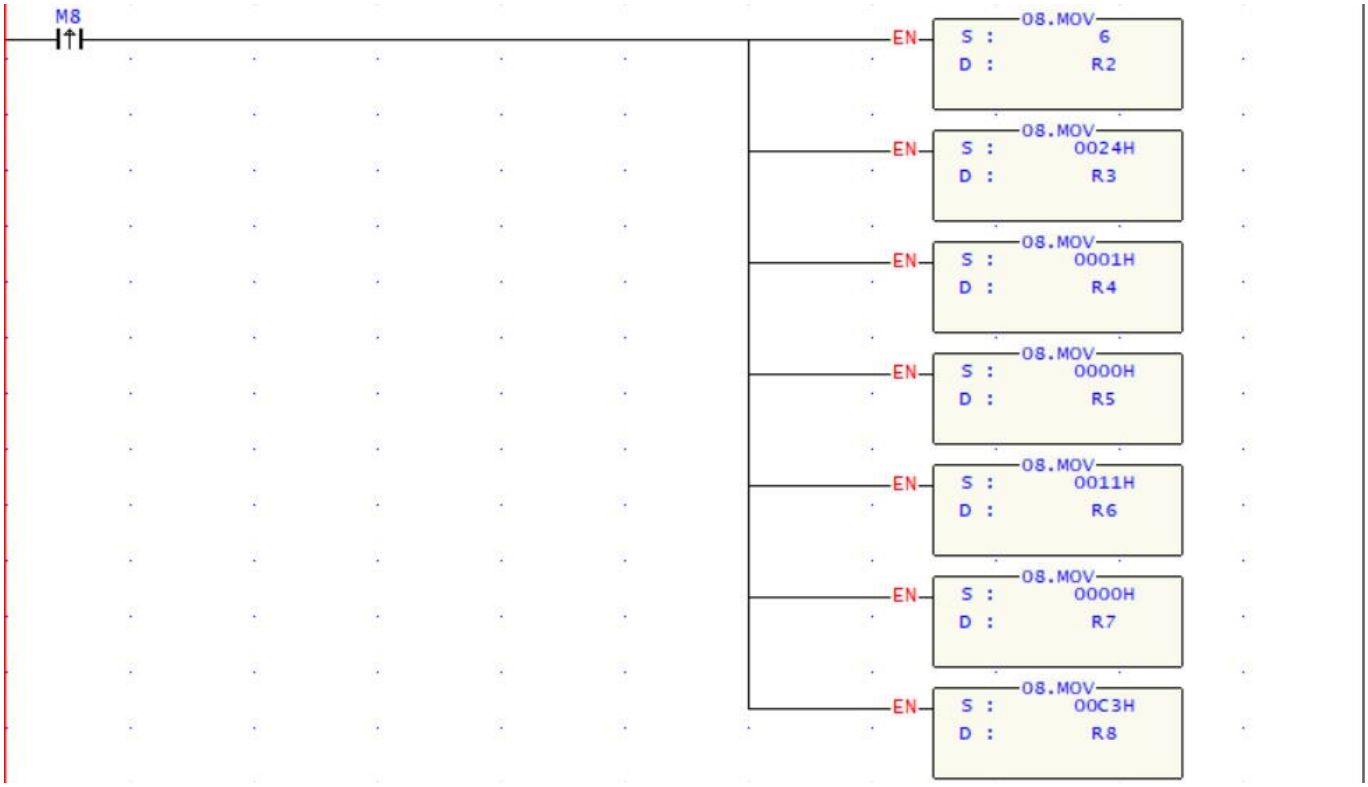


Explanation for the operand SR of FUN151: MD1

SR：Starting register of data transmission table

SR+0	Transmit only or Transmit then Receive	•Low byte is valid, =00H, transmit only, no response from the slave device =01H, transmit then receive the responding data (Receive only without err =81H, transmit then receive the responding data (Receive even with error)
SR+1	Starting & Ending code for receiving	• High byte : Start of text for receiving. Low byte : End of text for receiving.
SR+2	Length of Transmission	• The maximum length of data to be transmitted is 511
SR+3	Data 1	• Low byte is valid
SR+4	Data 2	• Low byte is valid
SR+5	Data 3	• Low byte is valid
SR+6	Data 4	• Low byte is valid
•		
•		
•		
	Data N	• 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.**

Status Monitoring

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						

StatusPage0