FB Series SIO Driver

Introduction

This manual describes how to connect the Display and the External Device.

In this manual, the connection procedure will be described by following the sections below:

1	System Configuration This section shows the types of External Devices that can be connected and SIO type.	☞ "1 System Configuration" (page 3)
2	Selection of External Device Select the model (series) of the External Device to be connected and its connection method.	☞ "2 Selection of External Device" (page 8)
3	Example of Communication Settings This section shows setting examples for communicating between the Display and the External Device.	☞ "3 Example of Communication Setting" (page 9)
4	Setup Items This section describes communication setup items on the Display. Set the communication settings of the Display with GP-Pro EX or in offline mode.	☞ "4 Setup Items" (page 32)
5	Cable Diagram This section shows cables and adapters for connecting the Display and the External Device.	☞ "5 Cable Diagram" (page 37)

Operation

1 System Configuration

The following shows the system configuration where the External Device of FATEK AUTOMATION Corporation and the Display are connected.

Series	CPU	Link I/F		SIO Type	Setting Example	Cable Diagram
FBs[*1]	FBs-10MA/MC FBs-14MA/MC FBs-20MA/MC FBs-24MA/MC FBs-32MA/MC FBs-40MA/MC FBs-60MA/MC FBs-20MN FBs-32MN FBs-44MN	CPU unit[*2]	Port 0	RS232C	Setting Example 1 (page 9)	Cable Diagram 1 (page 37)
		FBs-CB2	Port 2	RS232C	Setting Example 2 (page 10)	Cable Diagram 2 (page 38)
		FBs-CB22	Port 1	RS232C	Setting Example 3 (page 12)	Cable Diagram 2 (page 38)
			Port 2	RS232C	Setting Example 2 (page 10)	
		FBs-CB25	Port 1	RS232C	Setting Example 3 (page 12)	Cable Diagram 2 (page 38)
			Port 2	RS422/485 (2wire)	Setting Example 4 (page 14)	Cable Diagram 4 (page 40)
		FBs-CB5	Port 2	RS422/485 (2wire)	Setting Example 4 (page 14)	Cable Diagram 4 (page 40)
		FBs-CB55	Port 1	RS422/485 (2wire)	Setting Example 5 (page 16)	Cable Diagram 4 (page 40)
			Port 2	RS422/485 (2wire)	Setting Example 4 (page 14)	
		FBs-CM22	Port 3	RS232C	Setting Example 6 (page 18)	Cable Diagram 3 (page 39)
			Port 4	RS232C	Setting Example 7 (page 20)	
		FBs-CM25	Port 3	RS232C	Setting Example 6 (page 18)	Cable Diagram 3 (page 39)
			Port 4	RS422/485 (2wire)	Setting Example 9 (page 24)	Cable Diagram 4 (page 40)

Series	CPU	Link I/F		SIO Type	Setting Example	Cable Diagram
FBs*1	FBs-10MA/MC FBs-14MA/MC FBs-20MA/MC FBs-24MA/MC FBs-32MA/MC FBs-40MA/MC FBs-60MA/MC FBs-20MN FBs-32MN FBs-44MN	FBs-CM25E	Port 3	RS232C	Setting Example 6 (page 18)	Cable Diagram 3 (page 39)
			Port 4	RS422/485 (2wire)	Setting Example 9 (page 24)	Cable Diagram 4 (page 40)
		FBs-CM55	Port 3	RS422/485 (2wire)	Setting Example 8 (page 22)	Cable Diagram 4 (page 40)
			Port 4	RS422/485 (2wire)	Setting Example 9 (page 24)	
		FBs-CM55E	Port 3	RS422/485 (2wire)	Setting Example 8 (page 22)	Cable Diagram 4 (page 40)
			Port 4	RS422/485 (2wire)	Setting Example 9 (page 24)	
FBe/FBn*1	FBe-20MA FBe-28MA FBe-40MA	CPU unit	Port 0	RS232C	Setting Example 11 (page 27)	Cable Diagram 5 (page 49)
				RS422/485 (2wire)	Setting Example 10 (page 26)	Cable Diagram 6 (page 51)
	FBe-20MC FBe-28MC FBe-40MC FBn-19MCT FBn-26MCT FBn-36MCT	CPU unit	Port 0	RS232C	Setting Example 11 (page 27)	Cable Diagram 5 (page 49)
				RS422/485 (2wire)	Setting Example 10 (page 26)	Cable Diagram 6 (page 51)
			Port 1	RS232C	Setting Example 12 (page 28)	Cable Diagram 7 (page 60)
			Port 2	RS422/485 (2wire)	Setting Example 13 (page 30)	Cable Diagram 8 (page 61)
		FB-DTBR	Port 0	RS232C	Setting Example 11 (page 27)	Cable Diagram 3 (page 39)
			Port 1	RS232C	Setting Example 12 (page 28)	Cable Diagram 9 (page 70)
			Port 2	RS422/485 (2wire)	Setting Example 13 (page 30)	Cable Diagram 6 (page 51)

Series	CPU	Link I/F		SIO Type	Setting Example	Cable Diagram
FBe/FBn *1	FBe-20MC FBe-28MC FBe-40MC FBn-19MCT FBn-26MCT FBn-36MCT	FB-DTBR-E	Port 0	RS232C	Setting Example 11 (page 27)	Cable Diagram 3 (page 39)
			Port 2	RS422/485 (2wire)	Setting Example 13 (page 30)	Cable Diagram 6 (page 51)

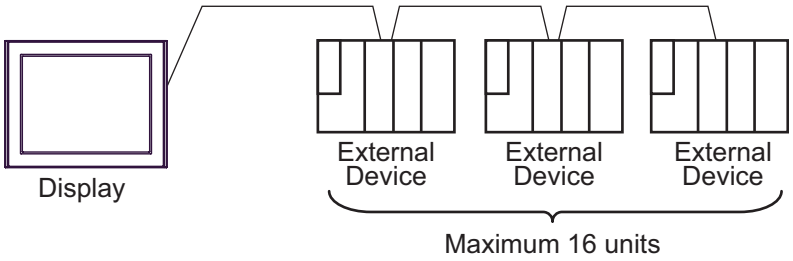
*1 Set the software's interface to "Standard Interface". Refer to your External Device manual for the correct settings.

*2 Available only with a CPU incorporating an RS232 port.

■ 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)

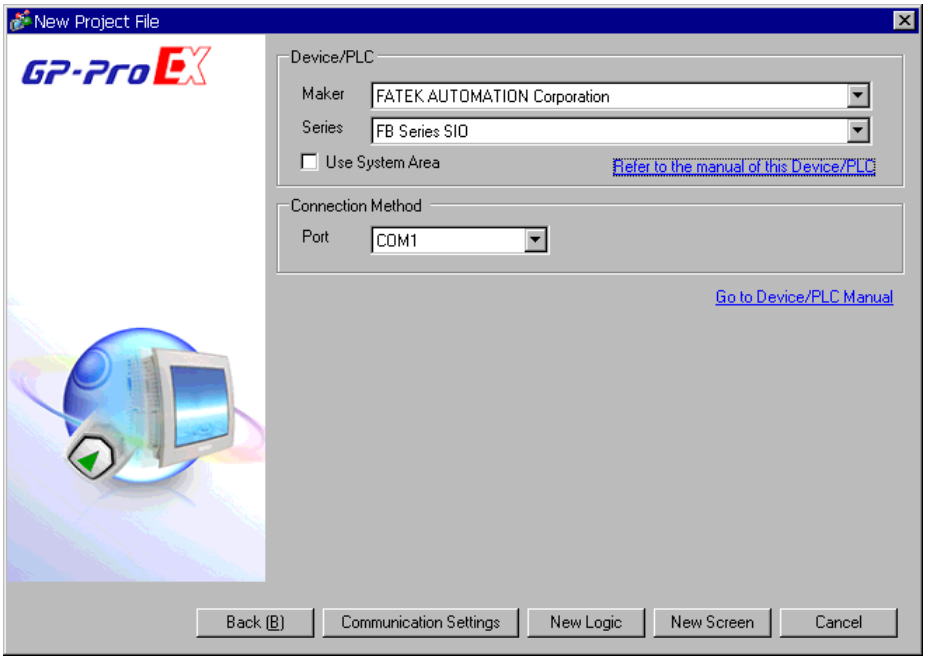
DIP switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA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

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 "FATEK AUTOMATION Corporation".
Series	Select the model (series) of the External Device to be connected and its connection method. Select "FB Series SIO". Check the External Device that can be connected in "FB Series SIO" in system configuration. ☞ "1 System Configuration" (page 3)
Use System Area	Check this option when you synchronize the system data area of Display and the device (memory) of External Device. When synchronized, you can use the ladder program of External Device to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "Display Unit (System Area) Settings Guide" Cf. Maintenance/Troubleshooting Manual "Main Unit - System Area Settings"
Port	Select the port of the Display to be connected to the External Device.

3 Example of Communication Setting

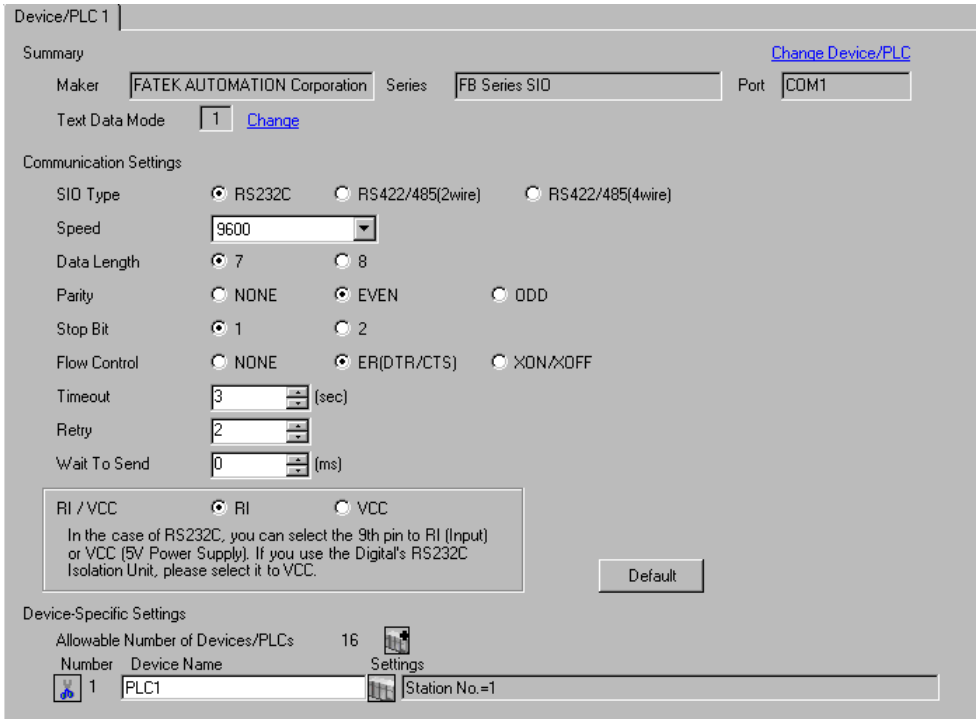
The following shows examples of communication settings for the Display and the External Device, which are recommended by Pro-face.

3.1 Setting Example 1

■ Settings of GP-Pro EX

◆ Communication Settings

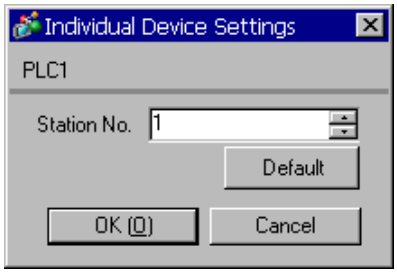
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click  ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click  from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

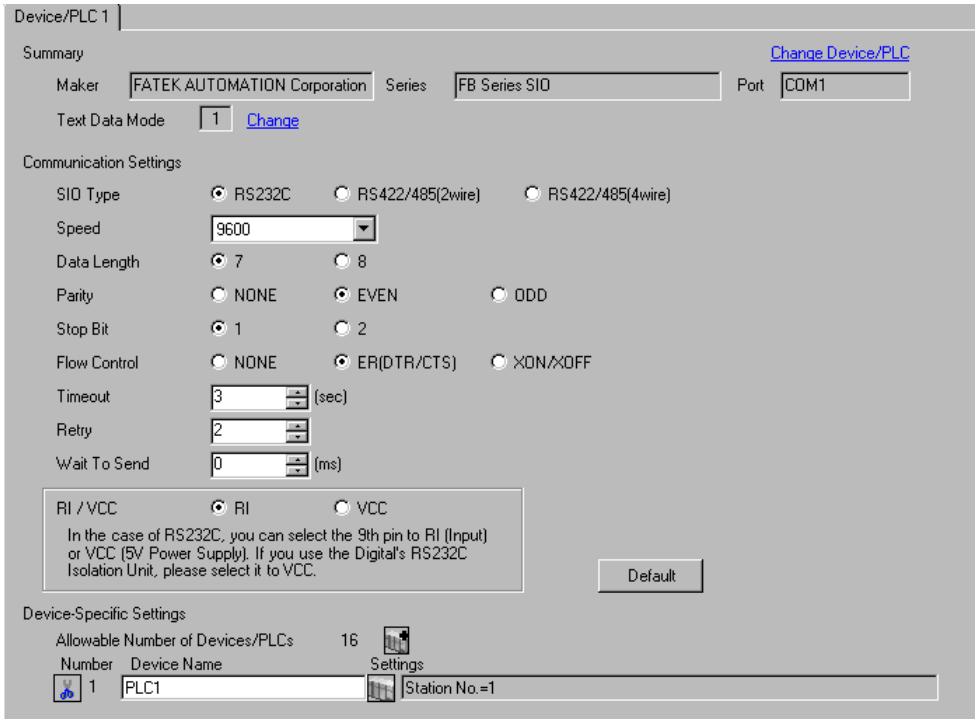
The communication setting is fixed.

3.2 Setting Example 2

■ Settings of GP-Pro EX

◆ Communication Settings

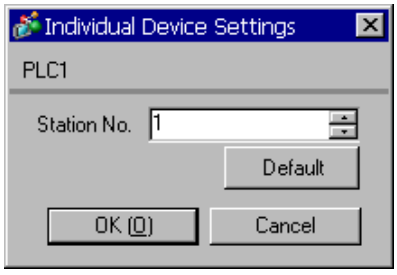
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 2 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

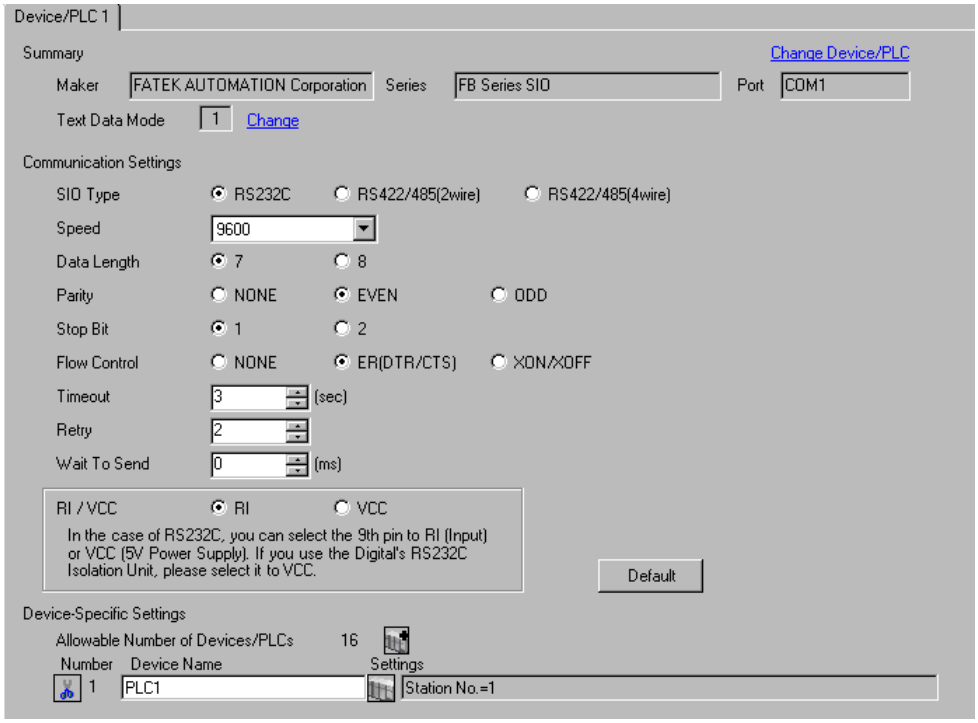
4 Click [OK] to complete the port settings.

3.3 Setting Example 3

■ Settings of GP-Pro EX

◆ Communication Settings

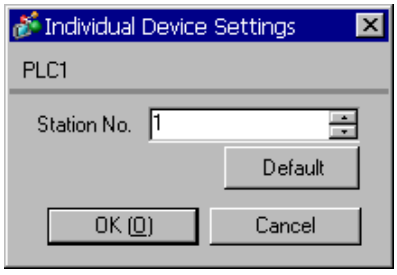
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 1 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

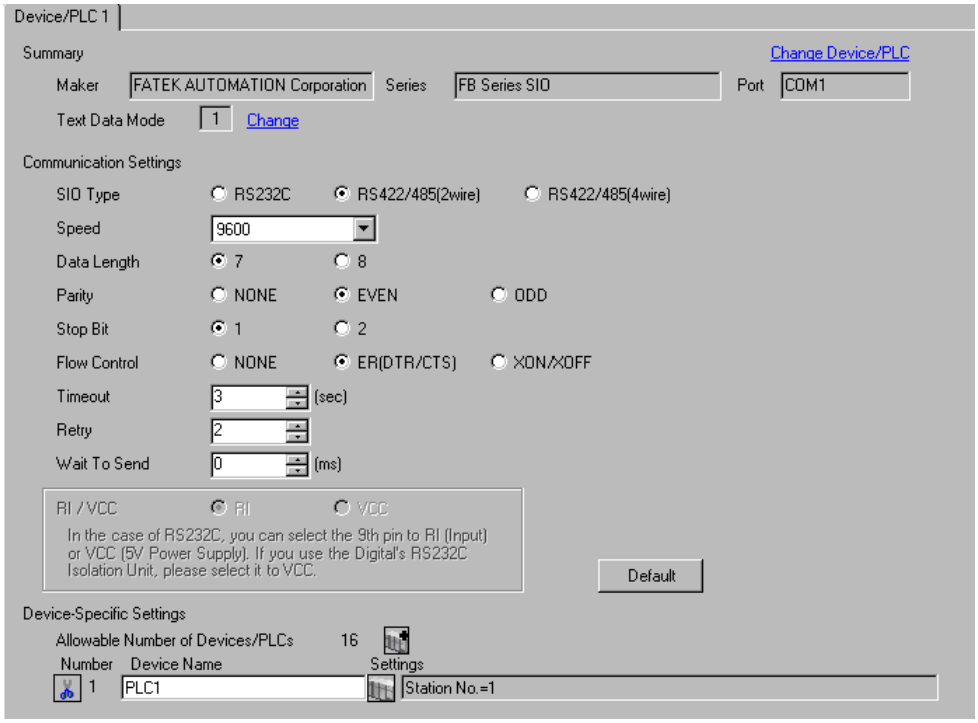
4 Click [OK] to complete the port settings.

