Hitachi Industrial Equipment Systems Co.,Ltd.

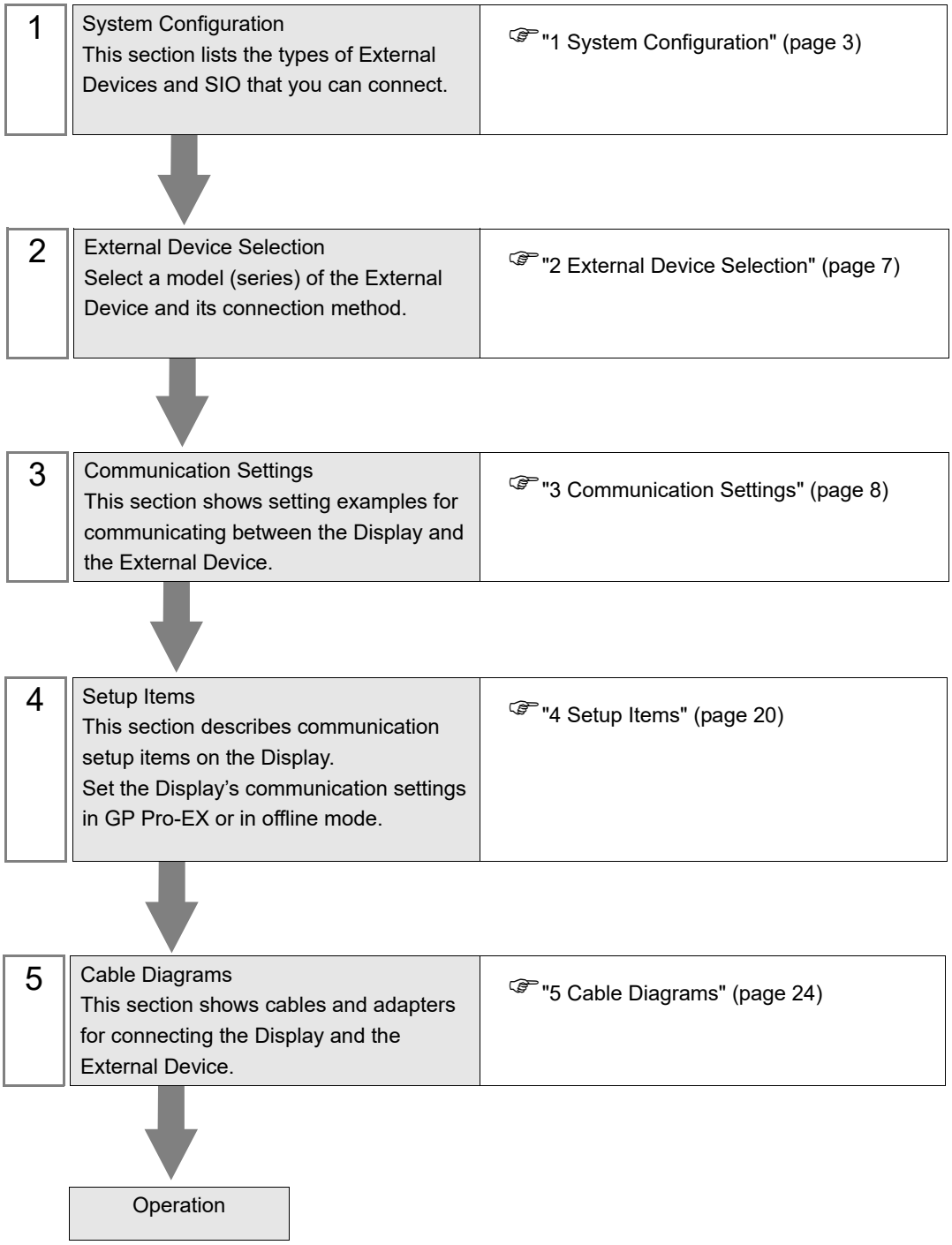
HIE_INVS_19
3/2024

Inverter ASCII SIO Driver

Introduction

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

In this manual, the connection procedure is described in the sections identified below:



1 System Configuration

The following table lists system configurations for connecting Hitachi Industrial Equipment Systems Co.,Ltd. External Devices and the Display.

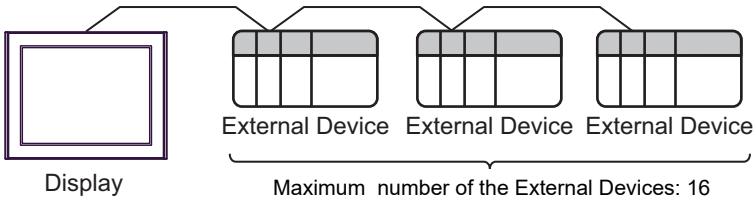
Series	Inverter*1	Link I/F	SIO Type	Setting Example	Cable Diagram
L300P	L300P-□□□■□F□	Serial communications connector on the inverter	RS-422/485 (2 wire)	"Setting Example 1" (page 8)	" Cable Diagram 1" (page 24)
SJ300	SJ300-□□□■□F■	Serial communications connector on the inverter	RS-422/485 (2 wire)	"Setting Example 2" (page 10)	" Cable Diagram 1" (page 24)
SJ700	SJ700-□□□■□F■F	Serial communications connector on the inverter	RS-422/485 (2 wire)	"Setting Example 3" (page 12)	" Cable Diagram 1" (page 24)
SJ700-2	SJ700-□□□■□F■F2	Serial communications connector on the inverter	RS-422/485 (2 wire)	"Setting Example 4" (page 14)	" Cable Diagram 1" (page 24)
SJH300	SJH300-□□F	Serial communications connector on the inverter	RS-422/485 (2 wire)	"Setting Example 5" (page 16)	" Cable Diagram 1" (page 24)
HFC-VAH3	HFC-VAH□□F3	Serial communications connector on the inverter	RS-422/485 (2 wire)	"Setting Example 6" (page 18)	" Cable Diagram 1" (page 24)

*1 ■ is not added as an option. □ differs depending on the option.

■ Connection Configuration

- 1:1 Connection

- 1:n Connection (when using either COM1 or COM2)



■ IPC COM Port

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

Usable port

Series	Usable Port		
	RS-232C	RS-422/485(4 wire)	RS-422/485(2 wire)
PS-2000B	COM1[*1] , COM2, COM3[*1], COM4	-	-
PS-3450A, PS-3451A, PS3000-BA, PS3001-BD	COM1, COM2[*1*2]	COM2[*1*2]	COM2[*1*2]
PS-3650A (T41 model), PS-3651A (T41 model)	COM1[*1]	-	-
PS-3650A (T42 model), PS-3651A (T42 model)	COM1[*1*2], COM2	COM1[*1*2]	COM1[*1*2]
PS-3700A (Pentium®4-M) PS-3710A	COM1[*1], COM2[*1], COM3[*2] , COM4	COM3[*2]	COM3[*2]
PS-3711A	COM1[*1], COM2[*2]	COM2[*2]	COM2[*2]
PS4000[*3]	COM1, COM2	-	-
PL3000	COM1[*1*2], COM2[*1], COM3, COM4	COM1[*1*2]	COM1[*1*2]
PE-4000B Atom N270	COM1, COM2	-	-
PE-4000B Atom N2600	COM1, COM2	COM3[*4] , COM4[*4], COM5[*4], COM6[*4]	COM3[*4], COM4[*4], COM5[*4], COM6[*4]
PS5000 (Slim Panel Type Core i3 Model) [*5] [*6]	COM1, COM2[*4]	COM2[*4]	COM2[*4]
PS5000 (Slim Panel Type Atom Model) [*5] [*6]	COM1, COM2[*7]	COM2[*7]	COM2[*7]
PS5000 (Enclosed Panel Type)[*8]	COM1	-	-
PS5000 (Modular Type PFXPU/PFXPP)[*5] [*6] PS5000 (Modular Type PFXPL2B5-6)	COM1[*7]	COM1[*7]	COM1[*7]
PS5000 (Modular Type PFXPL2B1-4)	COM1, COM2[*7]	COM2[*7]	COM2[*7]
PS6000 (Advanced Box) PS6000 (Standard Box)	COM1[*9]	[*10]	[*10]
PS6000 (Basic Box)	COM1[*9]	COM1[*9]	COM1[*9]

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

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

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

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

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

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

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

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

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

*9 In addition to COM1, you can also use the COM port on the optional interface.

*10 Install the optional interface in the expansion slot.

DIP Switch settings (PL3000 / PS3000 Series)

RS-232C

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

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

RS-422/485 (4 wire)

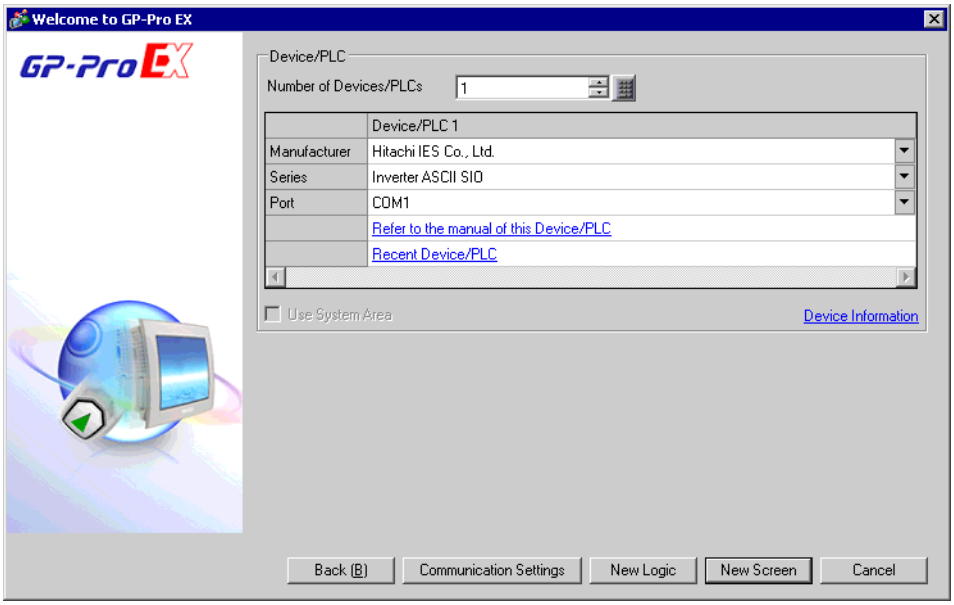
DIP Switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA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

RS-422/485 (2 wire)

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

2 External Device Selection

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Number of Devices/ PLCs	Enter an integer from 1 to 4 to define the number of Devices/PLCs to connect to the display.
Manufacturer	Select the manufacturer of the External Device to connect. Select "Hitachi IES Co., Ltd.".
Series	Select the External Device model (series) and the connection method. Select "Inverter ASCII SIO". In System configuration, make sure the External Device you are connecting is supported by "Inverter ASCII SIO". ☞ "1 System Configuration" (page 3)
Port	Select the Display port to connect to the External Device.
Use System Area	Not available in this driver.

