Temperature Controllers MODBUS SIO 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
This section shows the types of External Devices which can be connected and SIO type. | ☞ "1 System Configuration" (page 3) |

| 2 | Selection of External Device
Select a model (series) of the External Device to be connected and connection method. | ☞ "2 Selection of External Device" (page 8) |

| 3 | Example of Communication Settings
This section shows setting examples for communicating between the Display and the External Device. | ☞ "3 Example of Communication Setting" (page 9) |

| 4 | Setup Items
This section describes communication setup items on the Display.
Set communication settings of the Display with GP-Pro EX or in off-line mode. | ☞ "4 Setup Items" (page 65) |

| 5 | Cable Diagram
This section shows cables and adapters for connecting the Display and the External Device. | ☞ "5 Cable Diagram" (page 70) |

Operation

1 System Configuration

The system configuration in the case when the External Device of CHINO Corporation and the Display are connected is shown.

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
DB	DB1□□□B■□□-□□□ [*1]	Port on CPU unit	RS-232C	"Setting Example 1" (page 9)	"Cable Diagram 1" (page 70)
			RS-422/485 (2 wire)	"Setting Example 2" (page 11)	"Cable Diagram 3" (page 81)
			RS-422/485 (4 wire)	"Setting Example 3" (page 13)	"Cable Diagram 2" (page 72)
	DB2□□□□□□■-□□□ [*2]	Port on CPU unit	RS-232C	"Setting Example 4" (page 15)	"Cable Diagram 1" (page 70)
			RS-422/485 (2 wire)	"Setting Example 5" (page 17)	"Cable Diagram 3" (page 81)
			RS-422/485 (4 wire)	"Setting Example 6" (page 19)	"Cable Diagram 2" (page 72)
KP	KP1□□□C■□□-□□□ [*1]	Port on CPU unit	RS-232C	"Setting Example 7" (page 21)	"Cable Diagram 1" (page 70)
			RS-422/485 (2 wire)	"Setting Example 8" (page 23)	"Cable Diagram 3" (page 81)
			RS-422/485 (4 wire)	"Setting Example 9" (page 25)	"Cable Diagram 2" (page 72)
	KP2□□□□□□■-□□□ [*2]	Port on CPU unit	RS-232C	"Setting Example 10" (page 27)	"Cable Diagram 1" (page 70)
			RS-422/485 (2 wire)	"Setting Example 11" (page 29)	"Cable Diagram 3" (page 81)
			RS-422/485 (4 wire)	"Setting Example 12" (page 31)	"Cable Diagram 2" (page 72)
	KP3□0C□□■-□□□ [*2]	Port on CPU unit	RS-232C	"Setting Example 13" (page 33)	"Cable Diagram 1" (page 70)
			RS-422/485 (2 wire)	"Setting Example 14" (page 35)	"Cable Diagram 3" (page 81)
			RS-422/485 (4 wire)	"Setting Example 15" (page 37)	"Cable Diagram 2" (page 72)

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
LT	LT23□□□■00-□□□ [*3]	Port on CPU unit	RS-422/485 (2 wire)	"Setting Example 16" (page 39)	"Cable Diagram 3" (page 81)
	LT3□□□□■□0-□□□ [*1]	Port on CPU unit	RS-232C	"Setting Example 17" (page 41)	"Cable Diagram 1" (page 70)
			RS-422/485 (2 wire)	"Setting Example 18" (page 43)	"Cable Diagram 3" (page 81)
			RS-422/485 (4 wire)	"Setting Example 19" (page 45)	"Cable Diagram 2" (page 72)
	LT4□□□□■□□-□□□ [*1] [*4]	Port on CPU unit	RS-232C	"Setting Example 20" (page 47)	"Cable Diagram 1" (page 70)
			RS-422/485 (2 wire)	"Setting Example 21" (page 49)	"Cable Diagram 3" (page 81)
			RS-422/485 (4 wire)	"Setting Example 22" (page 51)	"Cable Diagram 2" (page 72)
	LT830□□000-■□□ [*5]	Port on CPU unit	RS-422/485 (2 wire)	"Setting Example 23" (page 53)	"Cable Diagram 3" (page 81)
JU	JU□□□□□□□513 [*6] JU□□□□□□□613 [*7]	Port on CPU unit	RS-422/485 (2 wire)	"Setting Example 24" (page 55)	"Cable Diagram 5" (page 96)
	JU□□□□□□□□■□□ [*8] [*9]	Setting communications unit	RS-422/485 (2 wire)	"Setting Example 25" (page 57)	"Cable Diagram 4" (page 89)
			RS-422/485 (4 wire)	"Setting Example 26" (page 59)	"Cable Diagram 2" (page 72)
JW	JW□□□□□□□□■□□ [*8]	Setting communications unit	RS-422/485 (2 wire)	"Setting Example 27" (page 61)	"Cable Diagram 4" (page 89)
			RS-422/485 (4 wire)	"Setting Example 28" (page 63)	"Cable Diagram 2" (page 72)

*1　Only the External Device with the ■ part of the CPU type has codes blow can be used.
　　R (RS-232C), A (RS-422A), S (RS-485)

*2　Only the External Device with the ■ part of the CPU type has codes blow can be used.
　　R (RS-232C), A (RS-422A), S (RS-485), B (RS-232C + RS-232C), C (RS-232C + RS-422A),
　　D (RS-232C + RS-485), E (RS-485 + RS-232C), F (RS-485 + RS-422A), G (RS-485 + RS-485)

*3　Only the External Device with the ■ part of the CPU type has codes blow can be used.
　　S or 2 (RS-485)

*4　To communicate with the Display, use LT400 series with Serial Number of LT4037**** or later. If one with
　　Serial Number of LT4036**** or earlier is used, an error will be displayed.

*5　Only the External Device with the ■ part of the CPU type has codes blow can be used.
　　2 (RS-485)

*6　JU series with temperature controller feature <Unit space Master>.
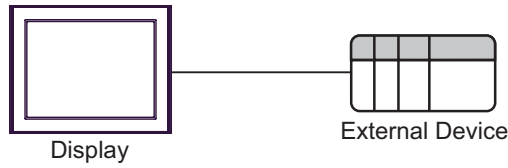
*7　JU series without temperature controller feature <Unit space Slave>.
　　To communicate with the Display, connect JU series with temperature controller feature <Unit space Master>
　　(JU□□□□□□□513) to make master and slave unit communication. Please refer to the External Device
　　manual on how to make unit communication.

*8　Only the External Device with the ■ part of the CPU type has codes blow can be used.
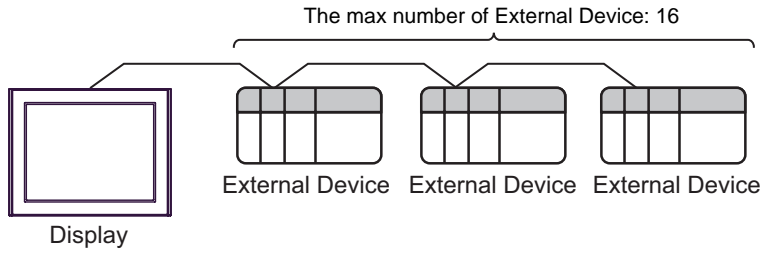　　3 or 4 (RS-422A, RS-485)

*9　JU series Single-phase.
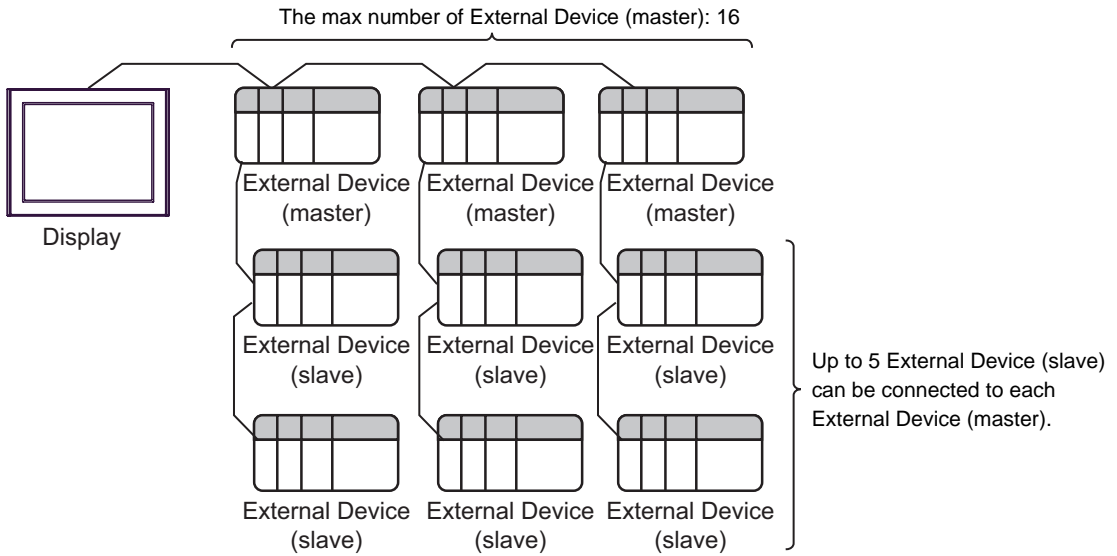
■ Connection Configuration

• 1:1 connection

Display   External Device

• 1:n connection

The max number of External Device: 16

Display   External Device   External Device   External Device

• 1:n connection (For JU series with temperature controller feature)

The max number of External Device (master): 16

Display

External Device   External Device   External Device
(master)   (master)   (master)

External Device   External Device   External Device
(slave)   (slave)   (slave)

External Device   External Device   External Device
(slave)   (slave)   (slave)

Up to 5 External Device (slave) can be connected to each External Device (master).

■ COM Port of IPC

When connecting IPC with External Device, the COM port which can be used changes with series and SIO type.
Please refer to the manual of IPC 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	COM1, COM2[*1*2]	COM2[*1*2]	COM2[*1*2]
PS-3650A, PS-3651A	COM1[*1]	-	-
PS-3700A (Pentium®4-M) PS-3710A	COM1[*1], COM2[*1], COM3[*2] , COM4	COM3[*2]	COM3[*2]
PS-3711A	COM1[*1], COM2[*2]	COM2[*2]	COM2[*2]
PL-3000B	COM1[*1*2], COM2[*1], COM3, COM4	COM1[*1*2]	COM1[*1*2]

*1   The RI/5V can be switched. Please switch with the change switch of IPC.

*2   It is necessary to set up the SIO type with the Dip switch. Please set up as follows according to SIO type to be used.

Dip switch setting: RS-232C

Dip switch	Setting	Description
1	OFF[*1]	Reserve (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): Does not Exist
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Does not Exist
9	OFF	RS (RTS) Auto control mode: Disable
10	OFF	

*1   It is necessary to turn ON the set value, only when using PS-3450A and PS-3451A.

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

Dip switch	Setting	Description
1	OFF	Reserve (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): Does not Exist
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Does not Exist
9	OFF	RS (RTS) Auto control mode: Disable
10	OFF	

Dip switch setting: RS-422/485 (2 wire)

Dip switch	Setting	Description
1	OFF	Reserve (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): Exist
8	ON	Short-circuit of SDB (TXB) and RDB (RXB): Exist
9	ON	RS (RTS) Auto control mode: Enable
10	ON	

2   Selection of External Device

Select the External Device to be connected to the Display.
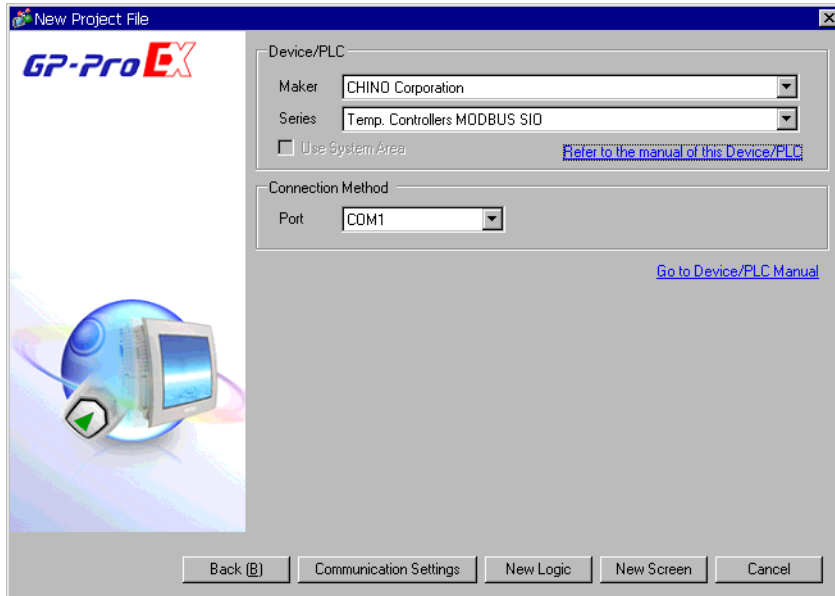
Setup Items	Setup Description
Maker	Select the maker of the External Device to be connected. Select "CHINO Corporation."
Series	Select a model (series) of the External Device to be connected and connection method. Select "Temp. Controllers MODBUS SIO." Check the External Device which can be connected in "Temp. Controllers MODBUS SIO" in system configuration. ☞ "1 System Configuration" (page 3)
Use System Area	This driver cannot be used.
Port	Select the Display port to be connected to the External Device.

3 Example of Communication Setting

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

3.1 Setting Example 1

■ Settings of GP-Pro EX

◆ Communication Settings

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

Device/PLC 1	

Summary   Change Device/PLC

Maker   CHINO Corporation   Series   Temp. Controllers MODBUS SIO   Port   COM1

Text Data Mode   [1]   Change

Communication Settings

SIO Type   ⊙ RS232C   ○ RS422/485(2wire)   ○ RS422/485(4wire)

Speed   9600

Data Length   ○ 7   ⊙ 8

Parity   ⊙ NONE   ○ EVEN   ○ ODD

Stop Bit   ⊙ 1   ○ 2

Flow Control   ⊙ NONE   ○ ER(DTR/CTS)   ○ XON/XOFF

Timeout   3   (sec)

Retry   2

Wait To Send   10   (ms)

RI / VCC   ⊙ RI   ○ VCC

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

Device-Specific Settings

Allowable Number of Devices/PLCs   16

Number   Device Name   Settings

1   PLC1   Series=DB1000 Series,Station No.=1

IMPORTANT   • Set Wait To Send to 5ms or more.