3.4 Setting Example 4

■ Settings of GP-Pro EX

◆ Communication Settings

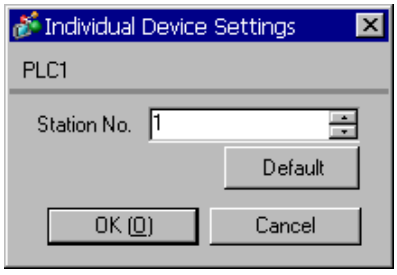
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 2 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

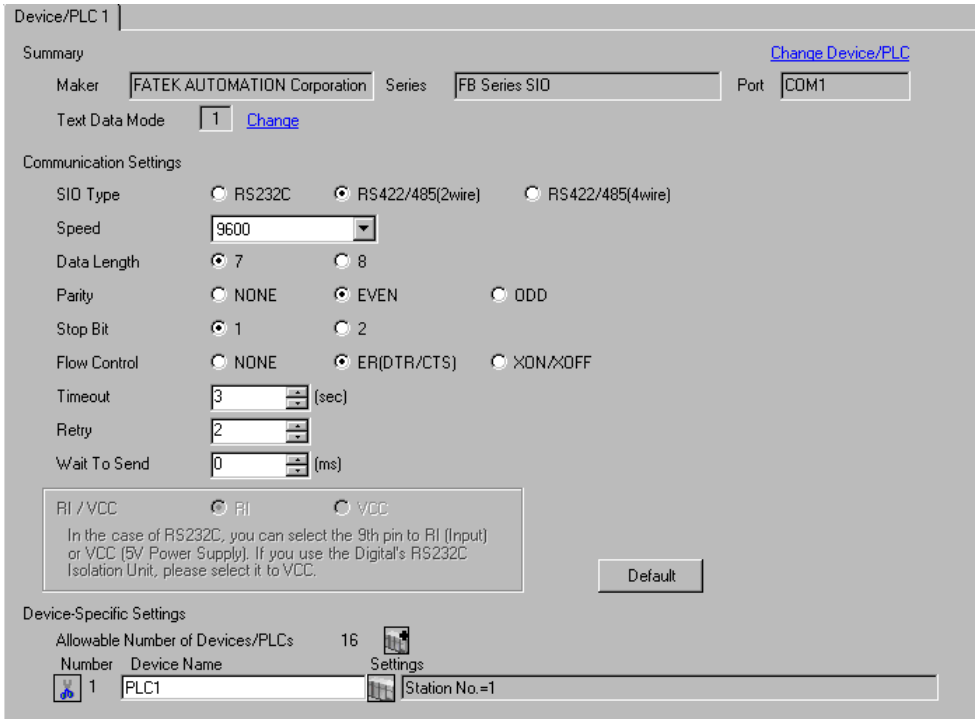
4 Click [OK] to complete the port settings.

3.5 Setting Example 5

■ Settings of GP-Pro EX

◆ Communication Settings

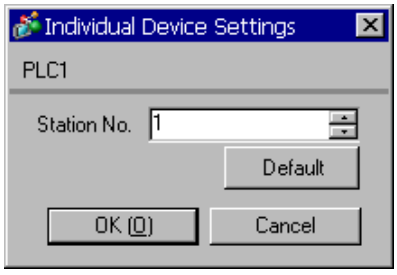
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 1 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

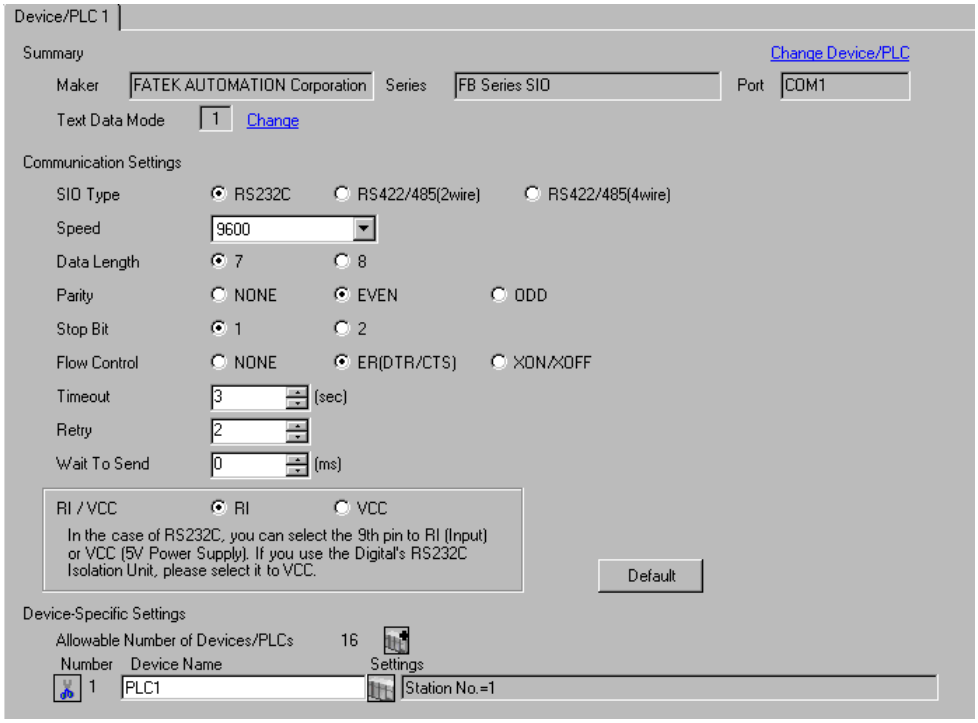
4 Click [OK] to complete the port settings.

3.6 Setting Example 6

■ Settings of GP-Pro EX

◆ Communication Settings

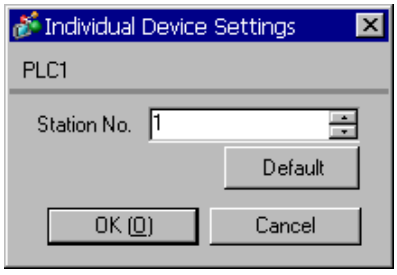
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 3 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

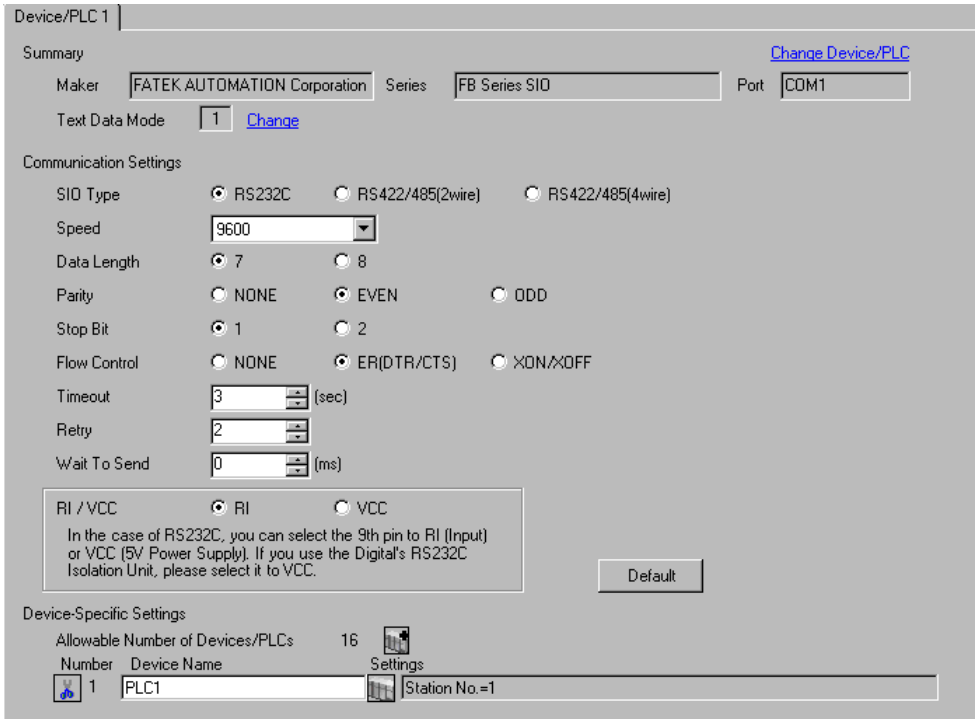
4 Click [OK] to complete the port settings.

3.7 Setting Example 7

■ Settings of GP-Pro EX

◆ Communication Settings

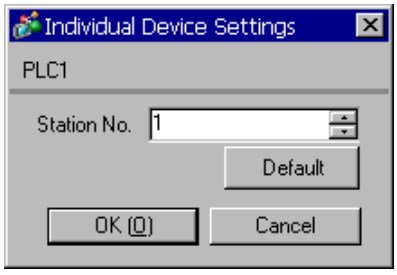
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 4 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

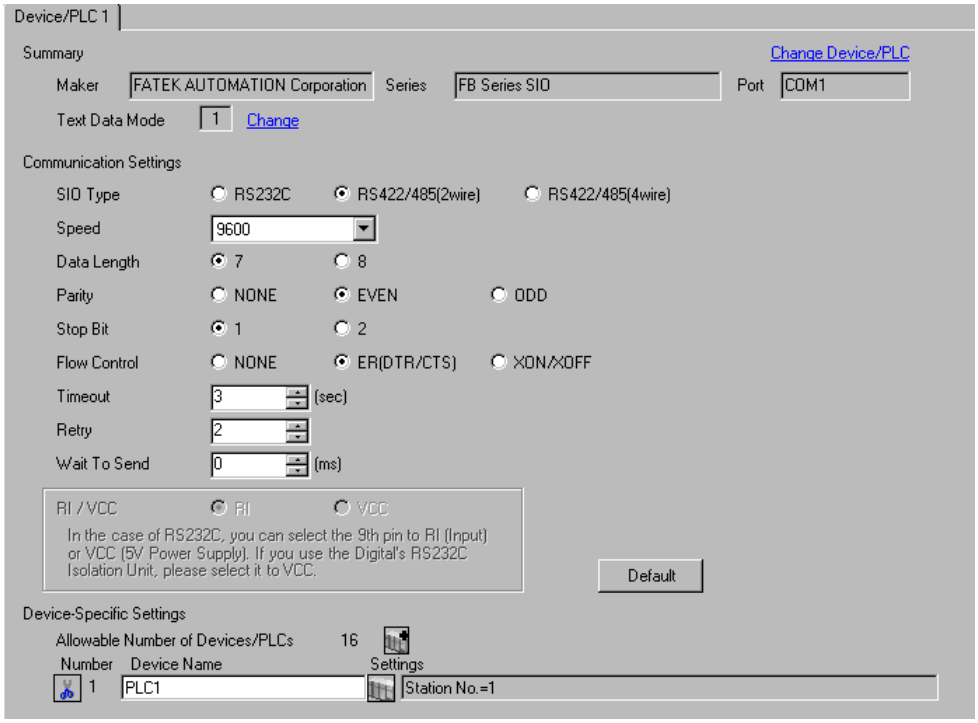
4 Click [OK] to complete the port settings.

3.8 Setting Example 8

■ Settings of GP-Pro EX

◆ Communication Settings

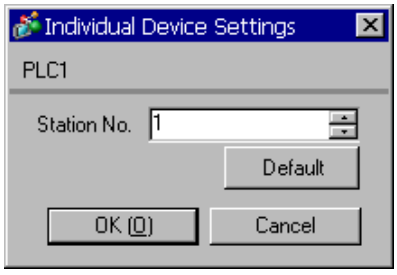
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 3 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

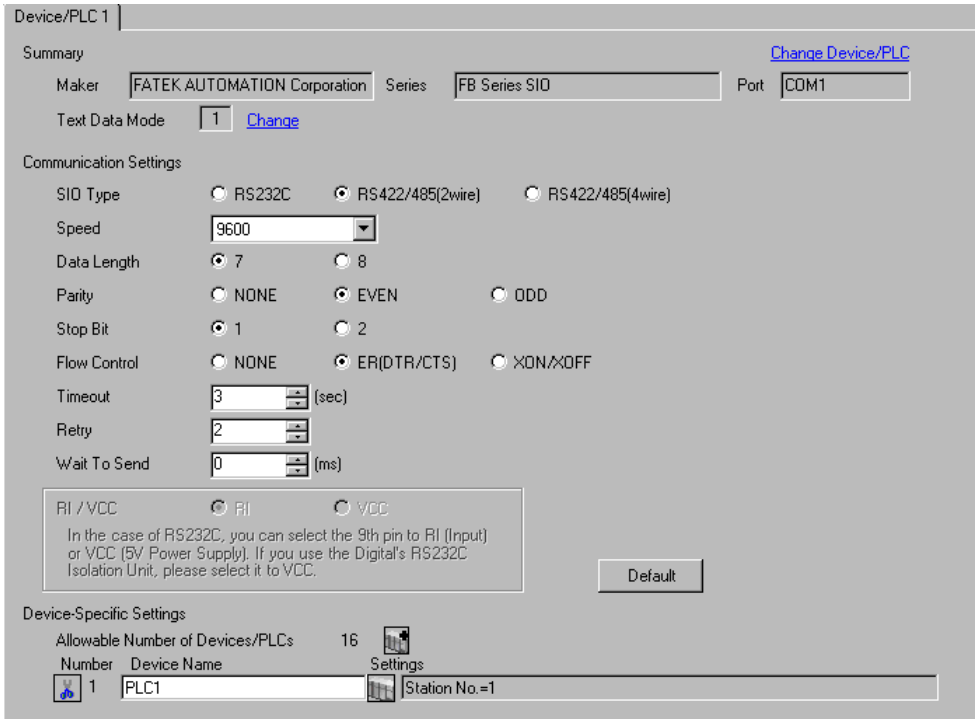
4 Click [OK] to complete the port settings.

3.9 Setting Example 9

■ Settings of GP-Pro EX

◆ Communication Settings

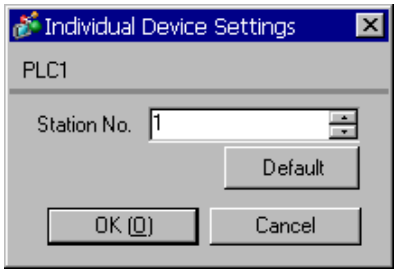
To display the setting screen, select [Device/PLC Settings] from [System setting window] in the workspace.



◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 4 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

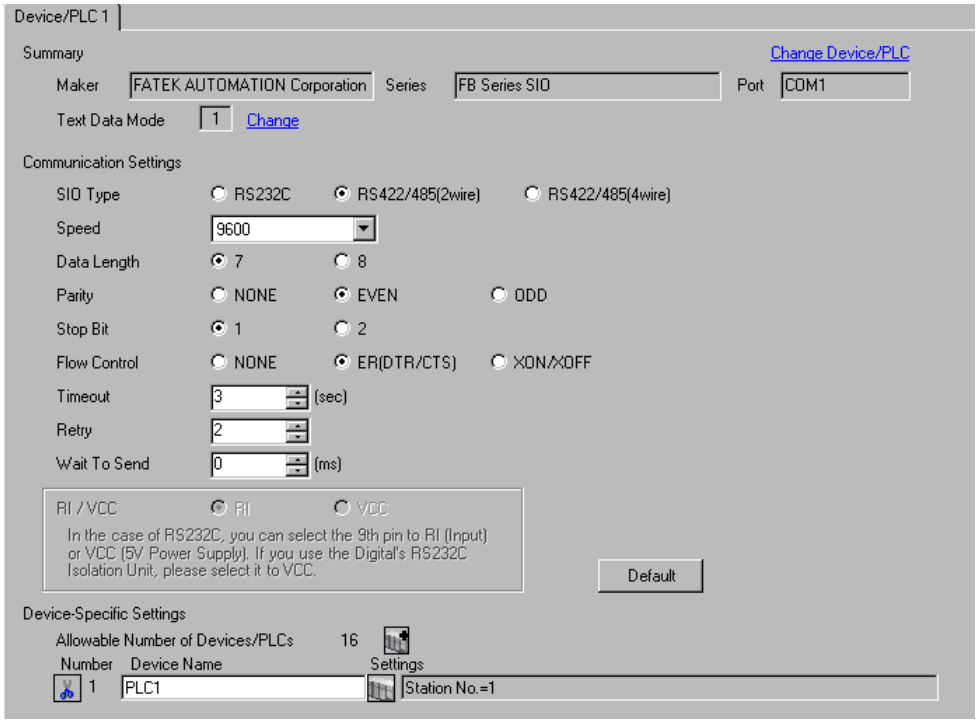
4 Click [OK] to complete the port settings.

3.10 Setting Example 10

■ Settings of GP-Pro EX

◆ Communication Settings

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



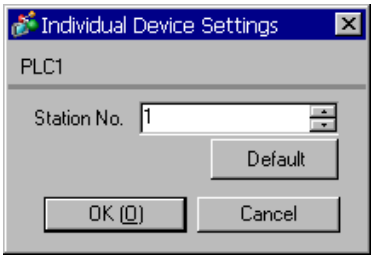
NOTE

- For 1:n connection, set [Wait To Send] to a value of the PLC scan time plus 5ms or more.

◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

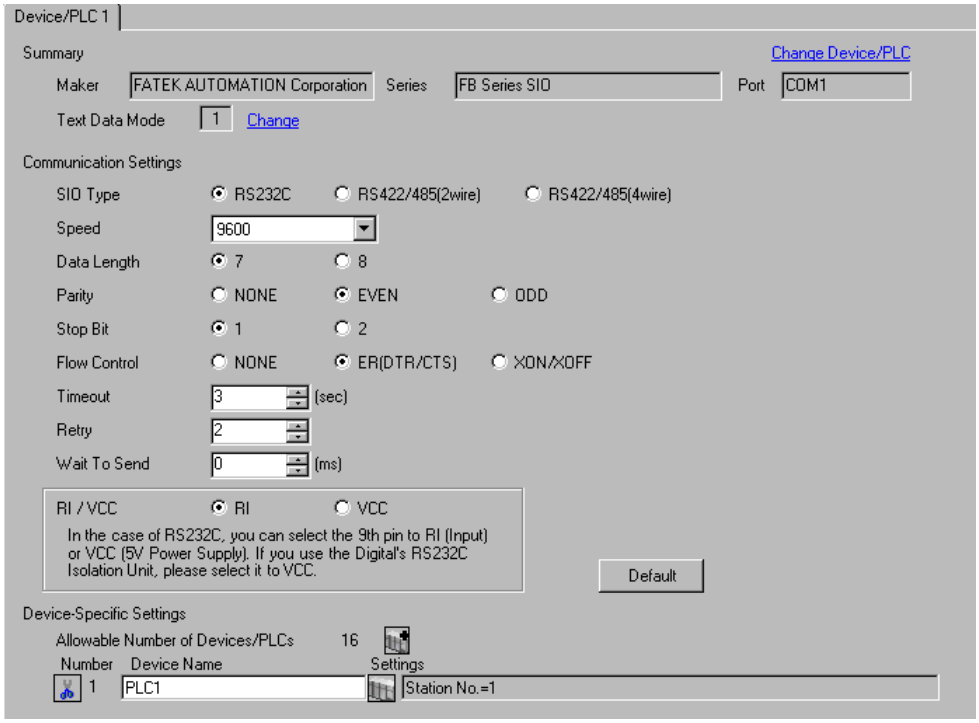
The communication setting is fixed.

3.11 Setting Example 11

■ Settings of GP-Pro EX

◆ Communication Settings

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



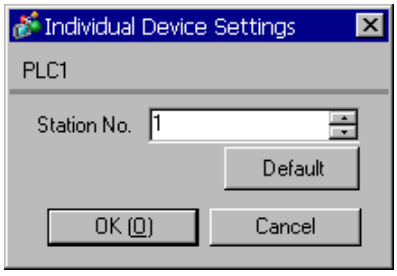
NOTE

- For 1:n connection, set [Wait To Send] to a value of the PLC scan time plus 5ms or more.

◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



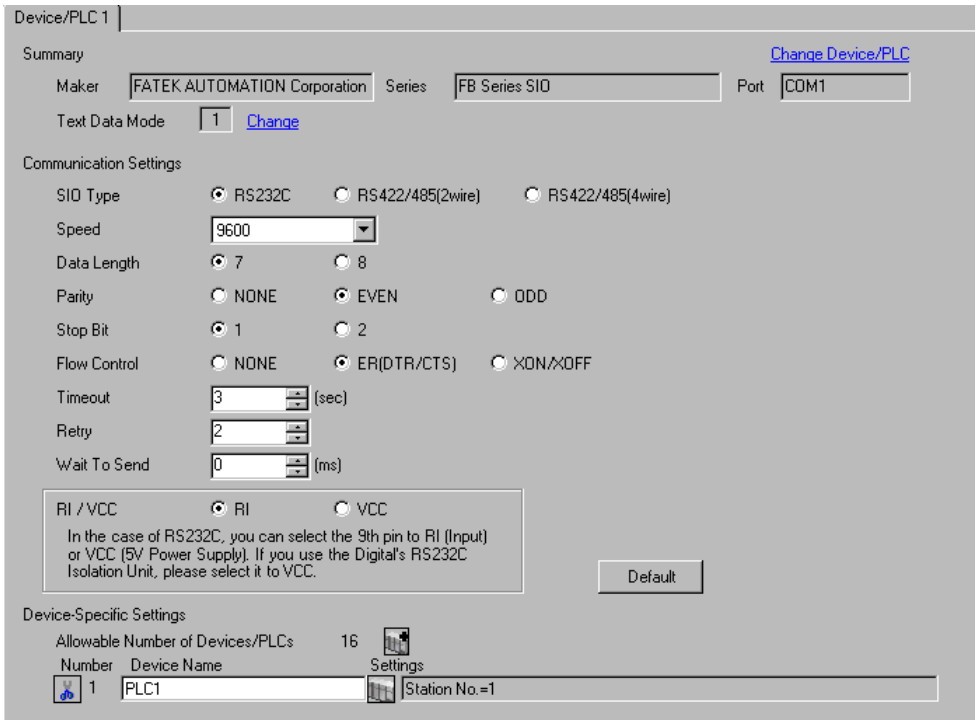
■ Settings of External Device

The communication setting is fixed.

3.12 Setting Example 12

◆ Communication Settings

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



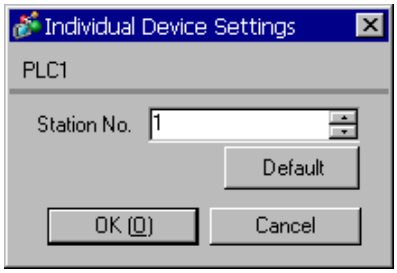
NOTE

- For 1:n connection, set [Wait To Send] to a value of the PLC scan time plus 5ms or more.

◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 1 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

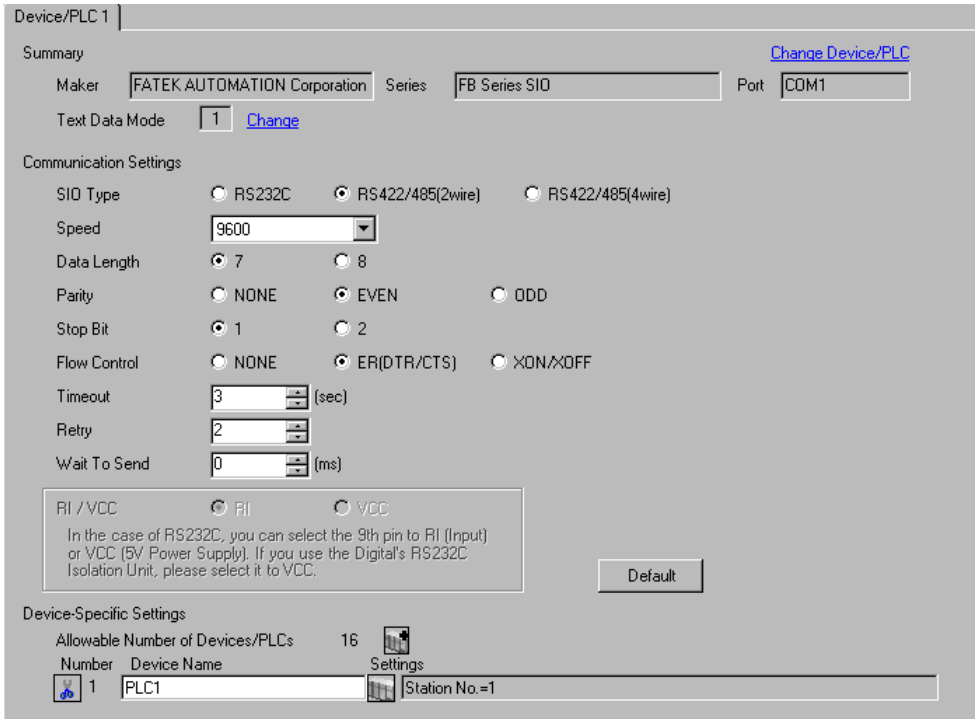
4 Click [OK] to complete the port settings.

3.13 Setting Example 13

■ Settings of GP-Pro EX

◆ Communication Settings

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

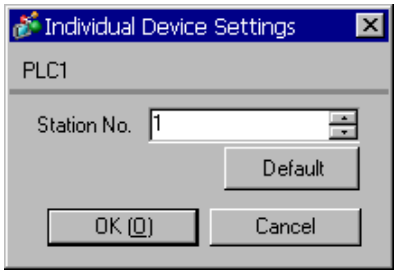


NOTE	• For 1:n connection, set [Wait To Send] to a value of the PLC scan time plus 5ms or more.

◆ Device Setting

To display the setting screen, click ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



■ Settings of External Device

Use the ladder software (WinProladder) for communication settings. After completing the settings, reboot the External Device to enable them. Refer to your External Device manual for details.

1 Start up the ladder software (WinProladder).

2 Select [Setting] - [Port 2 Parameter] from the [PLC] menu.

3 In the [Comm. Parameter Setting] dialog box, set the following parameters.

Item	Settings
Baud Rate	9,600
Parity	Even parity
Data Bit	7 bits
Stop Bit	1 bit

4 Click [OK] to complete the port settings.

4 Setup Items

Set the communication settings of the Display with GP-Pro Ex or in offline mode of the Display.

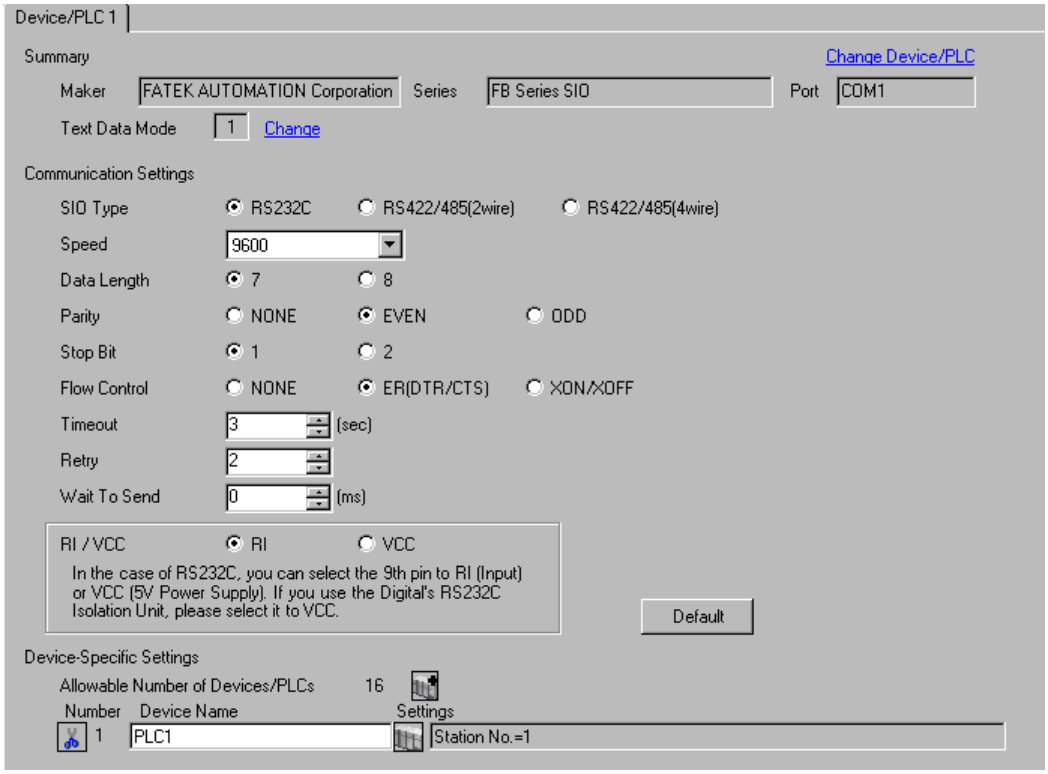
The setting of each parameter must match that of the External Device.

☞"3 Example of Communication Setting" (page 9)

4.1 Setup Items in GP-Pro EX

■ Communication Settings

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



Setup Items	Setup Description
SIO Type	Select the SIO type for communicating with the External Device.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Select a data length.
Parity	Select how to check parity.
Stop Bit	Select a stop bit length.
Flow Control	Select the communication control method to prevent overflow of transmission and reception data.
Timeout	Enter the time (s) for which the Display waits for a response from the External Device, from "1 to 127".

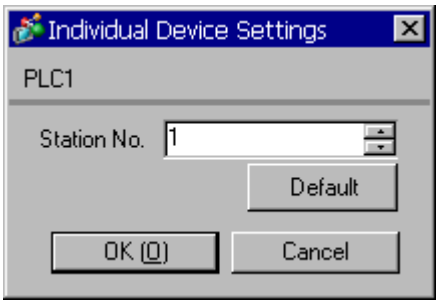
Continued to next page.

Setup Items	Setup Description
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255".
Wait To Send	Enter the standby time (ms) from when the Display receives packets until it transmits the next command, from "0 to 255".
RI/VCC	You can switch between RI/VCC of the 9th pin when you select RS232C for the SIO type. To connect to the IPC, you need to use the IPC selector switch to switch RI/5V. Refer to your IPC manual for details.

■ Device Setting

To display the setting screen, click  ([Setting]) of the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

To connect multiple External Devices, click  from [Device-Specific Settings] of [Device/PLC Settings] to add External Devices.



Setup Items	Setup Description
Station No.	Enter the station No. of the External Device, from "1 to 254".

4.2 Settings in Offline Mode

NOTE

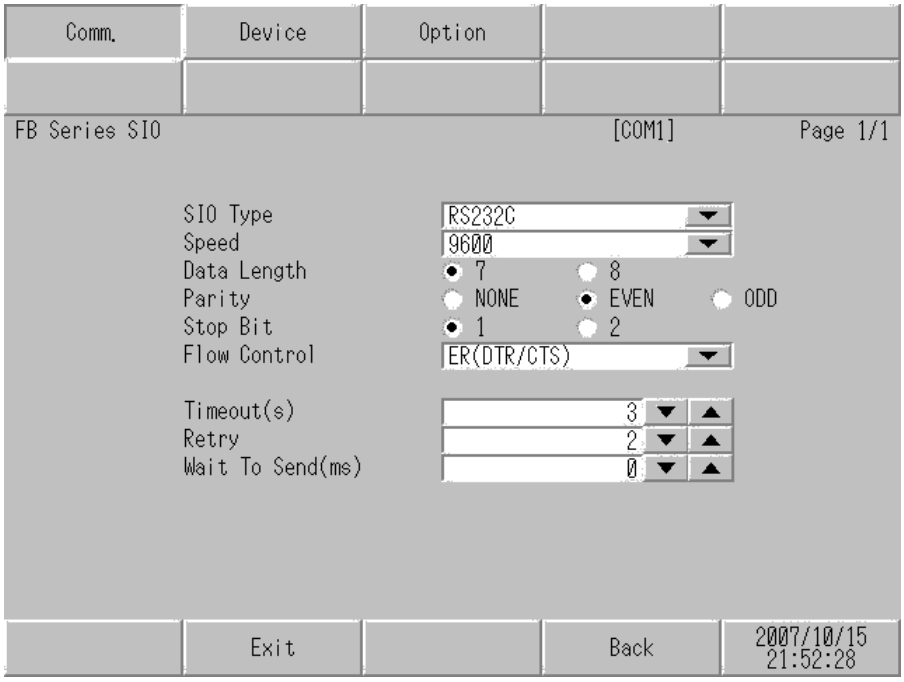
- Refer to the Maintenance/Troubleshooting guide for information on how to enter offline mode or about the operation.

  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 Settings] in offline mode. Touch the External Device you want to set from the list that appears.

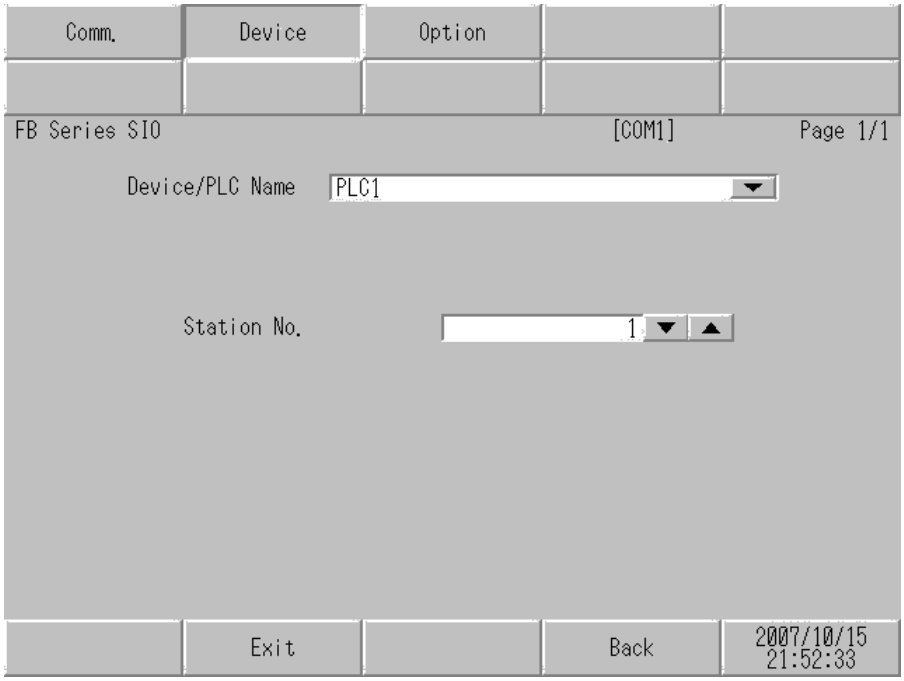


Setup Items	Setup Description
SIO Type	Select the SIO type for communicating with the External Device. IMPORTANT In the communication settings, set [SIO Type] correctly according to the serial interface specifications of the Display. If you select an SIO type that the serial interface does not support, 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	Select a data length.
Parity	Select how to check parity.
Stop Bit	Select a stop bit length.

Setup Items	Setup Description
Flow Control	Select the communication control method to prevent overflow of transmission and reception data.
Timeout	Enter the time (s) for which the Display waits for a response from the External Device, from "1 to 127".
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255".
Wait To Send	Enter the standby time (ms) from when the Display receives packets until it transmits the next command, from "0 to 255".

