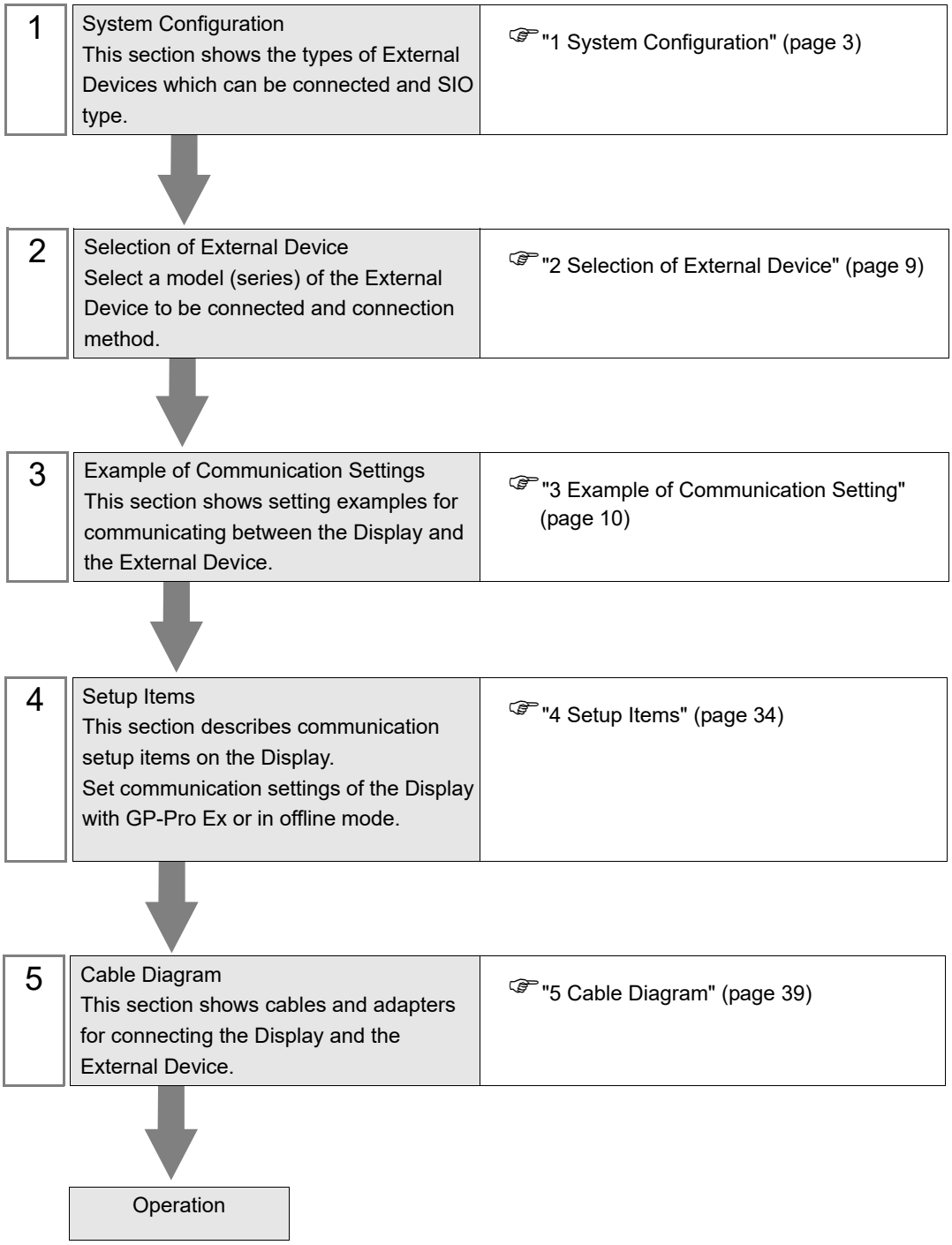
SHIBAURA MACHINE CO., LTD.

TC Series (TCmini/TC200) Driver

Introduction

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

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



1 System Configuration

The following table lists system configurations for connecting SHIBAURA MACHINE CO., LTD. External Devices and the Display.

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
TC200	TCCUH	TCCMW	RS-232C	"Setting Example 1" (page 10)	"Cable Diagram 1" (page 39)
		TCCMO		"Setting Example 2" (page 13)	
		RS-232C connector on CPU Module*1		"Setting Example 3" (page 15)	
TC200S	TCCUHS TCCUSS	TCCMWA	RS-232C	"Setting Example 4" (page 17)	"Cable Diagram 1" (page 39)
		TCCMOA		"Setting Example 5" (page 20)	
		RS-232C connector on CPU Module*1		"Setting Example 6" (page 22)	
TCmini	TC3-01	Port on CPU Module	RS-232C	"Setting Example 7" (page 24)	"Cable Diagram 2" (page 41)
		CN17A port on CPU Module	RS-422/485 (2 wire)	"Setting Example 8" (page 26)	"Cable Diagram 3" (page 43)
		CN17B port on CPU Module			
	TC3-02	Port on CPU Module	RS-232C	"Setting Example 7" (page 24)	"Cable Diagram 2" (page 41)
	TC5-02	Port on CPU Module	RS-232C	"Setting Example 7" (page 24)	"Cable Diagram 2" (page 41)
		CN24A port on CPU Module	RS-422/485 (2 wire)	"Setting Example 9" (page 29)	"Cable Diagram 4" (page 51)
		CN24B port on CPU Module			
	TC6-00	Port on CPU Module	RS-232C	"Setting Example 7" (page 24)	"Cable Diagram 2" (page 41)
	TC8-00	Port on CPU Module	RS-232C	"Setting Example 7" (page 24)	"Cable Diagram 2" (page 41)
		CN11 port on CPU Module	RS-422/485 (2 wire)	"Setting Example 8" (page 26)	"Cable Diagram 5" (page 59)
	TC9-00	CN11 port on CPU Module	RS-422/485 (2 wire)	"Setting Example 10" (page 31)	"Cable Diagram 6" (page 67)
TS	TS1000	TCPRG port	RS-232C	"Setting Example 11" (page 33)	"Table Diagram 7" (page 75)
	TS2000	POD port	RS-232C	"Setting Example 11" (page 33)	"Table Diagram 7" (page 75)
	TS2100	POD port	RS-232C	"Setting Example 11" (page 33)	"Table Diagram 7" (page 75)
	TS3000	TCPRG port	RS-232C	"Setting Example 11" (page 33)	"Table Diagram 7" (page 75)
	TS3100	TCPRG port	RS-232C	"Setting Example 11" (page 33)	"Table Diagram 7" (page 75)

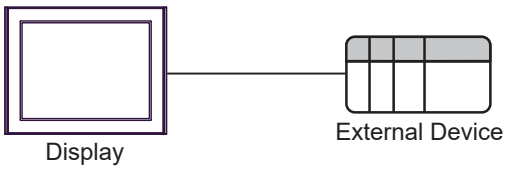
*1 To connect the Display directly to the External Device, in GP-Pro EX open the [Individual Device Settings] dialog box and set PC No. to 64.

NOTE

- For TCmini series to run RS-422/485 (2 wire) communications, one of the following CPU versions or later is necessary.
  TC3-01 (Version: TCmini LT3CU01D1)
  TC5-02 (Version: TCmini LT5CU02C0)
  TC8-00 (Version: TCmini LT8CU00A0)
  TC9-00 (Version: TCmini LT9CU00A0)

■ Connection Configuration

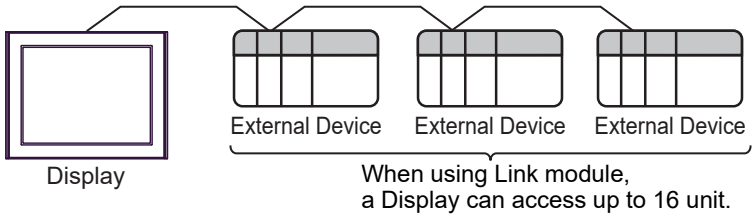
- 1:1 Connection



NOTE

- In this case, Display can communicate with the port on CPU module or PC link Module.

- 1:n Connection (Case of using TC200 Series / TC200S Series' External Device)



■ IPC COM Port

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

Usable port

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

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

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

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

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

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

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

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

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

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

DIP Switch settings (PL3000 / PS3000 Series)

RS-232C

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

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

RS-422/485 (4 wire)

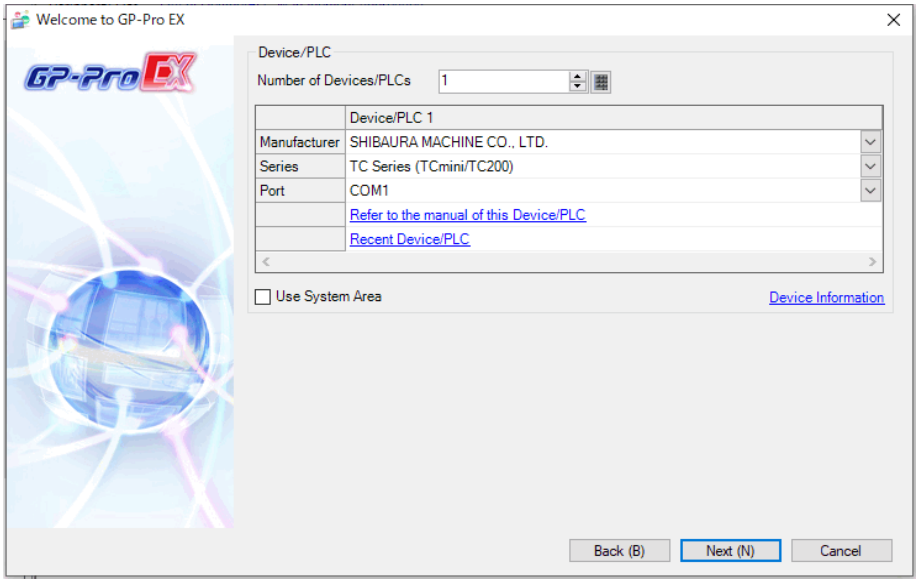
DIP Switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA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

RS-422/485 (2 wire)

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

2 Selection of External Device

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Number of Devices/ PLCs	Enter an integer from 1 to 4 to define the number of Devices/PLCs to connect to the display.
Manufacturer	Select the manufacturer of the External Device to connect. Select "SHIBAURA MACHINE Co., Ltd.".
Series	Select the External Device model (series) and the connection method. Select "TC Series (TCmini/TC200)". In System configuration, make sure the External Device you are connecting is supported by "TC Series (TCmini/TC200)" in system configuration. ☞"1 System Configuration" (page 3)
Port	Select the Display port to be connected to the External Device.
Use System Area	Check this option to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the External Device's ladder program to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This feature can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "System Settings [Display Unit] - [System Area] Settings Guide" Cf. Maintenance/Troubleshooting Guide "Main Unit - System Area Settings"

3 Example of Communication Setting

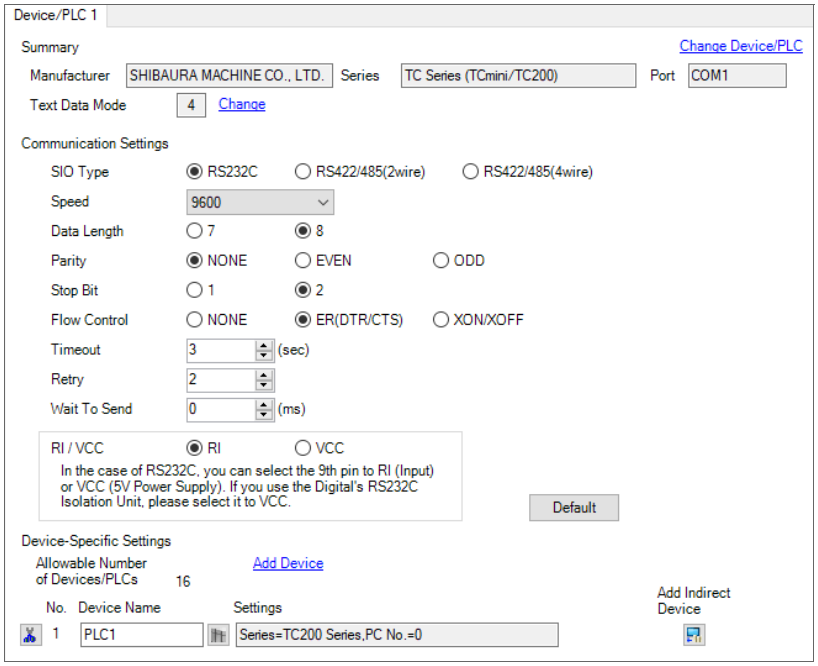
Examples of communication settings of the Display and the External Device, recommended by Pro-face, are shown.

3.1 Setting Example 1

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ Device Setting

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

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

■ Settings of External Device

Set PC No. of the External Device using DIP Switches and the rotary switch of External Device.

Please refer to the manual of the External Device for more details.

After setting, reboot the External Device to enable the setting.

◆ Setup Items

- DIP Switch

DIP Switch	Settings*1	Setup Description
SW1	OFF	Set PC No. by combining with the rotary switch.
SW2	OFF	
SW3	ON	Link Master
SW4	OFF	Link Slave
SW5	OFF	Remote Master
SW6	OFF	Remote Slave

*1 For SW3 to SW6, if two or more than two switches are turned on, there will be a set error.
SW3 must be turned ON when connect to Display.

- Rotary switch

Settings	Setup Description
0	PC No.

NOTE

- Set PC No. using DIP Switches 1 and 2 and the rotary switch. Combination of possible settings is as follows.

DIP Switch		PC No. that can be set with the rotary switch
SW1	SW2	
OFF	OFF	0 - 15
OFF	ON	16 - 31
ON	OFF	32 - 47
ON	ON	48 - 63

◆ Caution

In the case of a 1:n connection, the terminating resistance switch and shield grounding switch need to be set.

- Setting of the terminating resistance switch (ON/OFF) (LINE T)
  Always turn on the terminating resistance on both end stations of the communication circuit. Always turn off the terminating resistance of the way station.

IMPORTANT
- Turning off the terminating resistance on both end stations or turning on the terminating resistance of the way station disables normal communication.

- Setting of the shield grounding switch (grounding/isolating) (LINE G) of communication cable
  Turn on the shield grounding switch (grounding) on the shield side of the communication cable.

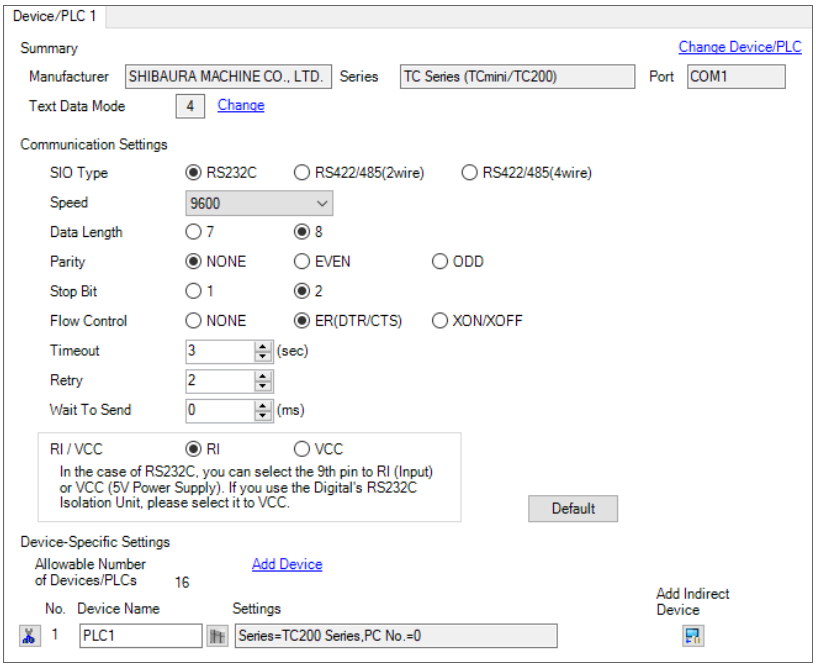
IMPORTANT
If there is 4V or more grounding electric potential difference between the other control panel and this module control panel, take the following steps.
- Turn off the shield grounding switch (isolating).
- If the total extension of communication cable exceeds 100m, turn on one or more switch(es) (grounding) every 100m. Select a place with 4V or lower grounding electric potential difference for grounding.
- If the total extension of the communication cable is 100m or less, turn on a switch (grounding) in the intermediate position.

3.2 Setting Example 2

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ Device Setting

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

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

■ Settings of External Device

Set PC No. of the External Device using DIP Switches and the rotary switch of External Device.

Please refer to the manual of the External Device for more details.

After setting, reboot the External Device to enable the setting.

◆ Setup Items

- DIP Switch

DIP Switch	Settings*1	Setup Description
SW1	OFF	Set PC No. by combining with the rotary switch.
SW2	OFF	
SW3	ON	Link Master
SW4	OFF	Link Slave
SW5	OFF	Remote Master
SW6	OFF	Remote Slave

*1 For SW3 to SW6, if two or more than two switches are turned on, there will be a set error.
SW3 must be turned ON when connect to Display.

- Rotary switch

Settings	Setup Description
0	PC No.

NOTE

- Set PC No. using DIP Switches 1 and 2 and the rotary switch.
  Combination of possible settings is as follows.

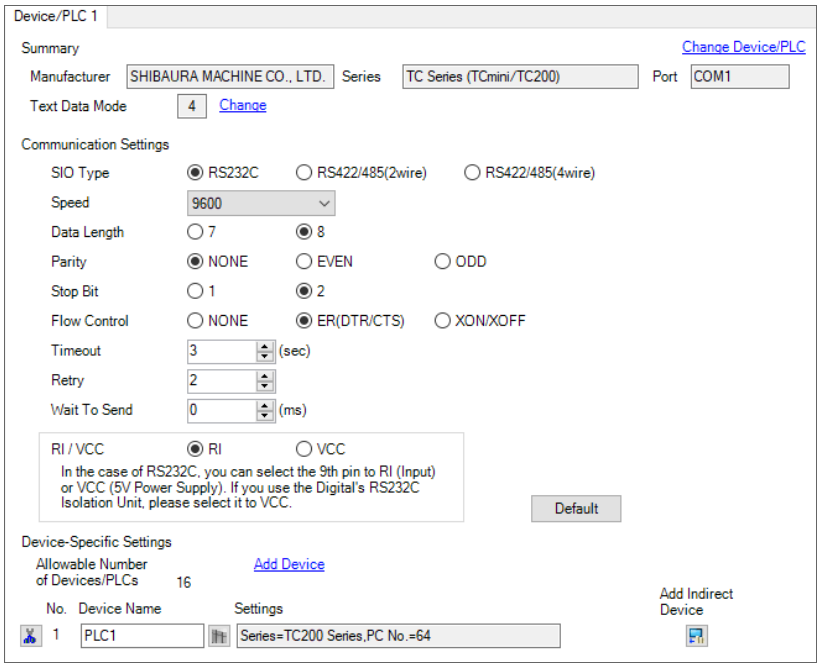
DIP Switch		PC No. that can be set with the rotary switch
SW1	SW2	
OFF	OFF	0 - 15
OFF	ON	16 - 31
ON	OFF	32 - 47
ON	ON	48 - 63

3.3 Setting Example 3

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ Device Setting

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

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

■ Settings of External Device

Communication setting of External Device by ladder software (TCPRGOS-W (J)).

Please refer to the manual of the External Device for more details.

◆ Procedure

1 Start the ladder software of the computer.

2 Select [Register editor] in the [Tool] menu.

[Register data [online]] window is displayed.

3 Click [A].

4 Double click the special auxiliary relay (A00F) to set communication speed.

Communication speed	A00F
9600bps	OFF

NOTE

- The other setting of communication speed is as follows.