◆ Device Setting

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

When you connect multiple External Device, click ![icon] from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, shift key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE7."

3 Press SEL key to display items to be set.

4 Press down/up key or shift key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.2   Setting Example 2

■ Settings of GP-Pro EX

◆ Communication Settings

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

| IMPORTANT | • Setting value for Wait To Send differs depending on the connection configuration. Set as shown below. |

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, shift key, down key and up key in front of the controller for

communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE7."

3 Press SEL key to display items to be set.

4 Press down/up key or shift key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.3　　　Setting Example 3

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT	• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click 🔧 from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, shift key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE7."

3 Press SEL key to display items to be set.

4 Press down/up key or shift key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.4   Setting Example 4

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT • Set Wait To Send to 5ms or more.

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, shift key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE7."

3 Press SEL key to display items to be set.

4 Press down/up key or shift key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.5 Setting Example 5

■ Settings of GP-Pro EX

◆ Communication Settings

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

| IMPORTANT | • Setting value for Wait To Send differs depending on the connection configuration. Set as shown below. |

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, shift key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE7."

3 Press SEL key to display items to be set.

4 Press down/up key or shift key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.6 Setting Example 6

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT	• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, shift key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE7."

3 Press SEL key to display items to be set.

4 Press down/up key or shift key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.8　　　Setting Example 8

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT
- Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for
communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.9 Setting Example 9

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT
- Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.10 Setting Example 10

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT • Set Wait To Send to 5ms or more.

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

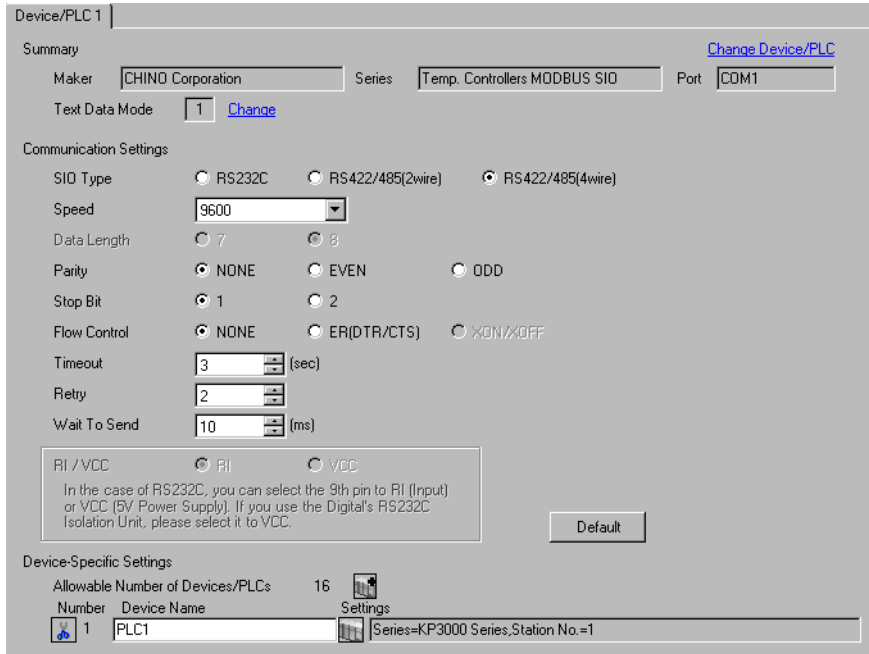4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.11　　　Setting Example 11

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT • Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.12 Setting Example 12

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT	• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.13　　Setting Example 13

■ Settings of GP-Pro EX

◆ Communication Settings

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

> IMPORTANT
>
> • Set Wait To Send to 5ms or more.

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

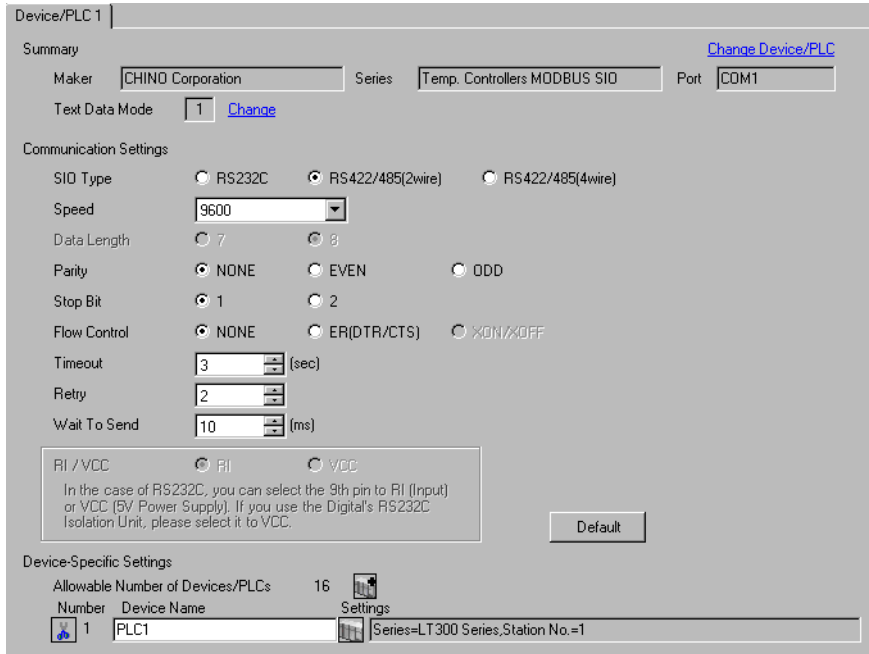4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.14 Setting Example 14

■ Settings of GP-Pro EX

◆ Communication Settings

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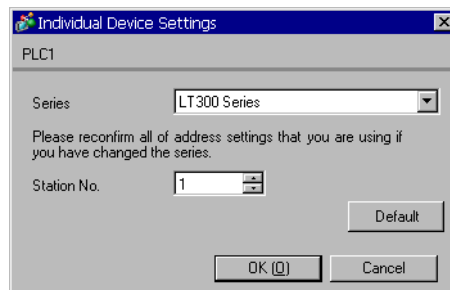

| IMPORTANT | • Setting value for Wait To Send differs depending on the connection configuration. Set as shown below. |

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click 📊 from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.15 Setting Example 15

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT
• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL key, ENT key, right key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press down/up key to move to "MODE8."

3 Press SEL key to display items to be set.

4 Press down/up key or right key, select setting value, and press ENT key.

Setup Items	Setting Value
COM BIT RATE	9600bps
COM NUMBER	01
COM KIND	COM
COM PROTOCOL	MODBUS(RTU)
COM CHARCTER	8BIT/NON/STOP1

3.16 Setting Example 16

■ Settings of GP-Pro EX

◆ Communication Settings

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

| IMPORTANT | • Setting value for Wait To Send differs depending on the connection configuration. Set as shown below. |

Connection Configuration	Setting Value
1 : 1	20ms or more
1 : n	65ms or more

◆ Device Setting

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

When you connect multiple External Device, click ▓ from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the SEL/ENT key, DOWN key and UP key in front of the controller for communication settings of the External Device.

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

1 Press SEL/ENT key for 2 seconds.

2 Press UP key to move to "MODE7."

3 Press SEL/ENT key to display items to be set.

4 Press DOWN/UP key, select setting value, and press SEL/ENT key.

Setup Items	Setting Value
PtCL	rtU
FUnC	Com
AdrS	1
rAtE	9600
CHAr	5

3.17   Setting Example 17

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT   • Set Wait To Send to 20ms or more.

◆ Device Setting

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

When you connect multiple External Device, click [image] from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL/ENT key, DOWN key and UP key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press UP key to move to "MODE7."

3 Press SEL/ENT key to display items to be set.

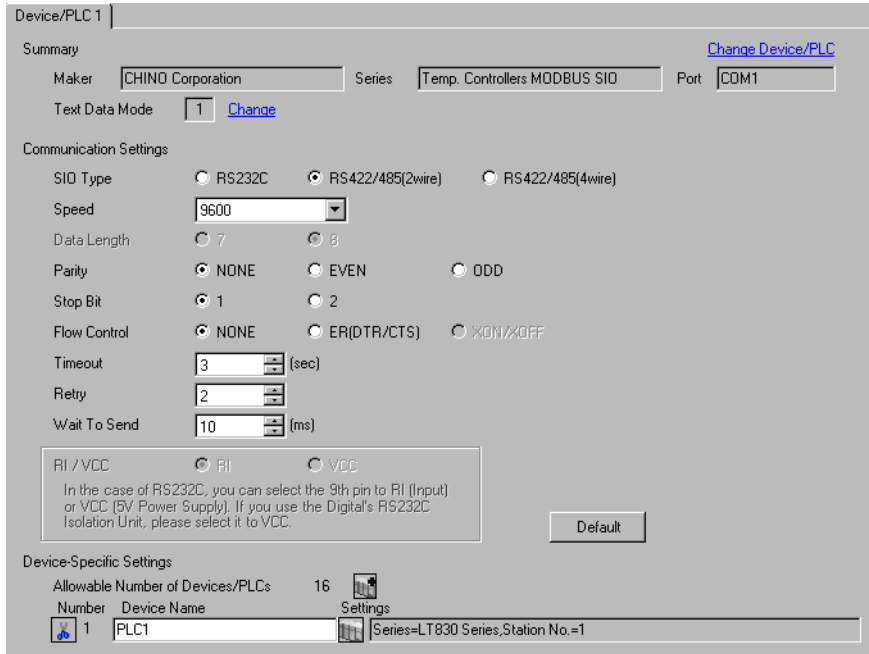4 Press DOWN/UP key, select setting value, and press SEL/ENT key.

Setup Items	Setting Value
PtCL	rtU
FUnC	Com
AdrS	1
rAtE	9600
CHAr	5

3.18   Setting Example 18

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT
• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	20ms or more
1 : n	65ms or more

◆ Device Setting

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

When you connect multiple External Device, click ▆▆ from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL/ENT key, DOWN key and UP key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press UP key to move to "MODE7."

3 Press SEL/ENT key to display items to be set.

4 Press DOWN/UP key, select setting value, and press SEL/ENT key.

Setup Items	Setting Value
PtCL	rtU
FUnC	Com
AdrS	1
rAtE	9600
CHAr	5

3.19 Setting Example 19

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT	• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	20ms or more
1 : n	65ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL/ENT key, DOWN key and UP key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press UP key to move to "MODE7."

3 Press SEL/ENT key to display items to be set.

4 Press DOWN/UP key, select setting value, and press SEL/ENT key.

Setup Items	Setting Value
PtCL	rtU
FUnC	Com
AdrS	1
rAtE	9600
CHAr	5

3.20   Setting Example 20

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT   • Set Wait To Send to 5ms or more.

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL/ENT key, DOWN key and UP key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press UP key to move to "MODE7."

3 Press SEL/ENT key to display items to be set.

4 Press DOWN/UP key, select setting value, and press SEL/ENT key.

Setup Items	Setting Value
PrtCL	rtU
FUnC	Com
AdrS	1
rAtE	9600
CHArA	8n1

3.21　　　Setting Example 21

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT	• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click ▥ from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL/ENT key, DOWN key and UP key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press UP key to move to "MODE7."

3 Press SEL/ENT key to display items to be set.

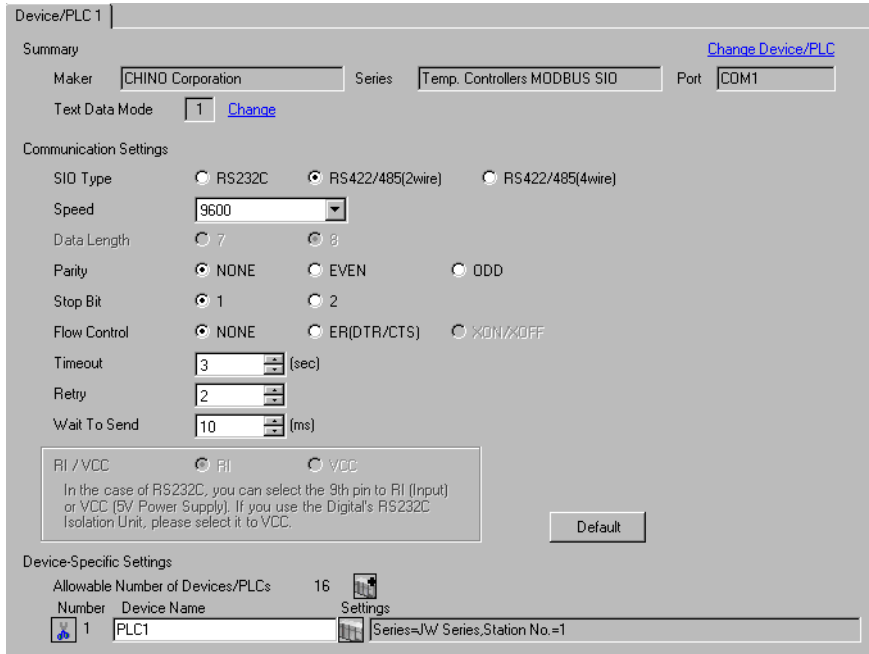4 Press DOWN/UP key, select setting value, and press SEL/ENT key.

Setup Items	Setting Value
PrtCL	rtU
FUnC	Com
AdrS	1
rAtE	9600
CHArA	8n1

3.22   Setting Example 22

■ Settings of GP-Pro EX

◆ Communication Settings

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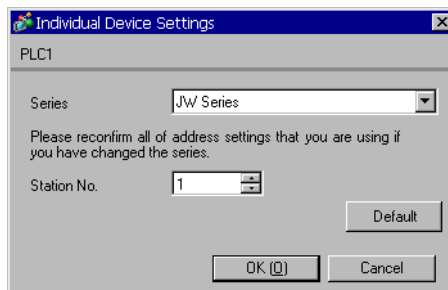

IMPORTANT	• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, SEL/ENT key, DOWN key and UP key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press UP key to move to "MODE7."

