



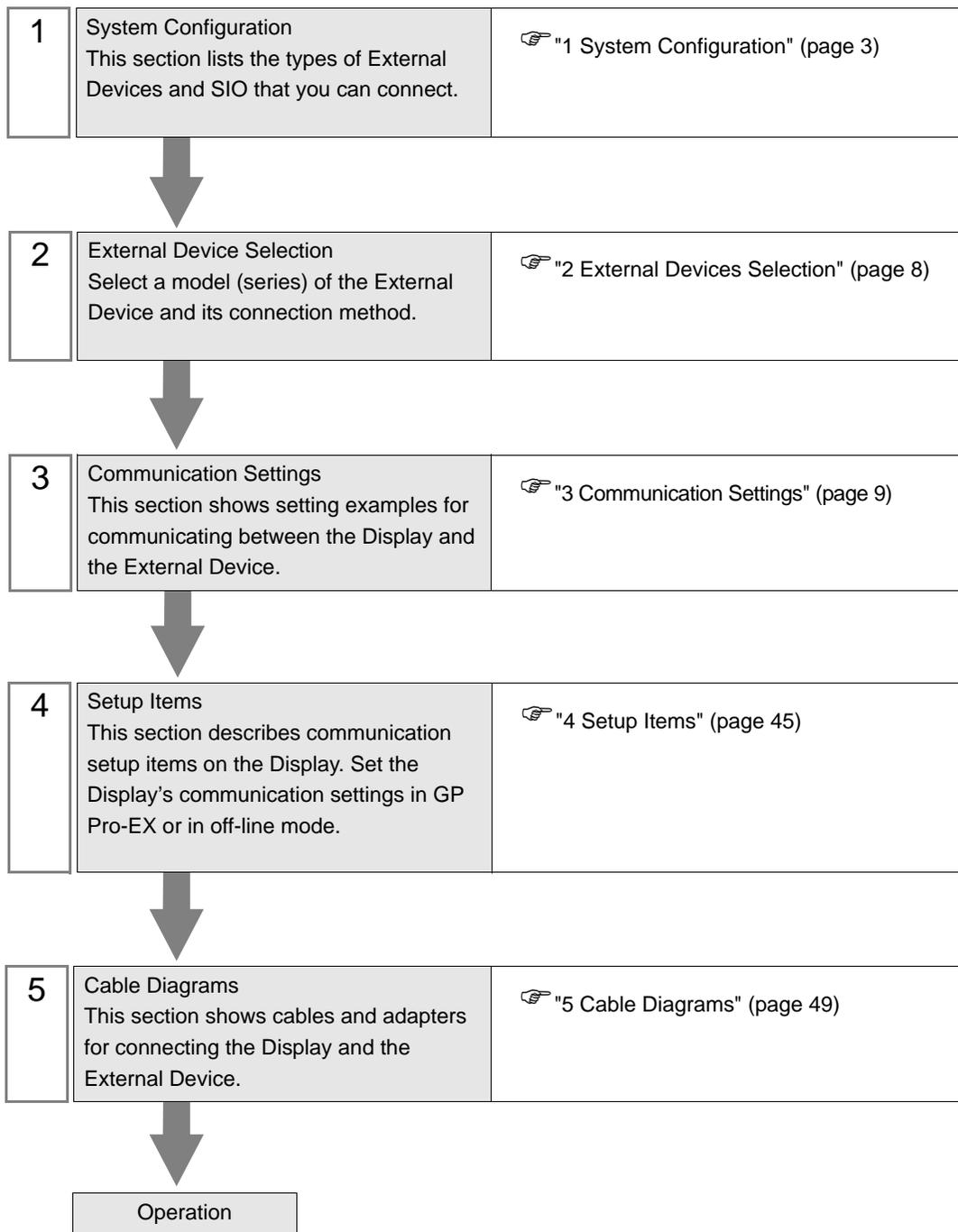
Inverter SIO Driver

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Introduction

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

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.

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 9)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 2 (page 11)	Cable Diagram 2 (page 55)
Varispeed G7	CIMR-G7A□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 3 (page 13)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 4 (page 15)	Cable Diagram 2 (page 55)
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 17)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 6 (page 19)	Cable Diagram 2 (page 55)
VS mini V7/ VS-606V7	CIMR-V7□A□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 7 (page 21)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 8 (page 23)	Cable Diagram 2 (page 55)
Varispeed F7S	CIMR-F7S□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 9 (page 25)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 10 (page 27)	Cable Diagram 2 (page 55)
Varispeed L7	CIMR-L7B□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 11 (page 29)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 12 (page 31)	Cable Diagram 2 (page 55)
Varispeed AC	CIMR-ACA□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 13 (page 33)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 14 (page 35)	Cable Diagram 2 (page 55)

Series	Inverter ^{*1}	Link I/F	SIO Type	Setting Example	Cable Diagram
V1000	CIMR-VA□A□□□□	Terminal Block on the inverter	RS-422/485 (4wire)	Setting Example 15 (page 37)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 16 (page 39)	Cable Diagram 2 (page 55)
J1000	CIMR-JA□A□□□□	Terminal Block on the SI-485/J RS-422/485 interface card	RS-422/485 (4wire)	Setting Example 17 (page 41)	Cable Diagram 1 (page 49)
			RS-422/485 (2wire)	Setting Example 18 (page 43)	Cable Diagram 2 (page 55)

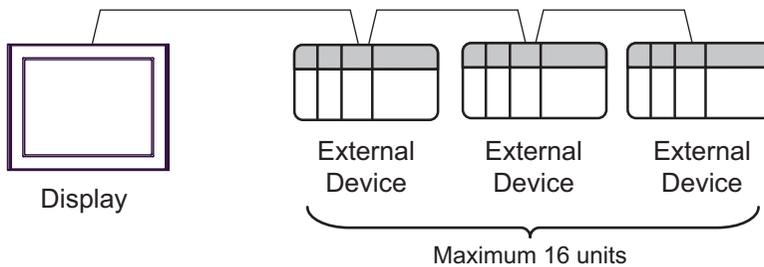
*1 The □ symbol in the inverter model names represents the maximum applicable motor capacity and other specifications.

■ Connection Configuration

◆ 1:1 Connection



◆ 1:n Connection



■ 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, PS-3651A	COM1 ^{*1}	-	-
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}
PL-3000B, PL-3600T, PL-3600K, PL-3700T, PL-3700K, PL-3900T	COM1 ^{*1*2} , COM2 ^{*1} , COM3, COM4	COM1 ^{*1*2}	COM1 ^{*1*2}

*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.

DIP switch setting: 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.

DIP switch setting: RS-422/485 (4 wire)

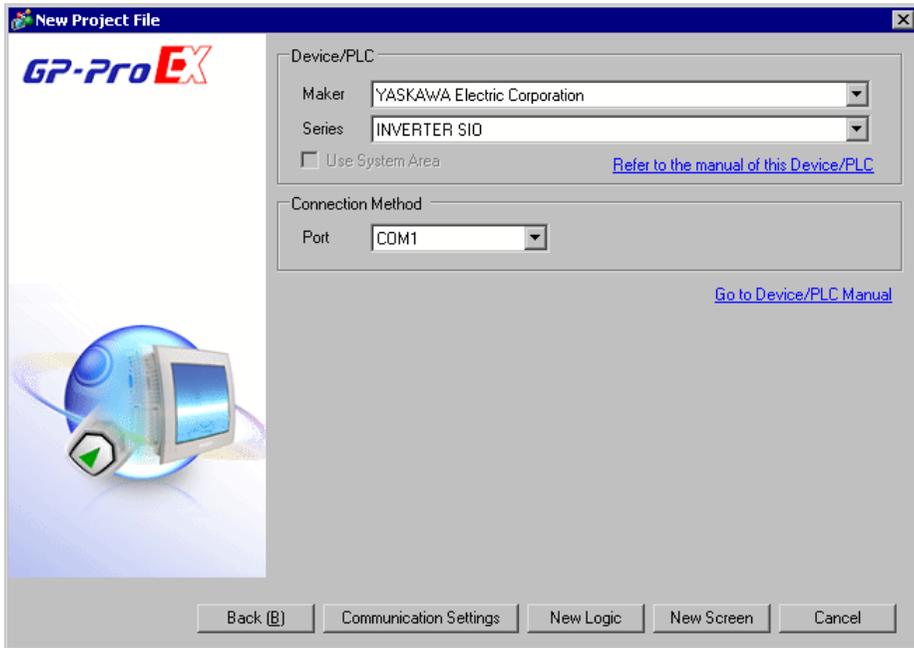
DIP switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA (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	

DIP switch setting: 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
Maker	Select the maker of the External Device to be connected. Select "YASKAWA Electric Corporation".
Series	Select a model (series) of the External Device to be connected and connection method. Select "INVERTER SIO". In System configuration, check to make sure the external device to which you are connecting is supported in "INVERTER SIO".  "1 System Configuration" (page 3)
Use System Area	Not available in this driver.
Port	Select the Display port to be connected to the External Device.

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 [System Settings] workspace, select [Device/PLC].

Device/PLC 1

Summary [Change Device/PLC](#)

Maker: YASKAWA Electric Corporation Series: INVERTER SIO Port: COM1

Text Data Mode: 1 [Change](#)

Communication Settings

SIO Type: RS232C RS422/485(2wire) RS422/485(4wire)

Speed: 9600

Data Length: 7 8

Parity: NONE EVEN ODD

Stop Bit: 1 2

Flow Control: NONE ER(DTR/CTS) XON/XOFF

Timeout: 3 (sec)

Retry: 2

Wait To Send: 10 (ms)

RI / VCC: RI VCC

In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC.

[Default](#)

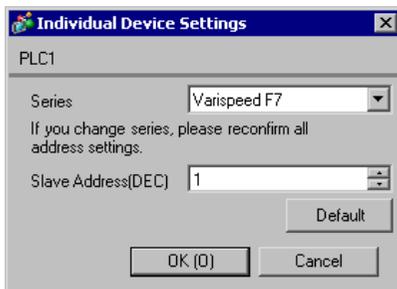
Device-Specific Settings

Allowable Number of Devices/PLCs: 16

Number	Device Name	Settings
1	PLC1	Series=Varispeed F7,Slave Address(DEC)=1

◆ Device Setting

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

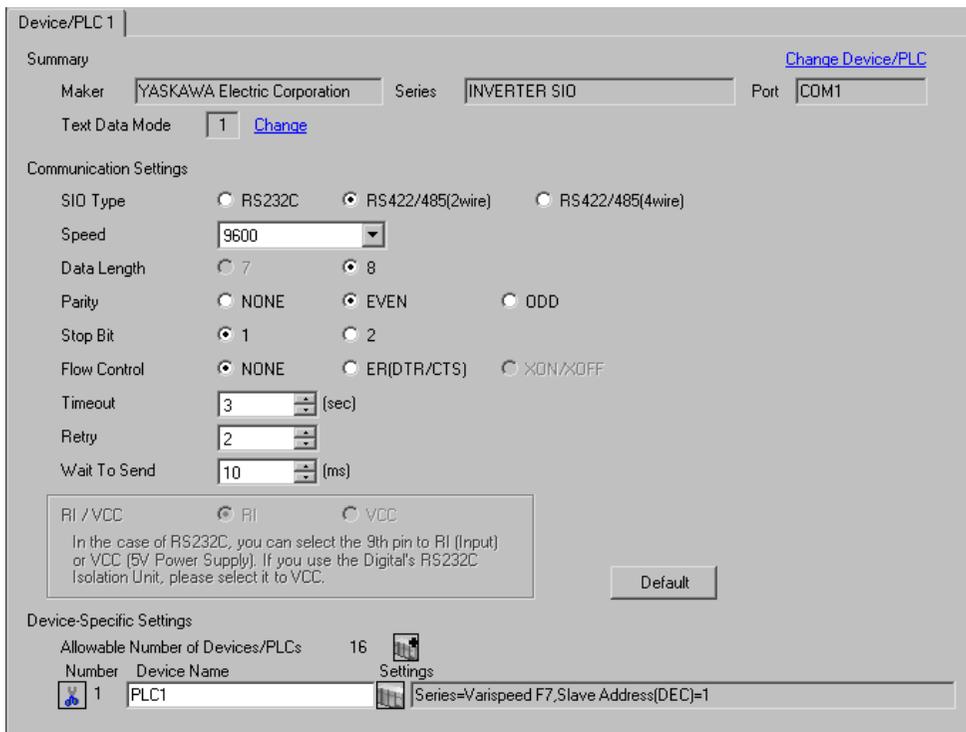
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.2 Setting Example 2