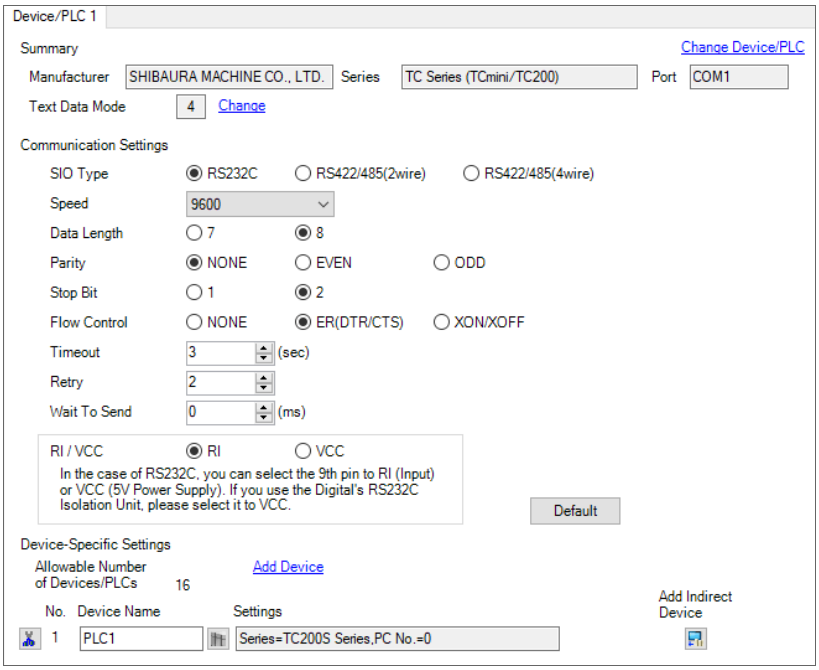
Communication speed	A00F
19200bps	ON

3.4 Setting Example 4

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ Device Setting

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

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

■ Settings of External Device

Set PC No. of the External Device using DIP Switches and the rotary switch of External Device.

Please refer to the manual of the External Device for more details.

After setting, reboot the External Device to enable the setting.

◆ Setup Items

- DIP Switch

DIP Switch	Settings*1	Setup Description
SW1	OFF	Set PC No. by combining with the rotary switch.
SW2	OFF	
SW3	ON	Link Master
SW4	OFF	Link Slave
SW5	OFF	Remote Master
SW6	OFF	Remote Slave

*1 For SW3 to SW6, if two or more than two switches are turned on, there will be a set error.
SW3 must be turned ON when connect to Display.

- Rotary switch

Settings	Setup Description
0	PC No.

NOTE

- Set PC No. using DIP Switches 1 and 2 and the rotary switch.
  Combination of possible settings is as follows.

DIP Switch		PC No. that can be set with the rotary switch
SW1	SW2	
OFF	OFF	0 - 15
OFF	ON	16 - 31
ON	OFF	32 - 47
ON	ON	48 - 63

◆ Caution

In the case of a 1:n connection, the terminating resistance switch and shield grounding switch need to be set.

- Setting of the terminating resistance switch (ON/OFF) (LINE T)
  Always turn on the terminating resistance on both end stations of the communication circuit. Always turn off the terminating resistance of the way station.

IMPORTANT
- Turning off the terminating resistance on both end stations or turning on the terminating resistance of the way station disables normal communication.

- Setting of the shield grounding switch (grounding/isolating) (LINE G) of communication cable
  Turn on the shield grounding switch (grounding) on the shield side of the communication cable.

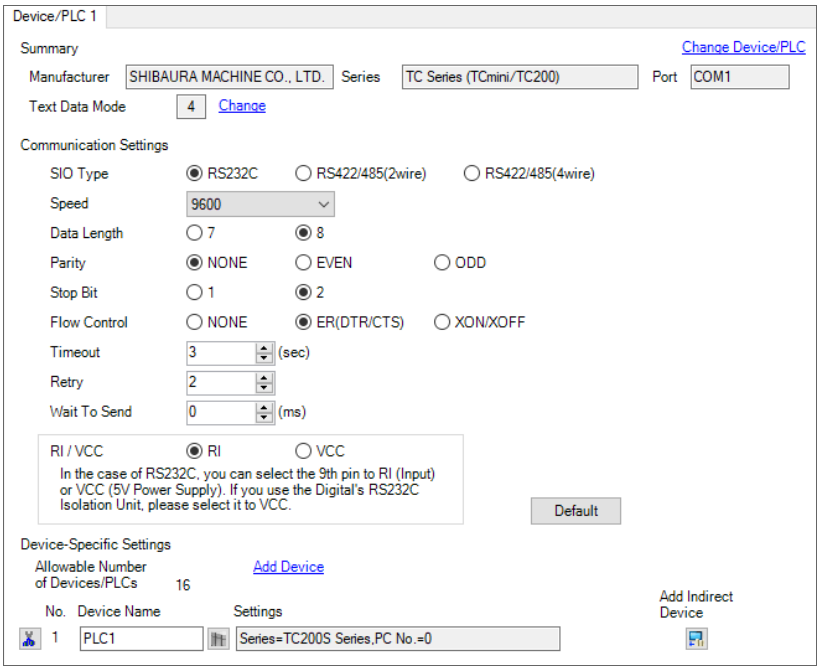
IMPORTANT
If there is 4V or more grounding electric potential difference between the other control panel and this module control panel, take the following steps.
- Turn off the shield grounding switch (isolating).
- If the total extension of communication cable exceeds 100m, turn on one or more switch(es) (grounding) every 100m. Select a place with 4V or lower grounding electric potential difference for grounding.
- If the total extension of the communication cable is 100m or less, turn on a switch (grounding) in the intermediate position.

3.5 Setting Example 5

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ Device Setting

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

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

■ Settings of External Device

Set PC No. of the External Device using DIP Switches and the rotary switch of External Device.

Please refer to the manual of the External Device for more details.

After setting, reboot the External Device to enable the setting.

◆ Setup Items

- DIP Switch

DIP Switch	Settings*1	Setup Description
SW1	OFF	Set PC No. by combining with the rotary switch.
SW2	OFF	
SW3	ON	Link Master
SW4	OFF	Link Slave
SW5	OFF	Remote Master
SW6	OFF	Remote Slave

*1 For SW3 to SW6, if two or more than two switches are turned on, there will be a set error.
SW3 must be turned ON when connect to Display.

- Rotary switch

Settings	Setup Description
0	PC No.

NOTE

- Set PC No. using DIP Switches 1 and 2 and the rotary switch.
  Combination of possible settings is as follows.

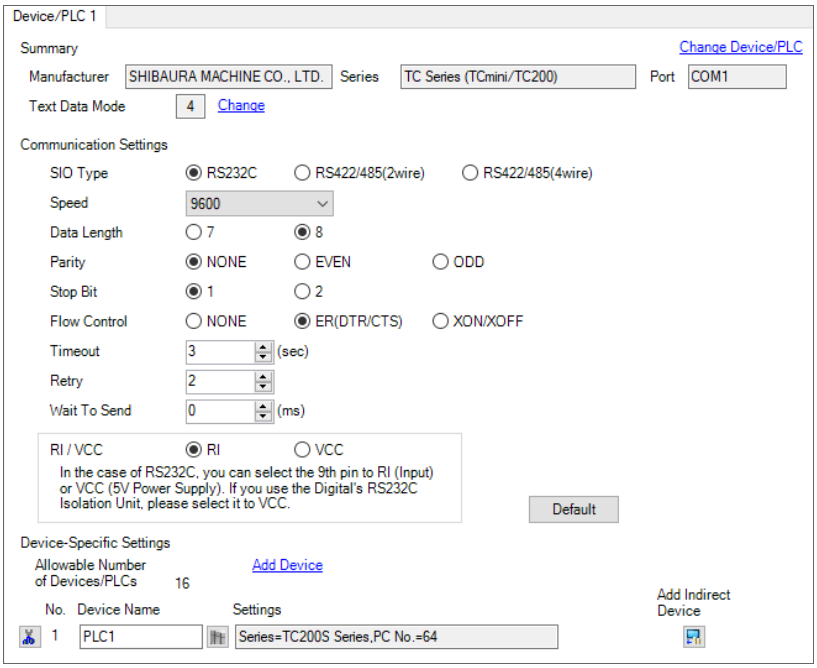
DIP Switch		PC No. that can be set with the rotary switch
SW1	SW2	
OFF	OFF	0 - 15
OFF	ON	16 - 31
ON	OFF	32 - 47
ON	ON	48 - 63

3.6 Setting Example 6

■ Settings of GP-Pro EX

◆ Communication Settings

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



NOTE

- Set Stop Bit to 1 bit.

◆ Device Setting

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

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

■ Settings of External Device

Communication setting of External Device by ladder software (TCPRGOS-W (J)).

Please refer to the manual of the External Device for more details.

◆ Procedure

1 Start the ladder software of the computer.

2 Select [Register editor] in the [Tool] menu.

[Register data [online]] window is displayed.

3 Click [A].

4 Double click the special auxiliary relay (A00F, A154, A155) to set communication speed.

Communication speed	A00F	A154	A155
9600bps	OFF	OFF	OFF

NOTE

- The other settings of communication speed is as follows.

Communication speed	A00F	A154	A155
19200bps	ON	OFF	OFF
38400bps	*1	ON	OFF
57600bps		OFF	ON
115200bps		ON	ON

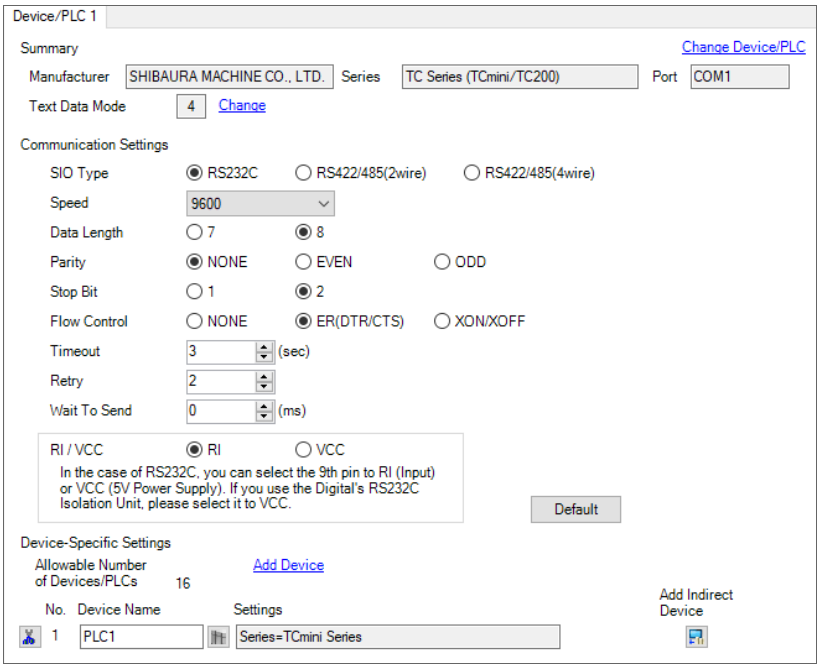
*1 Either ON or OFF can be set.

3.7 Setting Example 7

■ Settings of GP-Pro EX

◆ Communication Settings

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



NOTE

- For External Device, "2" is fixed for Stop Bit.
  For GP-Pro EX, set for Stop Bit as shown below depending on the CPU version.

CPU	Version	Setting value
TC3-01	TCmini LT3CU01E0 or later	2
	less than TCmini LT3CU01E0	1
TC3-02	TCmini LT3CU02G0 or later	2
	less than TCmini LT3CU02G0	1
TC5-02	TCmini LT3CU02D0 or later	2
	less than TCmini LT3CU02D0	1
TC6-00	---	1
TC8-00	TCmini LT8CU00D0 or later	2
	less than TCmini LT8CU00D0	1

◆ Device Setting

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

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

◆ Caution

When the TCmini series is used, please be sure to set a stop bit as "1."

■ Settings of External Device

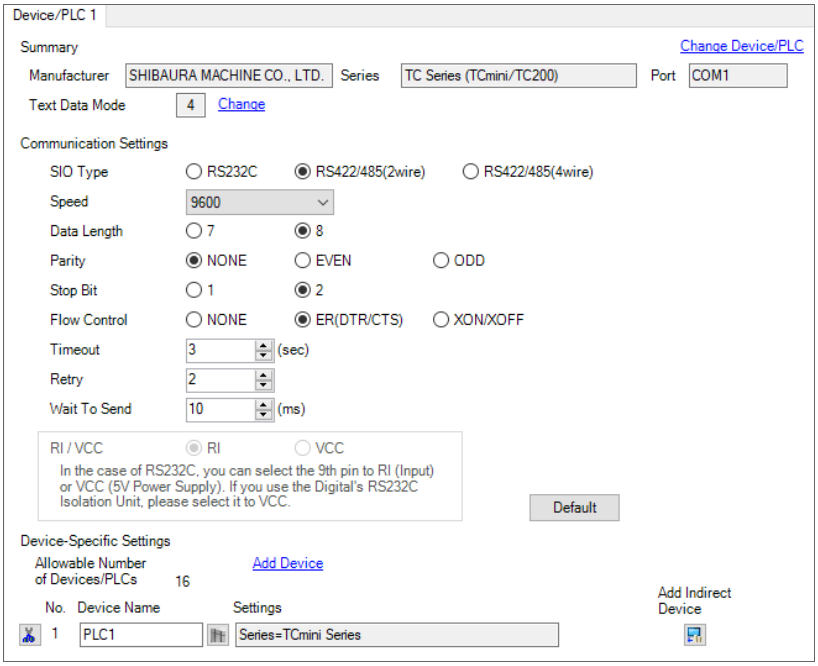
There is no setting for the External Device side. The communication speed automatically switches in accordance with the setting of the Display.

3.8 Setting Example 8

■ Settings of GP-Pro EX

◆ Communication Settings

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



NOTE

- For External Device, "2" is fixed for Stop Bit.
  For GP-Pro EX, set for Stop Bit as shown below depending on the CPU version.

CPU	Version	Setting value
TC3-01	TCmini LT3CU01E0 or later	2
	less than TCmini LT3CU01E0	1
TC8-00	TCmini LT8CU00D0 or later	2
	less than TCmini LT8CU00D0	1

- Set Wait To Send to 10ms or more.

◆ Device Setting

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

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

■ External Device Settings

◆ RS-422/485 Communication Port Settings

To set the External Device's RS-422/485 communication port to half-duplex communication, set the jumper (for TC3-01) or DIP Switch (for TC8-00) as follows.

Refer to your External Device manual for details.

- Setup Description

CPU	Jumper/DIP Switch	Setting
TC3-01	JP15, between pins 2 and 3	Short
	JP3	Short
	JP4	Short
TC8-00	SW5-1	OFF
	SW5-2	OFF
	SW5-3	ON
	SW5-4	ON
	SW5-5	ON

◆ Register Settings for RS-422/485 Communication

Use the ladder software (TCPRGOS-W (E)) to set up RS-422/485 communication.

Refer to your External Device manual for details.

After setup is complete, restart the External Device to enable the settings.

◆ Procedure

1 On the computer, start the ladder software.

2 From the [Tool] menu, select [Register editor].

The [Register data] window appears.

3 Set the register as follows.

Double-click [HEX] in the register column and enter the value in the [Data change] dialog box.

CPU	Register	Setting
TC3-01	D11F	0004h
TC8-00	D37F	8004h

NOTE

- The following items are fixed. The communication speed is set automatically.

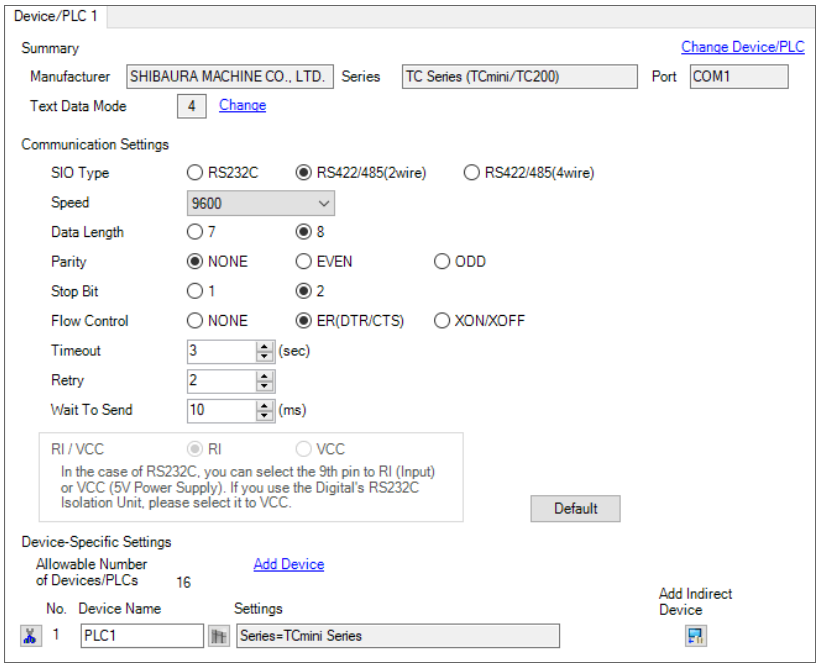
Setting Information	Value
Communication Type	RS-422/485 (2wire)
Data Length	8 bit
Parity	None
Stop Bit	2 bit

3.9 Setting Example 9

■ GP-Pro EX Settings

◆ Communication Settings

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



NOTE

- For External Device, "2" is fixed for Stop Bit.
  For GP-Pro EX, set for Stop Bit as shown below depending on the CPU version.

CPU	Version	Setting value
TC5-02	TCmini LT3CU02D0 or later	2
	less than TCmini LT3CU02D0	1

- Set Wait To Send to 10ms or more.

◆ Device Setting

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

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

■ External Device Settings

Use the ladder software (TCPRGOS-W (E)) to set up communication settings on the External Device.

Refer to your External Device manual for details.

After setup is complete, restart the External Device to enable the settings.

◆ Procedure

1 On the computer, start the ladder software.

2 From the [Tool] menu, select [Register editor].

The [Register data] window appears.

3 Set the register as follows.

Double-click [HEX] in the register column and enter the value in the [Data change] dialog box.

CPU	Register	Setting
D37E	0000h	Communication speed (9600bps)
D37F	0003h	Host Communication mode

NOTE

- The following items are fixed.

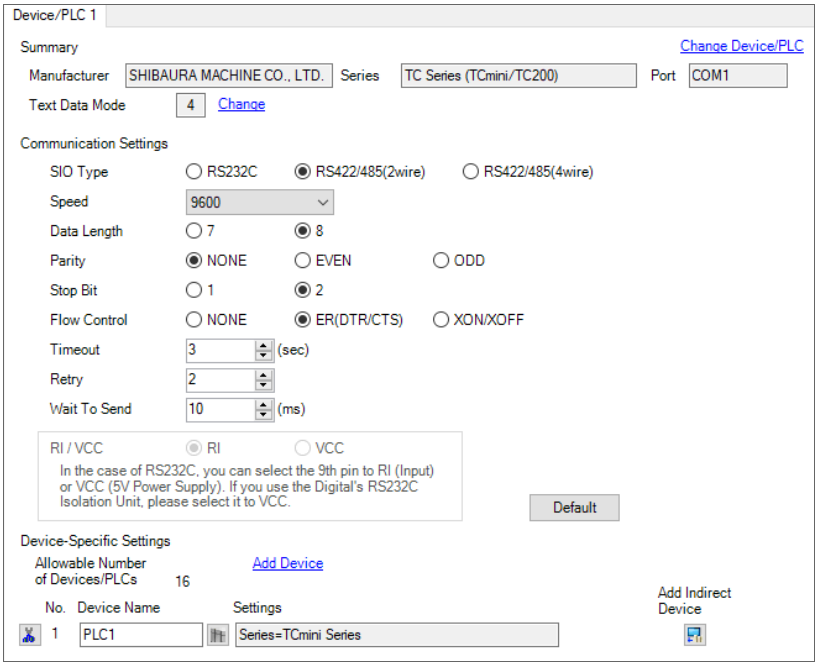
Setting Information	Value
Communication Type	RS-422/485 (2wire)
Data Length	8 bit
Parity	None
Stop Bit	2 bit

3.10 Setting Example 10

■ GP-Pro EX Settings

◆ Communication Settings

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



NOTE

- Set Wait To Send to 10ms or more.

◆ Device Setting

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

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

■ External Device Settings

Use the ladder software (TCPRGOS-W (E)) to set up communication settings on the External Device.

Refer to your External Device manual for details.

After setup is complete, restart the External Device to enable the settings.

◆ Procedure

1 On the computer, start the ladder software.

2 From the [Tool] menu, select [Register editor].

The [Register data] window appears.

3 Set the register as follows.

Double-click [HEX] in the register column and enter the value in the [Data change] dialog box.