■ Device Setting

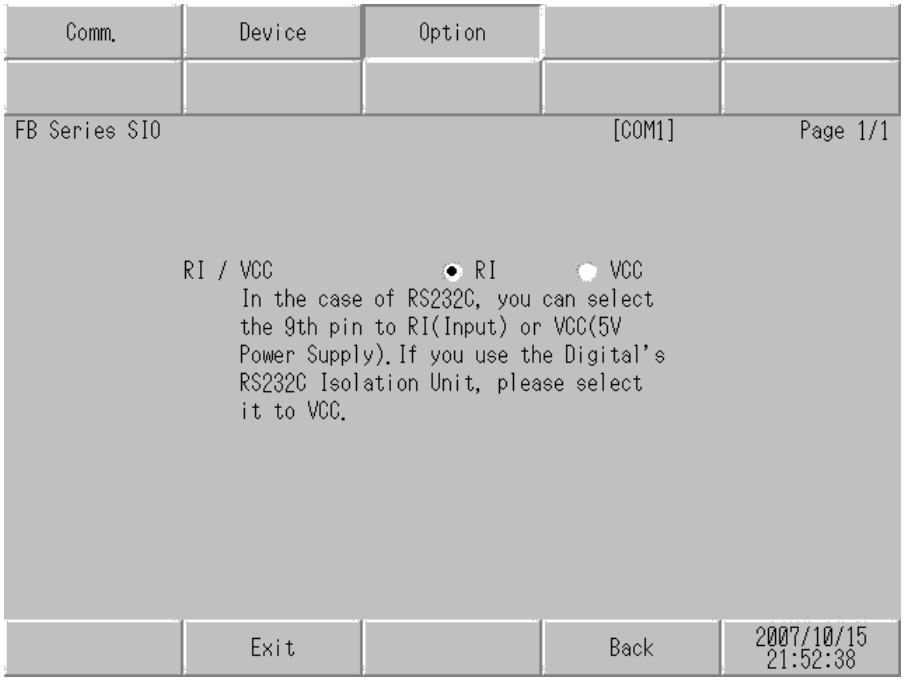
To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings]. Touch the External Device you want to set from the list that appears, and touch [Device Settings].



Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. Device name is the title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Station No.	Enter the station No. of the External Device, from "1 to 254".

■ Option

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



Setup Items	Setup Description
RI/VCC	You can switch between RI/VCC of the 9th pin when you select RS232C for the SIO type. To connect to the IPC, you need to use the IPC selector switch to switch between RI/5V. Refer to your IPC manual for details.

NOTE

- GP-4100 series do not have the [Option] setting in the offline mode.

5 Cable Diagram

The cable diagram shown below may differ from that recommended by the FATEK AUTOMATION Corporation. Please be assured, however, that there is no operational problem in applying the cable diagram shown in this manual.

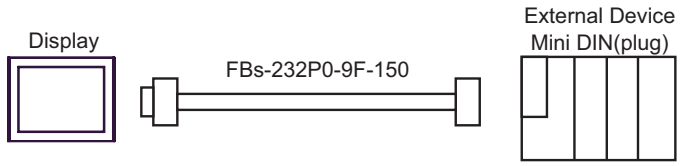
- The FG pin on the External Device must be D-class grounded. Refer to your External Device manual for details.
- The SG and FG are connected inside the Display. If you connect the External Device to the SG, do not form any short-circuit loop in the system design.
- If the communication is not stable because of noise or other factors, connect an isolation unit.

Cable Diagram 1

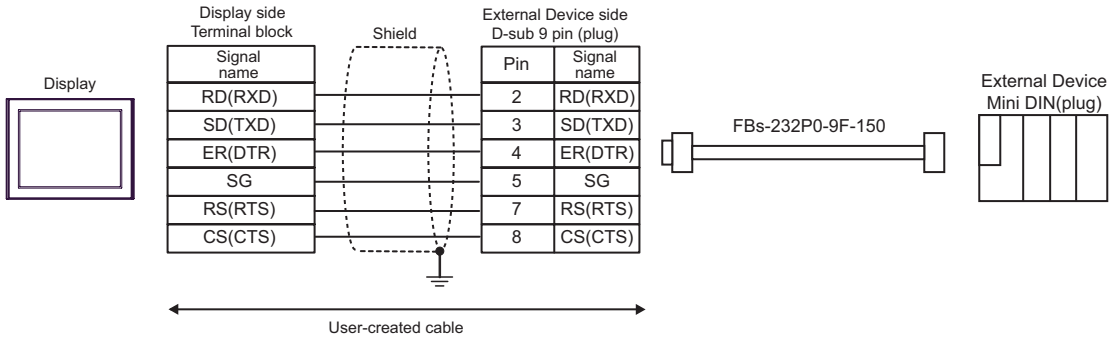
Display (Connection Port)	Cable		Remarks
GP (COM1) ST (COM1) IPC*1 PC/AT	1A	FBs-232P0-9F-150 by FATEK	-
GP-4105 (COM1)	1B	User-created Cable + FBs-232P0-9F-150 by FATEK	Cable length: 15m or less

*1 Available only with a COM port that supports RS232C.
☞■ IPC COM Port (page 6)

1A)



1B)

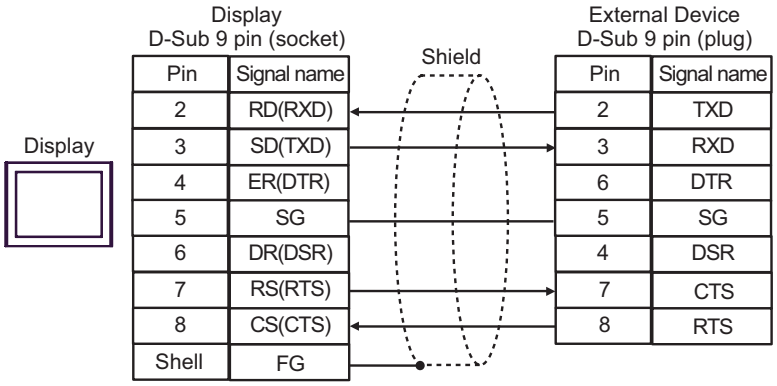


Cable Diagram 2

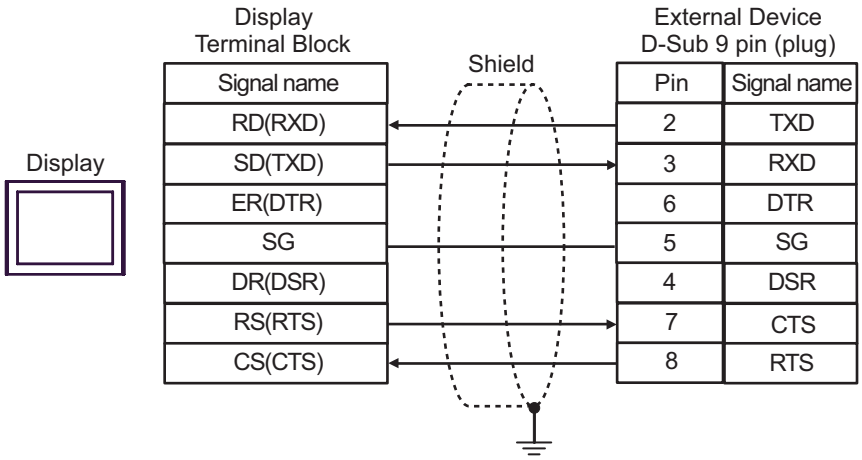
Display (Connection Port)	Cable		Remarks
GP (COM1) ST (COM1) IPC*1 PC/AT	2A	User-created Cable	Cable length: 15m or less
GP-4105 (COM1)	2B	User-created Cable	

*1 Available only with a COM port that supports RS232C.
☞ ■ IPC COM Port (page 6)

2A)



2B)

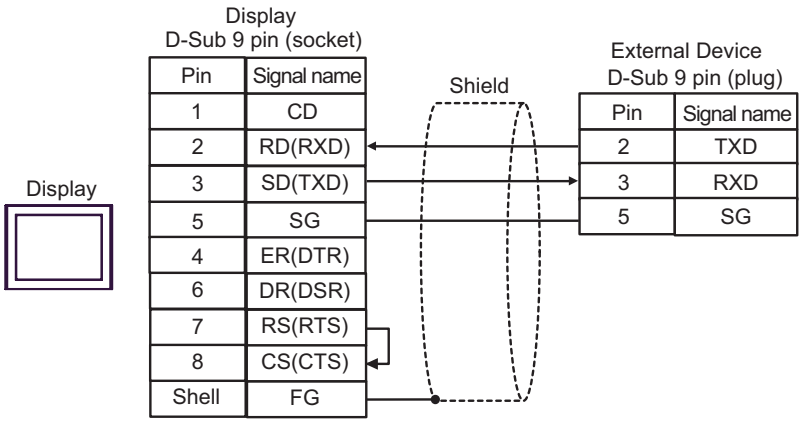


Cable Diagram 3

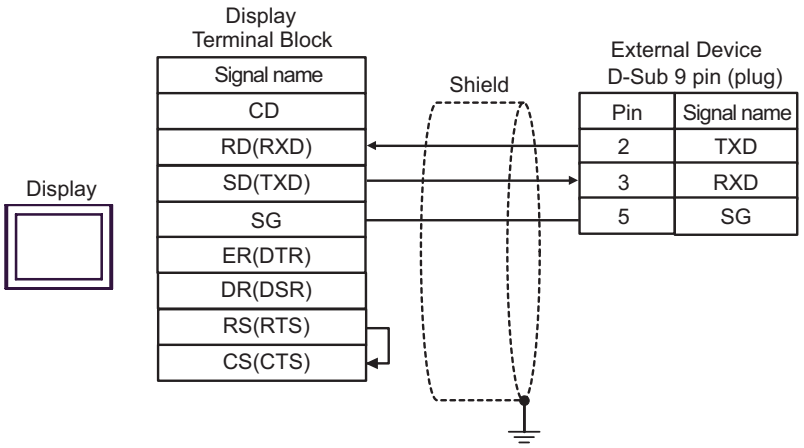
Display (Connection Port)	Cable		Remarks
GP (COM1) ST (COM1) IPC*1 PC/AT	3A	User-created Cable	Cable length: 15m or less
GP-4105 (COM1)	3B	User-created Cable	

*1 Available only with a COM port that supports RS232C.
☞ ■ IPC COM Port (page 6)

3A)



3B)



Cable Diagram 4

Display (Connection Port)	Cable		Remarks
GP[*1] (COM1) AGP-3302B (COM2) ST[*2] (COM2)	4A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	Cable length: 1,000m or less
	4B	Your own cable	
GP[*3] (COM2)	4C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	
	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 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	
	4F	User-created Cable	
GP-4106 (COM1)	4G	User-created Cable	
GP-4107 (COM1)	4H	User-created Cable	

*1 All GP models except AGP-3302B

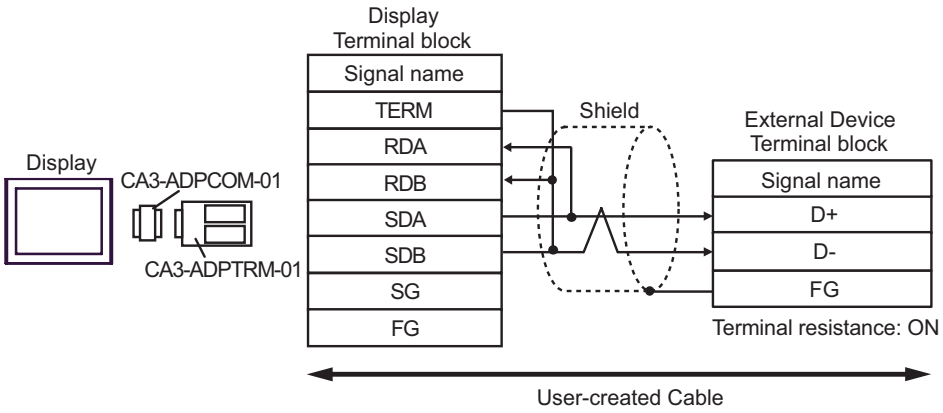
*2 All ST models except AST-3211A and AST-3302B

*3 All GP models except the GP-3200 Series and AGP-3302B

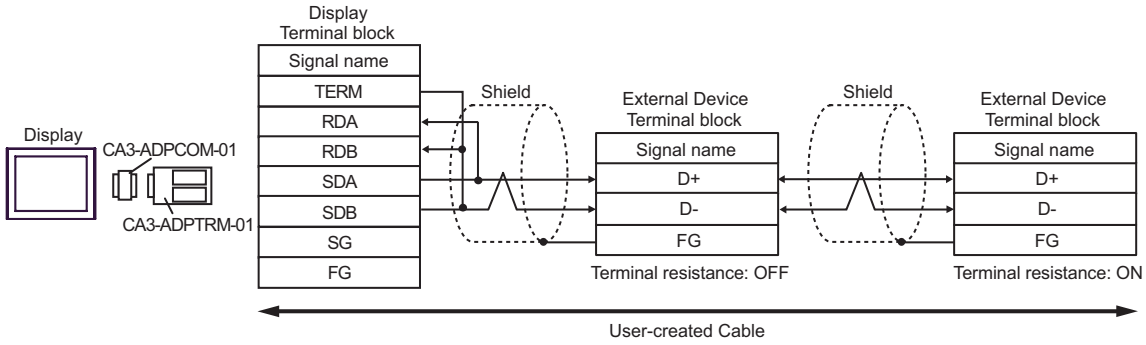
*4 Available only with a COM port that supports RS422/485 (2wire).
☞ ■ IPC COM Port (page 6)

4A)

• 1:1 Connection

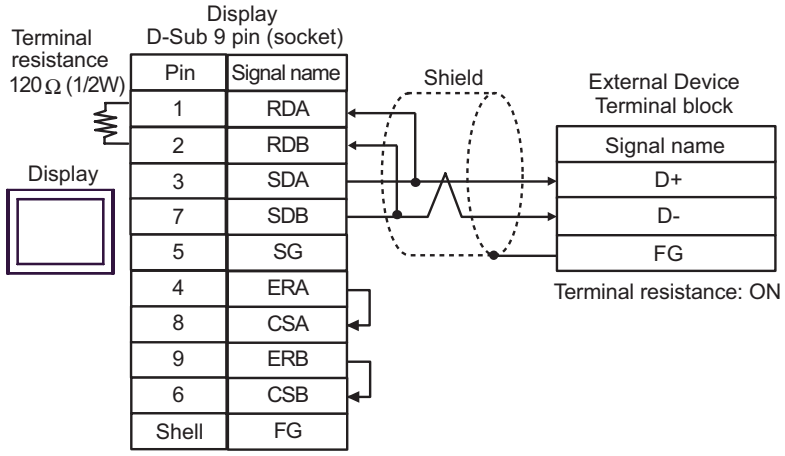


• 1:n Connection

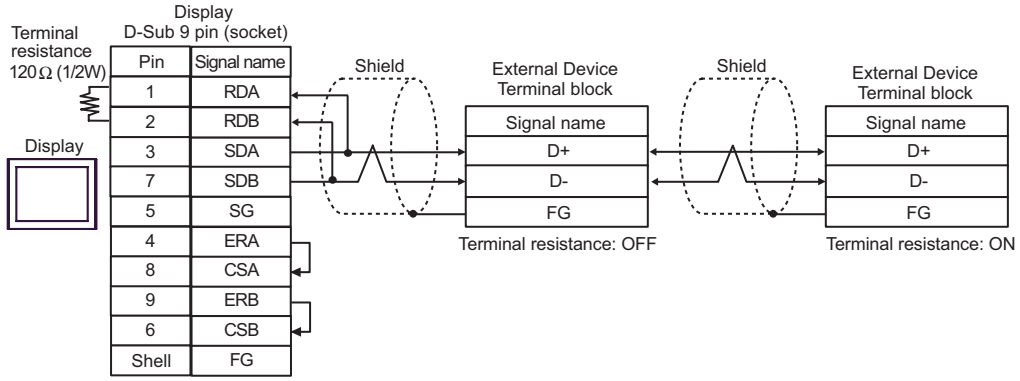


4B)

• 1:1 Connection

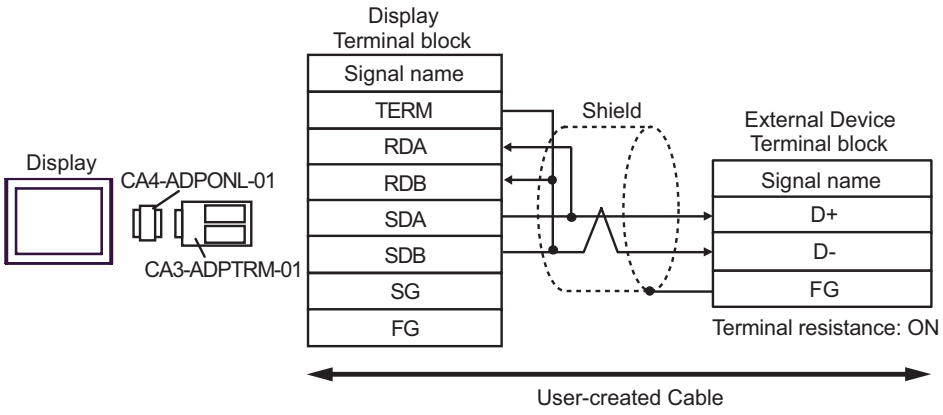


• 1:n Connection

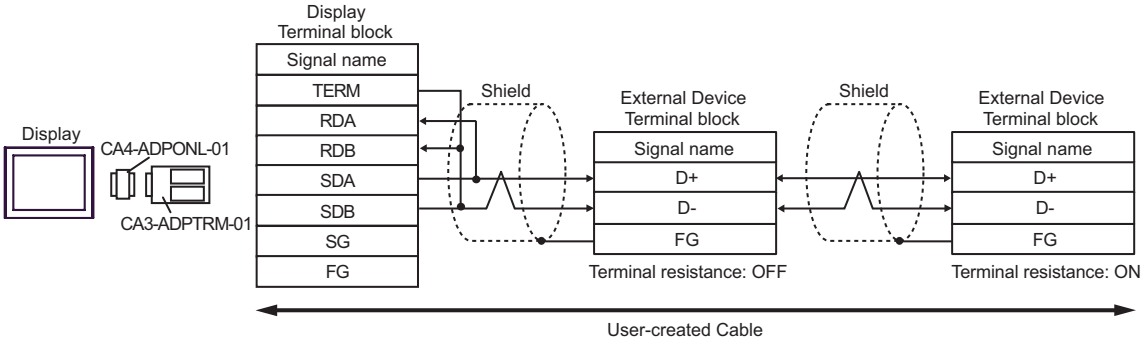


4C)

