Siemens AG

SIMATIC S7 MPI Direct Driver

Introduction

This manual describes how to connect the Display (GP3000 series) 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 External Device to be connected and connection method. | ☞ "2 Selection of External Device" (page 5) |

| 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 6) |

| 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 12) |

| 5 | Cable Diagram
This section shows cables and adapters for connecting the Display and the External Device. | ☞ "5 Cable Diagram" (page 17) |

Operation

1 System Configuration

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

Series	CPU Module	Connection Port	SIO Type	Setting Example	Cable Diagram
SIMATIC S7-200 Series	CPU214 CPU215 CPU216 CPU221 CPU222 CPU224 CPU226	Port 0/1 on the CPU unit	RS422/485 (2wire)	Setting Example 1 (page 6)	Cable Diagram 1 (page 17)
SIMATIC S7-300 Series	CPU312IFM CPU313 CPU314 CPU314IFM CPU315 CPU315-2 DP CPU316 CPU316-2 DP CPU318-2	MPI port on the CPU unit	RS422/485 (2wire)	Setting Example 2 (page 9)	Cable Diagram 1 (page 17)
					Cable Diagram 2 (page 23) *1
SIMATIC S7-400 Series	CPU412-1 CPU412-2 DP CPU413-1 CPU413-2 DP CPU414-1 CPU414-2 DP CPU414-3 DP CPU416-1 CPU416-2 DP CPU416-3 DP CPU417-4	MPI port on the CPU unit	RS422/485 (2wire)	Setting Example 2 (page 9)	Cable Diagram 1 (page 17)
					Cable Diagram 2 (page 23) *1

*1 This cable diagram is only for the model which has the same port of PROFIBUS as MPI shown below.

| S7-300 Series	318-2 (6ES7 318 2AJ00)
S7-400 Series	412-1 (6ES7 412 1XF03), 412-2DP (6ES7 412 2XG00), 414-2DP (6ES7 414 2XG03), 414-3DP (6ES7 414-3XJ00), 416-2DP (6ES7 416 2XK02), 416-3DP (6ES7 416-3XL00), 417-4 (6ES7 417-4XL00)

■ Connection Configuration

• 1:1 Connection

• 1:n Connection

NOTE • You cannot mix the S7-300/400 Series and the S7-200 Series to use in one connection configuration.

Max 16 units

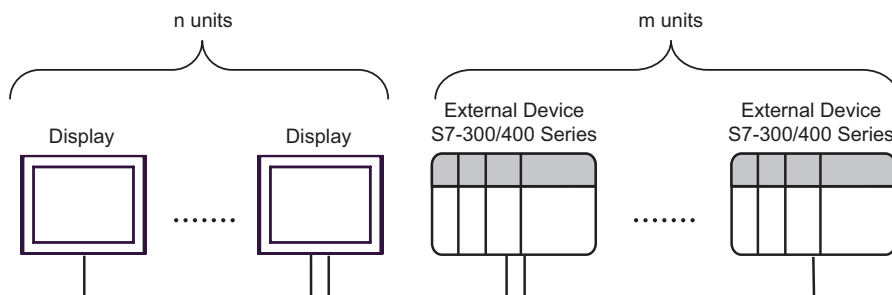Display   External Device   External Device

....
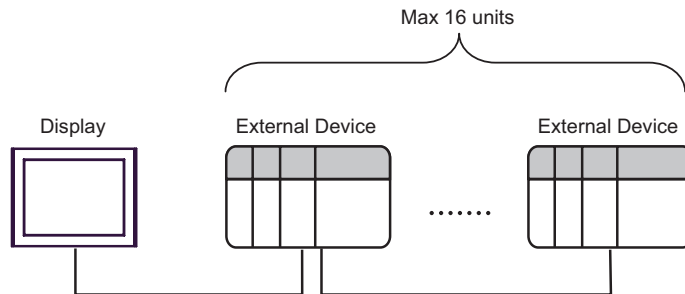
• n:1 Connection

NOTE • Only the S7-300/400 Series supports the n:1 connection.
• Maximum unit number of the Display that can be connected to 1 unit of the External Device varies depending on the type of the External Device. Please refer to the manual of each External Device for checking.
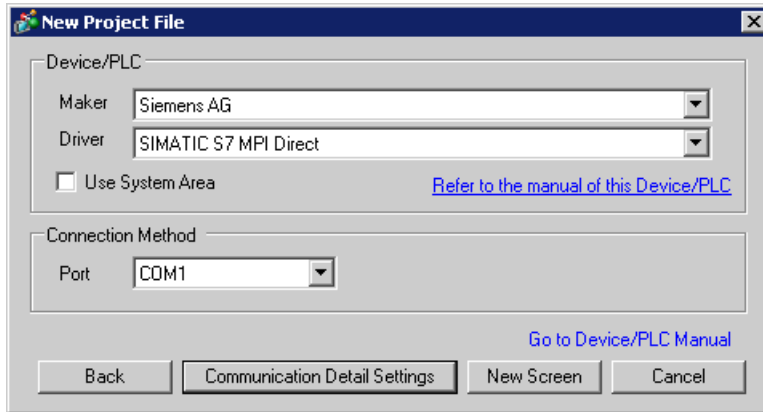
n units

Display   Display   External Device
                                      S7-300/400 Series

....
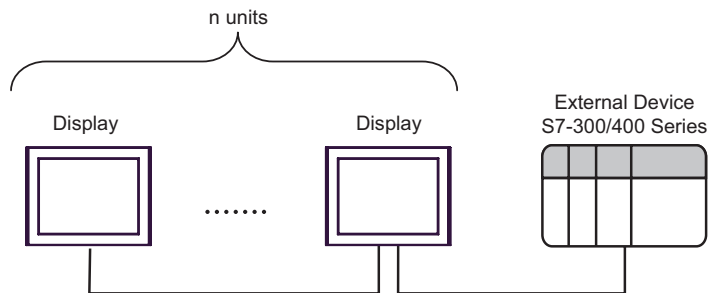
• n:m Connection

NOTE • Only the S7-300/400 Series supports the n:m connection.
• For n:m connection, the unit number of Display and External Device is within the range which satisfies the conditions below.
    •You can connect max 16 units of the External Device to 1 unit of the Display.
    •Maximum unit number of the Display that can be connected to 1 unit of the External Device varies depending on the type of the External Device. Please refer to the manual of each External Device for checking.

n units   m units

Display   Display   External Device   External Device
                             S7-300/400 Series   S7-300/400 Series

....

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 "Siemens AG".
Driver	Select a model (series) of the External Device to be connected and connection method. Select "SIMATIC S7 MPI Direct". Check the External Device which can be connected in "SIMATIC S7 MPI Direct" in system configuration. ☞ "1 System Configuration" (page 3)
Use System Area	Check this option when you synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the ladder program of the External Device to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for direct access method)" This can be also set with GP-Pro EX or in off-line mode of the Display. Cf. GP-Pro EX Reference Manual "System Area Setting, 6.13.6 Setting Guide of [System Setting Window]" Cf. GP3000 Series User Manual "4.3.6 System Area Setting"
Port	Select the Display port to be connected to the External Device. **NOTE** • When connect to S7-300/400 series, please use COM2.

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

■ Setting of GP-Pro EX

◆ Communication Settings

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

◆ 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 [Allowable No. of Device/PLCs] is multiple, you can click from [Device-Specific Settings] of [Device/PLC Settings] to add External Device which is available to set.

■ Settings of External Device

Use the ladder software "STEP 7 Micro/WIN 32" to perform the communication settings for the S7-200 Series.

(1) Click [Communication] in the menu list. Check the connection among PLC (PORT0), the ladder cable (PC/PPI Cable) and the PC, and double-click [Double-Click to Refresh].

(2) The [Search for Addresses] dialog box is displayed, and the software automatically scans the PLC. The dialog box is closed when the connection is checked.

(3) Select [Type] from [PLC] on the menu bar.

(4) The [PLC Type] dialog box is displayed. Select according to the connected PLC type, and click [OK].

(5) Click [System Block] in the menu list, and set according to the port (Port0/Port1) to be actually connected to the Display as below.

Item	Setup Description
PLC Address	2
Highest Address	31
Baud Rate	19.2k
Retry Count	2
Gap Update Factor	10

(6) When you finish setting, click [OK] and close the dialog box.

(7) Click the [Down load] button in the command menu.

(8) The [Download] dialog box is displayed. Check all items for [Program Block], [Data Block] and [System Block], and click [OK].