3 Communication Settings

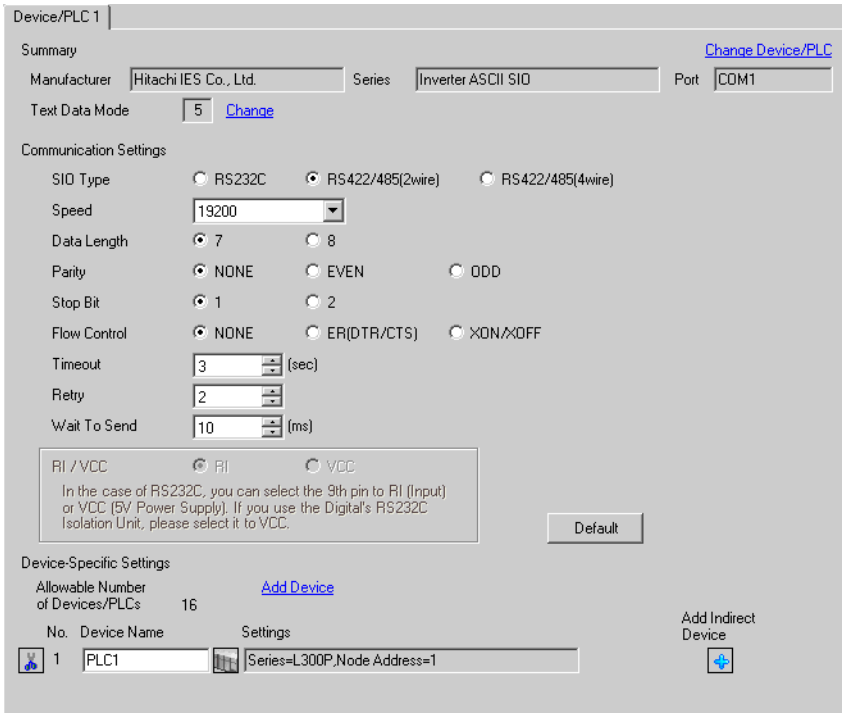
This section provides examples of communication settings recommended by Pro-face for the Display and the External Device.

3.1 Setting Example 1

■ GP-Pro EX Settings

◆ Communication Settings

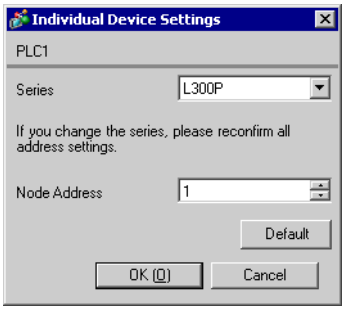
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



IMPORTANT	• When the inverter status is Tripping or UV, you need to set Wait to Send to 50ms or more.

◆ Device Setting

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



■ External Device Settings

For External Device communication settings, use the FUNC key, Up key, Down key, and STR key located in the keypad of the External Device.

Refer to your External Device manual for details.

1 Turn ON the External Device.
2 Press FUNC key.
3 Press and hold Up key or Down key to display [C---].
4 Press FUNC key.
5 Press Up key to display the setting function code.
6 Press FUNC key.
7 Press Up key or Down key to select the setting value.
8 Press STR key.
9 Reboot the External Device.

◆ Setting Value

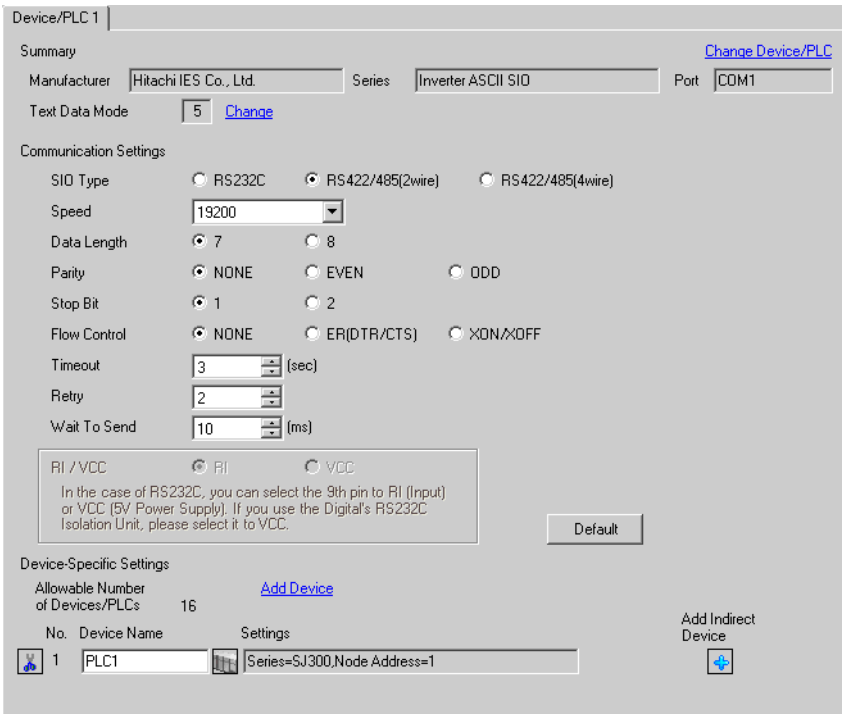
Function Code	Setting Value	Setup Description
C070	03	Data command method
C071	06	Communication speed selection
C072	1.	Node allocation
C073	7	Communication data length selection
C074	00	Communication parity selection
C075	1	Communication stop bit selection
C078	0.	Communication wait time
A001	03	Frequency source setting
A002	03	Run command source setting

3.2 Setting Example 2

■ GP-Pro EX Settings

◆ Communication Settings

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

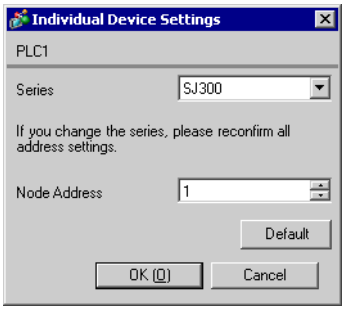


IMPORTANT

- When the inverter status is Tripping or UV, you need to set Wait to Send to 50ms or more.

◆ Device Setting

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



■ External Device Settings

For External Device communication settings, use the FUNC key, Up key, Down key, and STR key located in the keypad of the External Device.

Refer to your External Device manual for details.

1 Turn ON the External Device.
2 Press FUNC key.
3 Press and hold Up key or Down key to display [C---].
4 Press FUNC key.
5 Press Up key to display the setting function code.
6 Press FUNC key.
7 Press Up key or Down key to select the setting value.
8 Press STR key.
9 Reboot the External Device.

◆ Setting Value

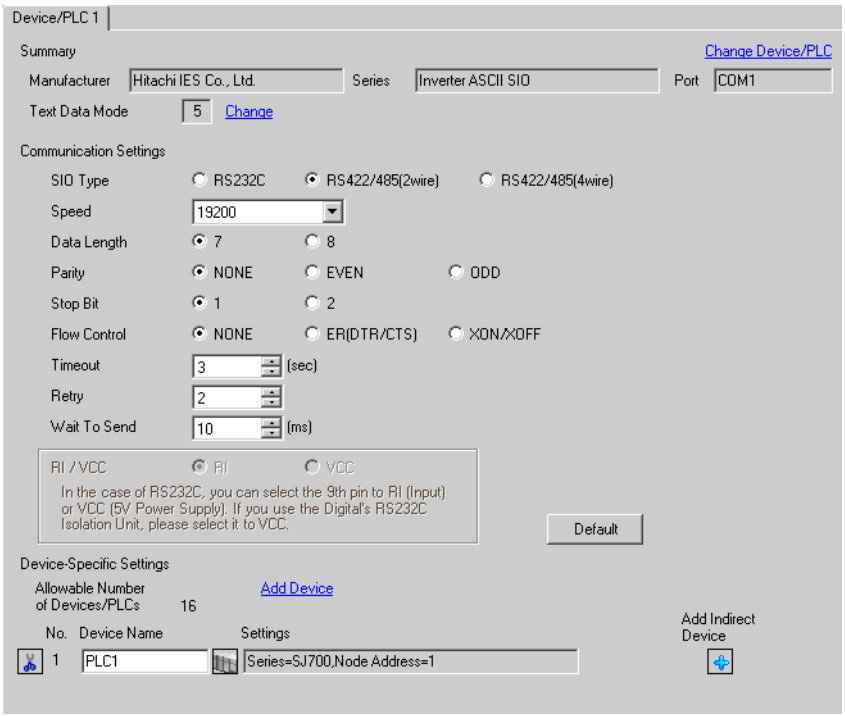
Function Code	Setting Value	Setup Description
C070	03	Data command method
C071	06	Communication speed selection
C072	1.	Node allocation
C073	7	Communication data length selection
C074	00	Communication parity selection
C075	1	Communication stop bit selection
C078	0.	Communication wait time
A001	03	Frequency source setting
A002	03	Run command source setting

3.3 Setting Example 3

■ GP-Pro EX Settings

◆ Communication Settings

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

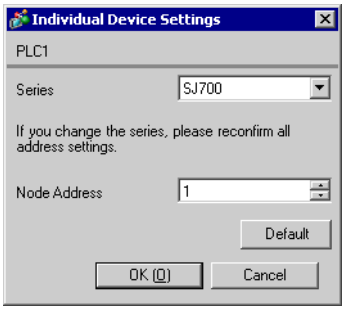


IMPORTANT

- When the inverter status is Tripping or UV, you need to set Wait to Send to 50ms or more.

◆ Device Setting

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



■ External Device Settings

For External Device communication settings, use the FUNC key, Up key, Down key, and STR key located in the keypad of the External Device.

Refer to your External Device manual for details.

1 Turn ON the External Device.
2 Press FUNC key for 3 seconds or longer.
3 Press FUNC key to display [d001].
4 Press and hold Down key to display [C---].
5 Press FUNC key.
6 Press Up key to display the setting function code.
7 Press FUNC key.
8 Press Up key or Down key to select the setting value.
9 Press STR key.
10 Reboot the External Device.

◆ Setting Value

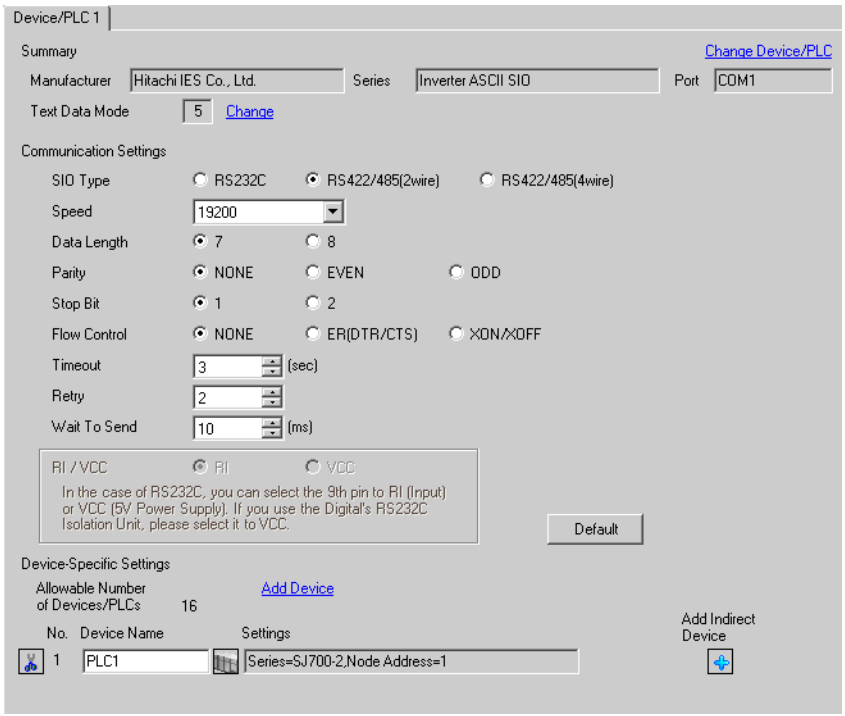
Function Code	Setting Value	Setup Description
C071	06	Communication speed selection
C072	1.	Node allocation
C073	7	Communication data length selection
C074	00	Communication parity selection
C075	1	Communication stop bit selection
C076	02	Selection of operation after communication error
C077	0.00	Communication trip limit time setting
C078	0.	Communication wait time
C079	00	Communication mode selection
A001	03	Frequency source setting
A002	03	Run command source setting

3.4 Setting Example 4

■ GP-Pro EX Settings

◆ Communication Settings

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

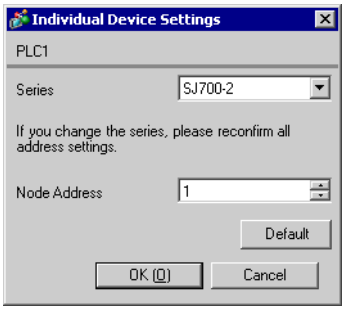


IMPORTANT

- When the inverter status is Tripping or UV, you need to set Wait to Send to 50ms or more.