• 1:1 Connection

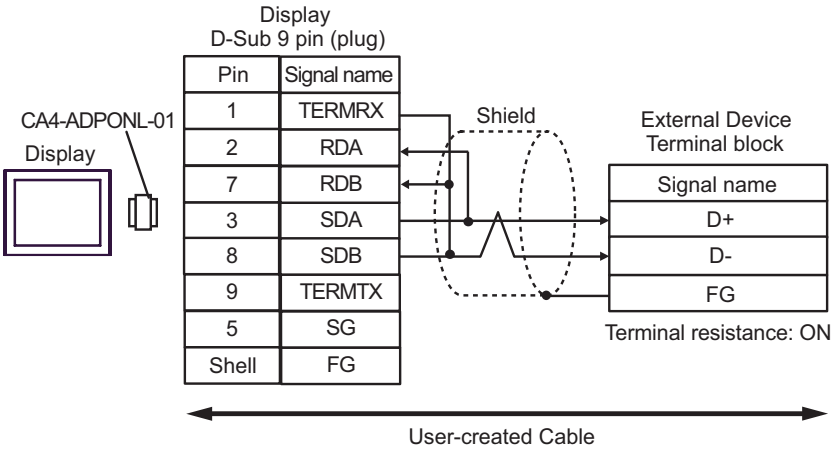


• 1:n Connection

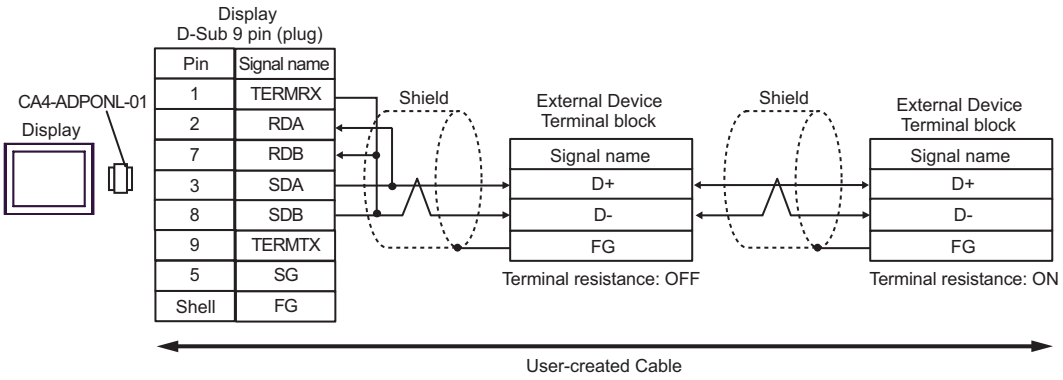


4D)

• 1:1 Connection

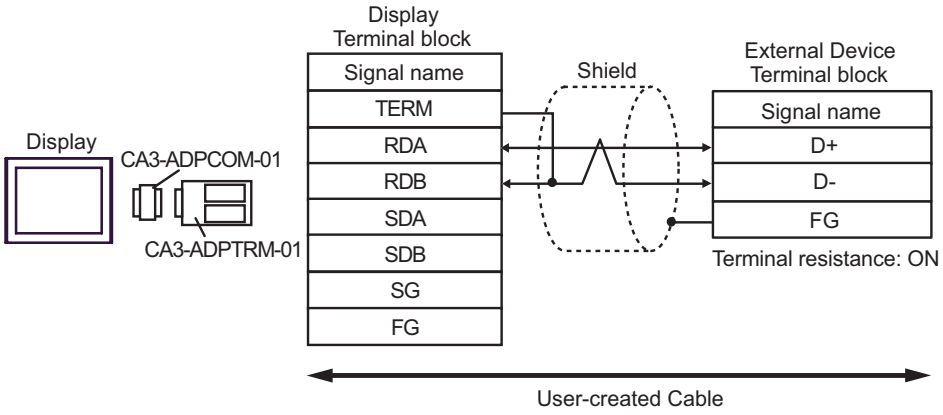


• 1:n Connection

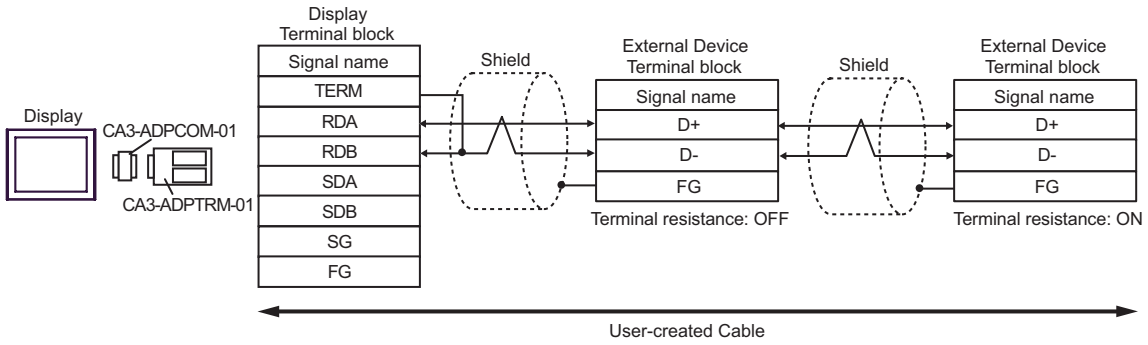


4E)

• 1:1 Connection

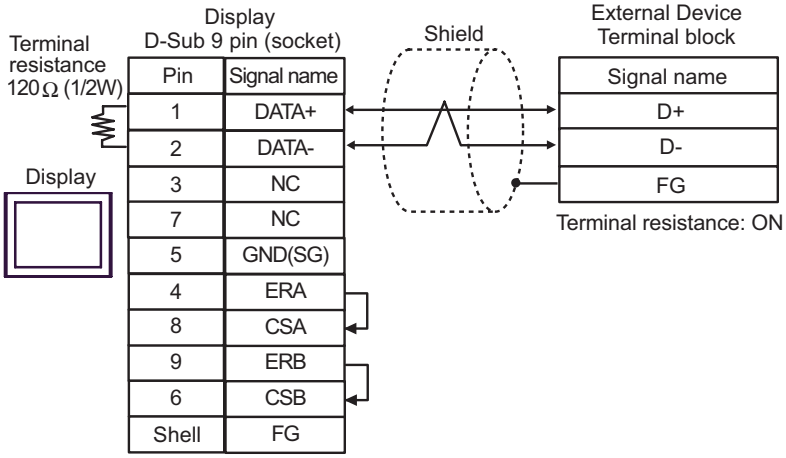


• 1:n Connection

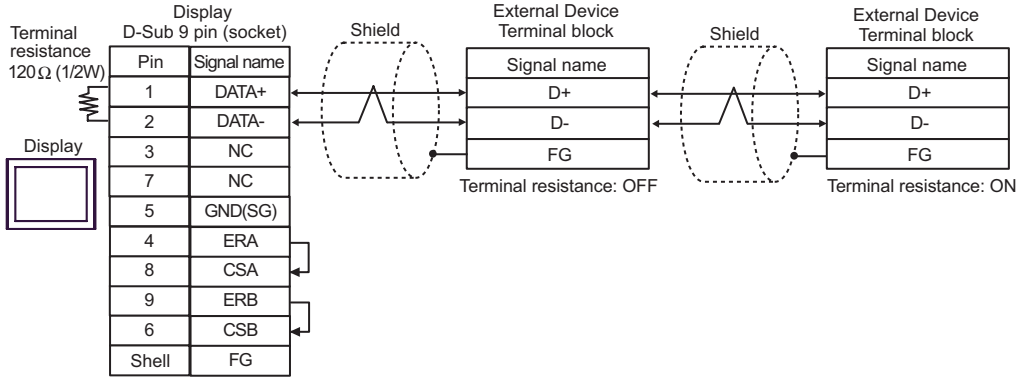


4F)

• 1:1 Connection

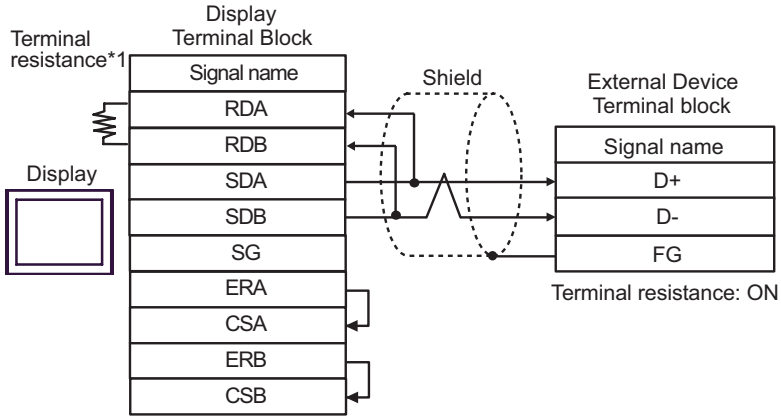


• 1:n Connection

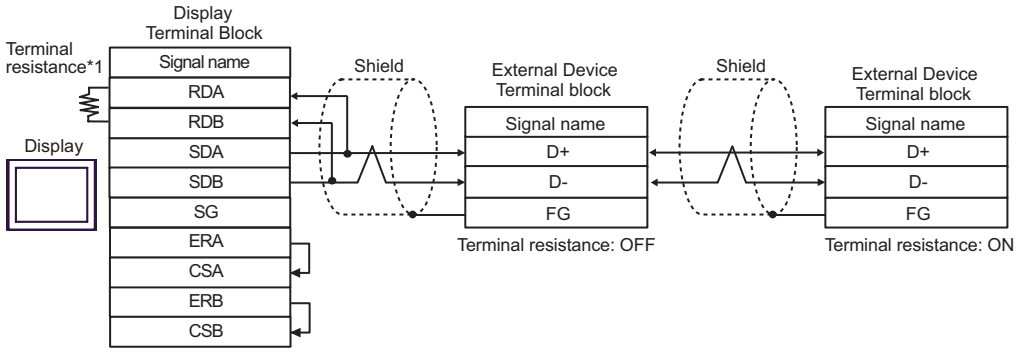


4G)

• 1:1 Connection



• 1:n Connection

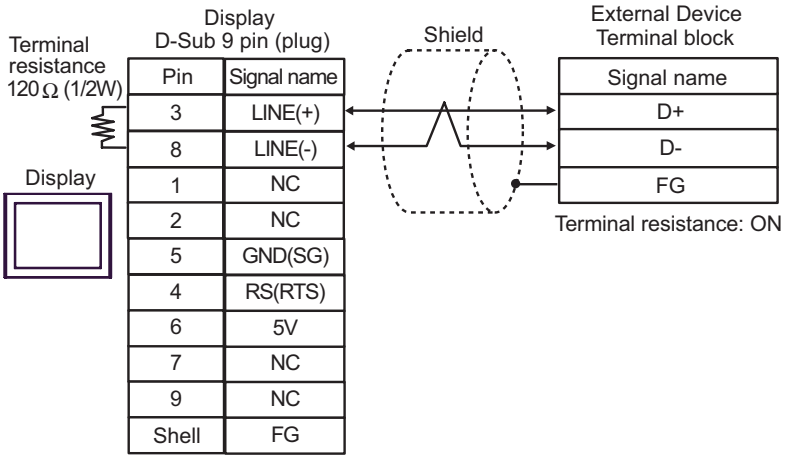


*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

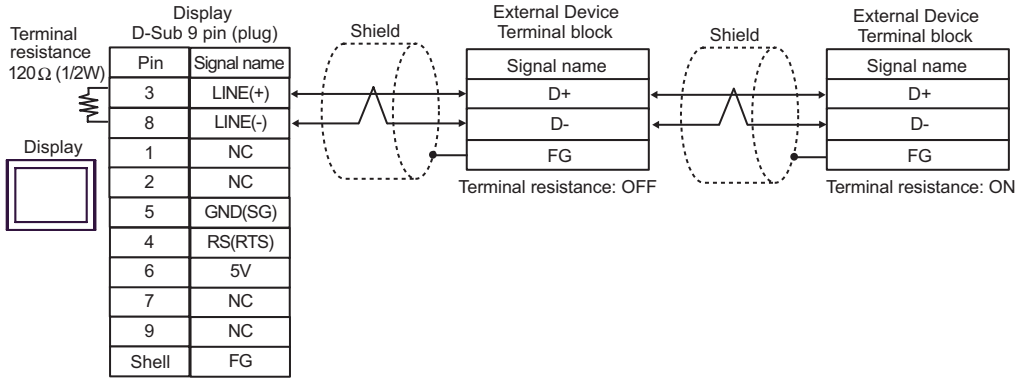
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

4H)

• 1:1 Connection



• 1:n Connection



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

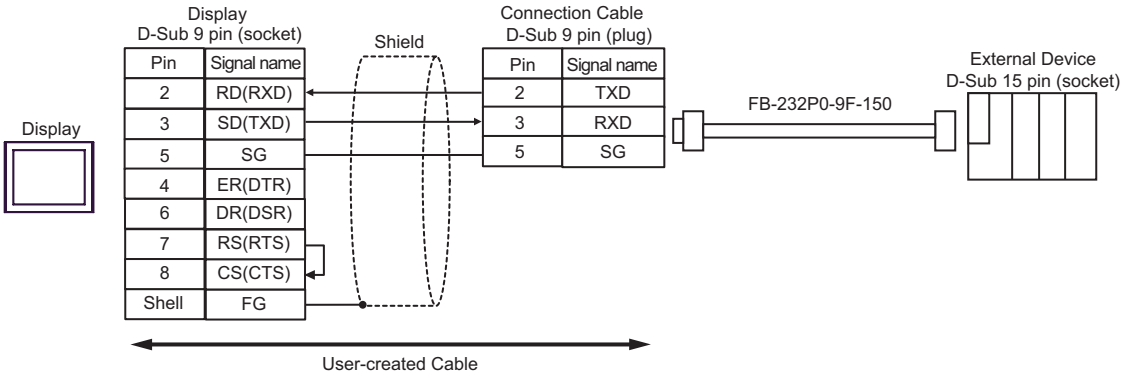
NOTE • In COM on the GP-4107, the SG and FG terminals are isolated.

Cable Diagram 5

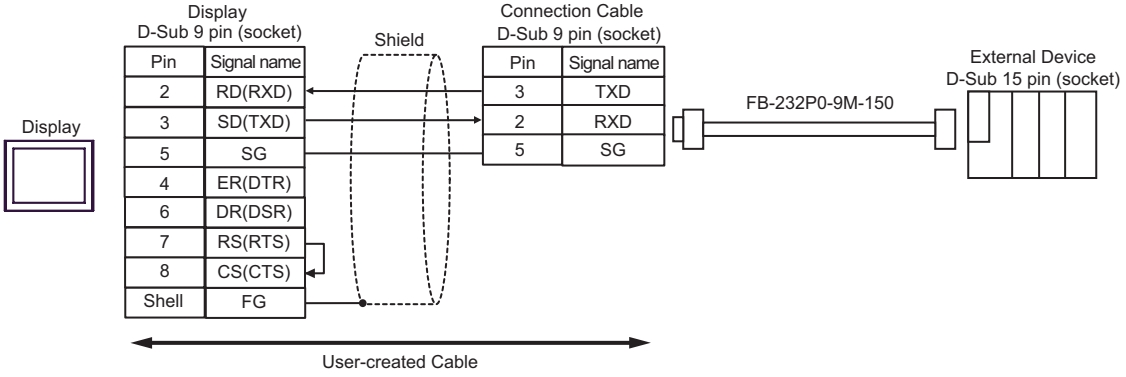
Display (Connection Port)	Cable		Remarks
GP (COM1) ST (COM1) IPC*1 PC/AT	5A	User-created Cable + Cable FB-232P0-9F-150 by FATEK	Cable length: 15m or less
	5B	User-created Cable + Cable FB-232P0-9M-150 by FATEK	
GP-4105 (COM1)	5C	User-created Cable + Cable FB-232P0-9F-150 by FATEK	
	5D	User-created Cable + Cable FB-232P0-9M-150 by FATEK	

*1 Available only with a COM port that supports RS232C.
☞ ■ IPC COM Port (page 6)

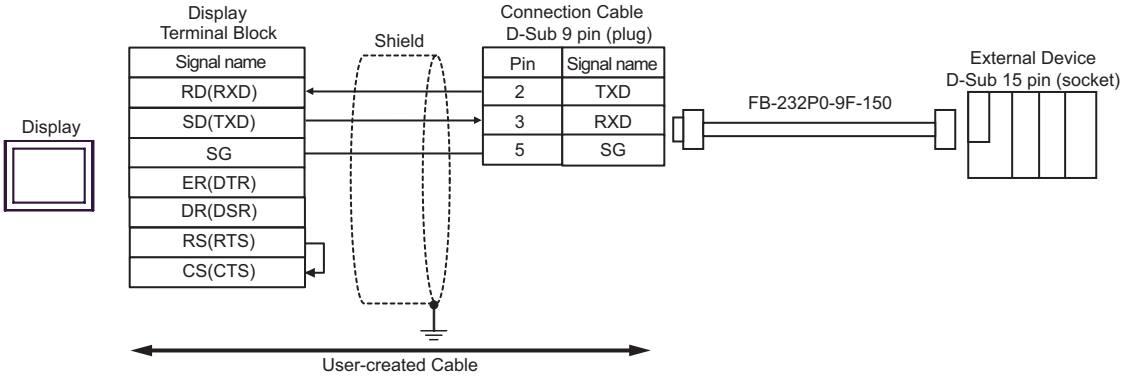
5A)



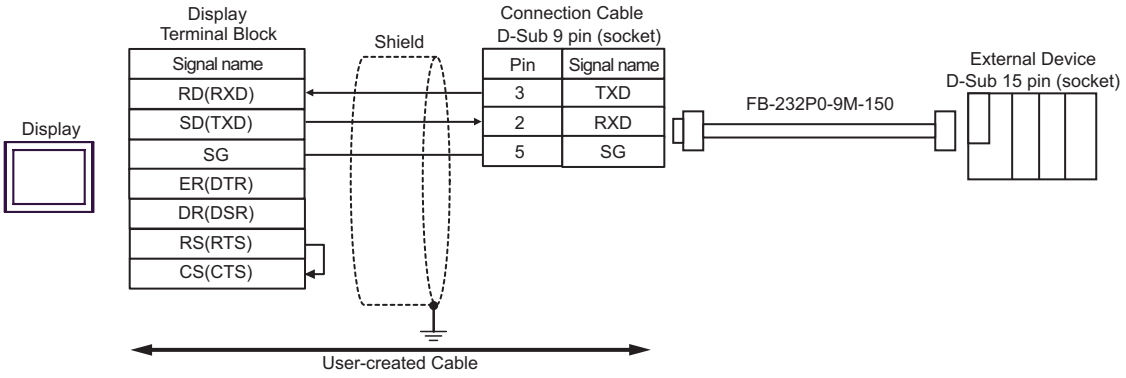
5B)