Register	Setting	Setup Description
D12E	0000h	Communication speed (9600bps)
D12F	0000h	Host Communication mode

NOTE

- The following items are fixed.

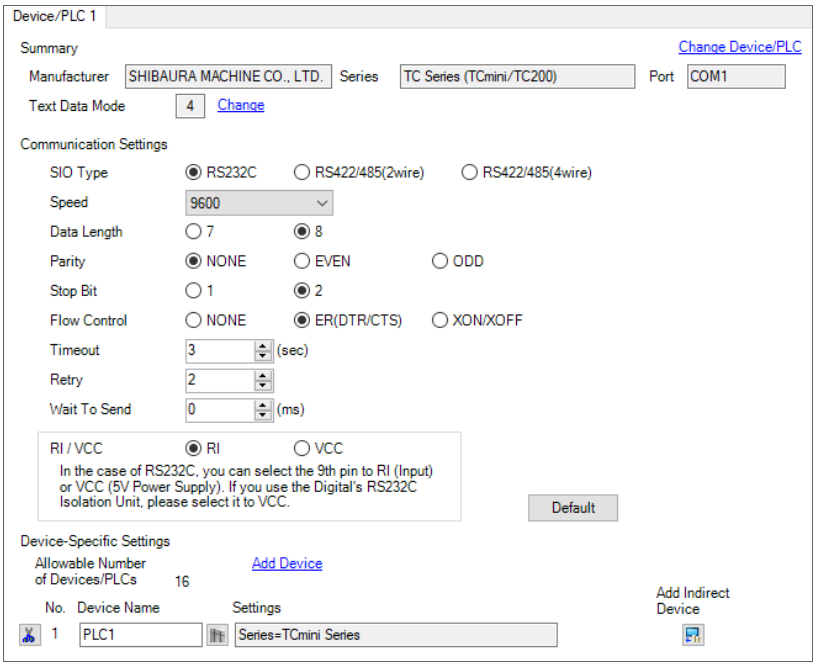
Setting Information	Value
Communication Type	RS-422/485 (2wire)
Data Length	8 bit
Parity	None
Stop Bit	2 bit

3.11 Setting Example 11

■ GP-Pro EX Settings

◆ Communication Settings

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



◆ Device Setting

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

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

NOTE

- Please select "TCmini Series" to connect with the TS series.

■ External Device Settings

There is no setting of the External Device side. Communication speed is switched automatically according to the setting of Display.

4 Setup Items

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

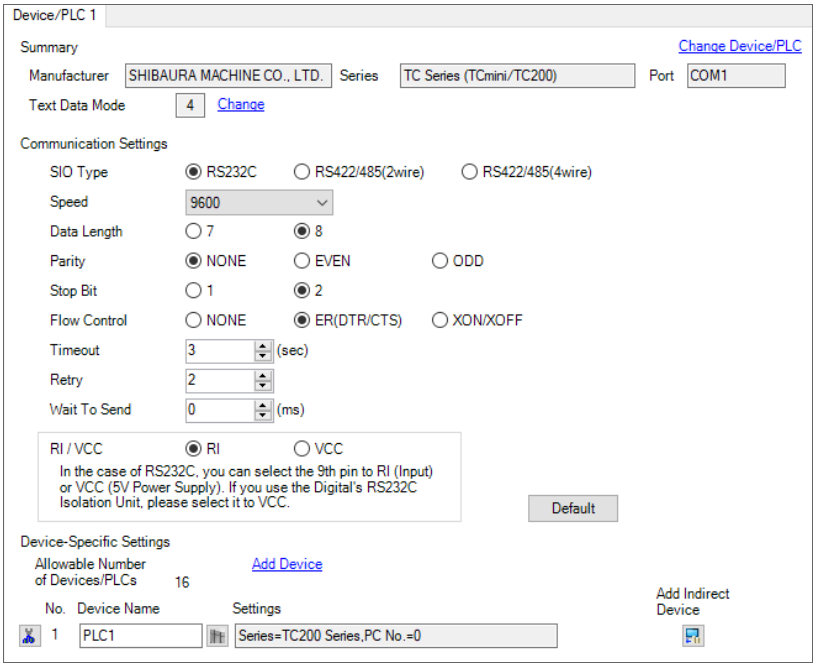
The setting of each parameter must be identical to that of External Device.

☞"3 Example of Communication Setting" (page 10)

4.1 Setup Items in GP-Pro EX

■ Communication Settings

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



Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device.
Speed	Select speed between the External Device and the Display.
Data Length	Select data length.
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.

Continues to the next page.

Setup Items	Setup Description
RI/VCC	You can switch RI/VCC of the 9th pin when you select RS232C for SIO type. It is necessary to change RI/5V by changeover switch of IPC when connect with IPC. Please refer to the manual of the IPC for more detail.

NOTE

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

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

■ Device Setting

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

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

Setup Items	Setup Description
Series	Select the External Device series.
PC No	Use an integer from 0 to 64 to enter the PC No. of the External Device. *1

*1 In the case of TC200 series or TC200S series, set "0 to 63" when using a communication module, and set "64" when using RS-232C connector on CPU.
In the case of a TCmini series, the PC number cannot be set.

4.2 Setup Items in Offline Mode

NOTE

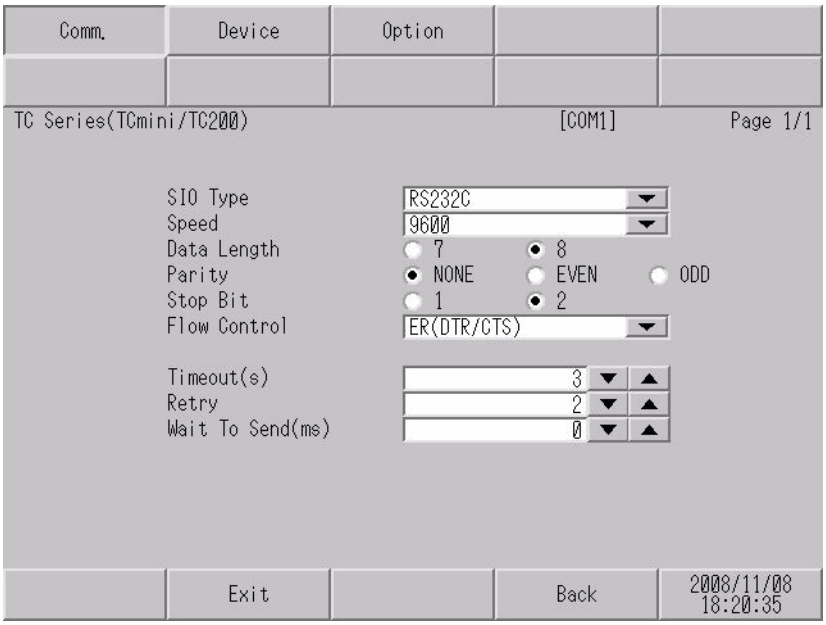
- Refer to the Maintenance/Troubleshooting guide for information on how to enter offline mode or about the operation.

  Cf. Maintenance/Troubleshooting Guide "Offline Mode"

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

■ Communication Settings

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



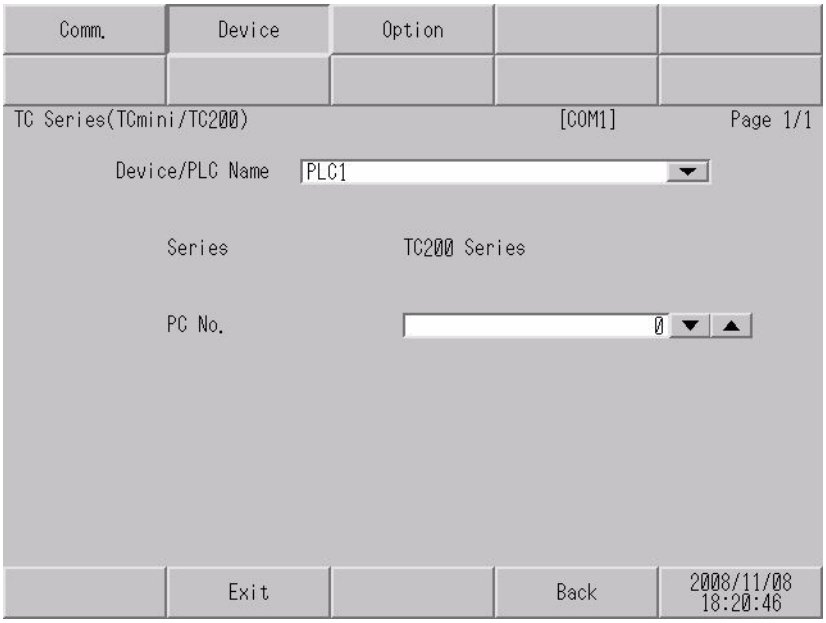
Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. **IMPORTANT** To make the communication settings correctly, confirm the serial interface specifications of Display unit for [SIO Type]. We cannot guarantee the operation if a communication type that the serial interface does not support is specified. For details concerning the serial interface specifications, refer to the manual for Display unit.
Speed	Select speed between the External Device and the Display.
Data Length	Select data length.
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.

Continues to the next page.

Setup Items	Setup Description
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 Settings]. Touch the External Device you want to set from the displayed list, and touch [Device].

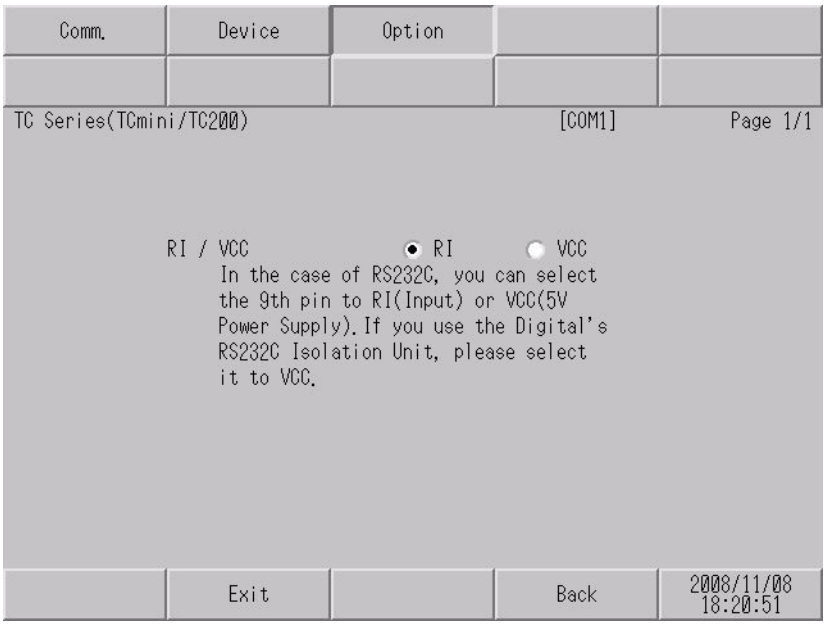


Setup Items	Setup Description
Device/PLC name	Select the External Device to set. Device name is a title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Series	Display the External Device series.
PC No.	Enter the PC No. of the External Device.*1

*1 In the case of TC200 series or TC200S series, set "0 to 63" when using a communication module, and set "64" when using RS-232C connector on CPU.
In the case of a TCmini series, the PC number cannot be set.

■ Option

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



Setup Items	Setup Description
RI/VCC	Switches RI/VCC of the 9th pin. It is necessary to change RI/5V by changeover switch of IPC when connect with IPC. Please refer to the manual of the IPC for more detail.

NOTE

- GP-4100 series, GP-4*01TM, GP-Rear Module, LT-4*01TM and LT-Rear Module do not have the [Option] setting in the offline mode.

5 Cable Diagram

The cable diagram shown below may be different from the cable diagram recommended by SHIBAURA MACHINE CO., LTD. Please be assured there is no operational problem in applying the cable diagram shown in this manual.

- The FG pin of the External Device body must be D-class grounded. Please refer to the manual of the External Device for more details.
- SG and FG are connected inside the Display. When connecting SG to the External Device, design the system not to form short-circuit loop.
- Connect the isolation unit, when communication is not stabilized under the influence of a noise etc.

Cable Diagram 1

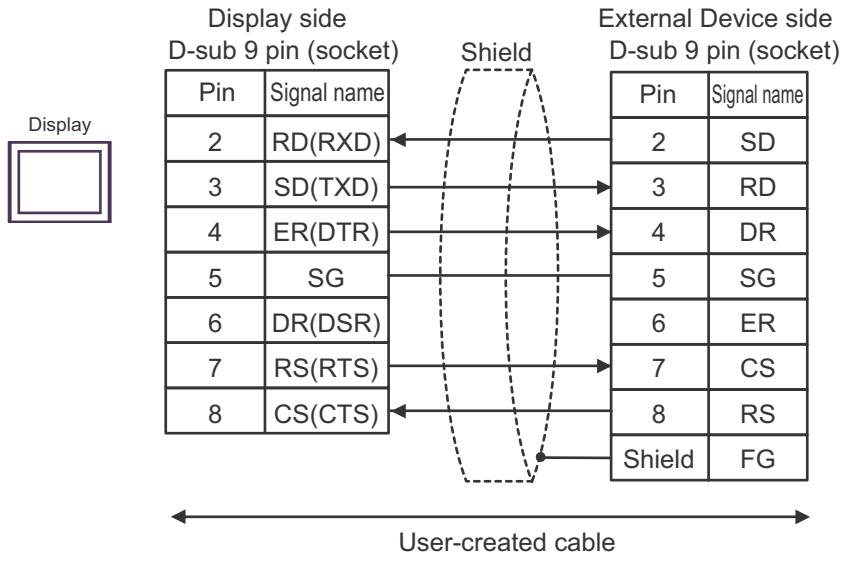
Display (Connection Port)	Cable		Notes
GP3000 (COM1) GP4000*1 (COM1) SP5000*2 (COM1/2) SP-5B00 (COM1) ST (COM1) LT3000 (COM1) IPC*3 PC/AT	1A	User-created cable	The cable length must be 15m or less.
GP-4105 (COM1) GP-4115T (COM1) GP-4115T3 (COM1)	1B	User-created cable	The cable length must be 15m or less.

*1 All GP4000 models except GP-4100 Series and GP-4203T

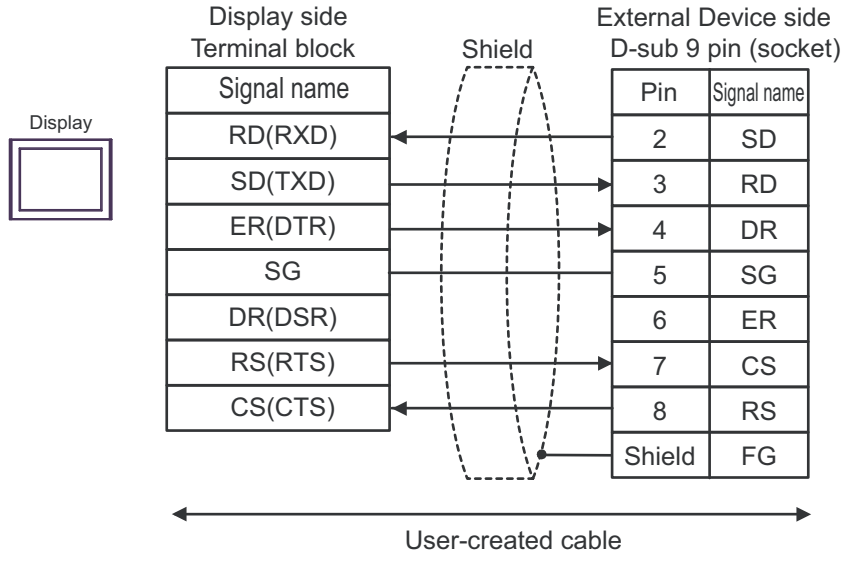
*2 Except SP-5B00

*3 Only the COM port which can communicate by RS-232C can be used.
☞"■ IPC COM Port" (page 6)

1A)


Display side
D-sub 9 pin (socket)
Shield
External Device side
D-sub 9 pin (socket)
Display
Pin
Signal name
2 RD(RXD)
3 SD(TXD)
4 ER(DTR)
5 SG
6 DR(DSR)
7 RS(RTS)
8 CS(CTS)
Pin
Signal name
2 SD
3 RD
4 DR
5 SG
6 ER
7 CS
8 RS
Shield FG
User-created cable

1B)


Display side
Terminal block
Shield
External Device side
D-sub 9 pin (socket)
Display
Signal name
RD(RXD)
SD(TXD)
ER(DTR)
SG
DR(DSR)
RS(RTS)
CS(CTS)
Pin
Signal name
2 SD
3 RD
4 DR
5 SG
6 ER
7 CS
8 RS
Shield FG
User-created cable

Cable Diagram 2

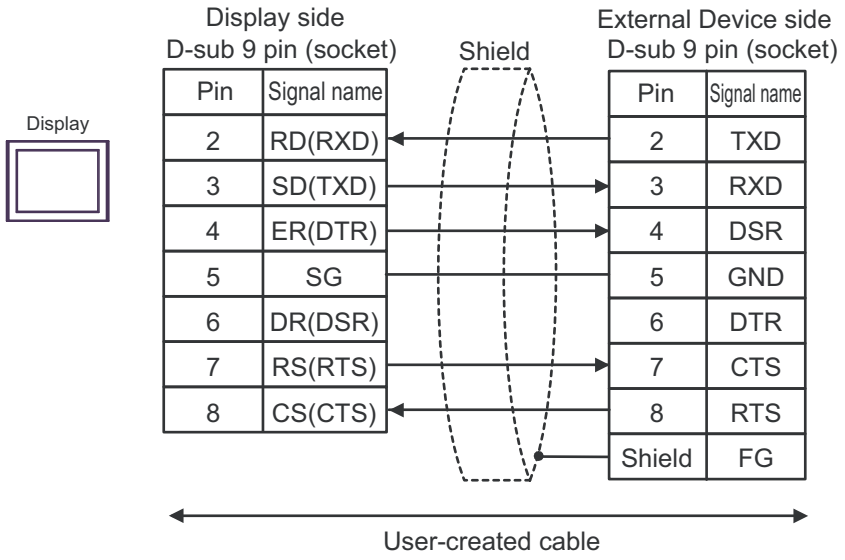
Display (Connection Port)	Cable		Notes
GP3000 (COM1) GP4000*1 (COM1) SP5000*2 (COM1/2) SP-5B00 (COM1) ST (COM1) LT3000 (COM1) IPC*3 PC/AT	2A	User-created cable	The cable length must be 15m or less.
GP-4105 (COM1) GP-4115T (COM1) GP-4115T3 (COM1)	2B	User-created cable	The cable length must be 15m or less.

*1 All GP4000 models except GP-4100 Series and GP-4203T

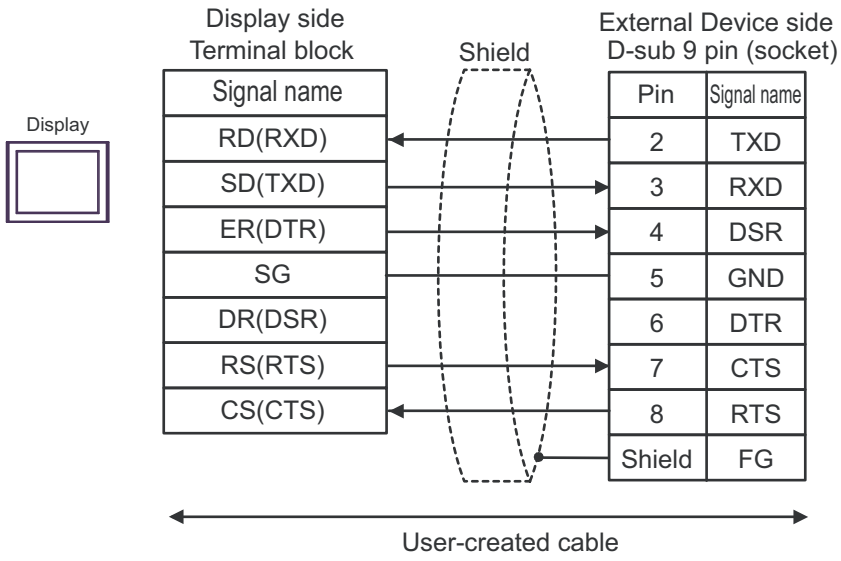
*2 Except SP-5B00

*3 Only the COM port which can communicate by RS-232C can be used.
☞"■ IPC COM Port" (page 6)

2A)



2B)


Display side
Terminal block
Shield
External Device side
D-sub 9 pin (socket)
Display
Signal name
RD(RXD)
SD(TXD)
ER(DTR)
SG
DR(DSR)
RS(RTS)
CS(CTS)
Pin
Signal name
2
TXD
3
RXD
4
DSR
5
GND
6
DTR
7
CTS
8
RTS
Shield
FG
User-created cable

Cable Diagram 3

Display (Connection Port)	Cable		Notes
GP3000[*1] (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST[*2] (COM2) LT3000 (COM1)	3A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 500m or less.
	3B	User-created cable	
GP3000[*3] (COM2)	3C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 500m or less.
	3D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
IPC[*4]	3E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 500m or less.
	3F	User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	3G	User-created cable	The cable length must be 500m or less.
GP-4107 (COM1) GP-4*03T[*5] (COM2) GP-4203T (COM1)	3H	User-created cable	The cable length must be 500m or less.
GP4000[*6] (COM2) GP-4201T (COM1) SP5000[*7] (COM1/2) SP-5B00 (COM2)	3I	RS-422 Terminal Block Conversion Adapterby Pro-face PFXZCBADTM1[*8] + User-created cable	The cable length must be 500m or less.
	3B	User-created cable	
LT-4*01TM (COM1) LT-Rear Module (COM1)	3J	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	The cable length must be 5m or less.