◆ Device Setting

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



■ External Device Settings

For External Device communication settings, use the FUNC key, Up key, Down key, and STR key located in the keypad of the External Device.

Refer to your External Device manual for details.

1 Turn ON the External Device.
2 Press FUNC key for 3 seconds or longer.
3 Press FUNC key to display [d001].
4 Press and hold Down key to display [C---].
5 Press FUNC key.
6 Press Up key to display the setting function code.
7 Press FUNC key.
8 Press Up key or Down key to select the setting value.
9 Press STR key.
10 Reboot the External Device.

◆ Setting Value

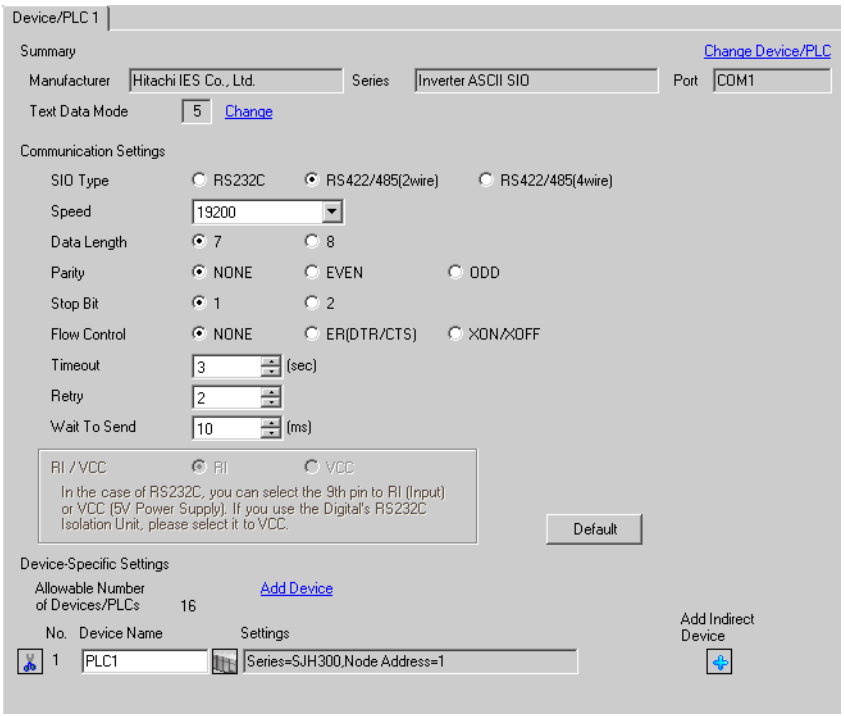
Function Code	Setting Value	Setup Description
C071	06	Communication speed selection
C072	1.	Node allocation
C073	7	Communication data length selection
C074	00	Communication parity selection
C075	1	Communication stop bit selection
C076	02	Selection of operation after communication error
C077	0.00	Communication trip limit time setting
C078	0.	Communication wait time
C079	00	Communication mode selection
A001	03	Frequency source setting
A002	03	Run command source setting

3.5 Setting Example 5

■ GP-Pro EX Settings

◆ Communication Settings

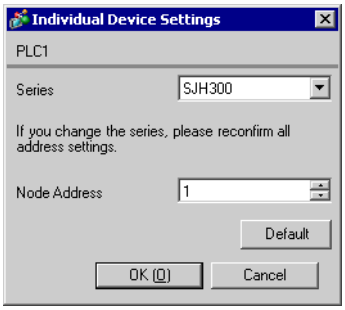
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



IMPORTANT	• When the inverter status is Tripping or UV, you need to set Wait to Send to 50ms or more.

◆ Device Setting

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



■ External Device Settings

For External Device communication settings, use the FUNC key, Up key, Down key, and STR key located in the keypad of the External Device.

Refer to your External Device manual for details.

1 Turn ON the External Device.
2 Press FUNC key.
3 Press and hold Up key or Down key to display [C---].
4 Press FUNC key.
5 Press Up key to display the setting function code.
6 Press FUNC key.
7 Press Up key or Down key to select the setting value.
8 Press STR key.
9 Reboot the External Device.

◆ Setting Value

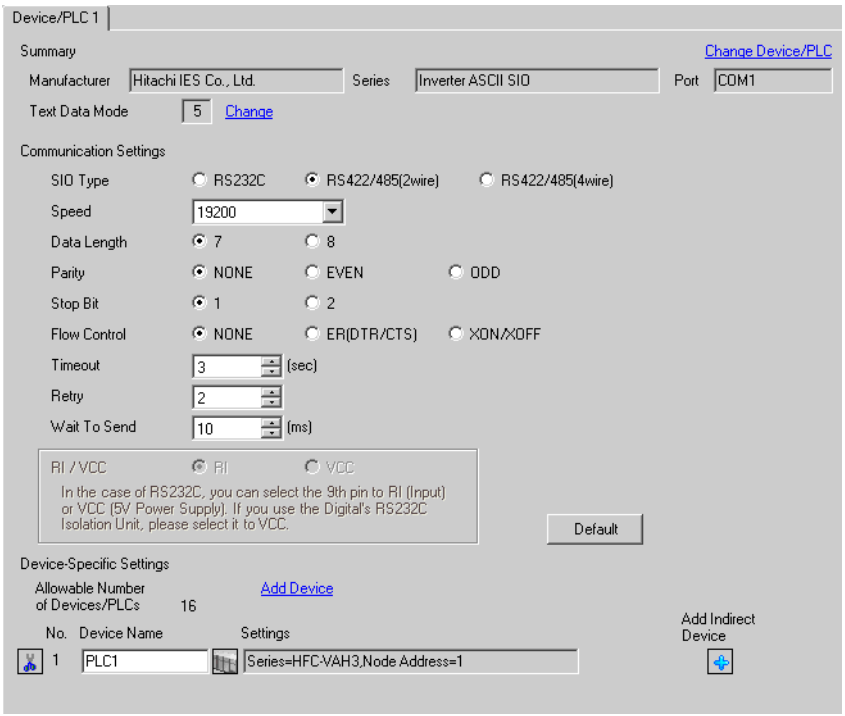
Function Code	Setting Value	Setup Description
C070	03	Data command
C071	06	Communicating transmission speed
C072	1.	Communication code
C073	7	Communication bit
C074	00	Communication parity
C075	1	Communication stop bit
C078	0.	Communication waiting time
A001	03	Frequency command selection
A002	03	Operation command selection

3.6 Setting Example 6

■ GP-Pro EX Settings

◆ Communication Settings

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

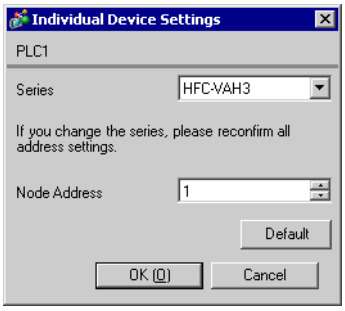


IMPORTANT

- When the inverter status is Tripping or UV, you need to set Wait to Send to 50ms or more.

◆ Device Setting

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



■ External Device Settings

For External Device communication settings, use the FUNC key, Up key, Down key, and STR key located in the keypad of the External Device.

Refer to your External Device manual for details.

1 Turn ON the External Device.
2 Press FUNC key.
3 Press and hold Up key or Down key to display [C---].
4 Press FUNC key.
5 Press Up key to display the setting function code.
6 Press FUNC key.
7 Press Up key or Down key to select the setting value.
8 Press STR key.
9 Reboot the External Device.

◆ Setting Value

Function Code	Setting Value	Setup Description
C070	03	Data command
C071	06	Communicating transmission speed
C072	1.	Communication code
C073	7	Communication bit
C074	00	Communication parity
C075	1	Communication stop bit
C078	0.	Communication waiting time
A001	03	Frequency setting selection
A002	03	Operation setting selection

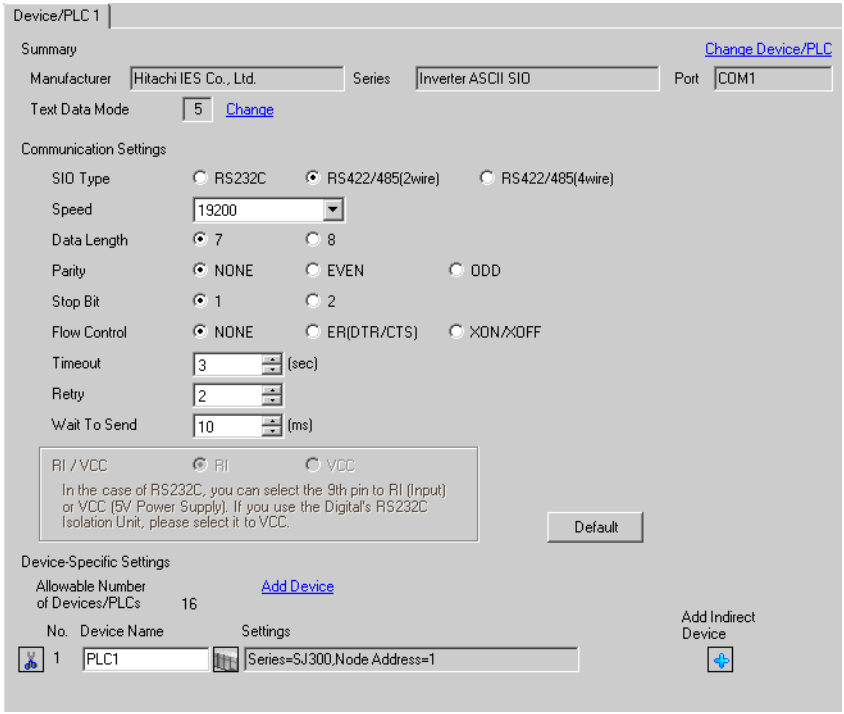
4 Setup Items

Set up the Display's communication settings in GP Pro-EX or in the Display's offline mode.
The setting of each parameter must match that of the External Device.
☞"3 Communication Settings" (page 8)

4.1 Setup Items in GP Pro-EX

■ Communication Settings

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



Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. IMPORTANT In the communication settings, set [SIO Type] correctly according to the serial interface specifications of the Display. If you select an SIO type that the serial interface does not support, proper operation cannot be guaranteed. Refer to your Display manual for details on the serial interface specifications.
Speed	Select communication 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.

Continued

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.

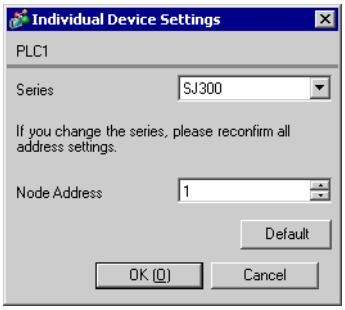
NOTE

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

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

■ Device Setting

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



Setup Items	Setup Description
Series	Select the series of the External Device.
Node Address	Use an integer from 1 to 32 to enter the address of the External Device.