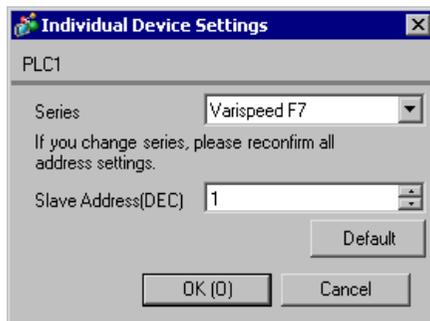
■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

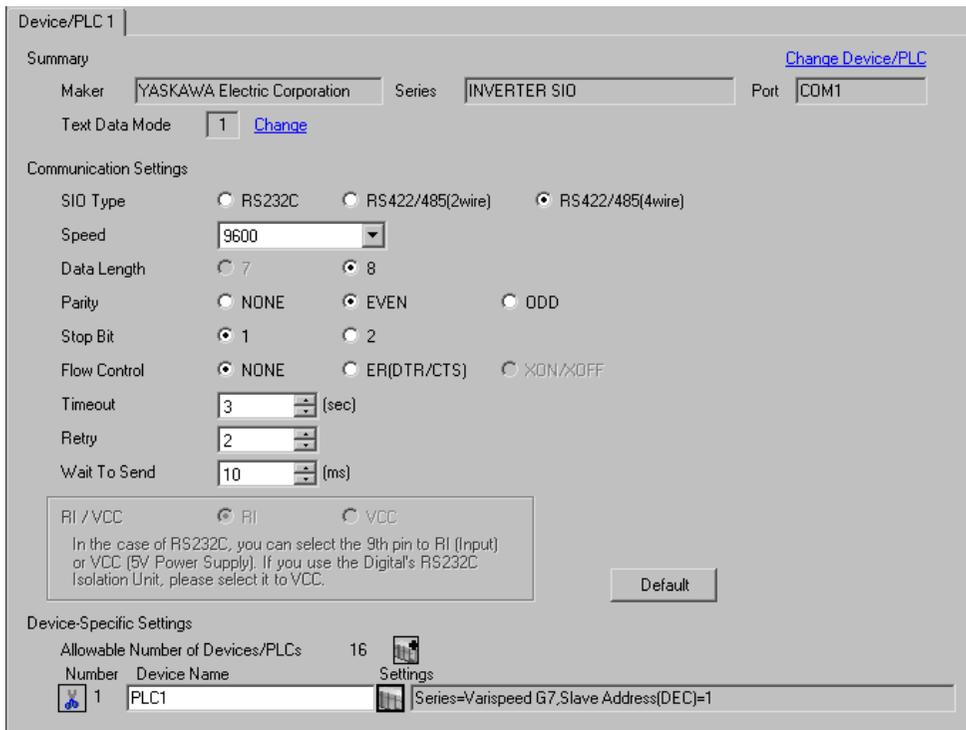
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.3 Setting Example 3

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

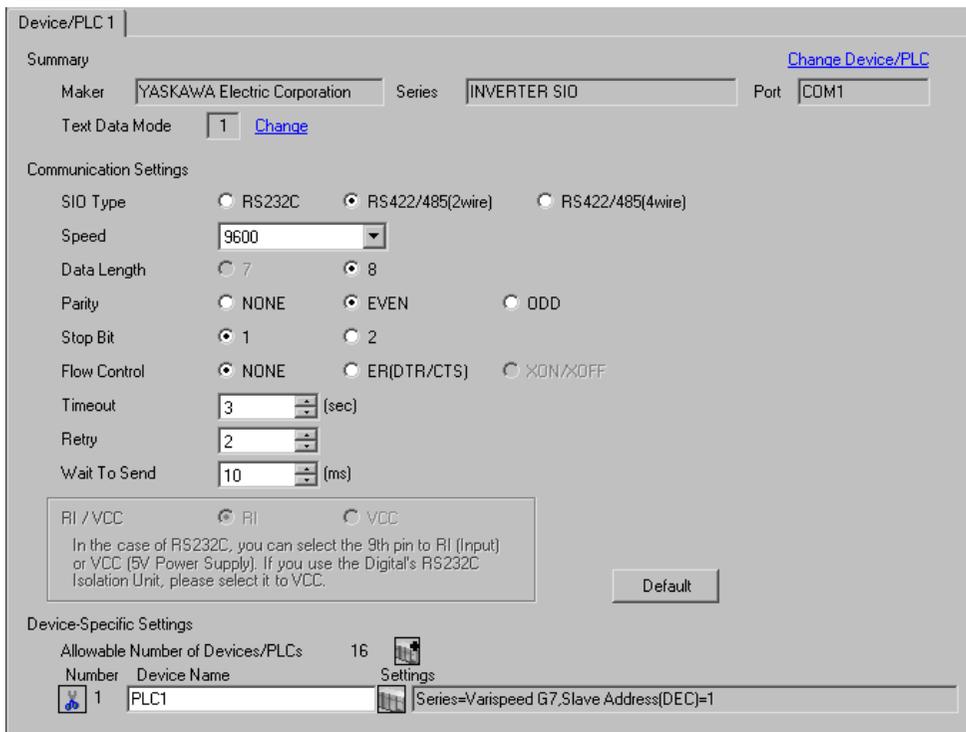
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.4 Setting Example 4

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

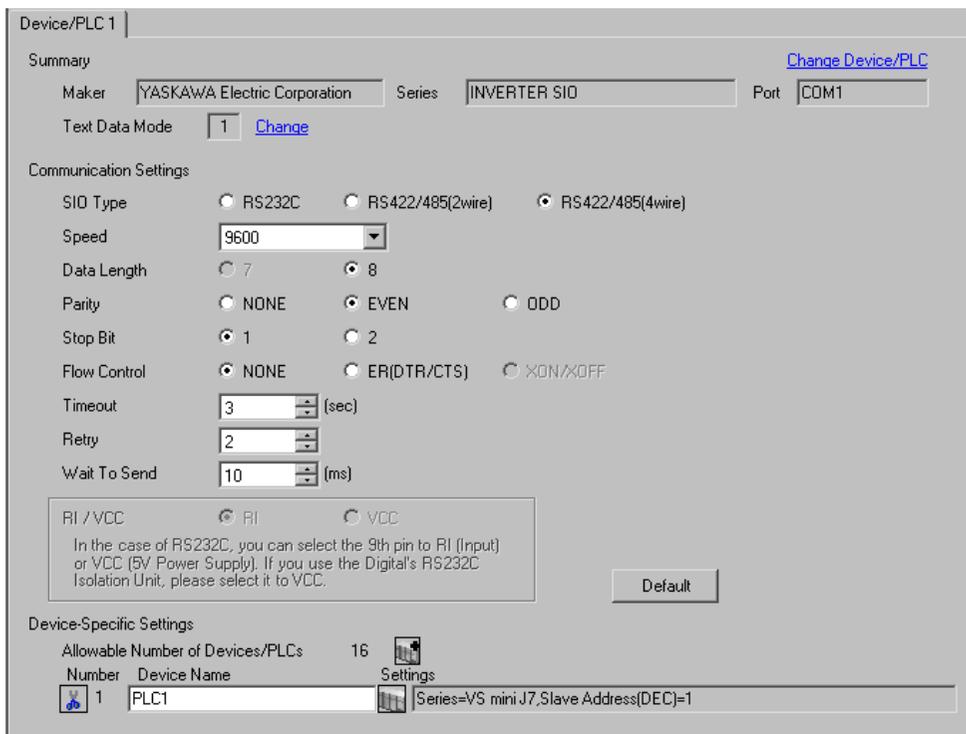
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.5 Setting Example 5

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

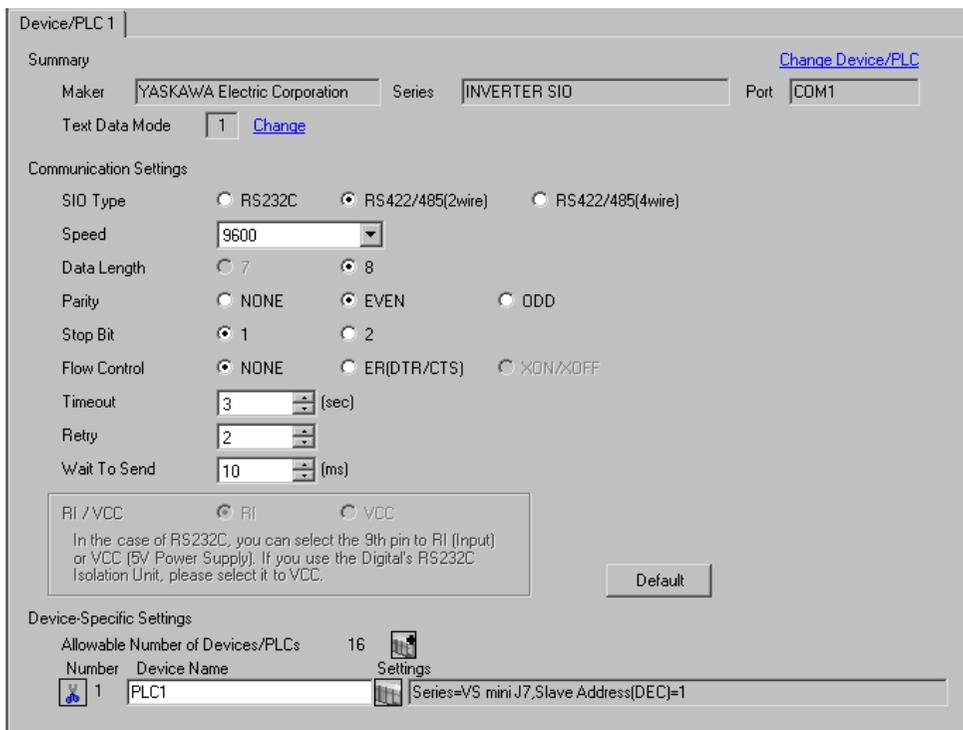
- 5 Press the DATA/ENTER key.
- 6 Reboot the External Device.

This completes the setting of the External Device.

3.6 Setting Example 6

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



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

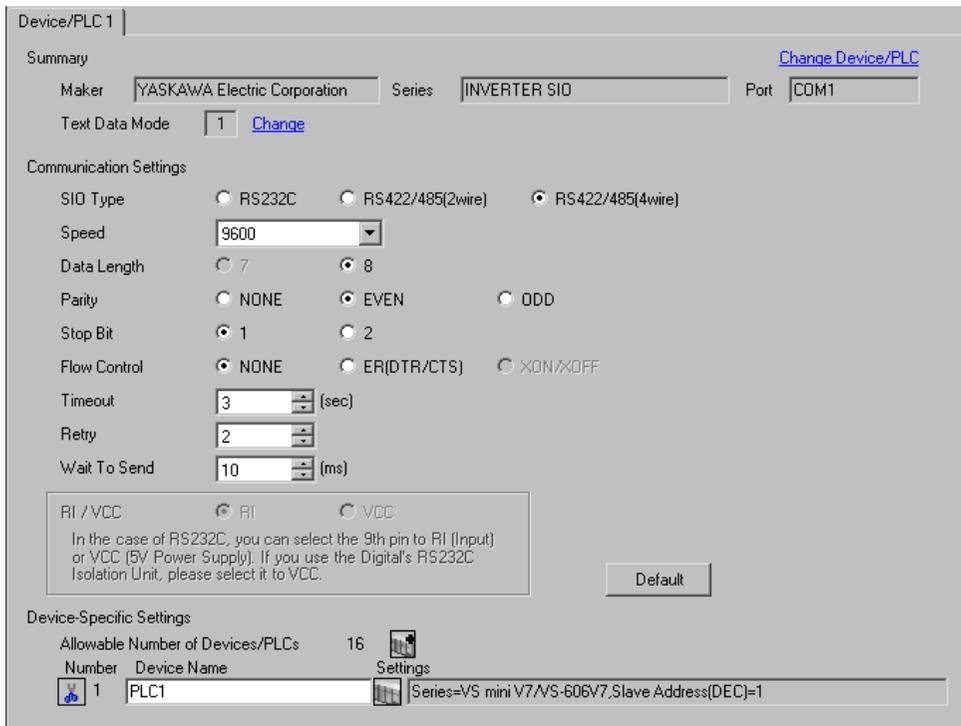
- 5 Press the DATA/ENTER key.
- 6 Reboot the External Device.