Display (Connection Port)	Cable		Notes
PE-4000B*9 PS5000*9	3K	User-created cable	The cable length must be 500m or less.

*1 All GP3000 models except AGP-3302B

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

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

*4 Only COM ports that support RS-422/485 (2 wire) communication. (Except PE-4000B, PS5000)
☞"■ IPC COM Port" (page 6)

*5 Except GP-4203T

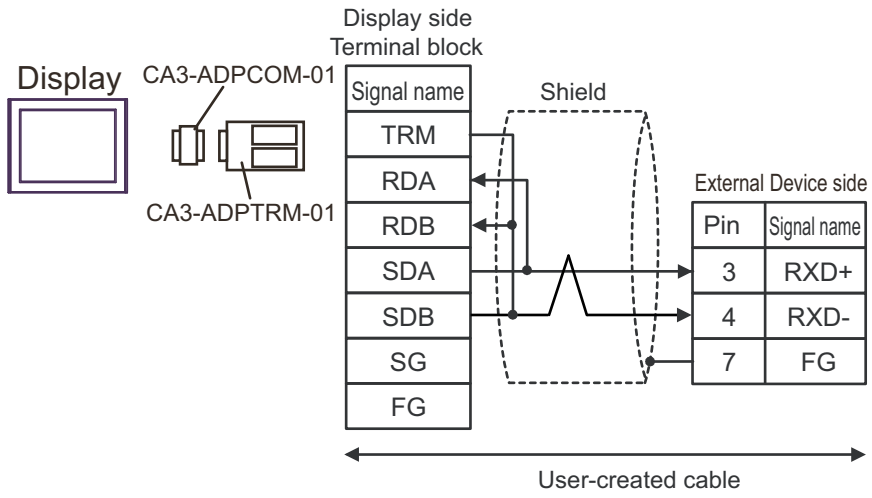
*6 All GP4000 models except GP-4100 Series, GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*7 Except SP-5B00

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

*9 Only COM ports that support RS-422/485 (2 wire) communication.
☞"■ IPC COM Port" (page 6)

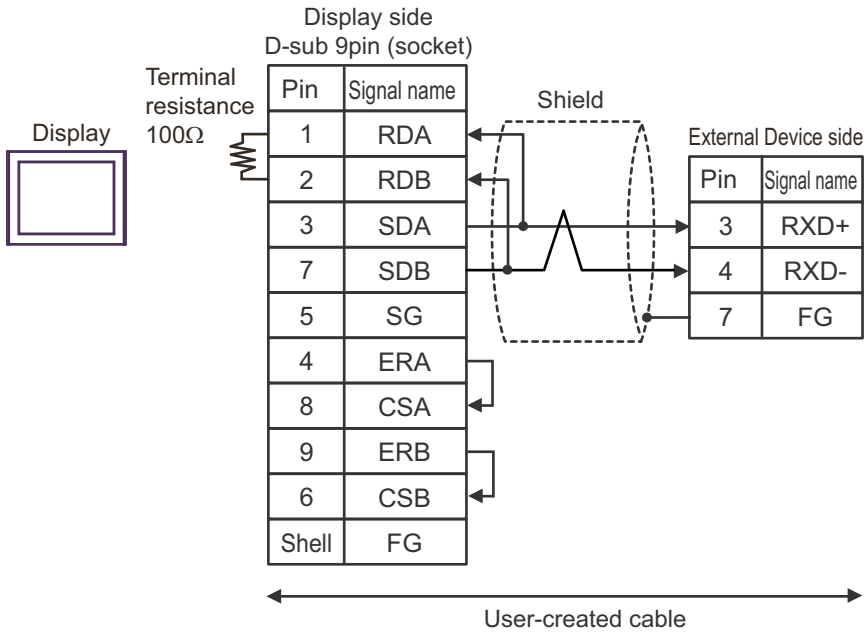
3A)



NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

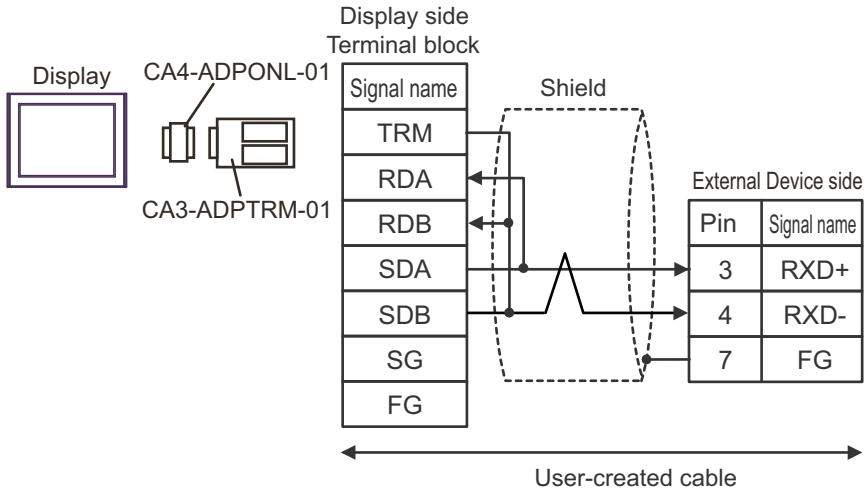
3B)



NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

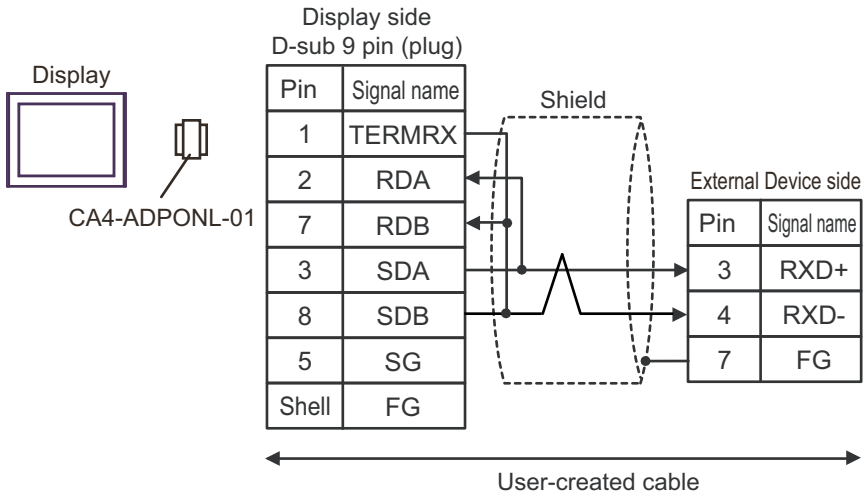
3C)



NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

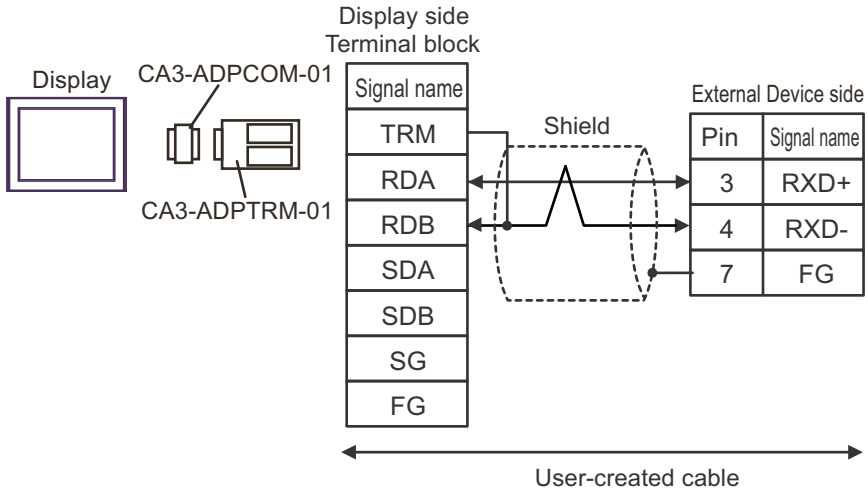
3D)



NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

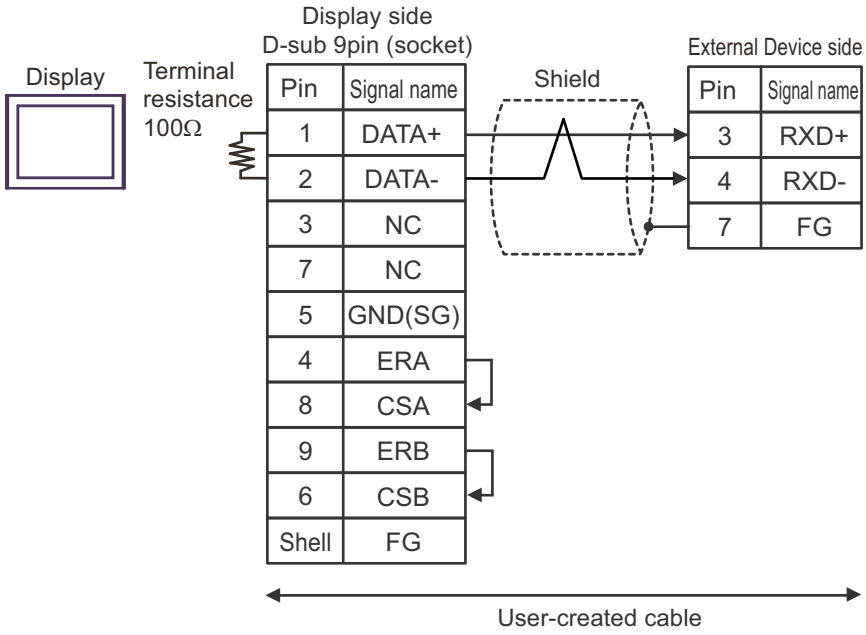
3E)



NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

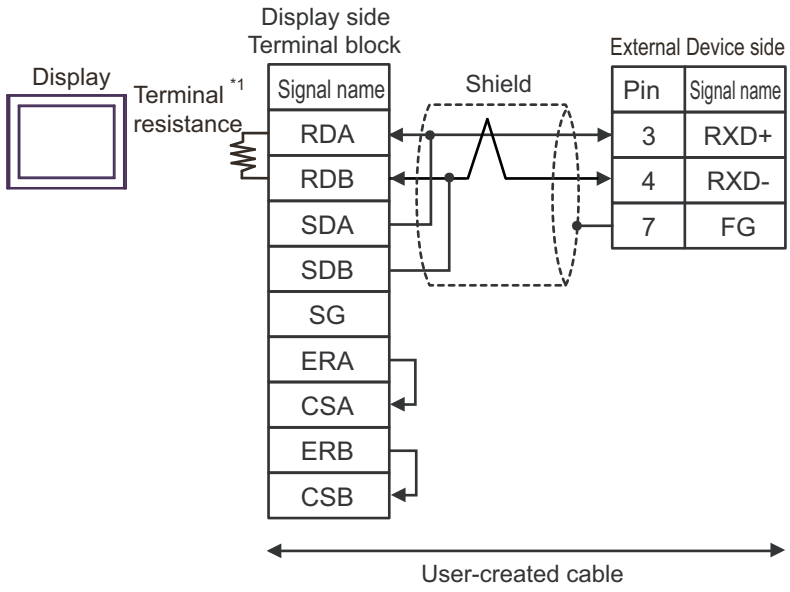
3F)



NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

3G)



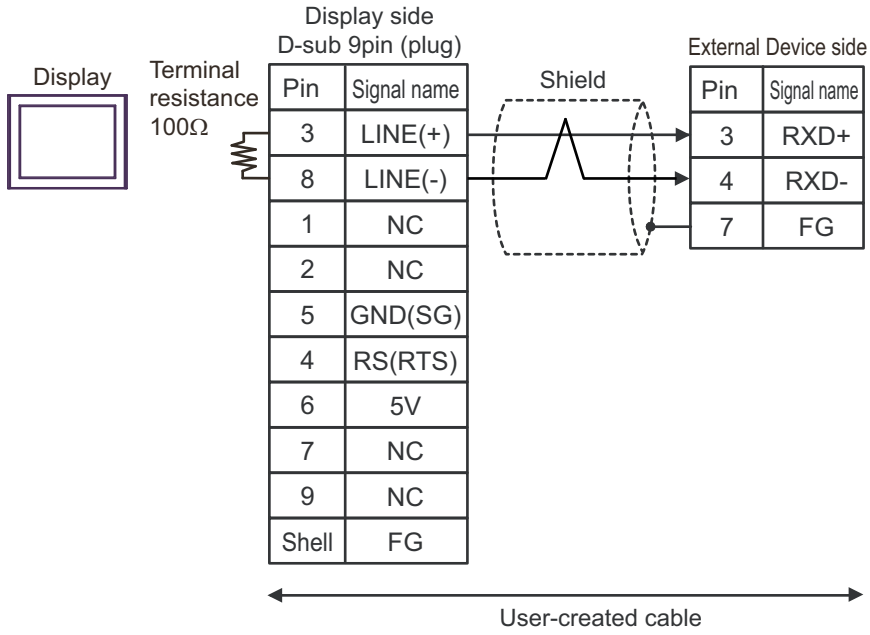
*1 The resistance built into the Display is used as termination resistance. Please set the DIP Switch in the back of the Display as follows.

DIP Switch	Setup Description
1	OFF
2	OFF
3	ON
4	ON

NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

3H)



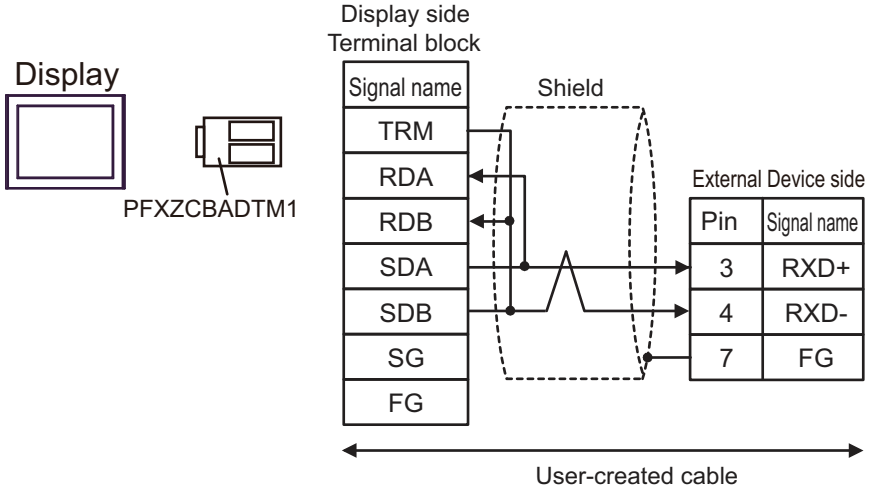
IMPORTANT

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

NOTE

- In the GP-4107 COM port, the SG and FG terminals are isolated.
- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

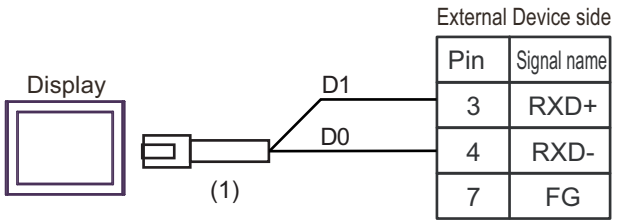
3I)



NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

3J)

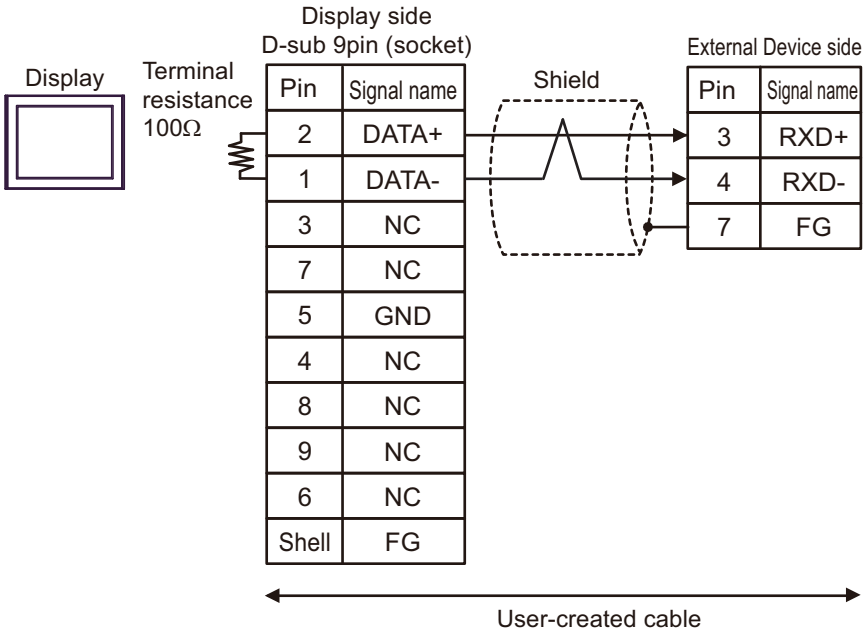


Legend	Name	Name
(1)	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	

NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

3K)



NOTE

- To insert termination resistance of 100Ω on the External Device, short-circuit jumper JP2.
- For the External Device connector, use the XH connector (XHP-7) by J.S.T. Mfg.

Cable Diagram 4

Display (Connection Port)	Cable		Notes
GP3000[*1] (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST[*2] (COM2) LT3000 (COM1)	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	The cable length must be 500m or less.
	4B	User-created cable	
GP3000[*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	The cable length must be 500m or less.
	4D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
IPC[*4]	4E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 500m or less.
	4F	User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	4G	User-created cable	The cable length must be 500m or less.
GP-4107 (COM1) GP-4*03T[*5] (COM2) GP-4203T (COM1)	4H	User-created cable	The cable length must be 500m or less.
GP4000[*6] (COM2) GP-4201T (COM1) SP5000[*7] (COM1/2) SP-5B00 (COM2)	4I	RS-422 Terminal Block Conversion Adapterby Pro-face PFXZCBADTM1[*8] + User-created cable	The cable length must be 500m or less.
	4B	User-created cable	
LT-4*01TM (COM1) LT-Rear Module (COM1)	4J	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	The cable length must be 5m or less.

Display (Connection Port)	Cable		Notes
PE-4000B*9 PS5000*9	4K	User-created cable	The cable length must be 500m or less.