5C)


Display
Display Terminal Block
Signal name
RD(RXD)
SD(TXD)
SG
ER(DTR)
DR(DSR)
RS(RTS)
CS(CTS)
Shield
Connection Cable
D-Sub 9 pin (plug)
Pin
Signal name
2
TXD
3
RXD
5
SG
FB-232P0-9F-150
External Device
D-Sub 15 pin (socket)
User-created Cable

5D)


Display
Display Terminal Block
Signal name
RD(RXD)
SD(TXD)
SG
ER(DTR)
DR(DSR)
RS(RTS)
CS(CTS)
Shield
Connection Cable
D-Sub 9 pin (socket)
Pin
Signal name
3
TXD
2
RXD
5
SG
FB-232P0-9M-150
External Device
D-Sub 15 pin (socket)
User-created Cable

Cable Diagram 6

Display (Connection Port)	Cable		Remarks
GP[*1] (COM1) AGP-3302B (COM2) ST[*2] (COM2)	6A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	Cable length: 1,000m or less
	6B	User-created Cable	
GP[*3] (COM2)	6C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	
	6D	Online adapter by Pro-face CA4-ADPONL-01 + User-created Cable	
IPC[*4]	6E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	
	6F	User-created Cable	
GP-4106 (COM1)	6G	User-created Cable	
GP-4107 (COM1)	6H	User-created Cable	

*1 All GP models except AGP-3302B

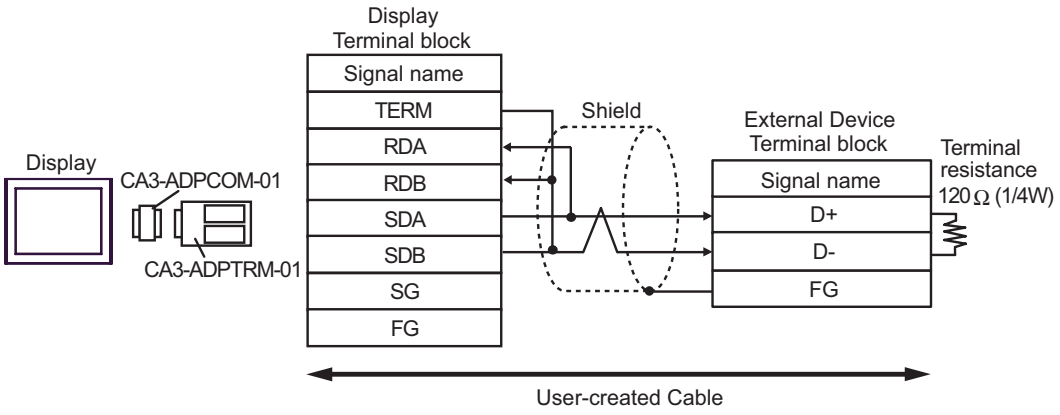
*2 All ST models except AST-3211A and AST-3302B

*3 All GP models except the GP-3200 Series and AGP-3302B

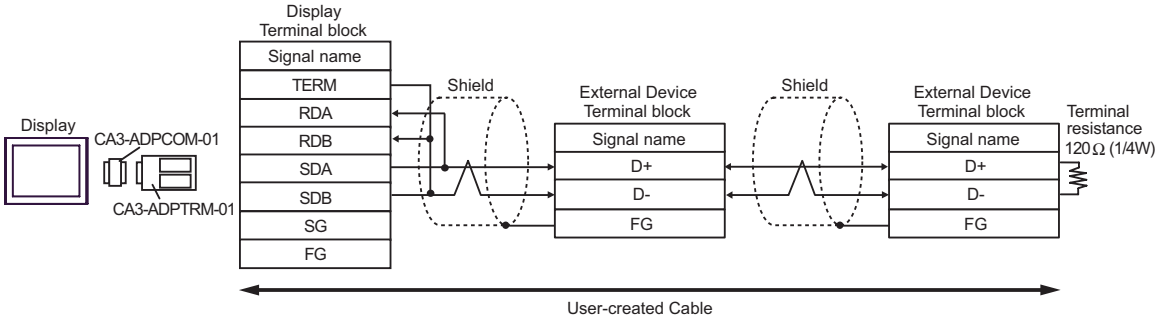
*4 Available only with a COM port that supports RS422/485 (2wire).
☞ ■ IPC COM Port (page 6)

6A)

• 1:1 Connection

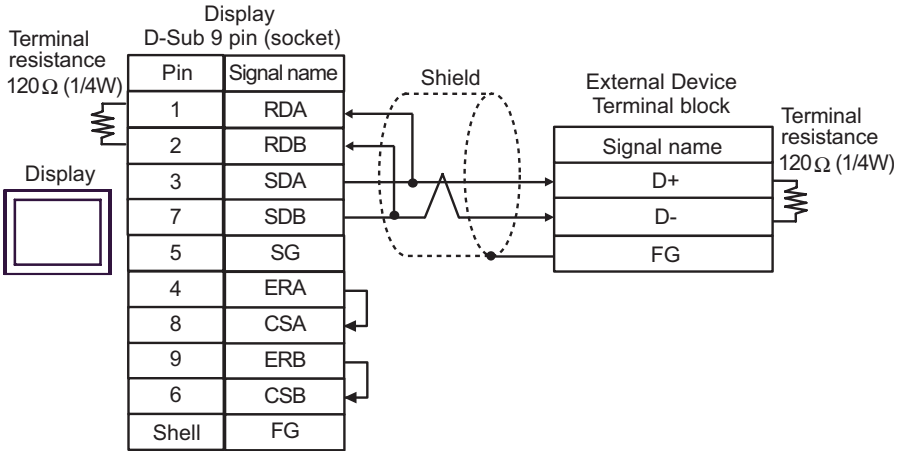


• 1:n Connection

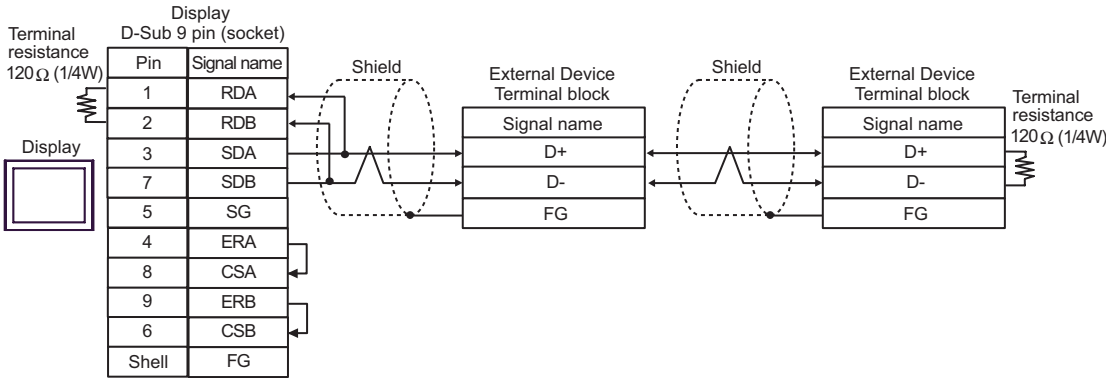


6B)

• 1:1 Connection

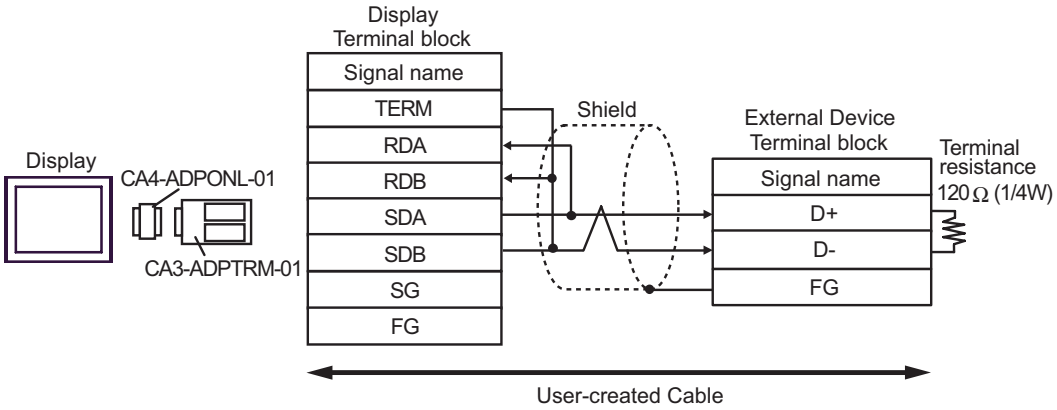


• 1:n Connection

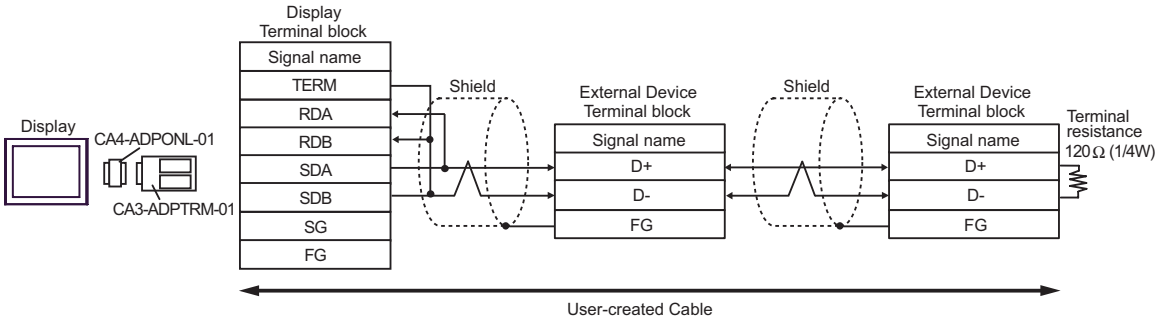


6C)

• 1:1 Connection

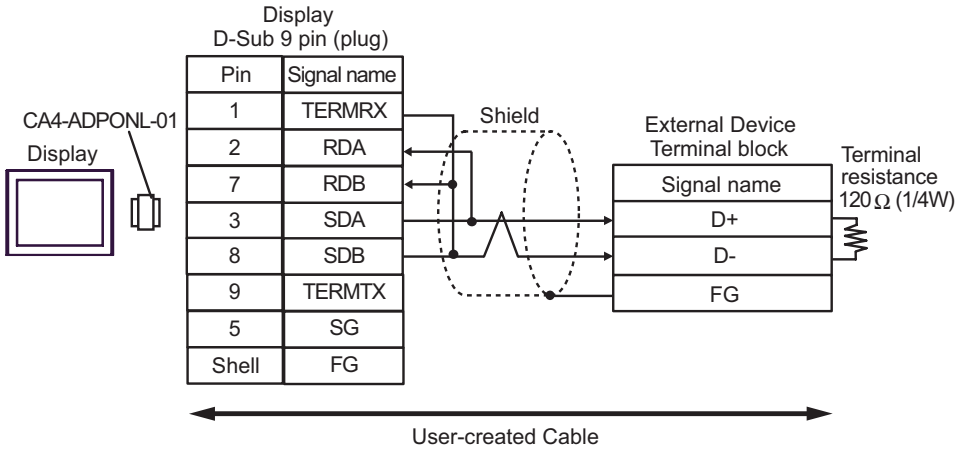


• 1:n Connection

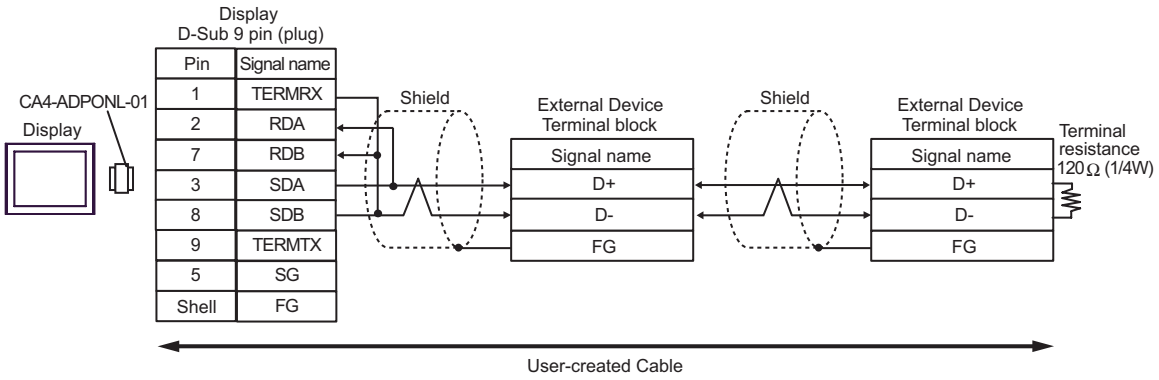


6D)

• 1:1 Connection

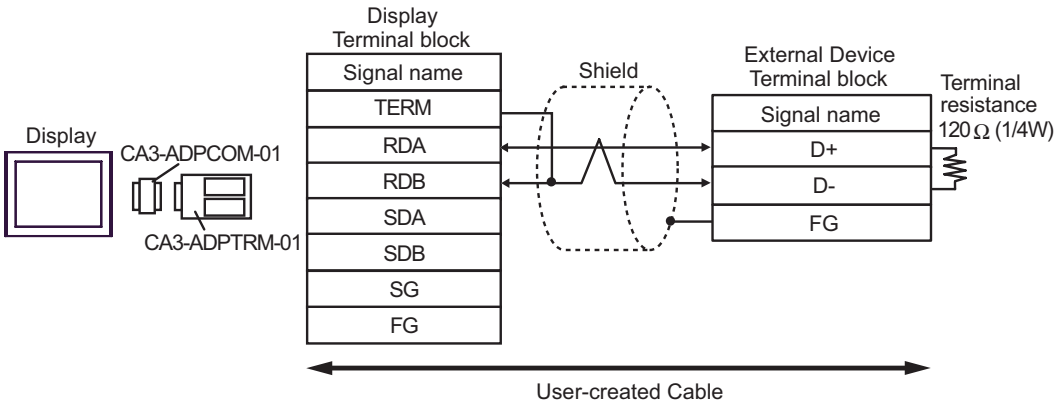


• 1:n Connection

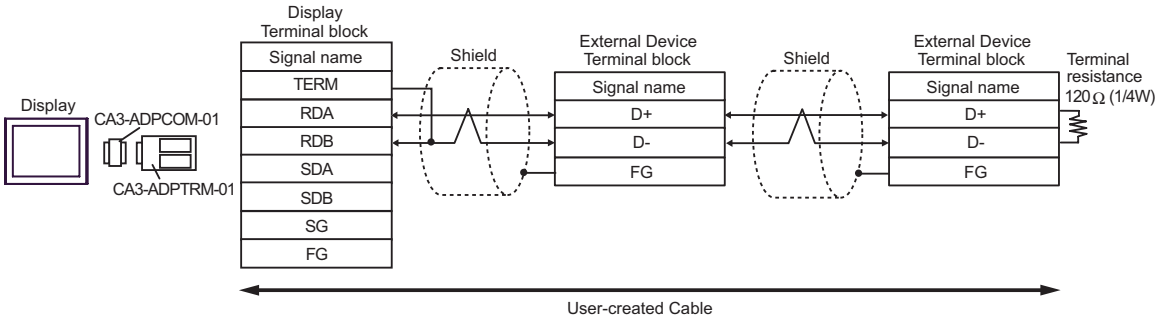


6E)

• 1:1 Connection

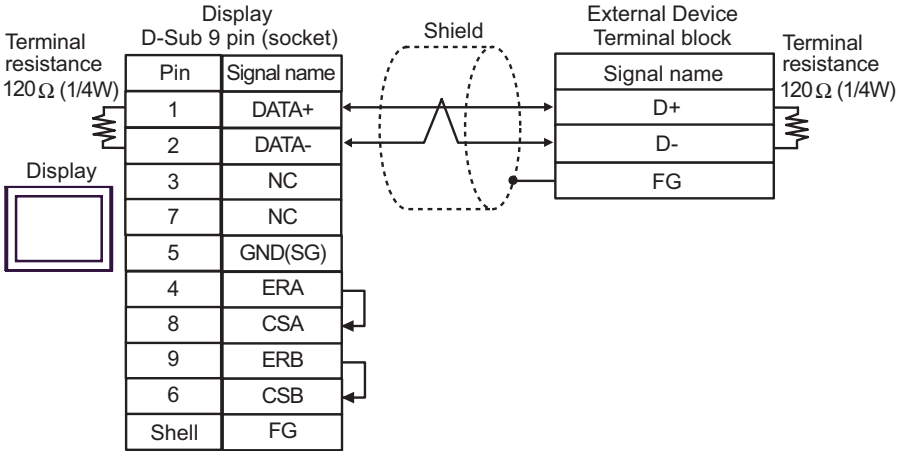


• 1:n Connection

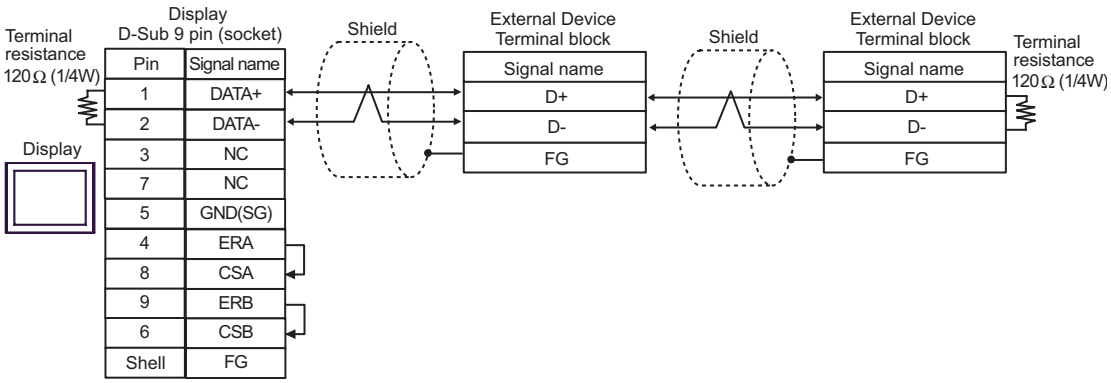


6F)