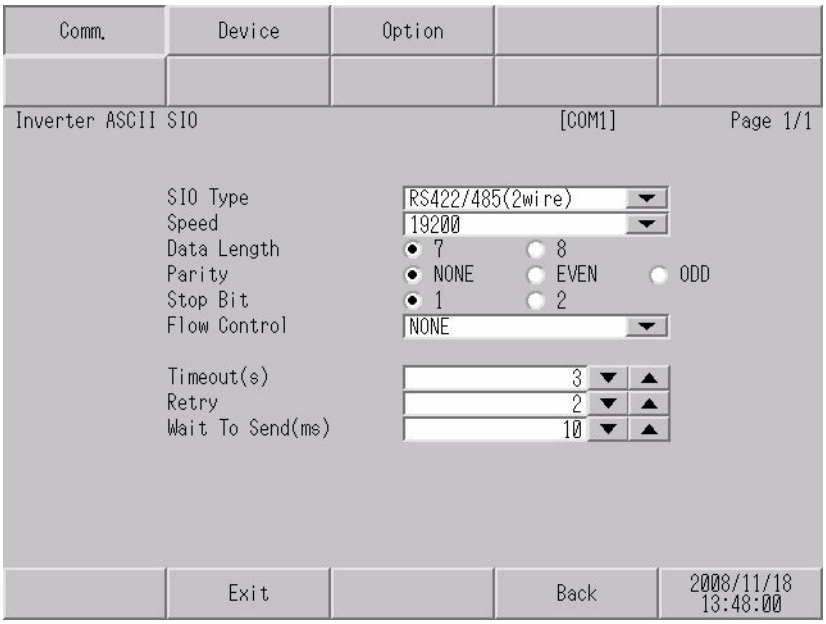
4.2 Setup Items in Offline Mode

NOTE

- Refer to the Maintenance/Troubleshooting guide for information on how to enter offline mode or about the operation.
  Cf. Maintenance/Troubleshooting Guide "Offline Mode"
- The number of the setup items to be displayed for 1 page in the offline mode depends on the Display in use. Please refer to the Reference manual for details.

■ Communication Settings

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



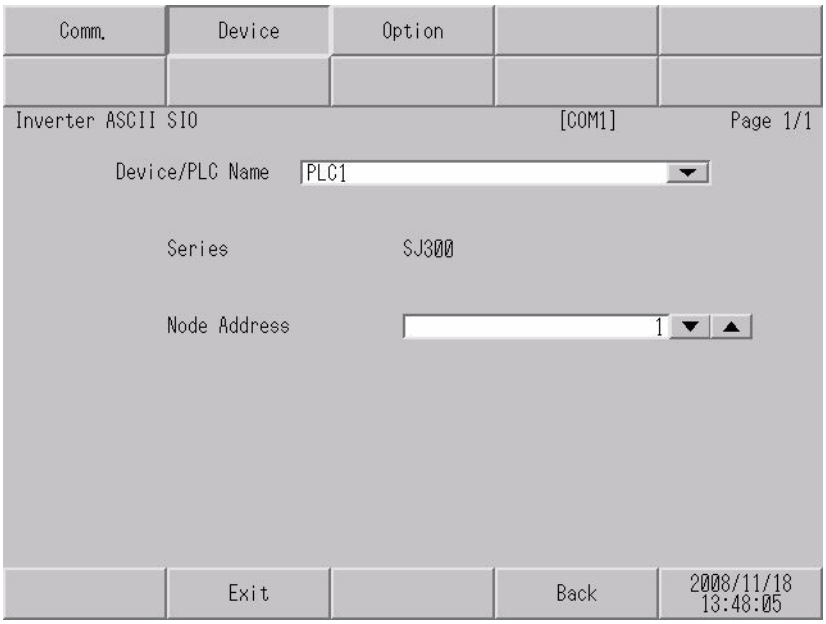
Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. **IMPORTANT** In the communication settings, set [SIO Type] correctly according to the serial interface specifications of the Display. If you select an SIO type that the serial interface does not support, proper operation cannot be guaranteed. Refer to your Display manual for details on the serial interface specifications.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Select 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.

Continued

Setup Items	Setup Description
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.
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 Setting

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



Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. Device name is a title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Series	Display the series of the External Device.
Node Address	Use an integer from 1 to 32 to enter the address of the External Device.

5 Cable Diagrams

The following cable diagrams may be different from cable diagrams recommended by Hitachi Industrial Equipment Systems Co.,Ltd. Please be assured there is no operational problem in applying the cable diagrams shown in this manual.

- The FG pin of the External Device body must be D-class grounded. Refer to your External Device manual for more details.
- The SG and FG are connected inside the Display. When connecting the External Device to the SG, design your system to avoid short-circuit loops.
- Connect an isolation unit if the communication is not stable due to noise or other factors.

Cable Diagram 1

Display (Connection Port)	Cable		Notes
GP3000[*1] (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) GP-Rear Module (COM1) ST3000[*2] (COM2) LT3000 (COM1)	1A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 250m or less
	1B	User-created cable	
GP3000[*3] (COM2)	1C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 250m or less
	1D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
IPC[*4]	1E	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 250m or less
	1F	User-created cable	
GP-4106 (COM1) GP-4116T (COM1)	1G	User-created cable	Cable length: 250m or less

Display (Connection Port)	Cable		Notes
GP-4107 (COM1) GP-4*03T[*5] (COM2) GP-4203T (COM1)	1H	User-created cable	Cable length: 250m or less
GP4000[*6] (COM2) GP-4201T (COM1) SP5000[*7] (COM1/2) SP-5B00 (COM2) ST6000[*8] (COM2) ST-6200 (COM1) STM6000 (COM1) STC6000 (COM1) ET6000[*9] (COM2) PS6000 (Basic Box) (COM1/2)	1I	RS-422 terminal block conversion adapter by Pro-face PFXZCBADTM1[*10] + User-created cable	Cable length: 250m or less
	1B	User-created cable	
LT-4*01TM (COM1) LT-Rear Module (COM1)	1J	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	Cable length: 200m or less
PE-4000B[*11] PS5000[*11] PS6000 (Optional Interface)[*11]	1K	User-created cable	Cable length: 250m or less

*1 All GP3000 models except AGP-3302B

*2 Except AST-3211A and AST-3302B

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

*4 Only the COM port which can communicate by RS-422/485 (2 wire) can be used. (Except PE-4000B, PS5000, and PS6000)
☞"■ IPC COM Port" (page 4)

*5 Except GP-4203T

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

*7 Except SP-5B00

*8 Except ST-6200

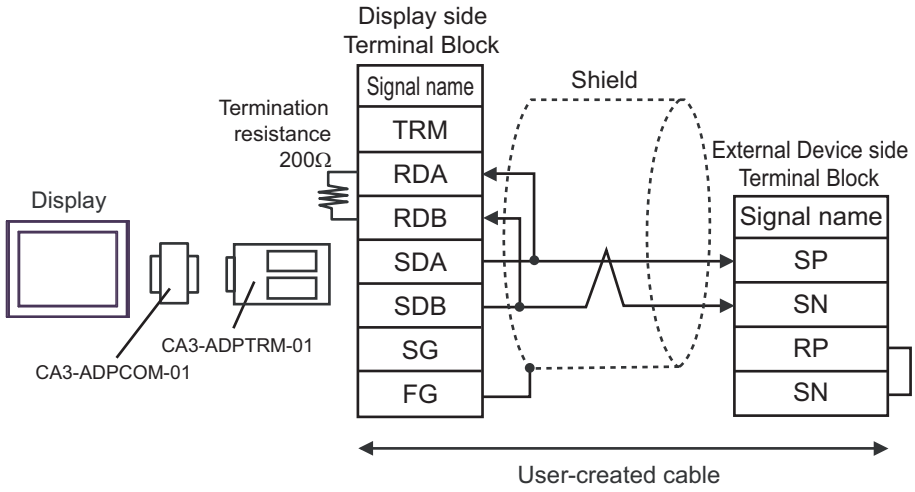
*9 Due to the COM port specifications, flow control is not possible. Omit wiring the control pins on the Display side of the cable diagram.

*10 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 1A.

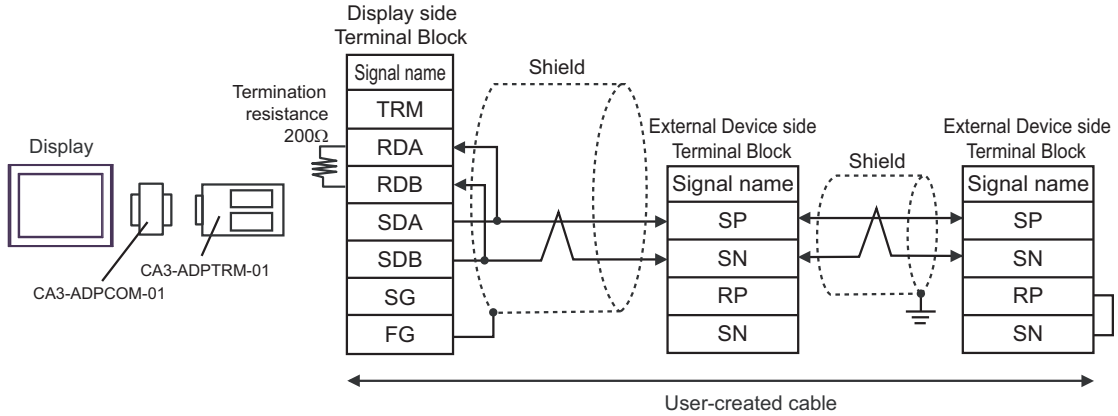
*11 Only the COM port which can communicate by RS-422/485 (2 wire) can be used.
☞"■ IPC COM Port" (page 4)

1A)

- 1:1 Connection



- 1:n Connection

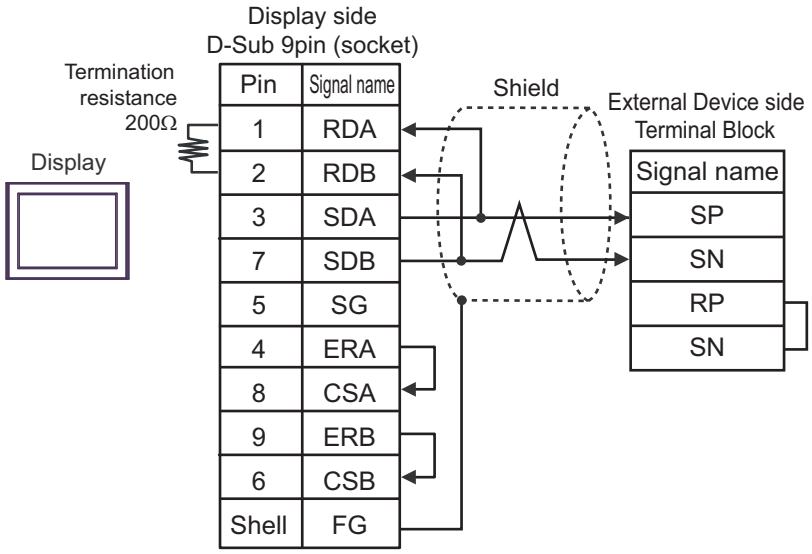


NOTE

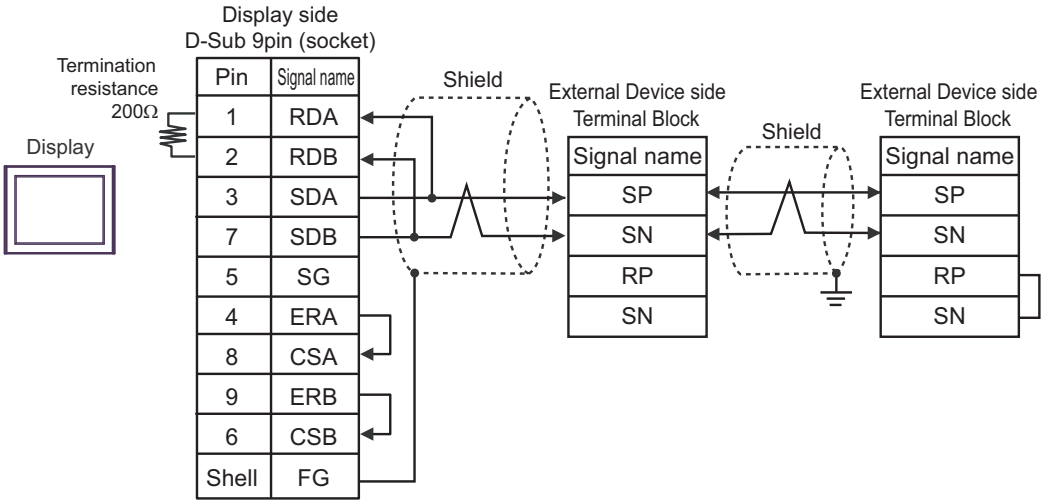
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