*1 All GP3000 models except AGP-3302B

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

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

*4 Only COM ports that support RS-422/485 (2 wire) communication. (Except PE-4000B, PS5000)
☞"■ IPC COM Port" (page 6)

*5 Except GP-4203T

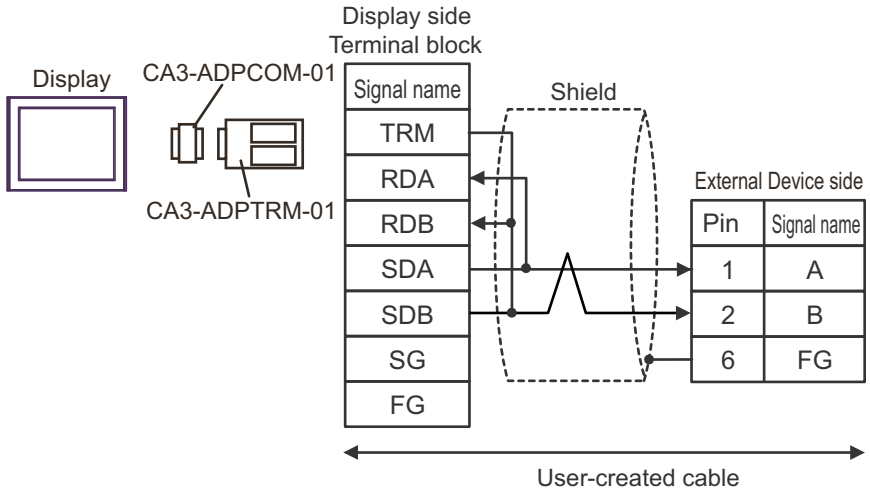
*6 All GP4000 models except GP-4100 Series, GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*7 Except SP-5B00

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

*9 Only COM ports that support RS-422/485 (2 wire) communication.
☞"■ IPC COM Port" (page 6)

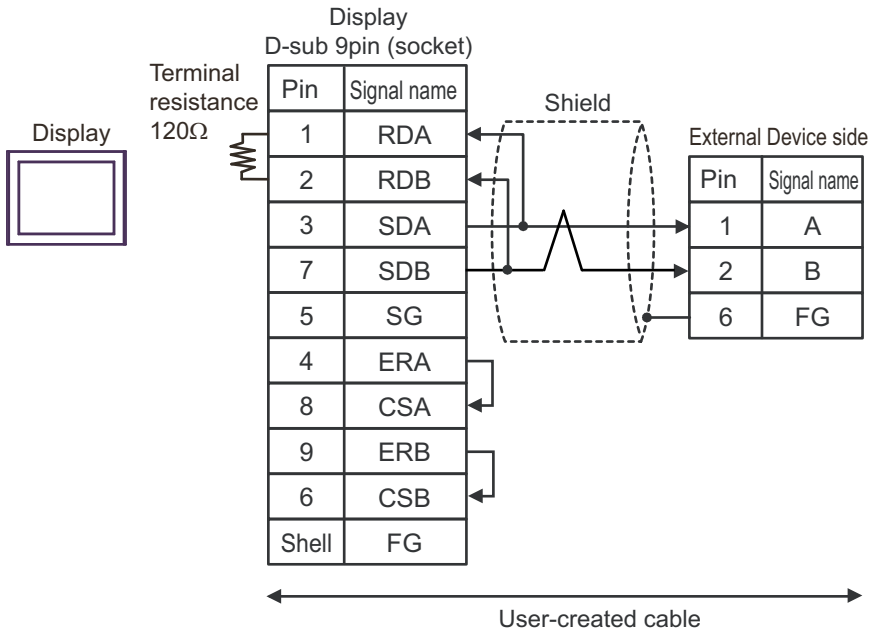
4A)



NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

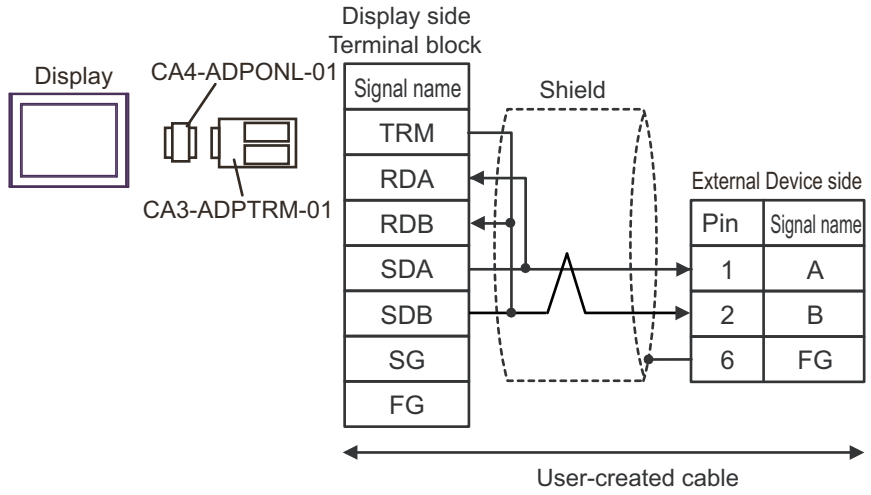
4B)



NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

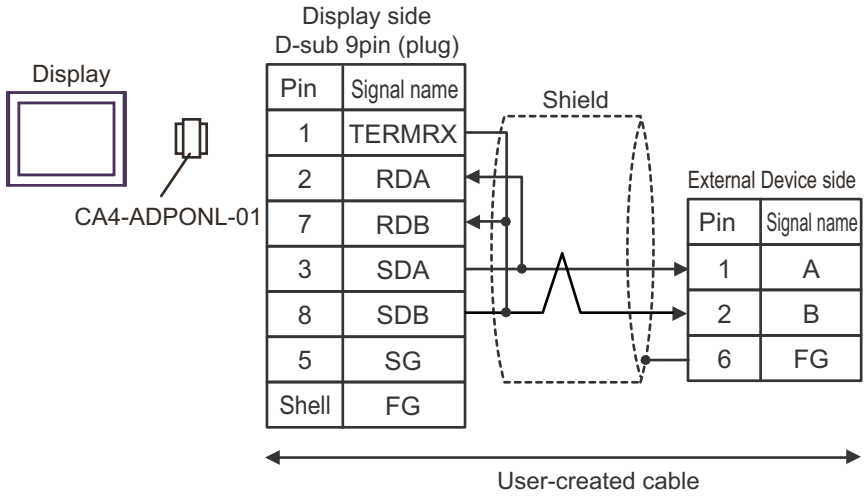
4C)



NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

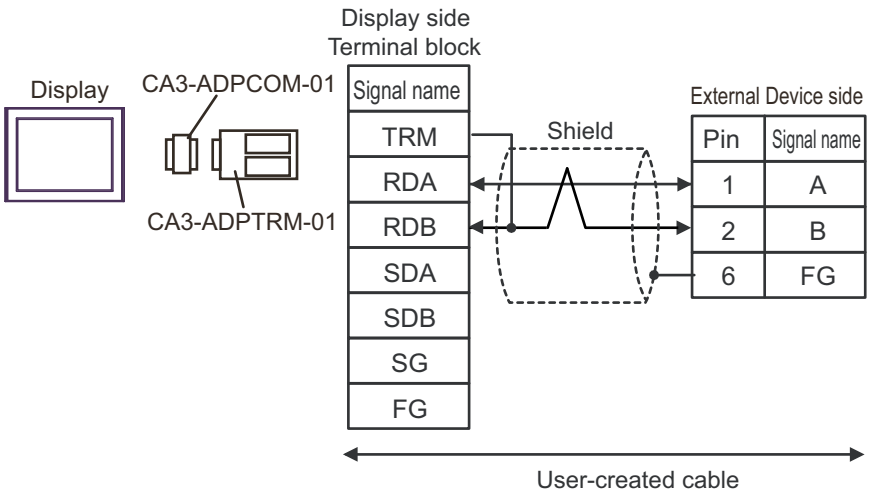
4D)



NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

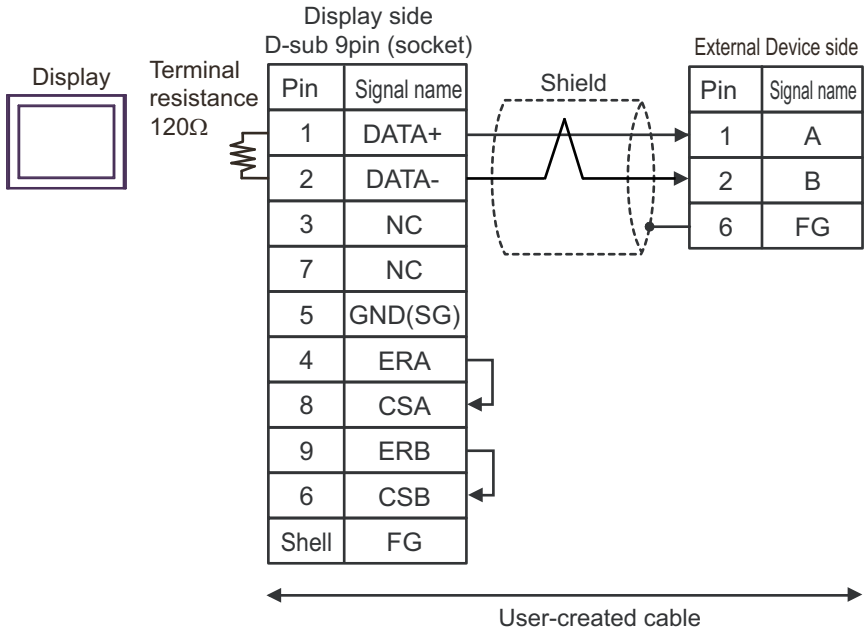
4E)



NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

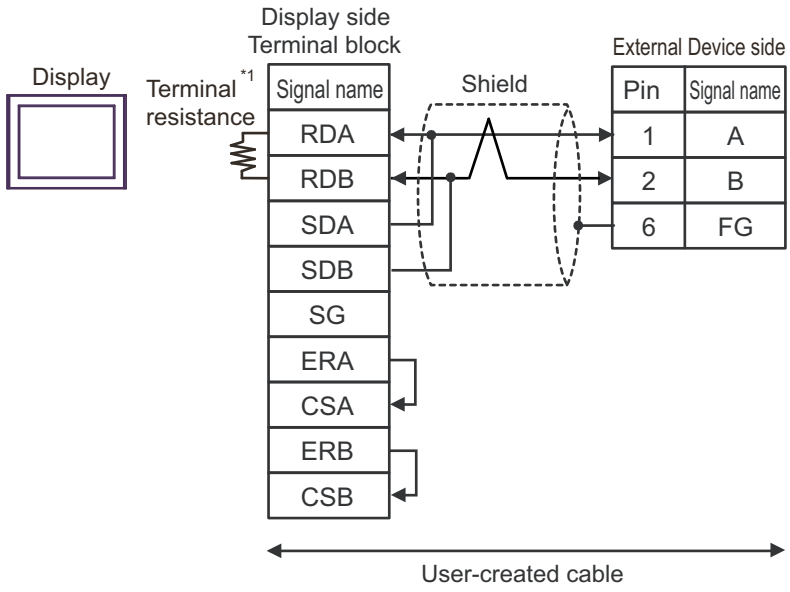
4F)



NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

4G)



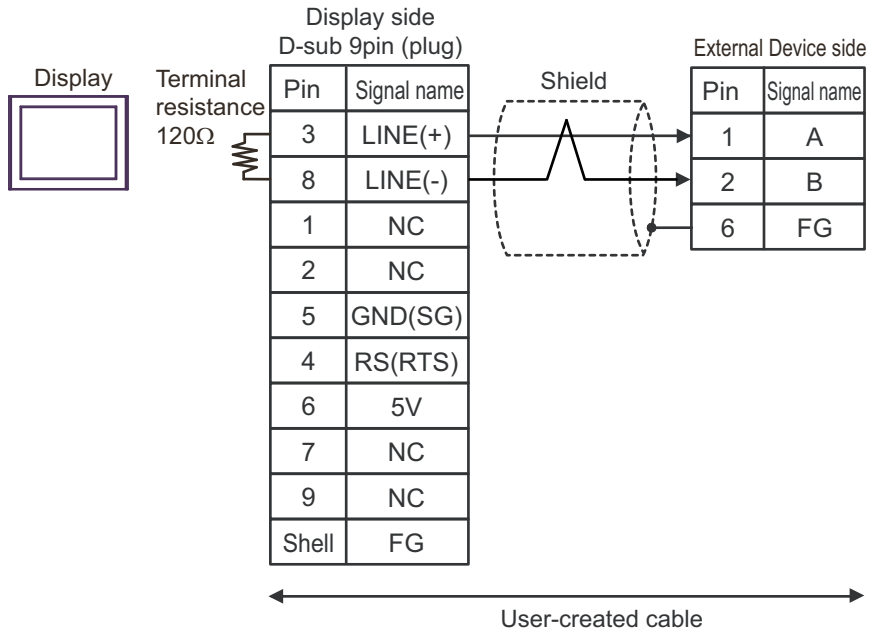
*1 The resistance built into the Display is used as termination resistance. Please set the DIP Switch in the back of the Display as follows.

DIP Switch	Setup Description
1	OFF
2	OFF
3	ON
4	ON

NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

4H)



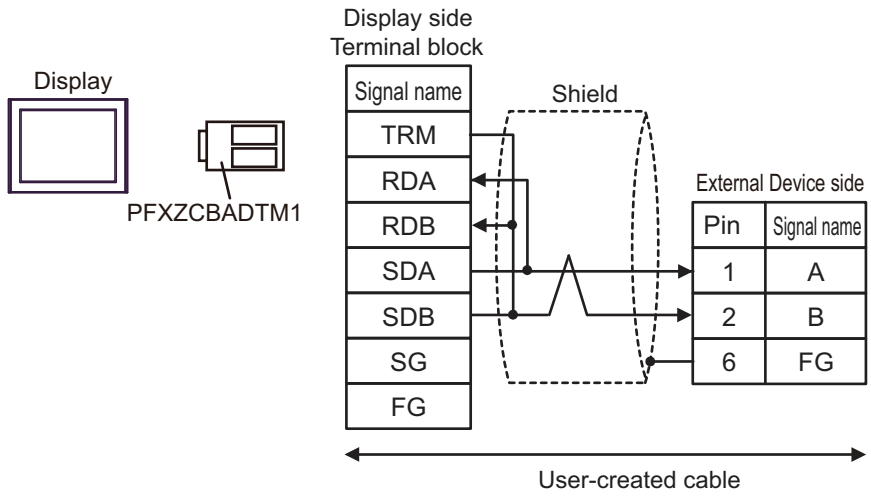
IMPORTANT

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

NOTE

- In the GP-4107 COM port, the SG and FG terminals are isolated.
- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

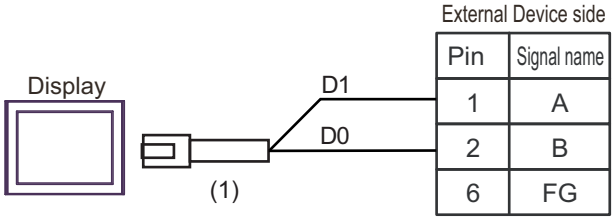
4I)



NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

4J)

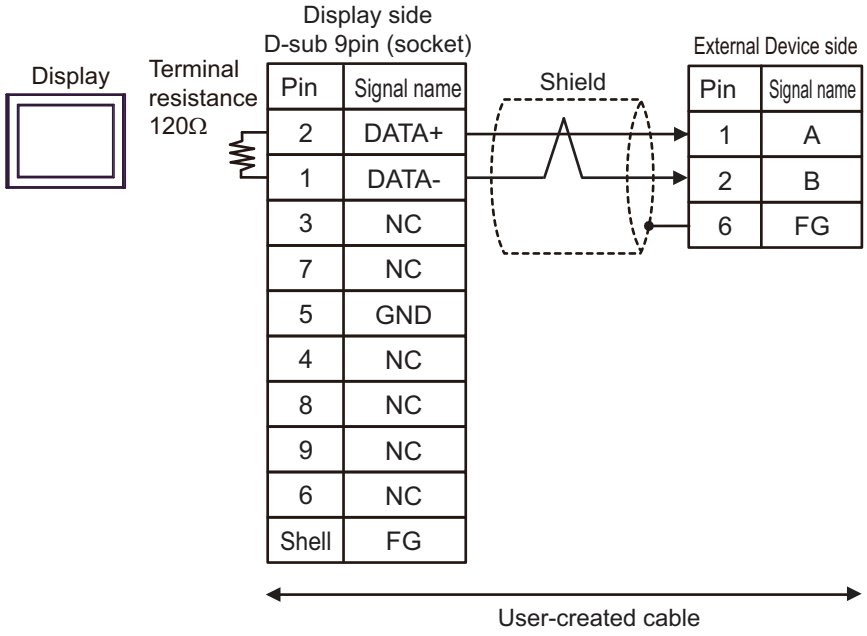


Legend	Name	Notes
(1)	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	

NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

4K)



NOTE

- To insert termination resistance of 120Ω on the External Device, turn on DIP Switch SW2-7.
- For the External Device connector, use the XH connector (XHP-6) by J.S.T. Mfg.

Cable Diagram 5

Display (Connection Port)	Cable		Notes
GP3000 (COM1)[*1] AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST (COM2)[*2] LT3000 (COM1)	5A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 500m or less.
	5B	User-created cable	
GP3000 (COM2)[*3]	5C	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 500m or less.
	5D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
IPC[*4]	5E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 500m or less.
	5F	User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	5G	User-created cable	The cable length must be 500m or less.
GP-4107 (COM1) GP-4*03T[*5] (COM2) GP-4203T (COM1)	5H	User-created cable	The cable length must be 500m or less.
GP4000[*6] (COM2) GP-4201T (COM1) SP5000[*7] (COM1/2) SP-5B00 (COM2)	5I	RS-422 Terminal Block Conversion Adapterby Pro-face PFXZCBADTM1[*8] + User-created cable	The cable length must be 500m or less.
	5B	User-created cable	
LT-4*01TM (COM1) LT-Rear Module (COM1)	5J	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	The cable length must be 5m or less.

Display (Connection Port)	Cable		Notes
PE-4000B*9 PS5000*9	5K	User-created cable	The cable length must be 500m or less.

*1 All GP3000 models except AGP-3302B

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

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

*4 Only COM ports that support RS-422/485 (2 wire) communication. (Except PE-4000B, PS5000)
☞"■ IPC COM Port" (page 6)

*5 Except GP-4203T

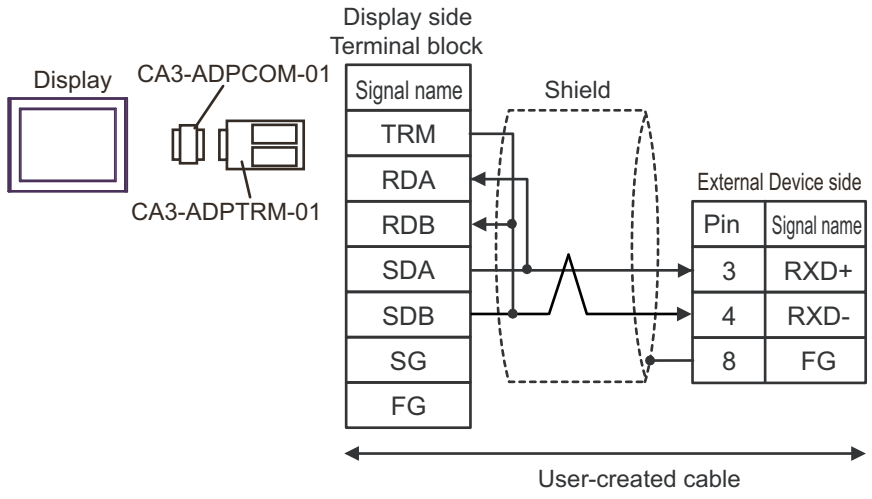
*6 All GP4000 models except GP-4100 Series, GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*7 Except SP-5B00

*8 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 5A.