3 Press SEL/ENT key to display items to be set.

4 Press DOWN/UP key, select setting value, and press SEL/ENT key.

Setup Items	Setting Value
PrtCL	rtU
FUnC	Com
AdrS	1
rAtE	9600
CHArA	8n1

3.23　　Setting Example 23

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT

- Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	20ms or more
1 : n	65ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the SEL/ENT key, DOWN key and UP key in front of the controller for communication settings of the External Device.

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

1 Press SEL/ENT key for 2 seconds.

2 Press UP key to move to "MODE6."

3 Press SEL/ENT key to display items to be set.

4 Press DOWN/UP key, select setting value, and press SEL/ENT key.

Setup Items	Setting Value
PtCL	rtU
FUnC	Com
AdrS	1
rAtE	9600
CHAr	8n1

3.24 Setting Example 24

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT • Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the rotary switch and DIP switches of the External Device for communication settings of the External Device.

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

• Rotary switch (SW1)

Rotary switch	Setting Value
SW1	1

• DIP switch (SW2)

DIP switches	Setting Value
SW1	OFF
SW2	OFF
SW3	OFF
SW4	OFF
SW5	OFF
SW6	OFF
SW7	OFF
SW8	OFF

3.25 Setting Example 25

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT	• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click ▥ from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, ENT key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press up key to move to "MODE3."

3 Press ENT key to display items to be set.

4 Press down/up key, select setting value, and press ENT key.

Setup Items	Setting Value
PtCL	rtU
AdrS	1
rAtE	9600
CHAr	8n1

3.26　　　Setting Example 26

■ Settings of GP-Pro EX

◆ Communication Settings

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

 IMPORTANT
• Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, ENT key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press up key to move to "MODE3."

3 Press ENT key to display items to be set.

4 Press down/up key, select setting value, and press ENT key.

Setup Items	Setting Value
PtCL	rtU
AdrS	1
rAtE	9600
CHAr	8n1

3.27   Setting Example 27

■ Settings of GP-Pro EX

◆ Communication Settings

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

| IMPORTANT | • Setting value for Wait To Send differs depending on the connection configuration. Set as shown below. |

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, ENT key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press up key to move to "MODE3."

3 Press ENT key to display items to be set.

4 Press down/up key, select setting value, and press ENT key.

Setup Items	Setting Value
PtCL	rtU
AdrS	1
rAtE	9600
CHAr	8n1

3.28 Setting Example 28

■ Settings of GP-Pro EX

◆ Communication Settings

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

IMPORTANT
- Setting value for Wait To Send differs depending on the connection configuration. Set as shown below.

Connection Configuration	Setting Value
1 : 1	5ms or more
1 : n	10ms or more

◆ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

■ Settings of External Device

Use the MODE key, ENT key, down key and up key in front of the controller for communication settings of the External Device.

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

1 Press MODE key.

2 Press up key to move to "MODE3."

3 Press ENT key to display items to be set.

4 Press down/up key, select setting value, and press ENT key.

Setup Items	Setting Value
PtCL	rtU
AdrS	1
rAtE	9600
CHAr	8n1

4 Setup Items

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

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

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

4.1 Setup Items in GP-Pro EX

■ Communication Settings

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

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	Display 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.
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.

■ Device Setting

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

When you connect multiple External Device, click from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.

Setup Items	Setup Description
Series	Select the External Device series.
Station No.	Use an integer 1 to 99 to enter the station number of the External Device to communicate.

4.2　　　Communication Settings in Off-line Mode

NOTE　　• Refer to the Maintenance/Troubleshooting manual for information on how to enter off-line
mode or about the operation.

Cf.　　Maintenance/Troubleshooting Manual "2.2 Off-line Mode"

■ Communication Settings

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

Comm.	Device	Option		

Temp. Controllers MODBUS SIO　　　　　　　　　　　　[COM1]　　　　　Page 1/1

SIO Type	RS422/485(2wire) ▼
Speed	9600 ▼
Data Length	8
Parity	● NONE　　● EVEN　　● ODD
Stop Bit	● 1　　● 2
Flow Control	NONE ▼
Timeout(s)	3 ▼ ▲
Retry	2 ▼ ▲
Wait To Send(ms)	10 ▼ ▲

| | Exit | | Back | 2007/10/30 14:53:59 |

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	Display 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 (s)	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.

Continues to the next page.

Setup Items	Setup Description
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 (ms)	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

■ Device Settings

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

Setup Items	Setup Description
Device/PLC Name	Select the External Device for device setting. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1])
Series	Display the External Device series.
Station No.	Use an integer 1 to 99 to enter the station number of the External Device to communicate.

■ 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].

Comm.	Device	Option		

Temp. Controllers MODBUS SIO   [COM1]   Page 1/1

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

| | Exit | | Back | 2007/10/30 14:59:19 |
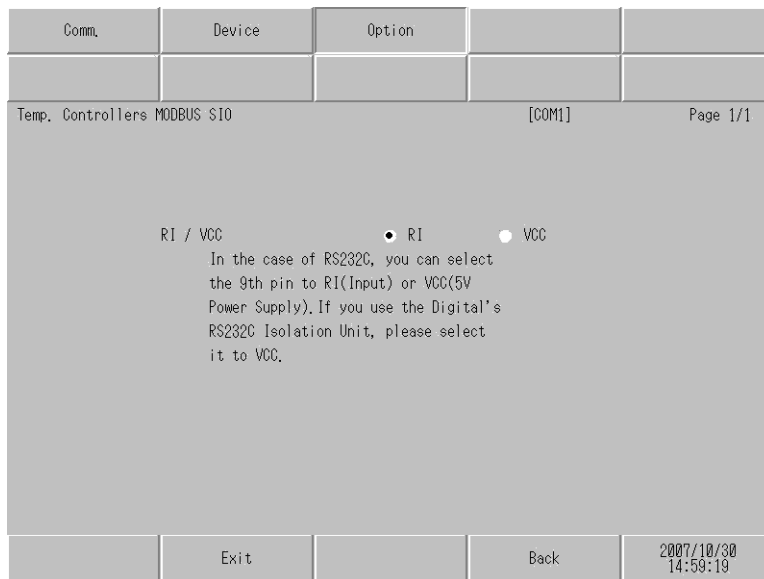
Setup Items	Setup Description
RI/VCC	You can switch RI/VCC of the 9th pin when you select RS232C for SIO type. It is necessary to change RI/5V by changeover switch of IPC when connect with IPC. Please refer to the manual of the IPC for more detail.

5　Cable Diagram

The cable diagram shown below may be different from the cable diagram recommended by CHINO Corporation.

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
GP (COM1) ST (COM1) LT (COM1) IPC[*1] PC/AT	A	RS-232C communication cable by CHINO Corporation RZ-CRS6□□[*2]	Cable length: 15m or less
	B	Your own cable	

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

*2   □□ shows cable length.

IMPORTANT	• Terminal number to be used for communication varies depending on the External Device. Terminal numbers corresponding to each series are shown below.

Series	SD	RD	SG
DB1000	13	12	14
DB2000 (COM1)	27	26	28
DB2000 (COM2)	30	29	31
KP1000	13	12	14
KP2000 (COM1)	27	26	28
KP2000 (COM2)	30	29	31
KP3000 (COM1)	27	26	28
KP3000 (COM2)	30	29	31
LT300/400	11	13	15

A) When using the RS-232C Communication Cable by CHINO Corporation

RD	○	SD
SD	○	RD
SG	○	SG

D-sub 9pin
plug

B) When using your own cable

Display

Display   External Device

Shield

Pin	Signal name		Signal name
2	RD (RXD)	←	SD
3	SD (TXD)	→	RD
5	SG		SG
7	RS (RTS)		
8	CS (CTS)	←	
Shell	FG		
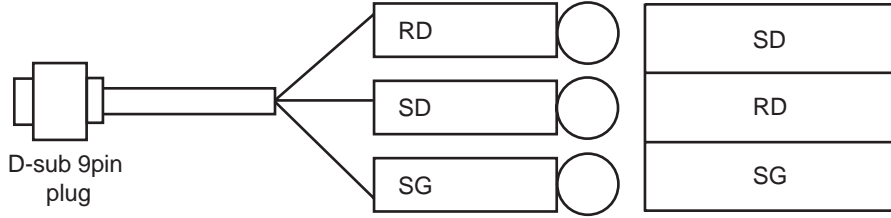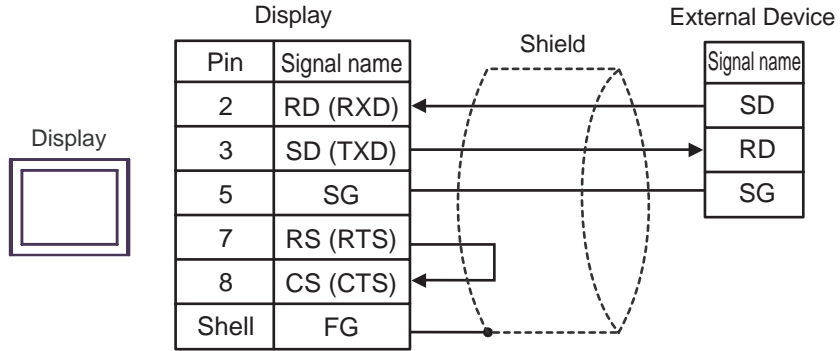
Cable Diagram 2

Display (Connection Port)	Cable		Notes
GP[*1] (COM1) AGP-3302B (COM2) ST[*2] (COM2) LT (COM1) IPC[*3]	A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	Cable length: 600m or less
	B	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + RS-422 cable by Pro-face CA3-CBL422-01 + Your own cable	
	C	RS-422 cable by Pro-face CA3-CBL422/5M-01 + Your own cable	
	D	Your own cable	
GP[*4] (COM2)	E	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	F	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	
	G	Online adapter by Pro-face CA4-ADPONL-01 + RS-422 cable by Pro-face CA3-CBL422-01 + Your own cable	

*1   All GP models except AGP-3302B
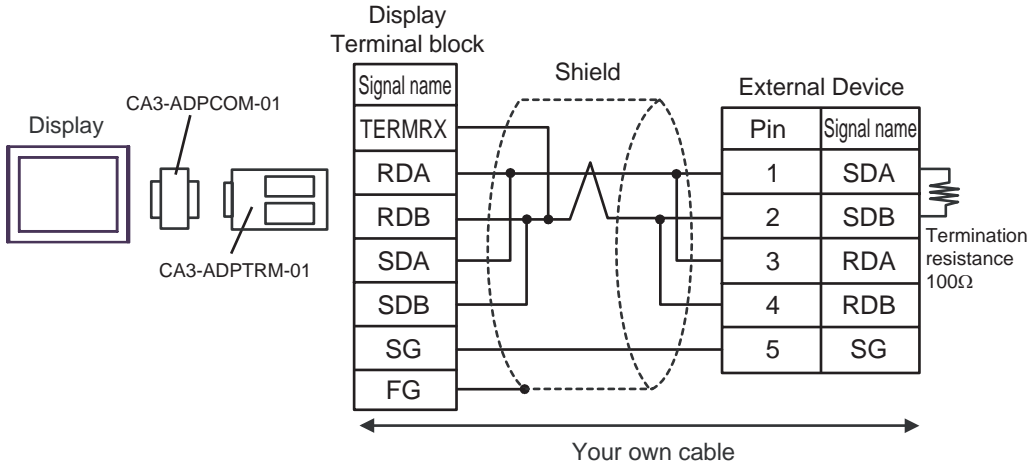
*2   All ST models except AST-3211A

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

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

IMPORTANT • Terminal number to be used for communication varies depending on the External Device. Terminal numbers corresponding to each series are shown below.