◆ Notes

- Since this protocol does not support the TimeMaster feature of S7-300/400 Series, time adjustment using this feature is unavailable. If you use it, the communication of the main unit may break for a few seconds, or a communication error may be displayed. Not using the Time Master feature is recommended.

3.2 Setting Example 2

■ Setting 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  Siemens AG          Series  SIMATIC S7 MPI Direct    Port  COM2
  Text Data Mode   1   Change

Communication Settings
  SIO Type        ○ RS232C      ● RS422/485(2wire)    ○ RS422/485(4wire)
  Speed           187500
  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    0      (ms)

  ┌ MPI Network ────────────────────────────────────────────┐
  │ Local Node            1      □ This station is the only master │
  │ Highest Node Number   31                                  │
  └──────────────────────────────────────────────────────────┘
                                                    Default

Device-Specific Settings
  Allowable No. of Device/PLCs  16 Unit(s)
     No.  Device Name          Settings
      1   PLC1                      PLC Type=S7-300/400 Series (English Device Names),Target Node=2
```

◆ 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 [Allowable No. of Device/PLCs] is multiple, you can click from [Device-Specific Settings] of [Device/PLC Settings] to add External Device which is available to set.

```
Individual Device Settings                           ×
PLC1

PLC Type    ● S7-300/400 Series (English Device Names)
            ○ S7-300/400 Series (German Device Names)
            ○ S7-200 Series (English Device Names)
            ○ S7-200 Series (German Device Names)
            (Please reconfirm all address settings that you are using if you
            have changed the "PLC Type".)

Target Node    2

            (Please confirm that the Target Node is not greater than the
            Highest Node.)
                                                    Default