This completes the setting of the External Device.

3.7 Setting Example 7

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

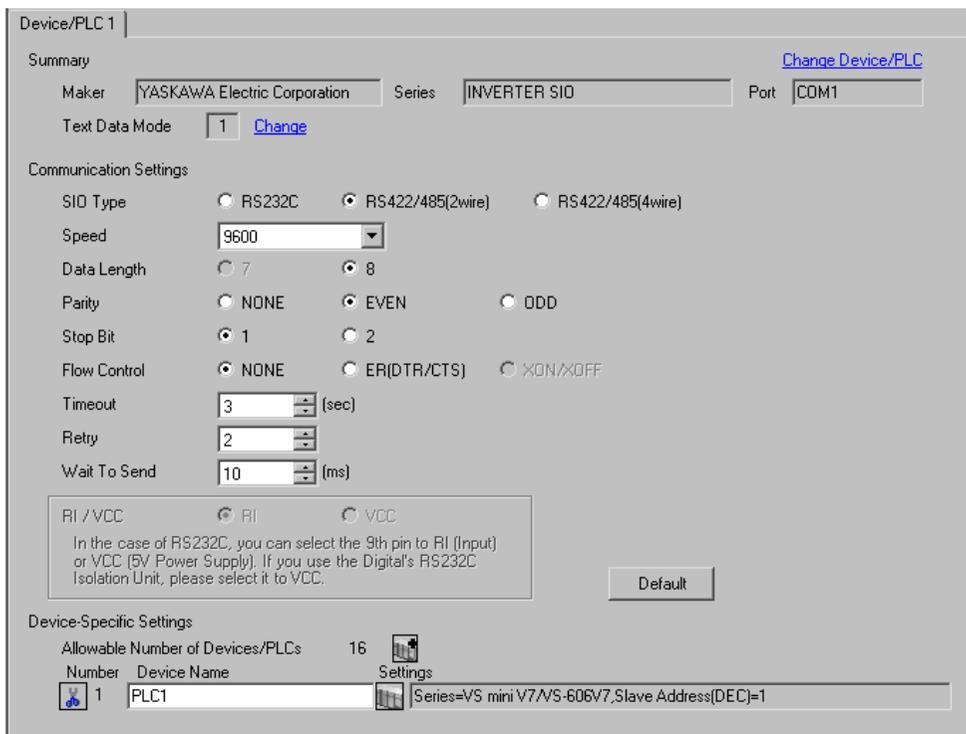
- 5 Press the DATA/ENTER key.
- 6 Reboot the External Device.

This completes the setting of the External Device.

3.8 Setting Example 8

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

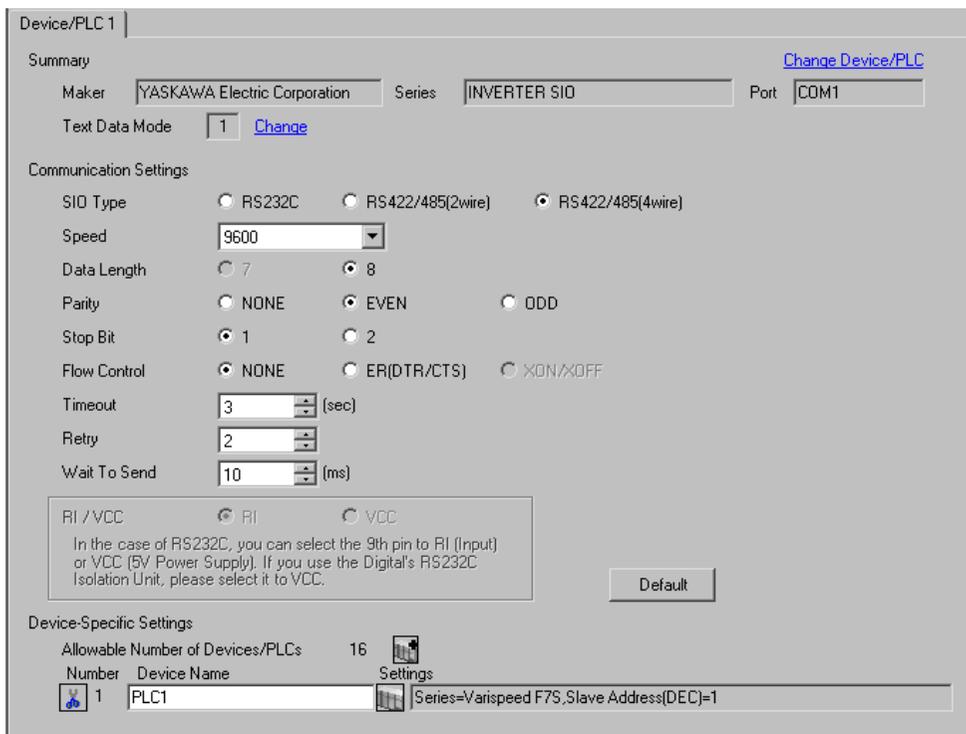
- 5 Press the DATA/ENTER key.
- 6 Reboot the External Device.

This completes the setting of the External Device.

3.9 Setting Example 9

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

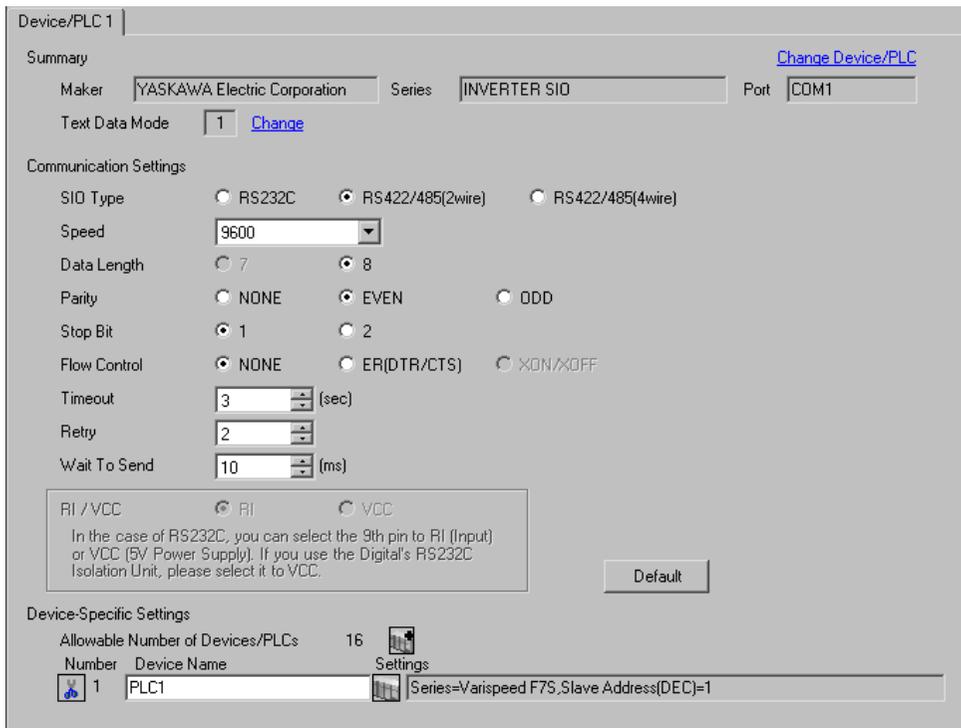
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.10 Setting Example 10

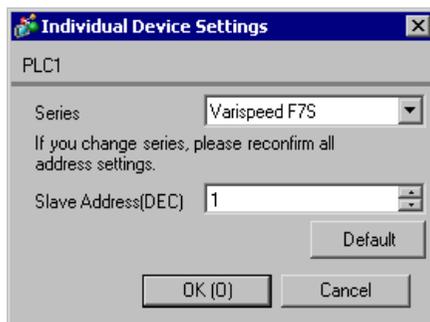
■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

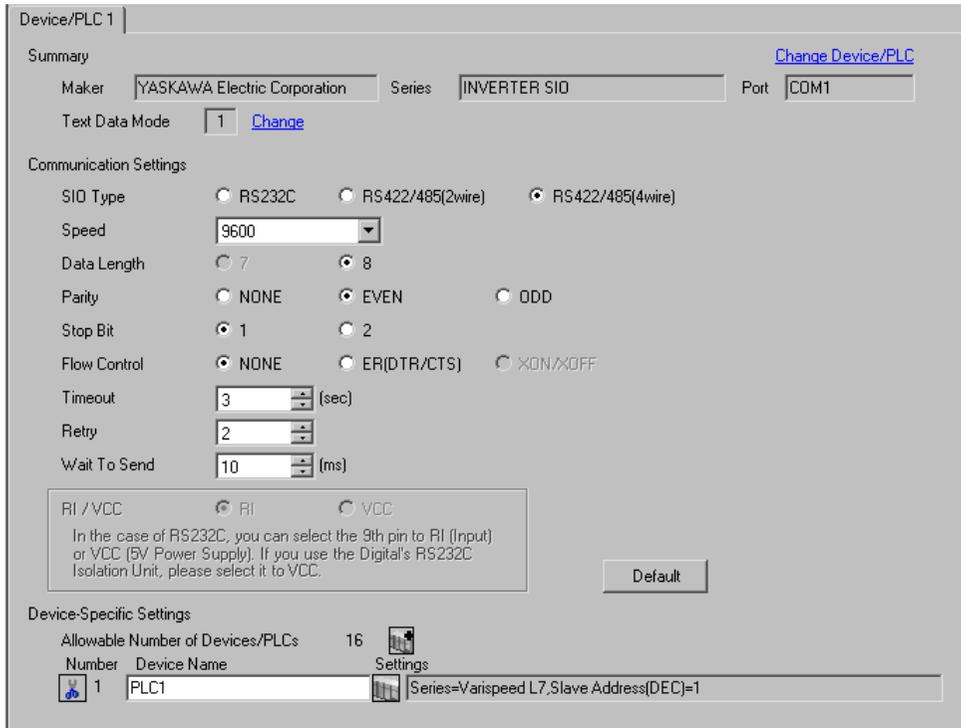
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.11 Setting Example 11

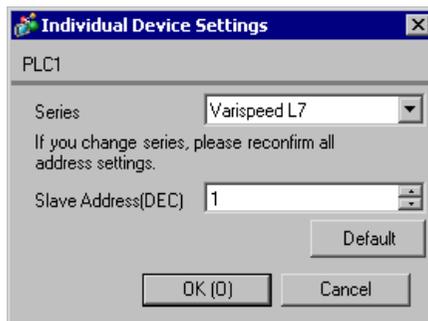
■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

