YASKAWA Electric Corporation

YAS_INVS_25

3/2025

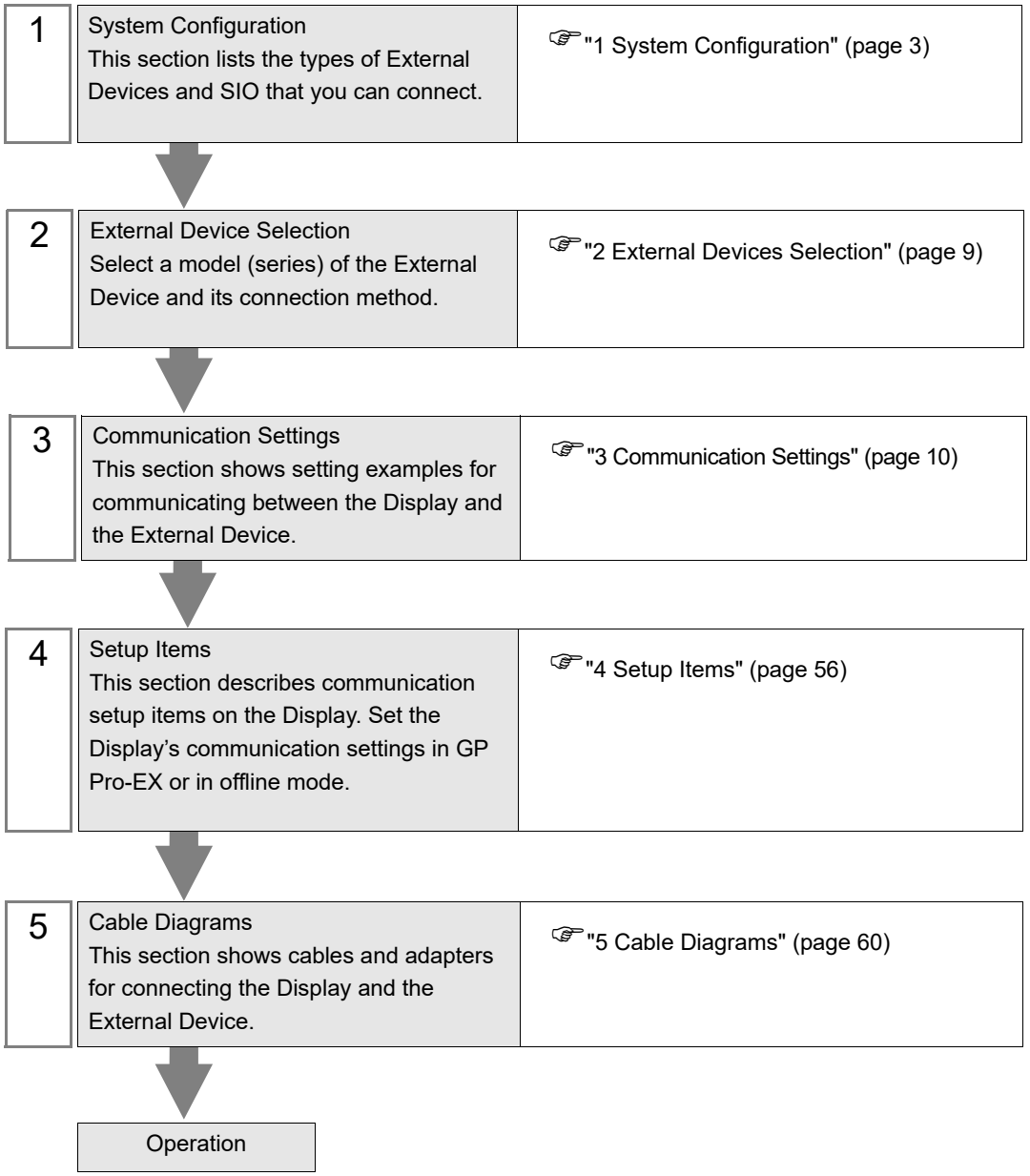
INVERTER/ SERVO SIO Driver

IMPORTANT
- The below Displays are no longer sold nor maintained by Pro-face. To reduce unplanned downtime due to aged hardware and to maximize your cyber security environment we recommend replacing your devices with a new, successor model. For details, please visit our homepage for "Recommended Substitution". Discontinued from GP-Pro EX 5.00 onwards: GP3000 Series, LT3000 Series, ST3000 Series, GP-4100 Series (Monochrome model), PL Series, PS3000/4000 Series, PE4000 Series.
- For details on the Displays supported by the driver, please check the "Connectable Devices" on our website.
  http://www.pro-face.com/trans/en/manual/1064.html

Introduction

This manual describes how to connect the Display and the External Device (target inverter/servo).

In this manual, the connection procedure is described in the sections identified below.



1 System Configuration

The following table lists system configurations for connecting YASKAWA Electric Corporation External Device and the Display.

1.1 Inverter

Series	Inverter*1	Link I/F	SIO Type	Setting Example	Cable Diagram
Varispeed F7	CIMR-F7A□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 1 (page 10)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 2 (page 12)	Cable Diagram 2 (page 69)
Varispeed G7	CIMR-G7A□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 3 (page 14)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 4 (page 16)	Cable Diagram 2 (page 69)
VS mini J7	CIMR-J7□A□□□□	Terminal Block on the SI-485/J7 RS-422/485 interface card	RS-422/485 (4wire)	Setting Example 5 (page 18)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 6 (page 20)	Cable Diagram 2 (page 69)
VS mini V7/ VS-606V7	CIMR-V7□A□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 7 (page 22)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 8 (page 24)	Cable Diagram 2 (page 69)
Varispeed F7S	CIMR-F7S□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 9 (page 26)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 10 (page 28)	Cable Diagram 2 (page 69)
Varispeed L7	CIMR-L7B□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 11 (page 30)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 12 (page 32)	Cable Diagram 2 (page 69)

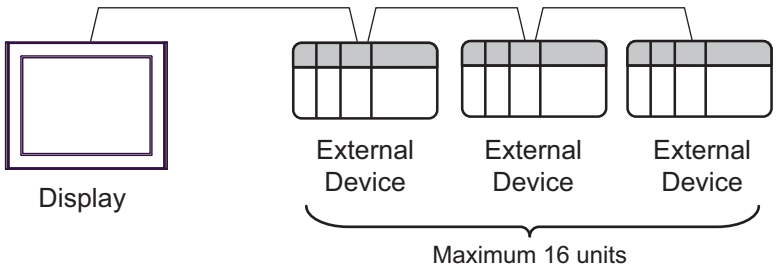
Series	Inverter*1	Link I/F	SIO Type	Setting Example	Cable Diagram
Varispeed AC	CIMR-ACA□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 13 (page 34)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 14 (page 36)	Cable Diagram 2 (page 69)
V1000	CIMR-VA□A□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 15 (page 38)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 16 (page 40)	Cable Diagram 2 (page 69)
J1000	CIMR-JA□A□□□□	Terminal Block on the SI-485/J RS-422/485 interface card	RS-422/485 (4wire)	Setting Example 17 (page 42)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 18 (page 44)	Cable Diagram 2 (page 69)
A1000	CIMR-A□□A□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 21 (page 50)	Cable Diagram 1 (page 60)
			RS-422/485 (2wire)	Setting Example 22 (page 52)	Cable Diagram 2 (page 69)
GA700	CIPR-GA70□ □□□□□□□□	Terminal Block on the inverter (TB4)	RS-422/485 (2wire)	Setting Example 23 (page 54)	Cable Diagram 4 (page 91)

*1 The □ symbol in the inverter model names represents the maximum applicable motor capacity and other specifications.

■ Connection Configuration

◆ 1:1 Connection

◆ 1:n Connection



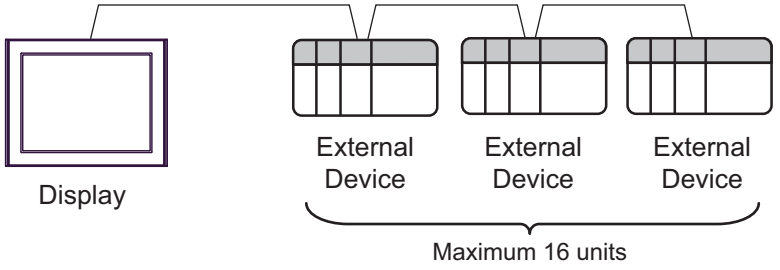
1.2 Σ-V series

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
Analog Voltage/Pulse Train Reference Type SERVOPACKs For Rotary Servomotors	SGDV-□□□□01 □□□□□□□	CN3 Connector for digital operator on SERVOPACK	RS-422/485 (4wire)	Setting Example 19 (page 46)	Cable Diagram 3 (page 82)
Analog Voltage/Pulse Train Reference Type SERVOPACKs For Linear Servomotors	SGDV-□□□□05 □□□□□□□		RS-422/485 (4wire)	Setting Example 20 (page 48)	Cable Diagram 3 (page 82)

■ Connection Configuration

◆ 1:1 Connection

◆ 1:n Connection



■ IPC COM Port

When connecting IPC with an External Device, the COM port used depends on the series and SIO type. Please refer to the IPC manual for details.

Usable port

Series	Usable Port		
	RS-232C	RS-422/485(4 wire)	RS-422/485(2 wire)
PS-2000B	COM1*1 , COM2, COM3*1, COM4	-	-
PS-3450A, PS-3451A, PS3000-BA, PS3001-BD	COM1, COM2*1*2	COM2*1*2	COM2*1*2
PS-3650A (T41 model), PS-3651A (T41 model)	COM1*1	-	-
PS-3650A (T42 model), PS-3651A (T42 model)	COM1*1*2, COM2	COM1*1*2	COM1*1*2
PS-3700A (Pentium®4-M) PS-3710A	COM1*1, COM2*1, COM3*2 , COM4	COM3*2	COM3*2
PS-3711A	COM1*1, COM2*2	COM2*2	COM2*2
PS4000*3	COM1, COM2	-	-
PL3000	COM1*1*2, COM2*1, COM3, COM4	COM1*1*2	COM1*1*2
PE-4000B Atom N270	COM1, COM2	-	-
PE-4000B Atom N2600	COM1, COM2	COM3*4 , COM4*4, COM5*4, COM6*4	COM3*4, COM4*4, COM5*4, COM6*4
PS5000 (Slim Panel Type Core i3 Model) *5 *6	COM1, COM2*4	COM2*4	COM2*4
PS5000 (Slim Panel Type Atom Model) *5 *6	COM1, COM2*7	COM2*7	COM2*7
PS5000 (Enclosed Panel Type)*8	COM1	-	-
PS5000 (Modular Type PFXPU/PFXPP)*5 *6 PS5000 (Modular Type PFXPL2B5-6)	COM1*7	COM1*7	COM1*7
PS5000 (Modular Type PFXPL2B1-4)	COM1, COM2*7	COM2*7	COM2*7
PS6000 (Advanced Box) PS6000 (Standard Box)	COM1*9	*10	*10
PS6000 (Basic Box)	COM1*9	COM1*9	COM1*9

*1 The RI/5V can be switched. Use the IPC's switch to change if necessary.

*2 Set up the SIO type with the DIP Switch. Please set up as follows according to SIO type to be used.

*3 When making communication between an External Device and COM port on the Expansion slot, only RS-232C is supported. However, ER (DTR/CTS) control cannot be executed because of the specification of COM port.
For connection with External Device, use user-created cables and disable Pin Nos. 1, 4, 6 and 9.
Please refer to the IPC manual for details of pin layout.

*4 Set up the SIO type with the BIOS. Please refer to the IPC manual for details of BIOS.

*5 When setting up communication between an External Device and the RS-232C/422/485 interface module, use the IPC (RS-232C) or PS5000 (RS-422/485) cable diagrams. However, when using PFXZPBMPR42P2 in a RS-422/485 (4-wire) configuration with no flow control, connect 7.RTS+ and 8.CTS+, and connect 6.RTS- and 9.CTS-.
When using RS-422/485 communication with External Devices, you may need to reduce the transmission speed and increase the TX Wait time.

*6 To use RS-422/485 communication on the RS-232C/422/485 interface module, the DIP Switch setting is required. Please refer to "Knowledge Base" (FAQs) on the support site. (http://www.pro-face.com/trans/en/manual/1001.html)

Settings	FAQ ID
PFXZPBMPR42P2, RS422/485 change method	FA263858
PFXZPBMPR42P2 termination resistor setting	FA263974
PFXZPBMPR44P2, RS422/485 change method	FA264087
PFXZPBMPR44P2 termination resistor setting	FA264088

*7 Set up the SIO type with the DIP Switch. Please refer to the IPC manual for details of DIP Switch. The BOX Atom has not a switch to set the RS-232C, RS-422/485 mode. Use the BIOS for the setting.

*8 For the connection with the External Device, on the user-created cable read as if the connector on the Display-side is a M12 A-coding 8 pin socket. The pin assignment is the same as described in the cable diagram. For the M12 A-coding connector, use PFXZPSCNM122.

*9 In addition to COM1, you can also use the COM port on the optional interface.

*10 Install the optional interface in the expansion slot.

DIP Switch settings (PL3000 / PS3000 Series)

RS-232C

DIP Switch	Setting	Description
1	OFF*1	Reserved (always OFF)
2	OFF	SIO type: RS-232C
3	OFF	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA (RXA): Not available
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Not available
9	OFF	RS (RTS) Auto control mode: Disabled
10	OFF	

*1 When using PS-3450A, PS-3451A, PS3000-BA and PS3001-BD, turn ON the set value.

RS-422/485 (4 wire)

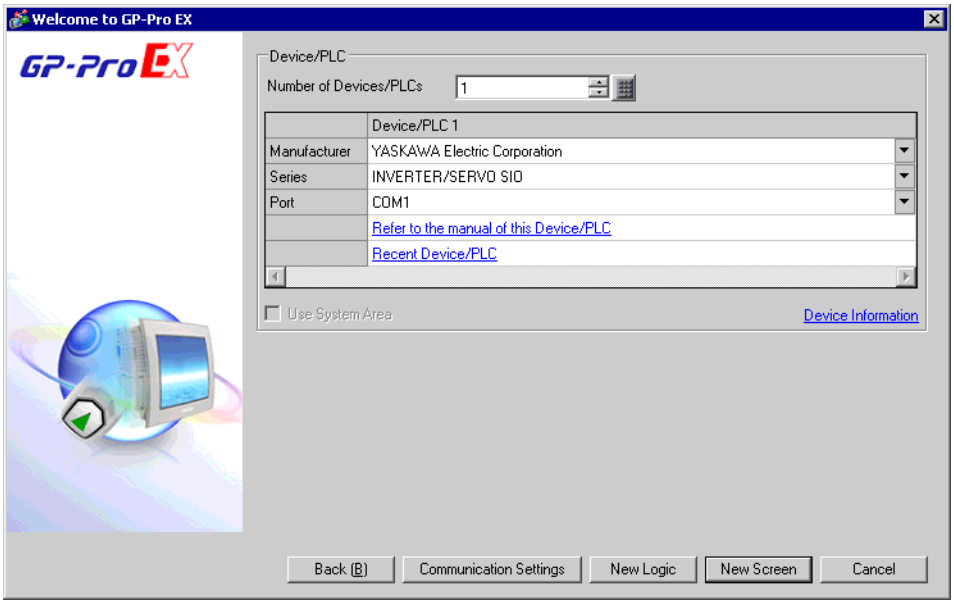
DIP Switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA (RXA): Not available
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Not available
9	OFF	RS (RTS) Auto control mode: Disabled
10	OFF	

RS-422/485 (2 wire)

DIP Switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	ON	Short-circuit of SDA (TXA) and RDA (RXA): Available
8	ON	Short-circuit of SDB (TXB) and RDB (RXB): Available
9	ON	RS (RTS) Auto control mode: Enabled
10	ON	

2 External Devices Selection

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Number of Devices/ PLCs	Enter an integer from 1 to 4 to define the number of Devices/PLCs to connect to the display.
Manufacturer	Select the manufacturer of the External Device to connect. Select "YASKAWA Electric Corporation".
Series	Select the External Device model (series) and the connection method. Select "INVERTER/ SERVO SIO". In System configuration, make sure the External Device you are connecting is supported by "INVERTER/SERVO SIO". ☞ "1 System Configuration" (page 3)
Port	Select the Display port to be connected to the External Device.
Use System Area	Not available in this driver.

3 Communication Settings

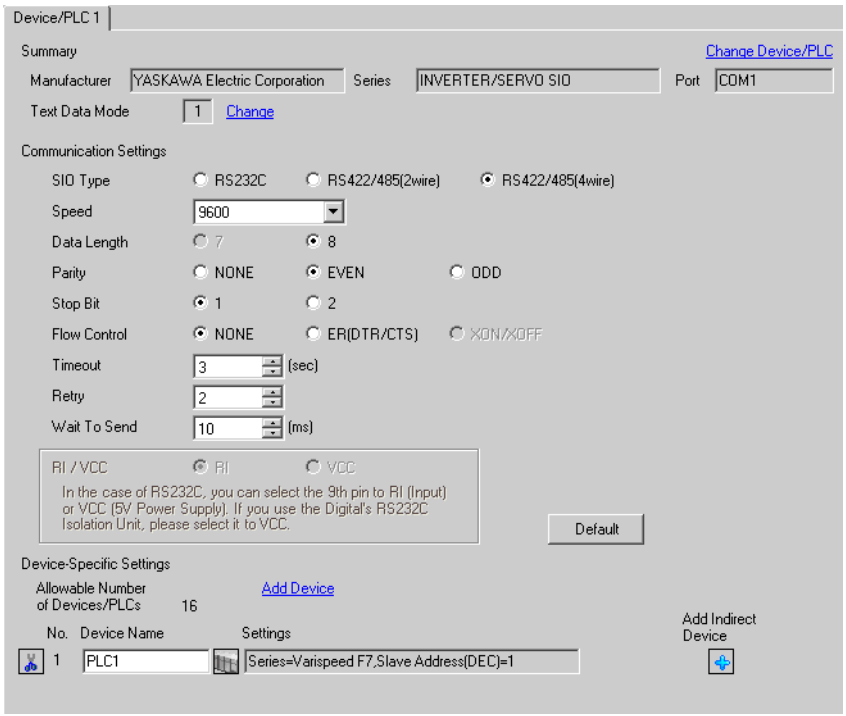
This section provides examples of communication settings recommended by Pro-face for the Display and the External Device.

3.1 Setting Example 1

■ GP-Pro EX Settings

◆ Communication Settings

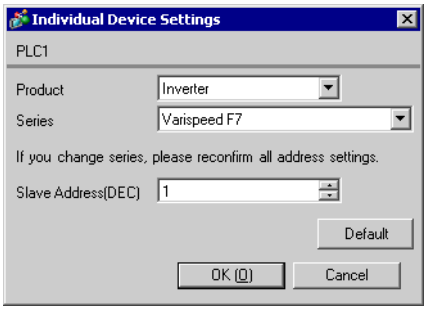
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

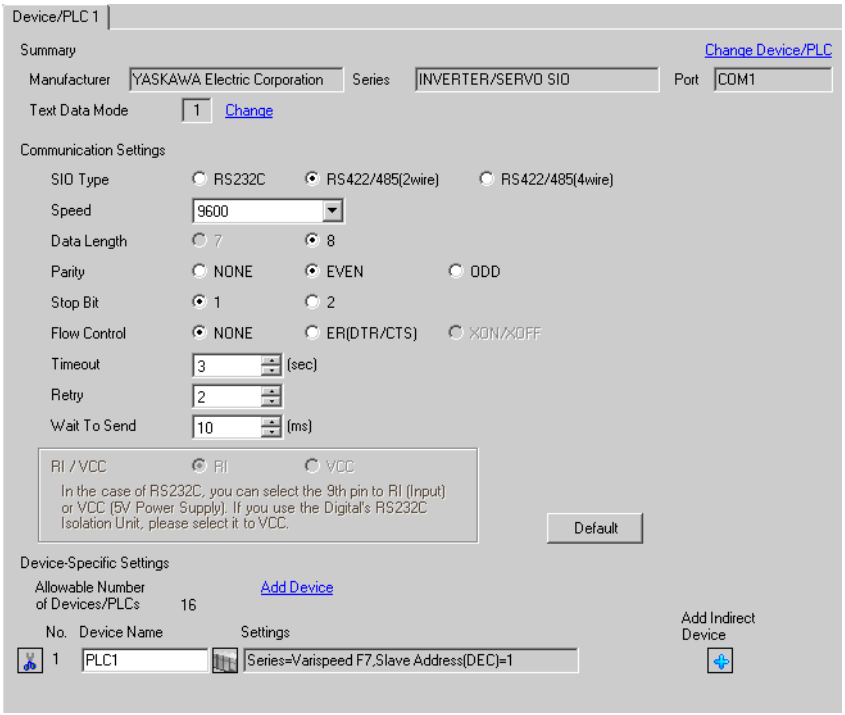
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.2 Setting Example 2

■ GP-Pro EX Settings

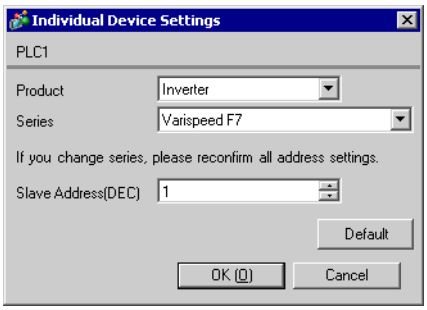
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

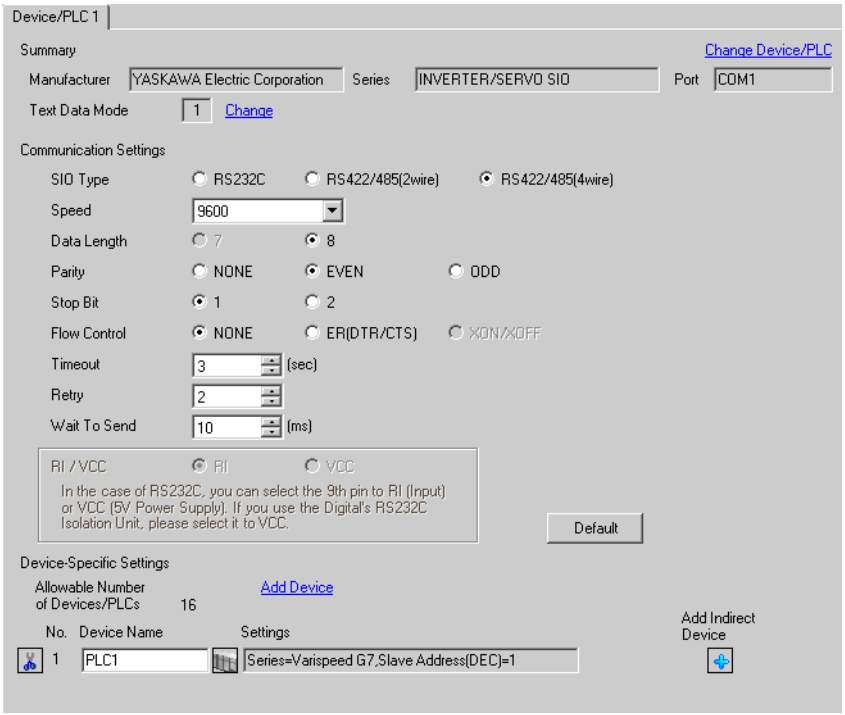
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.3 Setting Example 3

■ GP-Pro EX Settings

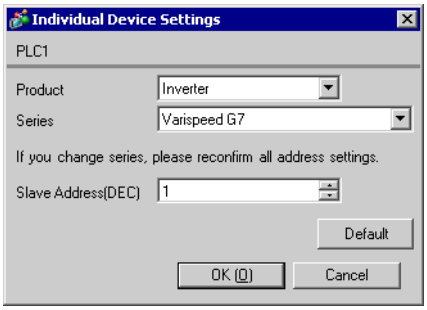
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

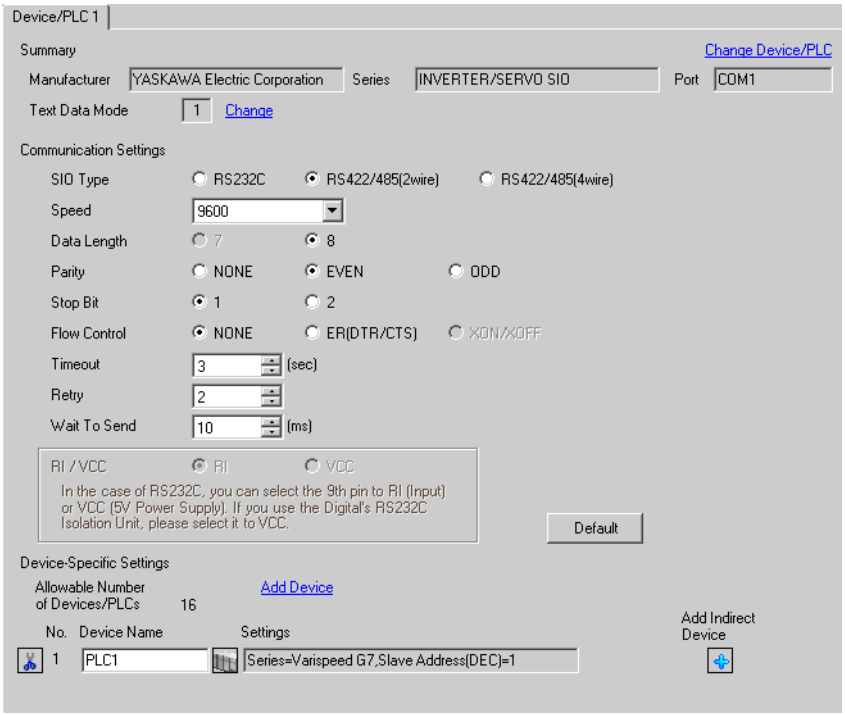
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.4 Setting Example 4

■ GP-Pro EX Settings

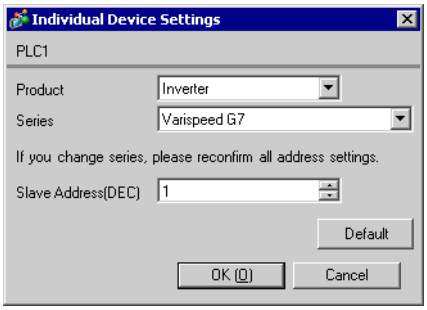
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

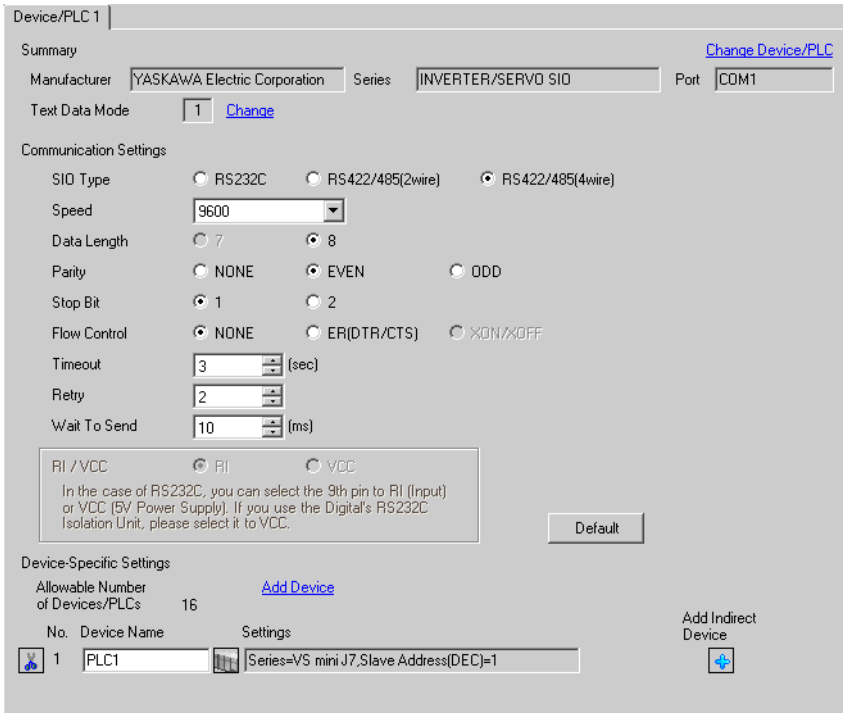
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.5 Setting Example 5

■ GP-Pro EX Settings

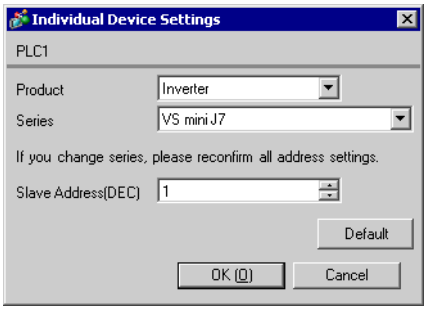
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the DSPL, DATA/ENTER, Up, or Down key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the DSPL key to select [PRGM].
2 Press the Up key to display the parameter you want to set.
3 Press the DATA/ENTER key.
4 Press the Up or Down key to display the setting value.