                   OK (O)              Cancel
```

■ Settings of External Device

Use the ladder software "SIMATIC Manager" to perform the communication settings for the S7-300/400 Series.
Set as below, following the steps.

Setup Items	Setup Description
Speed	187500 bps
Destination Node No.	2
Source Node No.	1 (Option: Set the smaller value than Max Value of Node No.)
Max Value of Node No.	31
Supported DB Device	DB1

(1) Click the icon of [New Project].

(2) Put the optional name and click [OK].

(3) From the menu bar, select [Insert], [Station], [1 SIMATIC 400 Station] in this order.

NOTE • When using the S7-300 Series, select [2 SIMATIC 300 Station].

(4) "SIMATIC 400(1)" is created in the project. Double-click [Hardware] in the CPU.

(5) The "HW Config" screen is displayed. From the left tree, open [RACK- 400] from [SIMATIC 400], and select the base unit of the using model, then drag & drop to the upper right window.

(6) Drag & drop the using power unit in the preset rack.

(7) Similarly, drag & drop the using CPU unit.

(8) Double-click the preset CPU unit "CPU xxx-xxx".

(9) The dialog box for the MPI port setting is displayed. Open [Properties].

(10) Check that "MPI(1)...187.5Kbps" is set as default. In addition, set [Address] which will be the destination node number (PLC Address) you set in GP-Pro EX (the default value "2" is used this time). Select "MPI(1)...187.5Kbps" and open [Properties].

(11) Click the [Network Settings] tab.

(12) You can change the transmission rate and the highest MPI address of the node No. in the dialog displayed (select [187.5Kbps] for the transmission rate). When you change the highest MPI address of the node No. (set to [31] this time), check the [Change] box to allow you to select the item. When you finish setting, click [OK].

(13) Click [OK] in the dialog box displayed in step 12.

(14) Click [OK] in the MPI port setting dialog box displayed in step 19.

(15) Check the connection between the PLC and the ladder software. Open [Set PG/PC Interface] from [Options] in the menu bar.

(16) The [Set PG/PC Interface] dialog box is displayed. Click [Properites].

(17) Set [Transmission] to [187.5Kbps], and [Highest Node Address] to [31]. Click [OK].

(18)Next click [Diagnostics].

(19)Click [Test] and [Read].

(20)If "OK" is displayed and other items than [0-0] of [Bus Nodes] are checked, the connection with the PLC is established. Click [OK] and close the dialog box.

(21)Open [Blocks] in [S7 Program(2)] from [CPU xxx-xxx] of the project. Then, from the menu bar, click [Insert], [S7 Block] and [4 Data Block] in this order.

(22)The [Properties - Data Black] dialog box is displayed. Click [OK].