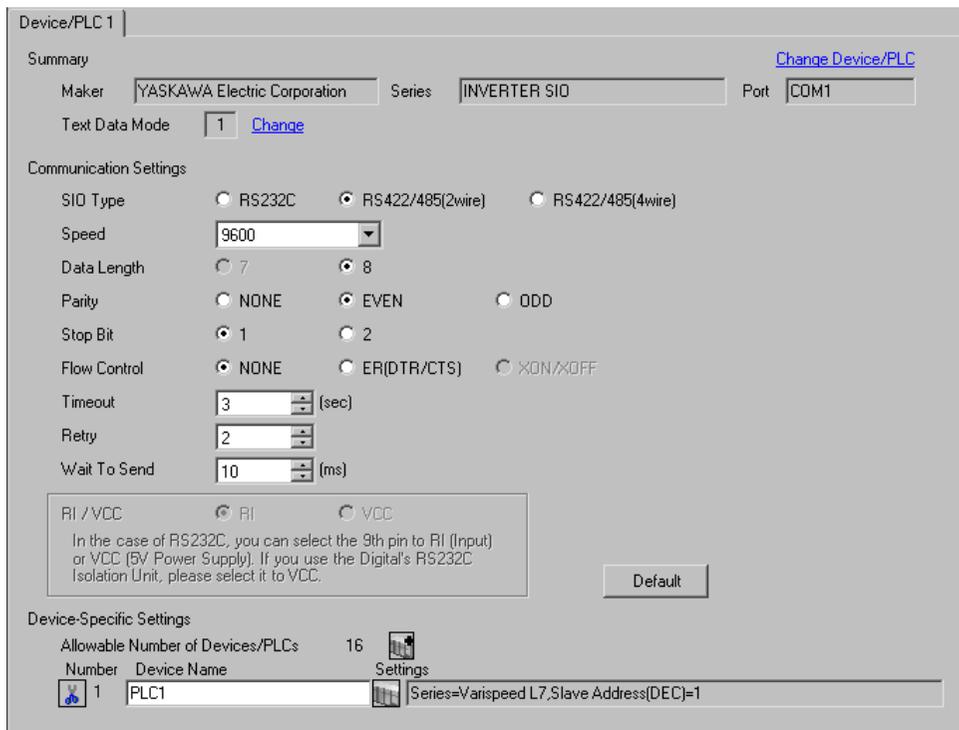
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.12 Setting Example 12

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

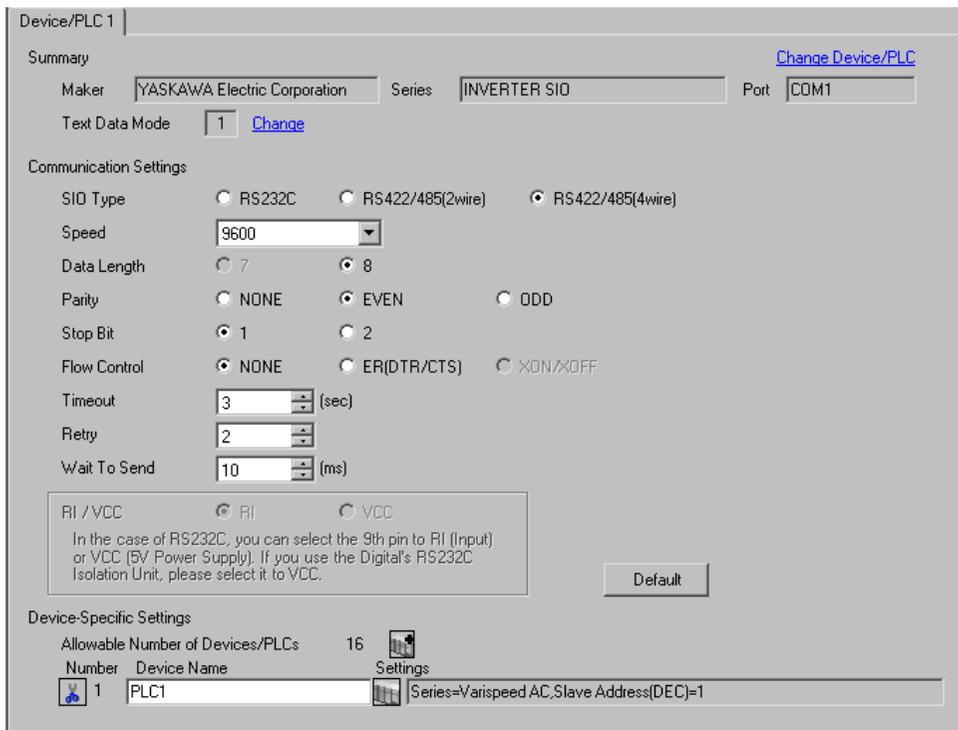
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.13 Setting Example 13

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

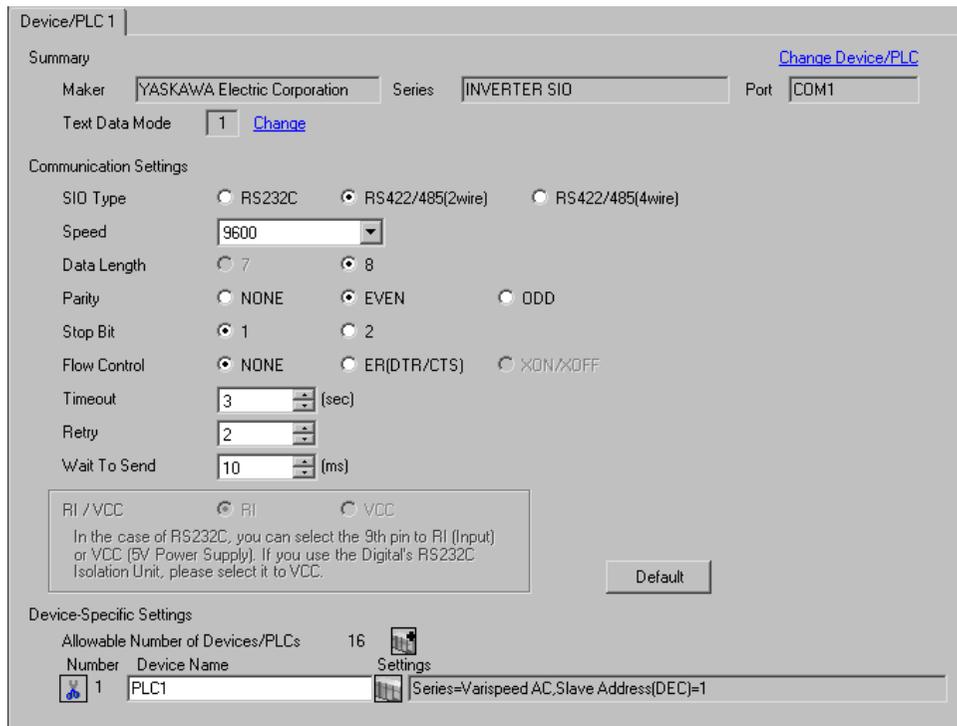
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.14 Setting Example 14

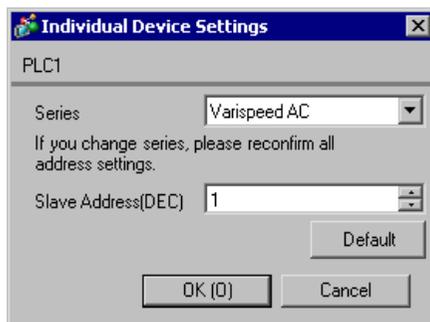
■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

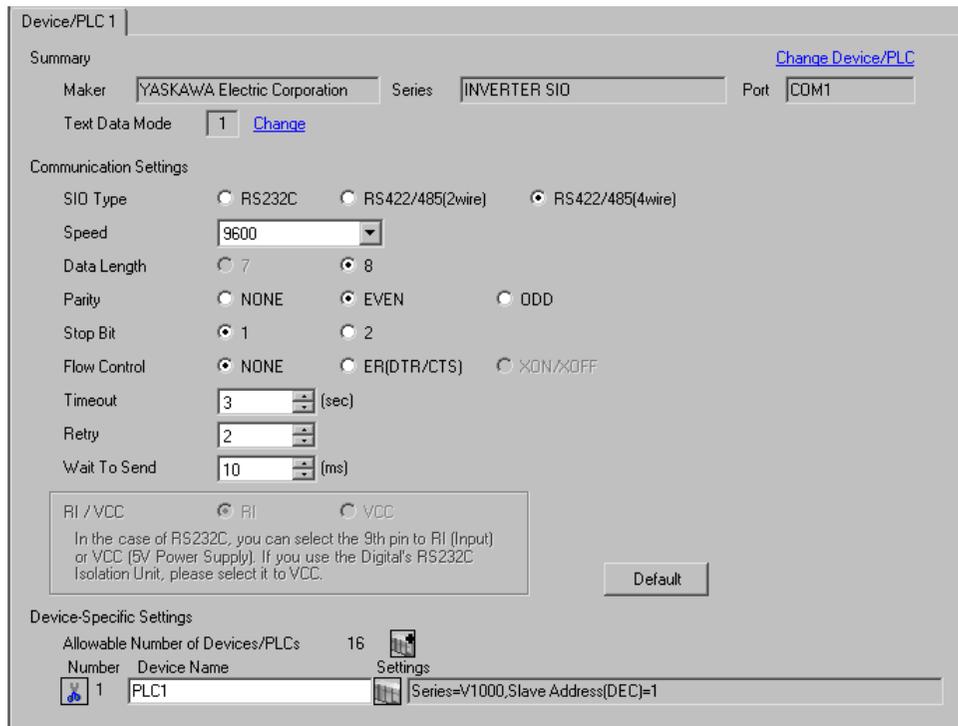
- 6 Press the DATA/ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.15 Setting Example 15

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

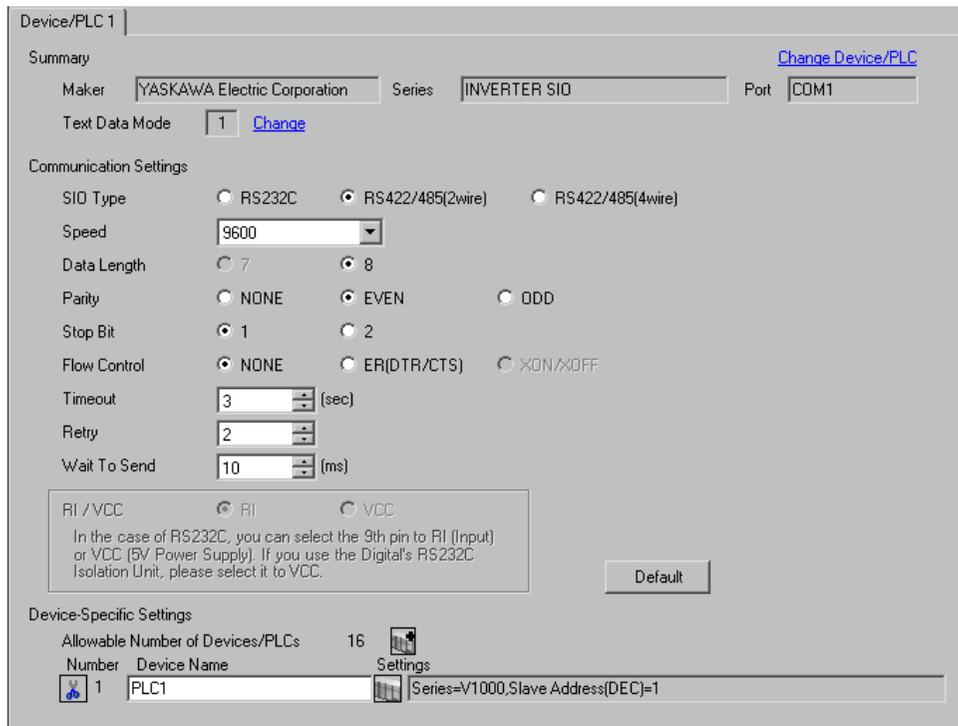
- 6 Press the ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.16 Setting Example 16