Parameter No.	Settings	Setup Description
n02	2	RUN Command Selection
n03	6	Frequency Reference Selection
n70	1	Slave Address Setting (DEC)
n71	2	Baud Rate Selection
n72	0	Parity Selection
n73	10	Transmission Wait Time
n74	0	RTS Control

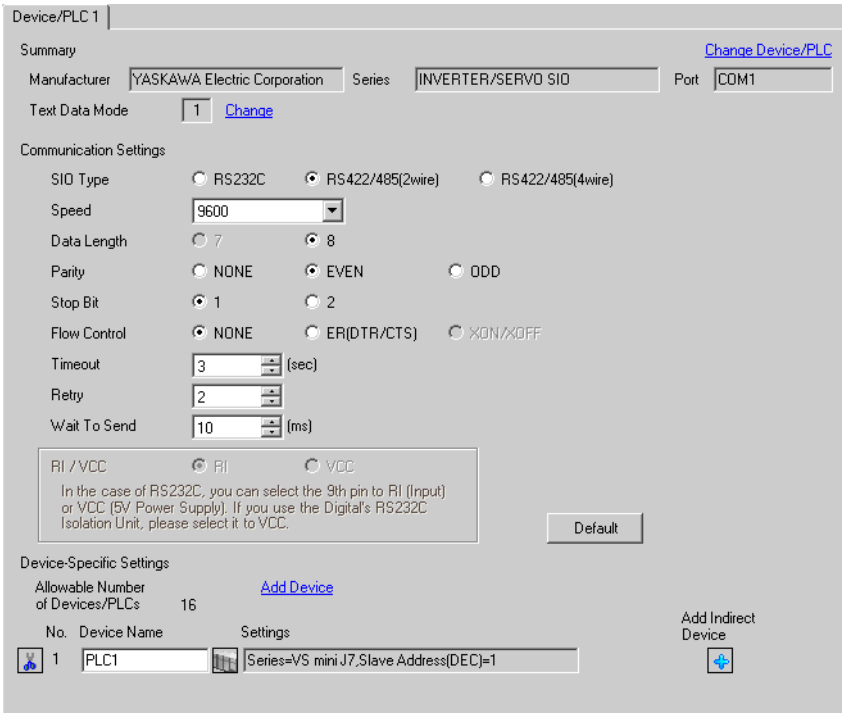
5 Press the DATA/ENTER key.
6 Reboot the External Device.

This completes the setting of the External Device.

3.6 Setting Example 6

■ GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



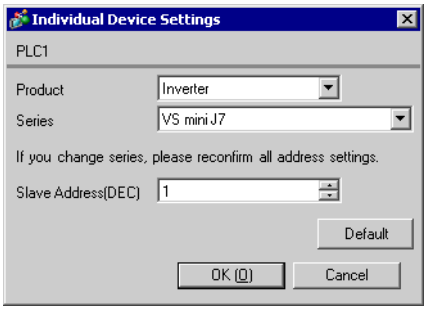
IMPORTANT

- To connect VS mini J7 series with 1:n connection, you need to set Wait To Send to 30 ms or more.

◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the DSPL, DATA/ENTER, Up, or Down key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the DSPL key to select [PRGM].
2 Press the Up key to display the parameter you want to set.
3 Press the DATA/ENTER key.
4 Press the Up or Down key to display the setting value.

Parameter No.	Settings	Setup Description
n02	2	RUN Command Selection
n03	6	Frequency Reference Selection
n70	1	Slave Address Setting (DEC)
n71	2	Baud Rate Selection
n72	0	Parity Selection
n73	10	Transmission Wait Time
n74	0	RTS Control

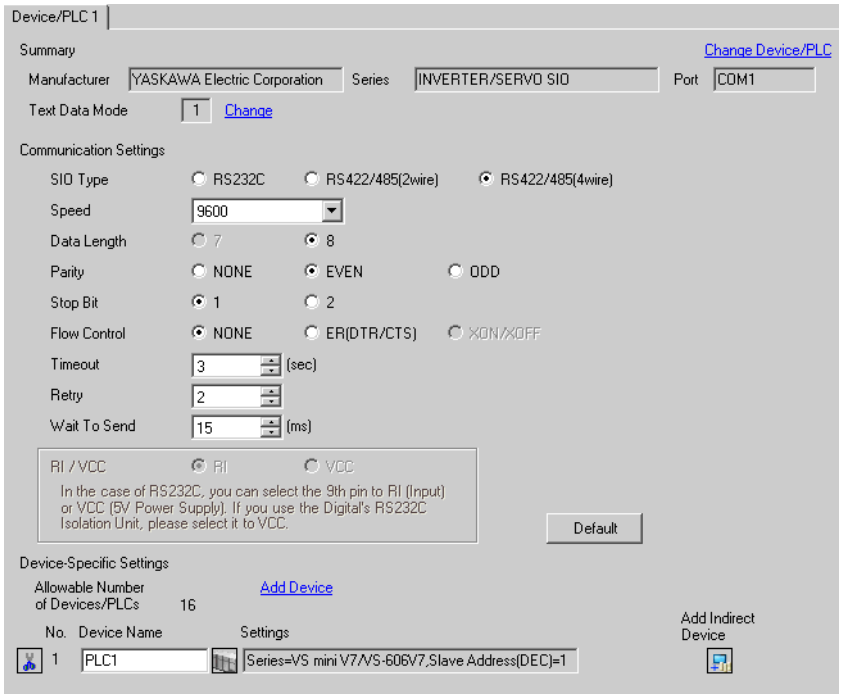
5 Press the DATA/ENTER key.
6 Reboot the External Device.

This completes the setting of the External Device.

3.7 Setting Example 7

■ GP-Pro EX Settings

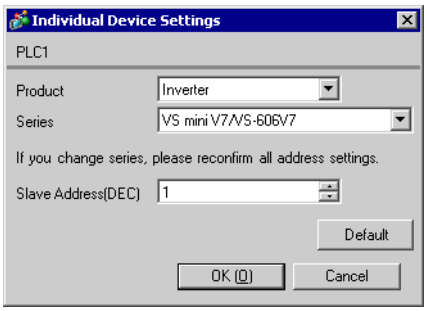
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the DSPL, DATA/ENTER, Up, or Down key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the DSPL key to select [PRGM].
2 Press the Up key to display the parameter you want to set.
3 Press the DATA/ENTER key.
4 Press the Up or Down key to display the setting value.

Parameter No.	Settings	Setup Description
n03	2	RUN Command Selection
n04	6	Frequency Reference Selection
n153	1	Slave Address Setting (DEC)
n154	2	Baud Rate Selection
n155	0	Parity Selection
n156	10	Transmission Wait Time
n157	0	RTS Control

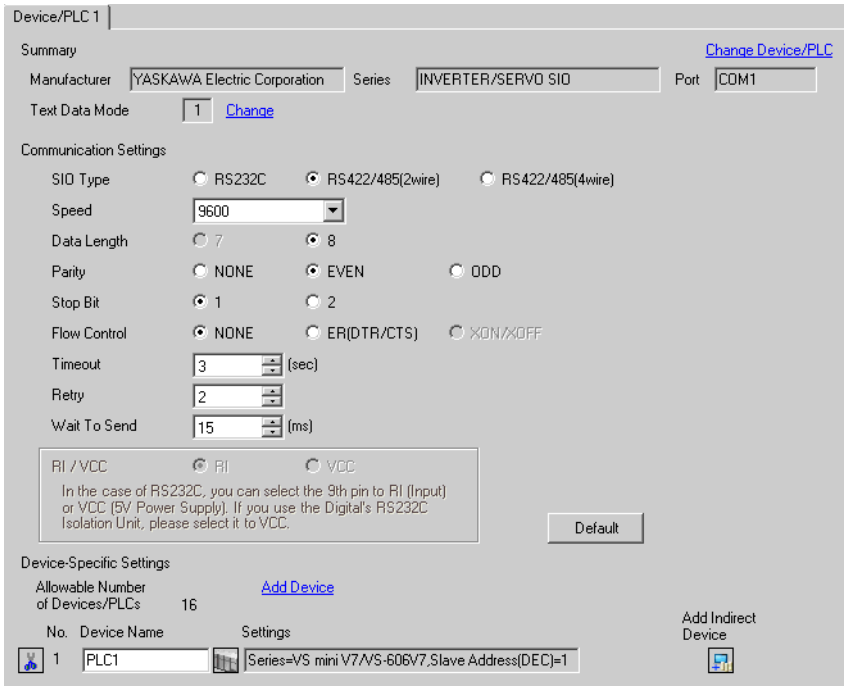
5 Press the DATA/ENTER key.
6 Reboot the External Device.

This completes the setting of the External Device.

3.8 Setting Example 8

■ GP-Pro EX Settings

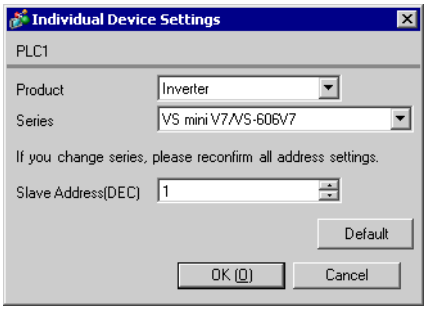
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the DSPL, DATA/ENTER, Up, or Down key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the DSPL key to select [PRGM].
2 Press the Up key to display the parameter you want to set.
3 Press the DATA/ENTER key.
4 Press the Up or Down key to display the setting value.

Parameter No.	Settings	Setup Description
n03	2	RUN Command Selection
n04	6	Frequency Reference Selection
n153	1	Slave Address Setting (DEC)
n154	2	Baud Rate Selection
n155	0	Parity Selection
n156	10	Transmission Wait Time
n157	0	RTS Control

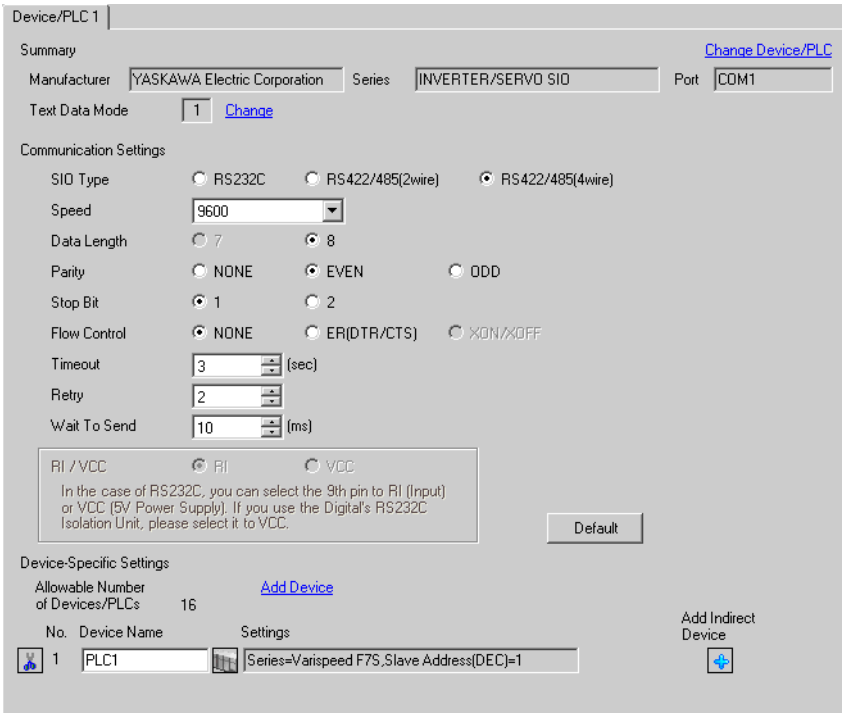
5 Press the DATA/ENTER key.
6 Reboot the External Device.

This completes the setting of the External Device.

3.9 Setting Example 9

■ GP-Pro EX Settings

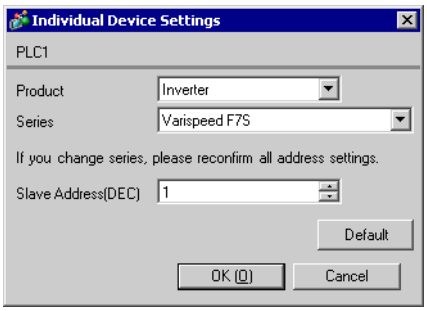
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

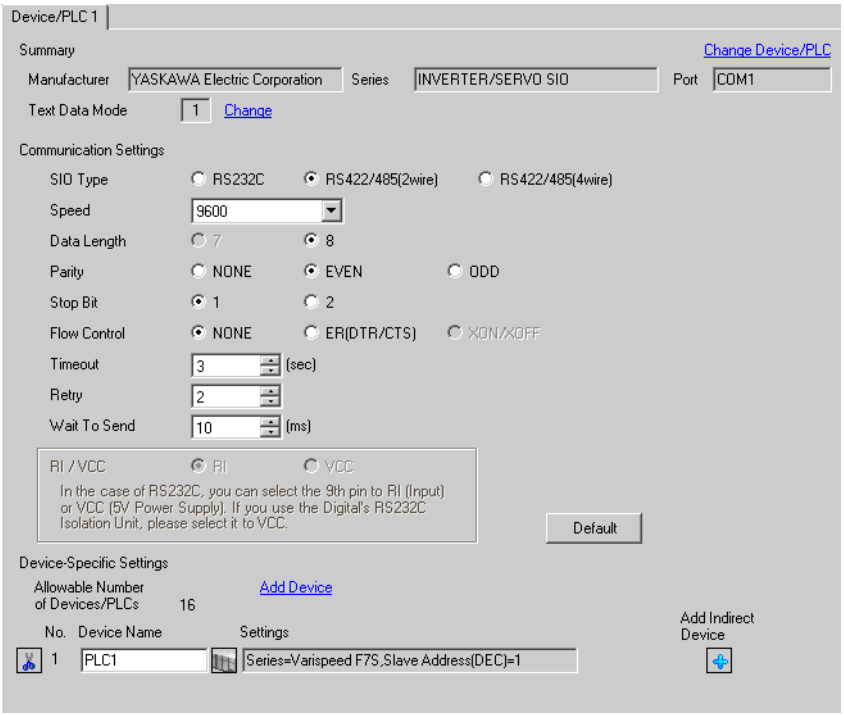
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.10 Setting Example 10

■ GP-Pro EX Settings

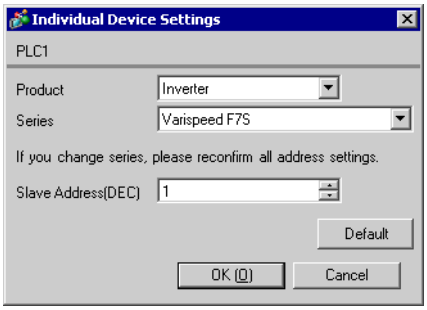
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

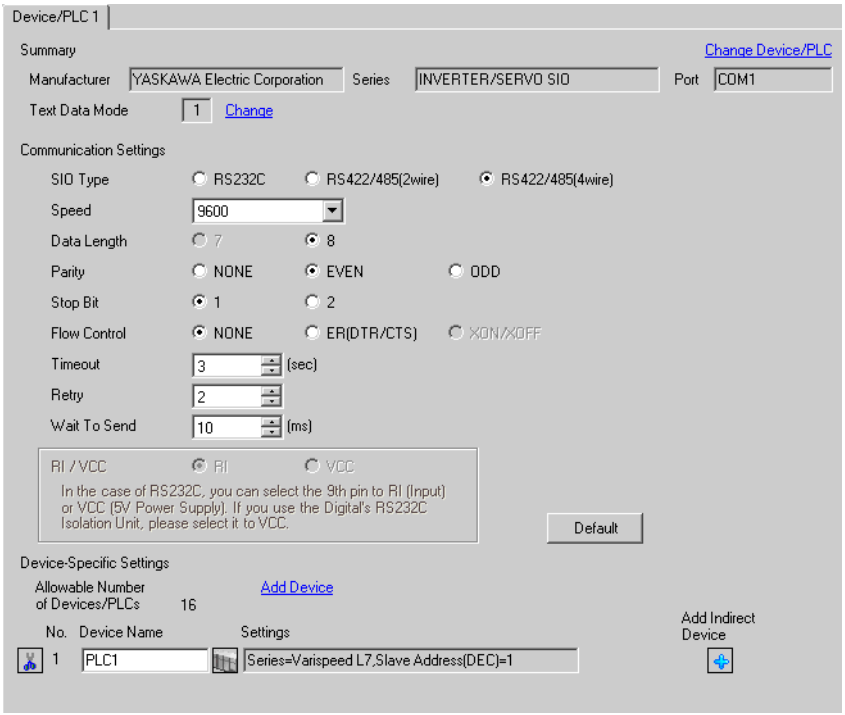
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.11 Setting Example 11

■ GP-Pro EX Settings

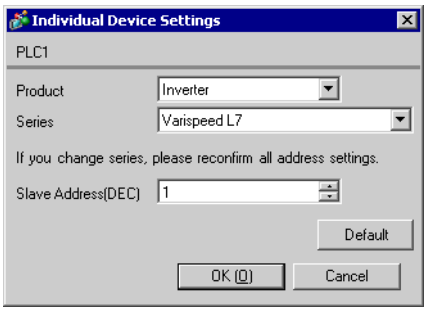
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up or Down key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

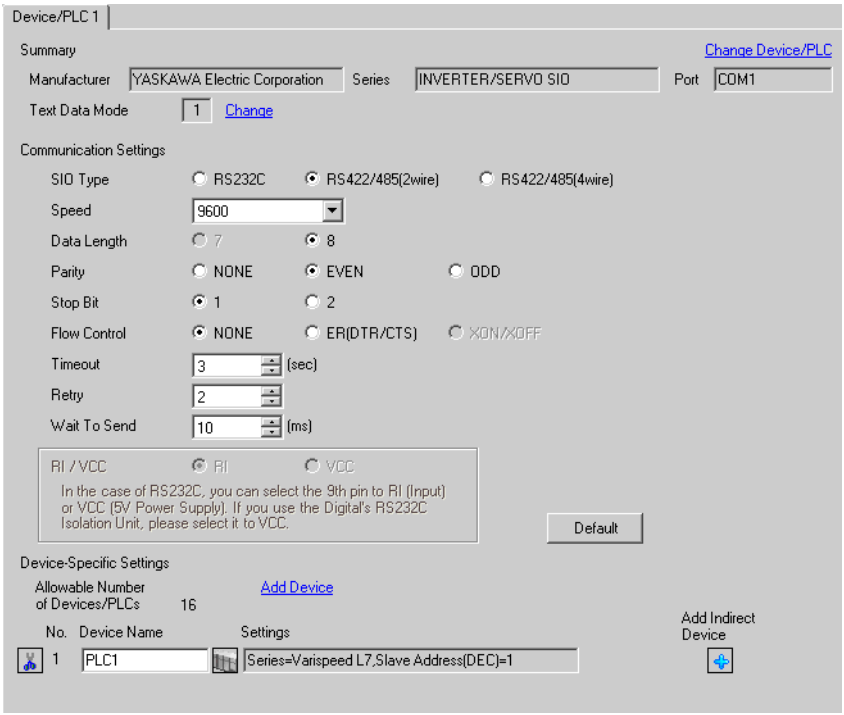
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.12 Setting Example 12

■ GP-Pro EX Settings

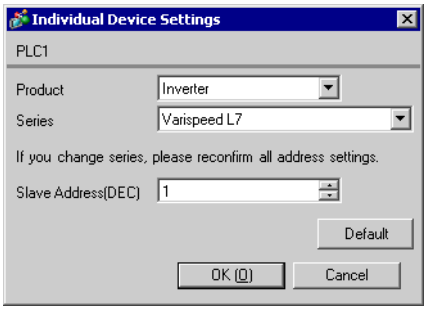
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up or Down key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

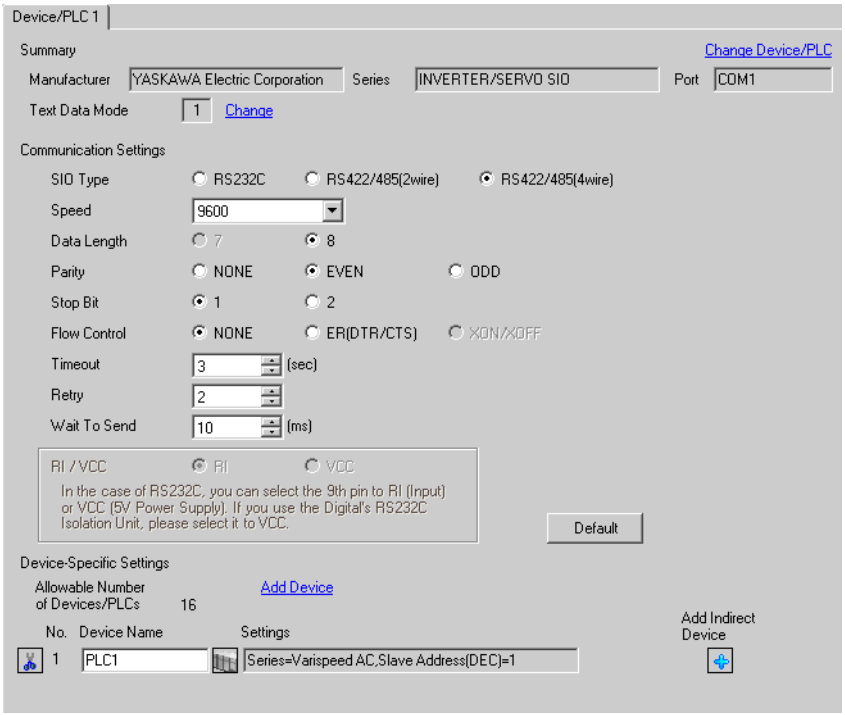
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.13 Setting Example 13

■ GP-Pro EX Settings

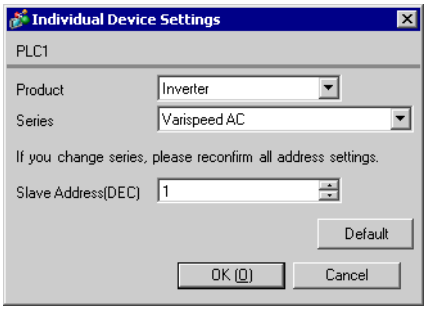
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

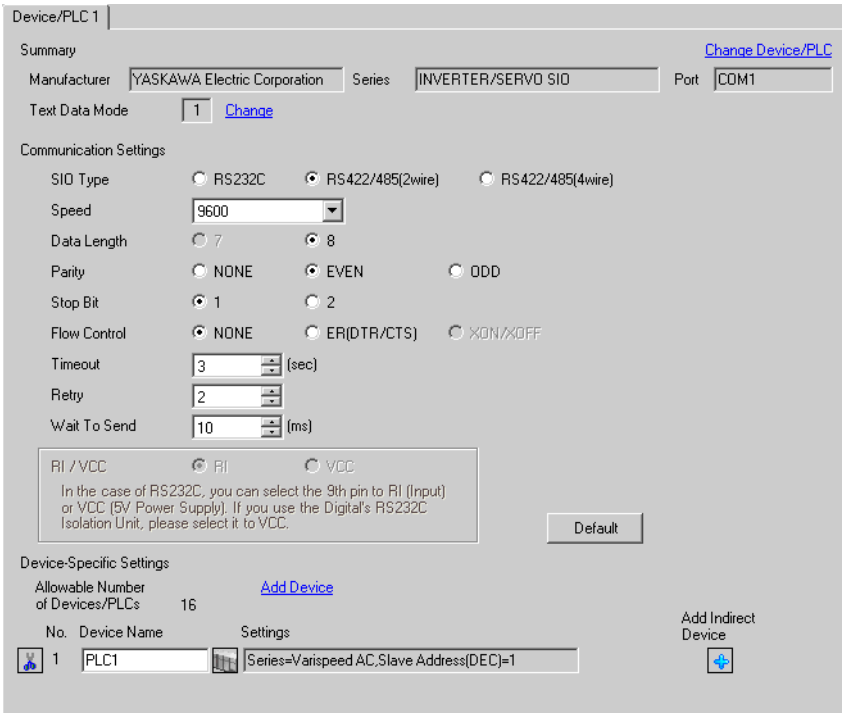
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.14 Setting Example 14

■ GP-Pro EX Settings

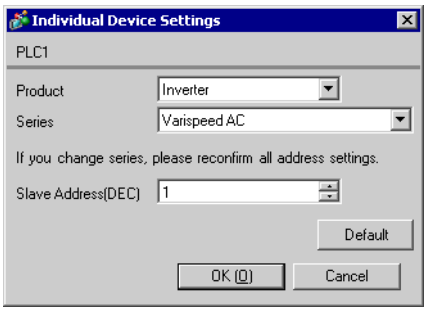
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the MENU, DATA/ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the MENU key to select [Programming].
2 Press the DATA/ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the DATA/ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Slave address (HEX)
H5-02	3	Communication speed selection
H5-03	1	Communication parity selection
H5-04	3	Stopping method after communication error
H5-05	1	Communication error detection selection
H5-06	5	Send wait time
H5-07	1	RTS control ON/OFF

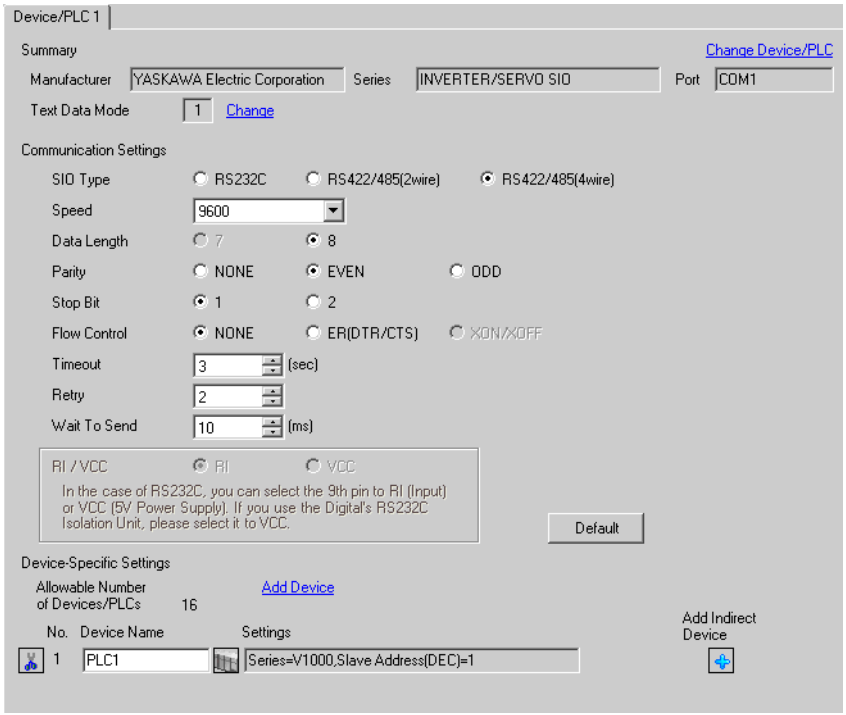
6 Press the DATA/ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

3.15 Setting Example 15

■ GP-Pro EX Settings

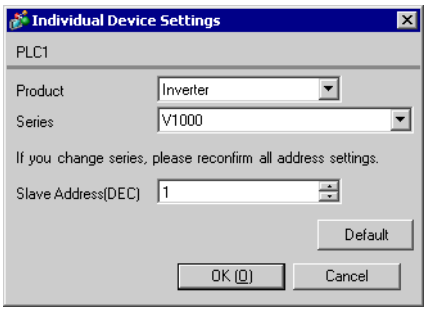
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the Up key to display [STUP].
2 Press the ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

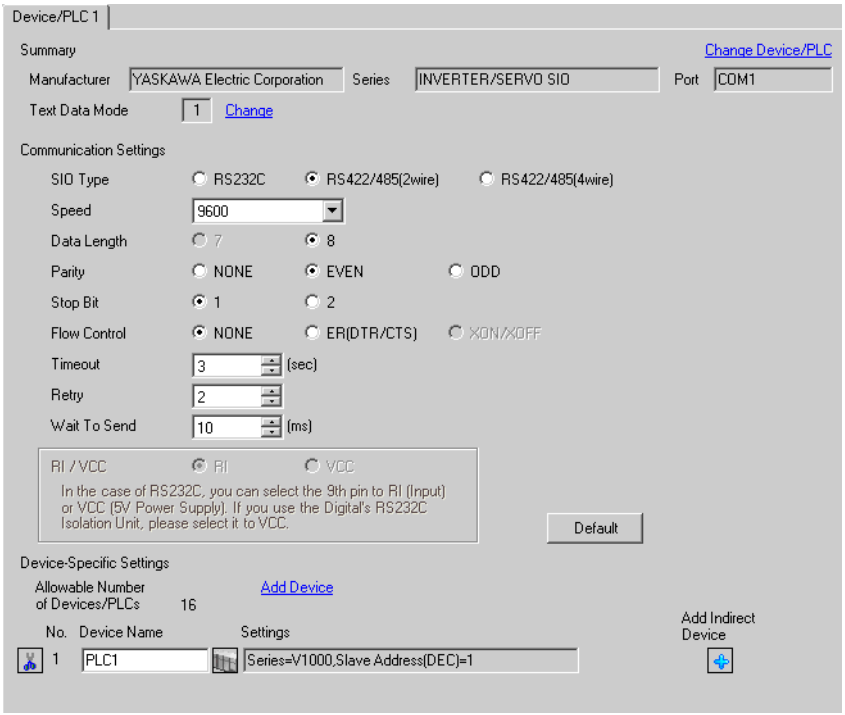
Parameter No.	Settings	Setup Description
b1-01	2	Frequency Reference Selection 1
b1-02	2	Run Command Selection 1
H5-01	01	Node Address Setting (HEX)
H5-02	3	Communication Speed Selection
H5-03	1	Communication Parity Selection
H5-04	3	Stopping Method After Communication Error
H5-05	1	Communication Fault Detection Selection
H5-06	5	Drive Transmit Wait Time
H5-07	1	RTS Control Selection
H5-09	2.0	CE Detection Time

6 Press the ENTER key.
7 Reboot the External Device.
This completes the setting of the External Device.

3.16 Setting Example 16

■ GP-Pro EX Settings

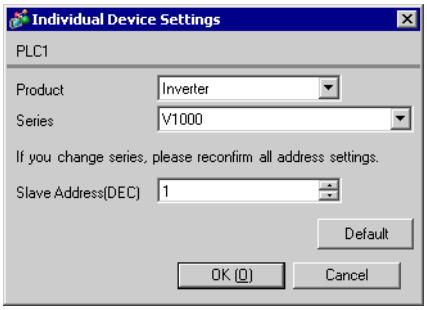
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the ENTER, Up, Down, or Shift/RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the Up key to display [STUP].
2 Press the ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the ENTER key.
5 Press the Up, Down, or Shift/RESET key to display the setting value.