(23)Open [DB1] created in [Block]. Right-click "INT" area of [Type], and select [ARRAY] from [Complex Types].
Set the ARRAY range optionally. Here, enter "0.3000".

(24)When [Type] is changed to [ARRAY], one line will be added under it. Right-click the area, and select [WORD] from [Elementary].

(25)Put [Name] optionally. You can use the displayed option as it is. In addition, there is no problem if you leave [Initial value], [Comment] blank. Save and close the window.

(26)Open "Configure Network". Select "CPU 413-2 DP" and click the [Download] button.

(27)When the "PLC Download Selected Stations" is displayed, click "Yes" and continue to download.

(28)When you finish downloading, the dialog box is closed.

(29)Close the [Configure Network] window. When the [Network Save and Compile] dialog box is displayed, click [Yes].

(30)When the [Save and Compile] dialog box is displayed, click [OK].

(31)Download [DB1] to the PLC. Select [DB1] and click the [Download] button.

(32)When the [Download] dialog box is displayed, click [Yes] and continue to download.

(33)When the download is completed, no message such as error is displayed. If nothing is displayed, the PLC setting is completed.

◆ Notes

• Since this protocol does not support the TimeMaster feature of S7-300/400 Series, time adjustment using this feature is unavailable. If you use it, the communication of the main unit may break for a few seconds, or a communication error may be displayed. Not using the Time Master feature is recommended.

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 6)

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. **IMPORTANT** • When connecting to the COM1 port of the Display, up to 19200bps is supported. When connecting to the COM2 port of the Display, 12Mbps is supported. Note that up to 187500bps is supported for AGP-3302.
Data Length	Select data length.
Parity	Select how to check parity.
Stop Bit	Select stop bit length.

Setup Items	Setup Description
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.
Local Node	Use an integer from 0 to 126 to enter the local node No. of the Display.
Highest Node Number	Select any of [15], [31], [63] and [126] for the highest value of the node No.
This station is the only master	Check this option when connecting to the S7-200 Series. Not check it when connecting to the S7-300/400 Series.

■ Device Setting

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

When [Allowable No. of Device/PLCs] is multiple, you can click 🔧 from [Device-Specific Settings] of [Device/PLC Settings] to add the External Device which is available to set.

Setup Items	Setup Description