■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

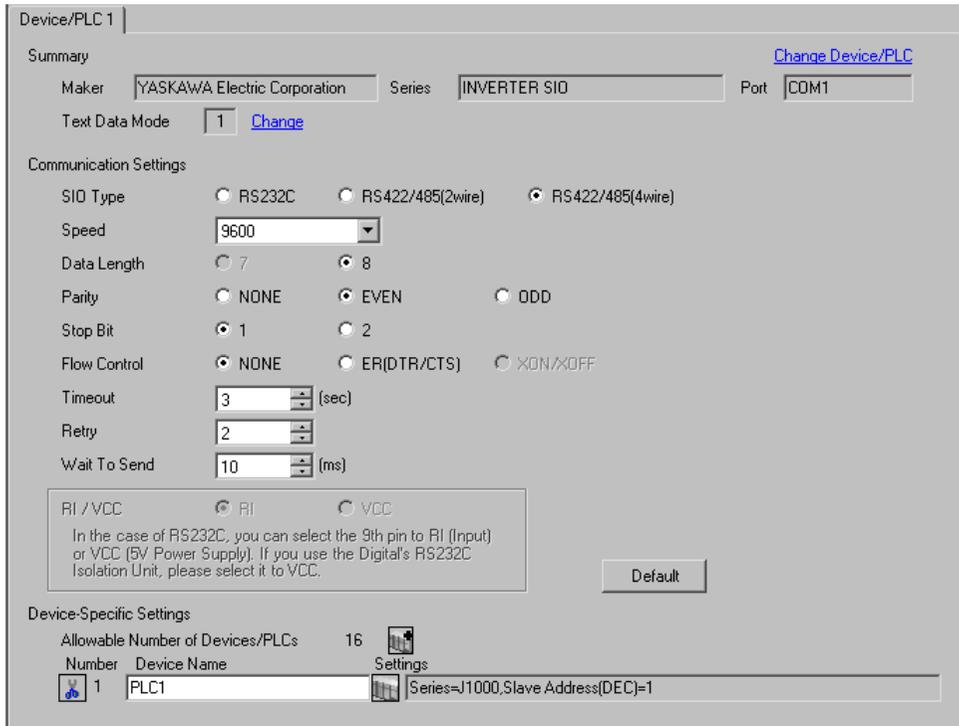
- 6 Press the ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.17 Setting Example 17

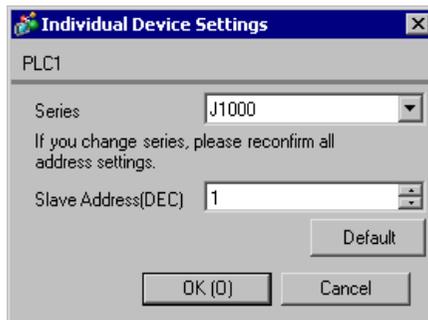
■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

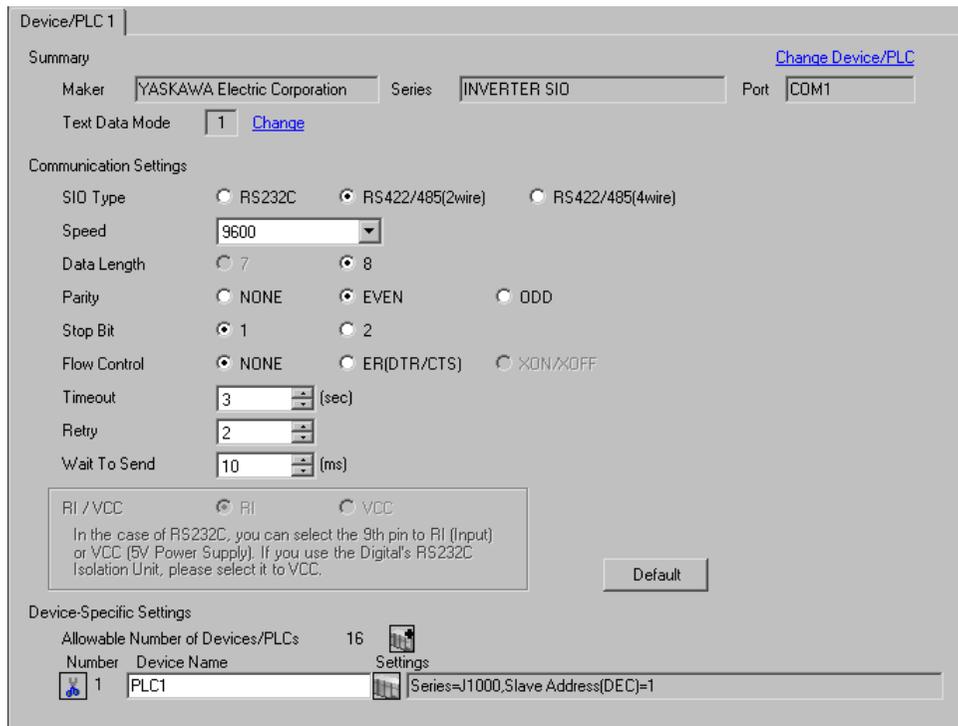
- 6 Press the ENTER key.
- 7 Reboot the External Device.

This completes the setting of the External Device.

3.18 Setting Example 18

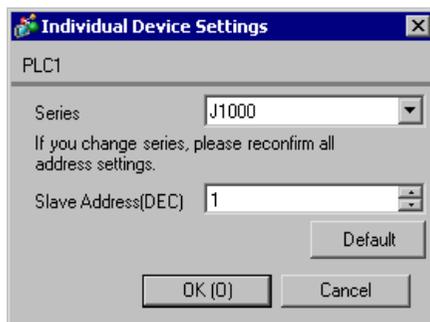
■ GP-Pro EX Settings

To display the setup screen, from the [System Settings] workspace, select [Device/PLC].



◆ Device Setting

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

4 Setup Items

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

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

☞ "3 Communication Settings" (page 9)

4.1 Setup Items in GP-Pro EX

■ Communication Settings

To display the setup screen, from the [System Settings] workspace, 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.

Continues on the next page.

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.

■ Device Setting

To display the [Individual Device Settings] dialog box, select the external device and click  [Setting] from [Device-Specific Settings] in the [Device/PLC] window. To connect multiple External Devices, click  from [Device-Specific Settings] in the [Device/PLC] window to add another External Device.



Setup Items	Setup Description
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 Off-line Mode

NOTE

- Refer to the Maintenance/Troubleshooting manual for information on how to enter off-line mode or about the operation.
- Cf. Maintenance/Troubleshooting Manual "Off-line Mode"
- The number of the setup items to be displayed for 1 page in the off-line 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 off-line mode. Touch the External Device you want to set from the display list.

Comm.	Device	Option		
INVERTER SIO		[COM1]	Page 1/1	
SIO Type	RS422/485(4wire) ▼			
Speed	9600 ▼			
Data Length	8			
Parity	<input type="radio"/> NONE <input checked="" type="radio"/> EVEN <input type="radio"/> ODD			
Stop Bit	<input checked="" type="radio"/> 1 <input type="radio"/> 2			
Flow Control	NONE ▼			
Timeout(s)	3 ▼ ▲			
Retry	2 ▼ ▲			
Wait To Send(ms)	10 ▼ ▲			
Exit		Back		2008/05/26 09:55:45

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.

Continues on the next page.

Setup Items	Setup Description
Parity	Select how to check parity.
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].

Comm.	Device	Option		
INVERTER SIO		[COM1]	Page 1/1	
Device/PLC Name		[PLC1] ▼		
Series		V1000		
Slave Address(DEC)		[1] ▼ ▲		
Exit		Back		2008/05/26 09:55:48

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) ST * ² (COM2) LT (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	
	1D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
GP-4106 (COM1)	1E	User-created cable	

*1 All GP3000 models except AGP-3302B

*2 All ST models except AST-3211A and AST-3302B

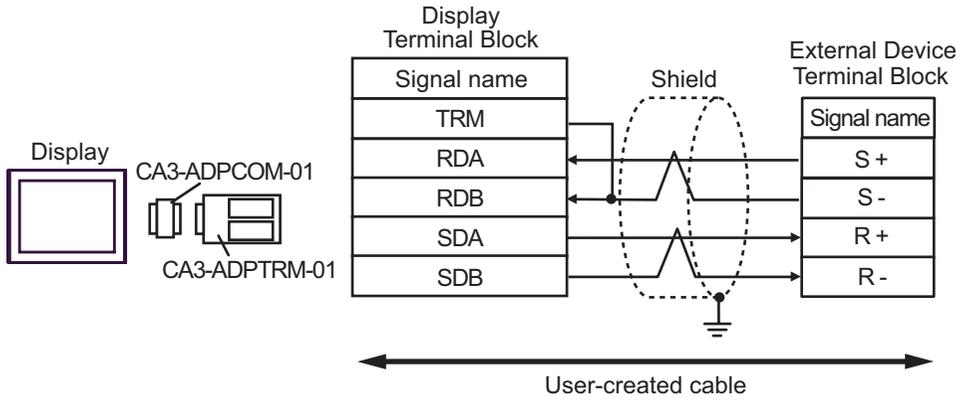
*3 Only the COM port which can communicate by RS-422/485 (4wire) can be used.

 ■ IPC COM Port (page 6)

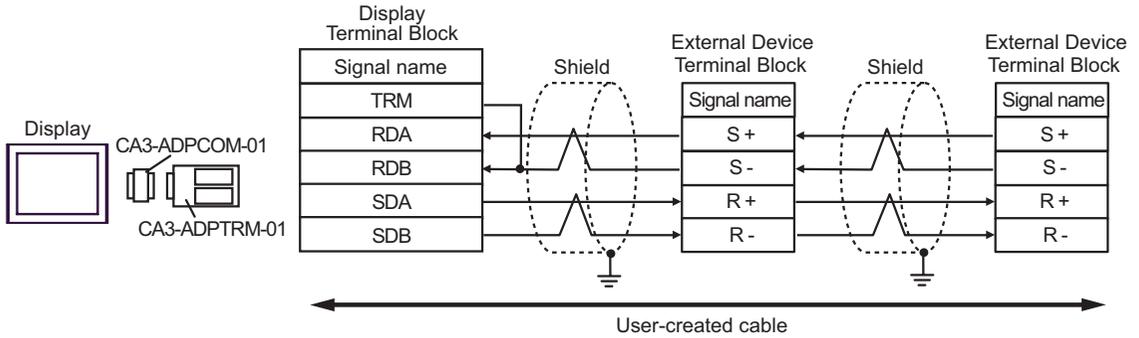
*4 All GP3000 models except GP-3200 series and AGP-3302B

1A)

- 1:1 Connection



- 1:n Connection

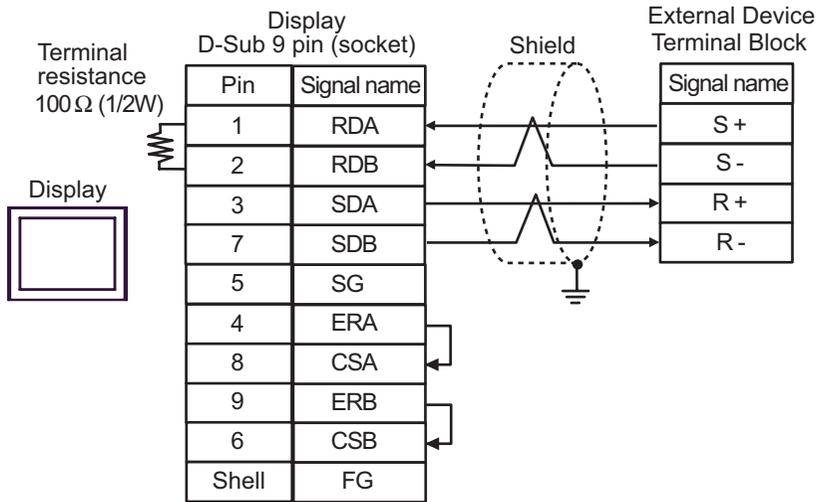


NOTE

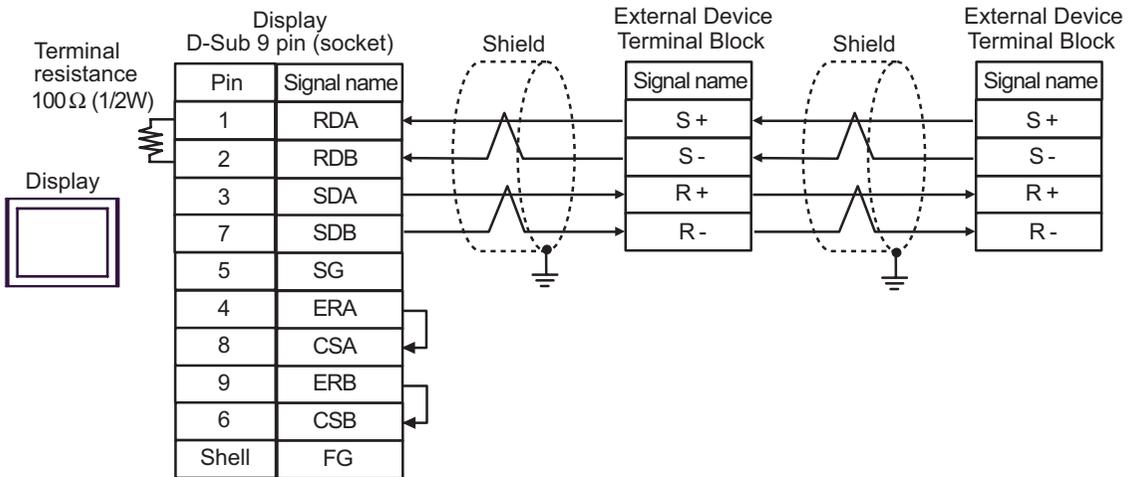
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