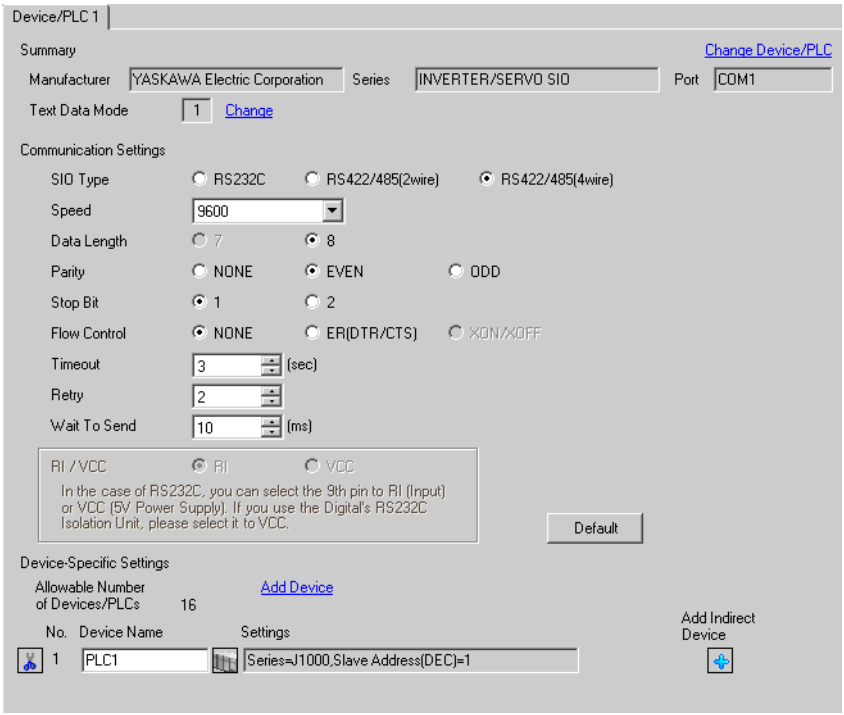
Parameter No.	Settings	Setup Description
b1-01	2	Frequency Reference Selection 1
b1-02	2	Run Command Selection 1
H5-01	01	Node Address Setting (HEX)
H5-02	3	Communication Speed Selection
H5-03	1	Communication Parity Selection
H5-04	3	Stopping Method After Communication Error
H5-05	1	Communication Fault Detection Selection
H5-06	5	Drive Transmit Wait Time
H5-07	1	RTS Control Selection
H5-09	2.0	CE Detection Time

6 Press the ENTER key.
7 Reboot the External Device.
This completes the setting of the External Device.

3.17 Setting Example 17

■ GP-Pro EX Settings

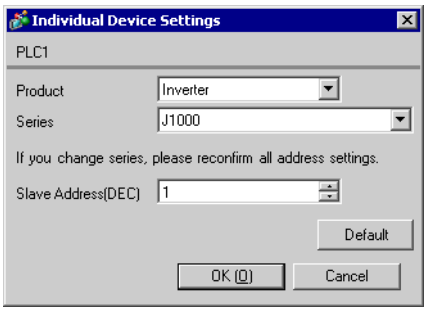
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the ENTER, Up, Down, or RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the Up key to display [STUP].
2 Press the ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the ENTER key.
5 Press the Up, Down, or RESET key to display the setting value.

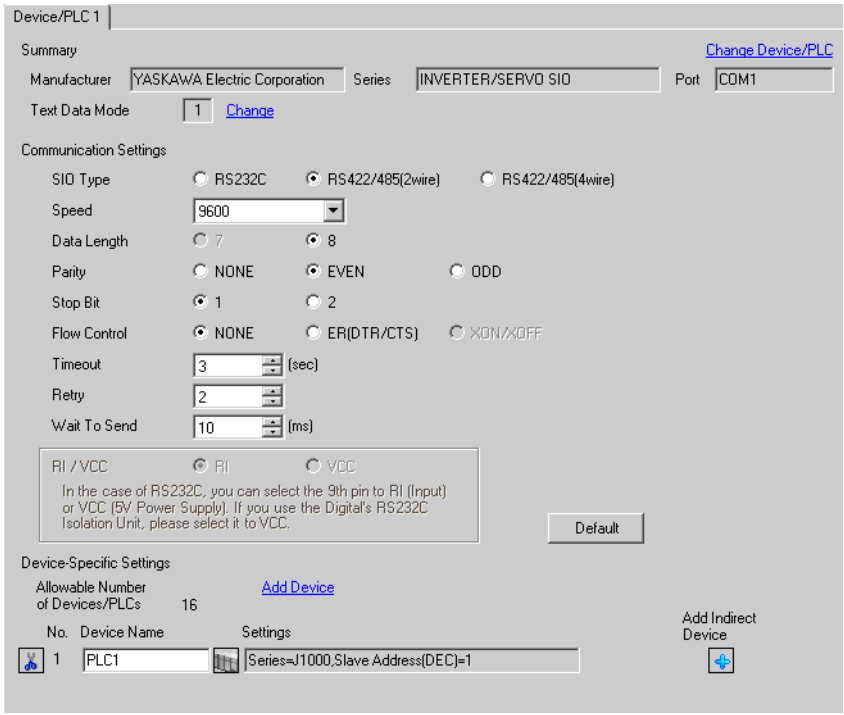
Parameter No.	Settings	Setup Description
b1-01	2	Frequency Reference Selection
b1-02	2	Run Command Selection
H5-01	01	Slave Address Setting (HEX)
H5-02	3	Communication Speed Selection
H5-03	1	Communication Parity Selection
H5-04	3	Stopping Method After Communication Error
H5-05	1	Communication Fault Detection Selection
H5-06	5	Drive Transmit Wait Time
H5-07	1	RTS Control Selection

6 Press the ENTER key.
7 Reboot the External Device.
This completes the setting of the External Device.

3.18 Setting Example 18

■ GP-Pro EX Settings

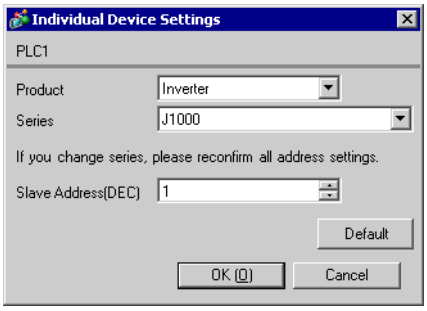
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the ENTER, Up, Down, or RESET key on the digital operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the Up key to display [STUP].
2 Press the ENTER key.
3 Press the Up key to display the parameter you want to set.
4 Press the ENTER key.
5 Press the Up, Down, or RESET key to display the setting value.

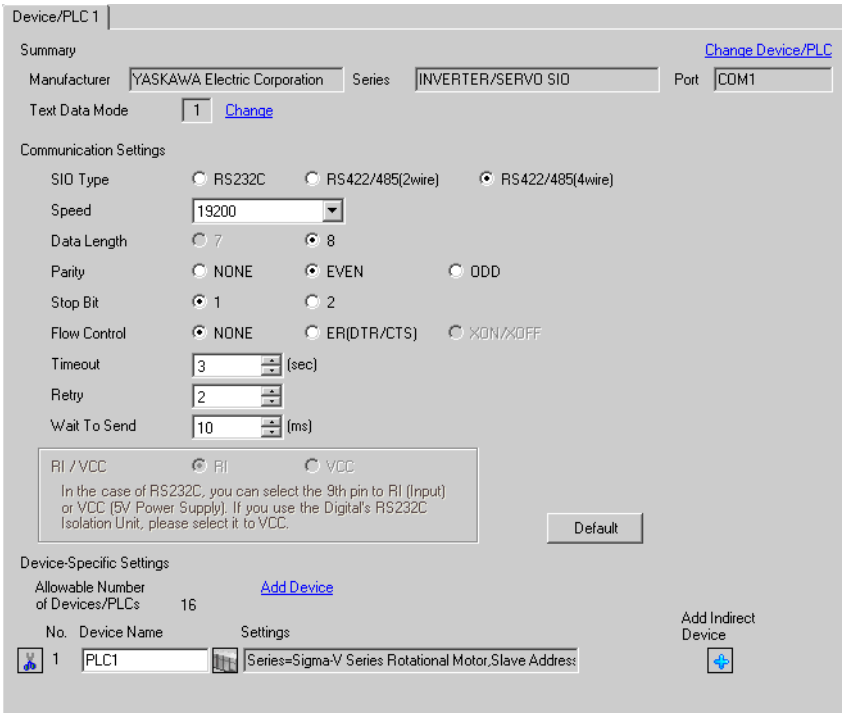
Parameter No.	Settings	Setup Description
b1-01	2	Frequency Reference Selection
b1-02	2	Run Command Selection
H5-01	01	Slave Address Setting (HEX)
H5-02	3	Communication Speed Selection
H5-03	1	Communication Parity Selection
H5-04	3	Stopping Method After Communication Error
H5-05	1	Communication Fault Detection Selection
H5-06	5	Drive Transmit Wait Time
H5-07	1	RTS Control Selection

6 Press the ENTER key.
7 Reboot the External Device.
This completes the setting of the External Device.

3.19 Setting Example 19

■ GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



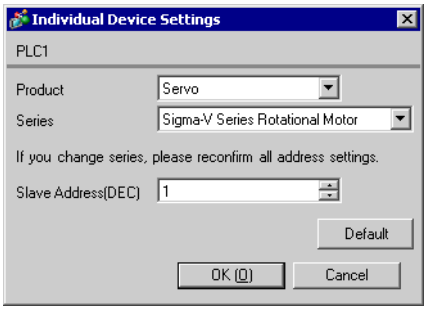
IMPORTANT

- To connect Σ-V series with 1:n connection, you need to set Wait To Send to 100ms or more.

◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



IMPORTANT

- To use Σ-V series, you need to set a Slave Address from "1" to "127."

■ External Device Settings

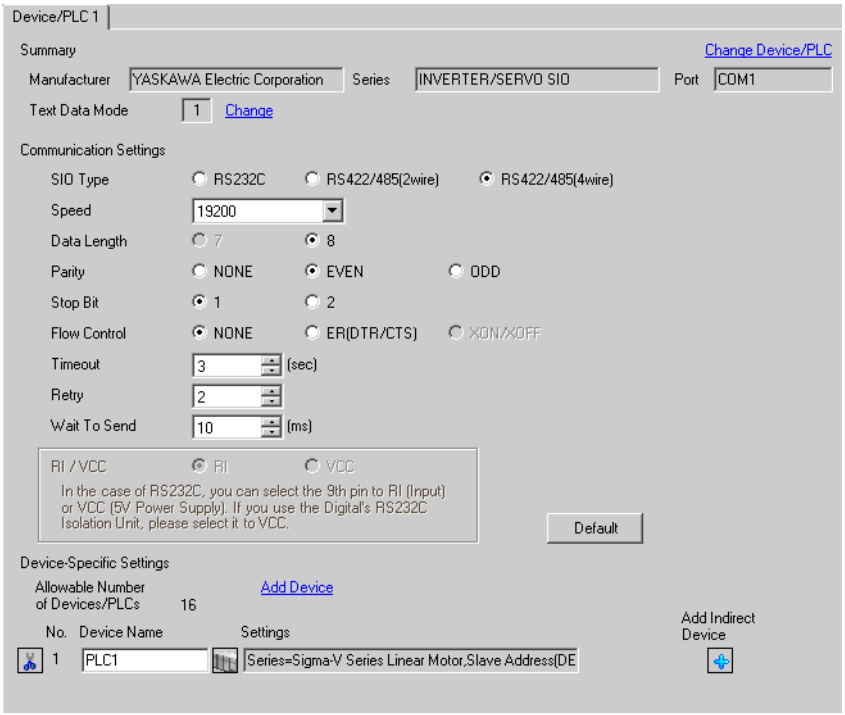
To configure communication settings, use the AC Servo Drive Engineering Tool (SigmaWin+). Refer to your External Device manual for details.

1 Select [Edit Parameters] from the [Parameter] menu to display the [Parameter Editing] dialog box.
2 Select [Pn010] on the [Function Selection(Pn0xx-)] tab and click [Edit].
3 Enter the slave address, "1H," in [Input value] and click [OK].
4 If the input address is correct, select the [Pn010] check box and click [Write].
Select [Software Reset] from the [Setup] menu to reboot the External Device as needed.
This completes the configuration of the External Device.

3.20 Setting Example 20

■ GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



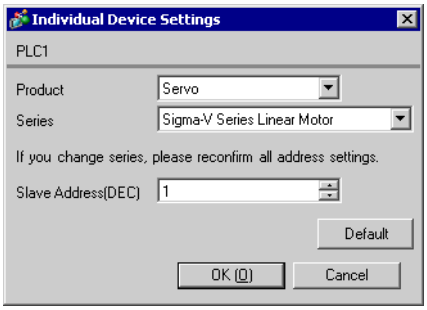
IMPORTANT

- To connect Σ-V series with 1:n connection, you need to set Wait To Send to 100ms or more.

◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



IMPORTANT

- To use Σ-V series, you need to set a slave address as the value between 1-127.

■ External Device Settings

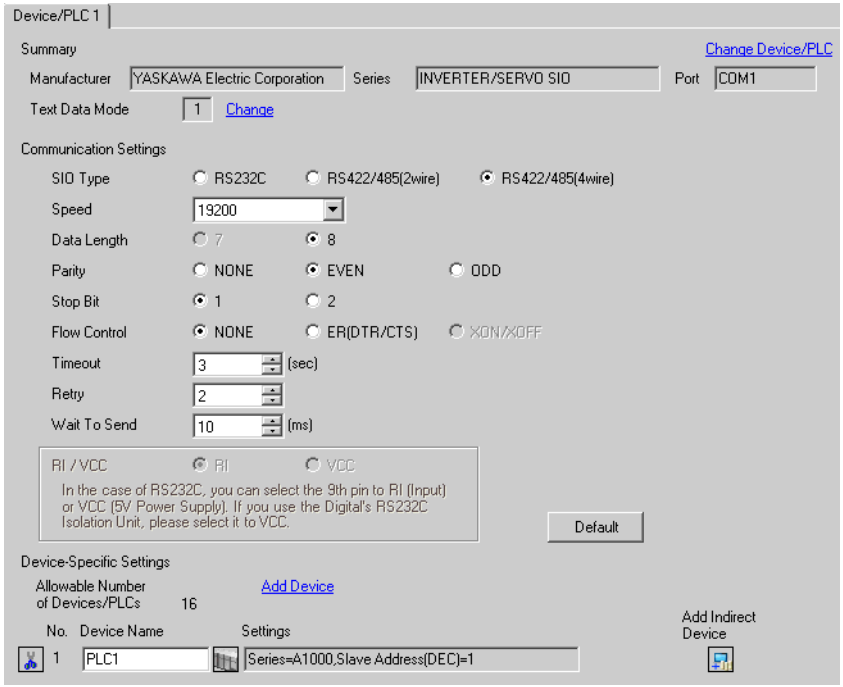
To configure communication settings, use the AC Servo Drive Engineering Tool (SigmaWin+). Refer to your External Device manual for details.

1 Select [Edit Parameters] from the [Parameter] menu to display the [Parameter Editing] dialog box.
2 Select [Pn010] on the [Function Selection(Pn0xx-)] tab and click [Edit].
3 Enter the slave address, "1H," in [Input value] and click [OK].
4 If the input address is correct, select the [Pn010] check box and click [Write].
Select [Software Reset] from the [Setup] menu to reboot the External Device as needed.
This completes the configuration of the External Device.

3.21 Setting Example 21

■ GP-Pro EX Settings

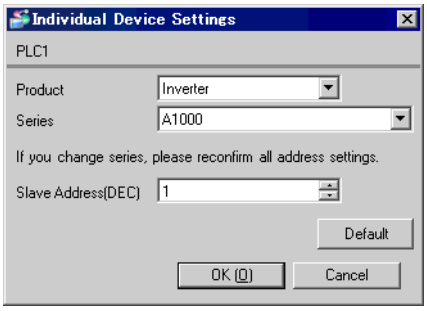
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the ENTER, Up, Down, or RESET key on the operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the Up or Down key to display the Parameter Setting Mode screen.
2 Press the ENTER key.
3 Press the Up or Down key to display the parameter you want to set.
4 Press the ENTER key.
5 Press the Up, Down, or RESET key to input the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Drive Slave Address (HEX)
H5-02	4	Communication Speed Selection (19200bps)
H5-03	1	Communication Parity Selection (Even parity)
H5-06	5	Drive Transmit Wait Time (ms)
H5-07	0	RTS Control Selection (Disabled)

NOTE
- To connect A1000 series with 1:n connection, you need to set RTC Control Selection to "1."

6 Press the ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

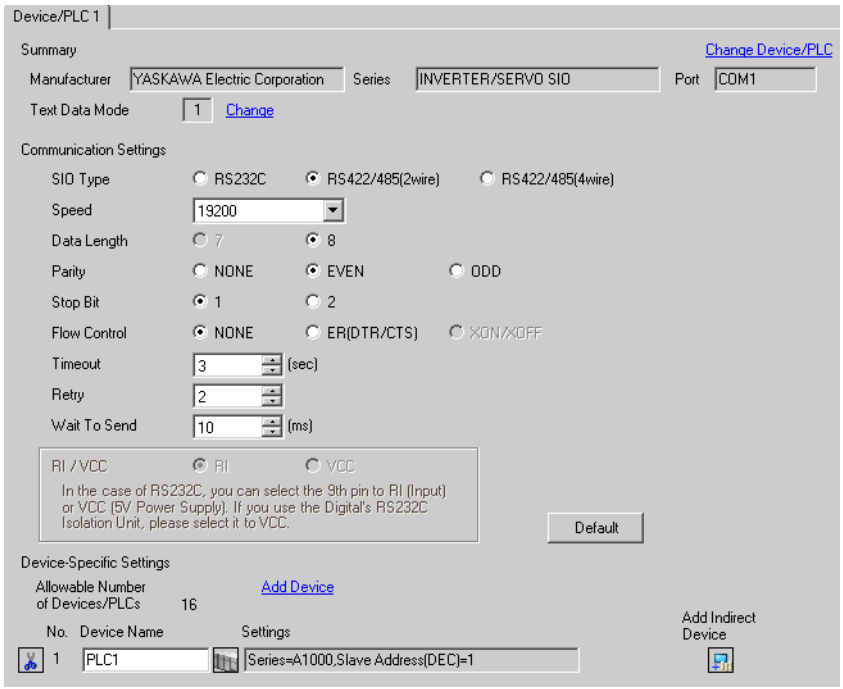
NOTE
- The following items are fixed.

Setup Items	Setting Value
Data Length	8 bits
Stop	1 bit

3.22 Setting Example 22

■ GP-Pro EX Settings

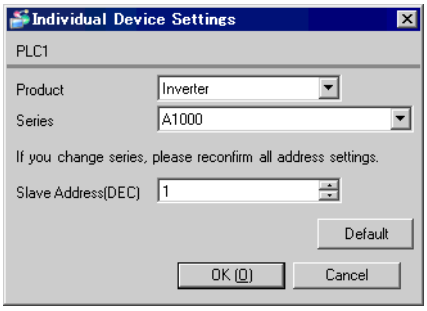
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the ENTER, Up, Down, or RESET key on the operator located on the front of the inverter. Refer to your External Device manual for details.

1 Press the Up or Down key to display the Parameter Setting Mode screen.
2 Press the ENTER key.
3 Press the Up or Down key to display the parameter you want to set.
4 Press the ENTER key.
5 Press the Up, Down, or RESET key to input the setting value.

Parameter No.	Settings	Setup Description
H5-01	01	Drive Slave Address (HEX)
H5-02	4	Communication Speed Selection (19200bps)
H5-03	1	Communication Parity Selection (Even parity)
H5-06	5	Drive Transmit Wait Time (ms)
H5-07	1	RTS Control Selection (Enabled)

6 Press the ENTER key.
7 Reboot the External Device.

This completes the setting of the External Device.

NOTE

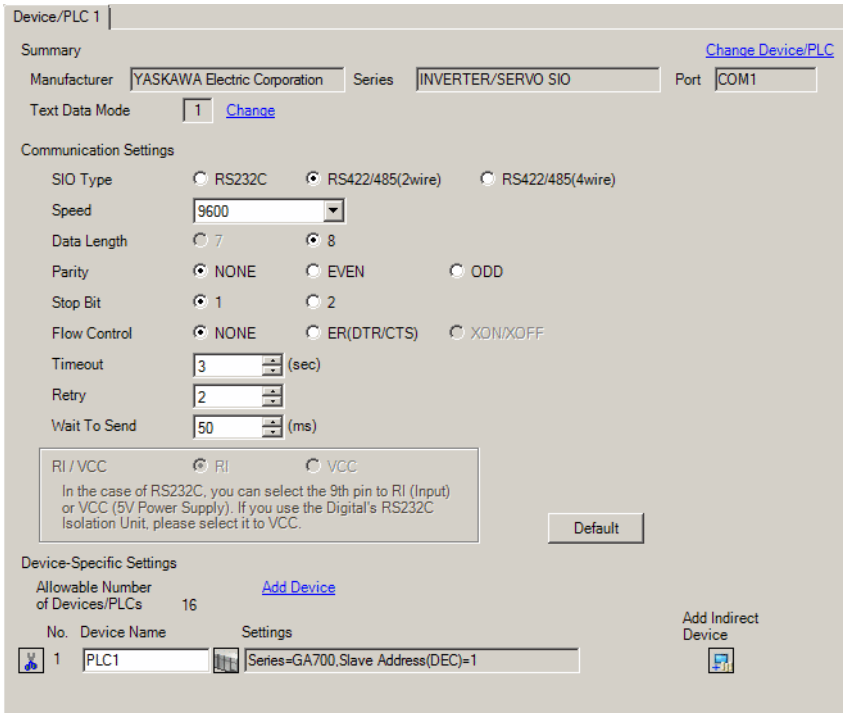
- The following items are fixed.

Setup Items	Setting Value
Data Length	8 bits
Stop	1 bit

3.23 Setting Example 23

■ GP-Pro EX Settings

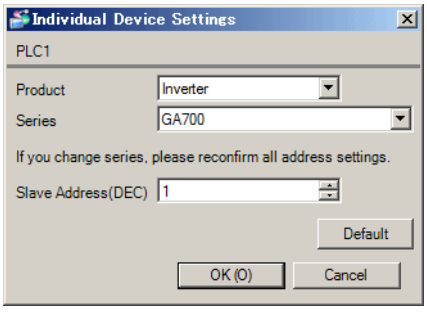
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



■ External Device Settings

To configure communication settings, use the ENTER, Up, Down, F1, or F2 key on the front of the panel.
Refer to your External Device manual for details.

1 Press the F2 key to display the Home screen.
2 Press the F2 key to display the Menu screen.
3 Press the Up or Down key to select [Parameters].
4 Press the ENTER key.
5 Press the Up or Down key to select [H Terminal Functions].
6 Press the ENTER key.
7 Press the Up or Down key to select [H5: MEMOBUS/Modbus Communication].
8 Press the ENTER key.
9 Press the Up, Down, or ENTER key to input the setting value.

Parameter No.	Settings	Setup Description
H5-01	1	Drive Node Address (HEX)
H5-02	3	Communication Speed (9600 bps)
H5-03	0	Communication Parity (No parity)

10 Press the ENTER key.
11 Press the F1 key to return to the Home screen.
12 Restart the External Device.
Setup for the External Device is now complete.

NOTE

- Settings for the following items are fixed.

Setup Items	Setting Value
Data Length	8 bit
Stop	1 bit

4 Setup Items

Set up the Display's communication settings in GP-Pro Ex or in the Display's offline mode.