1B)

- 1:1 Connection



- 1:n Connection

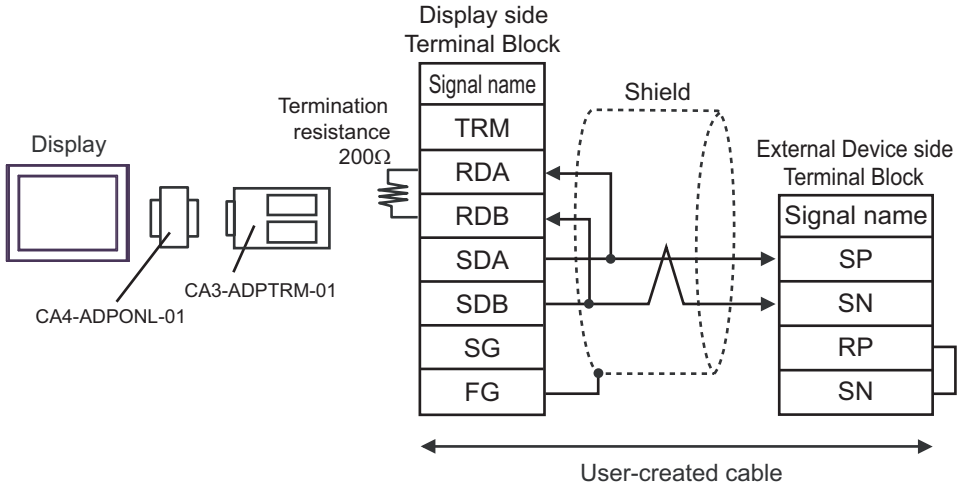


NOTE

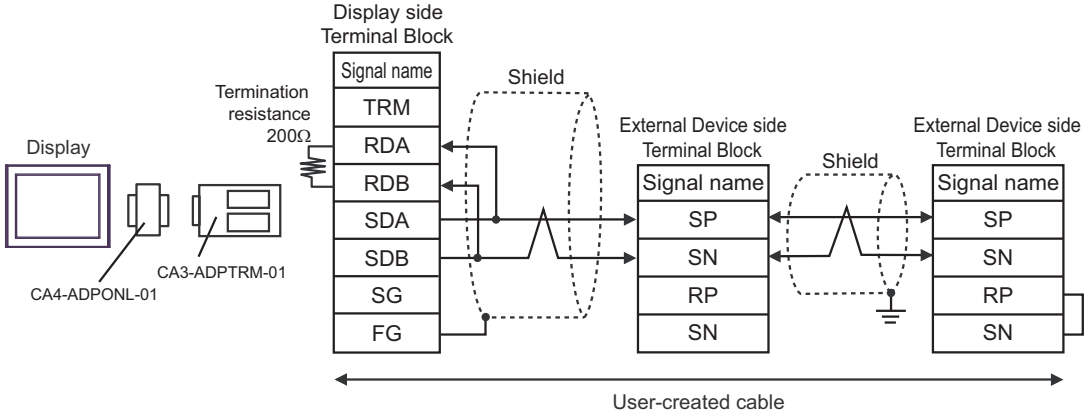
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

1C)

- 1:1 Connection



- 1:n Connection

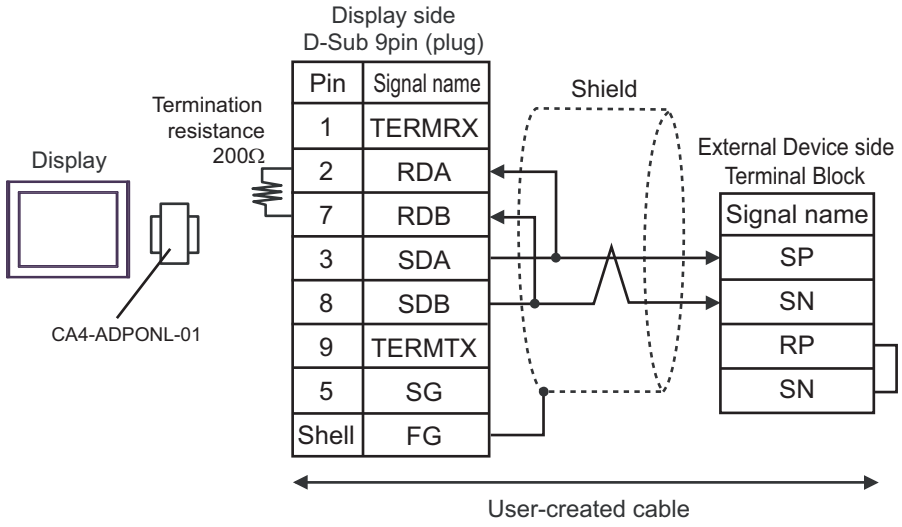


NOTE

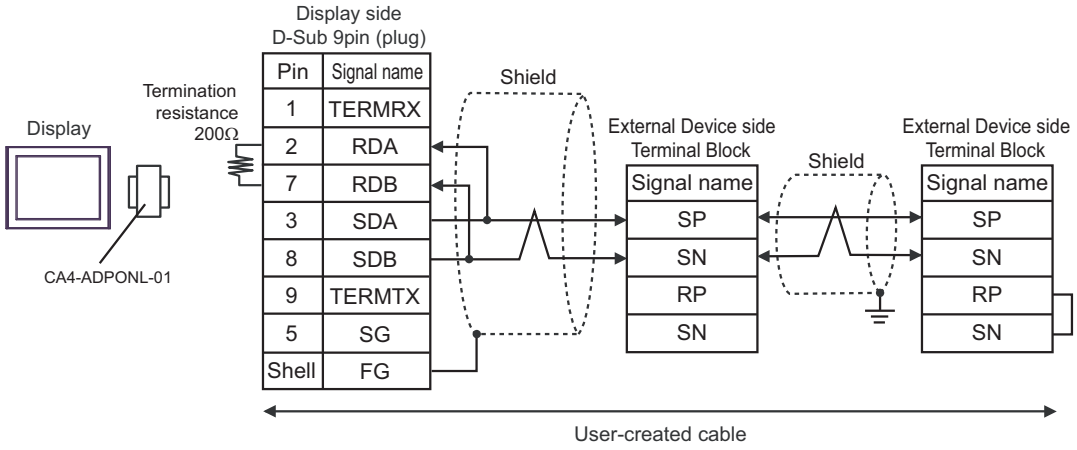
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

1D)

- 1:1 Connection



- 1:n Connection

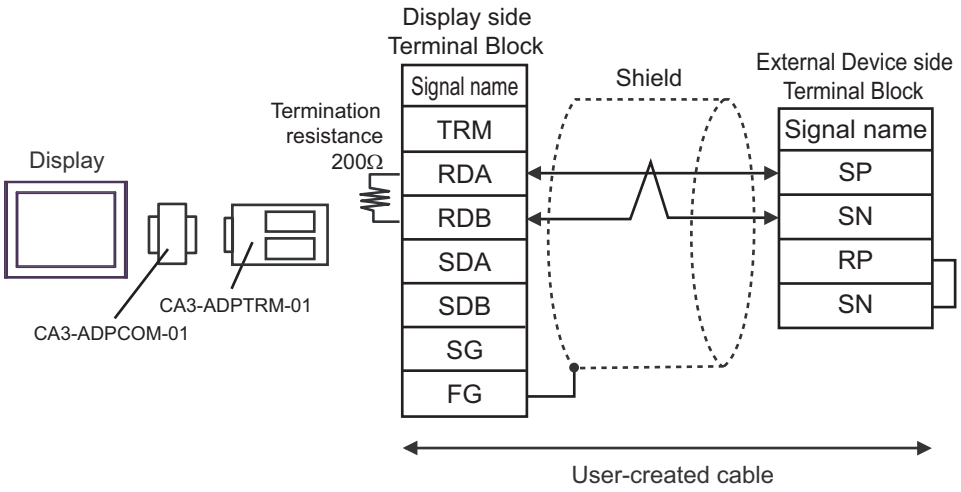


NOTE

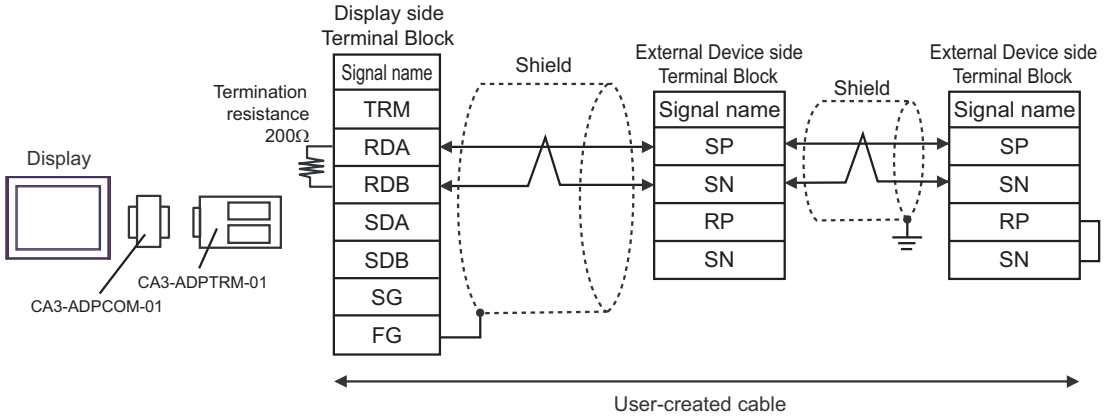
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

1E)