1B)

- 1:1 Connection



- 1:n Connection

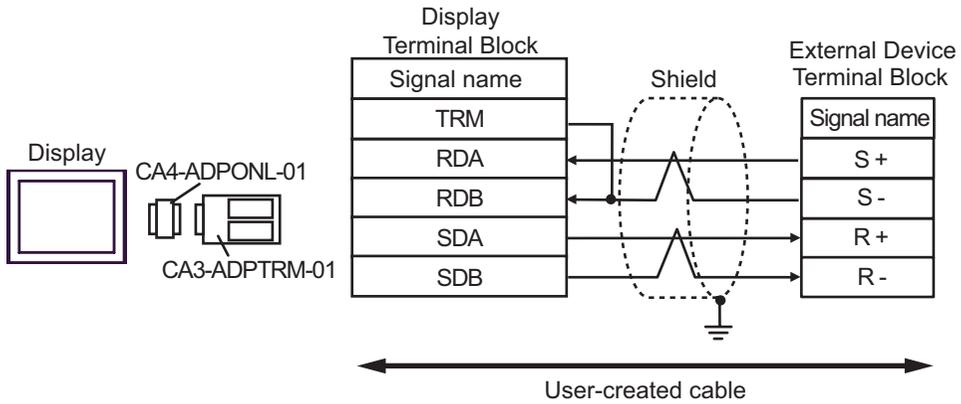


NOTE

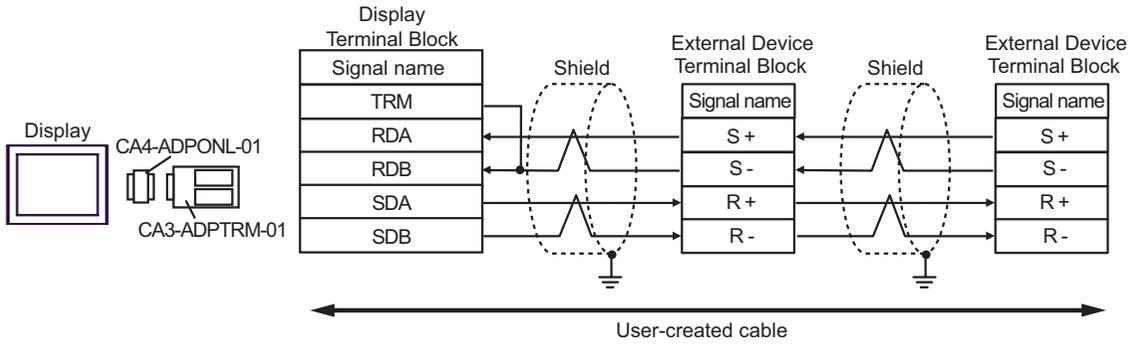
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

1C)

- 1:1 Connection



- 1:n Connection

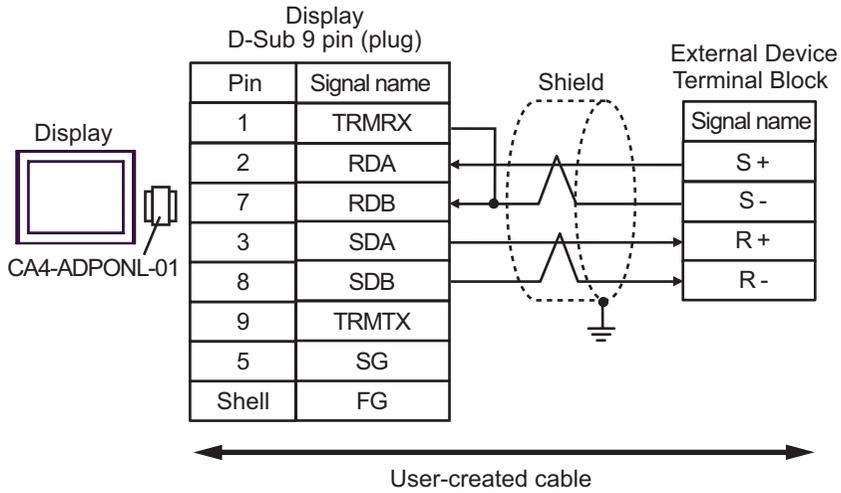


NOTE

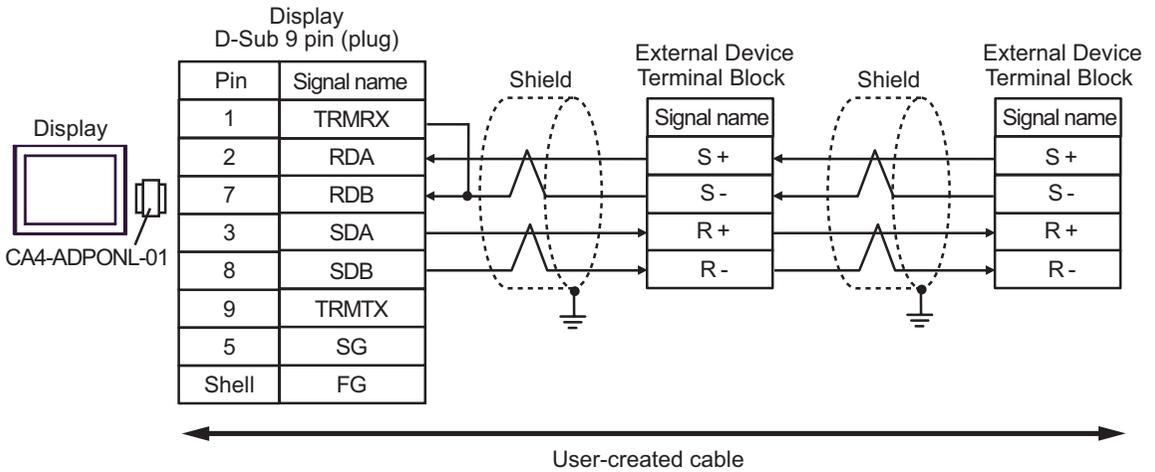
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

1D)

- 1:1 Connection



- 1:n Connection

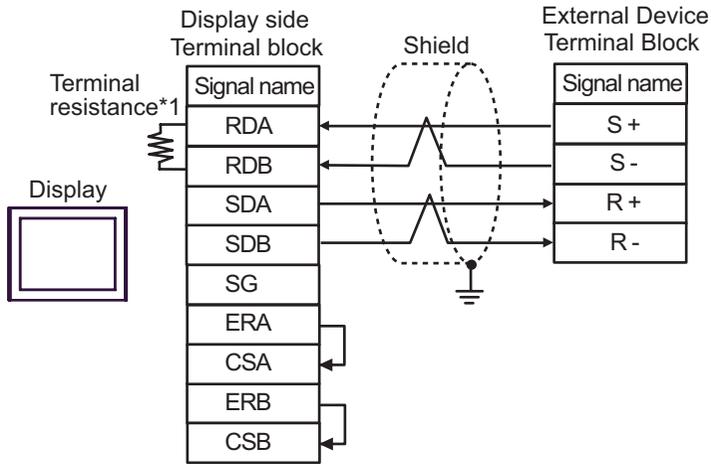


NOTE

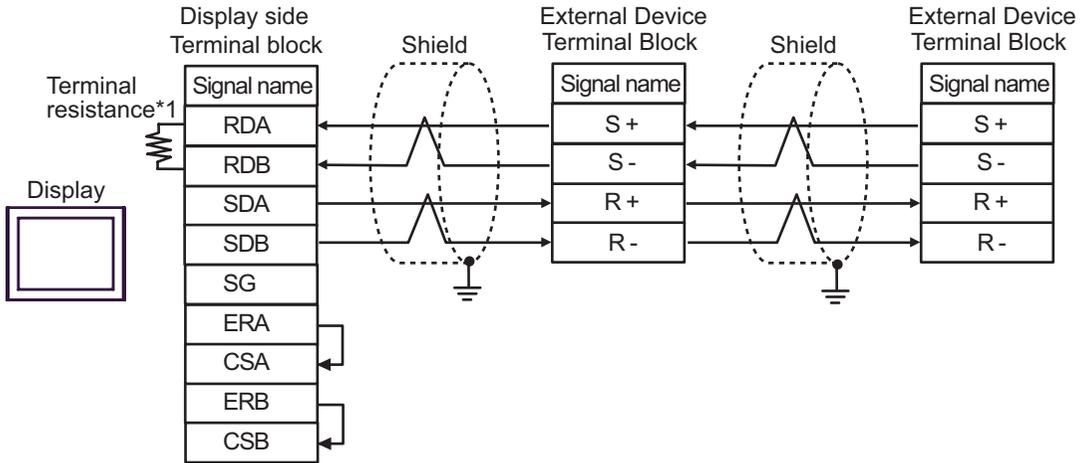
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

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

Cable Diagram 2

Display (Connection Port)	Cable		Remarks
GP3000* ¹ (COM1) AGP-3302B (COM2) ST* ² (COM2) LT (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	
	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	
	2F	User-created cable	
GP-4106 (COM1)	2G	User-created cable	
GP-4107 (COM1)	2H	User-created cable	

*1 All GP3000 models except AGP-3302B

*2 All ST models except AST-3211A and AST-3302B

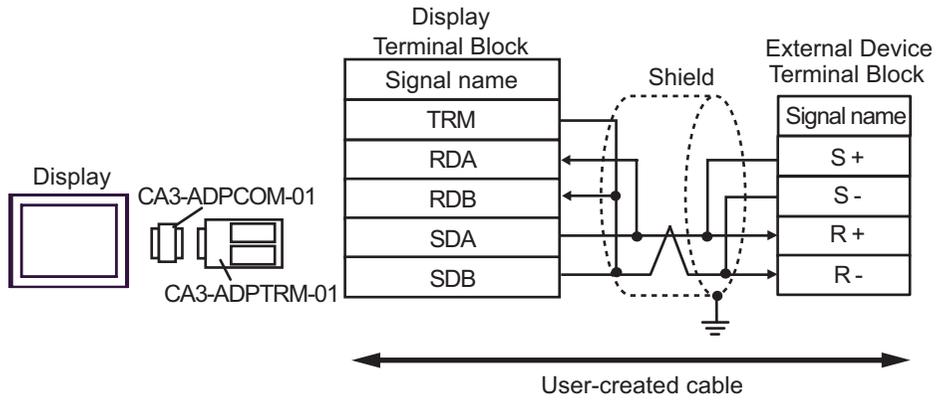
*3 All GP3000 models except GP-3200 series and AGP-3302B

*4 Only the COM port which can communicate by RS-422/485 (2wire) can be used.