PLC Type	For the type of External Device to communicate, select any of [S-7-300/400 Series [English Device Names]], [S-7-300/400 Series [German Device Names]], [S-7-200 Series [English Device Names]] and [S-7-200 Series [German Device Names]]. Select [English Device Name] or [German Device Name] depending on whether the device name is described in English or German.
Target Node	Use an integer from 0 to 126 to enter the node No. of the External Device. Be sure to set the node No. within the range which does not exceed the value set in [Highest Node Number] of [Communication Settings].

4.2　　　Setup Items in Off-Line Mode

NOTE　• Please refer to GP3000 Series User Manual for more information on how to enter off-line mode or about operation.

　　Cf.　GP3000 Series User Manual "Chapter 4 Setting"

■ 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, and touch [Communication Settings].

(Page 1/2)

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.

(Page 2/2)

Comm.	Device			

SIMATIC S7 MPI Direct　　　　　　　　　　　　　[COM1]　　　　　Page 2/2

Local Node　　　　　　　1 ▼ ▲
Highest Node　　　　　31　　▼
Only Master　　　　　OFF　　▼

(Please confirm that the Local Node
is not greater than the Highest Node.)

←

	Exit		Back	2005/09/02 13:05:12

Setup Items	Setup Description
Local Node	Use an integer from 0 to 126 to enter the local node No. of the Display.
Highest Node	Select any of [15], [31], [63] and [126] for the highest value of the node No.
Only Master	Select [ON] when connecting to the S7-200 Series. Select [OFF] when connecting to the S7-300/400 Series.

■ 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].

Comm.	Device			

SIMATIC S7 MPI Direct   [COM1]   Page 1/1

Device/PLC Name   [PLC1]   ▼

Series   S7-300/400 English Device Names
Target Node   2 ▼ ▲

(Please confirm that the Target Node
is not greater than the Highest Node.)

| | Exit | | Back | 2005/09/02 13:05:14 |

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	Displays the PLC type selected in [Device Setting] of GP-Pro EX. You cannot change the PLC type in [Device Setting] in off-line mode. ☞ "4.1 Setup Items in GP-Pro EX ■Device Setting" (page 13)
Target Node	Use an integer from 0 to 126 to enter the node No. of the External Device. Be sure to set the node No. within the range which does not exceed the value set in [Highest Node] of [Communication Settings].

5 Cable Diagram

The cable diagram shown below may be different from the cable diagram recommended by Siemens AG. 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.

Cable Diagram 1

Display (Connection Port)		Cable	Remarks
GP[*1] (COM1)[*2] AGP-3302 (COM2)	A	Your own cable	The cable length must be 50m or less in one segment.