• 1:1 Connection

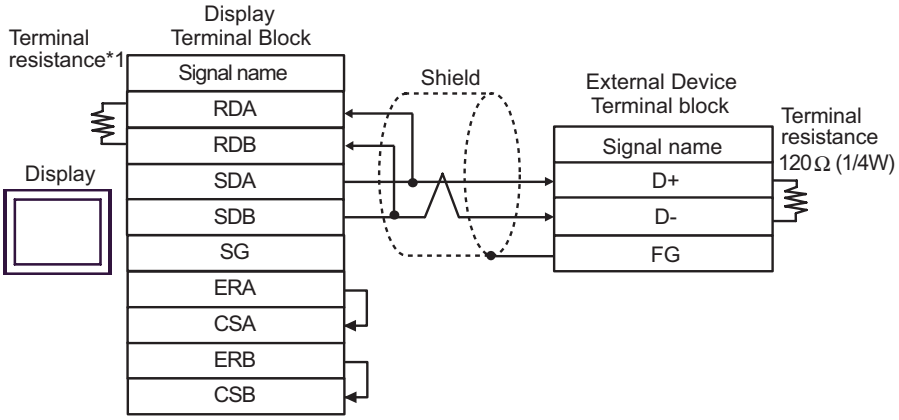


• 1:n Connection

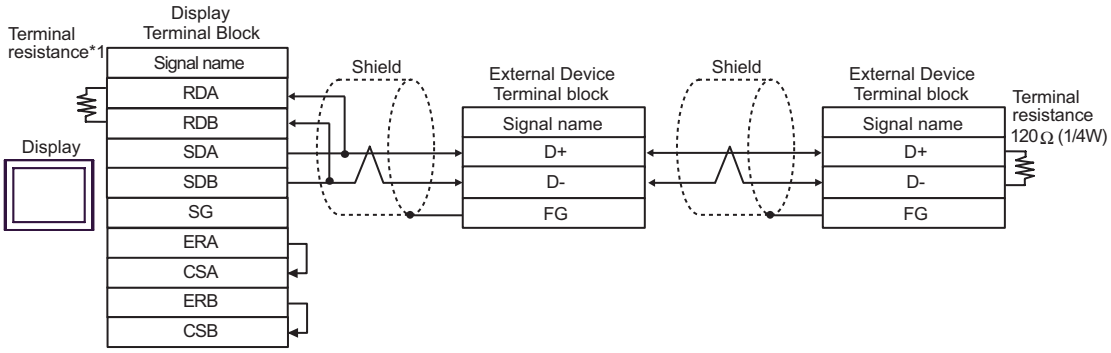


6G)

• 1:1 Connection



• 1:n Connection

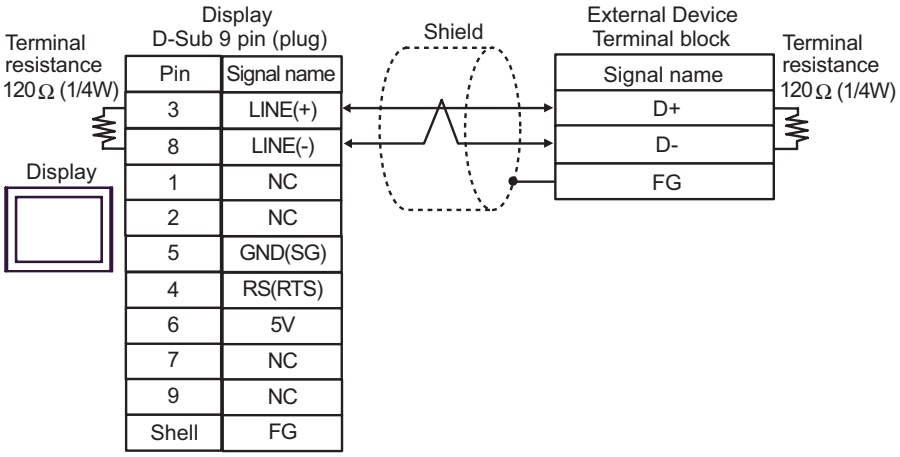


*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

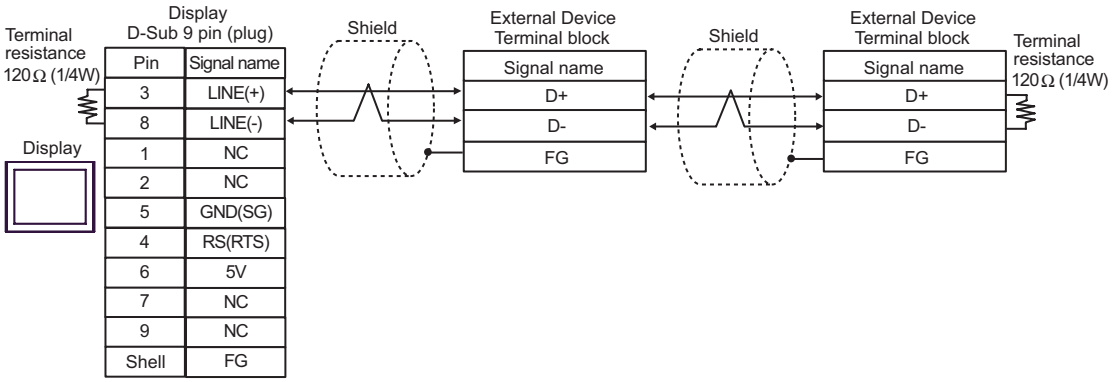
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

6H)

• 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.

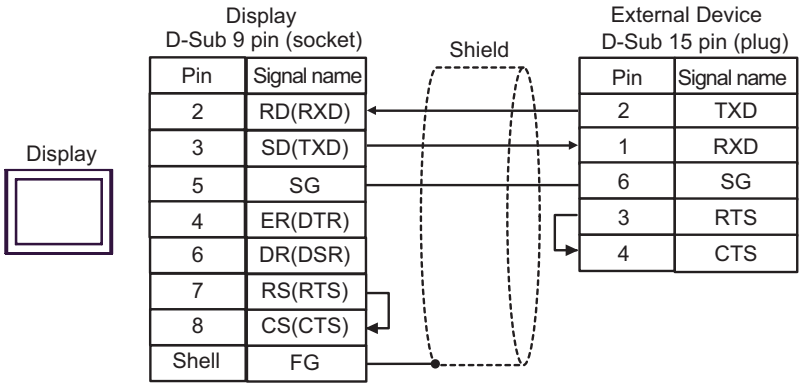
NOTE
- In COM on the GP-4107, the SG and FG terminals are isolated.

Cable Diagram 7

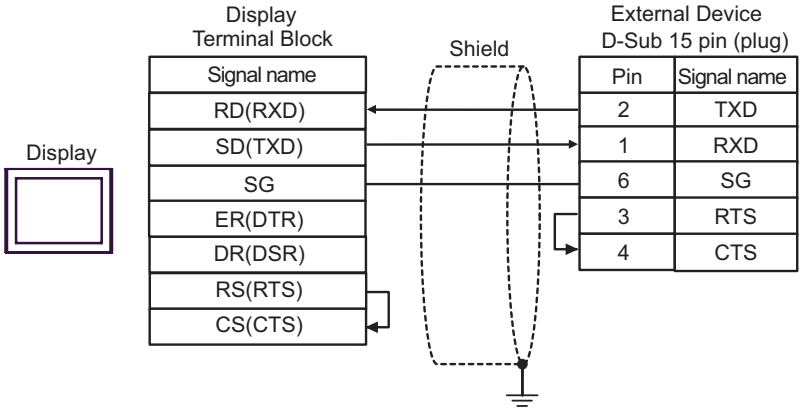
Display (Connection Port)	Cable		Remarks
GP (COM1) ST (COM1) IPC*1 PC/AT	7A	User-created Cable	Cable length: 15m or less
GP-4105 (COM1)	7B	User-created Cable	

*1 Available only with a COM port that supports RS232C.
☞ ■ IPC COM Port (page 6)

7A)



7B)



Cable Diagram 8

Display (Connection Port)	Cable		Remarks
GP[*1] (COM1) AGP-3302B (COM2) ST[*2] (COM2)	8A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	Cable length: 1,000m or less
	8B	User-created Cable	
GP[*3] (COM2)	8C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	
	8D	Online adapter by Pro-face CA4-ADPONL-01 + User-created Cable	
IPC[*4]	8E	COM port conversion adapter by Pro-face. CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created Cable	
	8F	User-created Cable	
GP-4106 (COM1)	8G	User-created Cable	
GP-4107 (COM1)	8H	User-created Cable	

*1 All GP models except AGP-3302B

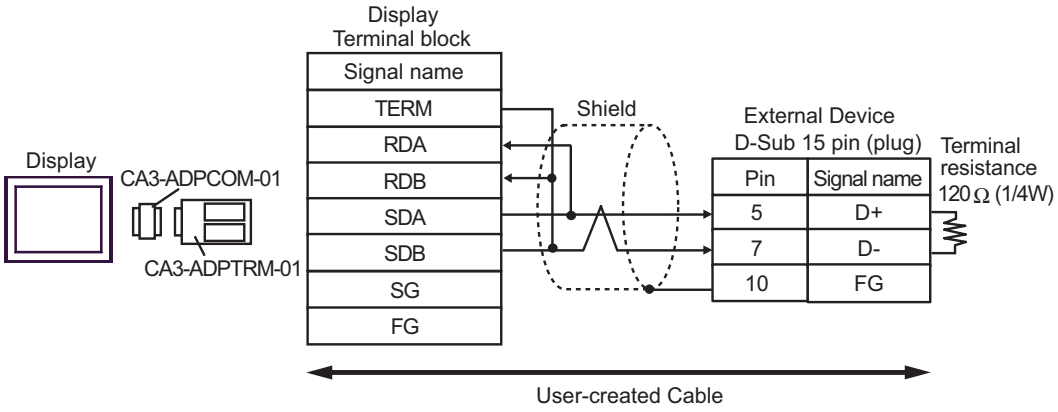
*2 All ST models except AST-3211A and AST-3302B

*3 All GP models except the GP-3200 Series and AGP-3302B

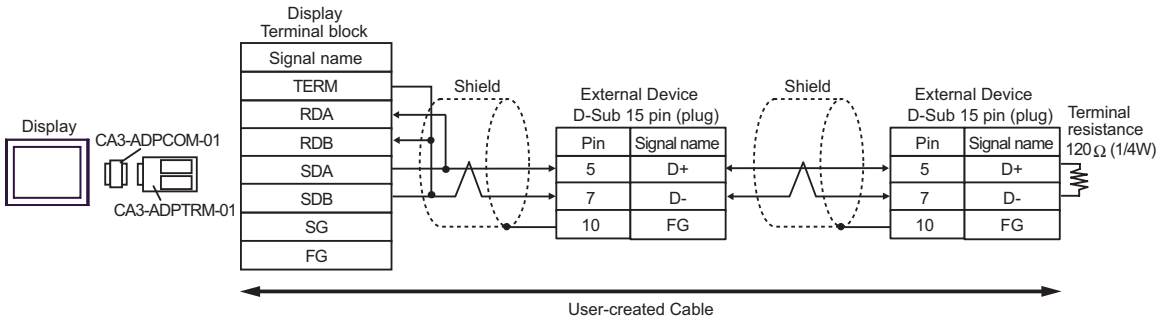
*4 Available only with a COM port that supports RS422/485 (2wire).
☞■ IPC COM Port (page 6)

8A)

• 1:1 Connection

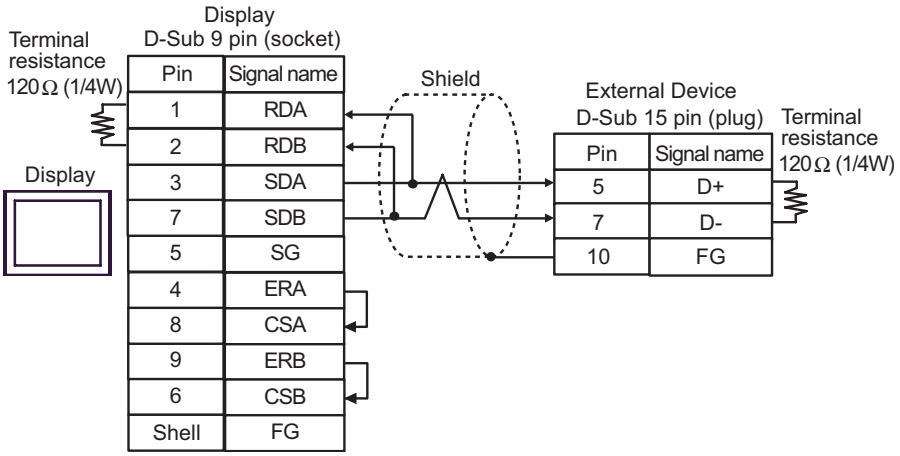


• 1:n Connection

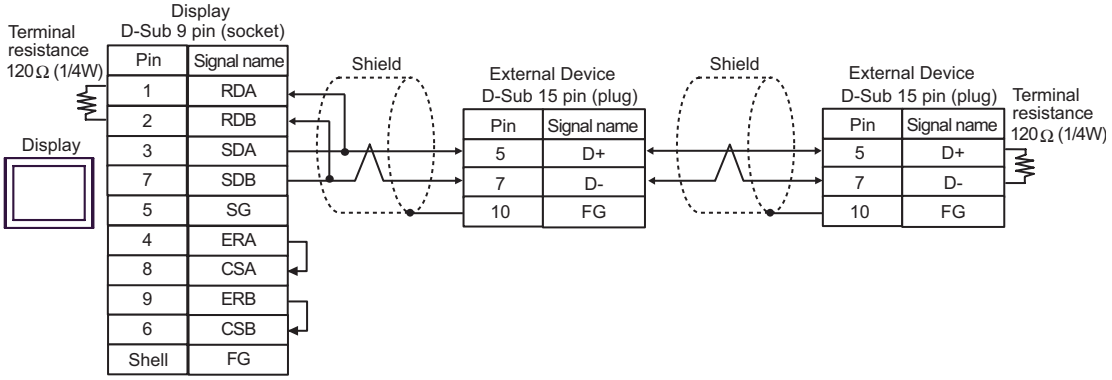


8B)

• 1:1 Connection

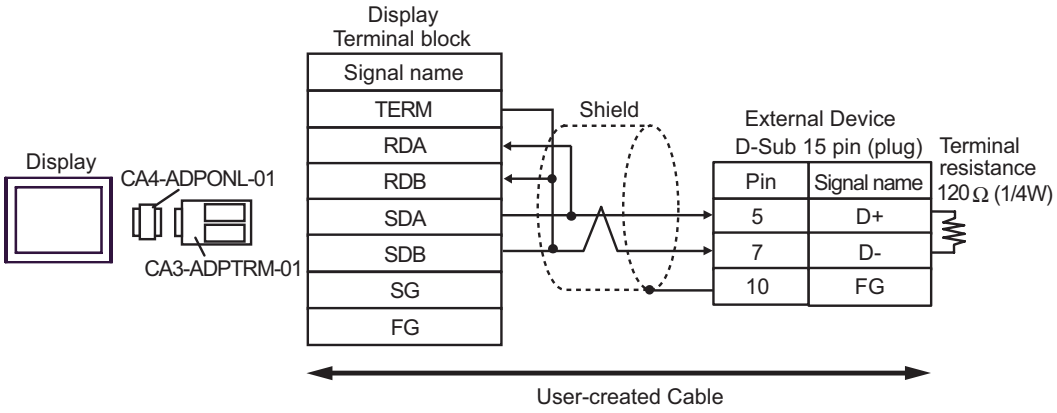


• 1:n Connection

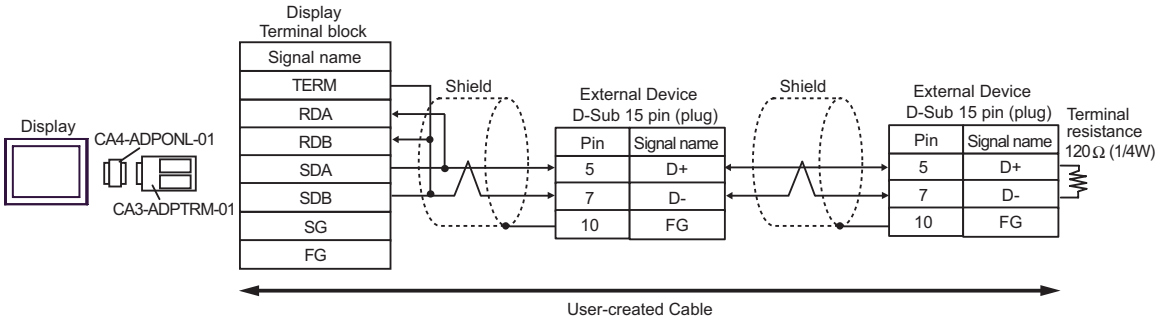


8C)

• 1:1 Connection

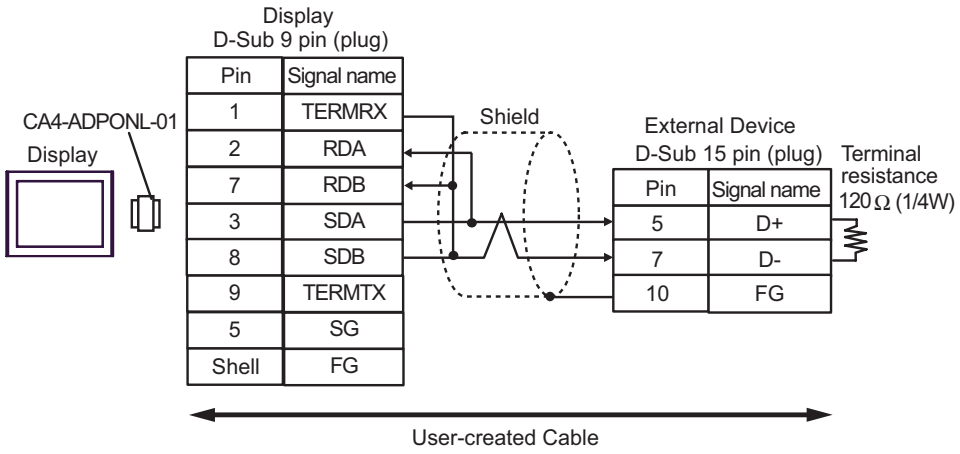


• 1:n Connection

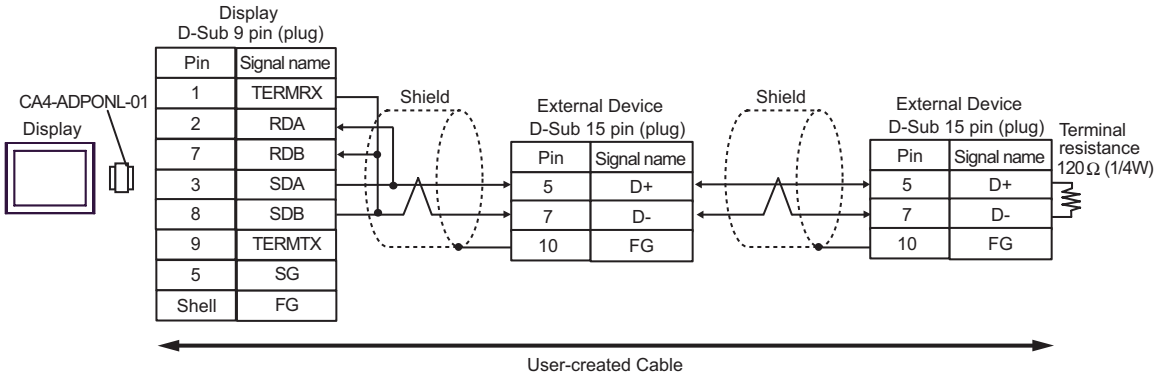


8D)