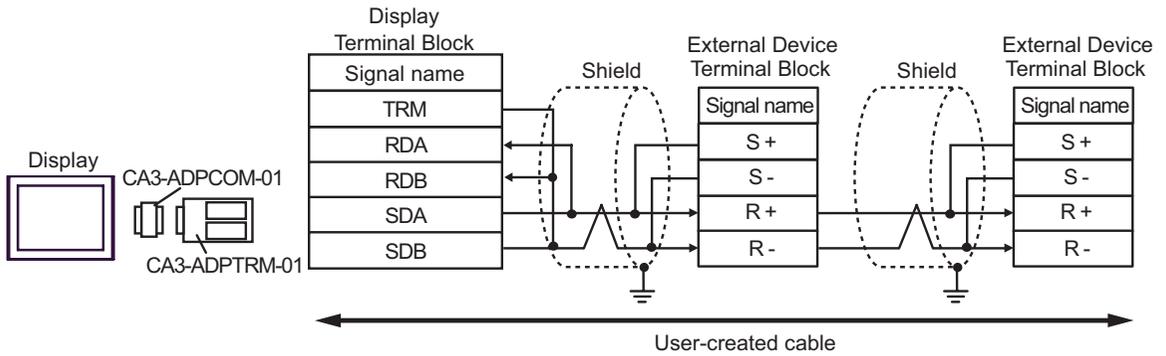
 ■ IPC COM Port (page 6)

2A)

- 1:1 Connection



- 1:n Connection

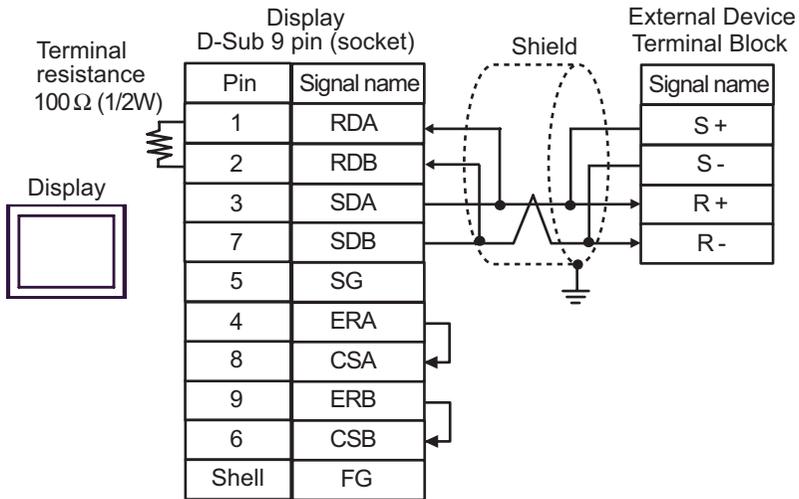


NOTE

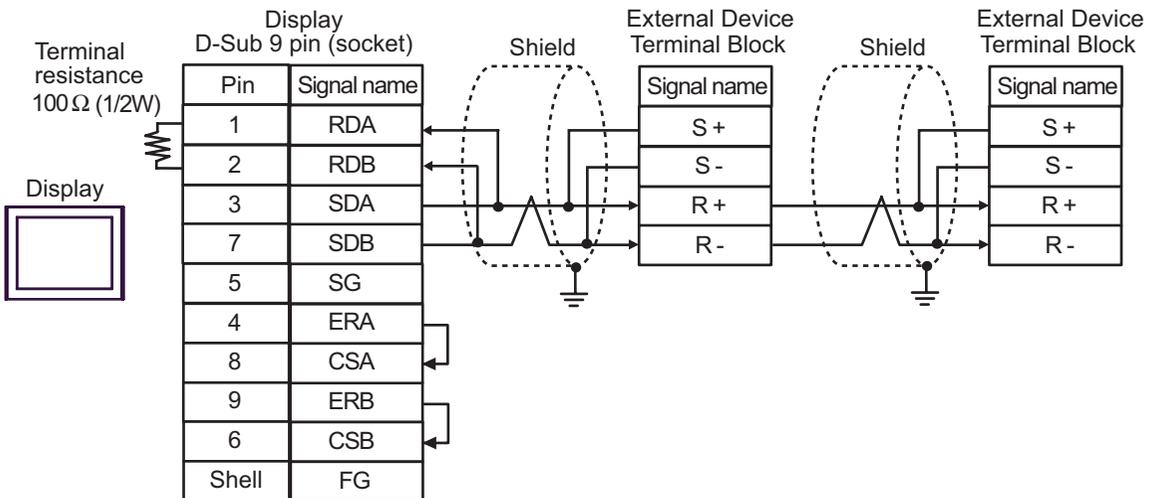
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2B)

- 1:1 Connection



- 1:n Connection

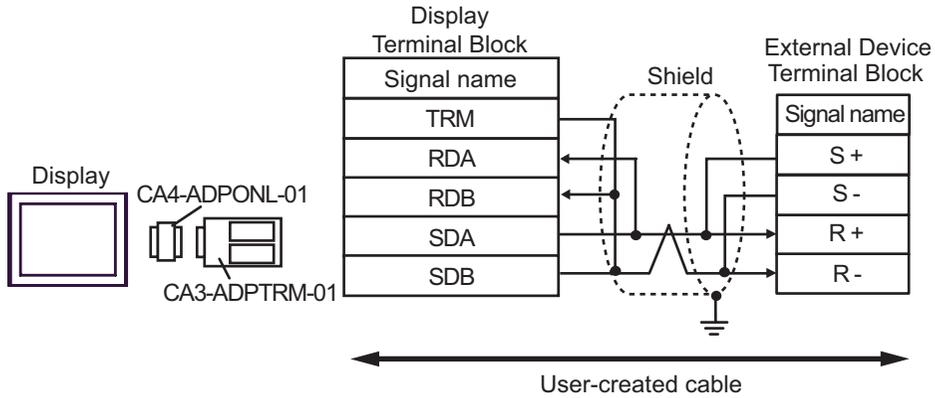


NOTE

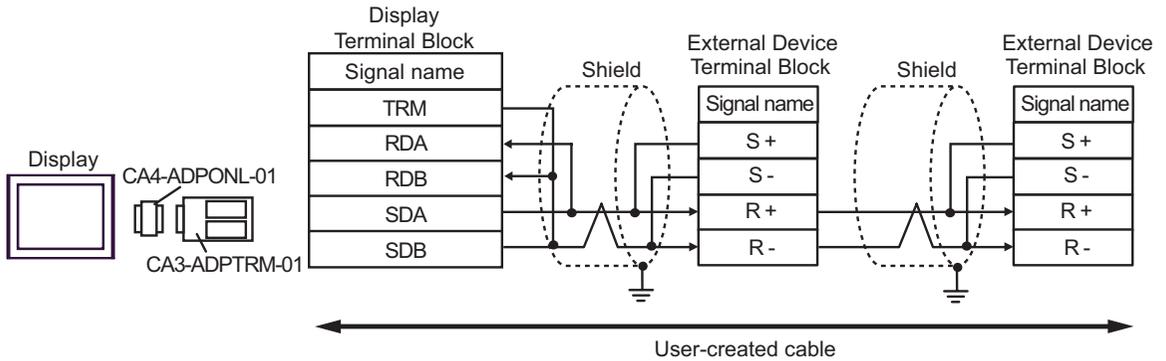
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2C)

- 1:1 Connection



- 1:n Connection

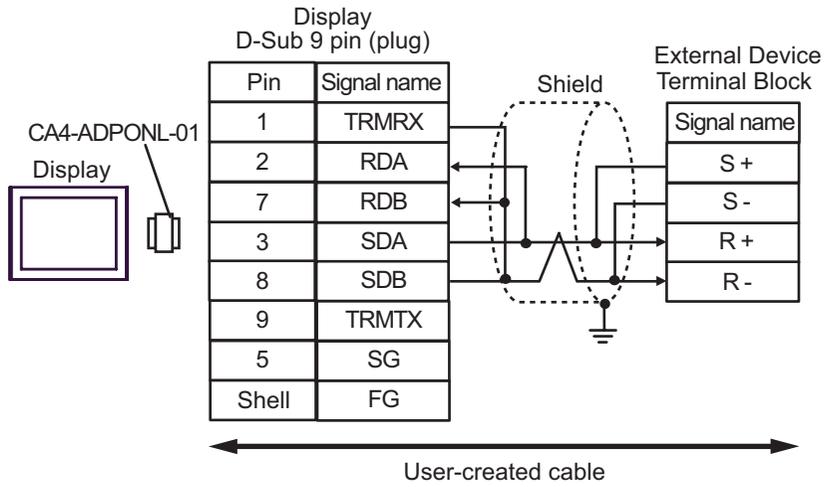


NOTE

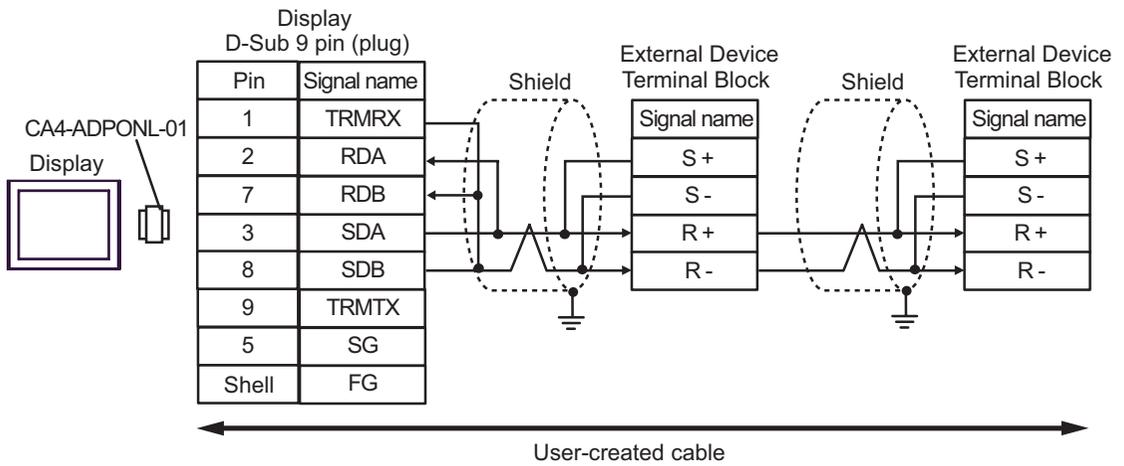
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2D)

- 1:1 Connection



- 1:n Connection

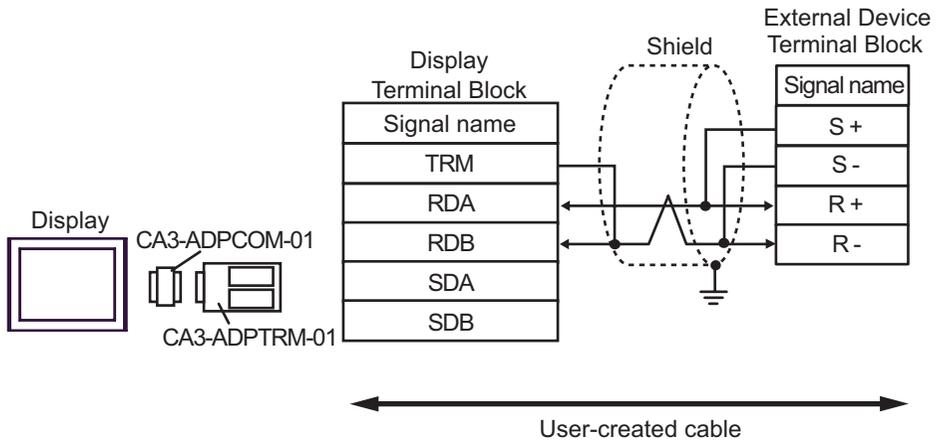


NOTE

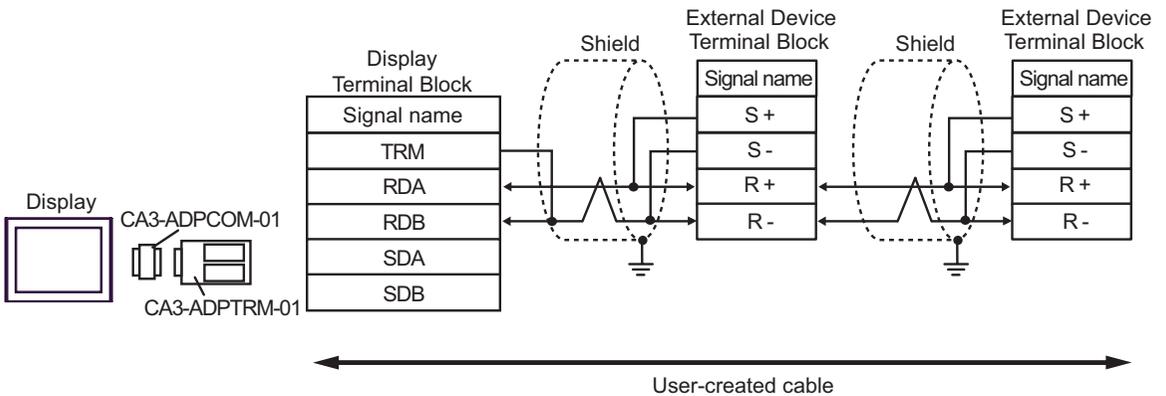
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2E)