Series	SDA	SDB	RDA	RDB	SG
DB1000	14	15	12	13	16
DB2000 (COM1)	28	29	26	27	30
DB2000 (COM2)	31	32	29	30	28
KP1000	14	15	12	13	16
KP2000 (COM1)	28	29	26	27	30
KP2000 (COM2)	31	32	29	30	28
KP3000 (COM1)	28	29	26	27	30
KP3000 (COM2)	31	32	29	30	28
LT300/400	11	12	13	14	15
JU Single-phase	1	2	3	4	5
JW	1	2	3	4	5

A) When using the COM port conversion adapter (CA3-ADPCOM-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
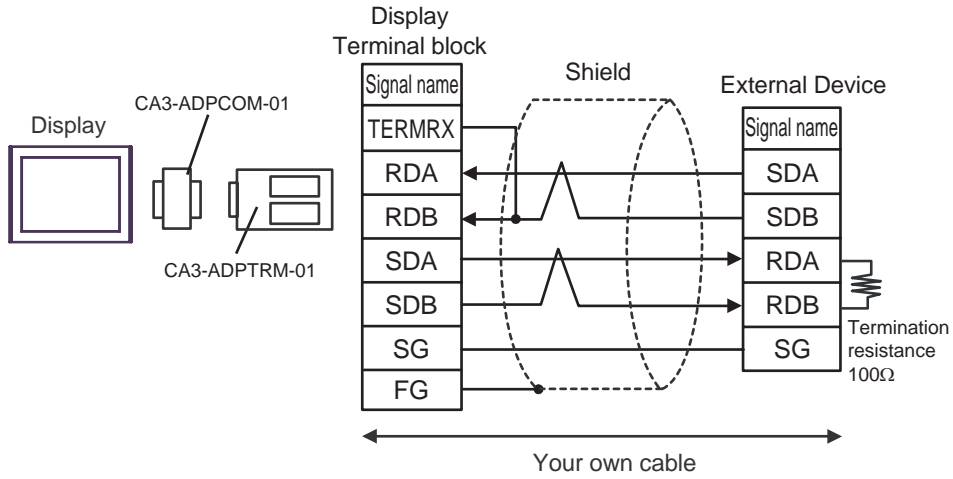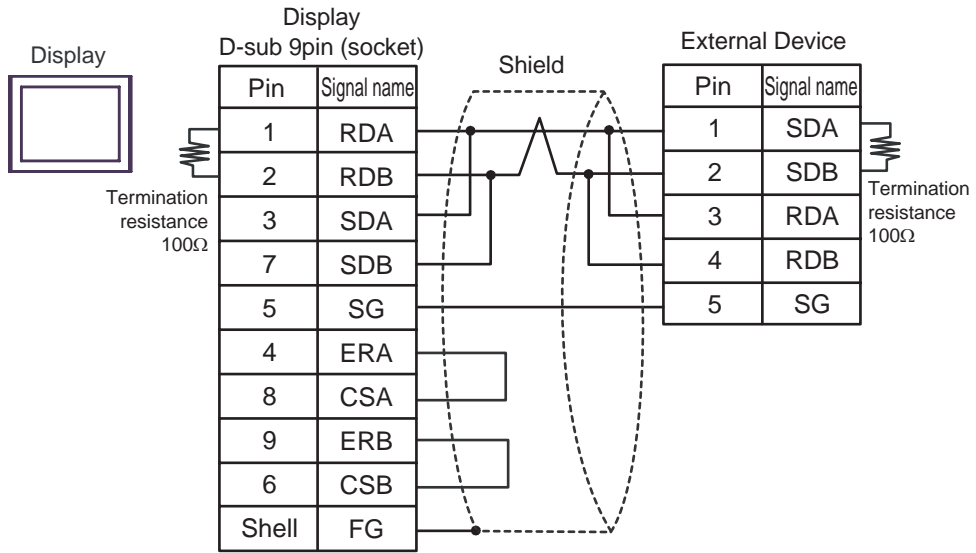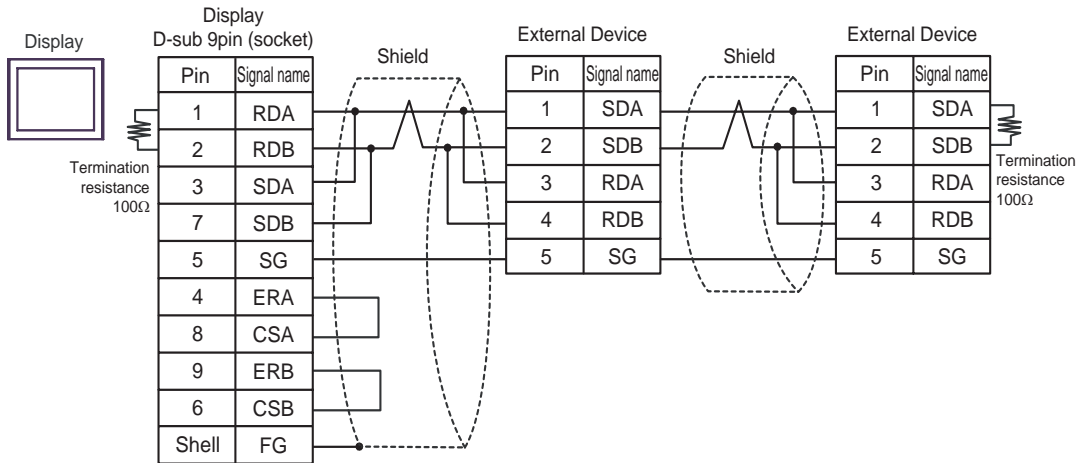
• 1:1 connection
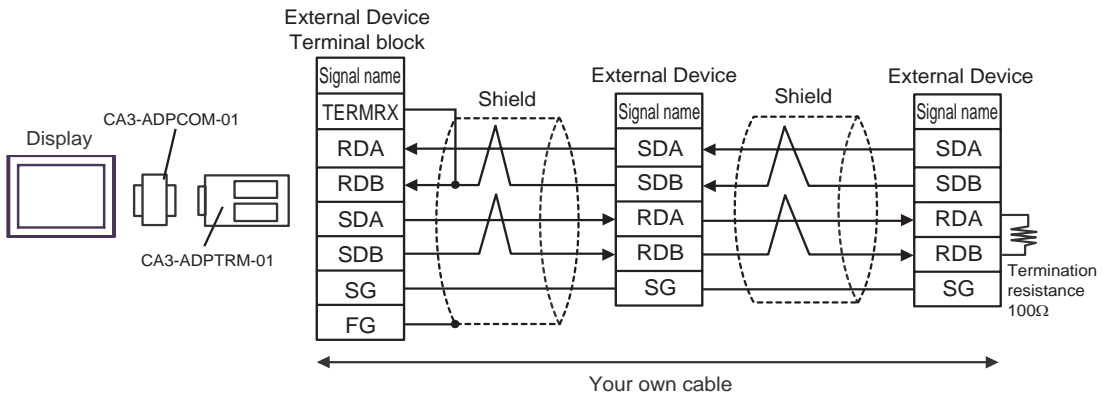
• 1:n connection

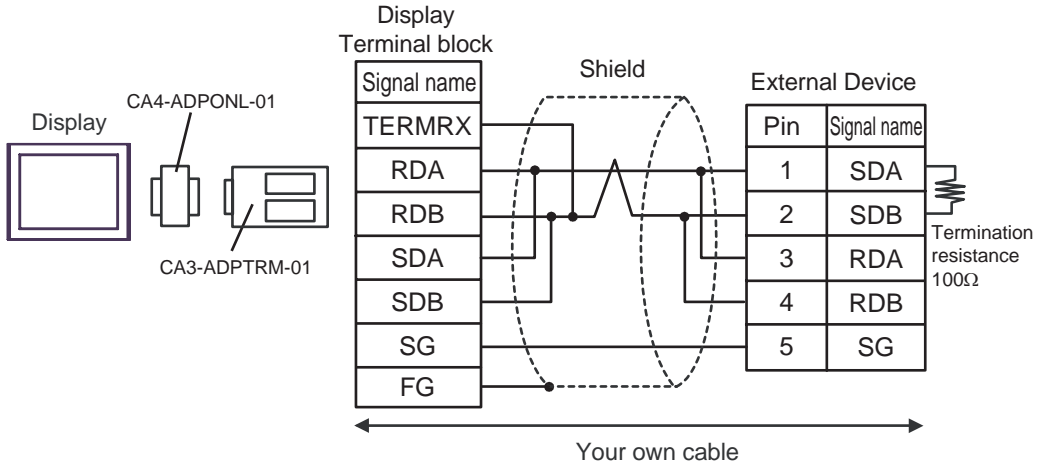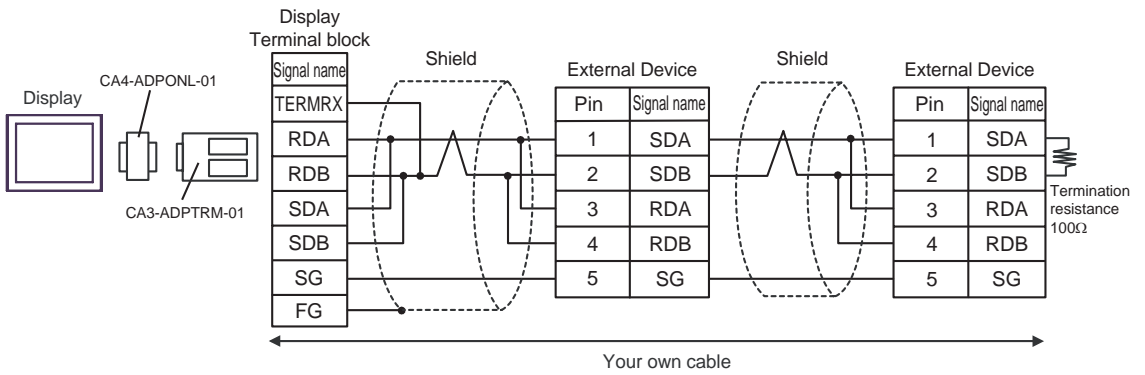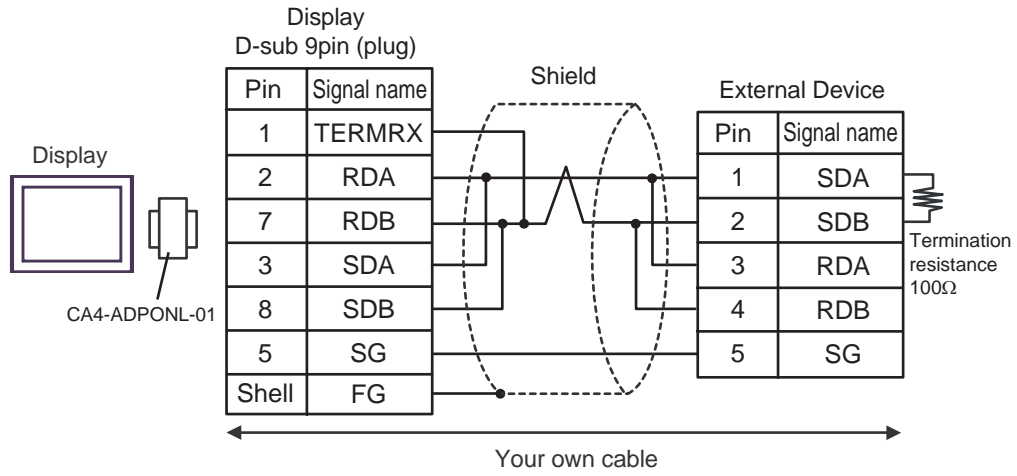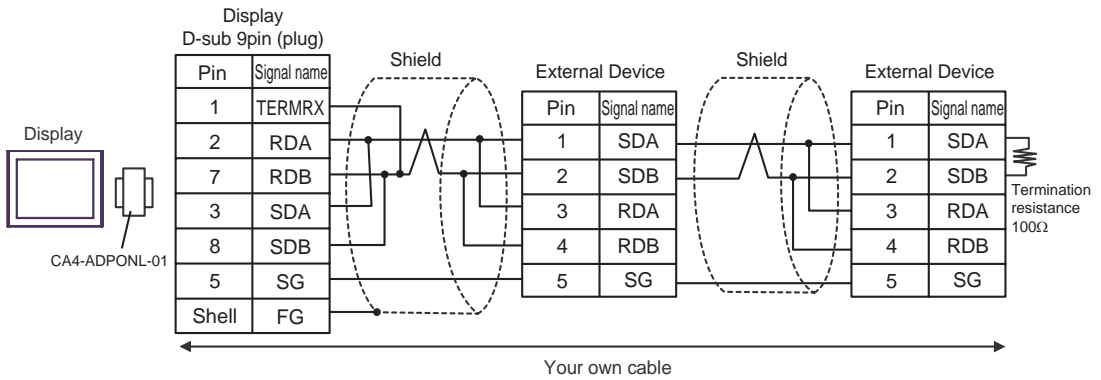B) When using the COM port conversion adapter (CA3-ADPCOM-01), the RS-422 cable (CA3-CBL422-01) by Pro-face and your own cable
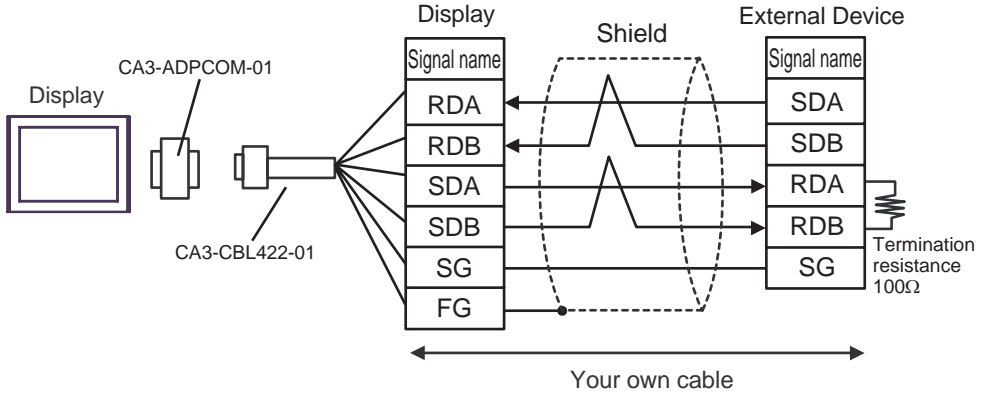
• 1:1 connection
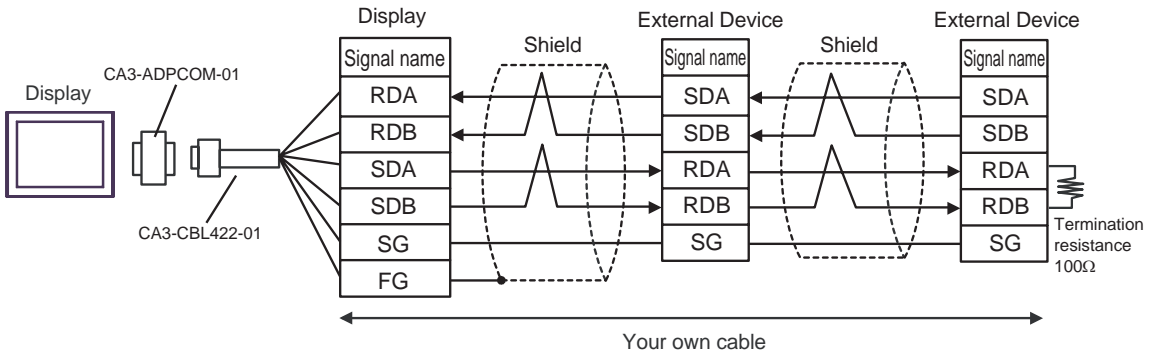
• 1:n connection