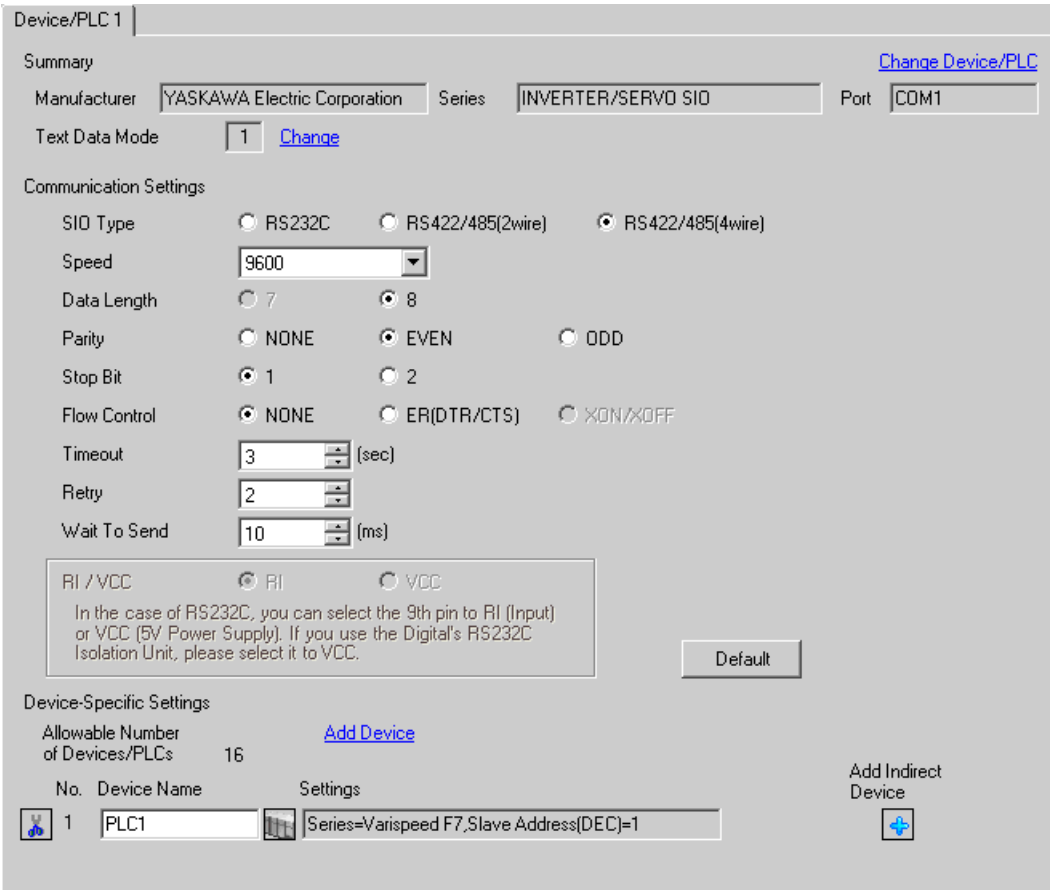
The setting of each parameter must match that of the External Device.

☞"3 Communication Settings" (page 10)

4.1 Setup Items in GP-Pro EX

■ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. IMPORTANT In the communication settings, set [SIO Type] correctly according to the serial interface specifications of the Display. If you select an SIO type that the serial interface does not support, proper operation cannot be guaranteed. Refer to your Display manual for details on the serial interface specifications.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Display data length.

Setup Items	Setup Description
Parity	Select how to check parity.
Stop Bit	Select stop bit length.
Flow Control	Select the communication control method to prevent overflow of transmission and reception data.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

NOTE

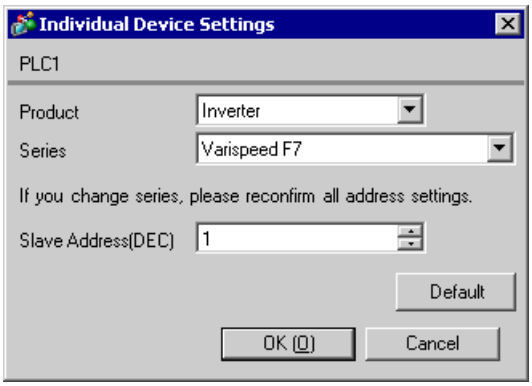
- Refer to the GP-Pro EX Reference Manual for Indirect Device.

Cf. GP-Pro EX Reference Manual "Changing the Device/PLC at Runtime (Indirect Device)"

■ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



Setup Items	Setup Description
Product	Select the product name of the External Device.
Series	Select the series of the External Device.
Slave Address	Enter the slave address of the External Device, from 1 to 255 (DEC).

4.2 Setup Items in Offline Mode

NOTE

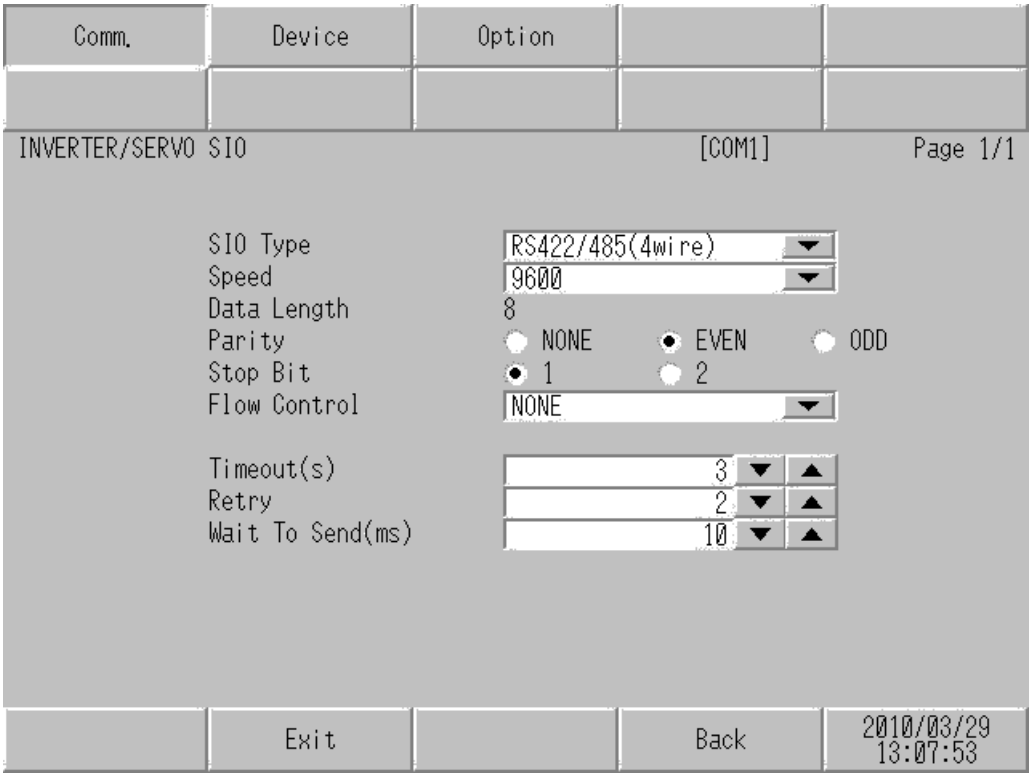
- Refer to the Maintenance/Troubleshooting guide for information on how to enter offline mode or about the operation.

  Cf. Maintenance/Troubleshooting Guide "Offline Mode"

- The number of the setup items to be displayed for 1 page in the offline mode depends on the Display in use. Please refer to the Reference manual for details.

■ Communication Settings

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings] in offline mode. Touch the External Device you want to set from the display list.

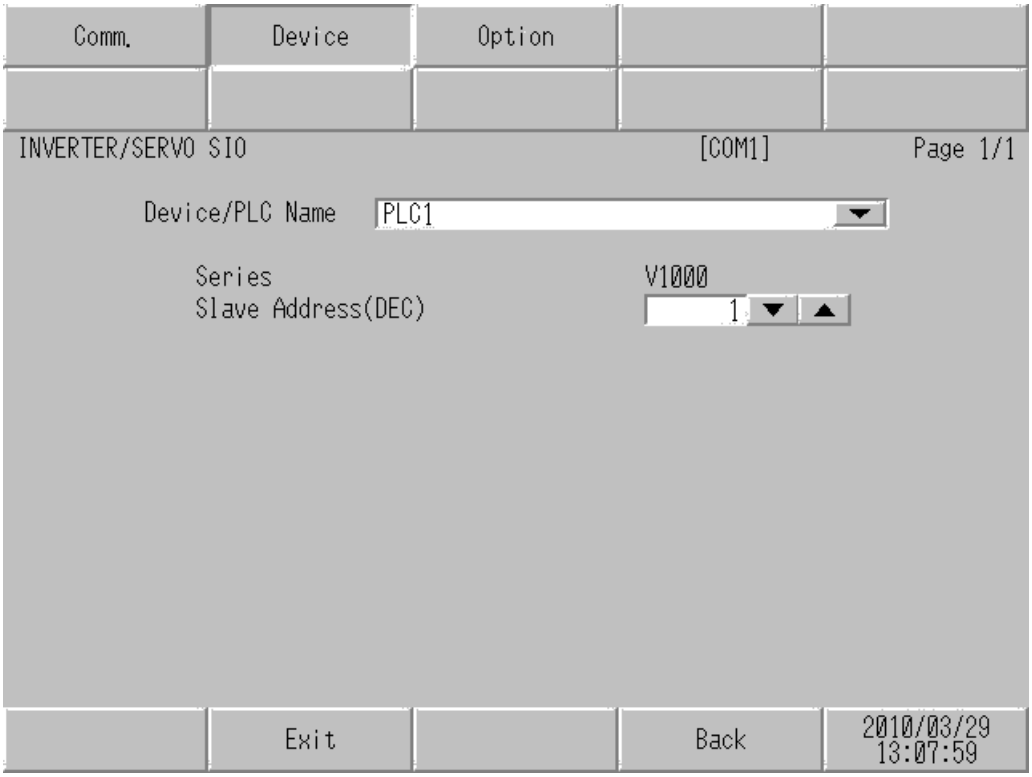


Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. **IMPORTANT** In the communication settings, set [SIO Type] correctly according to the serial interface specifications of the Display. If you select an SIO type that the serial interface does not support, proper operation cannot be guaranteed. Refer to your Display manual for details on the serial interface specifications.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Display data length.
Parity	Select how to check parity.

Setup Items	Setup Description
Stop Bit	Select stop bit length.
Flow Control	The communication control method to prevent overflow of transmission and reception data.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

■ Device Setting

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings]. Touch the External Device you want to set from the displayed list, and touch [Device].



Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. Device name is the title of a External Device set with GP-Pro EX. (Initial value [PLC1])
Series	Display the series of the External Device.
Slave Address	Enter the slave address of the External Device, from 1 to 255 (DEC).

5 Cable Diagrams

The following cable diagrams may be different from cable diagram recommended by YASKAWA Electric Corporation. Please be assured there is no operational problem in applying the cable diagrams shown in this manual.

- Be sure to isolate the communication wiring from the main circuit wiring and other power and electrical lines.
- The FG pin of the External Device body must be D-class grounded. Refer to your External Device manual for more details.
- The SG and FG are connected inside the Display. When connecting the External Device to the SG, design your system to avoid short-circuit loops.
- Connect an isolation unit if the communication is not stable due to noise or other factors.

Cable Diagram 1

Display (Connection Port)	Cable		Remarks
GP3000*1 (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST3000*2 (COM2) LT3000 (COM1) IPC*3	1A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 50m or less
	1B	User-created cable	
GP3000*4 (COM2)	1C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 50m or less
	1D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	1E	User-created cable	Cable length: 50m or less
GP4000*5 (COM2) GP-4201T (COM1) GP6000 (COM2) SP5000*6 (COM1/2) SP-5B00 (COM2) ST6000*7 (COM2) ST-6200 (COM1) STM6000 (COM1) STC6000 (COM1) ET6000*8 (COM2) PS6000 (Basic Box) (COM1/2)	1F	RS-422 terminal block conversion adapter by Pro-face PFXZCBADTM1*9 + User-created cable	Cable length: 50m or less
	1B	User-created cable	

Display (Connection Port)	Cable		Remarks
PE-4000B*10 PS5000*10 PS6000 (Optional Interface)*10	1G	User-created cable	Cable length: 50m or less

*1 All GP3000 models except AGP-3302B

*2 Except AST-3211A and AST-3302B

*3 Only the COM port which can communicate by RS-422/485 (4wire) can be used. (Except PE-4000B, PS5000, and PS6000)
☞■ IPC COM Port (page 6)

*4 All GP3000 models except GP-3200 series and AGP-3302B

*5 All GP4000 models except GP-4100 series, GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*6 Except SP-5B00

*7 Except ST-6200

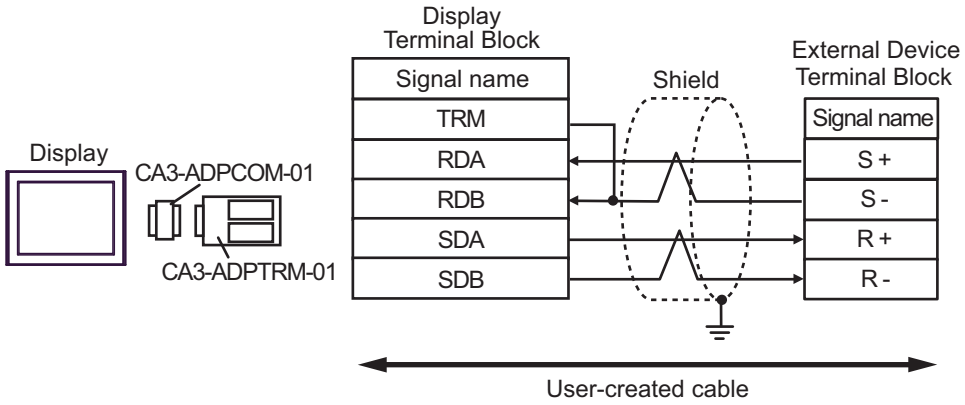
*8 Due to the COM port specifications, flow control is not possible. Omit wiring the control pins on the Display side of the cable diagram.

*9 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 1A.

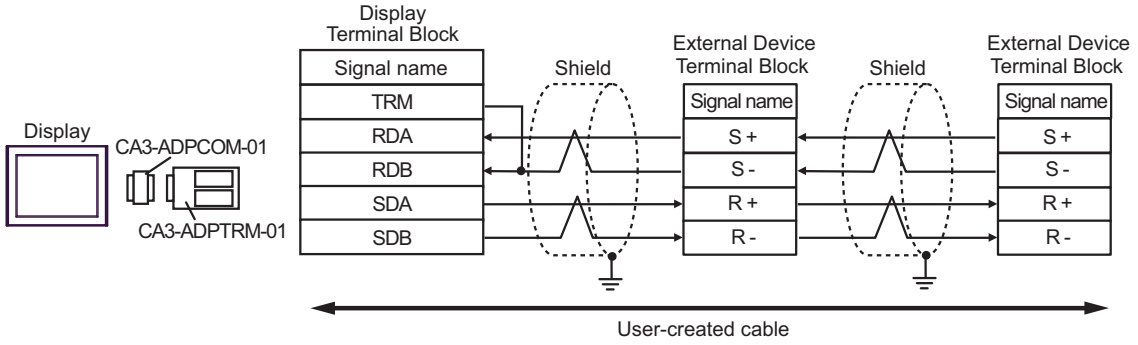
*10 Only the COM port which can communicate by RS-422/485 (4wire) can be used.
☞■ IPC COM Port (page 6)

1A)

- 1:1 Connection



- 1:n Connection

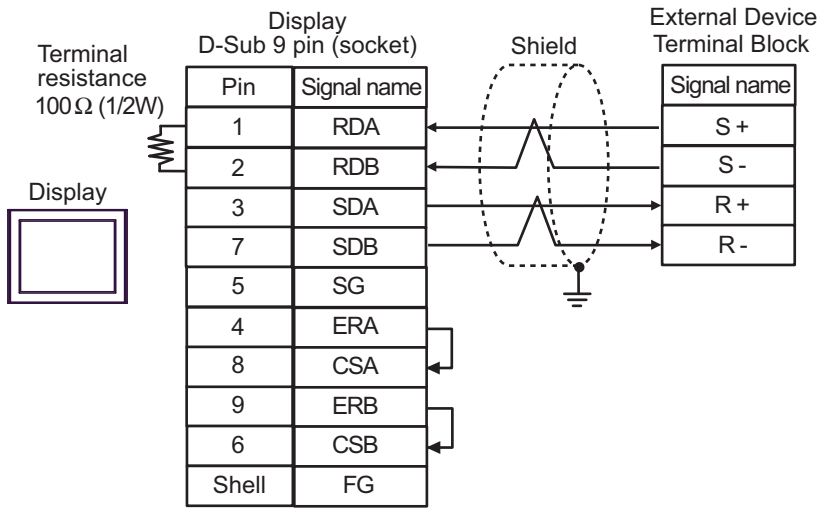


NOTE

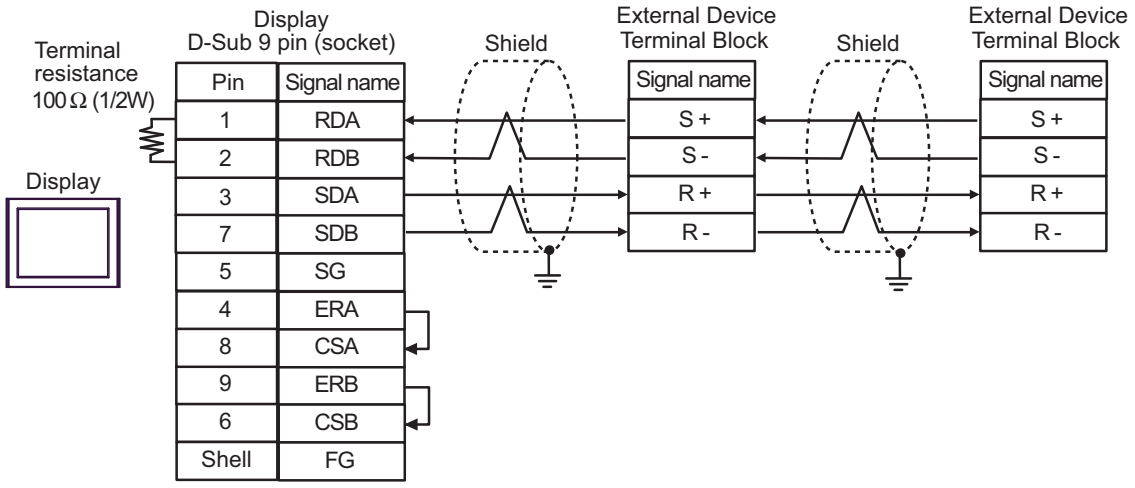
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

1B)

- 1:1 Connection



- 1:n Connection

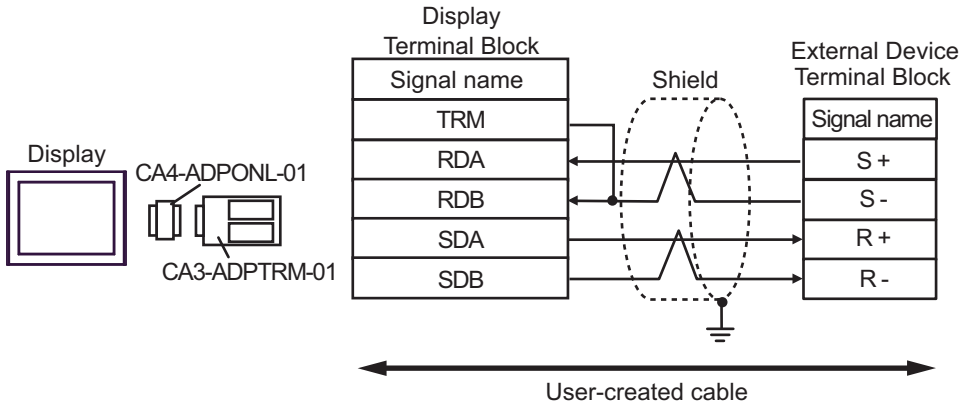


NOTE

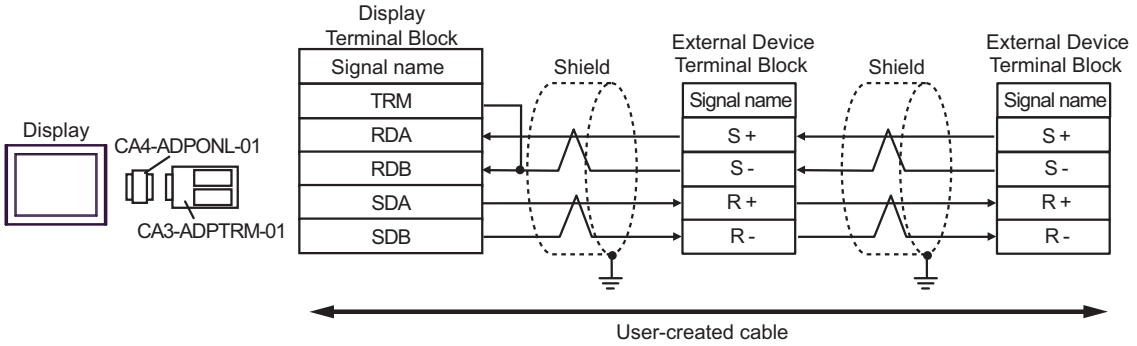
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

1C)

- 1:1 Connection



- 1:n Connection

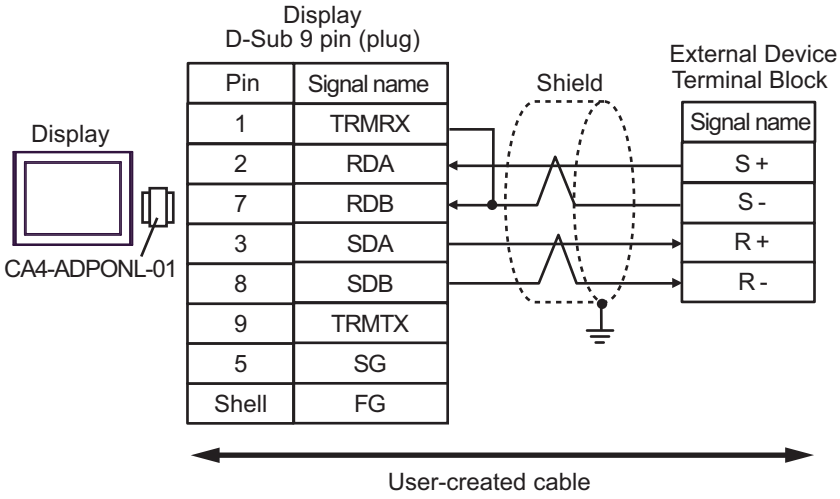


NOTE

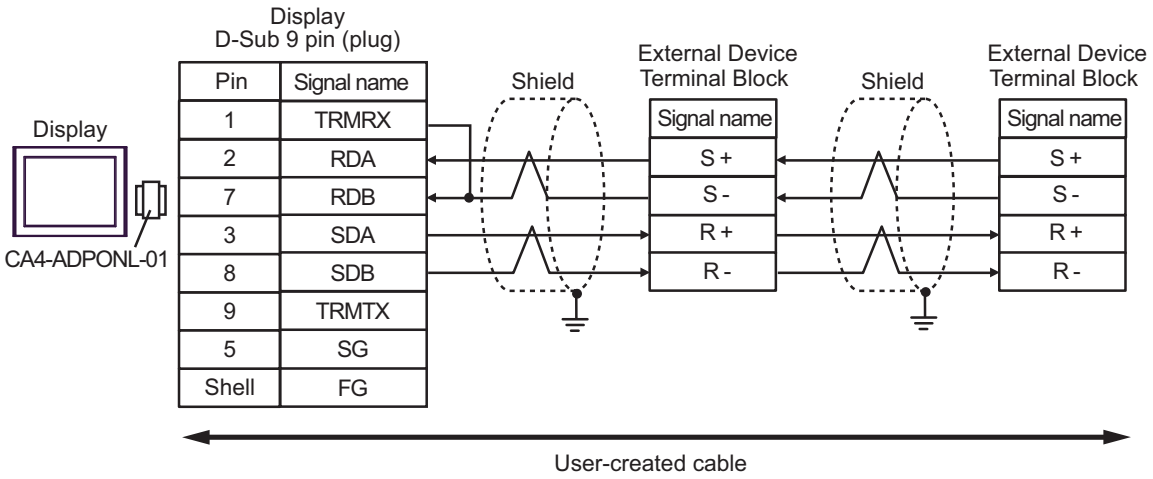
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

1D)

- 1:1 Connection



- 1:n Connection

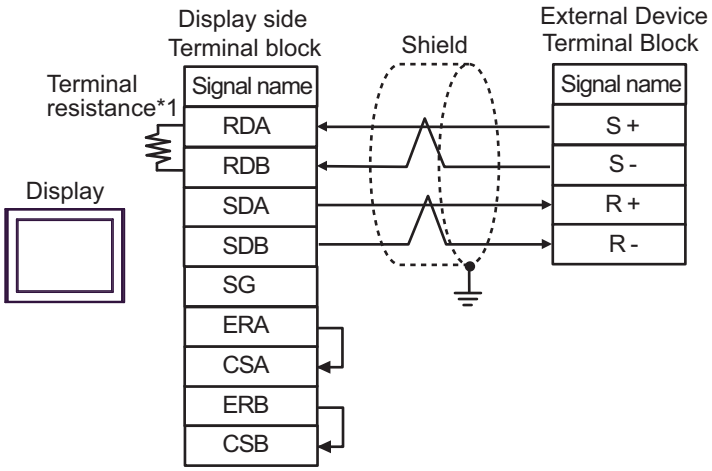


NOTE

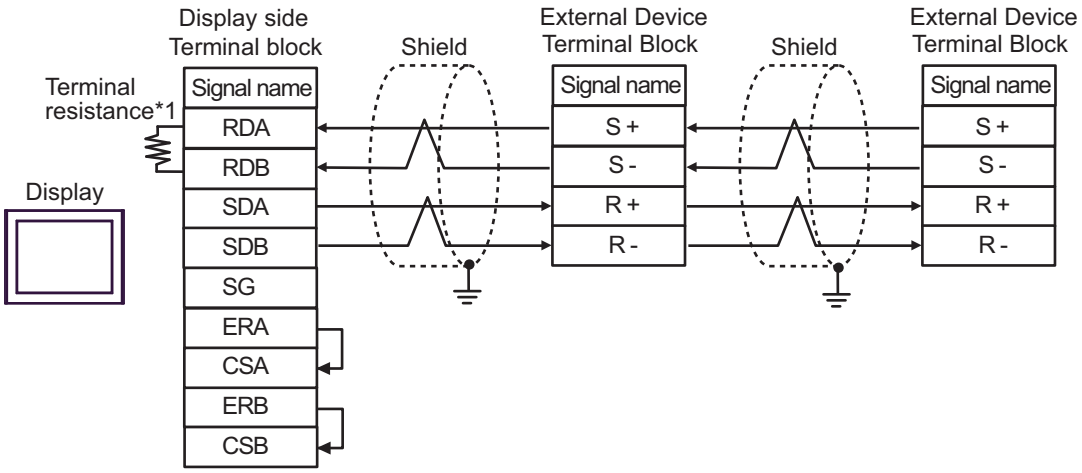
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

1E)

- 1:1 Connection



- 1:n Connection



NOTE

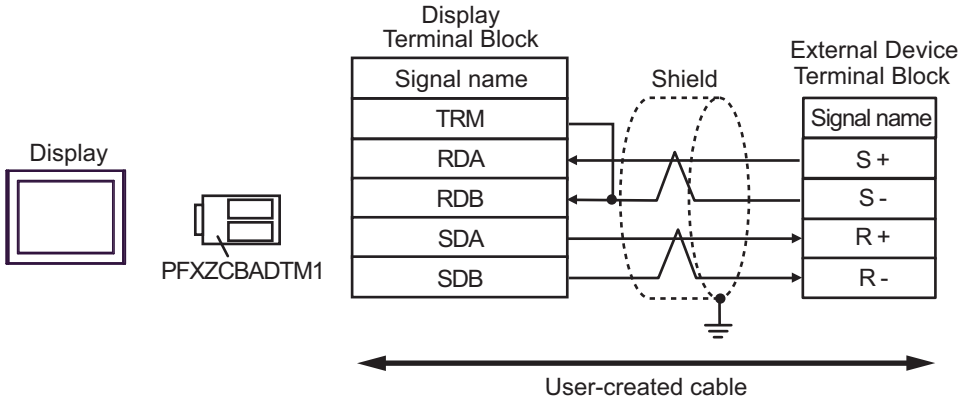
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

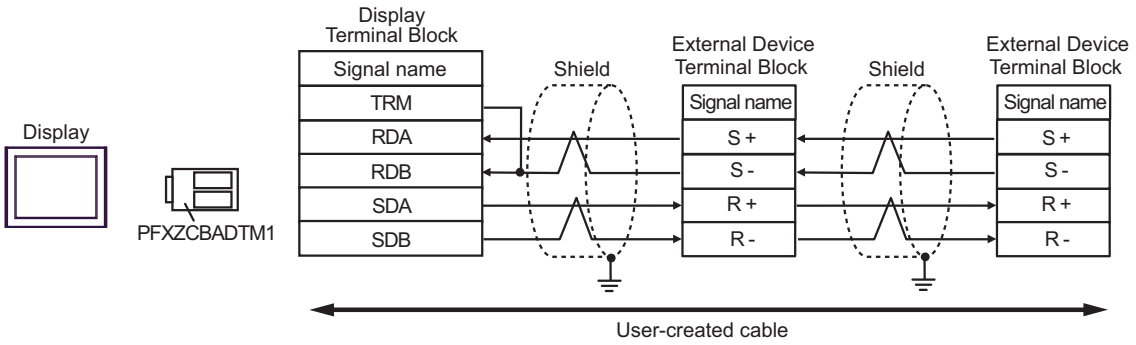
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