- 1:1 Connection



- 1:n Connection

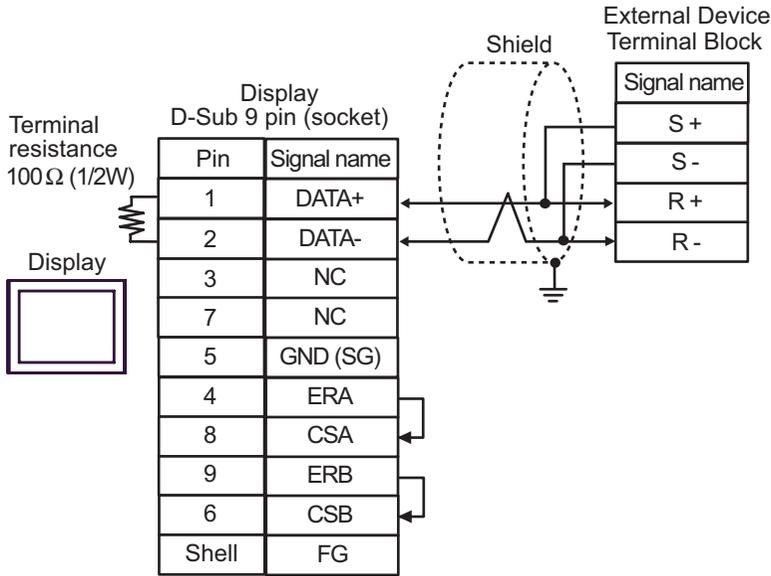


NOTE

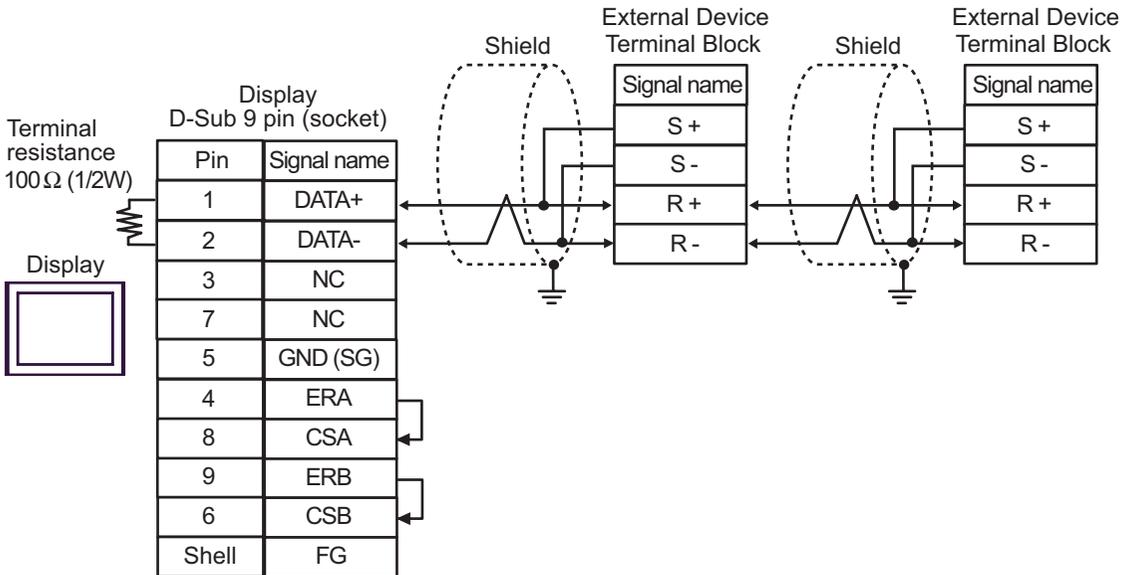
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2F)

- 1:1 Connection



- 1:n Connection

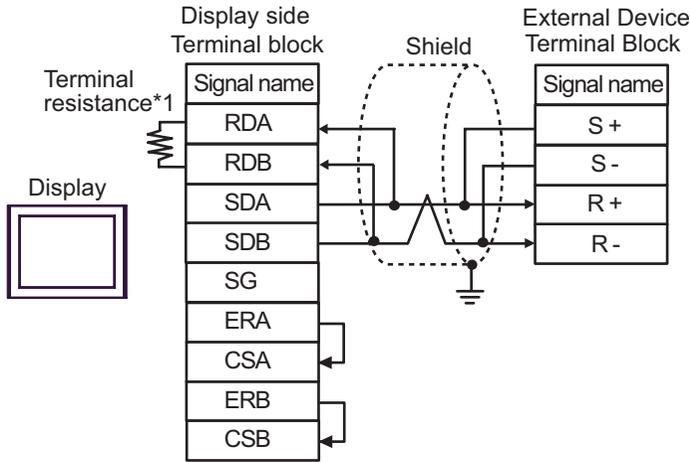


NOTE

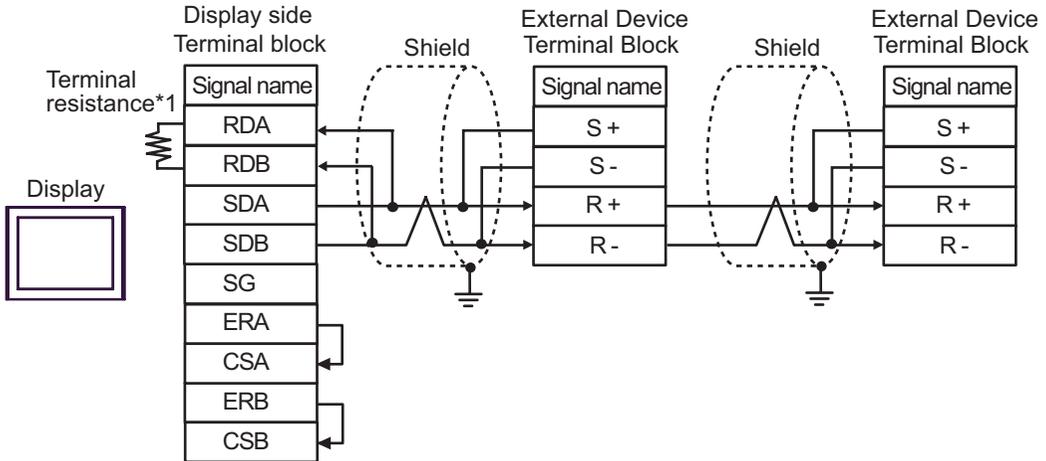
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

2G)

- 1:1 Connection



- 1:n Connection



NOTE

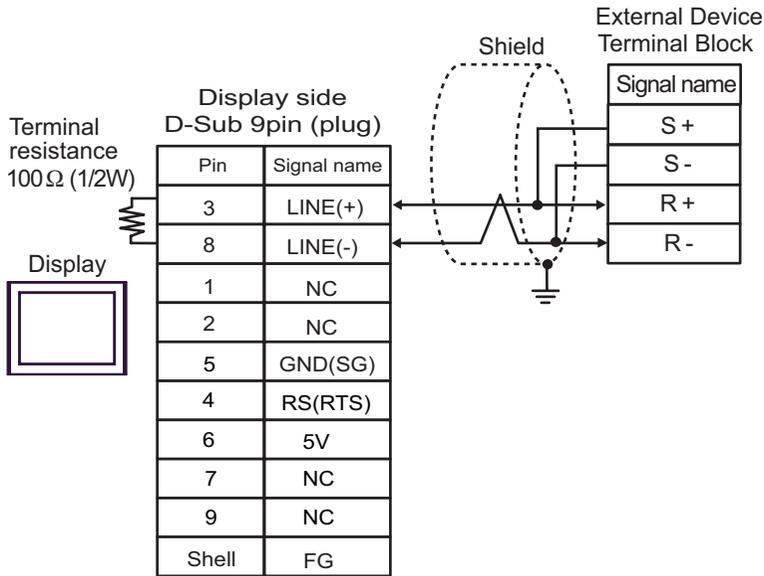
- For the shield ground, be sure to use the ground terminal on the External Device.
- Turn on the termination resistor switch on the External Device located at the end.

*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.

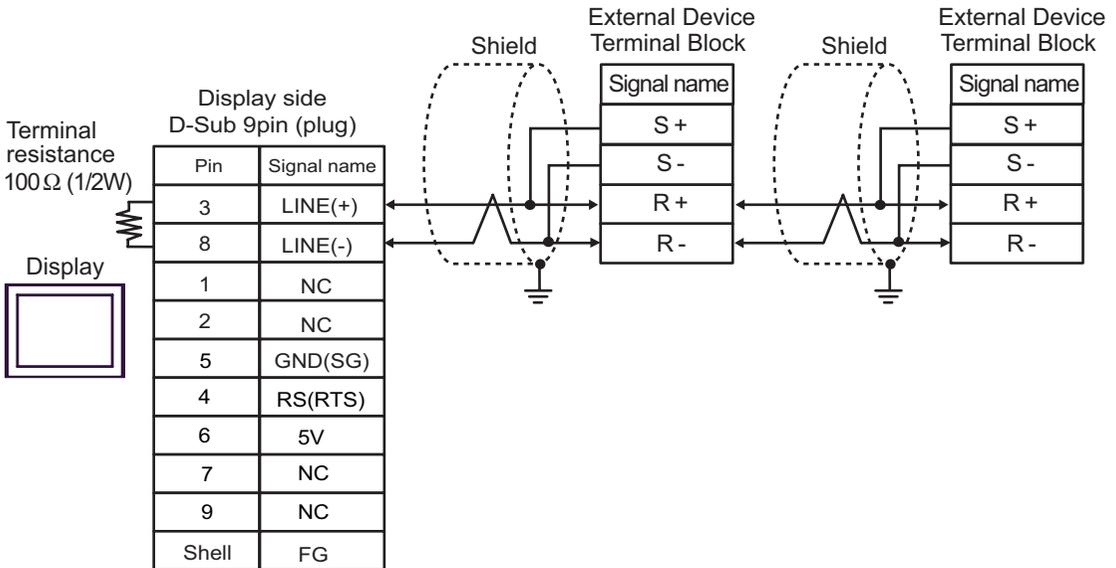
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

2H)

- 1:1 Connection



- 1:n Connection



IMPORTANT

- The 5V output (Pin #6) on the GP-4107 is the power for the Siemens AG's PROFIBUS connector. Do not use it for other devices.

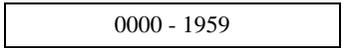
NOTE

- 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.

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.

 : This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Bit Register*1	BR0000.0 - BR1959.F	-----	-	*2
Register*1	-----	 0000 - 1959		

*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 correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it. 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.
- Refer to the GP-Pro EX Reference Manual for system data area.

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

- For the icons in the table, refer to the notes on manual notation.

 "Manual Symbols and Terminology"

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.

Device	Device Name	Device Code (HEX)	Address Code
Register	-	0000	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	<p>Displays the IP address or device address of the External Device where an error has occurred, or error codes received from the External Device.</p> <p>NOTE</p> <ul style="list-style-type: none"> 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 "When an error is displayed (Error Code List)" in "Maintenance/Troubleshooting Manual" for details on the error messages common to the driver.

◆ Error Codes Unique to External Device

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