- 1:1 Connection



- 1:n Connection

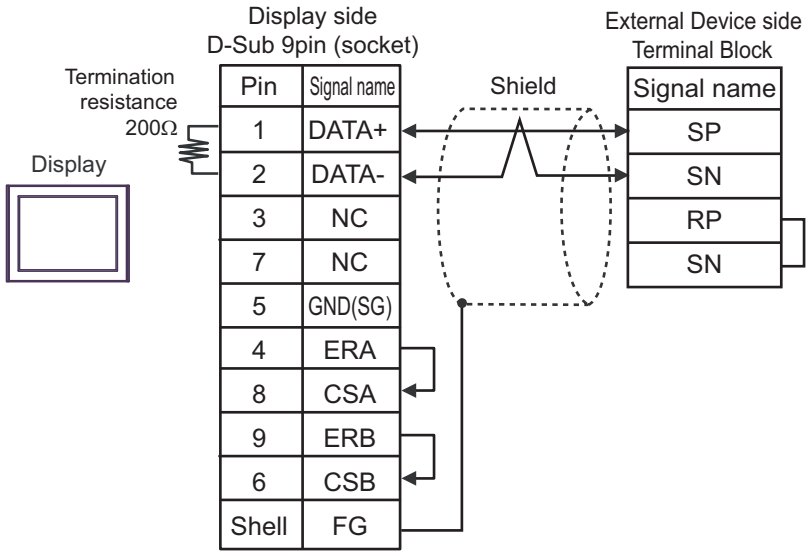


NOTE

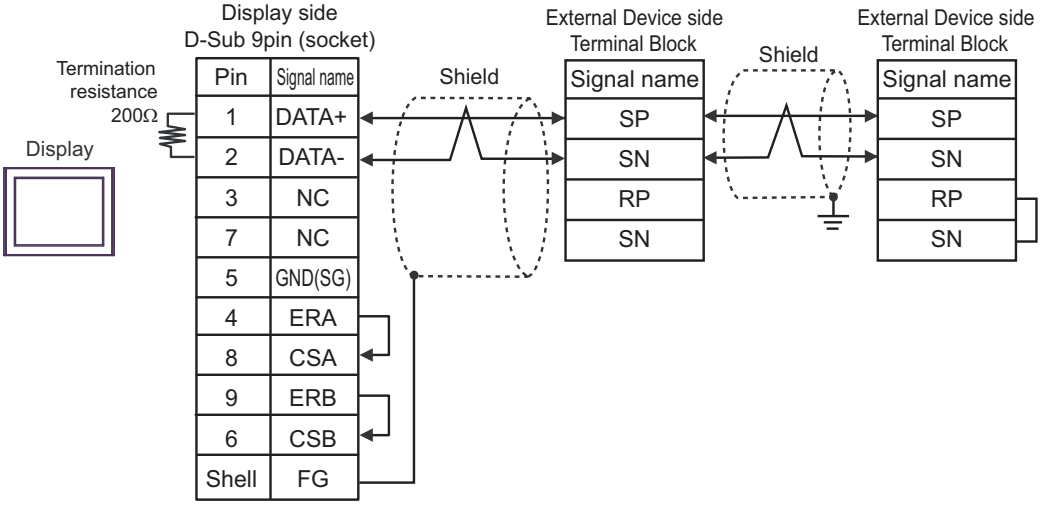
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

1F)

- 1:1 Connection



- 1:n Connection

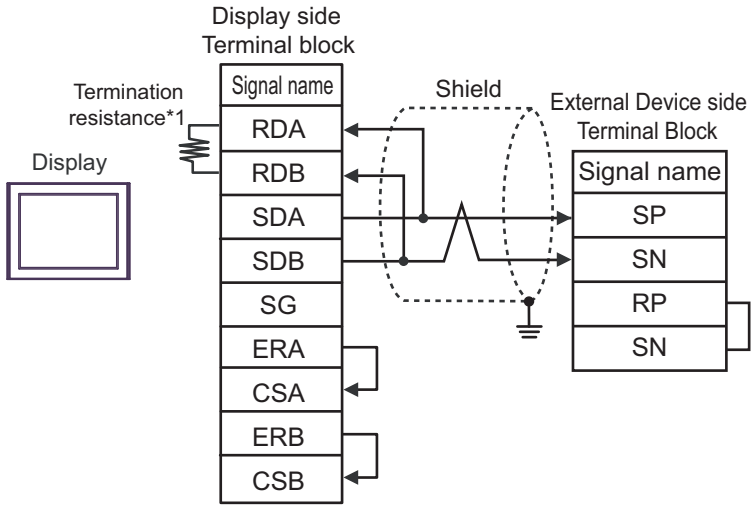


NOTE

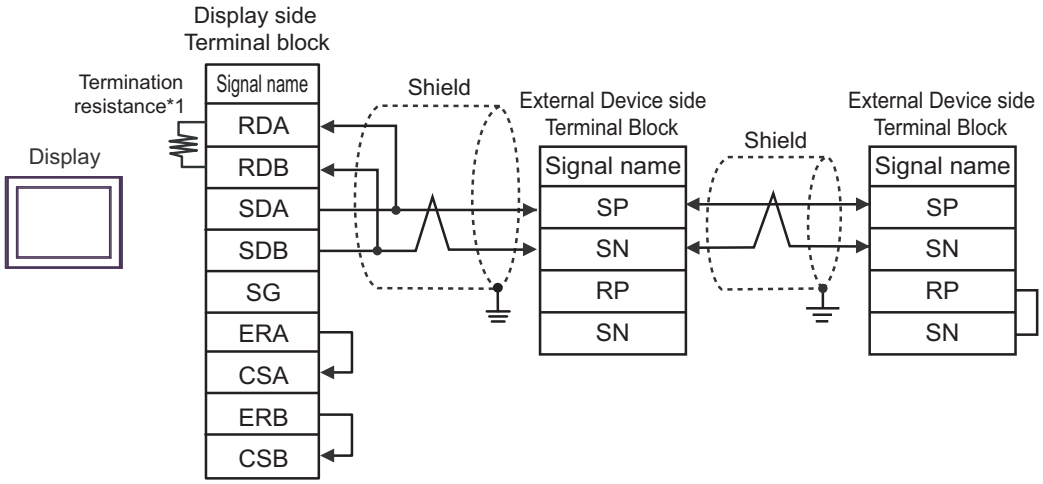
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

1G)

- 1:1 Connection



- 1:n Connection



NOTE

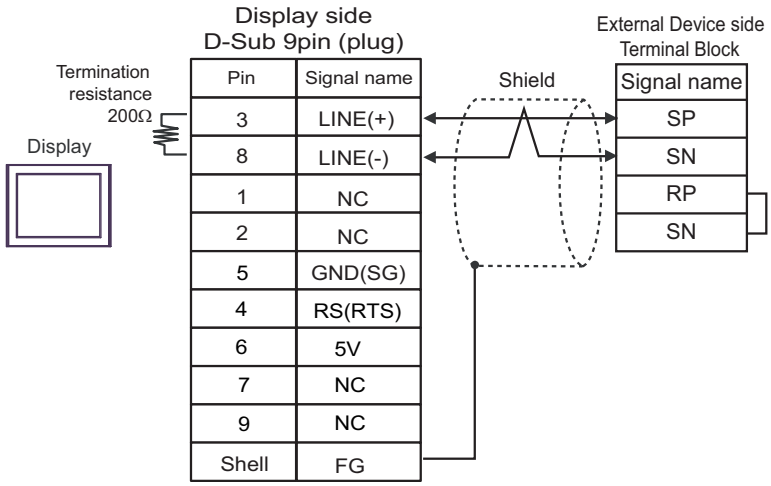
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

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

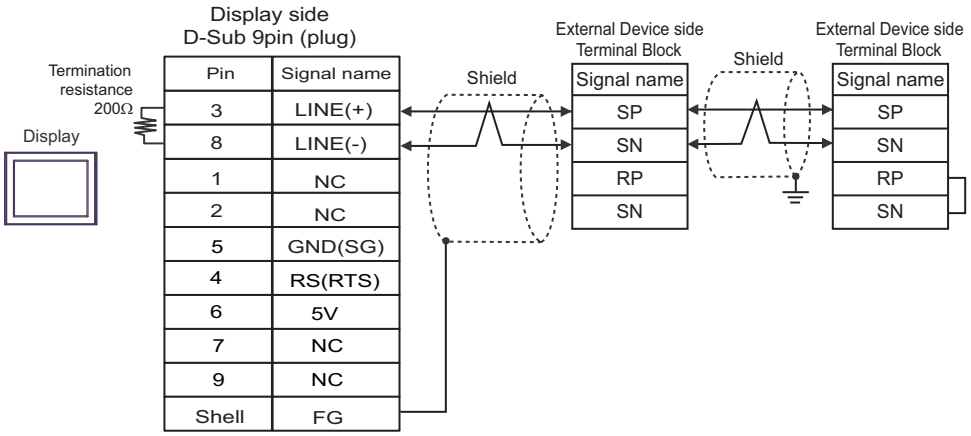
DIP Switch No.	Set Value
1	OFF
2	OFF
3	OFF
4	ON

1H)

- 1:1 Connection



- 1:n Connection



IMPORTANT

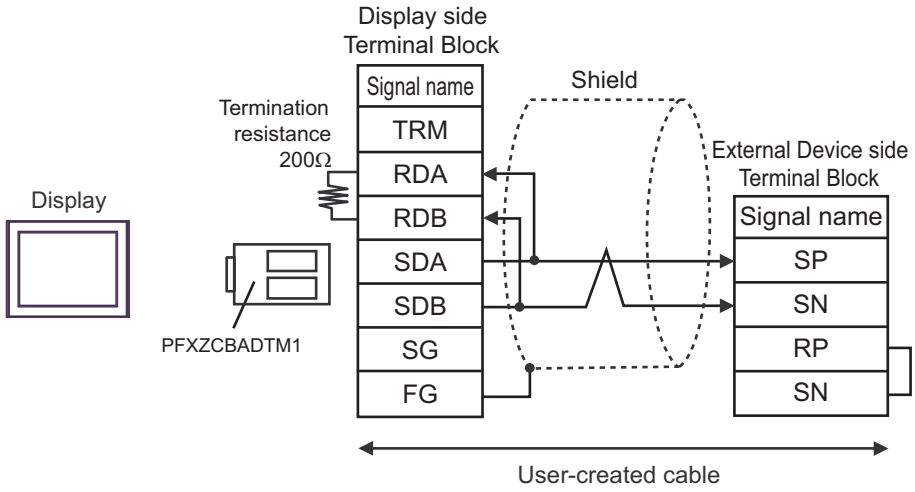
- The 5V output (Pin #6) on the Display is the power for the Siemens AG's PROFIBUS connector. Do not use it for other devices.

NOTE

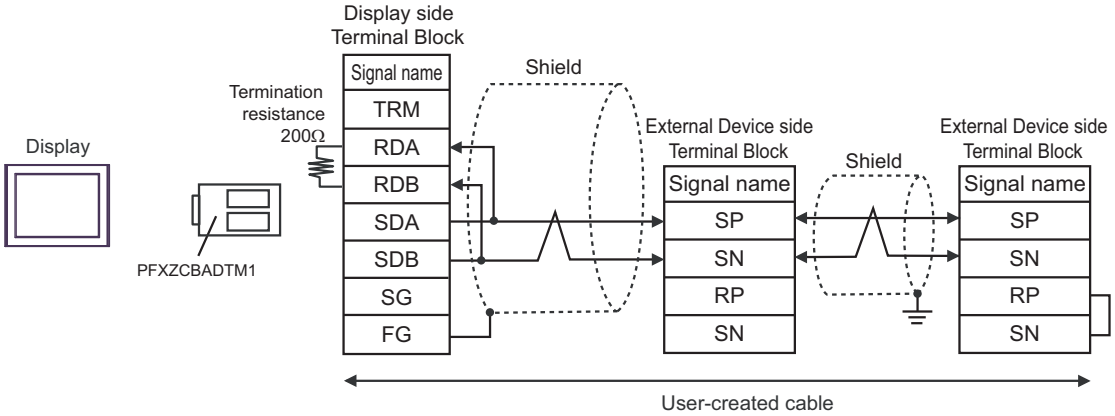
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.
- In COM on the GP-4107, the SG and FG terminals are isolated.