1F)

- 1:1 Connection



- 1:n Connection

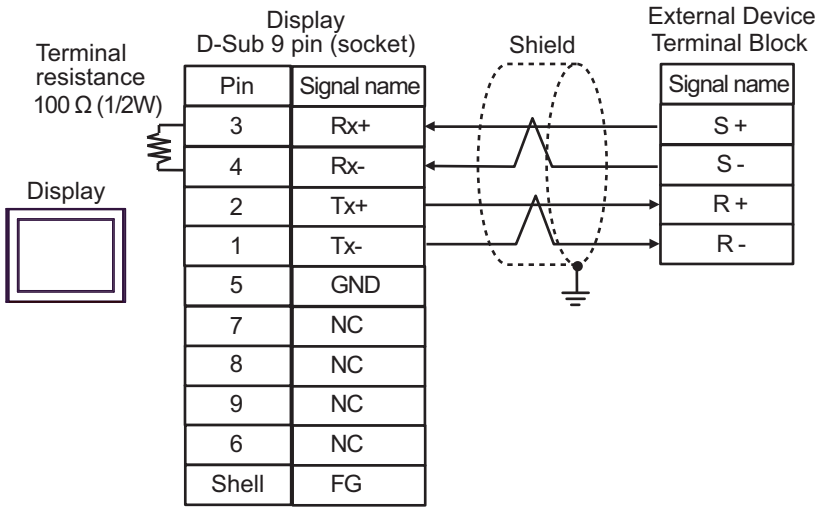


NOTE

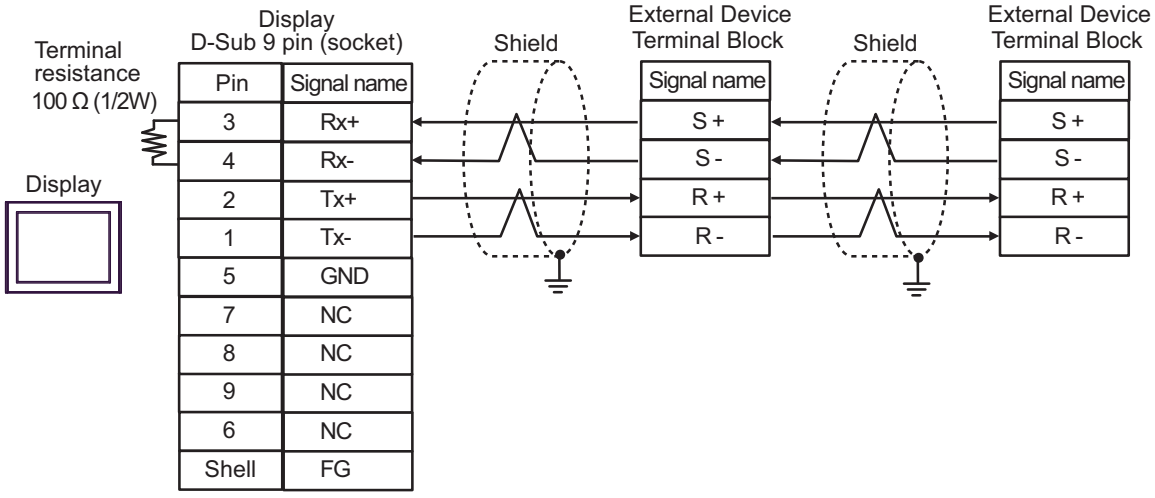
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

1G)

- 1:1 Connection



- 1:n Connection



NOTE

- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

Cable Diagram 2

Display (Connection Port)	Cable		Remarks
GP3000[*1] (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST3000[*2] (COM2) LT3000 (COM1)	2A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 50m or less
	2B	User-created cable	
GP3000[*3] (COM2)	2C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 50m or less
	2D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
IPC[*4]	2E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 50m or less
	2F	User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	2G	User-created cable	Cable length: 50m or less
GP-4107 (COM1) GP-4*03T[*5] (COM2) GP-4203T (COM1)	2H	User-created cable	Cable length: 50m or less
GP4000[*6] (COM2) GP-4201T (COM1) GP6000 (COM2) SP5000[*7] (COM1/2) SP-5B00 (COM2) ST6000[*8] (COM2) ST-6200 (COM1) STM6000 (COM1) STC6000 (COM1) ET6000[*9] (COM2) PS6000 (Basic Box) (COM1/2)	2I	RS-422 terminal block conversion adapter by Pro-face PFXZCBADTM1[*10] + User-created cable	Cable length: 50m or less
	2B	User-created cable	
LT-4*01TM (COM1) LT-Rear Module (COM1)	2J	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	Cable length: 50m or less

Display (Connection Port)	Cable		Remarks
PE-4000B*11 PS5000*11 PS6000 (Optional Interface)*11	2K	User-created cable	Cable length: 50m or less

*1 All GP3000 models except AGP-3302B

*2 Except AST-3211A and AST-3302B

*3 All GP3000 models except GP-3200 series and AGP-3302B

*4 Only the COM port which can communicate by RS-422/485 (2wire) can be used. (Except PE-4000B, PS5000, and PS6000)
☞ ■ IPC COM Port (page 6)

*5 Except GP-4203T

*6 All GP4000 models except GP-4100 series, GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*7 Except SP-5B00

*8 Except ST-6200

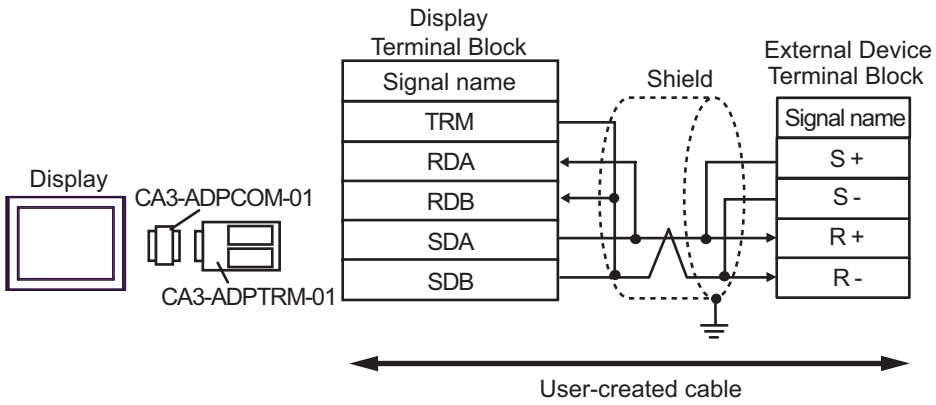
*9 Due to the COM port specifications, flow control is not possible. Omit wiring the control pins on the Display side of the cable diagram.

*10 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 2A.

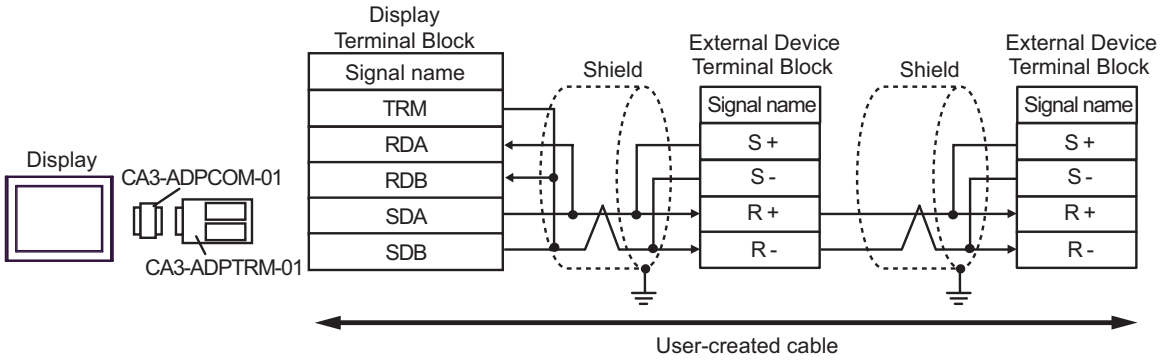
*11 Only the COM port which can communicate by RS-422/485 (2wire) can be used.
☞ ■ IPC COM Port (page 6)

2A)

- 1:1 Connection



- 1:n Connection

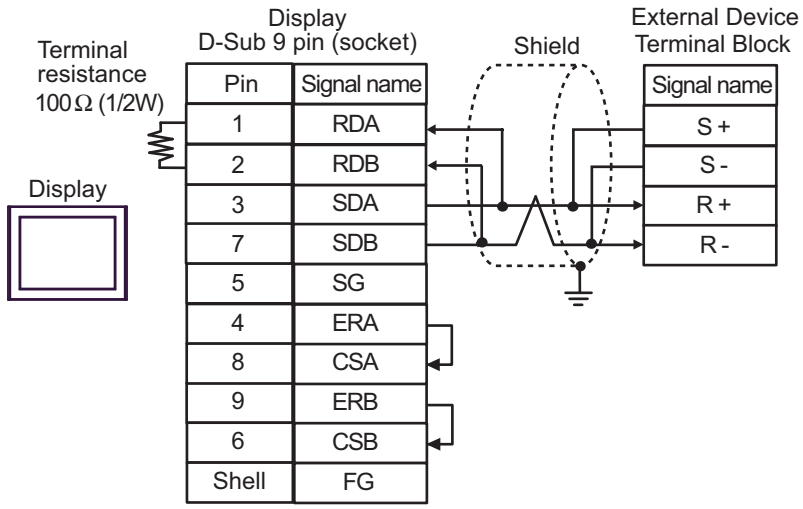


NOTE

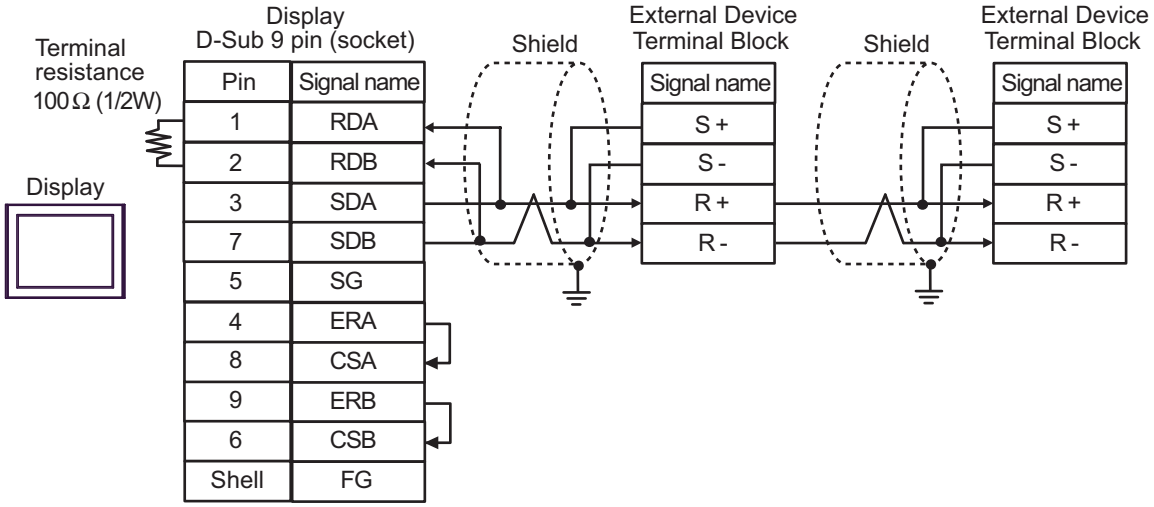
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2B)

- 1:1 Connection



- 1:n Connection

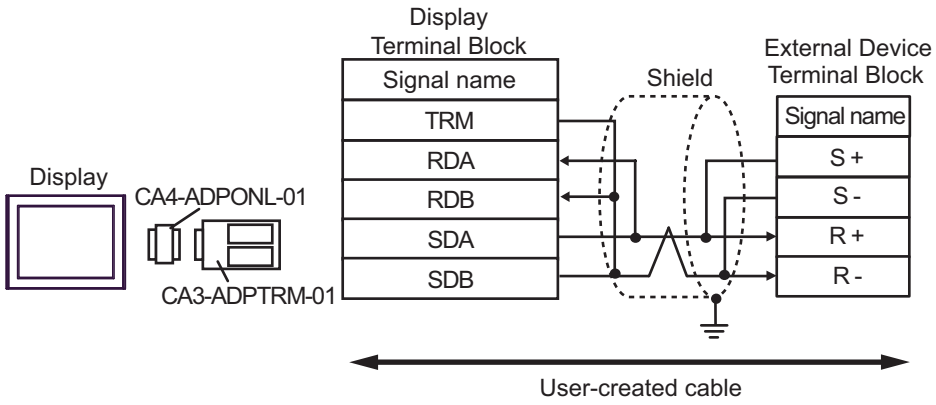


NOTE

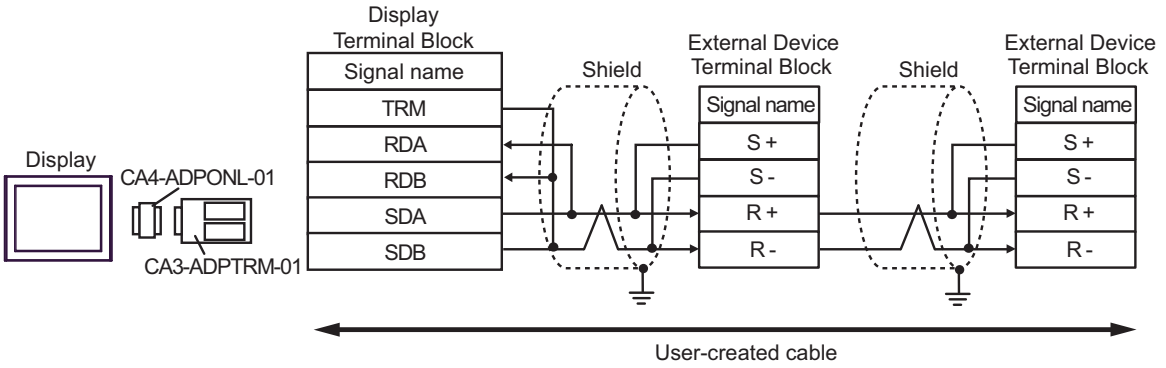
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2C)

- 1:1 Connection



- 1:n Connection

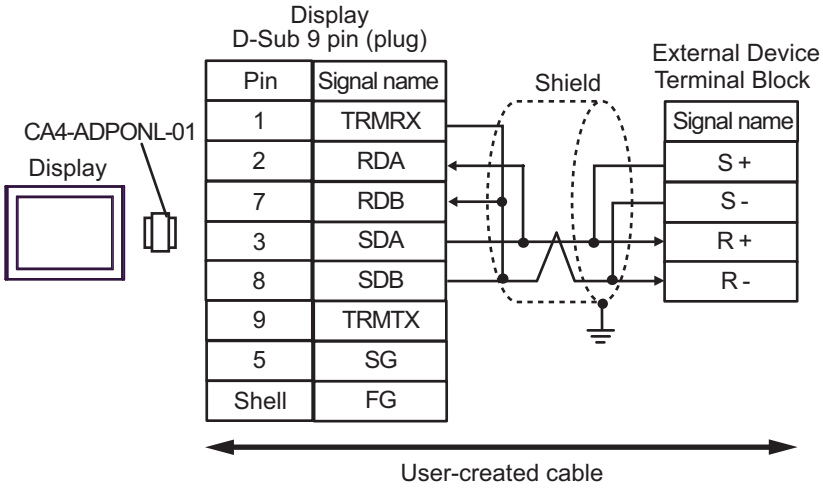


NOTE

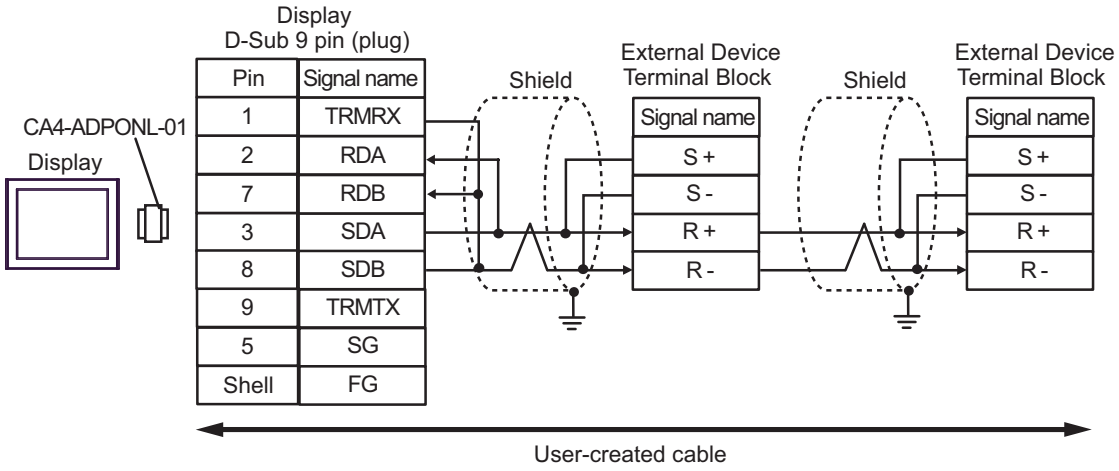
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2D)

- 1:1 Connection



- 1:n Connection

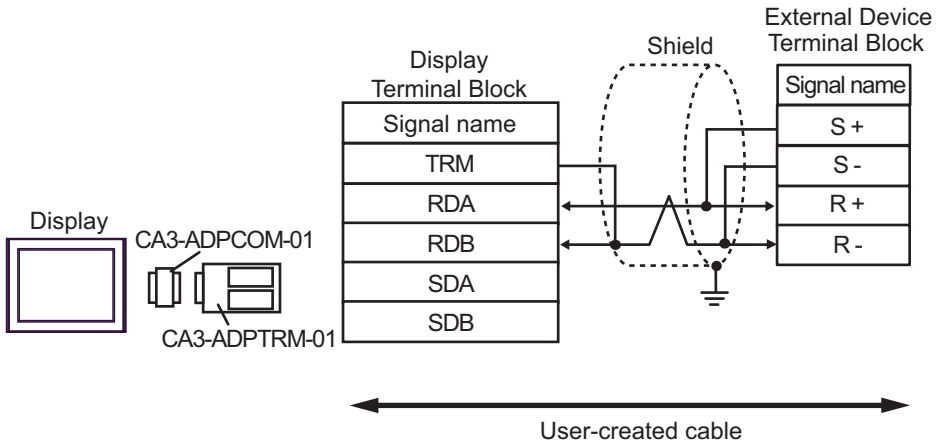


NOTE

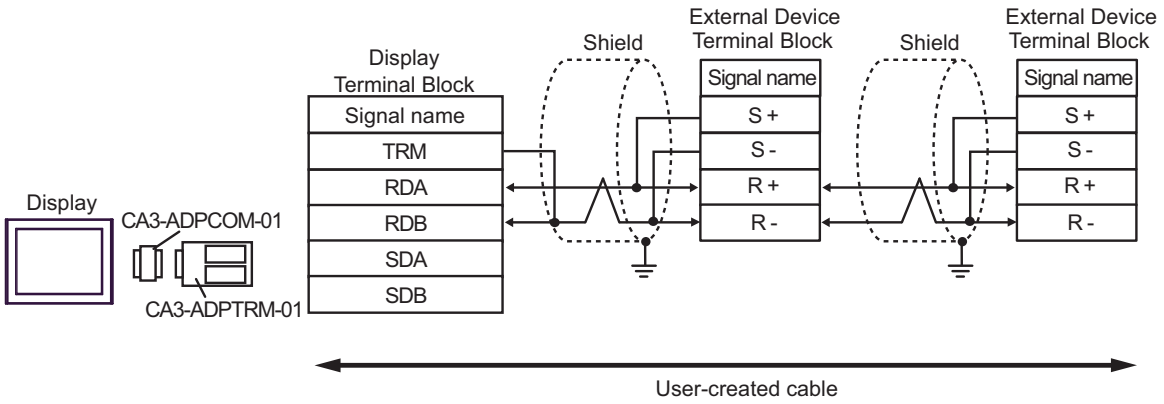
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2E)

- 1:1 Connection



- 1:n Connection

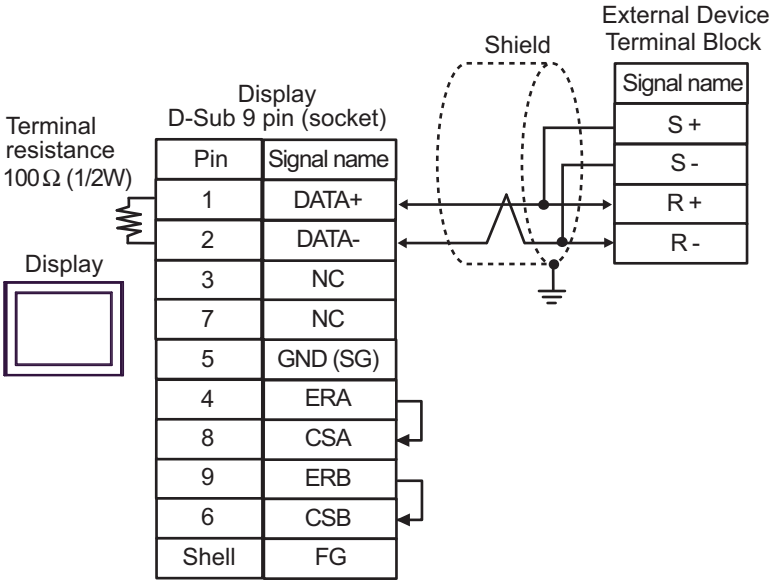


NOTE

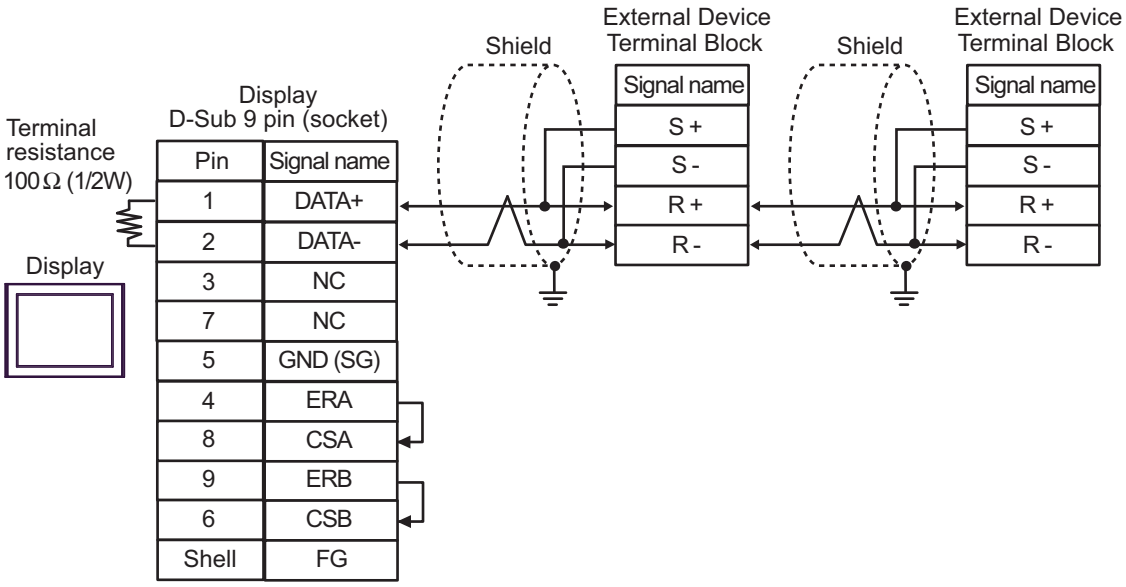
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2F)

- 1:1 Connection



- 1:n Connection

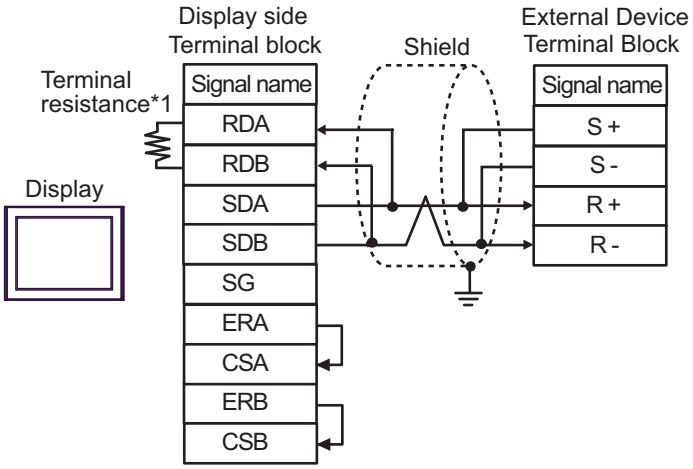


NOTE

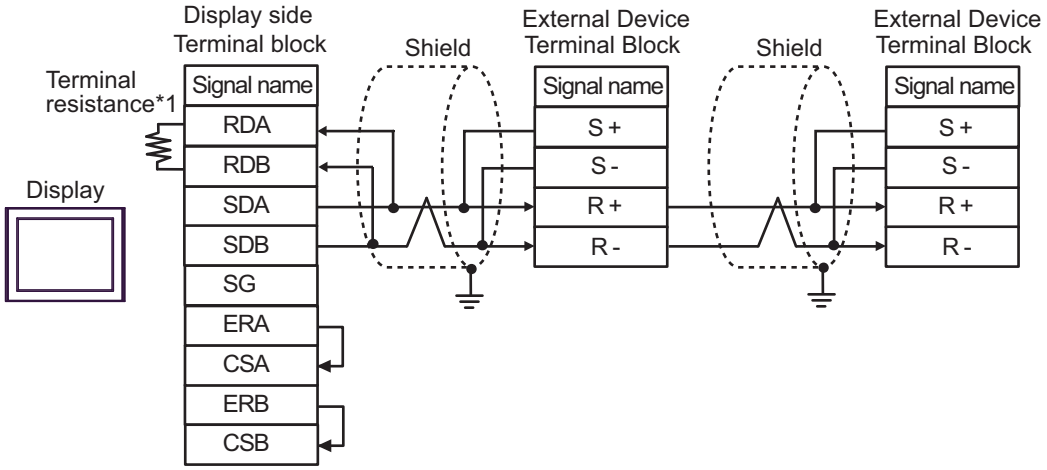
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2G)

- 1:1 Connection



- 1:n Connection



NOTE

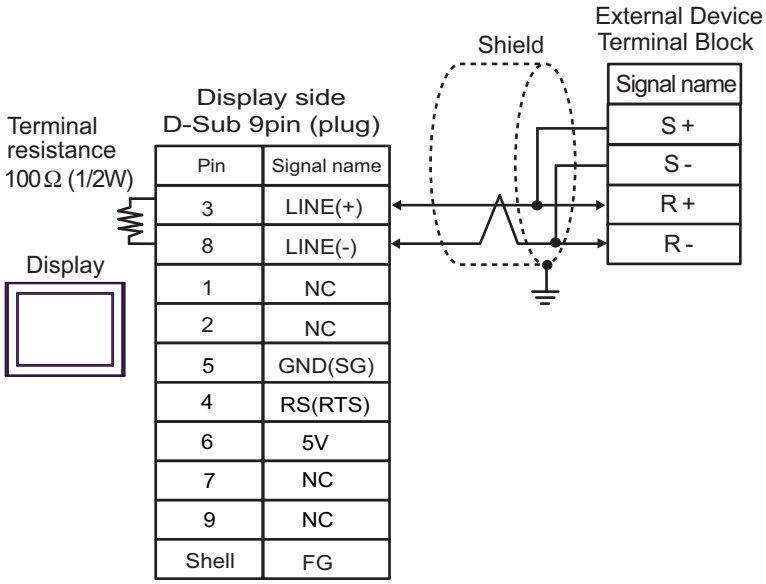
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

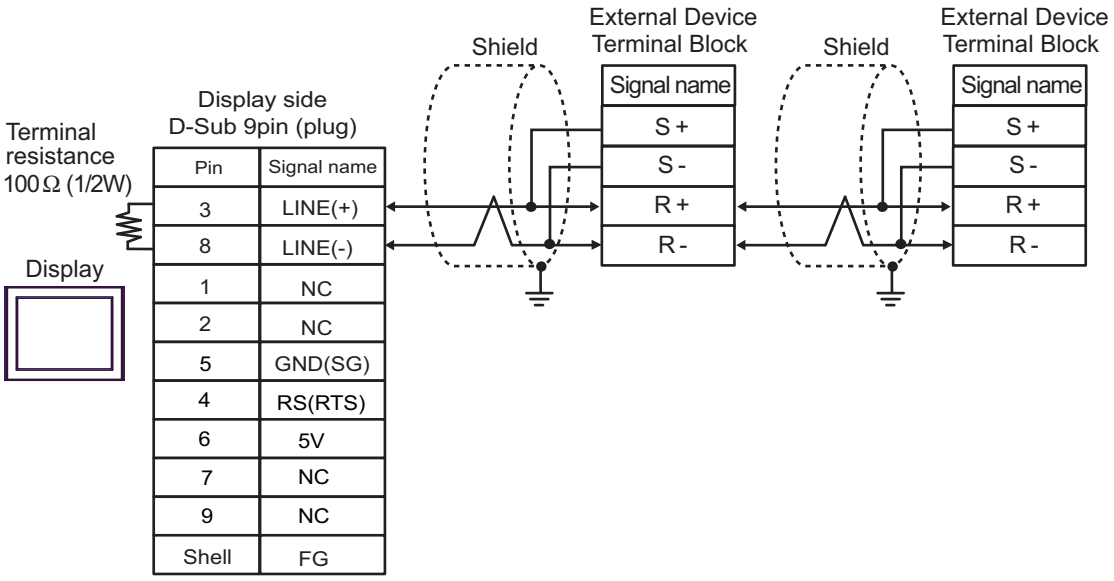
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

2H)

- 1:1 Connection



- 1:n Connection



IMPORTANT

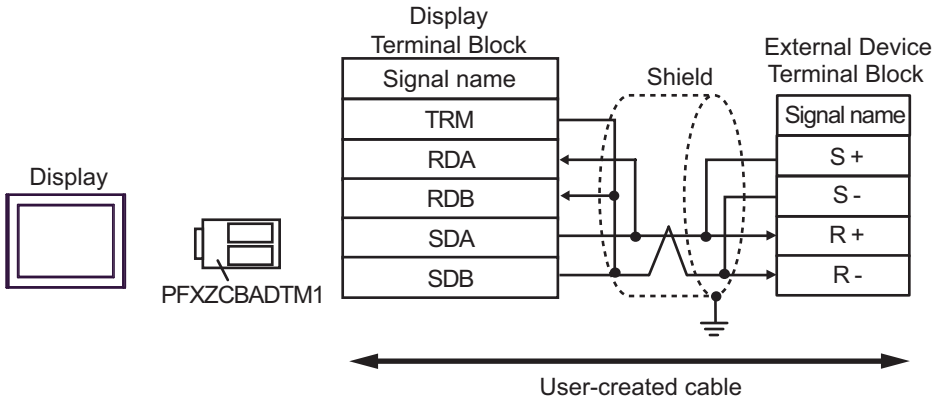
- The 5V output (Pin #6) on the Display is the power for the Siemens AG's PROFIBUS connector. Do not use it for other devices.