• 1:1 Connection

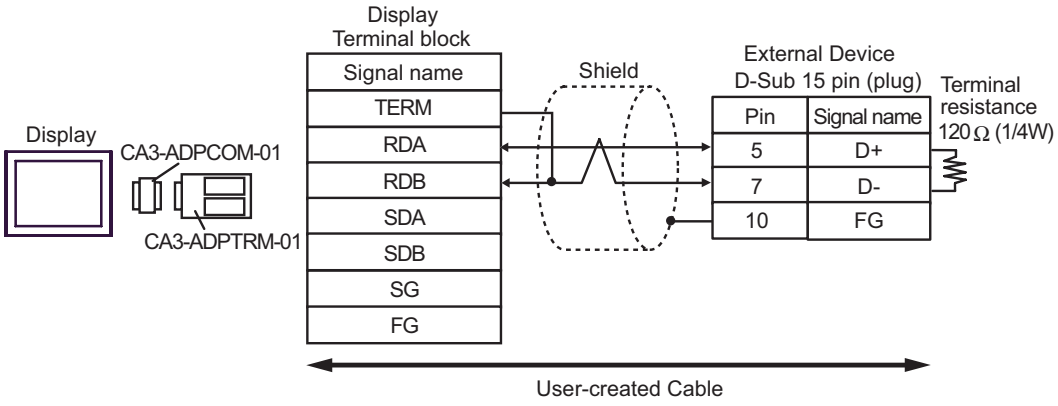


• 1:n Connection

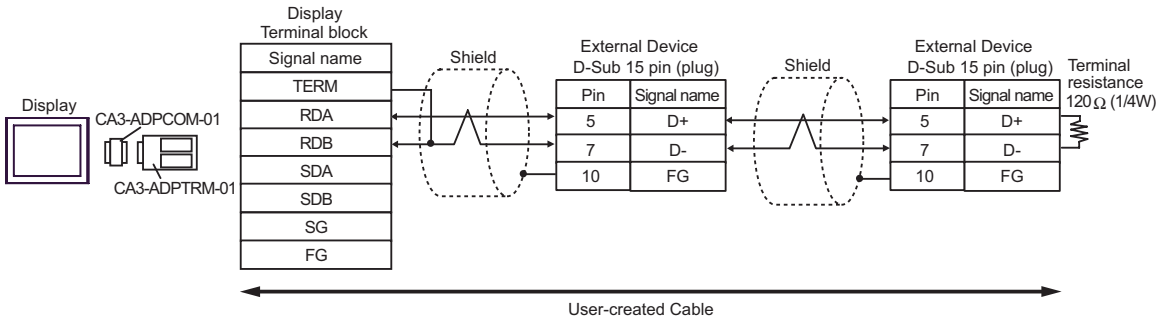


8E)

• 1:1 Connection

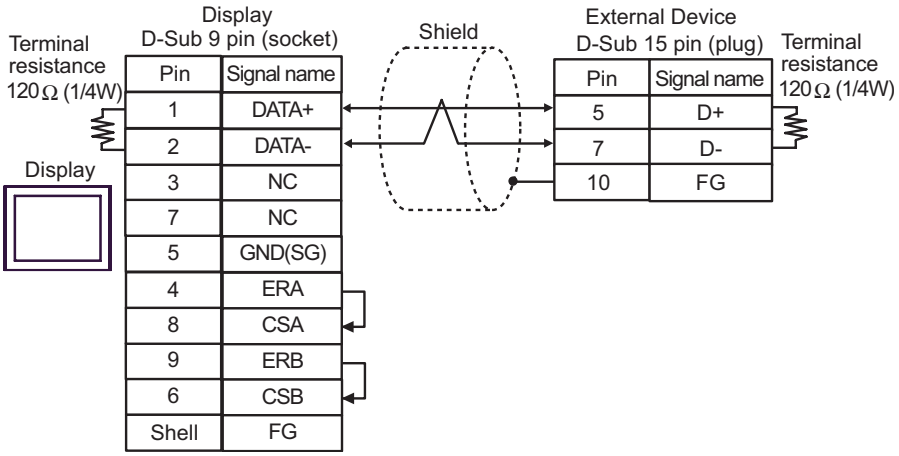


• 1:n Connection

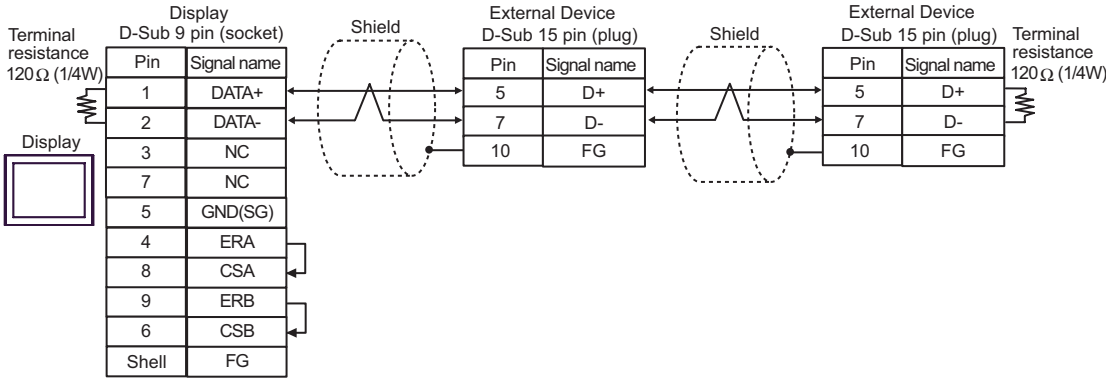


8F)

• 1:1 Connection

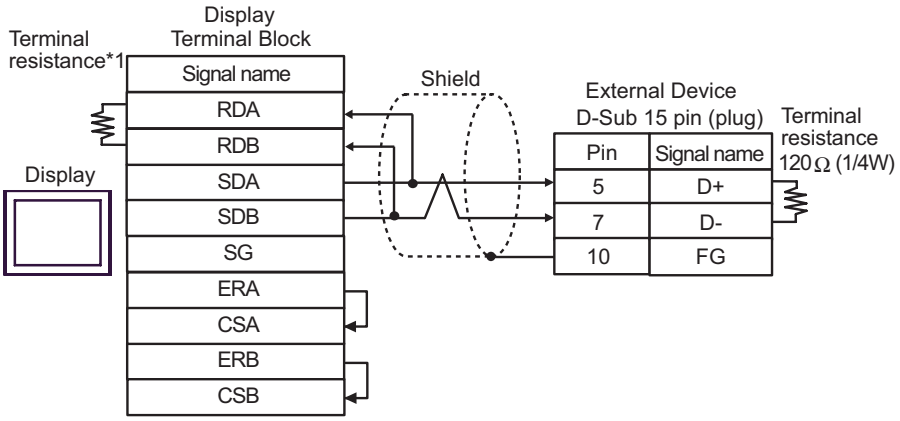


• 1:n Connection

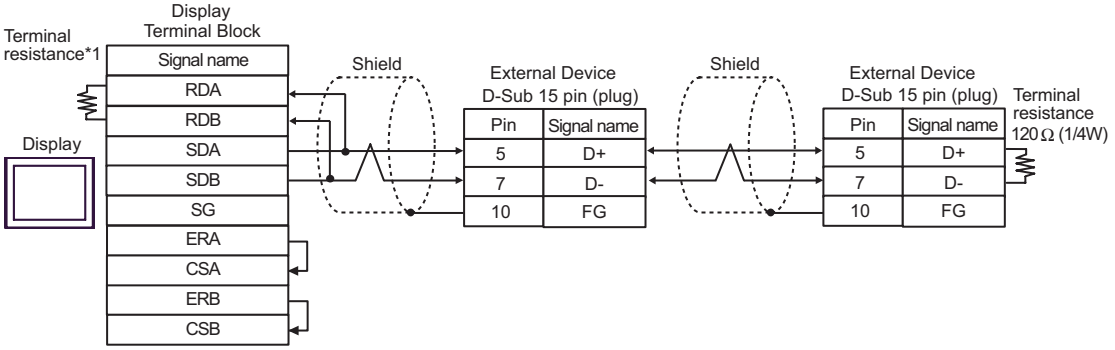


8G)

• 1:1 Connection



• 1:n Connection

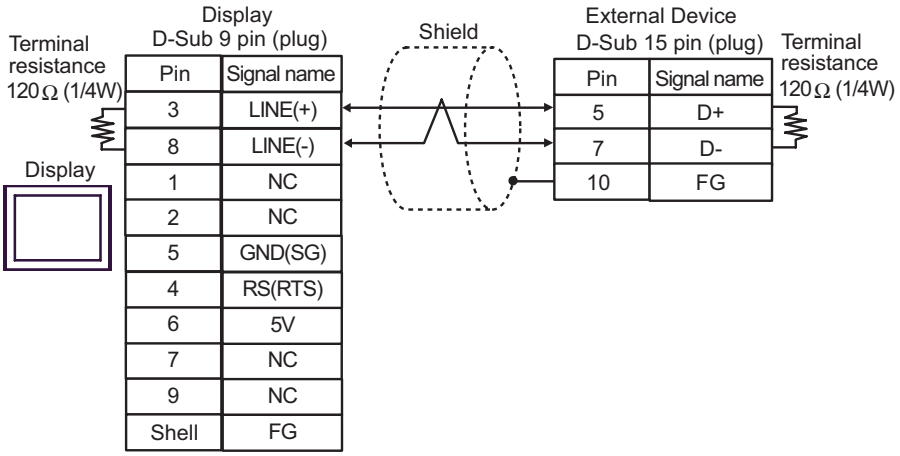


*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

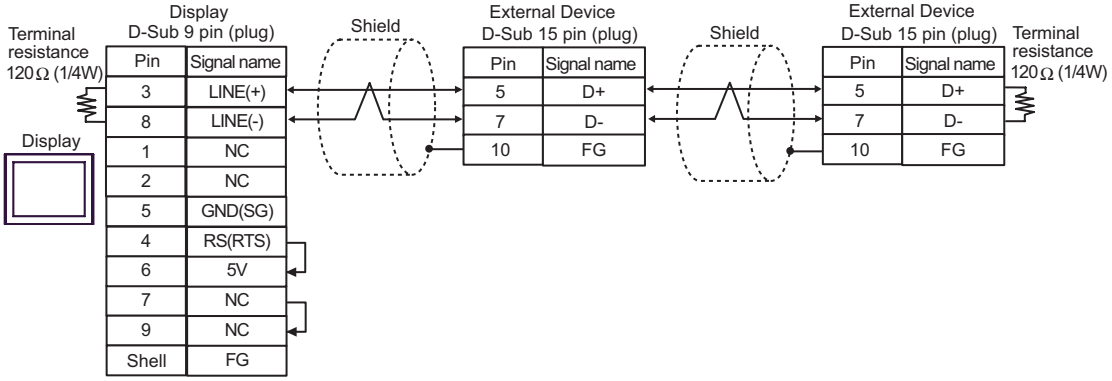
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

8H)

• 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.

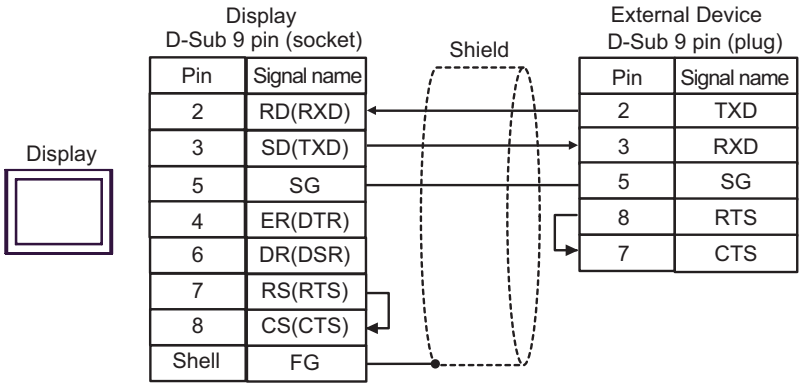
NOTE
- In COM on the GP-4107, the SG and FG terminals are isolated.

Cable Diagram 9

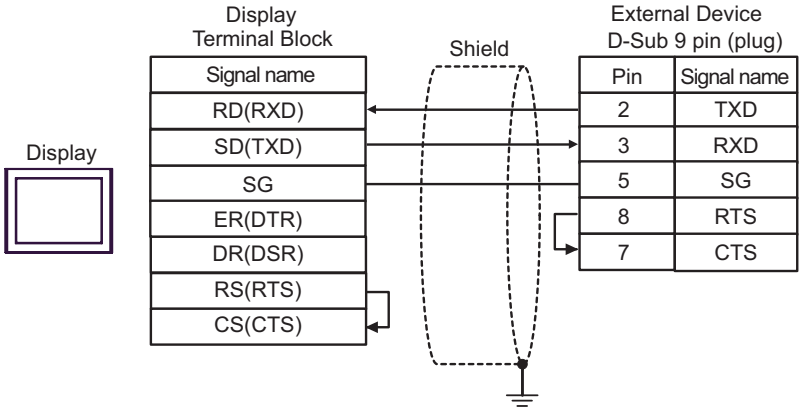
Display (Connection Port)	Cable		Remarks
GP (COM1) ST (COM1) IPC*1 PC/AT	9A	User-created Cable	Cable length: 15m or less
GP-4105 (COM1)	9B	User-created Cable	

*1 Available only with a COM port that supports RS232C.
☞ ■ IPC COM Port (page 6)

9A)



9B)



6 Supported Devices

The following table shows the range of supported device addresses. Available type and range of device may vary depending on the CPU. Consult the appropriate CPU manual before use.

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	X0000 - X0255	WX0000 - WX0240	L/H	÷16
Output Relay	Y0000 - Y0255	WY0000 - WY0240		÷16
Step Relay	S0000 - S0999	WS0000 - WS0976		÷16
Internal Relay	M0000 - M1911	WM0000 - WM1888		÷16
Special Relay	SM1912 - SM2001	WSM1912 - WSM1976		÷16
Timer (Contact)	T0000 - T0255	-		
Counter (Contact)	C0000 - C0255	-		
Timer (Current Value)	-	TMR0000 - TMR0255	L/H	
Counter (Current Value)	-	CTR0000 - CTR0199		
High-speed Counter	-	HC0200 - HC0255		*1
Data Register*2	-	HR0000 - HR8071		Bit 15 *3
Data Register *2	R00000.00 - R08071.15	R00000 - R08071		*3
Data Register	D00000.00 - D04095.15 (FBs) D00000.00 - D03071.15 (FBe/FBn)	D00000 - D04095 (FBs) D00000 - D03071 (FBe/FBn)		
Input Register	-	IR3840 - IR3903		Bit 15
Output Register	-	OR3904 - OR3967		Bit 15
Special Register	-	SR3968 - SR4167		Bit 15
HSC Register	-	HSC4096 - HSC4127		Bit 15
Calendar Register	-	RTC4128 - RTC4135		Bit 15
HST Register	-	HST4152 - HST4154		Bit 15
Read-only Register	-	ROR5000 - ROR8071		Bit 15 *4
File Register*5	-	F00000 - F08191		Bit 15

*1 32-bit device

*2 The External Device handles data registers HR and R as the same device. However, their bit-write operations differ as shown below. Select either register according to your system specifications.

- Device R allows data to be written to each specified bit.
- Device HR sets the 15 bits other than a specified bit to OFF(0).

*3 No data can be written to word addresses HR5000 to HR8071 and R05000 to R08071.

*4 Write disable

*5 The file register is supported only by the FBs Series.

NOTE

- Refer to the GP-Pro EX Reference Manual for system data area.

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

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

  ☞ "Manual Symbols and Terminology"

7 Device Code and Address Code

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

Device	Device Name	Device Code (HEX)	Address Code
Input Relay	X/WX	0082	Value of word address divided by 16
Output Relay	Y/WY	0083	Value of word address divided by 16
Step Relay	WS	0084	Value of word address divided by 16
Internal Relay	WM	0085	Value of word address divided by 16
Special Relay	WSM	0086	Value of (word address - 1912) divided by 16
Timer (Current Value)	TMR	0060	Word Address
Counter (Current Value)	CTR	0061	Word Address
High-speed Counter	HC	0062	Word Address
Data Register	HR	0000	Word Address
Data Register	R	0080	Word Address
Data Register	D	0081	Word Address
Input Register	IR	0001	Value of (word address - 3840)
Output Register	OR	0002	Value of (word address - 3904)
Special Register	SR	0003	Value of (word address - 3968)
HSC Register	HSC	0004	Value of (word address - 4096)
Calendar Register	RTC	0005	Value of (word address - 4128)
HST Register	HST	0008	Value of (word address - 4152)
Read-only Register	ROR	0006	Value of (word address - 5000)
File Register	F	0007	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 No.
Device Name	Name of the External Device where an error has occurred. Device 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** • IP address is displayed as "IP address (Decimal): MAC address (Hex)". • Device address is displayed as "Address: Device address". • Received error codes are displayed as "Decimal [Hex]".

Display 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.