1I)

- 1:1 Connection



- 1:n Connection

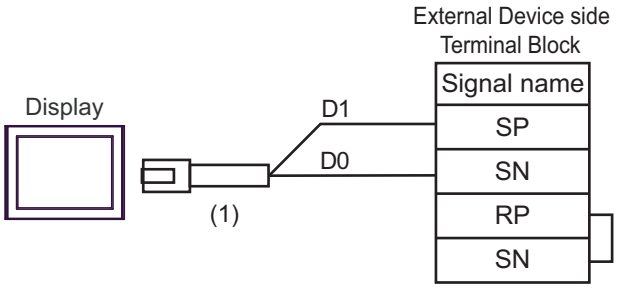


NOTE

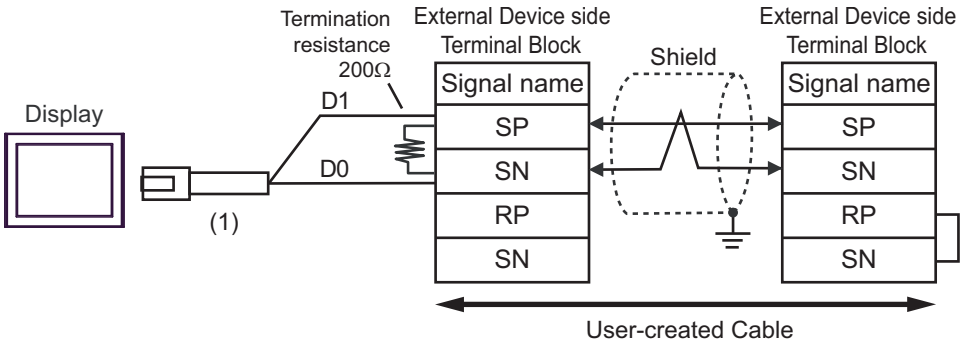
- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

1J)

- 1:1 Connection



- 1:n Connection



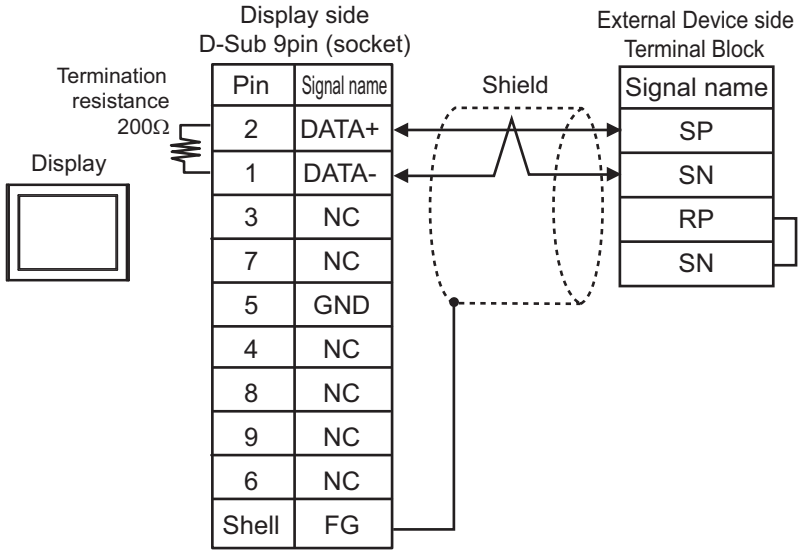
NOTE

- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

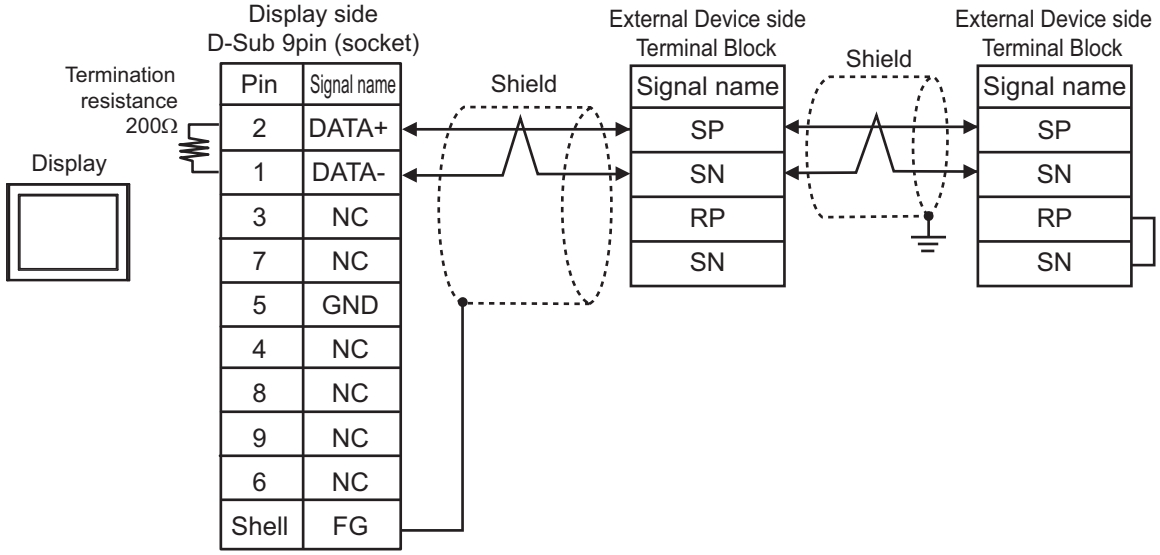
Number	Name	Notes
(1)	RJ45 RS-485 Cable (5m) by Pro-face PFXZLMCBRJR81	

1K)

- 1:1 Connection



- 1:n Connection



NOTE

- Enable termination resistance by short-circuiting the terminatory External Device's RP terminal and the terminatory External Device's SN terminal.

6 Supported Devices

The following table shows the range of supported device addresses. Please note that the actually supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

6.1 L300P series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Forward/Reverse/Stop Command	-	00_00		Bit15 *1*2
Frequency Value Setup	-	01_00		*2*3*4
Intelligent Terminal Status Setup	-	02_00 - 02_01		Bit31 *2*5
Monitor Data Batch Read	-	03_00 - 03_12		Bit31 *6*7
Read Inverter Status	-	04_00 - 04_03		Bit15 *6*8
Read Trip History	-	05_00 - 05_54		Bit31 *6*9
Read/Set Setting Fields	-	F002 - F203	H/L	Bit31 *10
	-	A001 - A296		Bit31 *10
	-	b001 - b213		Bit31 *10
	-	C001 - C123		Bit31 *10
	-	H003 - H206		Bit31 *10
	-	P001 - P049		Bit31 *10
Re-initilaize Setting Values	-	08_00		*2*3*11
Check if Setting Value can be saved to EEPROM or not	-	09_00		Bit15 *6*12
Save Setting Value to EEPROM	-	0A_00		*2*3*13
Re-calculate Internal Constant	-	0B_00		*2*3*14
Read Output Frequency Setting Value	-	0E_00		Bit31 *6*15

*1 The device is allocated to Command 00 of the External Device.
The following table describes Command 00's write-only parameter number.

Address	Write Data	Description
00_00	0	Stop Command
	1	Forward Command
	2	Reverse Command

*2 Read disabled.

*3 Word access only

*4 The device is allocated to Command 01 of the External Device.
The following table describes Command 01's write-only parameter number.
In a Display, it is treated as 32-bit data.

Address	Description
01_00	Frequency Value Setup

*5 The device is allocated to Command 02 of the External Device.
The following table describes Command 02's write-only parameter number.
In the External Device, it is a 64-bit data block. However, in a Display, it is separated into two 32-bit data blocks.

Address	Description
02_00	Lower 32 bits of 64-bit Intelligent Terminal Status data block
02_01	Higher 32 bits of 64-bit Intelligent Terminal Status data block

The table below shows the set values of the External Device.
Refer to the External Device manual for set value details.

Data	Description
0x0000000000000001	[FW] Forward Command
0x0000000000000002	[RV] Reverse Command
0x0000000000000004	[CF1] Multi-level Speed 1 (Binary Operation)
0x0000000000000008	[CF2] Multi-level Speed 2 (Binary Operation)
0x0000000000000010	[CF3] Multi-level Speed 3 (Binary Operation)
⋮	⋮

E.g. 1) When you want the External Device to operate in Forward Command and you also want to activate Multi-level Speed 1 and Multi-level Speed 2, write the following data to the External Device:
Forward Command 0x0000000000000001 + Multi-level Speed 1 0x0000000000000004 + Multi-level Speed 2 0x0000000000000008 = 0x000000000000000D
When you want to write data only to address 02_00, "0" will be written to address 02_01.
Use D-scripts's memory copy to simultaneously write data in address 02_00 and 02_01.

E.g. 2) When you want to clear Forward Command and remote operation data, write data "0x0000000200000001" to the External Device. This 64-bit data will be divided into two units of 32-bit data each, and will be written to the LS area. E.g., "0x00000001" will be written to LS100, and "0x00000002" will be written to LS101.
Use memcpy() (memory copy) function to copy the LS area data to address 02_00. This writes data "0x0000000200000001" to the External Device.

◆D-Script Example
[w:01/LS0100]=0x00000001
[w:01/LS0101]=0x00000001
memcpy([w:01/02_00],[w:01/LS0100],2)

*6 Write disabled.

*7 The device is allocated to Command 03 of the External Device.
The following table describes Command 03's read-only data.

Address	Description	Address	Description
03_00	Output frequency	03_07	Output torque monitor
03_01	Output current	03_08	Output voltage monitor
03_02	Direction of rotation	03_09	Electric power monitor
03_03	PID feedback monitor	03_10	Reserved
03_04	Intelligent input monitor	03_11	Run Mode time monitor
03_05	Intelligent output monitor	03_12	Power ON time monitor
03_06	Frequency converting monitor		

*8 The device is allocated to Command 04 of the External Device.
The following table describes Command 04's read-only data.

Address	Description	Address	Description
04_03	Inverter Status A	04_01	Inverter Status C
04_02	Inverter Status B	04_00	Reserved (default: 0)

*9 The device is allocated to Command 05 of the External Device.
The following table describes Command 05's read-only data.

Address	Description	Remarks
05_00	Total count	Total accumulated number of 6-trip events
05_01	Trip factor	Trip 1 (8 bytes)
05_02	Inverter Status A	
05_03	Inverter Status B	
05_04	Inverter Status C	
05_05	Output frequency	
05_06	Accumulated Run Mode time	
05_07	Output current	
05_08	Output voltage	
05_09	Power ON time	
⋮	⋮	⋮
05_46	Trip factor	Trip 6 (8 bytes)
05_47	Inverter Status A	
05_48	Inverter Status B	
05_49	Inverter Status C	
05_50	Output frequency	
05_51	Accumulated Run Mode time	
05_52	Output current	
05_53	Output voltage	
05_54	Power ON time	

*10 Some setting items are read-only or write-only. Check the setting permissions in the External Device manual before reading/writing a setting item.

*11 The device is allocated to Command 08 of the External Device.
The following table describes Command 08 data.
This command is an instruction and is write-only.
In a Display, writing data issues instructions to the External Device.

Address	Description
08_00	Re-initialize Setting Values

*12 The device is allocated to Command 09 of the External Device.
The following table describes Command 09 data.

Address	Description
09_00	Check if Setting Values can be saved to EEPROM or not. When it saves, it sets to 1.

*13 The device is allocated to Command 0A of the External Device.
The following table describes Command 0A data.
This command is an instruction and is write-only.
In a Display, writing data issues instructions to the External Device.

Address	Description
0A_00	Save Setting Values to EEPROM

*14 The device is allocated to Command 0B of the External Device.
The following table describes Command 0B data.
This command is an instruction and is write-only.
In a Display, writing data issues instructions to the External Device.
In a Display, it is treated as 16-bit data.

Address	Description
0B_00	Re-calculate Internal Constant

*15 The device is allocated to Command 0E of the External Device.
The following table describes Command 0E data.
This address is read-only.