NOTE

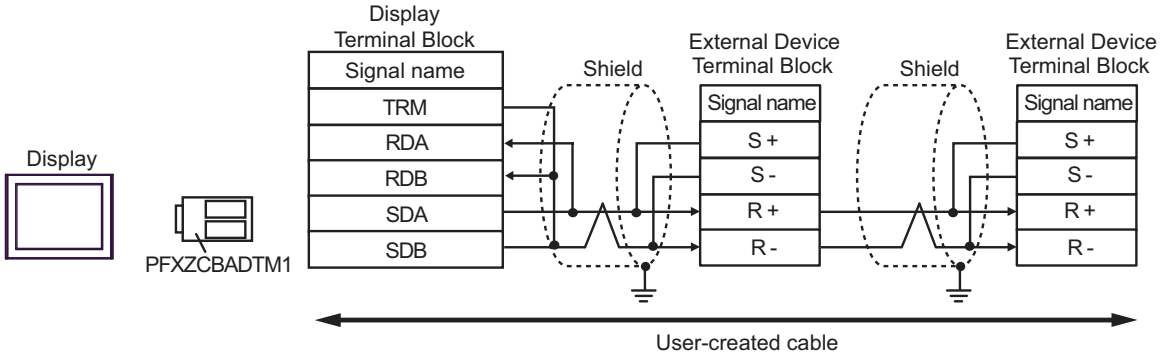
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.
- In COM on the GP-4107, the SG and FG terminals are isolated.

2I)

- 1:1 Connection



- 1:n Connection

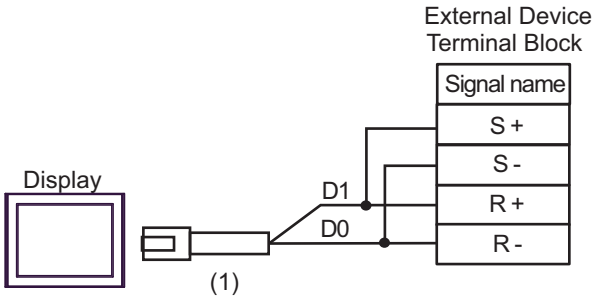


NOTE

- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2J)

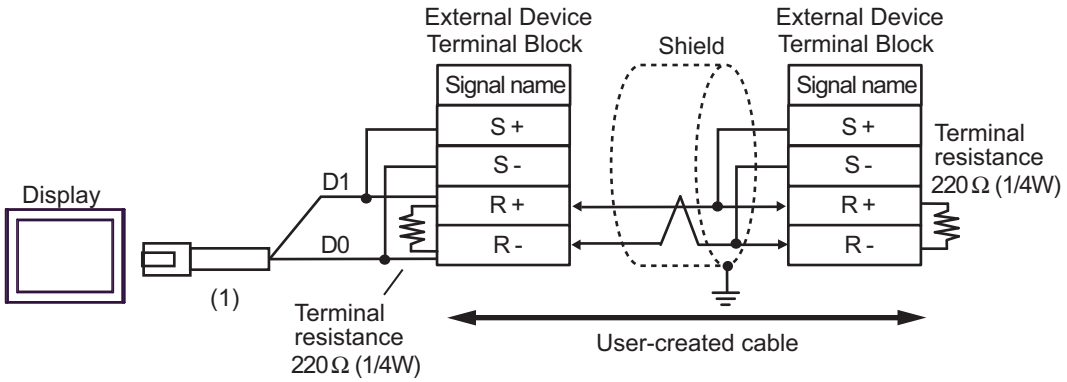
- 1:1 Connection



NOTE

- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

- 1:n Connection



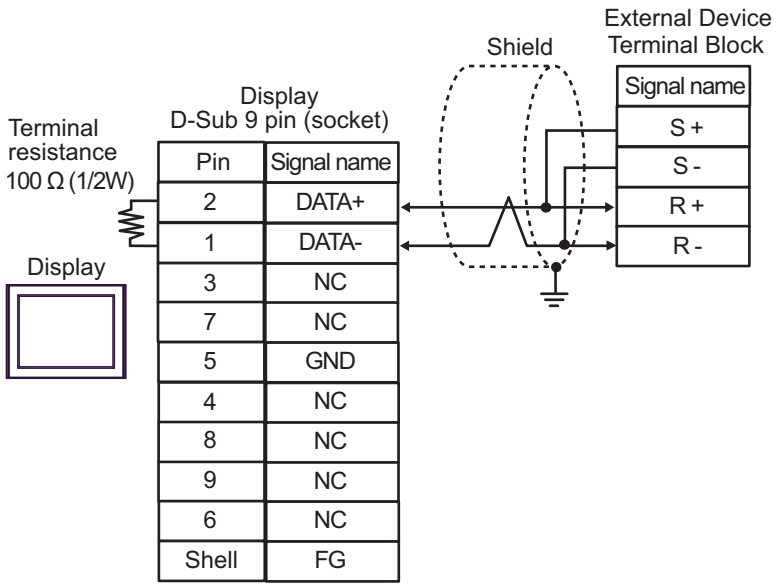
NOTE

- For the shield ground, be sure to use the ground terminal on the External Device.

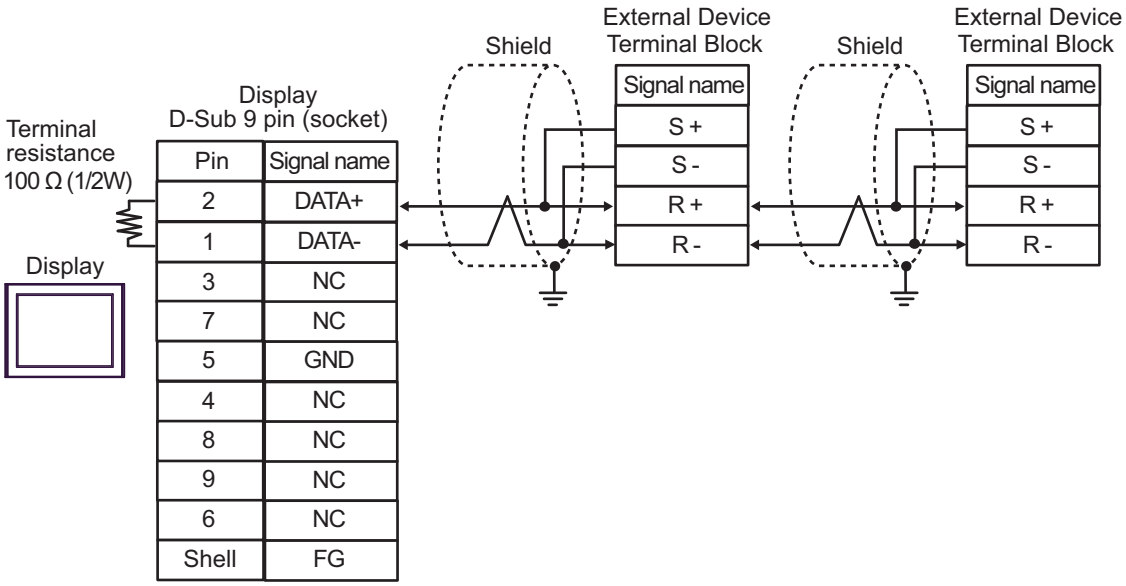
Legend	Name	Notes
(1)	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	

2K)

- 1:1 Connection



- 1:n Connection



NOTE

- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

Cable Diagram 3

Display (Connection Port)	Cable		Remarks
GP3000[*1] (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST3000[*2] (COM2) LT3000 (COM1) IPC[*3]	3A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 30m or less
	3B	User-created cable	
GP3000[*4] (COM2)	3C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 30m or less
	3D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	3E	User-created cable	Cable length: 30m or less
GP4000[*5] (COM2) GP-4201T (COM1) GP6000 (COM2) SP5000[*6] (COM1/2) SP-5B00 (COM2) ST6000[*7] (COM2) ST-6200 (COM1) STM6000 (COM1) STC6000 (COM1) ET6000[*8] (COM2) PS6000 (Basic Box) (COM1/2)	3F	RS-422 terminal block conversion adapter by Pro-face PFXZCBADTM1[*9] + User-created cable	Cable length: 30m or less
	3B	User-created cable	
PE-4000B[*10] PS5000[*10] PS6000 (Optional Interface)[*10]	3G	User-created cable	Cable length: 30m or less

*1 All GP3000 models except AGP-3302B

*2 Except AST-3211A and AST-3302B

*3 Only the COM port which can communicate by RS-422/485 (4wire) can be used. (Except PE-4000B, PS5000, and PS6000)
☞■ IPC COM Port (page 6)

*4 All GP3000 models except GP-3200 series and AGP-3302B

*5 All GP4000 models except GP-4100 series, GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*6 Except SP-5B00

*7 Except ST-6200

*8 Due to the COM port specifications, flow control is not possible. Omit wiring the control pins on the Display side of the cable diagram.

*9 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 3A.

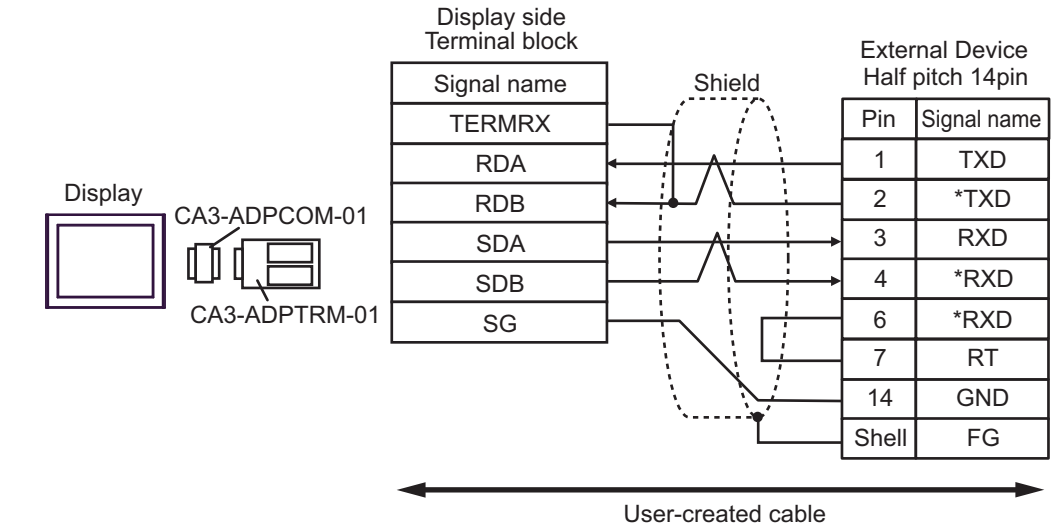
*10 Only the COM port which can communicate by RS-422/485 (4wire) can be used.
☞■ IPC COM Port (page 6)

NOTE

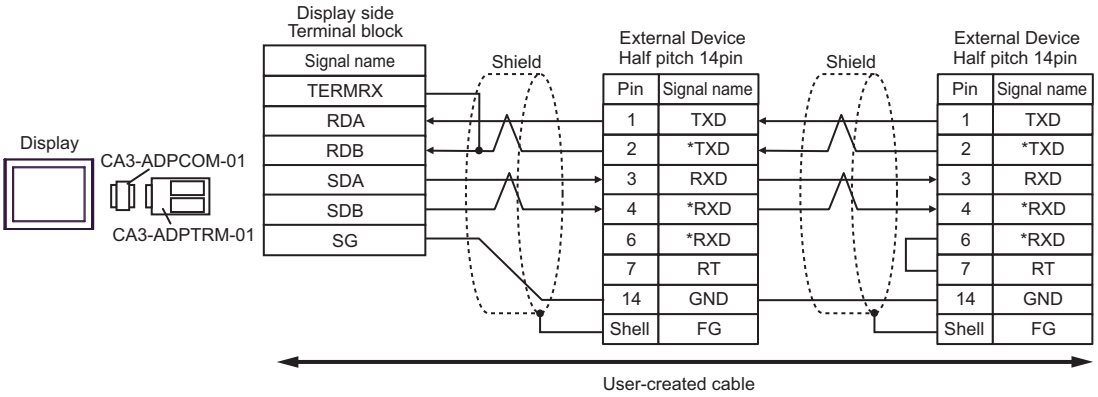
- Maximum cable length is 30m, however, communication may not be possible even when the cable length is less than 30m depending on the use environment. Verify the cable communicates correctly before use.
- To connect Σ-V series with 1:n connection, you need to set Wait To Send to 100ms or more.

3A)

- 1:1 Connection



- 1:n Connection

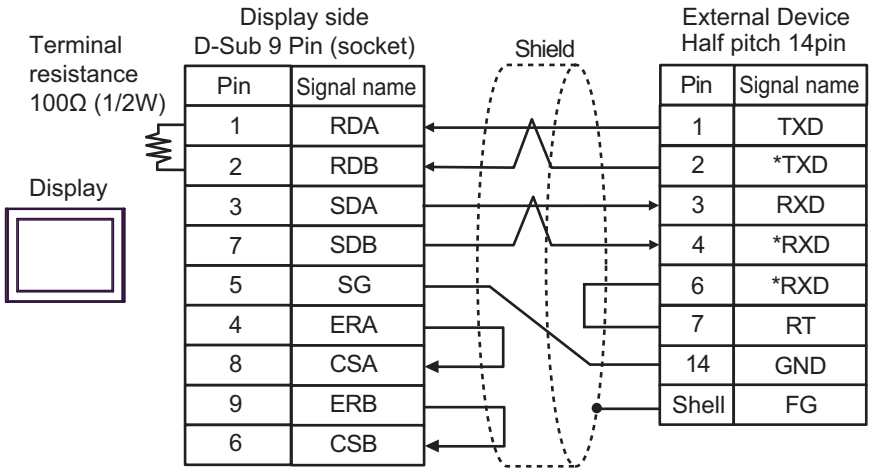


NOTE

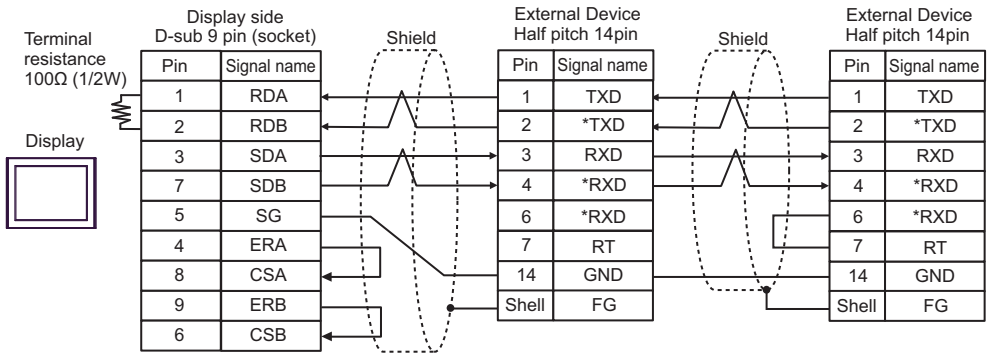
- We recommend following connector and case on the External Device side.
  Connector: HDR-E14MAG1+ by HONDA TSUSHIN KOGYO CO., LTD.
  Case: HDR-E14LPA5 by HONDA TSUSHIN KOGYO CO., LTD.

3B)

- 1:1 Connection



- 1:n Connection

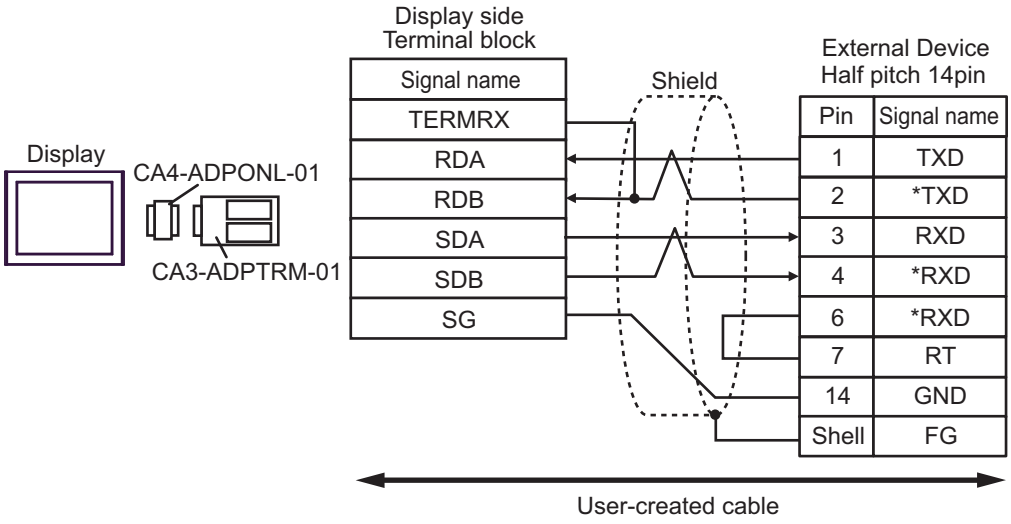


NOTE

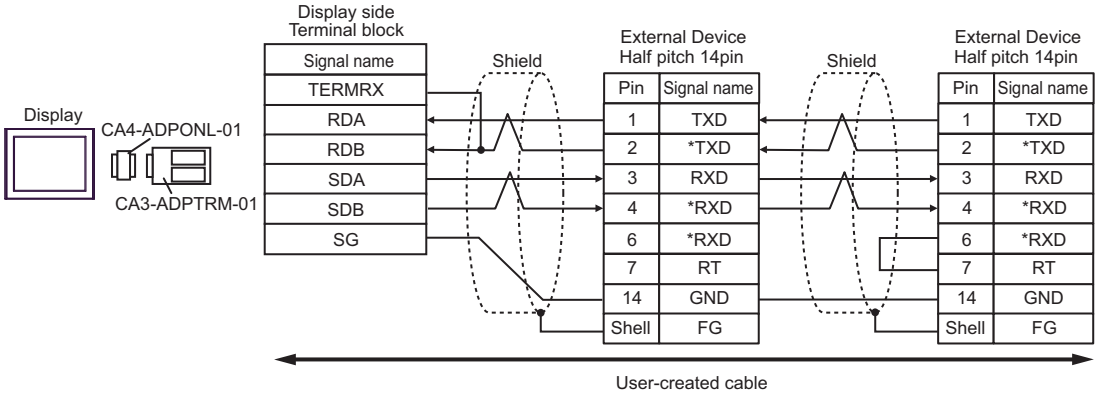
- We recommend following connector and case on the External Device side.
  Connector: HDR-E14MAG1+ by HONDA TSUSHIN KOGYO CO., LTD.
  Case: HDR-E14LPA5 by HONDA TSUSHIN KOGYO CO., LTD.

3C)

- 1:1 Connection



- 1:n Connection

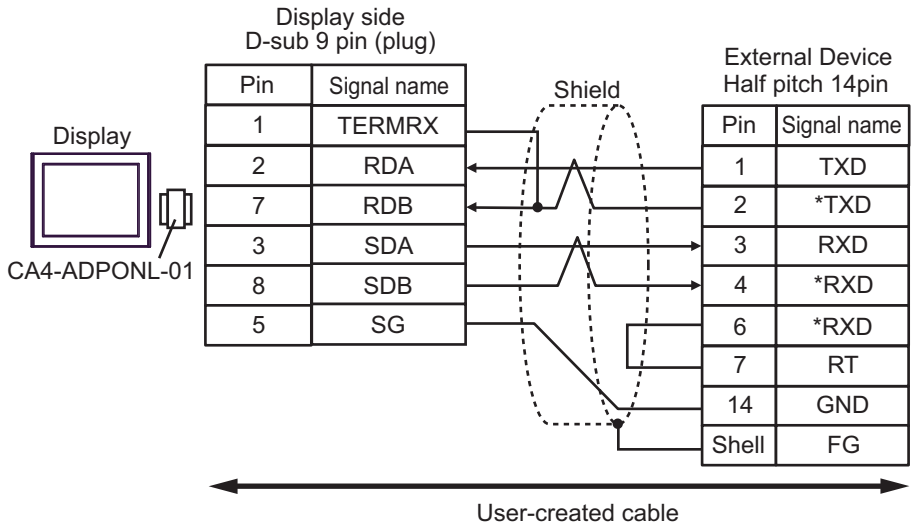


NOTE

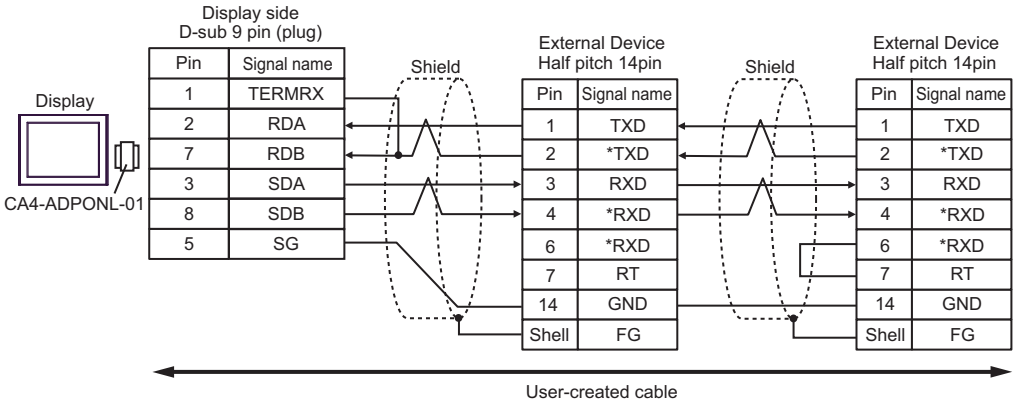
- We recommend following connector and case on the External Device side.
  Connector: HDR-E14MAG1+ by HONDA TSUSHIN KOGYO CO., LTD.
  Case: HDR-E14LPA5 by HONDA TSUSHIN KOGYO CO., LTD.

3D)

- 1:1 Connection



- 1:n Connection

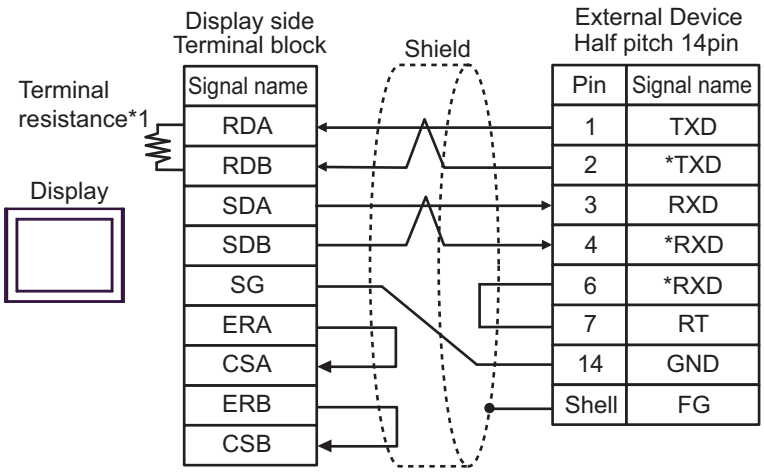


NOTE

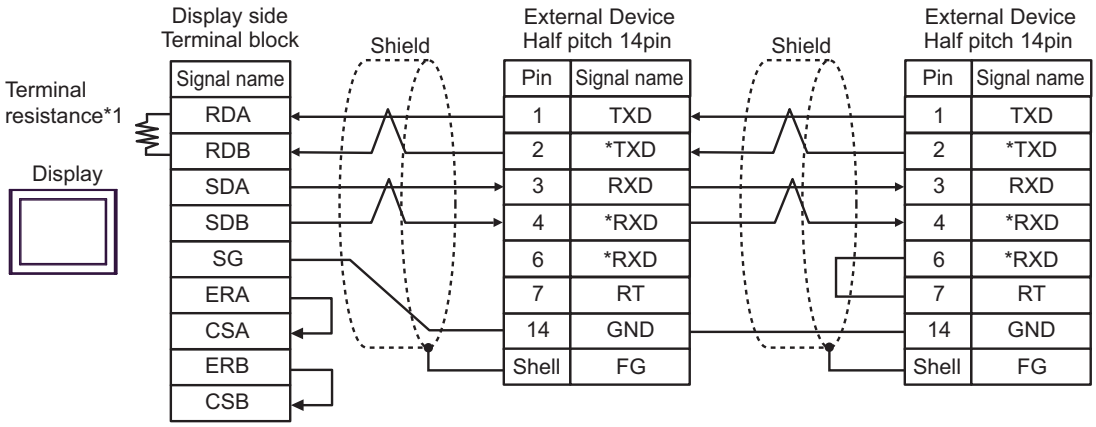
- We recommend following connector and case on the External Device side.
  Connector: HDR-E14MAG1+ by HONDA TSUSHIN KOGYO CO., LTD.
  Case: HDR-E14LPA5 by HONDA TSUSHIN KOGYO CO., LTD.