C) When using the RS-422 cable (CA3-CBL422/5M-01) by Pro-face and your own cable
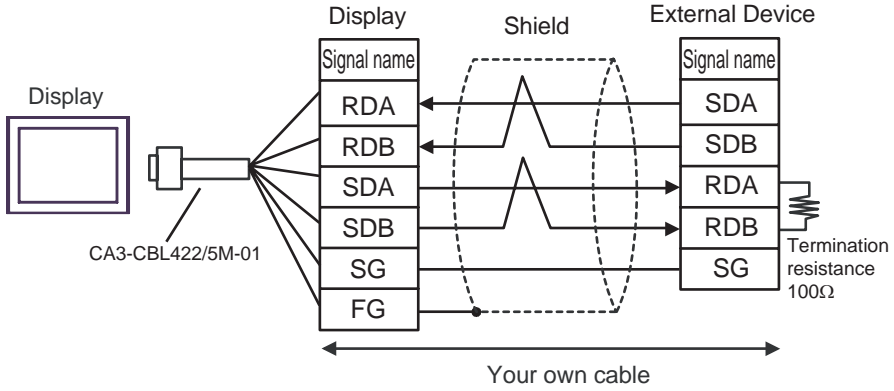
• 1:1 connection

• 1:n connection

D) When using your own cable

• 1:1 connection

Display

Display
D-sub 9pin (socket)

External Device

Pin	Signal name
1	RDA
2	RDB
3	SDA
7	SDB
5	SG
4	ERA
8	CSA
9	ERB
6	CSB
Shell	FG

Shield

Signal name
SDA
SDB
RDA
RDB
SG

Termination resistance 100Ω

Termination resistance 100Ω

• 1:n connection

Display

Display
D-sub 9pin (socket)

External Device

External Device

Termination resistance 100Ω

Pin	Signal name
1	RDA
2	RDB
3	SDA
7	SDB
5	SG
4	ERA
8	CSA
9	ERB
6	CSB
Shell	FG

Shield

Signal name
SDA
SDB
RDA
RDB
SG

Shield

Signal name
SDA
SDB
RDA
RDB
SG

Termination resistance 100Ω

E) When using the online adapter (CA4-ADPONL-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
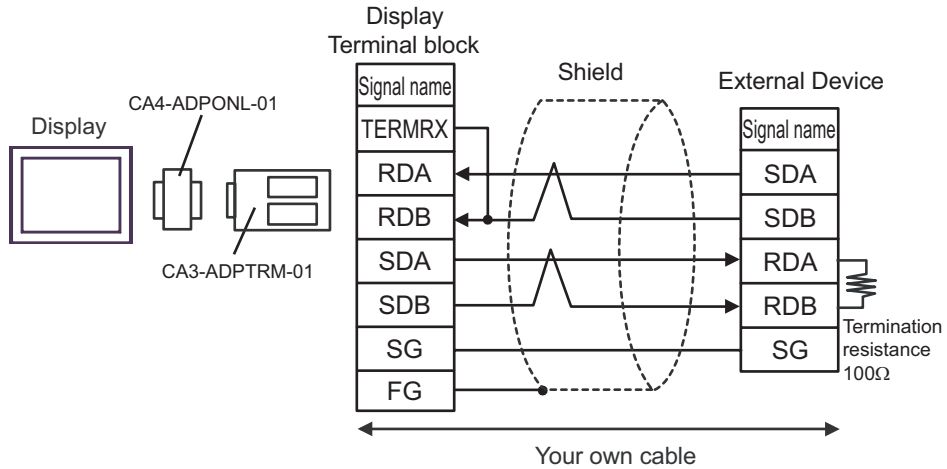
• 1:1 connection
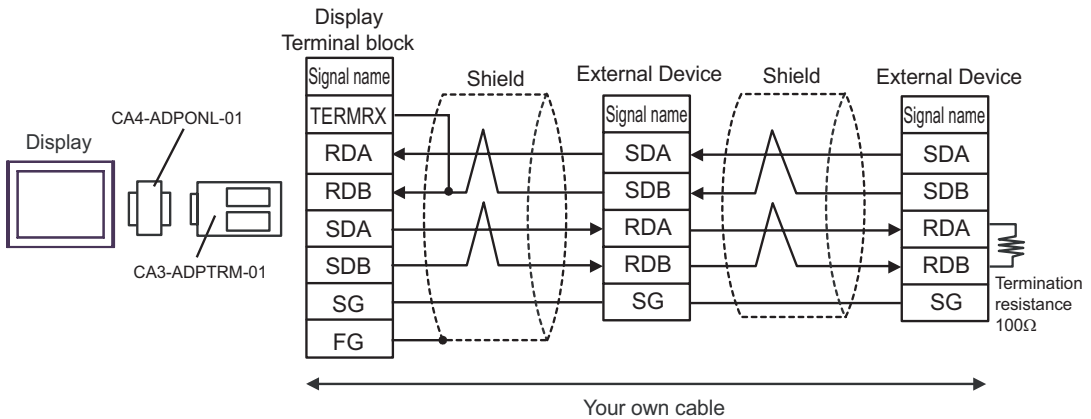
• 1:n connection

F) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable
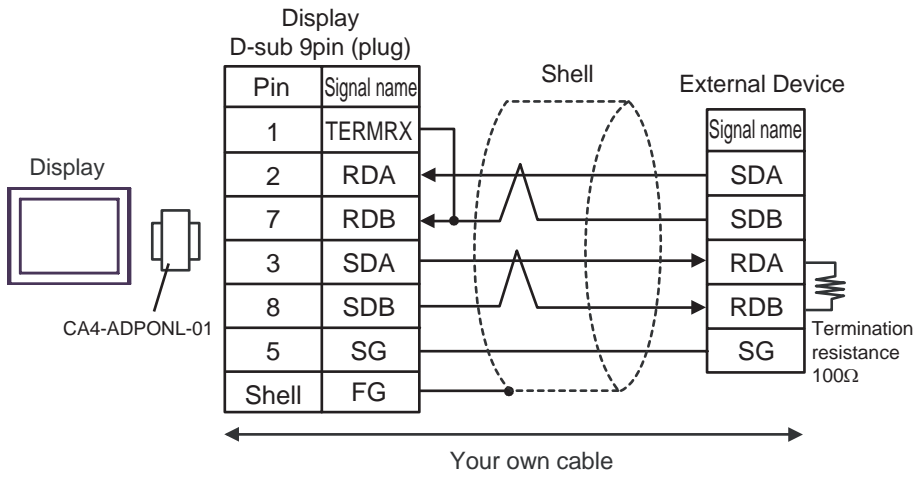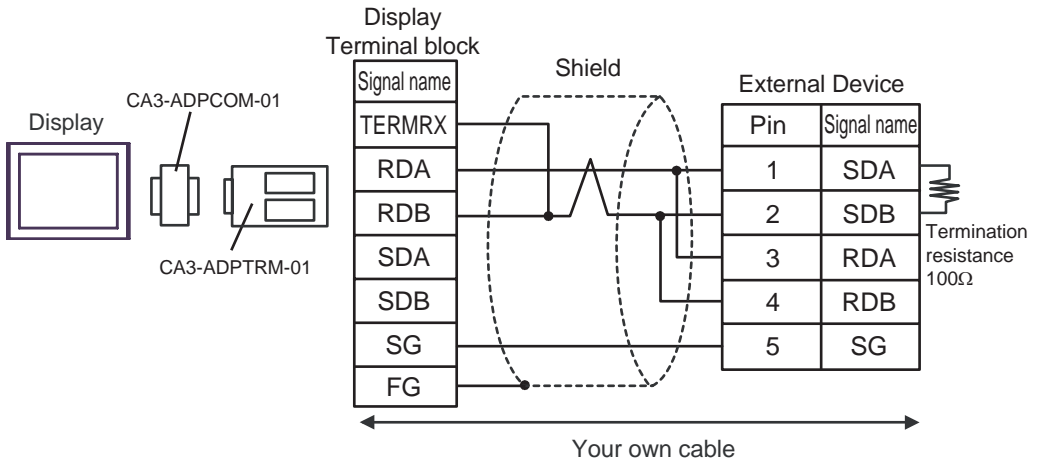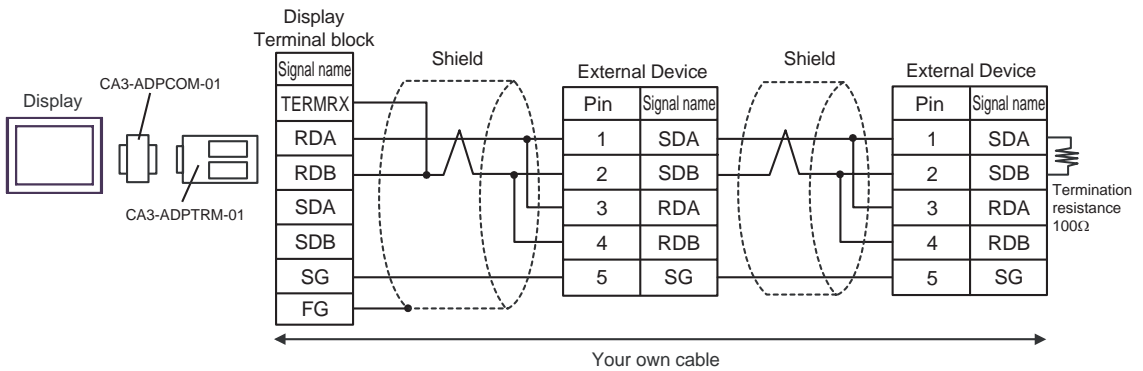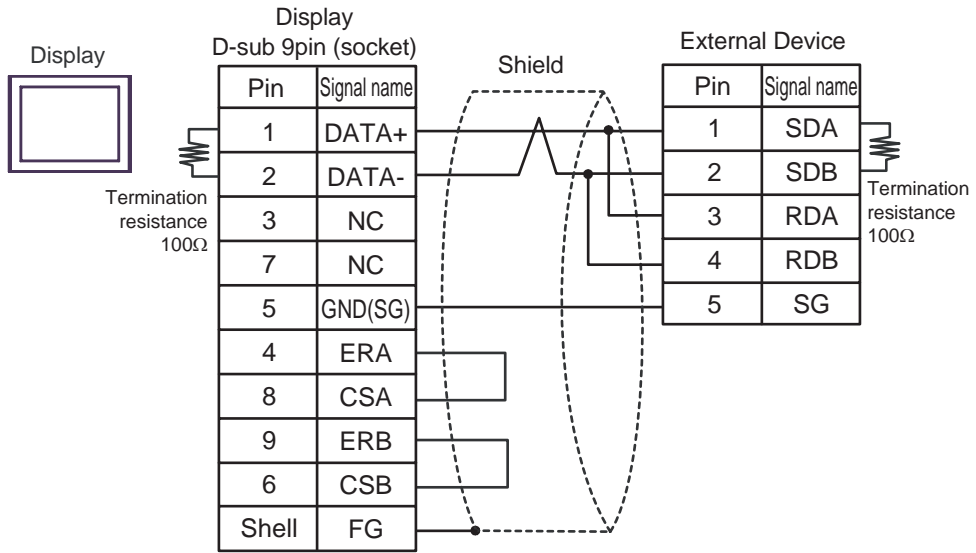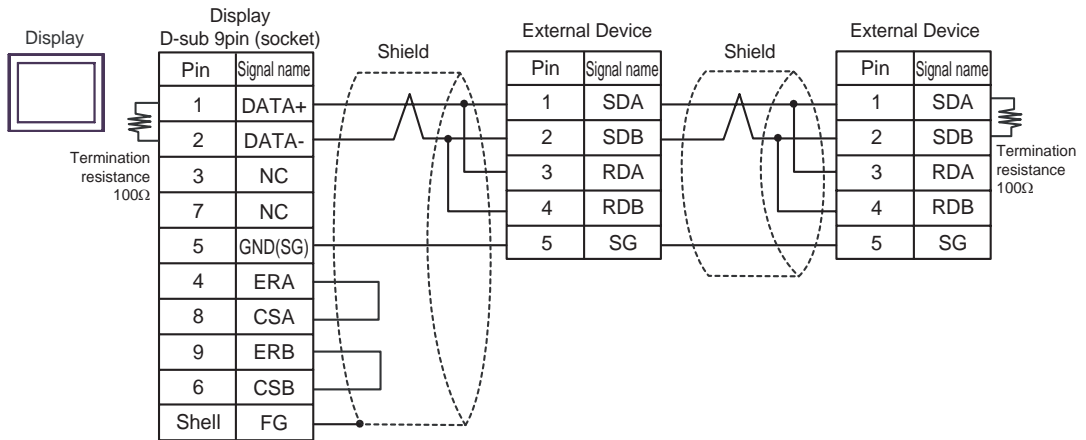
• 1:1 connection
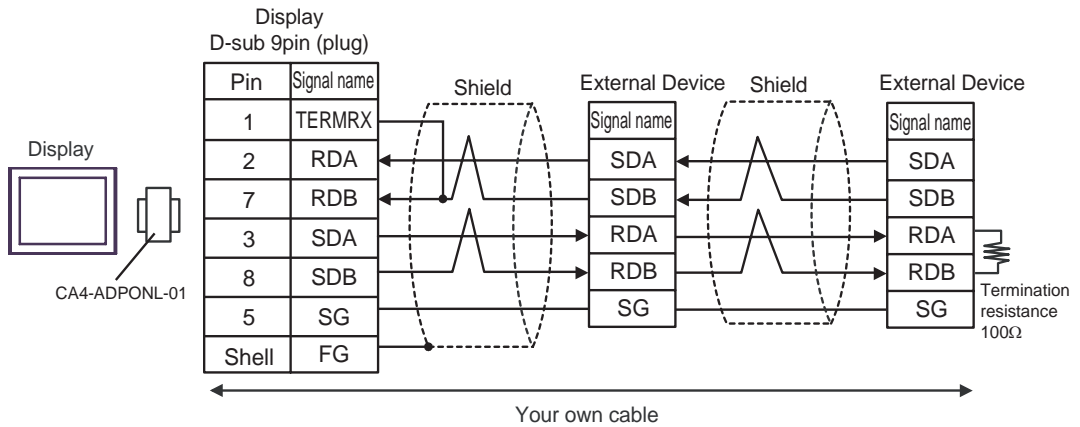
• 1:n connection