	B	COM port conversion adapter (for COM1) by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
GP[*1] (COM2)	C	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	
	D	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	

*1   All GP models except AGP-3302

*2   You can use the COM1 port only when connecting the S7-200 Series.

A) When using your own cable
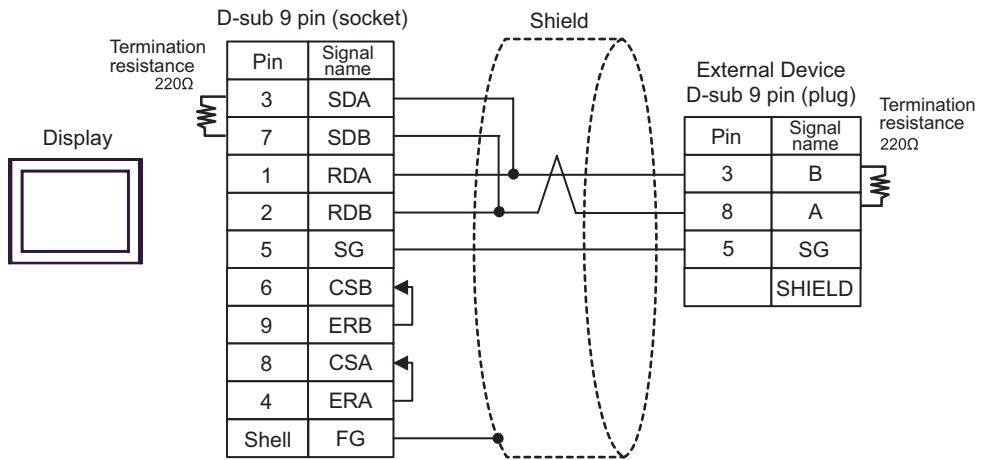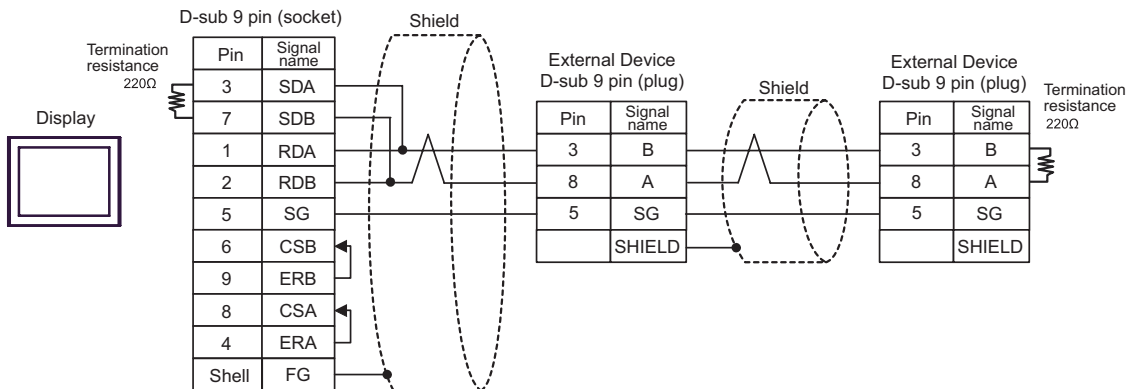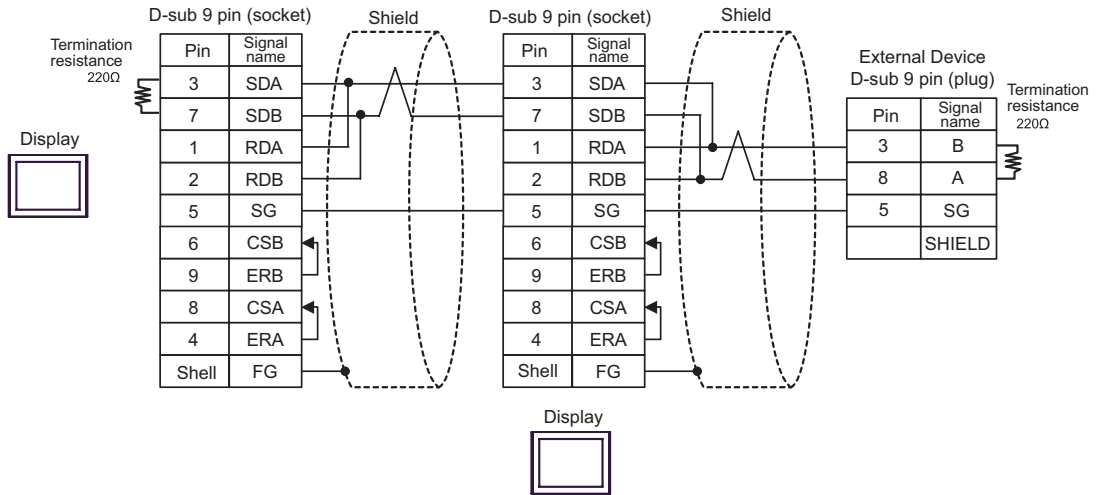
• 1:1 Connection

• 1:n Connection

- n:1 Connection

B) When using the COM port conversion adapter (for COM1) (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
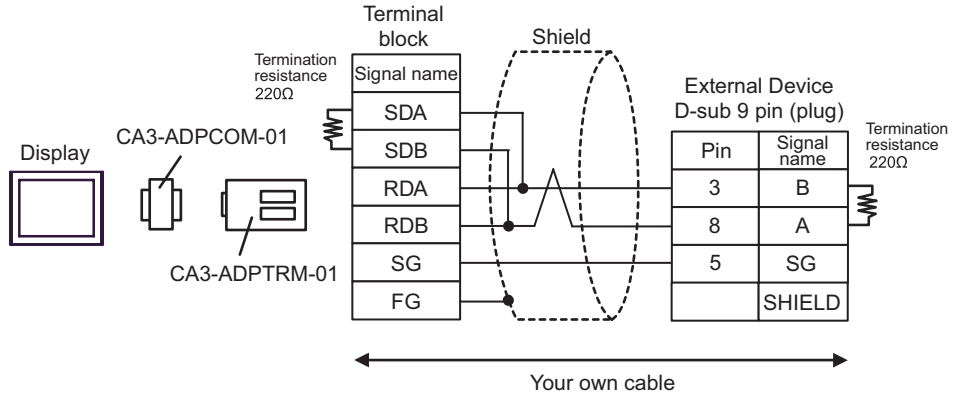
- 1:1 Connection
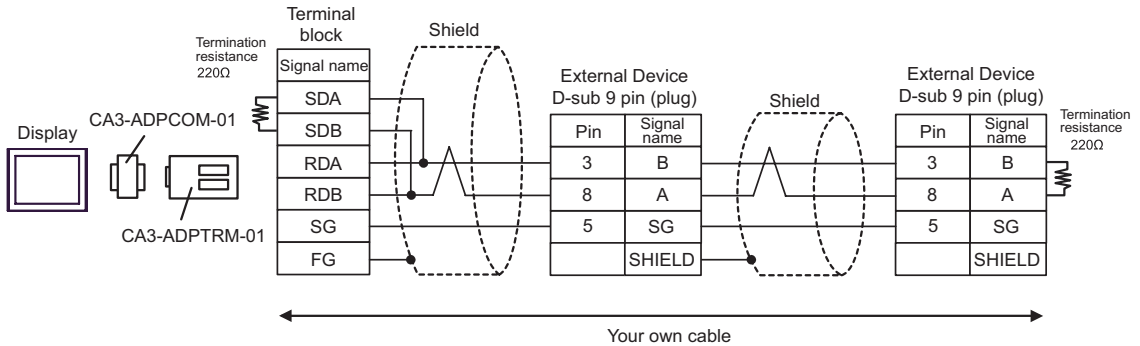
- 1:n Connection
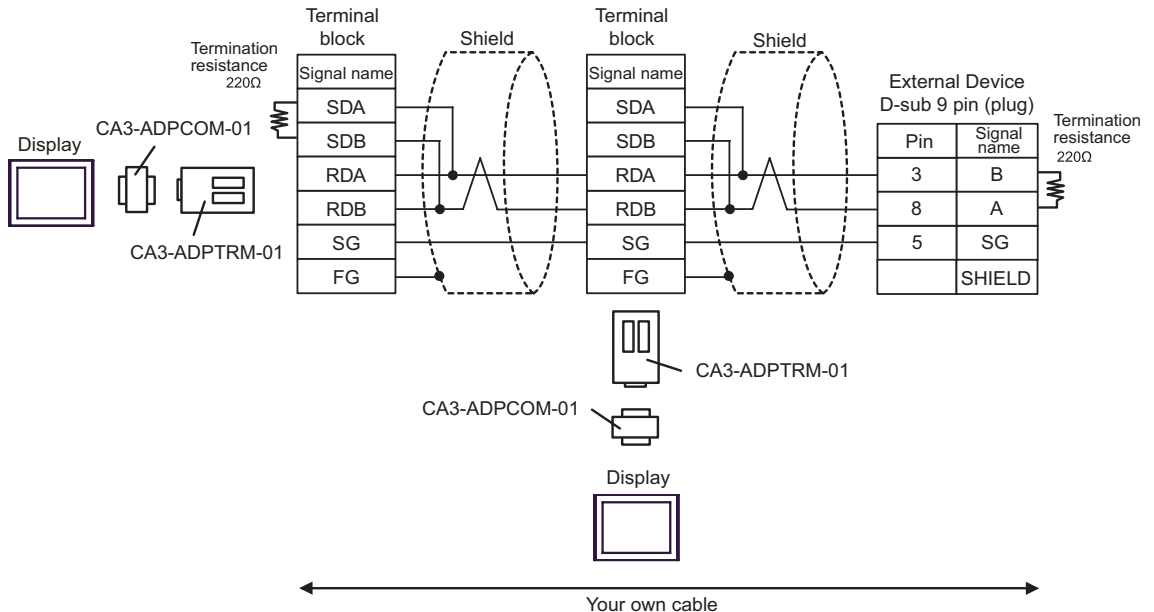
- n:1 Connection

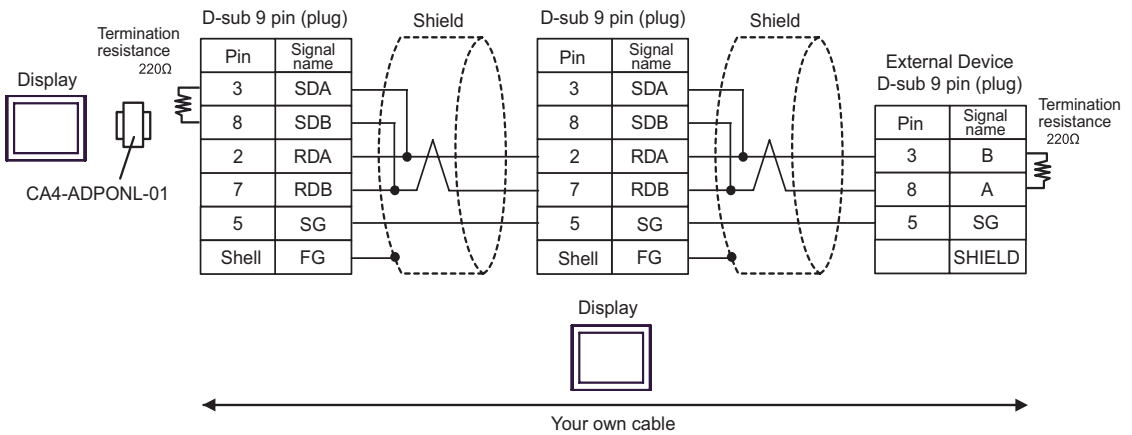C) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable
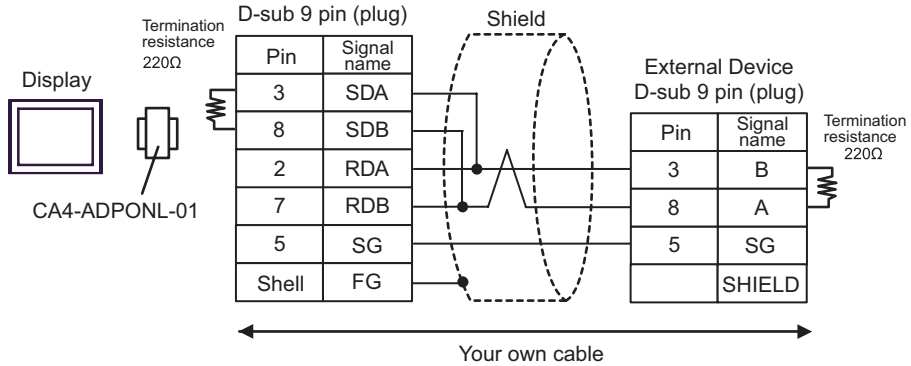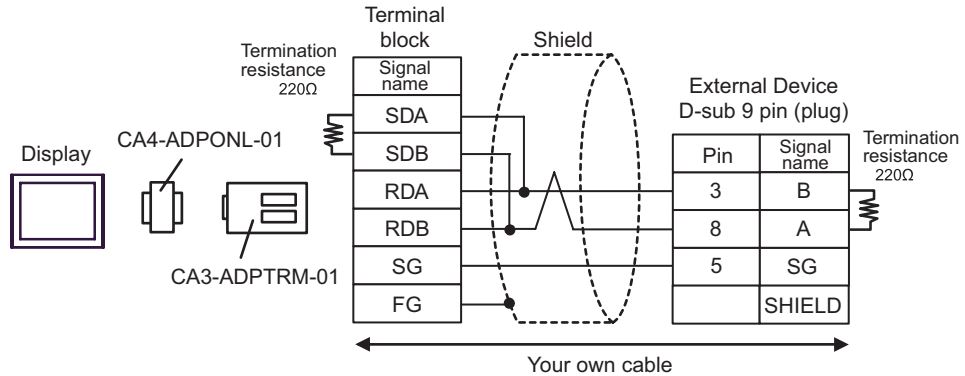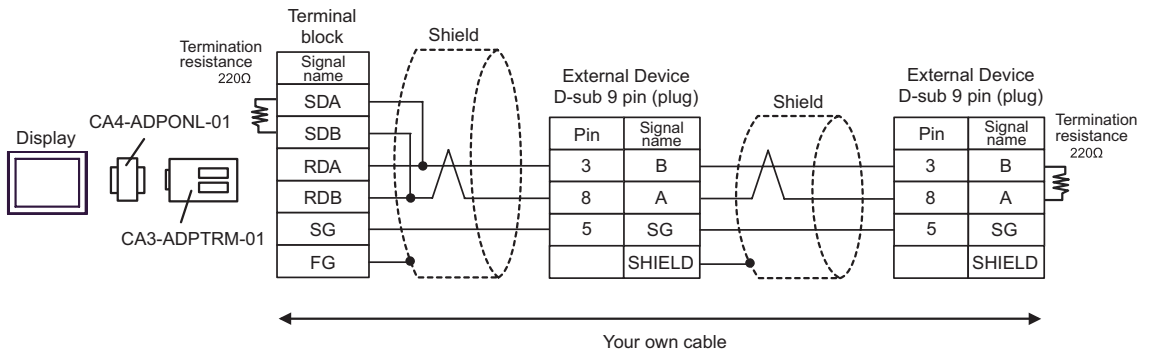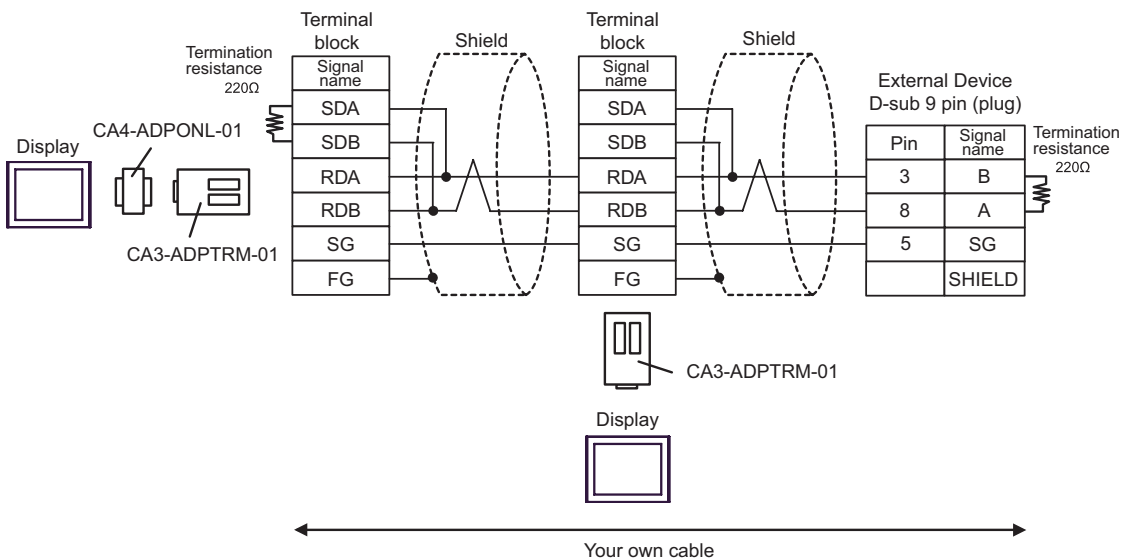
• 1:1 Connection
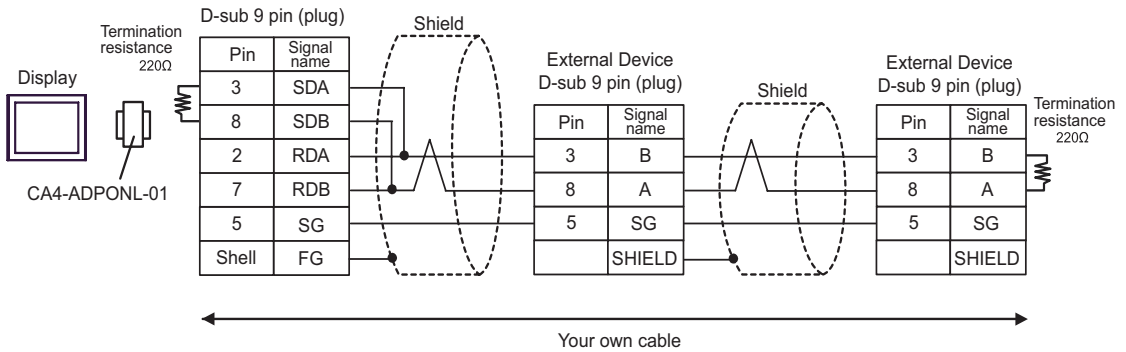
• 1:n Connection

• n:1 Connection

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

• 1:1 Connection

• 1:n Connection

• n:1 Connection

Cable Diagram 2

This cable diagram is only for the model which has the same port of PROFIBUS as MPI shown below.

SIMATIC S7-300 Series	318-2 (6ES7 318 2AJ00)
SIMATIC S7-400 Series	412-1 (6ES7 412 1XF03), 412-2DP (6ES7 412 2XG00), 414-2DP (6ES7 414 2XG03), 414-3DP (6ES7 414-3XJ00), 416-2DP (6ES7 416 2XK02), 416-3DP (6ES7 416-3XL00), 417-4 (6ES7 417-4XL00)

Display (Connection Port)		Cable	Remarks
AGP-3302 (COM2)	A	Your own cable	The cable length must be 50m or less in one segment.
	B	COM port conversion adapter (for COM1) by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	C	COM port conversion adapter (for COM1) by Pro-face CA3-ADPCOM-01 + Siemens COM port conversion adapter by Pro-face CA3-ADPSEI-01 + Your own cable (PROFIBUS connector[1][2] by Siemens AG used)	
GP[3] (COM2)	D	Online adapter by Pro-face CA4-ADPONL-01 + Your own cable	
	E	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + Your own cable	
	F	Siemens COM port conversion adapter by Pro-face CA3-ADPSEI-01 + Your own cable (PROFIBUS connector[1][2] by Siemens AG used)	

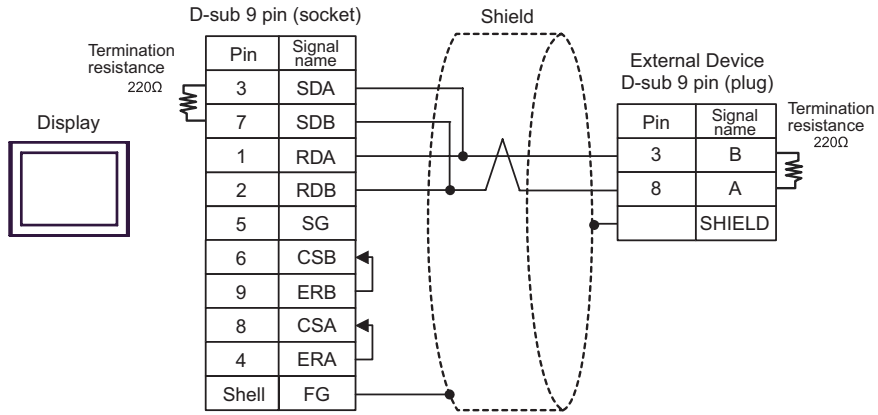[1]   For the GP models except GP-3300 Series, use the PROFIBUS connector with 180° Cable outlet.

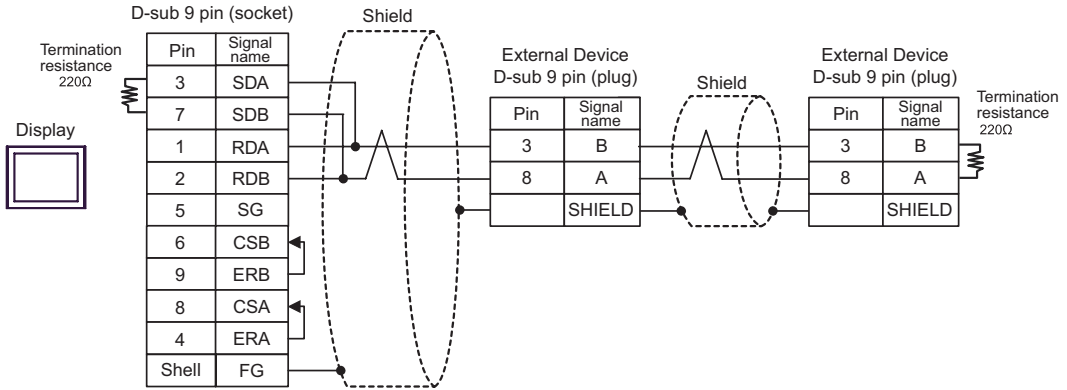[2]   Note that some types of PROFIBUS connector have the speed limitation.