3E)

- 1:1 Connection



- 1:n Connection



NOTE

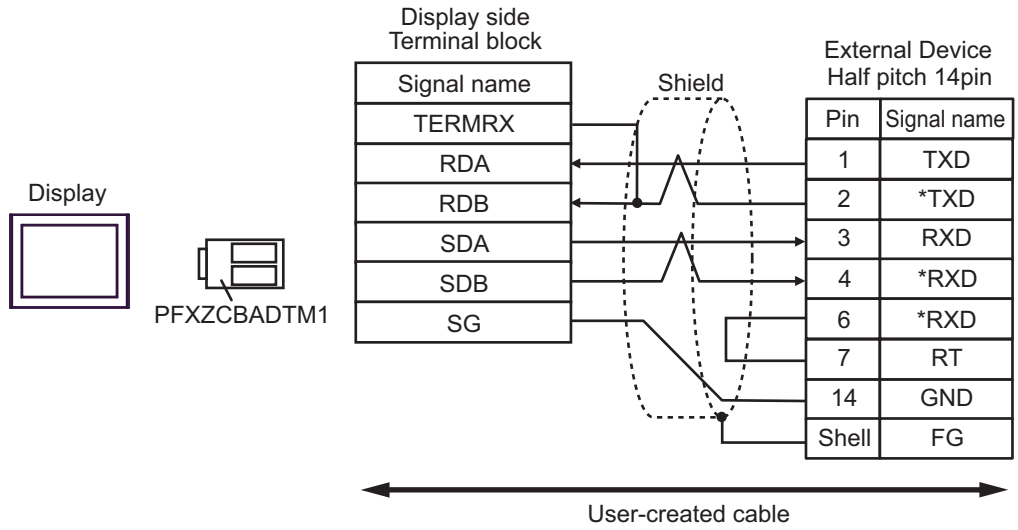
- We recommend following connector and case on the External Device side.
  Connector: HDR-E14MAG1+ by HONDA TSUSHIN KOGYO CO., LTD.
  Case: HDR-E14LPA5 by HONDA TSUSHIN KOGYO CO., LTD.

*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

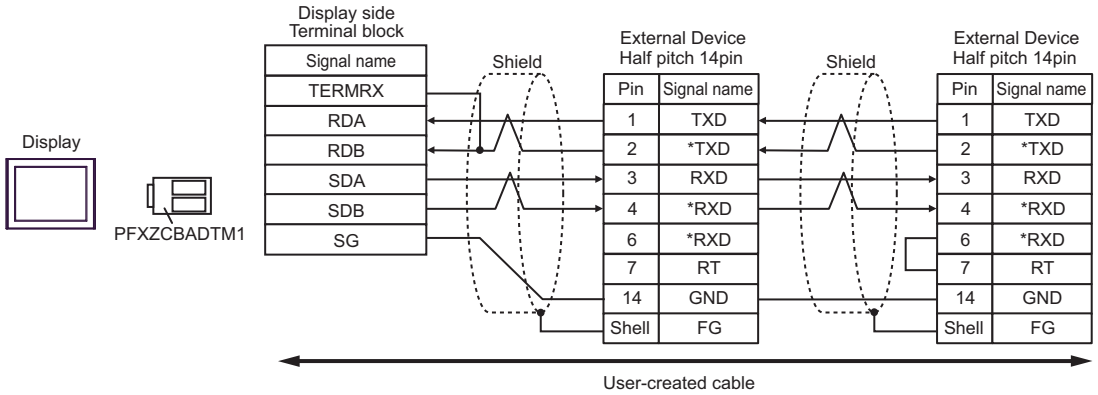
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

3F)

- 1:1 Connection



- 1:n Connection

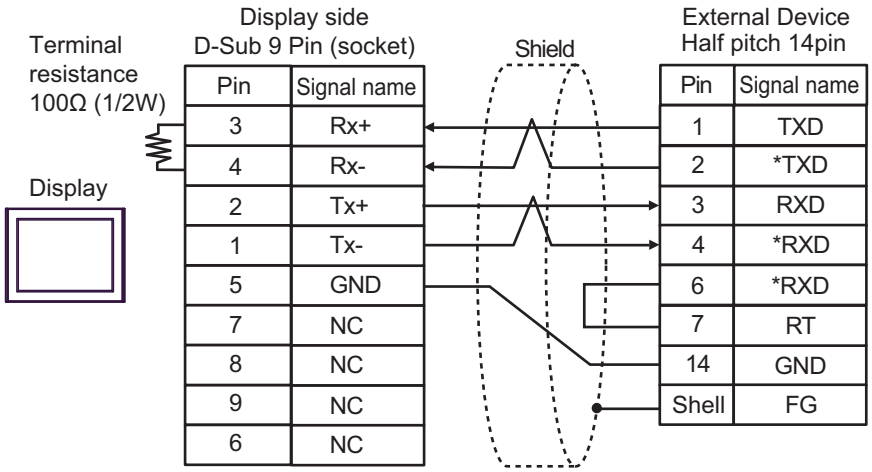


NOTE

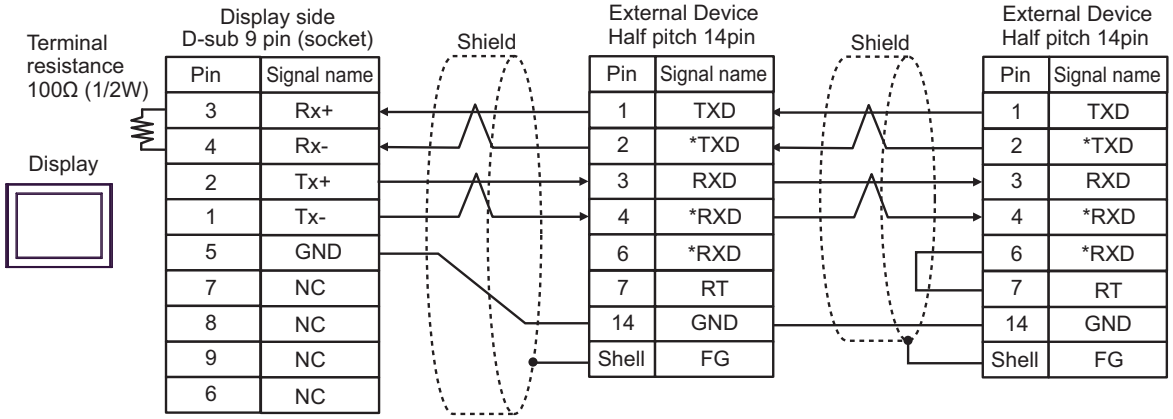
- We recommend following connector and case on the External Device side.
  Connector: HDR-E14MAG1+ by HONDA TSUSHIN KOGYO CO., LTD.
  Case: HDR-E14LPA5 by HONDA TSUSHIN KOGYO CO., LTD.

3G)

- 1:1 Connection



- 1:n Connection



NOTE

- We recommend following connector and case on the External Device side.
  Connector: HDR-E14MAG1+ by HONDA TSUSHIN KOGYO CO., LTD.
  Case: HDR-E14LPA5 by HONDA TSUSHIN KOGYO CO., LTD.

Cable Diagram 4

Display (Connection Port)	Cable		Remarks
GP3000[*1] (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST3000[*2] (COM2) LT3000 (COM1)	4A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 50m or less
	4B	User-created cable	
GP3000[*3] (COM2)	4C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 50m or less
	4D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
IPC[*4]	4E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 50m or less
	4F	User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	4G	User-created cable	Cable length: 50m or less
GP-4107 (COM1) GP-4*03T[*5] (COM2) GP-4203T (COM1)	4H	User-created cable	Cable length: 50m or less
GP4000[*6] (COM2) GP-4201T (COM1) GP6000 (COM2) SP5000[*7] (COM1/2) SP-5B00 (COM2) ST6000[*8] (COM2) ST-6200 (COM1) STM6000 (COM1) STC6000 (COM1) ET6000[*9] (COM2) PS6000 (Basic Box) (COM1/2)	4I	RS-422 terminal block conversion adapter by Pro-face PFXZCBADTM1[*10] + User-created cable	Cable length: 50m or less
	4B	User-created cable	
LT-4*01TM (COM1) LT-Rear Module (COM1)	4J	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	Cable length: 50m or less

Display (Connection Port)	Cable		Remarks
PE-4000B*11 PS5000*11 PS6000 (Optional Interface)*11	4K	User-created cable	Cable length: 50m or less

*1 All GP3000 models except AGP-3302B

*2 Except AST-3211A and AST-3302B

*3 All GP3000 models except GP-3200 series and AGP-3302B

*4 Only the COM port which can communicate by RS-422/485 (2wire) can be used. (Except PE-4000B, PS5000, and PS6000)
☞ ■ IPC COM Port (page 6)

*5 Except GP-4203T

*6 All GP4000 models except GP-4100 series, GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*7 Except SP-5B00

*8 Except ST-6200

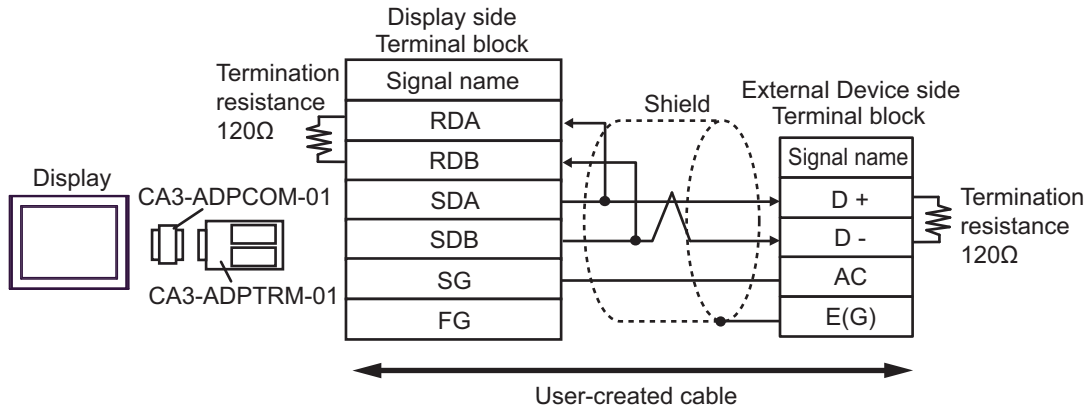
*9 Due to the COM port specifications, flow control is not possible. Omit wiring the control pins on the Display side of the cable diagram.

*10 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 4A.

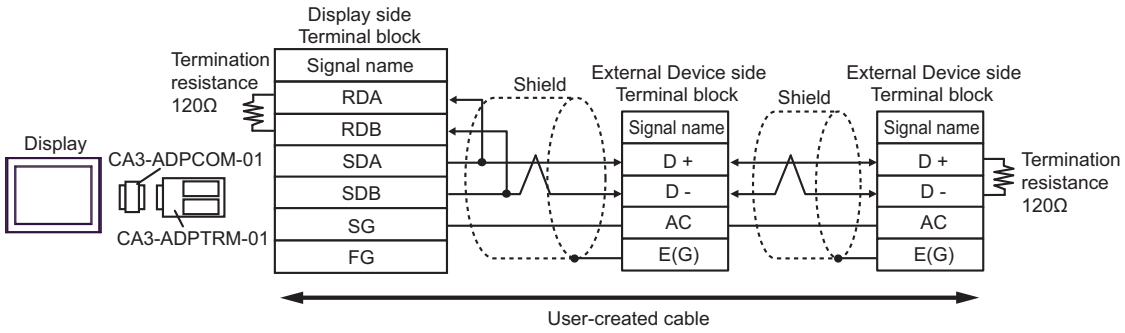
*11 Only the COM port which can communicate by RS-422/485 (2wire) can be used.
☞ ■ IPC COM Port (page 6)

4A)

- 1:1 Connection



- 1:n Connection

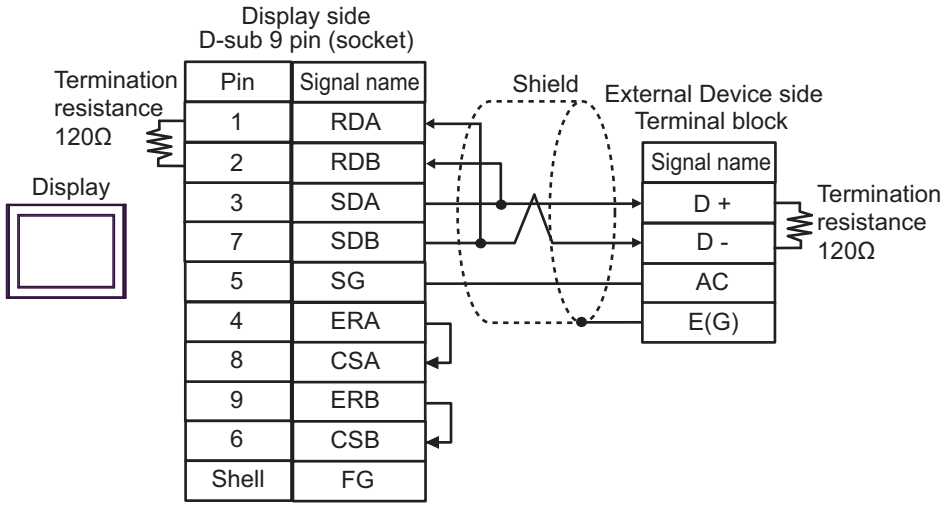


NOTE

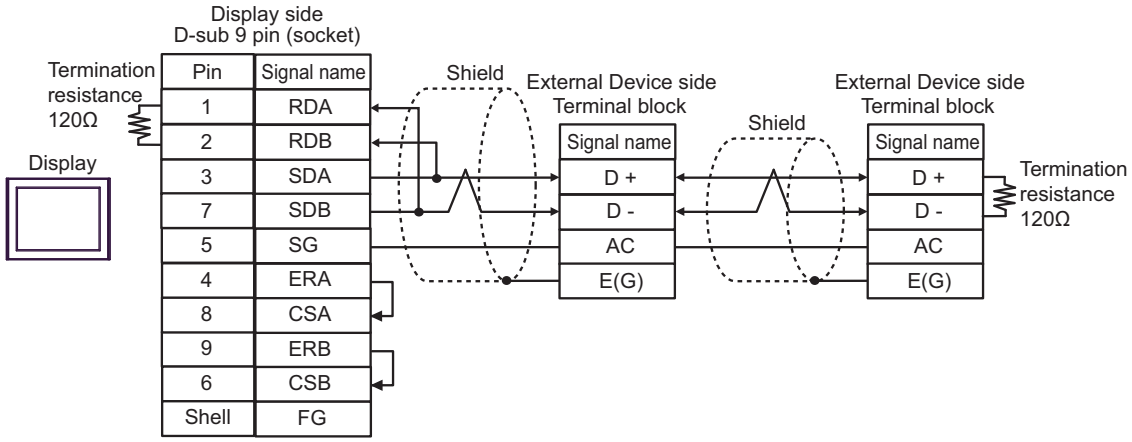
- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

4B)

- 1:1 Connection



- 1:n Connection

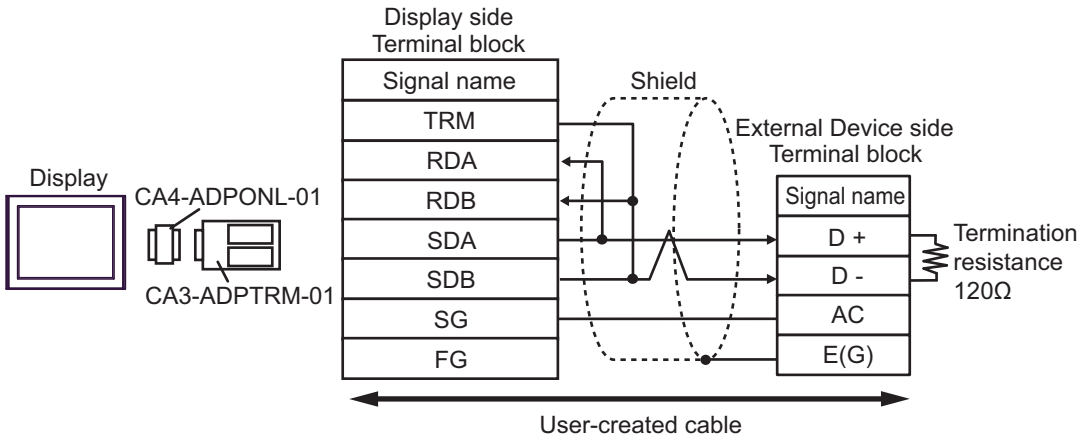


NOTE

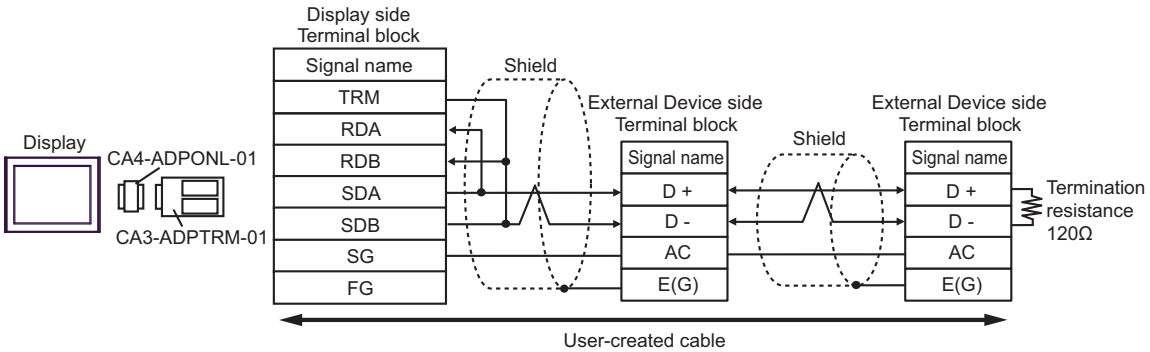
- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

4C)

- 1:1 Connection



- 1:n Connection

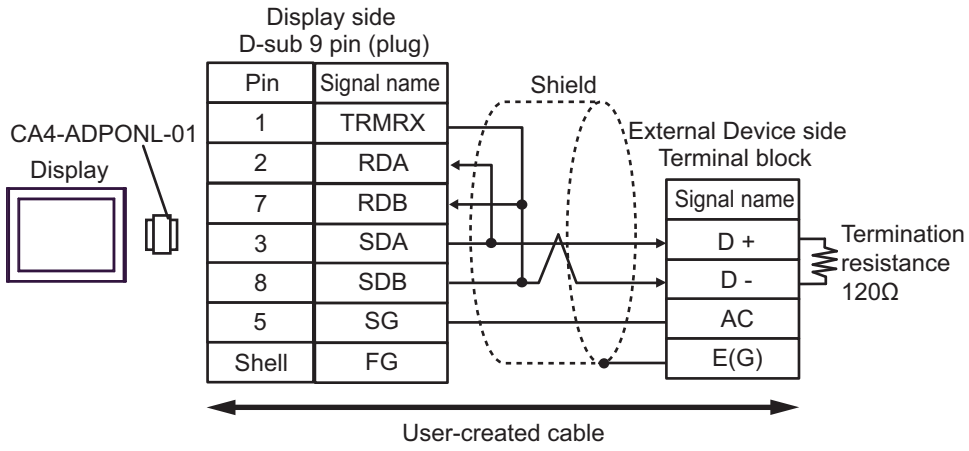


NOTE

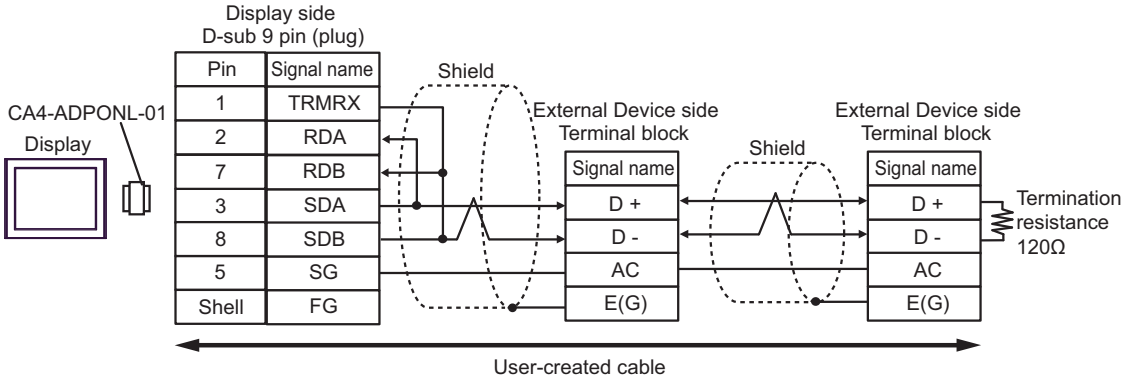
- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

4D)

- 1:1 Connection



- 1:n Connection

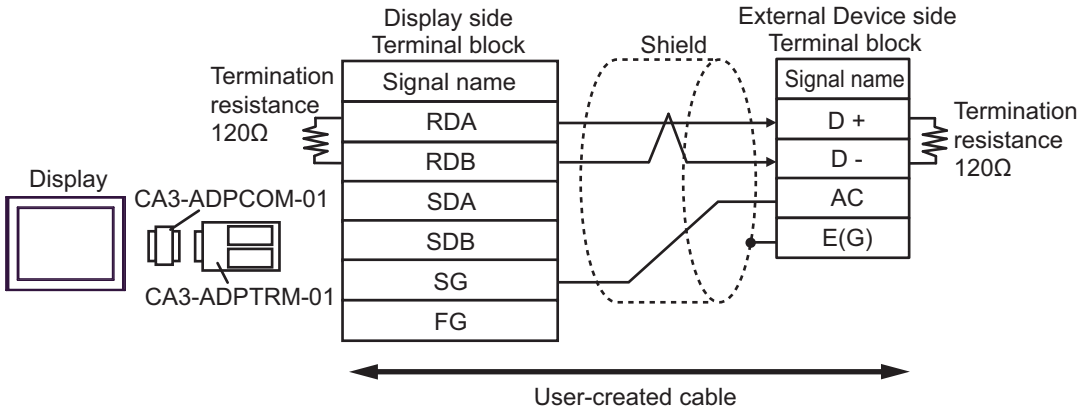


NOTE

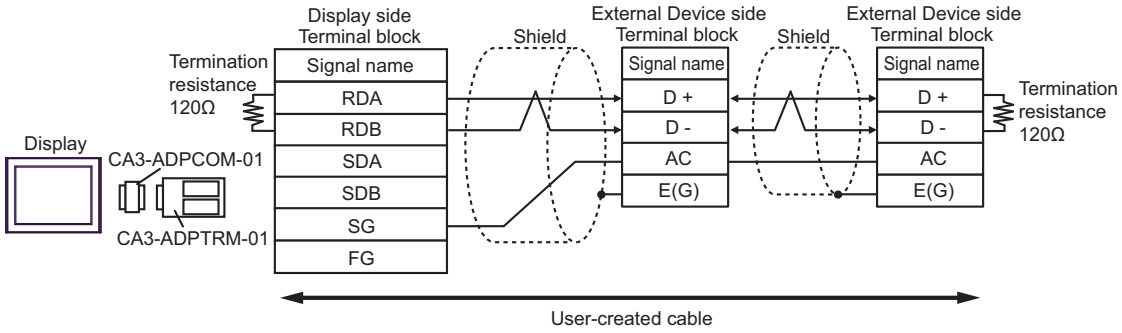
- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

4E)

- 1:1 Connection



- 1:n Connection

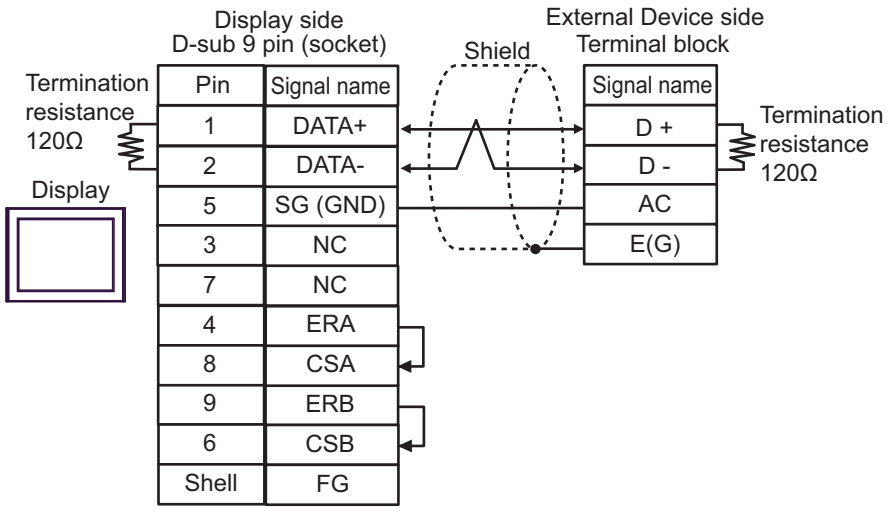


NOTE

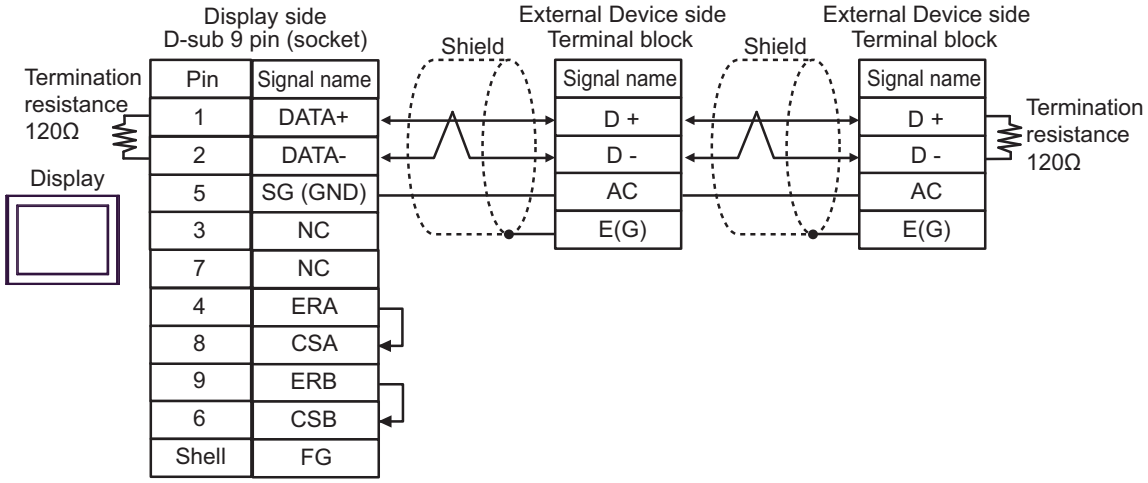
- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

4F)

- 1:1 Connection



- 1:n Connection

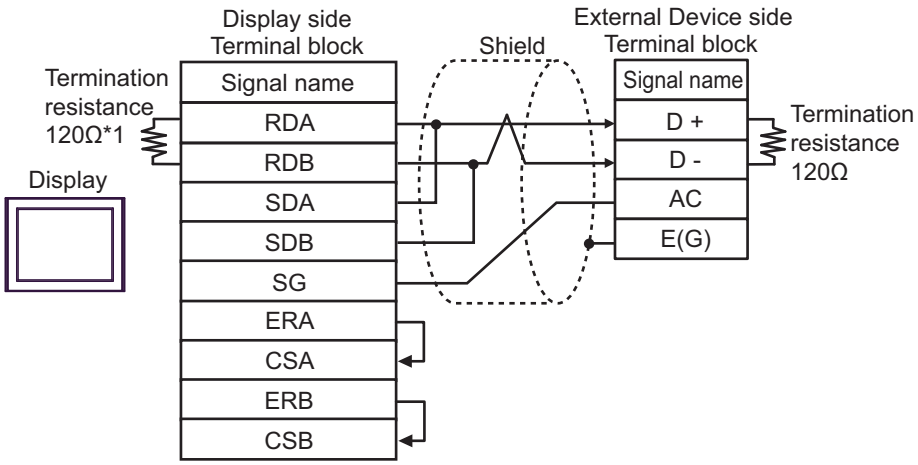


NOTE

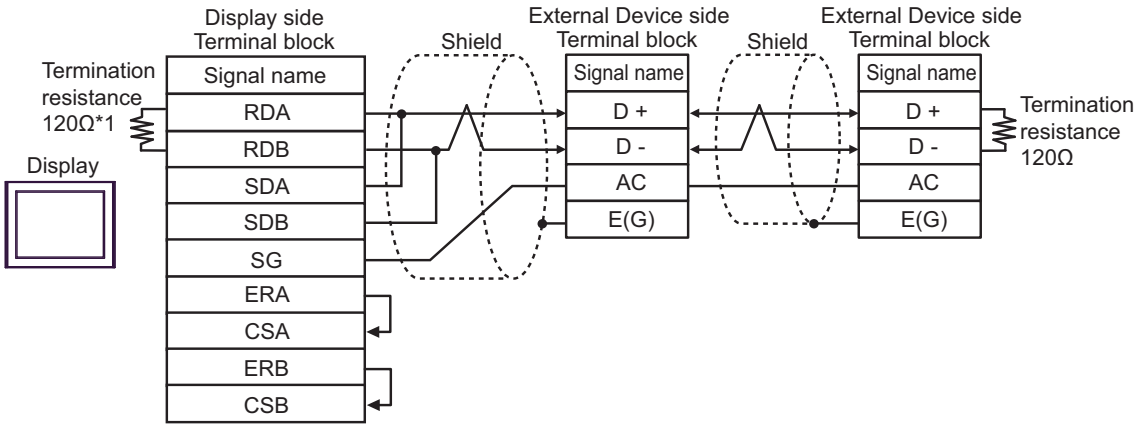
- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