G) When using the online adapter (CA4-ADPONL-01), the RS-422 cable (CA3-CBL422-01) by Pro-face and your own cable
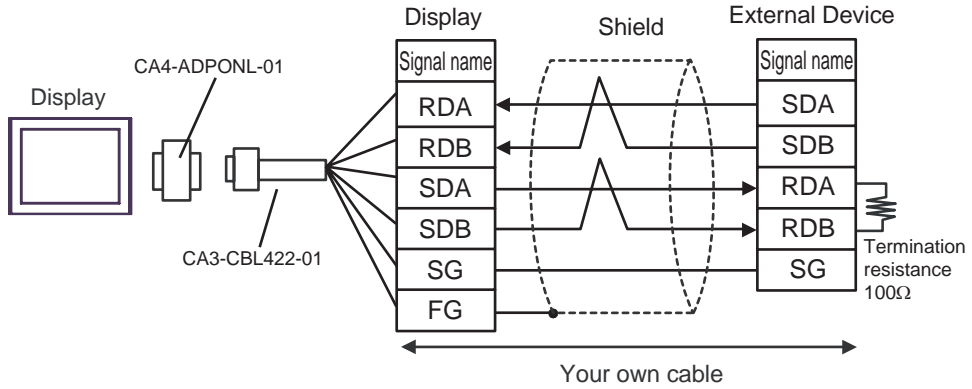
• 1:1 connection
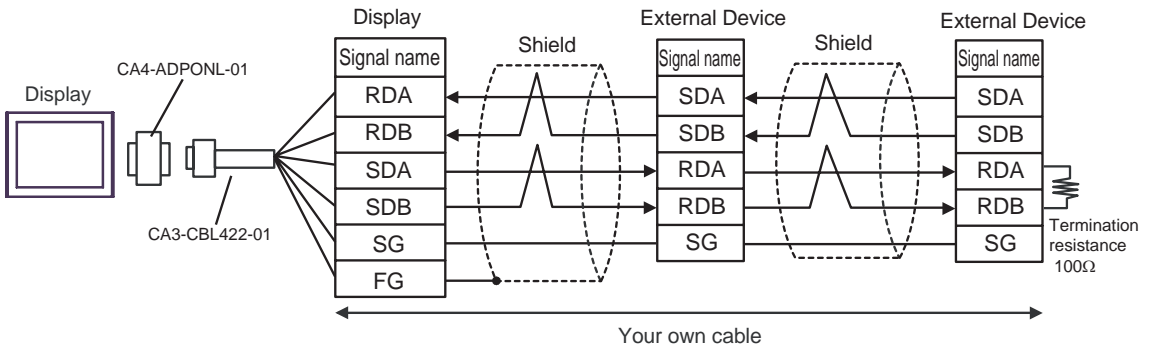
• 1:n connection

Cable Diagram 3

Display (Connection Port)		Cable	Notes
GP[*1] (COM1) AGP-3302B (COM2) ST[*2] (COM2) LT (COM1)	A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	Cable length: 600m or less
	B	Your own cable	
GP[*3] (COM2)	C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	
IPC[*4]	E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	F	Your own cable	

*1   All GP models except AGP-3302B
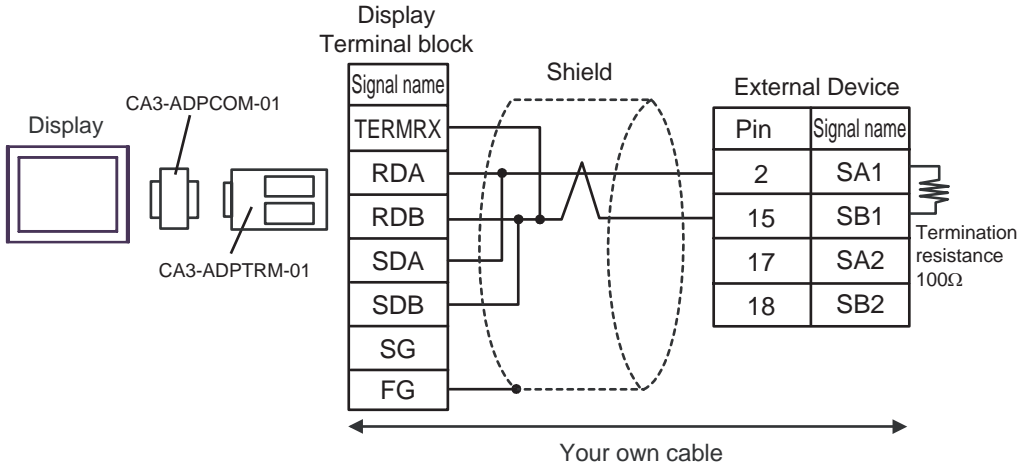
*2   All ST models except AST-3211A

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

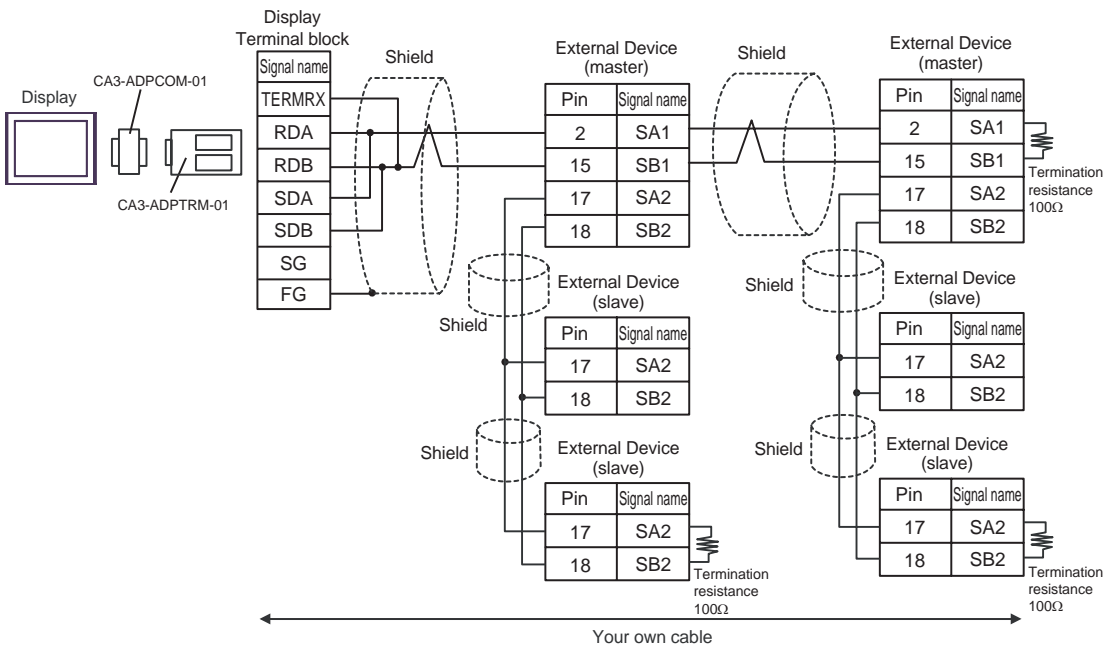*4   Only the COM port which can communicate by RS-422/485 (2 wire) can be used.
         ☞ "■ COM Port of IPC" (page 6)

IMPORTANT • Terminal number to be used for communication varies depending on the External Device. Terminal numbers corresponding to each series are shown below.

Series	SA	SB	SG
DB1000	12	13	14
DB2000 (COM1)	26	27	28
DB2000 (COM2)	29	30	31
KP1000	12	13	14
KP2000 (COM1)	26	27	28
KP2000 (COM2)	29	30	31
KP3000 (COM1)	26	27	28
KP3000 (COM2)	29	30	31
LT230	6	7	8
LT300/400	11	12	15
LT830	6	7	8

A) When using the com port conversion adapter (CA3-ADPCOM-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
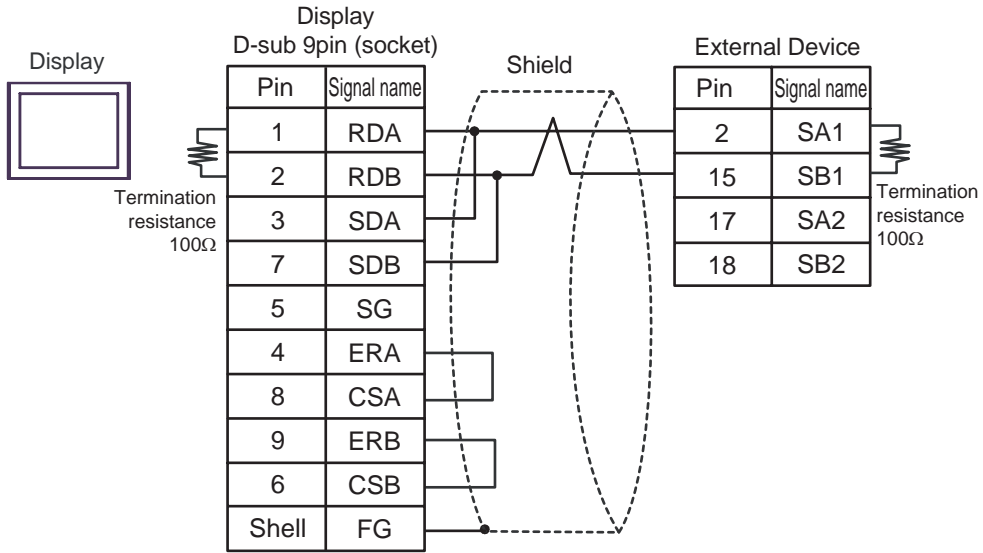
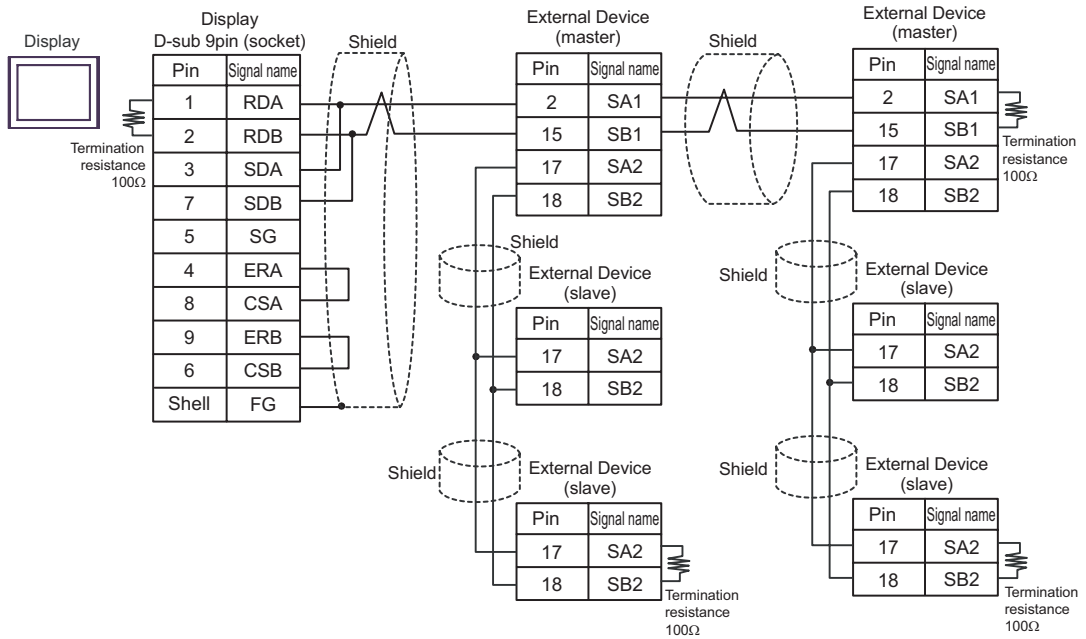• 1:1 connection

• 1:n connection

B) When using your own cable

• 1:1 connection

• 1:n connection

C) When using the online adapter (CA4-ADPONL-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
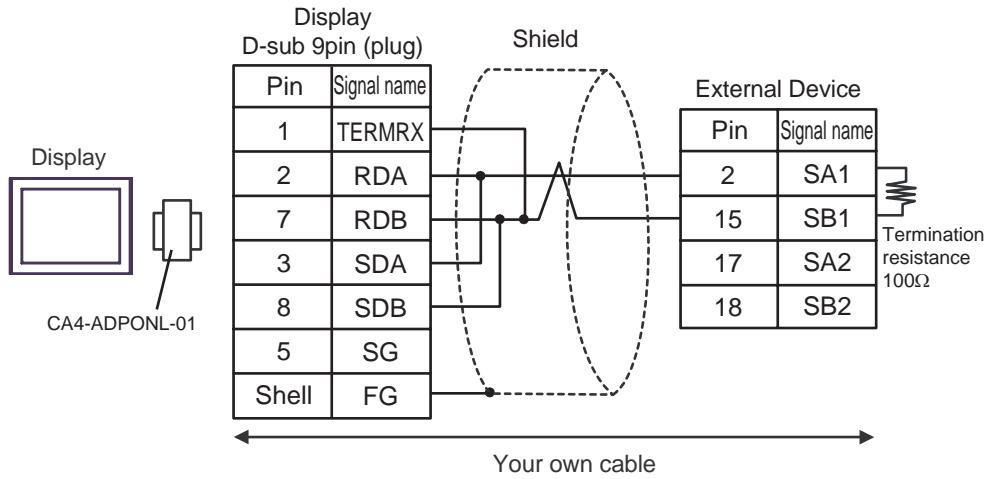
• 1:1 connection