*9 Only COM ports that support RS-422/485 (2 wire) communication.
☞"■ IPC COM Port" (page 6)

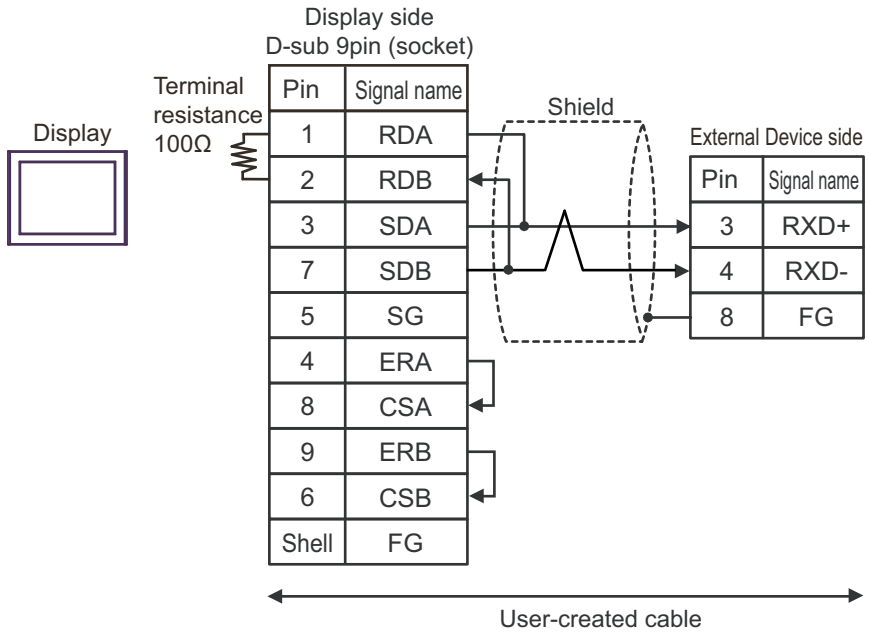
5A)



NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

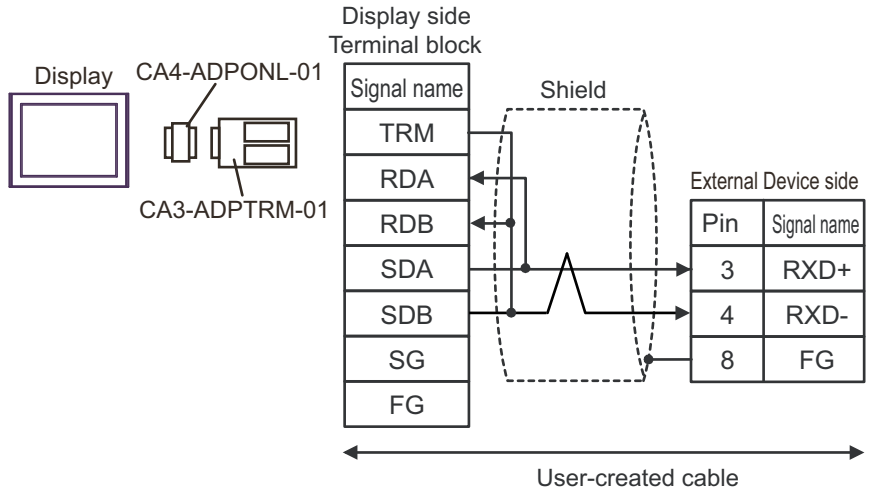
5B)



NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

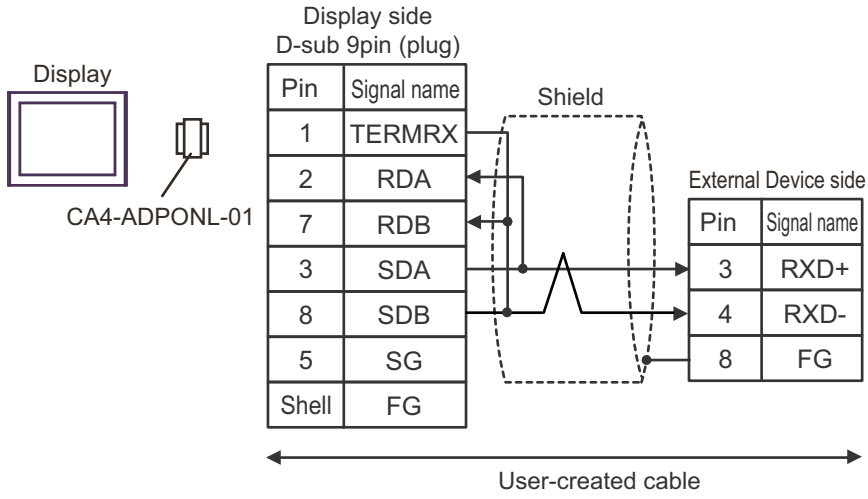
5C)



NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

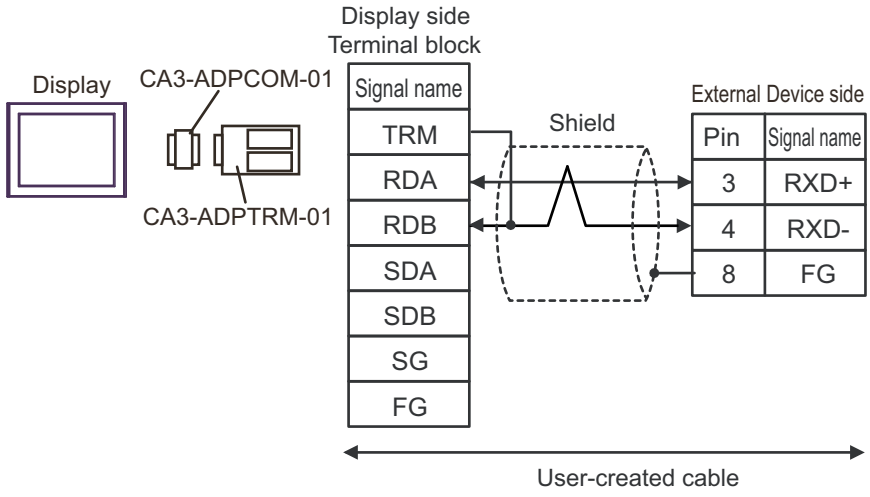
5D)



NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

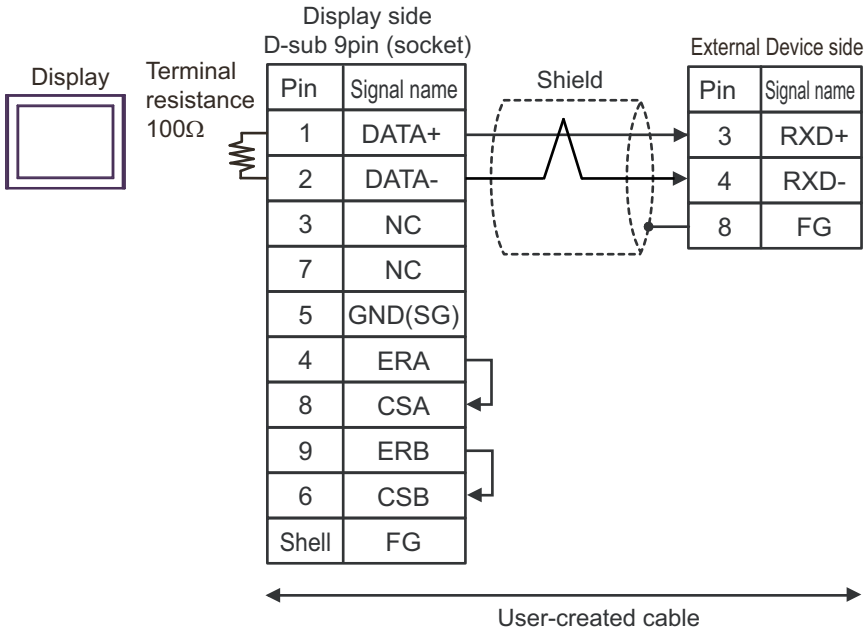
5E)



NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

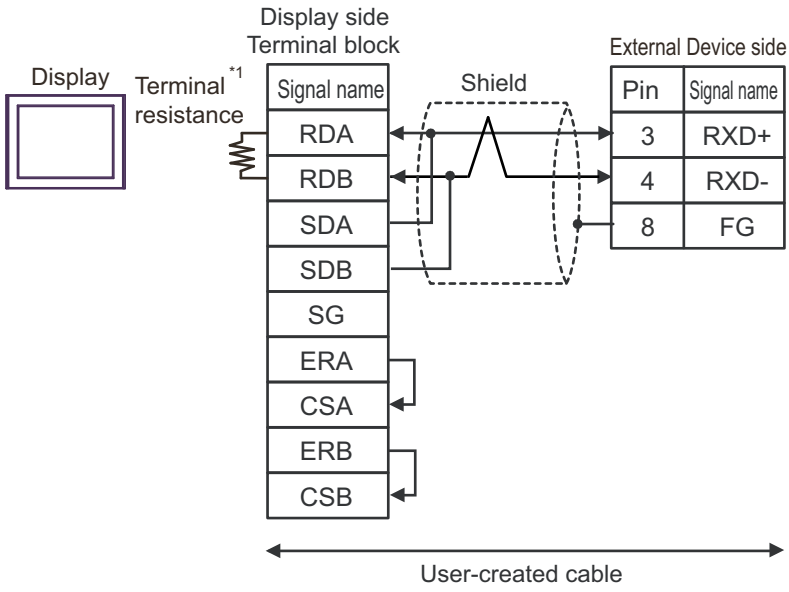
5F)



NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

5G)



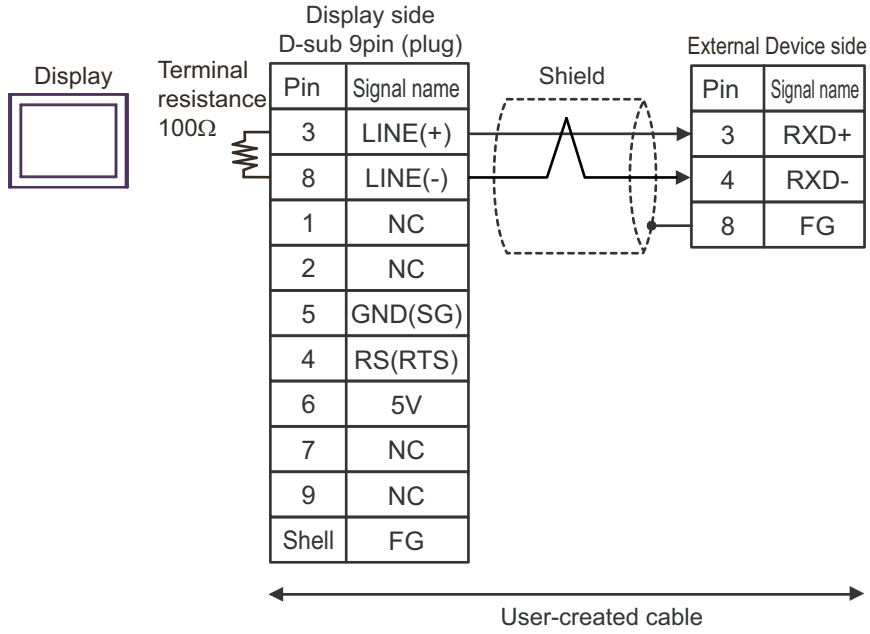
*1 The resistance built into the Display is used as termination resistance. Please set the DIP Switch in the back of the Display as follows.

DIP Switch	Setup Description
1	OFF
2	OFF
3	ON
4	ON

NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

5H)



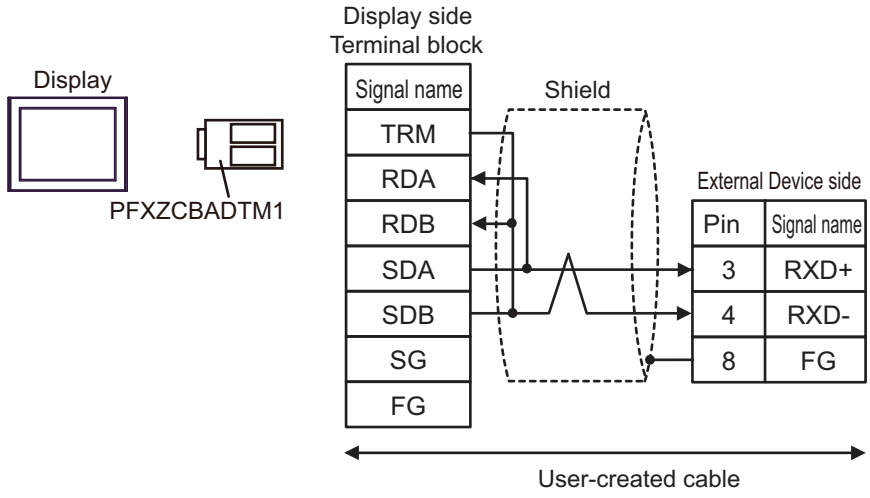
IMPORTANT

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

NOTE

- In the GP-4107 COM port, the SG and FG terminals are isolated.
- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

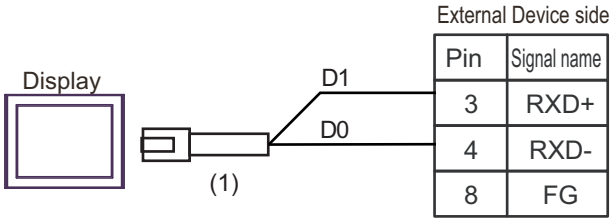
5I)



NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

5J)

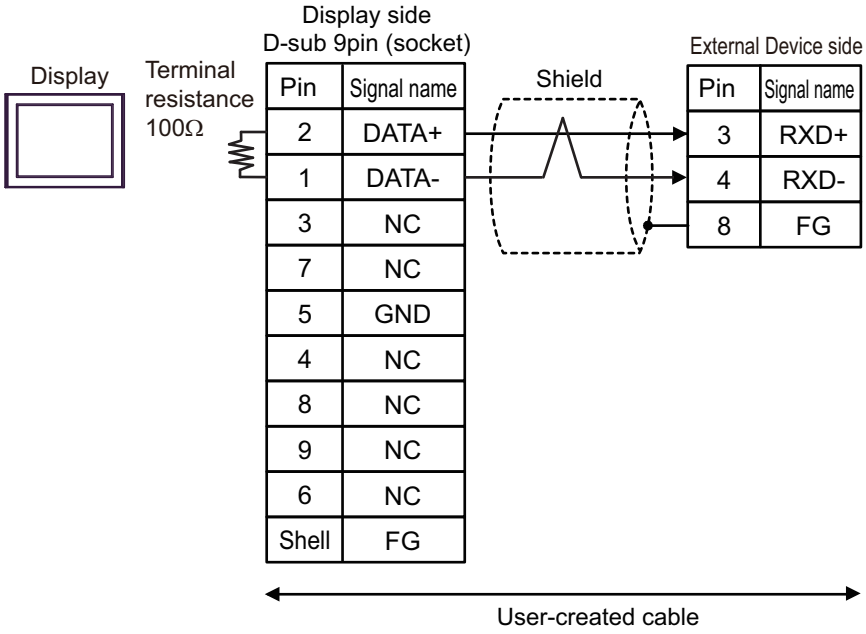


Legend	Name	Notes
(1)	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	

NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

5K)



NOTE

- To insert termination resistance of 100Ω on the External Device, turn on DIP Switch SW5-7.
- For the External Device connector, use the XH connector (XHP-8) by J.S.T. Mfg.

Cable Diagram 6

Display (Connection Port)	Cable		Notes
GP3000[*1] (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST[*2] (COM2) LT3000 (COM1)	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	The cable length must be 500m or less.
	6B	User-created cable	
GP3000[*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	The cable length must be 500m or less.
	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	The cable length must be 500m or less.
	6F	User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	6G	User-created cable	The cable length must be 500m or less.
GP-4107 (COM1) GP-4*03T[*5] (COM2) GP-4203T (COM1)	6H	User-created cable	The cable length must be 500m or less.
GP4000[*6] (COM2) GP-4201T (COM1) SP5000[*7] (COM1/2) SP-5B00 (COM2)	6I	RS-422 Terminal Block Conversion Adapterby Pro-face PFXZCBADTM1[*8] + User-created cable	The cable length must be 500m or less.
	6B	User-created cable	
LT-4*01TM (COM1) LT-Rear Module (COM1)	6J	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	The cable length must be 5m or less.

Display (Connection Port)	Cable		Notes
PE-4000B*9 PS5000*9	6K	User-created cable	The cable length must be 500m or less.

*1 All GP3000 models except AGP-3302B

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

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

*4 Only COM ports that support RS-422/485 (2 wire) communication. (Except PE-4000B, PS5000)
☞"■ IPC COM Port" (page 6)

*5 Except GP-4203T

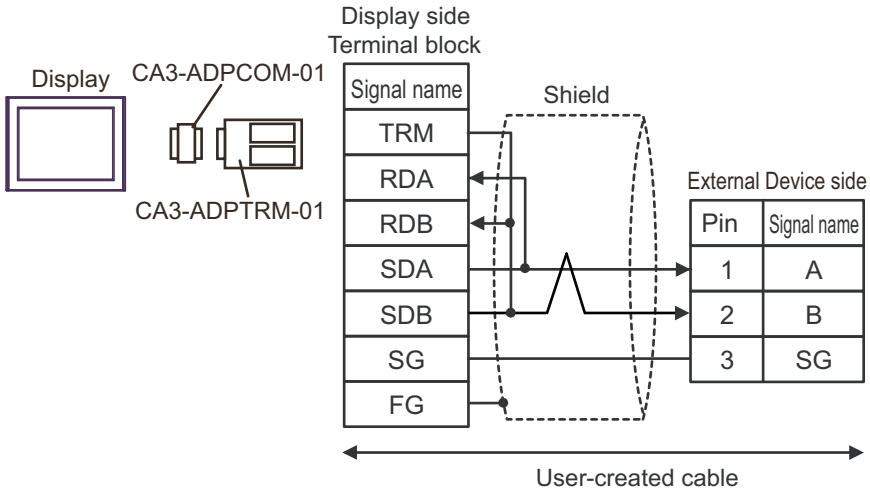
*6 All GP4000 models except GP-4100 Series, GP-4*01TM, GP-Rear Module, GP-4201T and GP-4*03T

*7 Except SP-5B00

*8 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 6A.