4G)

- 1:1 Connection



- 1:n Connection



NOTE

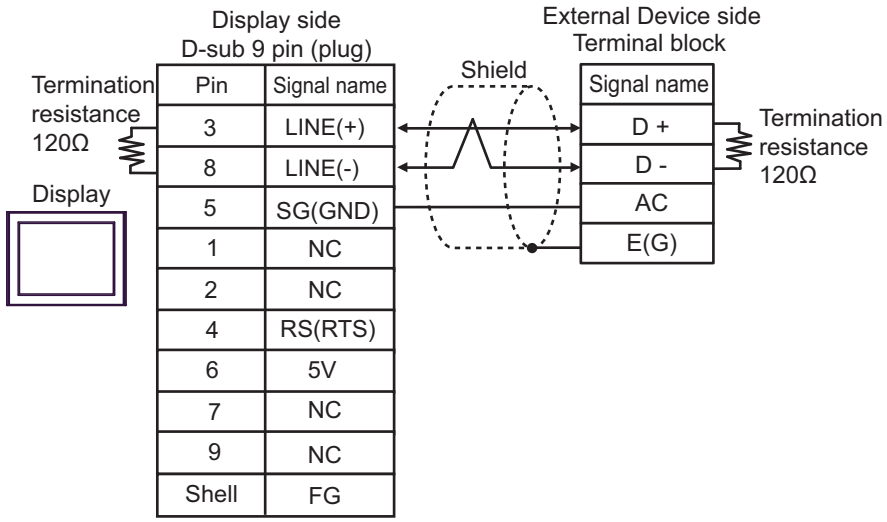
- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

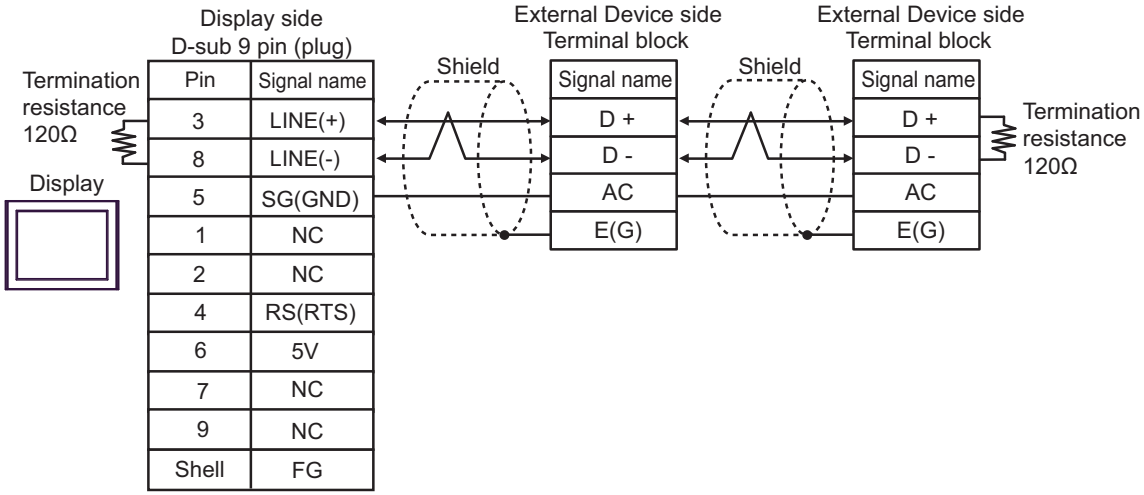
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

4H)

- 1:1 Connection



- 1:n Connection



IMPORTANT

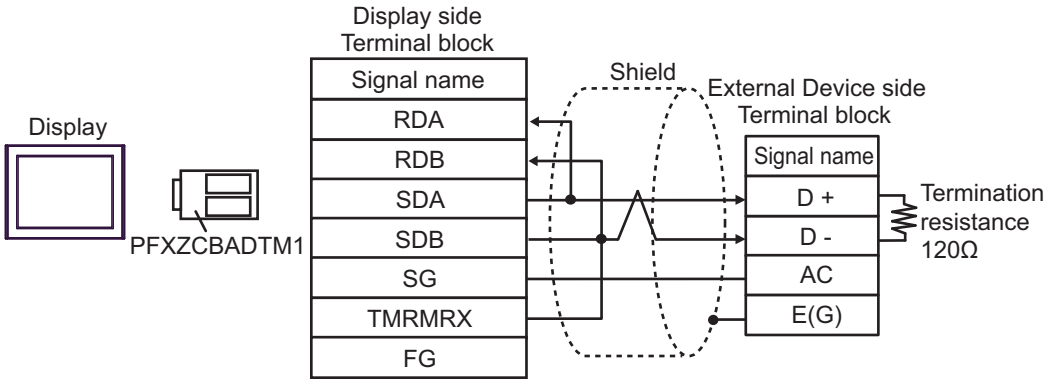
- The 5V output (Pin #6) on the Display is the power for the Siemens AG's PROFIBUS connector. Do not use it for other devices.

NOTE

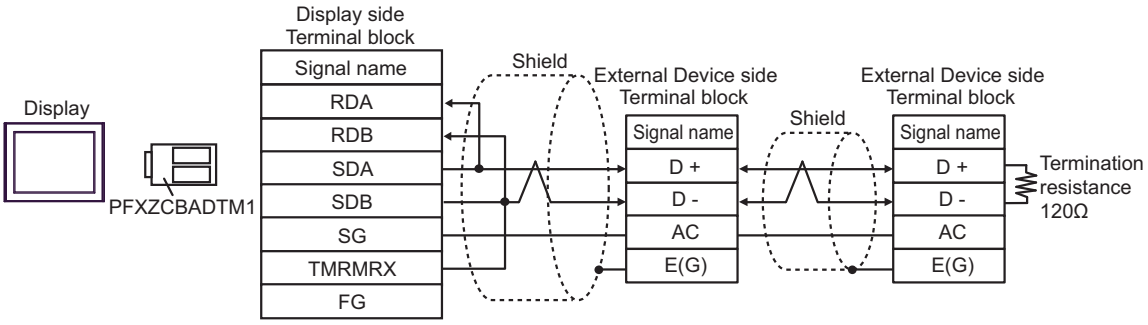
- In COM on the GP-4107, the SG and FG terminals are isolated.
- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

4I)

- 1:1 Connection



- 1:n Connection

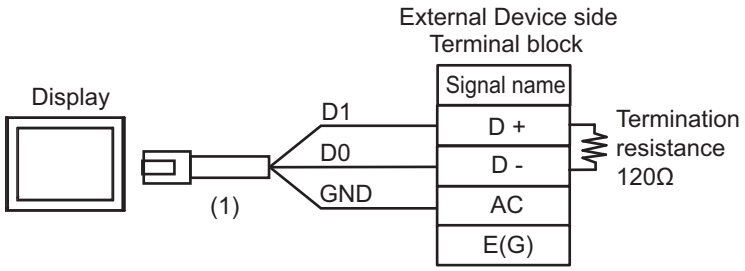


NOTE

- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

4J)

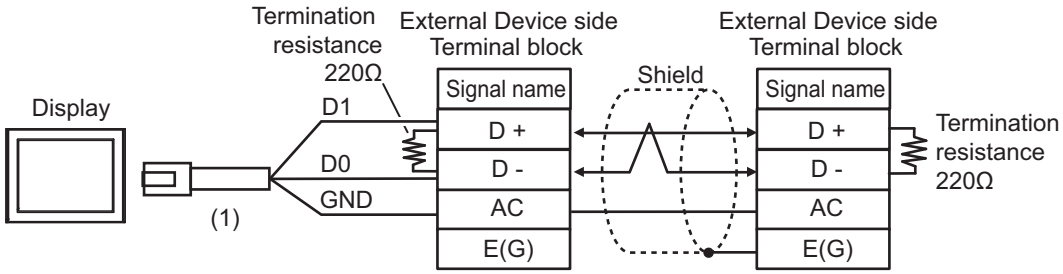
- 1:1 Connection



NOTE

- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

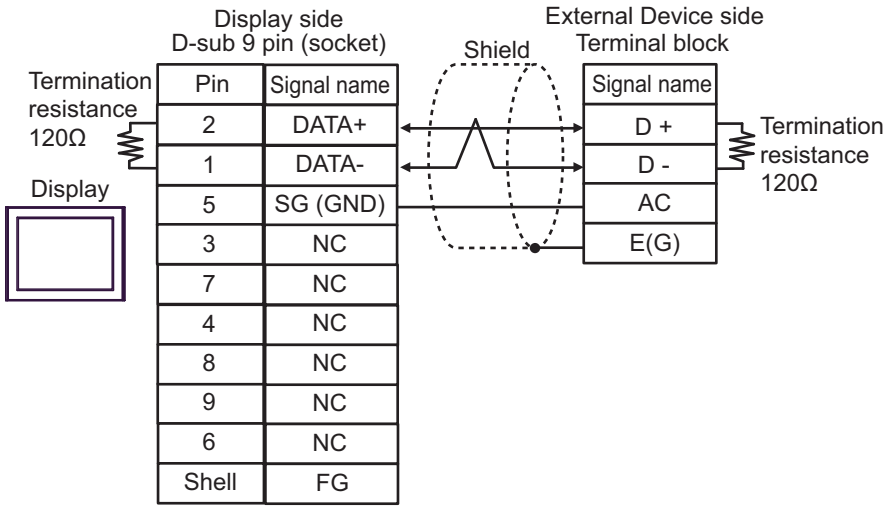
- 1:n Connection



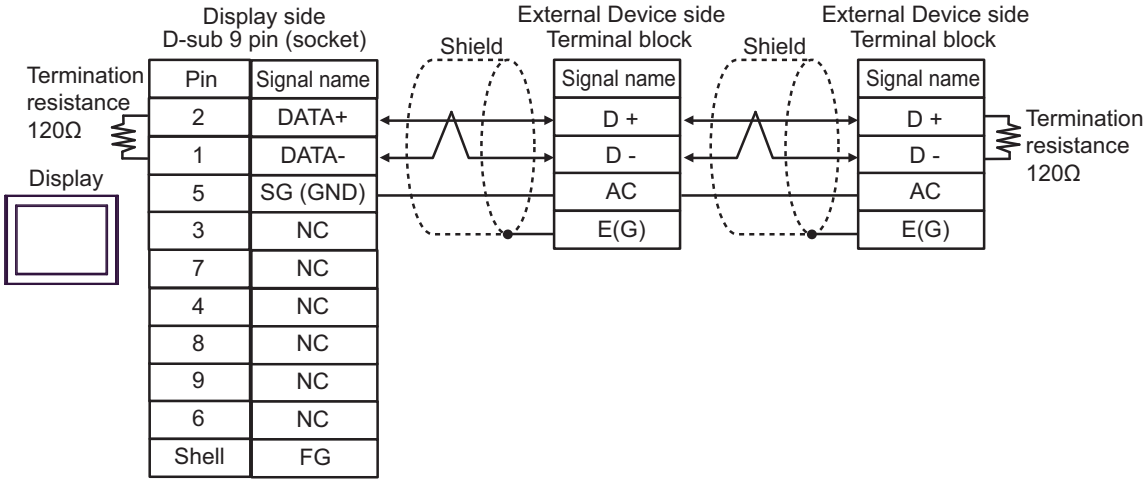
Legend	Name	Notes
(1)	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	

4K)

- 1:1 Connection



- 1:n Connection



NOTE

- On the final External Device, turn on DIP Switch S2 to apply termination resistance of 120 Ω 1/2 W.

6 Supported Device

The following table shows the range of supported device addresses. Please note that the actually supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

6.1 Inverter (Except GA700)

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Bit Register*1	BR0000.0 - BR195C.F	------	-	*2
Register*1	------	0000 - 195C	L/H	Bit F

*1 The Bit Register and the Register are the same device, but their bit write operation differs. Use either as needed.

*2 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the data may not be written correctly if you write to the word address using the ladder program while the Display is reading data from, and writing data to, the External Device. To write bits to the write-only register, use a registering device. Writing bits to the write-only register will cause a communication error to appear when the readout command is executed.

NOTE

- If you use a device, set the address to the MEMOBUS register No. corresponding to the parameter No. Refer to your External Device manual for details.

Example) Correspondence between the Inverter Constant Number and MEMOBUS register

Constant No.	Name	Description	Setting Range	Default Value	Changes during Operation	Control mode			MEMOBUS Register
						V/f without PG	V/f with PG	Vector without PG	
A1-02	Selection of Control Mode	Select an inverter control mode. 0: V/f control without PG 1: V/f control with PG 2: Vector control without PG The control mode is not initialized by selecting INITIALIZE.	0 to 2	0	×	Q	Q	Q	102H
b1-01	Selection of frequency command	Select a frequency command input method. 0: Digital operator 1: Control circuit terminal (analog input) 2: MEMOBUS communication 3: Optional card 4: Pulse column input	0 to 4	1	×	Q	Q	Q	180H

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.
- Please refer to the GP Pro-EX Reference Manual for System Data Area information.

Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"

- Please refer to the precautions on manual notation for icons in the table.

☞ "Manual Symbols and Terminology"

6.2 Inverter (GA700)

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Bit Register*1	BR0000.0 - BR313A.F	------	-	*2
Register*1	------	0000 - 313A	L/H	Bit F

*1 The Bit Register and the Register are the same device, but their bit write operation differs. Use either as needed.

*2 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the data may not be written correctly if you write to the word address using the ladder program while the Display is reading data from, and writing data to, the External Device. To write bits to the write-only register, use a registering device. Writing bits to the write-only register will cause a communication error to appear when the readout command is executed.

NOTE

- If you use a device, set the address to the MEMOBUS register No. corresponding to the parameter No. Refer to your External Device manual for details.

Example) Correspondence between the Inverter Constant Number and MEMOBUS register

Constant No.	Name	Description	Setting Range	Default Value	Changes during Operation	Control mode			MEMOBUS Register
						V/f without PG	V/f with PG	Vector without PG	
A1-02	Selection of Control Mode	Select an inverter control mode. 0: V/f control without PG 1: V/f control with PG 2: Vector control without PG The control mode is not initialized by selecting INITIALIZE.	0 to 2	0	×	Q	Q	Q	102H
b1-01	Selection of frequency command	Select a frequency command input method. 0: Digital operator 1: Control circuit terminal (analog input) 2: MEMOBUS communication 3: Optional card 4: Pulse column input	0 to 4	1	×	Q	Q	Q	180H

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.
- Please refer to the GP Pro-EX Reference Manual for System Data Area information.

Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"

- Please refer to the precautions on manual notation for icons in the table.

☞ "Manual Symbols and Terminology"

6.3 Σ-V series

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Normal Parameters Area	0000.0 - 0FFF.F	0000 - 0FFF	L/H	*1 *2
Temporary Parameters Area	1000.0 - 1FFF.F	1000 - 1FFF		*1 *2
Monitor Area	E000.0 - EFFF.F	E000 - EFFF		*1 *2

*1 When you write to the bit address, the Display reads the entire word, sets the defined bit, then returns the new word value to the External Device. If the ladder program writes data to this word address during the bit write process, the resulting data may be incorrect.

*2 The following addresses are 32 bit parameters. Please use two words when reading or writing.

- Normal Parameters Area
  020AH / 020EH / 0210H / 0212H / 0282H / 051BH / 0520H / 0522H / 0524H / 0526H / 0531H

- Temporary Parameters Area
  120AH / 120EH / 1210H / 1212H / 1282H / 151BH / 1520H / 1522H / 1524H / 1526H / 1531H

- Monitor Area
  E003H / E009H / E00EH / E010H / E012H / E016H / E01BH / E084H / E52AH / E52CH / E52EH / E530H / E532H / E534H / E536H / E538H / E53AH / E53CH / E601H / E603H / E605H / E705H / E707H / E110H / E120H / E130H

NOTE

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP-Pro EX Reference Manual for Read Area Size.
- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

■ Normal Parameters Area

This area is used to map the External Device's user constant parameters. The register number is defined by adding the Pn number and the offset value. The normal parameters area offset value is 0000H.

For details on the Pn number and register mapping, please refer to the manual of the External Device.

Operation	Description
Read	Reads volatile memory such as RAM for values. Unable to read values from non-volatile memory such as EEPROM.
Write	Writes values to volatile memory such as RAM, and non-volatile memory such as EEPROM.

NOTE

- You cannot run consecutive reads from, or consecutive writes to, different register groups. Example: When consecutively reading from or writing to 07FFH to 0800H, the message "Data Consistency Error (33H)" or "Access Denied Error (31H)" is displayed.
- If you specify a nonexistent register number, the message "Access Denied Error (31H)," is displayed.

■ Temporary Parameters Area

This area is used to map the External Device's user constant parameters. The register number is defined by adding the Pn number and the offset value. The temporary parameters area offset value is 1000H.

For details on the Pn number and register mapping, please refer to the manual of the External Device.

Operation	Description
Read	Reads volatile memory such as RAM for values.
Write	Writes values to volatile memory such as RAM.

Since writing to Temporary Parameters Area is run in volatile memory (such as RAM), values are cleared when the External Device is turned OFF.

If there is an operation, such as servo tuning, that requires an extreme number of write operations to memory, running the operation in the Temporary Parameters Area generates the following advantages.

- You can increase the life of non-volatile memory.
- You can reduce processing time.

NOTE

- You cannot run consecutive reads from, or consecutive writes to, different register groups. Example: When consecutively reading from or writing to 07FFH to 0800H, the message "Data Consistency Error (33H)" or "Access Denied Error (31H)" is displayed.
- If you specify a nonexistent register number, the message "Access Denied Error (31H)," is displayed.

■ Monitor Area

This area is used to reference internal information (such as operating condition, alarm status, and various status flags) on the External Device. By referring to the value of a register number, you can check the status of the External Device. While the External Device is running, register values change constantly.

Register No.	Name	Unit	No. of Registers	Sign	Remarks
E000H	Motor Rotational/Translational Speed	Rotary: min^{-1} Linear: mm/s	1	S	Un000
E001H	Reference Speed	Rotary: min^{-1} Linear: mm/s	1	S	Un001
E002H	Internal Torque/Thrust Force Reference	%	1	S	Un002
E003H	Rotational Angle 1 (Number of Pulses from the Origin)	Pulse	2	U	Un003
E005H	Rotational Angle 2 (Angle from the Origin)	deg	1	U	Un004
E006H	Input Signal Monitor	-	1	-	Un005
E007H	Output Signal Monitor	-	1	-	Un006
E008H	Input Reference Pulse Speed	Rotary: min^{-1} Linear: mm/s	1	S	Un007
E009H	Position Error Counter	Reference unit	2	S	Un008
E00BH	Accumulated Load Rate	%(10s cycle)	1	U	Un009

Register No.	Name	Unit	No. of Registers	Sign	Remarks
E00CH	Regenerative Load Rate	%(10s cycle)	1	U	Un00A
E00DH	Dynamic Break Consumption Power	%(10s cycle)	1	U	Un00B
E00EH	Input Reference Pulse Counter (32bit)	Pulse	2	S	Un00C
E010H	Feedback Pulse Counter (32bit)	Pulse	2	S	Un00D
E012H	Fully-closed Feedback Pulse Counter (32bit)	Pulse	2	S	Un00E
E016H	Total Operation Time	100ms	2	U	Un012
E018H	Upper Limit of Maximum Motor Speed	mm/s	1	U	Un010 (Available only in linear motor)
E019H	Upper Limit of Divided Pulse Output Setting	Pulse/Pitch	1	U	Un010 (Available only in linear motor)
E01AH	Magnetic Pole Sensor Information	-	1	-	Un011
E01BH	Feedback Pulse Counter	Reference unit	2	S	Un013
E01DH	Effective Gain Set Number	-	1	U	Un014
E01EH	Safety I/O Signal Monitor	-	1	-	Un015
E084H	Linear Scale Pitch	pm	2	U	Un084
E086H	Linear Scale Pitch Scaling Exponent	Power of Ten	1	S	Un085
E500H	Alarm History Alarm Code No. = 0	Code	1	U	Fn000-0
E501H	Alarm History Alarm Code No. = 1	Code	1	U	Fn000-1
E502H	Alarm History Alarm Code No. = 2	Code	1	U	Fn000-2
E503H	Alarm History Alarm Code No. = 3	Code	1	U	Fn000-3
E504H	Alarm History Alarm Code No. = 4	Code	1	U	Fn000-4
E505H	Alarm History Alarm Code No. = 5	Code	1	U	Fn000-5
E506H	Alarm History Alarm Code No. = 6	Code	1	U	Fn000-6
E507H	Alarm History Alarm Code No. = 7	Code	1	U	Fn000-7
E508H	Alarm History Alarm Code No. = 8	Code	1	U	Fn000-8
E509H	Alarm History Alarm Code No. = 9	Code	1	U	Fn000-9
E50AH	Current Alarm Information	Code	1	U	
E51BH	Servo Running Status	-	1	U	
E51CH	Control Mode Status	-	1	U	
E52AH	Alarm History Time Stamp No. = 0	100ms	2	U	
E52CH	Alarm History Time Stamp No. = 1	100ms	2	U	
E52EH	Alarm History Time Stamp No. = 2	100ms	2	U	
E530H	Alarm History Time Stamp No. = 3	100ms	2	U	
E532H	Alarm History Time Stamp No. = 4	100ms	2	U	

Register No.	Name	Unit	No. of Registers	Sign	Remarks
E534H	Alarm History Time Stamp No. = 5	100ms	2	U	
E536H	Alarm History Time Stamp No. = 6	100ms	2	U	
E538H	Alarm History Time Stamp No. = 7	100ms	2	U	
E53AH	Alarm History Time Stamp No. = 8	100ms	2	U	
E53CH	Alarm History Time Stamp No. = 9	100ms	2	U	

- Input Signal Monitor (E006H)

  Analog/Pulse Interface Type / Command Option Card Interface Type

Bit	Status Signal	Logic	Un No.
0	SI0(CN1-40)	0 = Lo (Close) 1 = Hi (Open)	Un005
1	SI1(CN1-41)	0 = Lo (Close) 1 = Hi (Open)	
2	SI2(CN1-42)	0 = Lo (Close) 1 = Hi (Open)	
3	SI3(CN1-43)	0 = Lo (Close) 1 = Hi (Open)	
4	SI4(CN1-44)	0 = Lo (Close) 1 = Hi (Open)	
5	SI5(CN1-45)	0 = Lo (Close) 1 = Hi (Open)	
6	SI6(CN1-46)	0 = Lo (Close) 1 = Hi (Open)	
7	SEN(CN1-4)	0 = Lo 1 = Hi	

- Output Signal Monitor (E007H)

  Analog/Pulse Interface Type / Command Option Card Interface Type

Bit	Status Signal	Logic	Un No.
0	ALM(CN1-31,32)	0 = Lo (Close) 1 = Hi (Open)	Un006
1	SO1(CN1-25,26)	0 = Lo (Close) 1 = Hi (Open)	
2	SO2(CN1-27,28)	0 = Lo (Close) 1 = Hi (Open)	
3	SO3(CN1-29,30)	0 = Lo (Close) 1 = Hi (Open)	
4	ALO1(CN1-37)	0 = Lo (Close) 1 = Hi (Open)	
5	ALO2(CN1-38)	0 = Lo (Close) 1 = Hi (Open)	
6	ALO3(CN1-39)	0 = Lo (Close) 1 = Hi (Open)	
7	Reserved		

- Safety I/O Signal Monitor (E01EH)

Bit	Status Signal	Logic	Un No.
0	/HWBB1(CN8-3,4)	0 = Lo (Close) 1 = Hi (Open)	Un015
1	/HWBB2(CN8-5,6)	0 = Lo (Close) 1 = Hi (Open)	
2 to 7	Reserved		

NOTE

- /HWBB1 and /HWBB2 are valid only when the safety option card is not connected. When the safety option card is connected, they become indefinite.

- Servo Running Status (E51BH)

Reading	Description
0000H	Reserved (Initial State)
0001H	Alarm Occurred (A.***)
0002H	Hardwired Base Blocked (HWBB)
0003H	Forward / Reverse Run Prohibited (PTNT)
0004H	Forward Run Prohibited (P-OT)
0005H	Reverse Run Prohibited (N-OT)
0006H	Base Blocked (BB)
0007H	Base Enabled (RUN)
0008H	Magnetic Pole Detecting (PDET)

- Control Mode Status (E51CH)

Reading	Description
0000H	Speed Control Mode
0001H	Position Control Mode
0002H	Torque Control Mode

NOTE

- JOG Drive Mode, Origin Search Mode, and Internally Set Speed Control Mode become Speed control mode.
- Programmed JOG Drive Mode, Advanced Auto-Tuning Mode, and Easy FFT Mode become Position Control Mode.

7 Device Code and Address Code

Use device code and address code when you set "Device Type & Address" for the address type of the data display or other devices.

7.1 Inverter

Device	Device Name	Device Code (HEX)	Address Code
Register	-	0000	Word Address

7.2 Σ-V series

Device	Device Name	Device Code (HEX)	Address Code
Normal Parameters Area	0	0000	Word Address
Temporary Parameters Area	1	0001	Word Address
Monitor Area	E	0009	Word Address

8 Error Messages

Error messages are displayed on the Display screen as follows: "No.: Device Name: Error Message (Error Occurrence Area)". Each description is shown below.

Item	Description
No.	Error number
Device Name	Name of the External Device where an error has occurred. Device/PLC name is the title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Error Message	Displays messages related to an error that has occurred.
Error Occurrence Area	Displays the IP address or device address of the External Device where an error has occurred, or error codes received from the External Device. NOTE • Received error codes are displayed as "Decimal [Hex]". • Device address is displayed as "Address: Device address". • IP addresses are displayed as "IP address (Decimal): MAC address (Hex)".

Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 1 [01H])"

NOTE

- Refer to your External Device manual for details on received error codes.
- Refer to "Display-related errors" in "Maintenance/Troubleshooting Guide" for details on the error messages common to the driver.

◆ Error Codes Unique to External Device (Inverter)

Error Code	Description
02H	Invalid register number error
21H	Data setting error
22H	Write mode error
23H	Writing during main circuit undervoltage (UV) error
24H	Writing error during constants processing

◆ Error Codes Unique to External Device (Σ-V series)

Error Code	Description
01H	Function code error • The function code or the sub function code which is not support.
02H	Incorrect register number • The register number being accessed has not been registered.
03H	Incorrect number of data • The read/write data quantity is not between 1 and the maximum quantity value (defined by each model). • The number of data in the message is not equal to the quantity specified in the write mode.
30H	Incorrect register number (High-level) • The register number being accessed has not been registered.
31H	Limited access • Access to the specified register is not permitted.
32H	Outside setting range The data write value exceeds the upper/lower range.
33H	Data consistency error • Attempted to access a register in a range reserved for multiple register access. • Attempted to access multiple registers which exceeds register group.
34H	Condition error • The contents of a command message cannot be processed because of a register specification condition.
35H	Contention error • Cannot process while another process is in progress (other channel may have priority).