• 1:n connection

D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

- 1:1 connection

Your own cable

- 1:n connection

Your own cable

E) When using the com port conversion adapter (CA3-ADPCOM-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
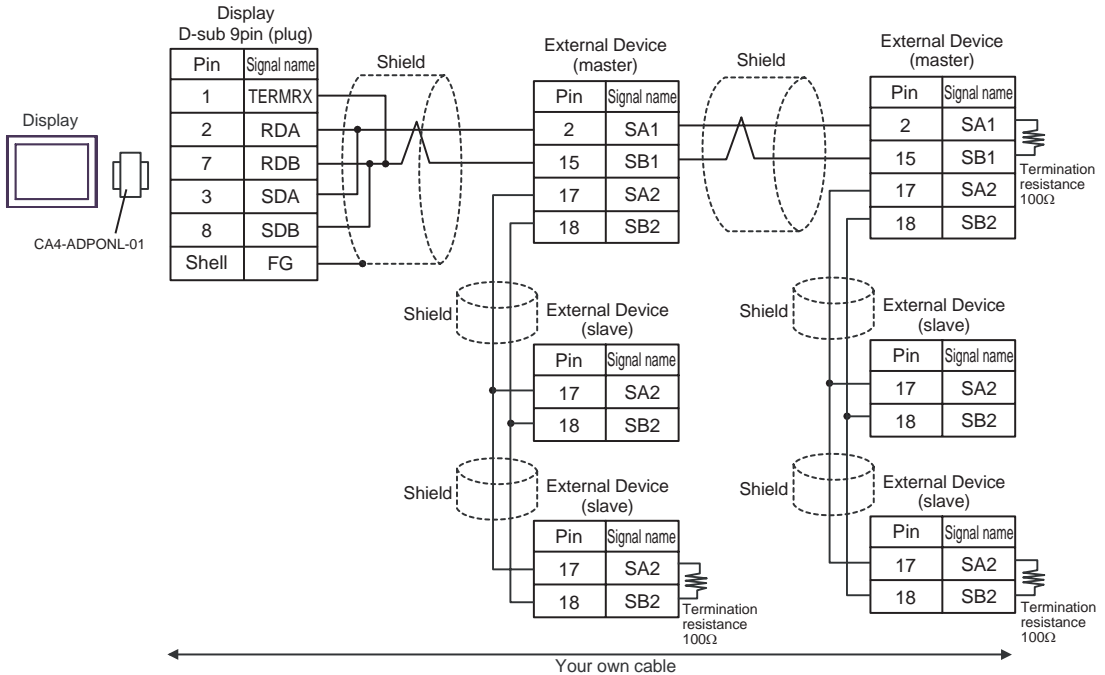
• 1:1 connection

• 1:n connection

F) When using your own cable

- 1:1 connection

Your own cable

- 1:n connection

Your own cable

Cable Diagram 4

Display (Connection Port)		Cable	Notes
GP[*1] (COM1) AGP-3302B (COM2) ST[*2] (COM2) LT (COM1)	A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	Cable length: 600m or less
	B	Your own cable	
GP[*3] (COM2)	C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	
IPC[*4]	E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	F	Your own cable	

*1   All GP models except AGP-3302B

*2   All ST models except AST-3211A

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

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

A) When using the com port conversion adapter (CA3-ADPCOM-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
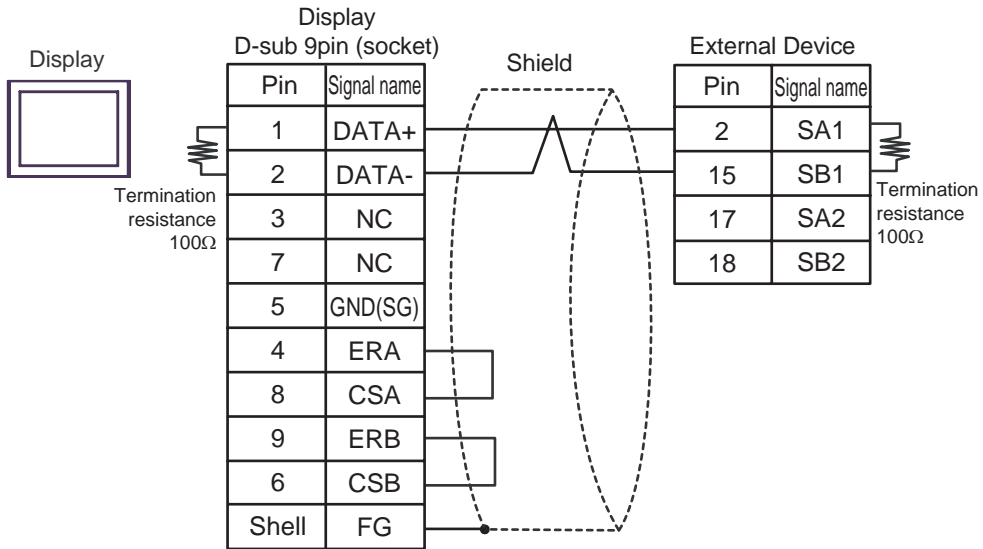
• 1:1 connection

• 1:n connection

B) When using your own cable

• 1:1 connection

• 1:n connection

C) When using the online adapter (CA4-ADPONL-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable

• 1:1 connection

• 1:n connection

D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

• 1:1 connection

• 1:n connection

E) When using the com port conversion adapter (CA3-ADPCOM-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable

• 1:1 connection

• 1:n connection

F) When using your own cable

• 1:1 connection

• 1:n connection

Cable Diagram 5

Display (Connection Port)		Cable	Notes
GP[*1] (COM1) AGP-3302B (COM2) ST[*2] (COM2) LT (COM1)	A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	Cable length: 600m or less However, between the master and the slave cable length: 10m or less
	B	Your own cable	
GP[*3] (COM2)	C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	
IPC[*4]	E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	F	Your own cable	

*1   All GP models except AGP-3302B

*2   All ST models except AST-3211A

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

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

A) When using the com port conversion adapter (CA3-ADPCOM-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable

• 1:1 connection

• 1:n connection

| IMPORTANT | • Connect No. 17 and No. 18 between slaves as shown in the figure above. |

B) When using your own cable

• 1:1 connection

• 1:n connection

| IMPORTANT | • Connect No. 17 and No. 18 between slaves as shown in the figure above. |

C) When using the online adapter (CA4-ADPONL-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
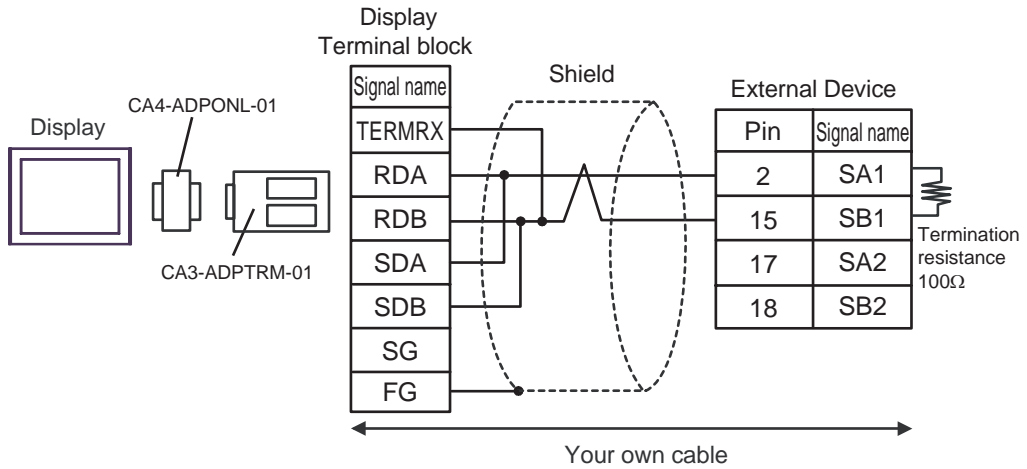
- 1:1 connection
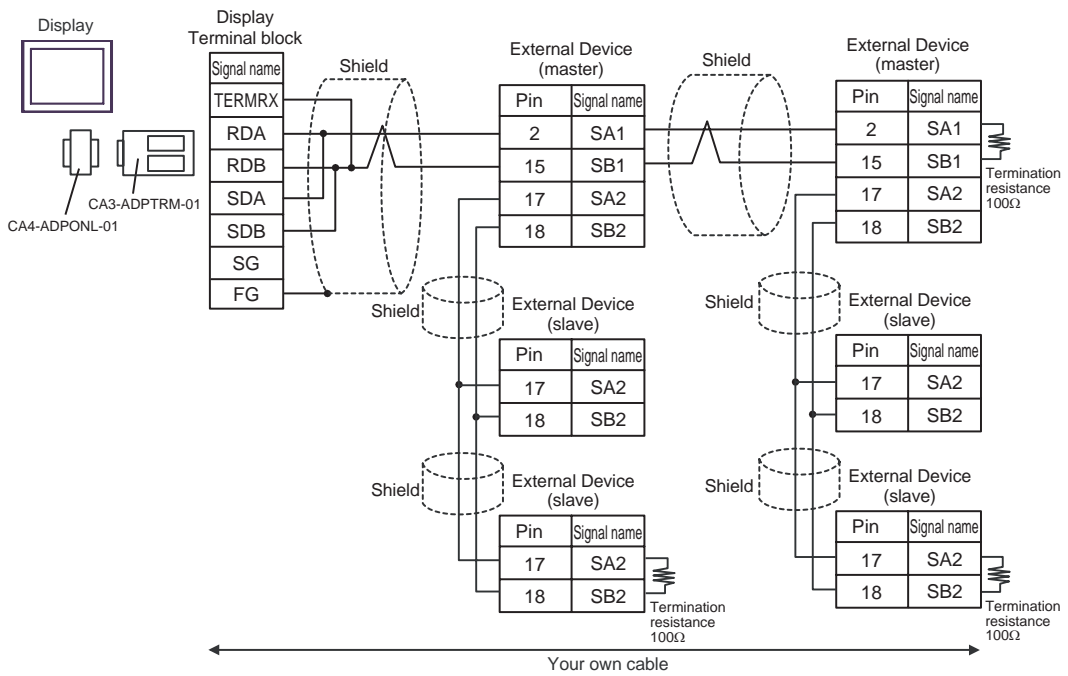
- 1:n connection

| IMPORTANT | • Connect No. 17 and No. 18 between slaves as shown in the figure above. |

D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

• 1:1 connection

Display
D-sub 9pin (plug)

Shield

Pin	Signal name
1	TERMRX
2	RDA
7	RDB
3	SDA
8	SDB
5	SG
Shell	FG

Display

CA4-ADPONL-01

External Device

Pin	Signal name
2	SA1
15	SB1
17	SA2
18	SB2

Termination resistance 100Ω

Your own cable

• 1:n connection

Display
D-sub 9pin (plug)

Pin	Signal name
1	TERMRX
2	RDA
7	RDB
3	SDA
8	SDB
Shell	FG

Display

CA4-ADPONL-01

Shield

External Device (master)

Pin	Signal name
2	SA1
15	SB1
17	SA2
18	SB2

Shield

External Device (master)

Pin	Signal name
2	SA1
15	SB1
17	SA2
18	SB2

Termination resistance 100Ω

Shield

External Device (slave)

Pin	Signal name
17	SA2
18	SB2

Shield

External Device (slave)

Pin	Signal name
17	SA2
18	SB2

Shield

External Device (slave)

Pin	Signal name
17	SA2
18	SB2

Termination resistance 100Ω

Shield

External Device (slave)

Pin	Signal name
17	SA2
18	SB2

Termination resistance 100Ω

Your own cable

IMPORTANT
• Connect No. 17 and No. 18 between slaves as shown in the figure above.

E) When using the com port conversion adapter (CA3-ADPCOM-01), the terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
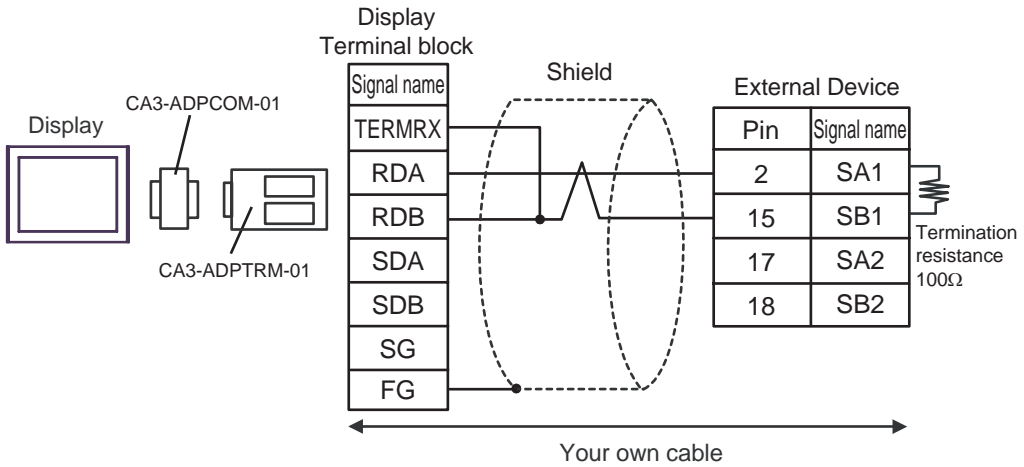
• 1:1 connection
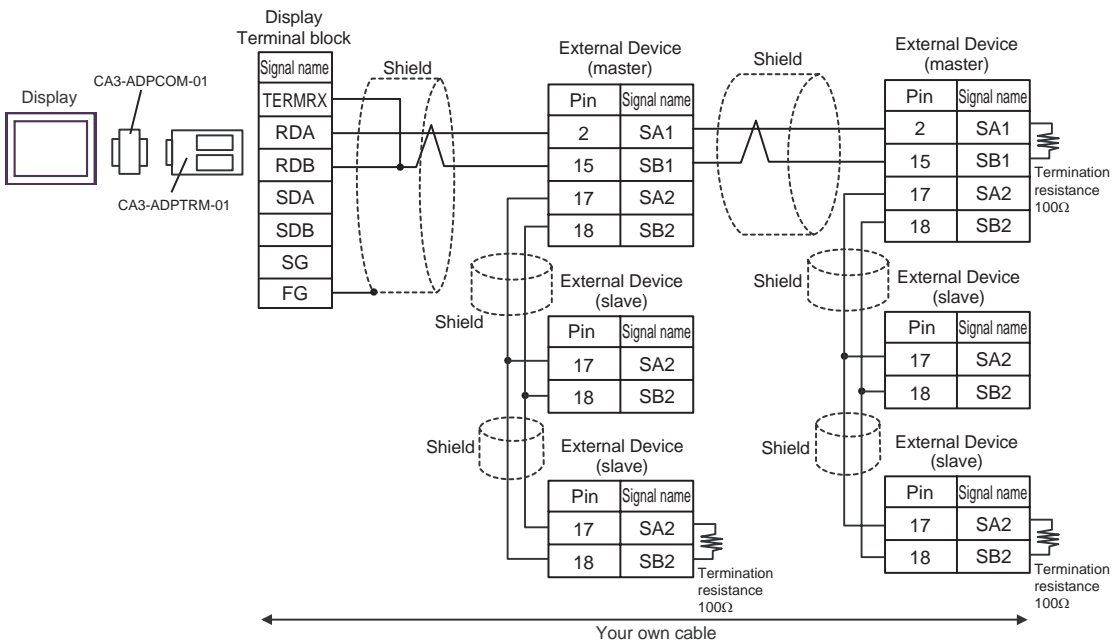
• 1:n connection

| IMPORTANT | • Connect No. 17 and No. 18 between slaves as shown in the figure above. |