*9 Only COM ports that support RS-422/485 (2 wire) communication.
☞"■ IPC COM Port" (page 6)

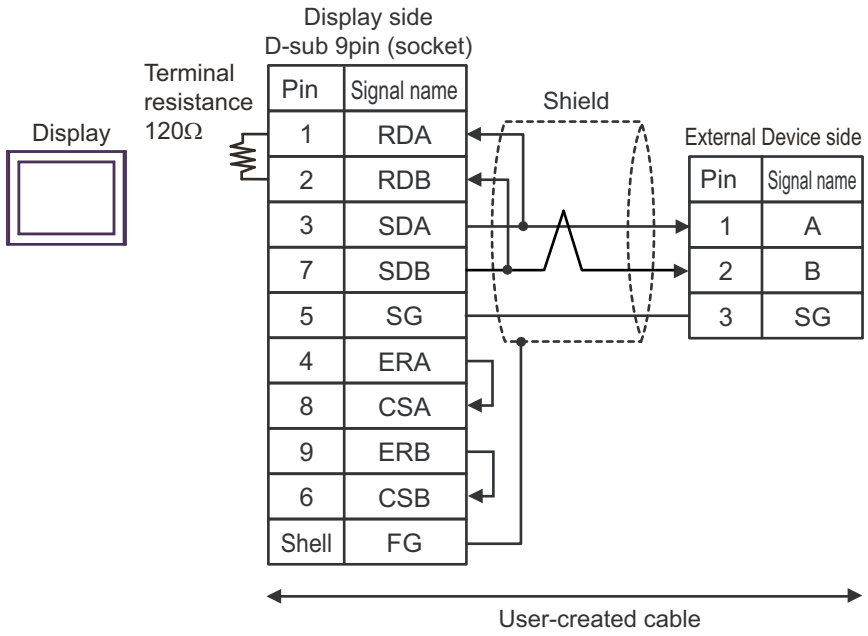
6A)



NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

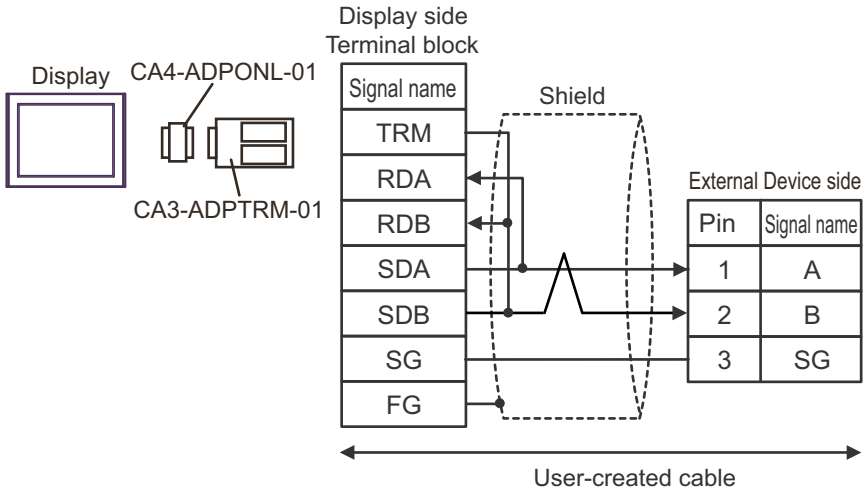
6B)



NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

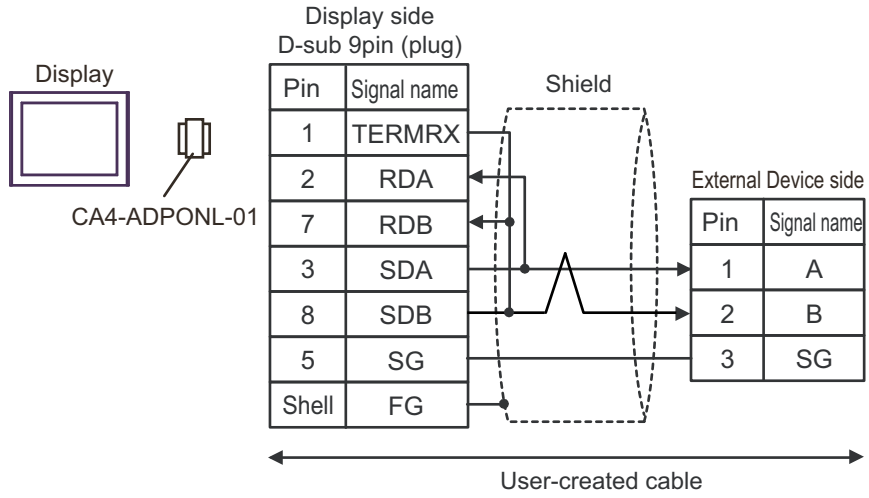
6C)



NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

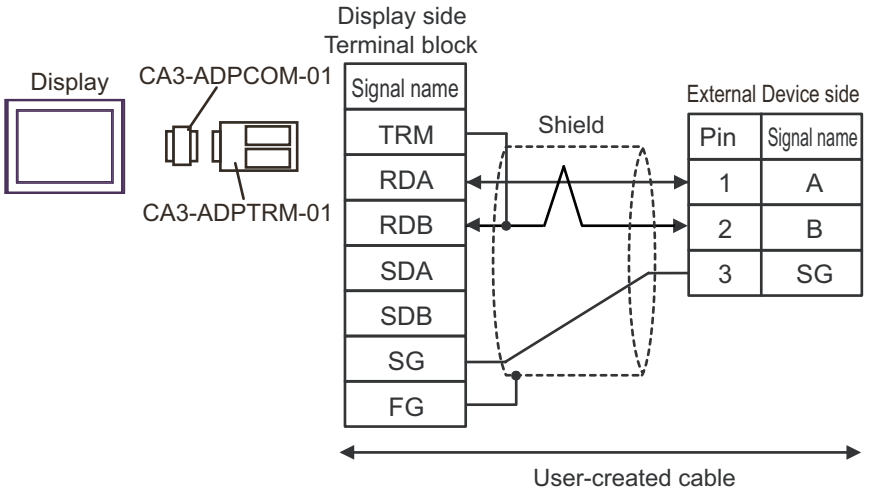
6D)



NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

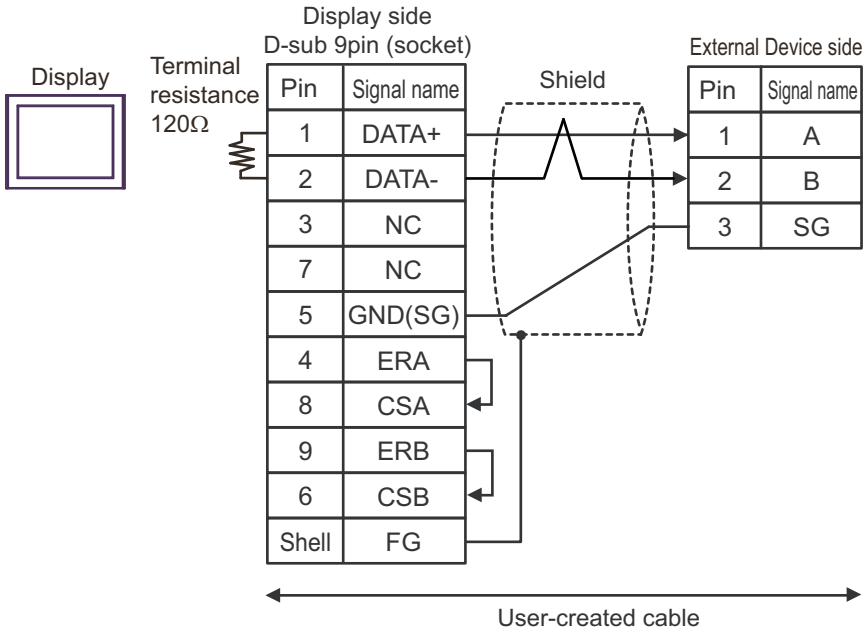
6E)



NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

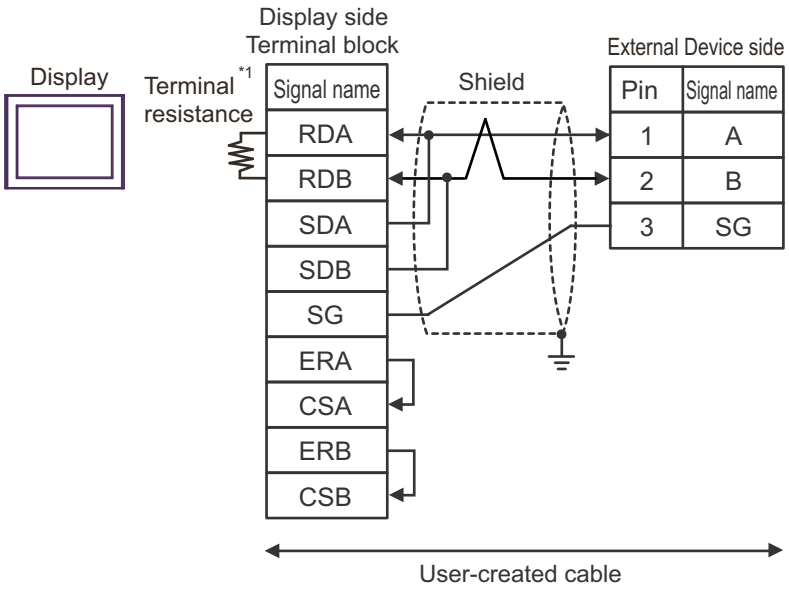
6F)



NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

6G)



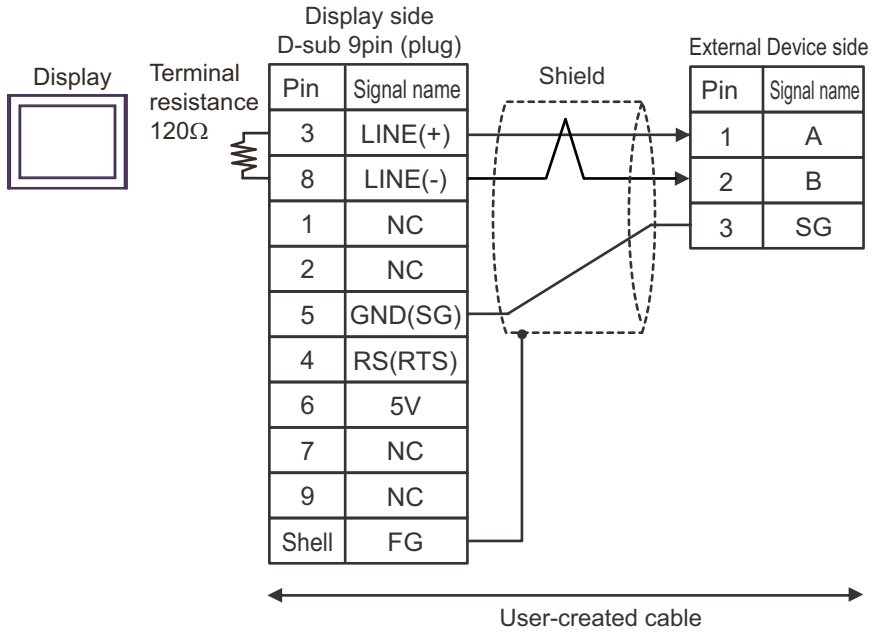
*1 The resistance built into the Display is used as termination resistance. Please set the DIP Switch in the back of the Display as follows.

DIP Switch	Setup Description
1	OFF
2	OFF
3	ON
4	ON

NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

6H)



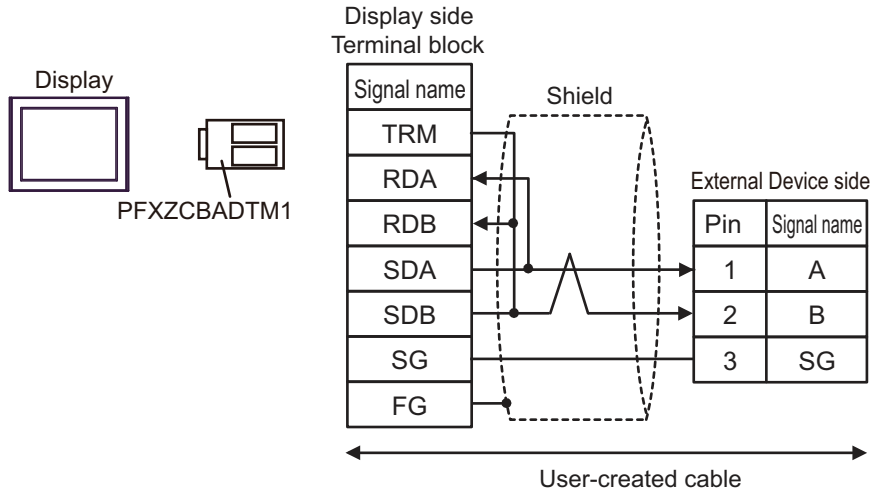
IMPORTANT

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

NOTE

- In the GP-4107 COM port, the SG and FG terminals are isolated.
- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

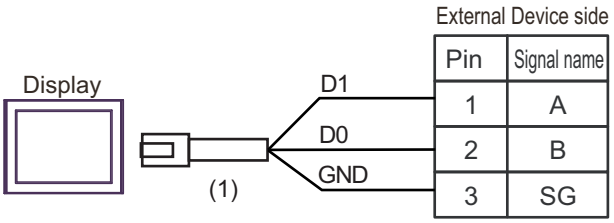
6I)



NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

6J)

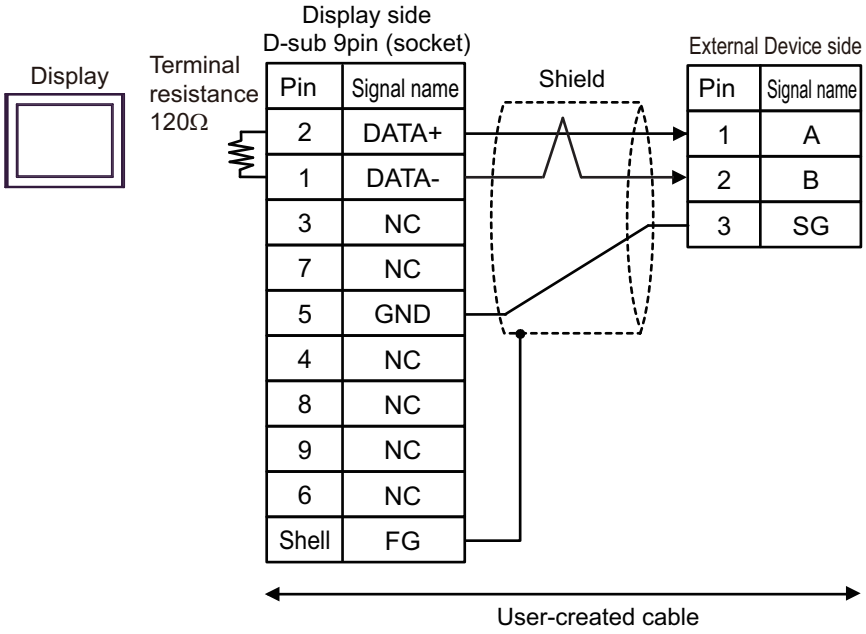


Legend	Name	Notes
(1)	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	

NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

6K)



NOTE

- Termination resistance of 120Ω is built into the External Device.
- For the External Device connector, use the XA connector (XAP-03V-1) by J.S.T. Mfg.

Table Diagram 7

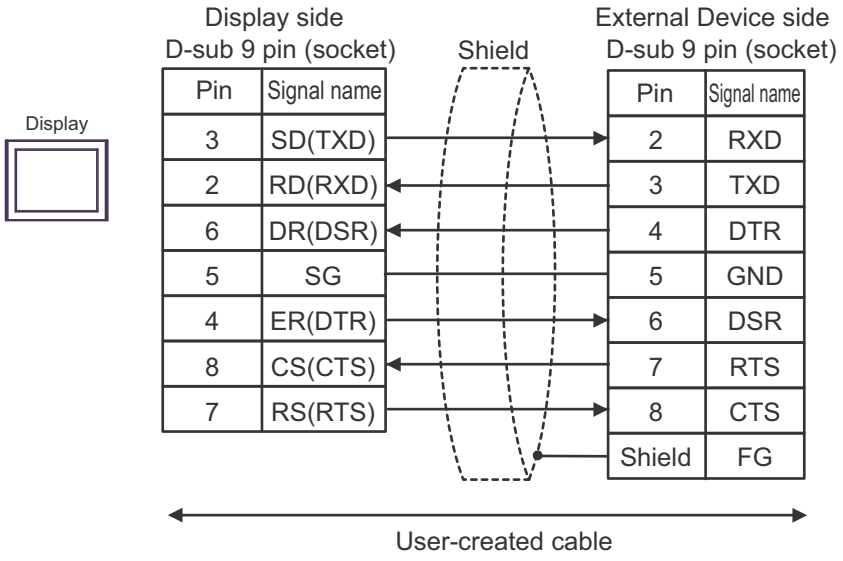
Display (Connection Port)	Cable		Notes
GP3000 (COM1) GP4000*1 (COM1) SP5000*2 (COM1/2) SP-5B00 (COM1) ST (COM1) LT3000 (COM1) IPC*3 PC/AT	7A	User-created cable	The cable length must be 15m or less.
GP-4105 (COM1) GP-4115T (COM1) GP-4115T3 (COM1)	7B	User-created cable	The cable length must be 15m or less.

*1 All GP4000 models except GP-4100 Series and GP-4203T

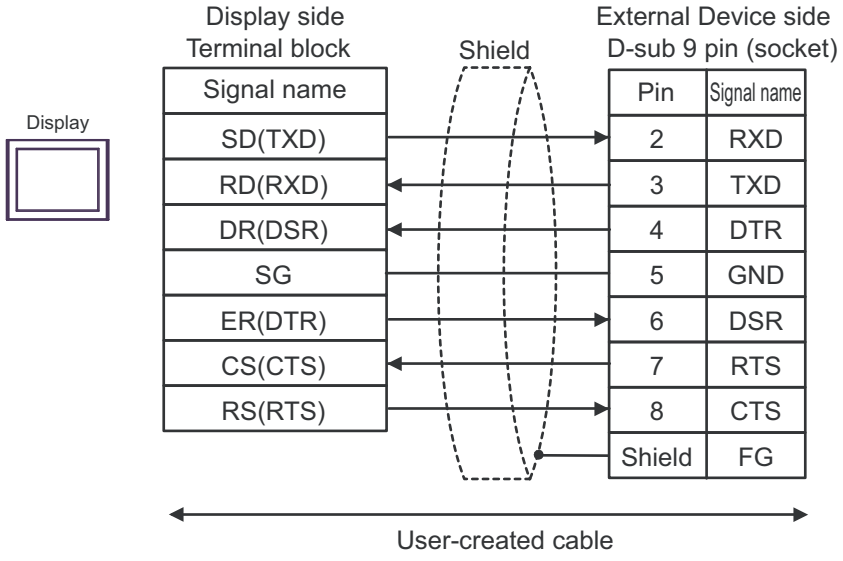
*2 Except SP-5B00

*3 Only the COM port which can communicate by RS-232C can be used.
☞"■ IPC COM Port" (page 6)

7A)


Display side
D-sub 9 pin (socket)
Shield
External Device side
D-sub 9 pin (socket)
Display
Pin
Signal name
3
SD(TXD)
2
RD(RXD)
6
DR(DSR)
5
SG
4
ER(DTR)
8
CS(CTS)
7
RS(RTS)
Pin
Signal name
2
RXD
3
TXD
4
DTR
5
GND
6
DSR
7
RTS
8
CTS
Shield
FG
User-created cable

7B)


Display side
Terminal block
Shield
External Device side
D-sub 9 pin (socket)
Display
Signal name
SD(TXD)
RD(RXD)
DR(DSR)
SG
ER(DTR)
CS(CTS)
RS(RTS)
Pin
Signal name
2
RXD
3
TXD
4
DTR
5
GND
6
DSR
7
RTS
8
CTS
Shield
FG
User-created cable

6 Supported Devices

Range of supported device address is shown in the table below. 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 connecting equipment.

6.1 TC200 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Input Relay 1	X000 - XF7F	X00W - XF7W	L/H	*1
Output Relay 1	Y000 - YF7F	Y00W - YF7W		*1
Internal Relay	R000 - R77F	R00W - R77W		*1
Extended Internal Relay 1	G000 - GF7F	G00W - GF7W		*1
Extended Internal Relay 2	H000 - HF7F	H00W - HF7W		*1
Special AUX Relay	A000 - A16F	A00W - A16W		*1
Latch Relay	L000 - L07F	L00W - L07W		*1
Shift Register	S000 - S07F	S00W - S07W		*1
Edge Relay	E000 - E77F	E00W - E77W		*1
Timer (contact)	T000 - T77F	T00W - T77W		*1 *2
Counter (contact)	C000 - C77F	C00W - C77W		*1 *3
Timer/Counter (current value)	------	P000 - P77F		Bit F *1
Timer/Counter (setup value)	------	V000 - V77F		Bit F *1
Generic Register 1	------	D000 - DF7F		Bit F *1
Generic Register 2	------	B000 - BF7F		Bit F *1

*1 Device format is as follows:
Please refer to the manual of external device for more detail.

E.g. X F 7 W
- W: Register Word Specified
- 7: Position (0 to 7)
- F: Rack No. (0 to F)

D F 7 F
- F: Port No. (0 to F)
- 7: Position (0 to 7)
- F: Rack No. (0 to F)

*2 The addresses of the timer (contact) range from T00W to T77W, however the internal memory area is not consecutive. This range is divided into two areas, e.g., T00W to T37W and T40W to T77W.

*3 The addresses of the counter (contact) range from C00W to C77W, however the internal memory area is not consecutive. This range is divided into two areas, e.g., C00W to C37W and C40W to C77W.

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.2 TC200S series

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Input Relay 1	X000 - XF7F	X00W - XF7W		*1
Input Relay 2	I000 - IF7F	I00W - IF7W		*1
Output Relay 1	Y000 - YF7F	Y00W - YF7W		*1
Output Relay 2	O000 - OF7F	O00W - OF7W		*1
Internal Relay	R000 - R77F	R00W - R77W		*1
Extended Internal Relay 1	G000 - GF7F	G00W - GF7W		*1
Extended Internal Relay 2	H000 - HF7F	H00W - HF7W		*1
Extended Internal Relay 3	J000 - JF7F	J00W - JF7W		*1
Extended Internal Relay 4	K000 - KF7F	K00W - KF7W		*1
Special AUX Relay	A000 - A16F	A00W - A16W		*1
Latch Relay	L000 - L07F	L00W - L07W	L/H	*1
Shift Register	S000 - S07F	S00W - S07W		*1
Edge Relay	E000 - E77F	E00W - E77W		*1
Timer (contact)	T000 - T77F	T00W - T77W		*1 *2
Counter (contact)	C000 - C77F	C00W - C77W		*1 *3
Timer/Counter (current value)	------	P000 - P77F		Bit F *1
Timer/Counter (setup value)	------	V000 - V77F		Bit F *1
Generic Register 1	------	D000 - DF7F		Bit F *1
Generic Register 2	------	B000 - BF7F		Bit F *1
Generic Register 3	------	U000 - UF7F		Bit F *1
Generic Register 4	------	M000 - MF7F		Bit F *1
Generic Register 5	------	Q000 - QF7F		Bit F *1

*1 Device format is as follows:
Please refer to the manual of external device for more detail.