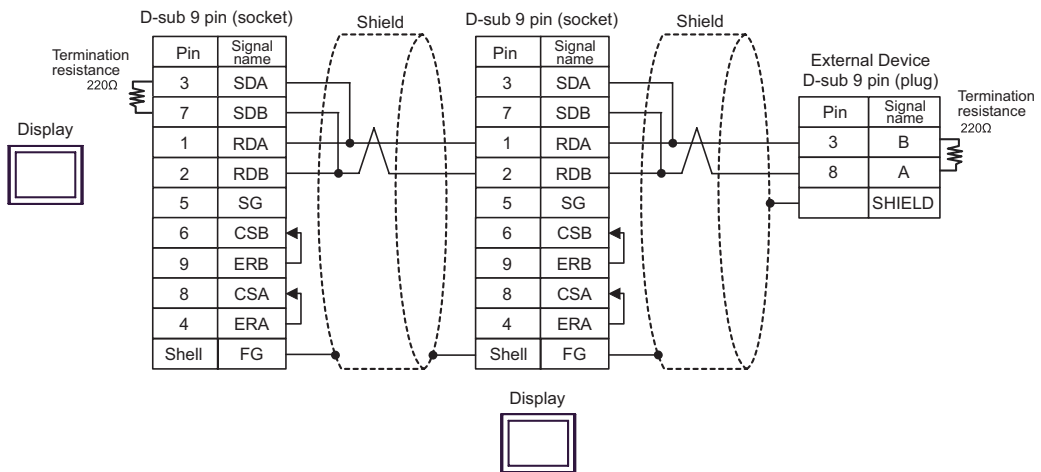[3]   All GP models except AGP-3302

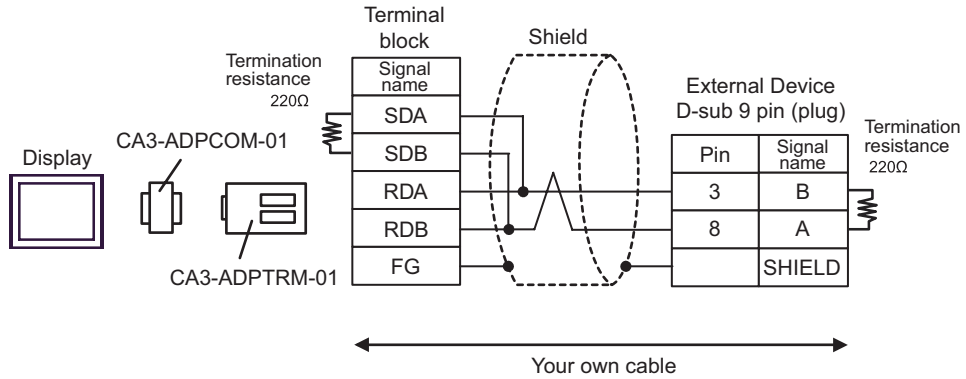A) When using your own cable
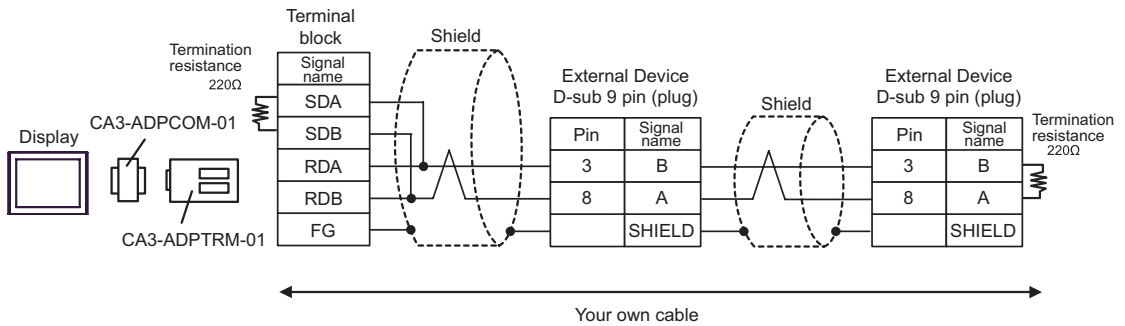
• 1:1 Connection

• 1:n Connection

• n:1 Connection

B) When using the COM port conversion adapter (for COM1) (CA3-ADPCOM-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable
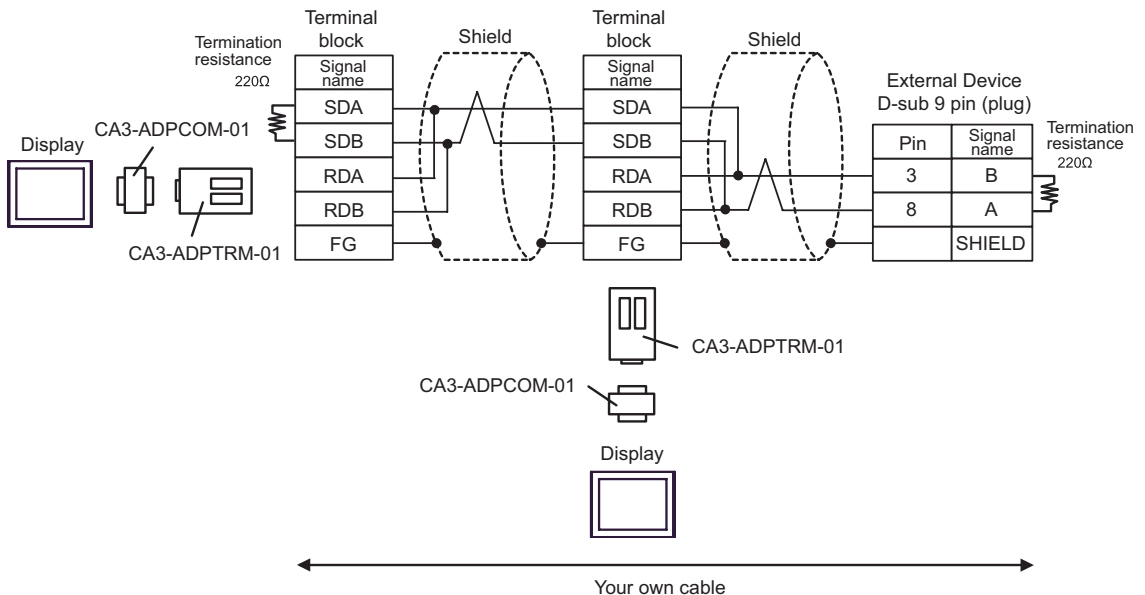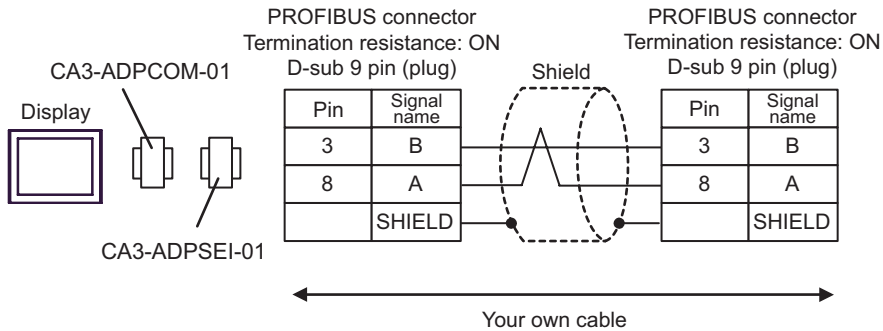
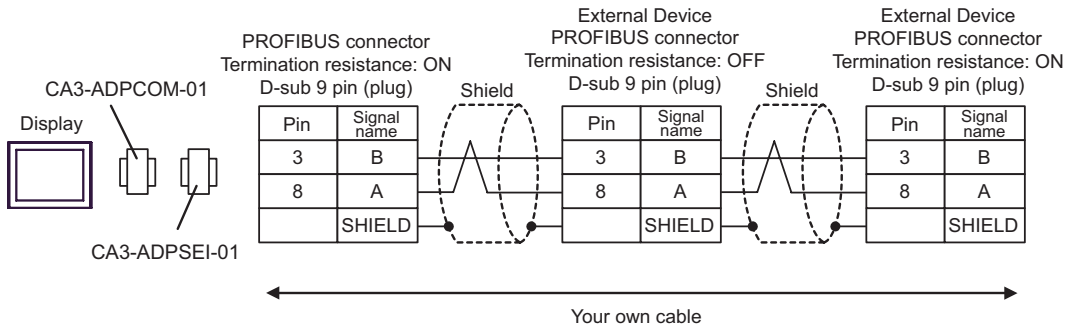- 1:1 Connection

- 1:n Connection

- n:1 Connection

C) When using the COM port conversion adapter (for COM1) (CA3-ADPCOM-01), the Siemens COM port conversion adapter by Pro-face (CA3-ADPSEI-01) by Pro-face and your own cable (PROFIBUS connector by Siemens AG used)
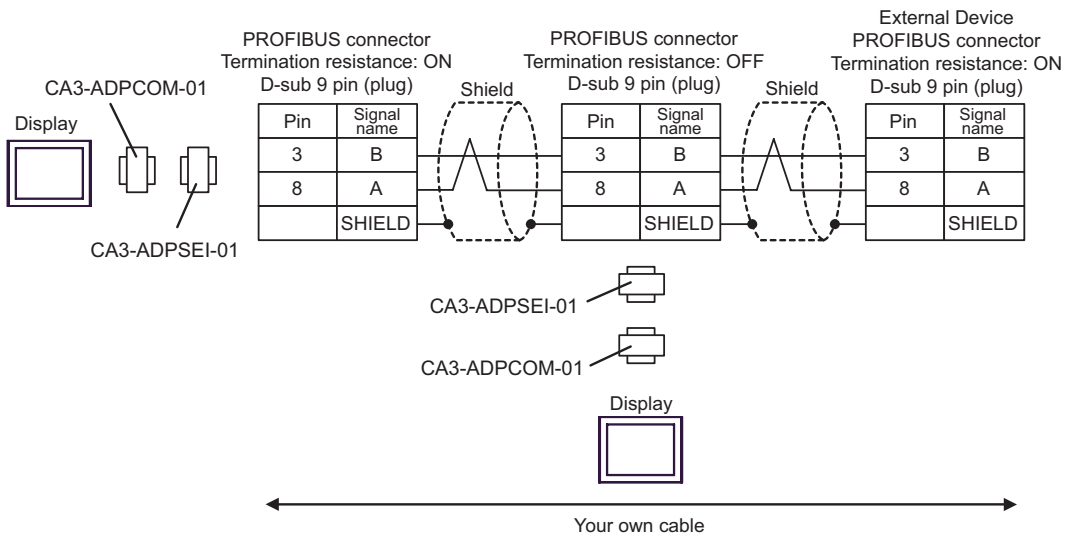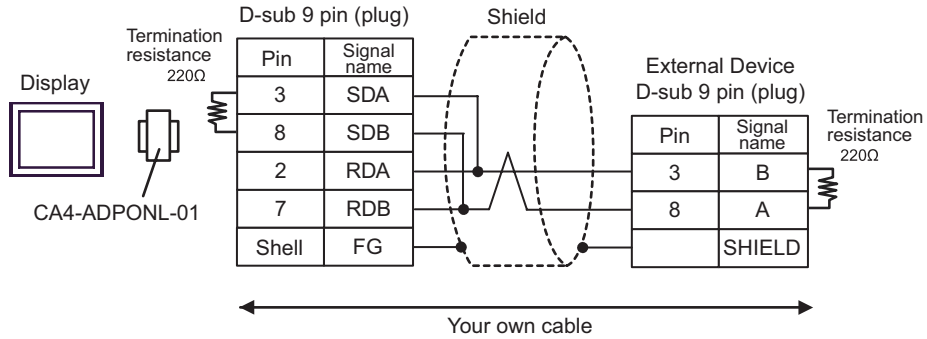
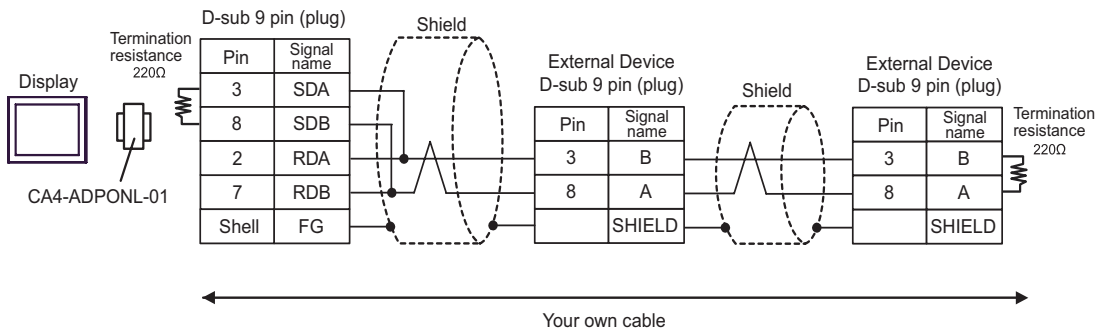- 1:1 Connection

- 1:n Connection

- n:1 Connection

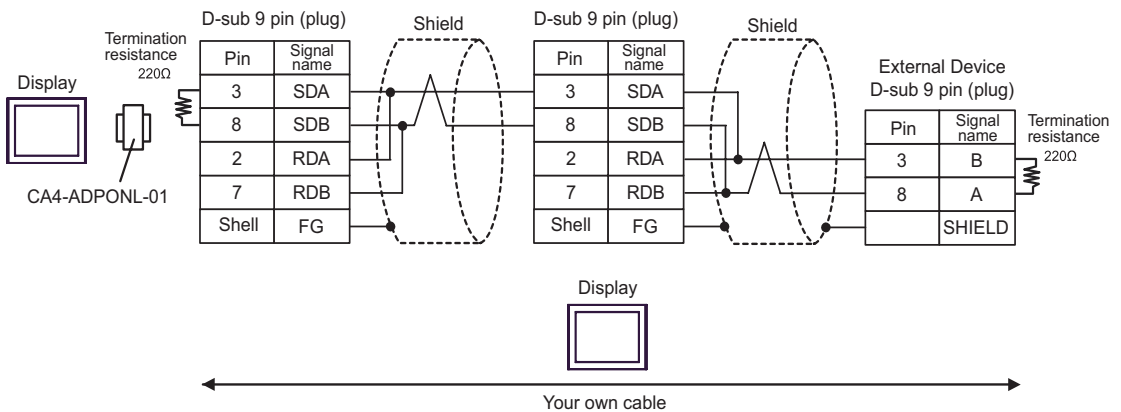D) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

• 1:1 Connection

• 1:n Connection

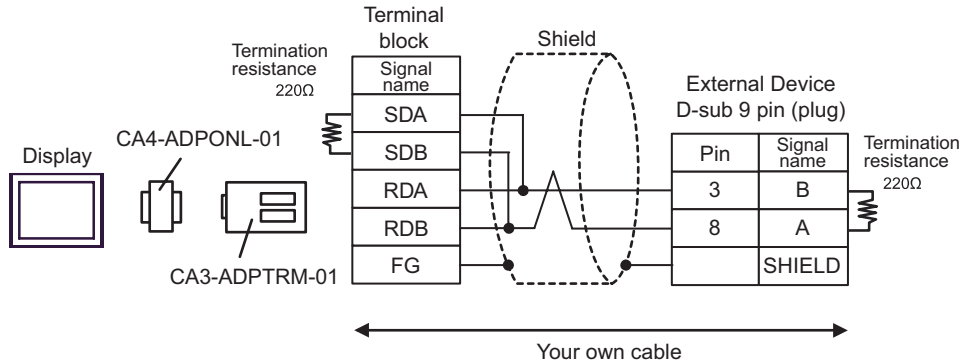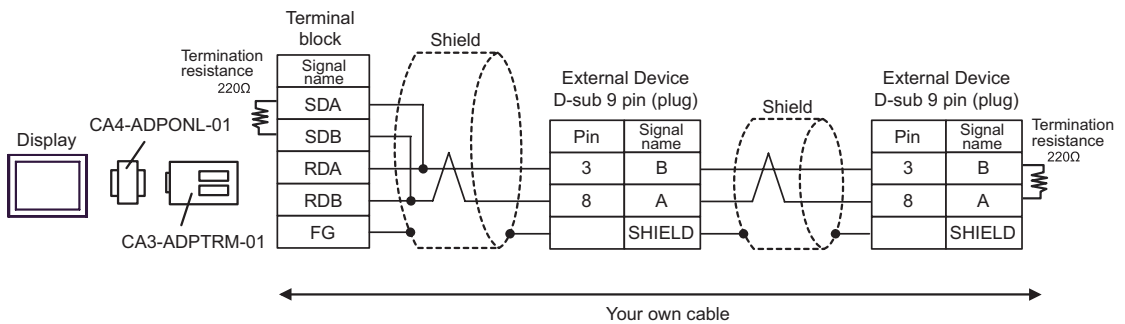• n:1 Connection

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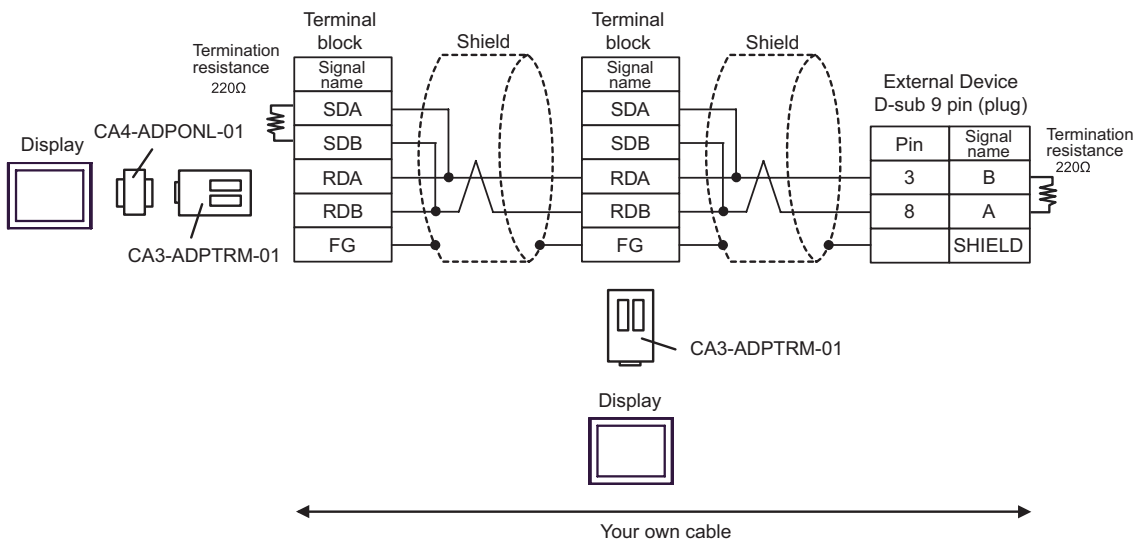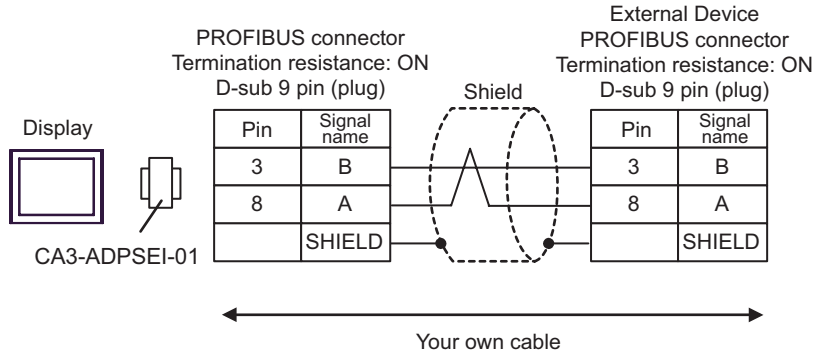
• 1:1 Connection

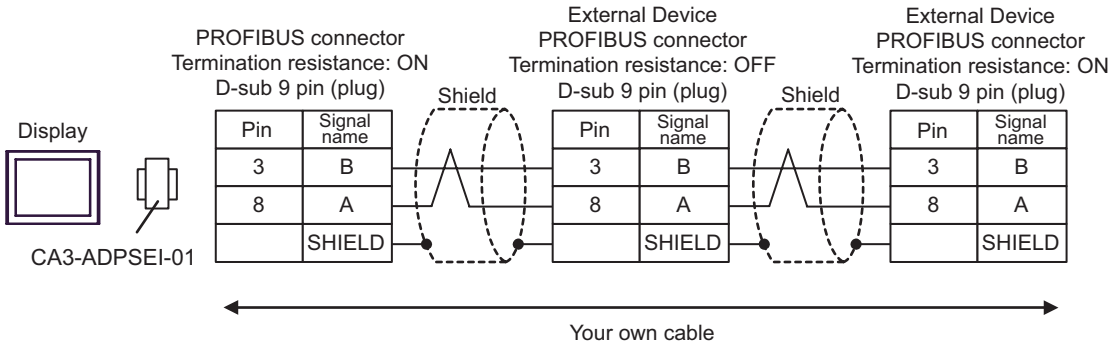• 1:n Connection

• n:1 Connection

F) When using the Siemens COM port conversion adapter by Pro-face and your own cable (PROFIBUS connector by Siemens AG used)
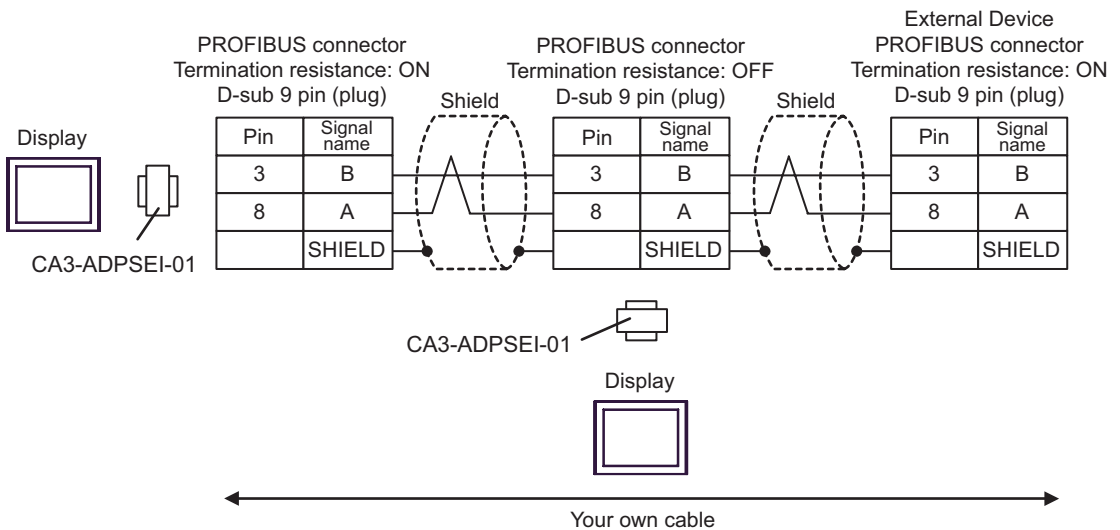
• 1:1 Connection

• 1:n Connection

• n:1 Connection

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.

6.1 S7-200 Series

Device	Bit Address		Word Address		32 bits	Remarks
	English	German	English	German		
Variables	-		VW00000-VW05118			$\div 2$
Input	I00000.0-I00015.7	E00000.0-E00015.7	IW00000-IW00014	EW00000-EW00014		$\div 2$ [*1]
Output	Q00000.0-Q00015.7	A00000.0-A00015.7	QW00000-QW00014	AW00000-AW00014	H / L	$\div 2$ [*2]
Internal Marker	M00000.0-M00031.7		MW00000-MW00030			$\div 2$
Timer	-		T00000-T00255			[*3]
Counter	-		C00000-C00255	Z00000-Z00255		[*3]

*1 You cannot write to IW0 to IW2 depending on the CPU type. These addresses are reserved for onboard I/O. Please refer to the manual of your External Device for checking.

*2 You can write in the QW and Q devices only when the External Device is during RUN. When the External Device moves to the STOP mode, the output will be reset.

*3 Write disable

> NOTE
> • Please refer to the GP-Pro EX Reference Manual for system data area.
>   Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for direct access method)"
> • Please refer to the precautions on manual notation for icons in the table.