F) When using your own cable

• 1:1 connection

• 1:n connection
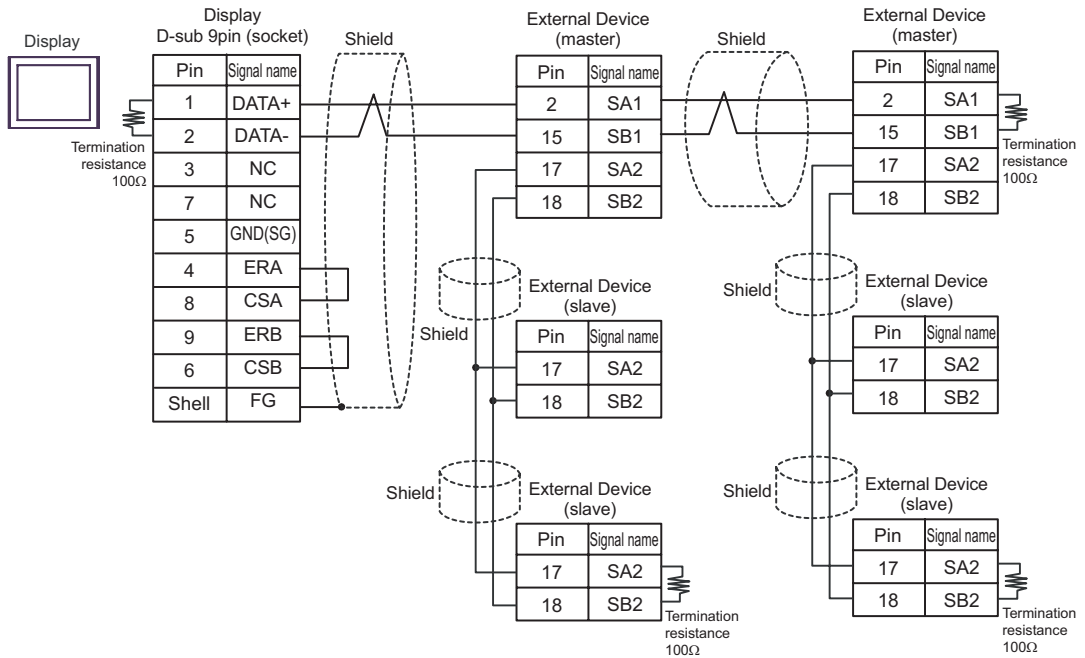
IMPORTANT • Connect No. 17 and No. 18 between slaves as shown in the figure above.

6   Supported Device

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 External Device.

Enter the External Device address in the dialog below.
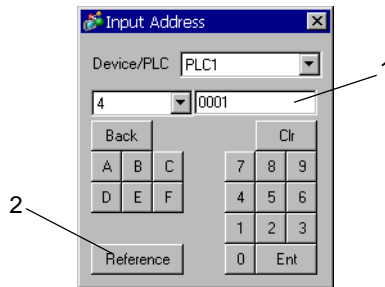
    1. Address   Enter the address.

    2. Reference   Available parameter list is displayed.
                           Click the parameter to use and press "Select", then the address is entered.

There are some temperature controller data with decimal points.

On the Display, data with decimal points are treated as follow.

<When reading>

Read data from the temperature controller is integral number without decimal points.

e.g. When a value of temperature controller is 100.0:

    Value of temperature controller: 100.0

    Displayed value on the Display (setting is without decimal points): 1000

To display decimal points on the Data Display, set "Decimal Places" of "Display" tab.

For example, if the specification of temperature controller data is in the first decimal position, set 1 to "Decimal Places."

e.g. When a value of temperature controller is 100.0:

    Value of temperature controller: 100.0

    Displayed value on the Display (setting is without decimal points): 1000

    Displayed value on the Display (setting is the first position of decimal points): 100.0

<When writing>

When writing to the temperature controller, set integral number without decimal points.

6.1 DB1000 series

This address can be specified as system data area.

| Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101	-	[H / L]	
	00111			
Digital Input Data	10002 - 10124	-		*1
Analog Input Data	-	30101 - 30143		$\boxed{\text{Bit}}$15 *1
Analog Setting Value	-	40001 - 40596*2		$\boxed{\text{Bit}}$15
Operational Status Setting		49056 - 49512		$\boxed{\text{Bit}}$15

*1   Write disable

*2   Write disable in 40151.

NOTE
• System area setting that can be used with controller is read area size for reading only.
  Please refer to the GP-Pro EX Reference Manual for read area size.
  Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
• Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

6.2 DB2000 series

This address can be specified as system data area.

| Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101	-	[H / L]	
	00111			
Digital Input Data	10002 - 10124	-		*1
Analog Input Data	-	30101 - 30143		$\boxed{\text{Bit}}$15 *1
Analog Setting Value	-	40001 - 40650*2		$\boxed{\text{Bit}}$15
Operational Status Setting		49056 - 49536		$\boxed{\text{Bit}}$15

*1   Write disable

*2   Write disable in 40151.

NOTE
• System area setting that can be used with controller is read area size for reading only.
  Please refer to the GP-Pro EX Reference Manual for read area size.
  Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
• Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

6.3 KP1000 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101	-	[H / L]	
	00111			
Digital Input Data	10002 - 10124	-		*1
Analog Input Data	-	30101 - 30144		[Bit 15] *1
Analog Setting Value	-	40001 - 40650*2		[Bit 15]
Pattern Setting		49003 - 49534*3		[Bit 15]

*1 Write disable

*2 Write disable in 40151.

*3 Write disable in 49040.

NOTE

• System area setting that can be used with controller is read area size for reading only.

Please refer to the GP-Pro EX Reference Manual for read area size.

Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"

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

☞ "Manual Symbols and Terminology"

6.4 KP2000 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101	-	[H / L]	
	00111			
Digital Input Data	10002 - 10124	-		*1
Analog Input Data	-	30101 - 30144		[Bit 15] *1
Analog Setting Value	-	40001 - 40650*2		[Bit 15]
Pattern Setting		49003 - 49536*3		[Bit 15]

*1 Write disable

*2 Write disable in 40151.

*3 Write disable in 49040.

NOTE

• System area setting that can be used with controller is read area size for reading only.

Please refer to the GP-Pro EX Reference Manual for read area size.

Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"

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

☞ "Manual Symbols and Terminology"

6.5 KP3000 series

 This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Input Data	10005	-		*1
Analog Input Data	-	30109 - 30144	$[H/L]$	Bit **15** *1
Analog Setting Value	-	40008 - 40574[*2]		Bit **15**
Pattern Setting	-	49003 - 49534[*3]		Bit **15**

*1 Write disable

*2 Write disable in 40151.

*3 Write disable in 49040.

NOTE
- System area setting that can be used with controller is read area size for reading only.
  Please refer to the GP-Pro EX Reference Manual for read area size.
  Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

6.6 LT230 series

 This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101	-		*1
Digital Input Data	10004 - 10120	-		*2
Analog Input Data	-	30101 - 30142	$[H/L]$	Bit **15** *2
Analog Setting Value	-	40008[*3]		Bit **15** *1
		40114 - 40119		
		40201 - 40251		
		49501 - 49512		

*1 When writing, key lock of External Device needs to be set to lock 4. When writing to other than lock 4, a communication error will be displayed.

*2 Write disable

*3 Write disable in 40008.

NOTE
- System area setting that can be used with controller is read area size for reading only.
  Please refer to the GP-Pro EX Reference Manual for read area size.
  Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

6.7 LT300 series

▭▭ This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101	-		*1
Digital Input Data	10004 - 10122	-		*2
Analog Input Data	-	30101 - 30142	[H / L]	[Bit **15**] *2
Analog Setting Value	-	40008 *3 40114 - 40119 40201 - 40251 49501 - 49512		[Bit **15**] *1

*1 When writing, key lock of External Device needs to be set to lock 4. When writing to other than lock 4, a communication error will be displayed.

*2 Write disable

*3 Write disable in 40008.

NOTE
- System area setting that can be used with controller is read area size for reading only.
  Please refer to the GP-Pro EX Reference Manual for read area size.
  Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.8 LT400 series

▭▭ This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101 - 00109	-		*1
Digital Input Data	10002 - 10124	-		*2
Analog Input Data	-	30101 - 30142	[H / L]	[Bit **15**] *2
Analog Setting Value	-	40001 - 40093 40112 - 40166 40201 - 40388 49501 - 49512		[Bit **15**] *1

*1 When writing, key lock of External Device needs to be set to lock 4. When writing to other than lock 4, a communication error will be displayed.

*2 Write disable

NOTE
- System area setting that can be used with controller is read area size for reading only.
  Please refer to the GP-Pro EX Reference Manual for read area size.
  Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
- Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.9 LT830 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101	-		*1
Digital Input Data	10004 - 10120	-		*2
Analog Input Data	-	30101 - 30142	$\lceil H / L \rfloor$	$\boxed{Bit15}$ *2
Analog Setting Value	-	40008*3		$\boxed{Bit15}$ *1
		40114 - 40119		
		40201 - 40211		
		49501 - 49512		

*1 When writing, key lock of External Device needs to be set to lock 3. When writing to other than lock 3, a communication error will be displayed.

*2 Write disable

*3 Write disable in 40008.

NOTE
- System area setting that can be used with controller is read area size for reading only.
  Please refer to the GP-Pro EX Reference Manual for read area size.
  Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
- Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

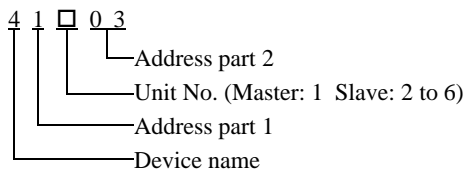## 6.10   JU series with temperature controller feature

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	00101 - 00106	-		*1
	01102 - 01612[*2]			
Digital Input Data	10002 - 10122	-		*3
	11109 - 11614[*2]			
Analog Input Data	-	30101 - 30142	[H / L]	Bit 15 *3
		31101 - 31612[*2]		
		39001 - 39080		
Analog Setting Value	-	40001 - 40384		Bit 15 *1
		41102 - 41672[*2]		
		48111 - 48618[*2]		
		49501 - 49525		

*1   When writing, key lock of External Device needs to be set to lock 4. When writing to other than lock 4, a communication error will be displayed.

*2   Specify the address in the style below for Operation terminal function (01102 - 01612), Operation terminal operation part (11109 - 11614), Operation terminal measurement data (31101 - 31612), and Operation terminal parameter (41102 - 41672/48111 - 48618).

　　EX. Elevation (41□03)

4 1 □ 0 3
　　　└Address part 2
　　└Unit No. (Master: 1 Slave: 2 to 6)
　└Address part 1
└Device name

*3   Write disable

NOTE

• System area setting that can be used with controller is read area size for reading only.
  Please refer to the GP-Pro EX Reference Manual for read area size.
  Cf.   GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
• Please refer to the precautions on manual notation for icons in the table.

　☞ "Manual Symbols and Terminology"

6.11 JU series Single-phase

This address can be specified as system data area.

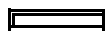| Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	01001 - 01013	-	[H / L]	*1
Digital Input Data	11001 - 11015	-		*2
Analog Input Data	-	31101 - 31112		[Bit 15] *2
Analog Setting Value	-	41001 - 41013		[Bit 15] *1
		49501		

*1   When writing, key lock of External Device needs to be set to locked. When writing in unlocked status, a communication error will be displayed.

*2   Write disable

NOTE
• System area setting that can be used with controller is read area size for reading only.
    Please refer to the GP-Pro EX Reference Manual for read area size.
    Cf.   GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
• Please refer to the precautions on manual notation for icons in the table.

☞ "Manual Symbols and Terminology"

6.12 JW series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Digital Setting Value	01001 - 01014	-	[H / L]	*1
Digital Input Data	11001 - 11019	-		*2
Analog Input Data	-	31101 - 31182		[Bit 15] *2
Analog Setting Value	-	41001 - 41018		[Bit 15] *1
		49501		

*1   When writing, key lock of External Device needs to be set to locked. When writing in unlocked status, a communication error will be displayed.

*2   Write disable

NOTE
• System area setting that can be used with controller is read area size for reading only.
    Please refer to the GP-Pro EX Reference Manual for read area size.
    Cf.   GP-Pro EX Reference Manual "Appendix 1.4 LS Area (Direct Access Method)"
• 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.

Device	Device Name	Device Code (HEX)	Address Code
Analog Input Data	3	0001	Word Address
Analog Setting Value	4	0000	Word Address

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.
- Refer to "When an error is displayed (Error Code List)" in "Maintenance/Troubleshooting Manual" for details on the error messages common to the driver.

■ Error Codes Unique to External Device

Error codes unique to External Device are shown below.

Error Code	Description
18 (12H)	Cannot be set[*1] • When key setting is not locked. • When trying to set an item that cannot be selected in the type.

*1   Causes for setting error depend on the External Device.
      Please refer to the manual of the External Device for more details.