E.g. X F 7 W
- W: Register Word Specified
- 7: Position (0 to 7)
- F: Rack No. (0 to F)

D F 7 F
- F: Port No. (0 to F)
- 7: Position (0 to 7)
- F: Rack No. (0 to F)

*2 The addresses of the timer (contact) range from T00W to T77W, however the internal memory area is not consecutive. This range is divided into two areas, e.g., T00W to T37W and T40W to T77W.

*3 The addresses of the counter (contact) range from C00W to C77W, however the internal memory area is not consecutive. This range is divided into two areas, e.g., C00W to C37W and C40W to C77W.

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.3 TCmini series

■ TC9-00

This address can be specified as system data area.

Device		Bit Address	Word Address	32 bits	Notes
External Input Relay	Contact Input	X000 - X007	X00W - X00W	L / H	*1
	DIP Switch	X008 - X009			*1
	Key Switch	X100 - X10F	X10W - X10W		*1
External Output Relay	Transistor	Y020 - Y027	Y00W - Y00W		*1
	LED	Y140 - Y147	Y14W - Y14W		*1
Internal Relay		X000 - X17F Y000 - Y17F R000 - R37F	X00W - X17W Y00W - Y17W R00W - R37W		*1 *2
Edge Relay		E000 - E07F	E00W - E07W		*1
Latch Relay		L000 - L03F	L00W - L03W		*1
Timer Relay		T000 - T13F	T00W - T13W		*1
Counter Relay		C000 - C13F	C00W - C13W		*1
Special AUX Relay		A000 - A15F	A00W - A15W		*1
Data Register		------	D000 - D27F		Bit F *1
T/C Register 1		------	P000 - P13F		Bit F *1
T/C Register 2		------	V000 - V13F		Bit F *1

*1 Device format is as follows:
Please refer to the manual of the External Device for more details.

E.g. X 0 0 W
- W: Specified register word
- 0: Position (0 to 7)
- 0: Rack Number (0 to F)

D F 7 F
- F: Port Number (0 to F)
- 7: Position (0 to 7)
- F: Rack Number (0 to F)

*2 Results from External Input Relay or External Output Relay are given priority for areas mapped to External Input Relay or External Output Relay.

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

■ TC8-00/TC5-02

This address can be specified as system data area.

Device		Bit Address	Word Address	32 bits	Notes
External Input Relay	Photo coupler	X000 - X00F	X00W - X00W	L/H	*1
	DIP Switch	X010 - X017	X01W - X01W		*1
	Extended Panel Switch	X100 - X11F	X10W - X11W		*1
External Output Relay	Transistor	Y020 - Y02B	Y02W - Y02W		*1
	Relay Contact	Y02C - Y02F	Y02W - Y02W		*1
	Extended Panel LED	Y140 - Y14F	Y14W - Y14W		*1
Internal Relay		R000 - R77F	R00W - R77W		*1
Edge Relay		E000 - E17F	E00W - E17W		*1
Latch Relay		L000 - L07F	L00W - L07W		*1
Timer Relay		T000 - T27F	T00W - T27W		*1
Counter Relay		C000 - C27F	C00W - C27W		*1
Special AUX Relay		A000 - A16F	A00W - A16W		*1
Data Register		------	D000 - D77F		Bit F *1
T/C Register 1		------	P000 - P27F		Bit F *1
T/C Register 2		------	V000 - V27F		Bit F *1

*1 Device format is as follows:
Please refer to the manual of external device for more detail.

E.g. X 0 0 W
- W: Register Word Specified
- 0: Position (0 to 7)
- 0: Rack No. (0 to F)

D F 7 F
- F: Port No. (0 to F)
- 7: Position (0 to 7)
- F: Rack No. (0 to F)

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

■ TC6-00

This address can be specified as system data area.

Device		Bit Address	Word Address	32 bits	Notes
External Input Relay	Photo coupler	X000 - X00F	X00W - X00W		*1
	Push-button switch	X100 - X11F	X10W - X11W		*1
External Output Relay	Relay	Y020 - Y02F	Y02W - Y02W		*1
	Panel LED	Y160 - Y16F	Y16W - Y16W		*1
External Input Output Relay		X030 - X13F	X03W - X13W		*1
		X148 - XF7F	X14W - XF7W		*1
		Y030 - Y13F	Y03W - Y13W		*1
		Y148 - YF7F	Y14W - YF7W		*1
		I000 - IF7F	I00W - IF7W		*1
		O000 - OF7F	O00W - OF7W		*1
Internal Relay		R000 - R77F	R00W - R77W		*1
Extended Internal Relay 1		G000 - GF7F	G00W - GF7W		*1
Extended Internal Relay 2		H000 - HF7F	H00W - HF7W	L/H	*1
Extended Internal Relay 3		J000 - JF7F	J00W - JF7W		*1
Extended Internal Relay 4		K000 - KF7F	K00W - KF7W		*1
Edge Relay		E000 - E77F	E00W - E77W		*1
Latch Relay		L000 - L07F	L00W - L07W		*1
Shift Register		S000 - S07F	S00W - S07W		*1
Timer Relay		T000 - T77F	T00W - T77W		*1
Counter Relay		C000 - C77F	C00W - C77W		*1
T/C Register 1		------	P000 - P77F		Bit F *1
T/C Register 2		------	V000 - V77F		Bit F *1
Generic Register 1		------	D000- DF7F		Bit F *1
Generic Register 2		------	B000- BF7F		Bit F *1
Generic Register 3		------	U000- UF7F		Bit F *1
Generic Register 4		------	M000- MF7F		Bit F *1
Generic Register 5		------	Q000- QF7F		Bit F *1

*1 Device format is as follows:
Please refer to the manual of external device for more detail.

E.g. X 0 0 W
- W: Register Word Specified
- 0: Position (0 to 7)
- 0: Rack No. (0 to F)

D F 7 F
- F: Port No. (0 to F)
- 7: Position (0 to 7)
- F: Rack No. (0 to F)

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

■ TC3-01

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
External Input Relay	X000 - X00B	X00W - X00W	L/H	*1
External Output Relay	Y000 - Y00B	Y00W - Y00W		*1
Internal Relay	R000 - R17F	R00W - R17W		*1
Timer Relay	T000 - T05F	T00W - T05W		*1
Counter Relay	C000 - C05F	C00W - C05W		*1
Latch Relay	L000 - L01F	L00W - L01W		*1
Data Register	------	D000 - D22F		Bit F *1
T/C Register 1	------	P000 - P05F		Bit F *1
T/C Register 2	------	V000 - V05F		Bit F *1

*1 Device format is as follows:
Please refer to the manual of external device for more detail.

E.g. X 0 0 W
- Register Word Specified
- Position (0 to 7)
- Rack No. (0 to F)

D F 7 F
- Port No. (0 to F)
- Position (0 to 7)
- Rack No. (0 to F)

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

■ TC3-02

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
External Input Relay	X000 - X00F	X00W - X00W	L/H	*1
External Output Relay	Y000 - Y00F	Y00W - Y00W		*1
Internal Relay	R000 - R37F	R00W - R37W		*1
Timer Relay	T000 - T13F	T00W - T13W		*1
Counter Relay	C000 - C13F	C00W - C13W		*1
Latch Relay	L000 - L03F	L00W - L03W		*1
Data Register	------	D000 - D24C		Bit F *1
T/C Register 1	------	P000 - P13F		Bit F *1
T/C Register 2	------	V000 - V15F		Bit F *1

*1 Device format is as follows:
Please refer to the manual of external device for more detail.

E.g. X 0 0 W
- W — Register Word Specified
- 0 — Position (0 to 7)
- 0 — Rack No. (0 to F)

D F 7 F
- F — Port No. (0 to F)
- 7 — Position (0 to 7)
- F — Rack No. (0 to F)

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.4 TS series

■ TS1000

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
External Input Relay	X000 - X07F	X00W - X07W		*1
	X200 - X27F	X20W - X27W		*2
External Output Relay	Y100 - Y17F	Y10W - Y17W		*1
	Y300 - Y37F	Y30W - Y37W		*2
Internal Relay	R000 - R17F	R00W - R17W		
	R200 - R57F	R20W - R57W		*3
Edge Relay	E000 - E03F	E00W - E03W		
Latch Relay	L000 - L01F	L00W - L01W	L / H	
Timer Relay	T000 - T05F	T00W - T05W		
Counter Relay	C000 - C05F	C00W - C05W		
Special AUX Relay	A000 - A05F	A00W - A05W		
Data Register	------	D000 - D05F		Bit F *4
	------	D060 - D11F		Bit F *5
	------	D120 - D17F		Bit F *6
T/C Register 1	------	P000 - P05F		Bit F
T/C Register 2	------	V000 - V05F		Bit F

*1 It is the input signal to the controller.

*2 It is the output signal to the controller.

*3 It links the signal input order of the robot program in programmers made by SHIBAURA MACHINE CO., LTD.

*4 It is data register to be used generally.

*5 It is data register for backup.

*6 It is made by SHIBAURA MACHINE CO., LTD. programmer that can be used for robot data acquisition.

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

■ TS2000/TS2100

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
External Input Relay	X000 - X07F	X00W - X07W		*1
	X200 - X27F	X20W - X27W		*2
External Output Relay	Y100 - Y17F	Y10W - Y17W		*1
	Y300 - Y37F	Y30W - Y37W		*2
Internal Relay	R000 - R17F	R00W - R17W		
	R200 - R57F	R20W - R57W		*3
Edge Relay	E000 - E03F	E00W - E03W		
Latch Relay	L000 - L01F	L00W - L01W	L / H	
Timer Relay	T000 - T05F	T00W - T05W		
Counter Relay	C000 - C05F	C00W - C05W		
Special AUX Relay	A000 - A05F	A00W - A05W		
Data Register	------	D000 - D05F		Bit F *4
	------	D060 - D11F		Bit F *5
	------	D120 - D17F		Bit F *6
T/C Register 1	------	P000 - P05F		Bit F
T/C Register 2	------	V000 - V05F		Bit F

*1 It is the input signal to the controller.

*2 It is the output signal to the controller.

*3 It links the signal input order of the robot program in programmers made by SHIBAURA MACHINE CO., LTD.

*4 It is data register to be used generally.

*5 It is data register for backup.

*6 It is made by SHIBAURA MACHINE CO., LTD. programmer that can be used for robot data acquisition.

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

■ TS3000/TS3100

This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
External Input Relay	X000 - X07F	X00W - X07W		*1
	X200 - X27F	X20W - X27W		*2
External Output Relay	Y100 - Y17F	Y10W - Y17W		*1
	Y300 - Y37F	Y30W - Y37W		*2
Internal Relay	R000 - R77F	R00W - R27W		
Extended Internal Relay 1	G000 - G27F	G00W - G27W		*3
Extended Internal Relay 2	H000 - H27F	H00W - H27W		*4
Edge Relay	E000 - E17F	E00W - E17W	L/H	
Latch Relay	L000 - L07F	L00W - L07W		
Timer Relay	T000 - T27F	T00W - T27W		
Counter Relay	C000 - C27F	C00W - C27W		
Special AUX Relay	A000 - A05F	A00W - A05W		
Data Register	------	D000 - D27F		Bit *5
	------	D300 - D37F		Bit *6
	------	D400 - D77F		Bit *7
T/C Register 1	------	P000 - P27F		Bit
T/C Register 2	------	V000 - V27F		Bit

*1 It is the input signal to the controller.

*2 It is the output signal to the controller.

*3 It links the signal input order of the robot program in programmers made by SHIBAURA MACHINE CO., LTD.

*4 It links the signal output order of the robot program in programmers made by SHIBAURA MACHINE CO., LTD.

*5 It is data register to be used generally.

*6 It is data register for backup.

*7 It is made by SHIBAURA MACHINE CO., LTD. programmer that can be used for robot data acquisition.

NOTE

- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

7 Device Code and Address Code

Use device code and address code when you select "Device Type & Address" for the address type in data displays.

7.1 TC200 series

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay 1	X	0080	Rack No. × 0x08 + Position
Output Relay 1	Y	0082	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Extended Internal Relay 1	G	0085	Rack No. × 0x08 + Position
Extended Internal Relay 2	H	0086	Rack No. × 0x08 + Position
Special AUX Relay	A	0089	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Shift Register	S	008B	Rack No. × 0x08 + Position
Edge Relay	E	008C	Rack No. × 0x08 + Position
Timer (contact)	T	008D	Rack No. × 0x08 + Position
Counter (contact)	C	008E	Rack No. × 0x08 + Position
Timer/Counter (current value)	P	0002	Rack No. × 0x08 + Position
Timer/Counter (setup value)	V	0003	Rack No. × 0x08 + Position
Generic Register 1	D	0000	Rack No. × 0x08 + Position
Generic Register 2	B	0001	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and the Position.

7.2 TC200S series

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay 1	X	0080	Rack No. × 0x08 + Position
Input Relay 2	I	0081	Rack No. × 0x08 + Position
Output Relay 1	Y	0082	Rack No. × 0x08 + Position
Output Relay 2	O	0083	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Extended Internal Relay 1	G	0085	Rack No. × 0x08 + Position
Extended Internal Relay 2	H	0086	Rack No. × 0x08 + Position
Extended Internal Relay 3	J	0087	Rack No. × 0x08 + Position
Extended Internal Relay 4	K	0088	Rack No. × 0x08 + Position
Special AUX Relay	A	0089	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Shift Register	S	008B	Rack No. × 0x08 + Position
Edge Relay	E	008C	Rack No. × 0x08 + Position
Timer (contact)	T	008D	Rack No. × 0x08 + Position
Counter (contact)	C	008E	Rack No. × 0x08 + Position
Timer/Counter (current value)	P	0002	Rack No. × 0x08 + Position
Timer/Counter (setup value)	V	0003	Rack No. × 0x08 + Position
Generic Register 1	D	0000	Rack No. × 0x08 + Position
Generic Register 2	B	0001	Rack No. × 0x08 + Position
Generic Register 3	U	0004	Rack No. × 0x08 + Position
Generic Register 4	M	0005	Rack No. × 0x08 + Position
Generic Register 5	Q	0006	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and the Position.

7.3 TCmini series

■ TC9-00

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay 1	X	0080	Rack No. × 0x08 + Position
Output Relay 1	Y	0082	Rack No. × 0x08 + Position
Internal Relay	X	0080	Rack No. × 0x08 + Position
	Y	0082	Rack No. × 0x08 + Position
	R	0084	Rack No. × 0x08 + Position
Special AUX Relay	A	0089	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Edge Relay	E	008C	Rack No. × 0x08 + Position
Timer (contact)	T	008D	Rack No. × 0x08 + Position
Counter (contact)	C	008E	Rack No. × 0x08 + Position
T/C Register 1	P	0002	Rack No. × 0x08 + Position
T/C Register 2	V	0003	Rack No. × 0x08 + Position
Data Register	D	0000	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and Position.

■ TC8-00/TC5-02

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay 1	X	0080	Rack No. × 0x08 + Position
Output Relay 1	Y	0082	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Special AUX Relay	A	0089	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Edge Relay	E	008C	Rack No. × 0x08 + Position
Timer (contact)	T	008D	Rack No. × 0x08 + Position
Counter (contact)	C	008E	Rack No. × 0x08 + Position
T/C Register 1	P	0002	Rack No. × 0x08 + Position
T/C Register 2	V	0003	Rack No. × 0x08 + Position
Data Register	D	0000	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and the Position.

■ TC6-00

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay 1	X	0080	Rack No. × 0x08 + Position
Input Relay 2	I	0081	Rack No. × 0x08 + Position
Output Relay 1	Y	0082	Rack No. × 0x08 + Position
Output Relay 2	O	0083	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Extended Internal Relay 1	G	0085	Rack No. × 0x08 + Position
Extended Internal Relay 2	H	0086	Rack No. × 0x08 + Position
Extended Internal Relay 3	J	0087	Rack No. × 0x08 + Position
Extended Internal Relay 4	K	0088	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Shift Register	S	008B	Rack No. × 0x08 + Position
Edge Relay	E	008C	Rack No. × 0x08 + Position
Timer (contact)	T	008D	Rack No. × 0x08 + Position
Counter (contact)	C	008E	Rack No. × 0x08 + Position
Timer/Counter (current value)	P	0002	Rack No. × 0x08 + Position
Timer/Counter (setup value)	V	0003	Rack No. × 0x08 + Position
Generic Register 1	D	0000	Rack No. × 0x08 + Position
Generic Register 2	B	0001	Rack No. × 0x08 + Position
Generic Register 3	U	0004	Rack No. × 0x08 + Position
Generic Register 4	M	0005	Rack No. × 0x08 + Position
Generic Register 5	Q	0006	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and the Position.

■ TC3-01

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay 1	X	0080	Rack No. × 0x08 + Position
Output Relay 1	Y	0082	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Timer (contact)	T	008D	Rack No. × 0x08 + Position
Counter (contact)	C	008E	Rack No. × 0x08 + Position
T/C Register 1	P	0002	Rack No. × 0x08 + Position
T/C Register 2	V	0003	Rack No. × 0x08 + Position
Data Register	D	0000	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and the Position.

■ TC3-02

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay 1	X	0080	Rack No. × 0x08 + Position
Output Relay 1	Y	0082	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Timer (contact)	T	008D	Rack No. × 0x08 + Position
Counter (contact)	C	008E	Rack No. × 0x08 + Position
T/C Register 1	P	0002	Rack No. × 0x08 + Position
T/C Register 2	V	0003	Rack No. × 0x08 + Position
Data Register	D	0000	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and the Position.

7.4 TS series

■ TS1000

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay	X	0080	Rack No. × 0x08 + Position
Output Relay	Y	0082	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Special AUX Relay	A	0089	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Edge Relay	E	008C	Rack No. × 0x08 + Position
Timer Relay	T	008D	Rack No. × 0x08 + Position
Counter Relay	C	008E	Rack No. × 0x08 + Position
T/C Register 1	P	0002	Rack No. × 0x08 + Position
T/C Register 2	V	0003	Rack No. × 0x08 + Position
Data Register	D	0000	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and Position.

■ TS2000/TS2100

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay	X	0080	Rack No. × 0x08 + Position
Output Relay	Y	0082	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Special AUX Relay	A	0089	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Edge Relay	E	008C	Rack No. × 0x08 + Position
Timer Relay	T	008D	Rack No. × 0x08 + Position
Counter Relay	C	008E	Rack No. × 0x08 + Position
T/C Register 1	P	0002	Rack No. × 0x08 + Position
T/C Register 2	V	0003	Rack No. × 0x08 + Position
Data Register	D	0000	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and Position.

■ TS3000/TS3100

Device	Device Name	Device Code (HEX)	Address Code*1
Input Relay	X	0080	Rack No. × 0x08 + Position
Output Relay	Y	0082	Rack No. × 0x08 + Position
Internal Relay	R	0084	Rack No. × 0x08 + Position
Extended Internal Relay 1	G	0085	Rack No. × 0x08 + Position
Extended Internal Relay 2	H	0086	Rack No. × 0x08 + Position
Special AUX Relay	A	0089	Rack No. × 0x08 + Position
Latch Relay	L	008A	Rack No. × 0x08 + Position
Edge Relay	E	008C	Rack No. × 0x08 + Position
Timer Relay	T	008D	Rack No. × 0x08 + Position
Counter Relay	C	008E	Rack No. × 0x08 + Position
T/C Register 1	P	0002	Rack No. × 0x08 + Position
T/C Register 2	V	0003	Rack No. × 0x08 + Position
Data Register	D	0000	Rack No. × 0x08 + Position

*1 Please refer to the *1 in "6 Supported Devices" for the Rack No. and Position.

8 Error Messages

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

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

Display Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 2 [02H])"

NOTE

- Refer to your External Device manual for details on received error codes.
- Please refer to "Display-related errors" of "Maintenance/Troubleshooting Guide" for a common error message to the driver.

■ Error Codes Specific to the External Device

Error Code	Description
BE	The specified PC number does not exist.
CA	The specified device does not exist in the External Device.
BA	The specified External Device does not support the read command.
CB	The specified PC number of the slave station does not exist.