>   ☞ "Manual Symbols and Terminology"

6.2   S7-300/400 Series

Device	Bit Address		Word Address		32 bits	Remarks
	English	German	English	German		
Data Block	DB00001.DBX00000.0-DB65535.DBX65533.7		DB00001.DBW00000-DB65535.DBW65532			÷ 2 *1
Input	I00000.0-I00127.7	E00000.0-E00127.7	IW00000-IW00126	EW00000-EW00126		÷ 2
Output	Q00000.0-Q00127.7	A00000.0-A00127.7	QW00000-QW00126	AW00000-AW00126	H / L	÷ 2
Internal Marker	M00000.0-M00511.7		MW00000-MW00510			÷ 2
Timer	-		T00000-T00255			*2
Counter	-		C00000-C00255	Z00000-Z00255		*2

*1   When you write the bit address, the Display reads the word address corresponding to that of the External Device first. Change only the target bit address among the word data once read, and write the word data to the External Device.
Note that the correct data may not be written if you change the word address value in the ladder program while the Display reads the data of the External Device and writes it to the External Device.

*2   Write disable

NOTE
• Please refer to the GP-Pro EX Reference Manual for system data area.
Cf.   GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for 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.

7.1 S7-200 Series

Device	Device Name		Device Code (HEX)	Address Code
	English	German		
Variables	V	V	0001	Value of word address divided by 2
Input	I	E	0080	Value of word address divided by 2
Output	Q	A	0081	Value of word address divided by 2
Internal Marker	M	M	0082	Value of word address divided by 2
Timer	T	T	0060	Word Address
Counter	C	Z	0061	Word Address

7.2 S7-300/400 Series

Device	Device Name		Device Code (HEX)	Address Code
	English	German		
Data Block	DB	DB	0000	(Data Block No. x 0x10000) + Value of (word address divided by 2)
Input	I	E	0080	Value of word address divided by 2
Output	Q	A	0081	Value of word address divided by 2
Internal Marker	M	M	0082	Value of word address divided by 2
Timer	T	T	0060	Word Address
Counter	C	Z	0061	Word Address

8   Error Messages

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

Item	Description
No.	Error No.
Device Name	Name of the External Device where error occurs. Device name is a title of the 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 the External Device where error occurs, or error codes received from the External Device. **NOTE** • Received error codes are displayed such as "Decimal [Hex]". • IP address is displayed such as "IP address (Decimal): MAC address (Hex)".

Display Examples of Error Messages

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

NOTE	• Please refer to the manual of the External Device for more detail of received error codes.