Address	Description
0E_00	Read Output Frequency Setting Value

NOTE

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.
  Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"
- Refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.2 SJ300 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Forward/Reverse/Stop Command	-	00_00		Bit 15 *1*2
Frequency Value Setup	-	01_00		*2*3*4
Intelligent Terminal Status Setup	-	02_00 - 02_01		Bit 31 *2*5
Monitor Data Batch Read	-	03_00 - 03_12		Bit 31 *6*7
Read Inverter Status	-	04_00 - 04_03		Bit 15 *6*8
Read Trip History	-	05_00 - 05_54		Bit 31 *6*9
Read/Set Setting Fields	-	F002 - F303	H / L	Bit 31 *10
	-	A001 - A393		Bit 31 *10
	-	b001 - b313		Bit 31 *10
	-	C001 - C123		Bit 31 *10
	-	H003 - H306		Bit 31 *10
	-	P001 - P049		Bit 31 *10
Re-initilaize Setting Values	-	08_00		*2*3*11
Check if Setting Value can be saved to EEPROM or not	-	09_00		Bit 15 *6*12
Save Setting Value to EEPROM	-	0A_00		*2*3*13
Re-calculate Internal Constant	-	0B_00		*2*3*14
Read Output Frequency Setting Value	-	0E_00		Bit 31 *6*15

*1 The device is allocated to Command 00 of the External Device.
The following table describes Command 00's write-only parameter number.

Address	Write Data	Description
00_00	0	Stop Command
	1	Forward Command
	2	Reverse Command

*2 Read disabled.

*3 Word access only

*4 The device is allocated to Command 01 of the External Device.
The following table describes Command 01's write-only parameter number.
In a Display, it is treated as 32-bit data.

Address	Description
01_00	Frequency Value Setup

*5 The device is allocated to Command 02 of the External Device.
The following table describes Command 02's write-only parameter number.
In the External Device, it is a 64-bit data block. However, in a Display, it is separated into two 32-bit data blocks.

Address	Description
02_00	Lower 32 bits of 64-bit Intelligent Terminal Status data block
02_01	Higher 32 bits of 64-bit Intelligent Terminal Status data block

The table below shows the set values of the External Device.
Refer to the External Device manual for set value details.

Data	Description
0x0000000000000001	[FW] Forward Command
0x0000000000000002	[RV] Reverse Command
0x0000000000000004	[CF1] Multi-level Speed 1 (Binary Operation)
0x0000000000000008	[CF2] Multi-level Speed 2 (Binary Operation)
0x0000000000000010	[CF3] Multi-level Speed 3 (Binary Operation)
⋮	⋮

E.g. 1) When you want the External Device to operate in Forward Command and also you want to activate Multi-level Speed 1 and Multi-level Speed 2, write the following data to the External Device:
Forward Command 0x0000000000000001 + Multi-level Speed 1 0x0000000000000004 + Multi-level Speed 2 0x0000000000000008 = 0x000000000000000D
When you want to write data only to address 02_00, "0" will be written to address 02_01.
Use D-scripts's memory copy to simultaneously write data in address 02_00 and 02_01.

E.g. 2) When you want to clear Forward Command and remote operation data, write data "0x0000000200000001" to the External Device. This 64-bit data will be divided into two units of 32-bit data each, and will be written to the LS area. E.g., "0x00000001" will be written to LS100, and "0x00000002" will be written to LS101.
Use memcpy() (memory copy) function to copy the LS area data to address 02_00. This writes data "0x0000000200000001" to the External Device.

◆D-Script Example
[w:01/LS0100]=0x00000001
[w:01/LS0101]=0x00000001
memcpy([w:01/02_00],[w:01/LS0100],2)

*6 Write disabled.

*7 The device is allocated to Command 03 of the External Device.
The following table describes Command 03's read-only data.

Address	Description	Address	Description
03_00	Output frequency	03_07	Output torque monitor
03_01	Output current	03_08	Output voltage monitor
03_02	Direction of rotation	03_09	Electric power monitor
03_03	PID feedback monitor	03_10	Reserved
03_04	Intelligent input monitor	03_11	Run Mode time monitor
03_05	Intelligent output monitor	03_12	Power ON time monitor
03_06	Frequency converting monitor		

*8 The device is allocated to Command 04 of the External Device.
The following table describes Command 04's read-only data.

Address	Description	Address	Description
04_03	Inverter Status A	04_01	Inverter Status C
04_02	Inverter Status B	04_00	Reserved (default: 0)

*9 The device is allocated to Command 05 of the External Device.
The following table describes Command 05's read-only data.

Address	Description	Remarks
05_00	Total count	Total accumulated number of 6-trip events
05_01	Trip factor	Trip 1 (8 bytes)
05_02	Inverter Status A	
05_03	Inverter Status B	
05_04	Inverter Status C	
05_05	Output frequency	
05_06	Accumulated Run Mode time	
05_07	Output current	
05_08	Output voltage	
05_09	Power ON time	
⋮	⋮	⋮
05_46	Trip factor	Trip 6 (8 bytes)
05_47	Inverter Status A	
05_48	Inverter Status B	
05_49	Inverter Status C	
05_50	Output frequency	
05_51	Accumulated Run Mode time	
05_52	Output current	
05_53	Output voltage	
05_54	Power ON time	

*10 Some setting items are read-only or write-only. Check the setting permissions in the External Device manual before reading/writing a setting item.

*11 The device is allocated to Command 08 of the External Device.
The following table describes Command 08 data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
08_00	Re-initialize Setting Values

*12 The device is allocated to Command 09 of the External Device.
The following table describes Command 09 data.

Address	Description
09_00	Check if Setting Values can be saved to EEPROM or not. When it saves, it sets to 1.

*13 The device is allocated to Command 0A of the External Device.
The following table describes Command 0A data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
0A_00	Save Setting Values to EEPROM

*14 The device is allocated to Command 0B of the External Device.
The following table describes Command 0B data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.
In a Display, it is treated as 16-bit data.

Address	Description
0B_00	Re-calculate Internal Constant

*15 The device is allocated to Command 0E of the External Device.
The following table describes Command 0E data.
This address is read-only.

Address	Description
0E_00	Read Output Frequency Setting Value

NOTE

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.
  Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"
- Refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.3 SJ700 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Forward/Reverse/Stop Command	-	00_00		Bit 15 *1*2
Frequency Value Setup	-	01_00		*2*3*4
Intelligent Terminal Status Setup	-	02_00 - 02_01		Bit 31 *2*5
Monitor Data Batch Read	-	03_00 - 03_12		Bit 31 *6*7
Read Inverter Status	-	04_00 - 04_03		Bit 15 *6*8
Read Trip History	-	05_00 - 05_54		Bit 31 *6*9
Read/Set Setting Fields	-	F002 - F303	H / L	Bit 31 *10
	-	A001 - A393		Bit 31 *10
	-	b001 - b313		Bit 31 *10
	-	C001 - C159		Bit 31 *10
	-	H003 - H306		Bit 31 *10
	-	P001 - P131		Bit 31 *10
Re-initilaize Setting Values	-	08_00		*2*3*11
Check if Setting Value can be saved to EEPROM or not	-	09_00		Bit 15 *6*12
Save Setting Value to EEPROM	-	0A_00		*2*3*13
Re-calculate Internal Constant	-	0B_00		*2*3*14
Read Output Frequency Setting Value	-	0E_00		Bit 31 *6*15

*1 The device is allocated to Command 00 of the External Device.
The following table describes Command 00's write-only parameter number.

Address	Write Data	Description
00_00	0	Stop Command
	1	Forward Command
	2	Reverse Command

*2 Read disabled.

*3 Word access only

*4 The device is allocated to Command 01 of the External Device.
The following table describes Command 01's write-only parameter number.
In a Display, it is treated as 32-bit data.

Address	Description
01_00	Frequency Value Setup

*5 The device is allocated to Command 02 of the External Device.
The following table describes Command 02's write-only parameter number.
In the External Device, it is a 64-bit data block. However, in a Display, it is separated into two 32-bit data blocks.

Address	Description
02_00	Lower 32 bits of 64-bit Intelligent Terminal Status data blocks
02_01	Higher 32 bits of 64-bit Intelligent Terminal Status data blocks

The table below shows the set values of the External Device.
Refer to the External Device manual for set value details.

Data	Description
0x0000000000000001	[FW] Forward Command
0x0000000000000002	[RV] Reverse Command
0x0000000000000004	[CF1] Multi-level Speed 1 (Binary Operation)
0x0000000000000008	[CF2] Multi-level Speed 2 (Binary Operation)
0x0000000000000010	[CF3] Multi-level Speed 3 (Binary Operation)
⋮	⋮

E.g. 1) When you want the External Device to operate in Forward Command and also you want to activate Multi-level Speed 1 and Multi-level Speed 2, write the following data to the External Device:
Forward Command 0x0000000000000001 + Multi-level Speed 1 0x0000000000000004 + Multi-level Speed 2 0x0000000000000008 = 0x000000000000000D
When you want to write data only to address 02_00, "0" will be written to address 02_01.
Use D-scripts's memory copy to simultaneously write data in address 02_00 and 02_01.

E.g. 2) When you want to clear Forward Command and remote operation data, write data "0x0000000200000001" to the External Device. This 64-bit data will be divided into two units of 32-bit data each, and will be written to the LS area. E.g., "0x00000001" will be written to LS100, and "0x00000002" will be written to LS101.
Use memcpy() (memory copy) function to copy the LS area data to address 02_00. This writes data "0x0000000200000001" to the External Device.

◆D-Script Example
[w:01/LS0100]=0x00000001
[w:01/LS0101]=0x00000001
memcpy([w:01/02_00],[w:01/LS0100],2)

*6 Write disabled.

*7 The device is allocated to Command 03 of the External Device.
The following table describes Command 03's read-only data.

Address	Description	Address	Description
03_00	Output frequency	03_07	Output torque monitor
03_01	Output current	03_08	Output voltage monitor
03_02	Direction of rotation	03_09	Electric power monitor
03_03	PID feedback monitor	03_10	Reserved
03_04	Intelligent input monitor	03_11	Run Mode time monitor
03_05	Intelligent output monitor	03_12	Power ON time monitor
03_06	Frequency converting monitor		

*8 The device is allocated to Command 04 of the External Device.
The following table describes Command 04's read-only data.

Address	Description	Address	Description
04_03	Inverter Status A	04_01	Inverter Status C
04_02	Inverter Status B	04_00	Reserved (default: 0)

*9 The device is allocated to Command 05 of the External Device.
The following table describes Command 05's read-only data.

Address	Description	Remarks
05_00	Total count	Total accumulated number of 6-trip events
05_01	Trip factor	Trip 1 (8 bytes)
05_02	Inverter Status A	
05_03	Inverter Status B	
05_04	Inverter Status C	
05_05	Output frequency	
05_06	Accumulated Run Mode time	
05_07	Output current	
05_08	Output voltage	
05_09	Power ON time	
⋮	⋮	⋮
05_46	Trip factor	Trip 6 (8 bytes)
05_47	Inverter Status A	
05_48	Inverter Status B	
05_49	Inverter Status C	
05_50	Output frequency	
05_51	Accumulated Run Mode time	
05_52	Output current	
05_53	Output voltage	
05_54	Power ON time	

*10 Some setting items are read-only or write-only. Check the setting permissions in the External Device manual before reading/writing a setting item.

*11 The device is allocated to Command 08 of the External Device.
The following table describes Command 08 data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
08_00	Re-initialize Setting Values

*12 The device is allocated to Command 09 of the External Device.
The following table describes Command 09 data.

Address	Description
09_00	Check if Setting Values can be saved to EEPROM or not. When it saves, it sets to 1.

*13 The device is allocated to Command 0A of the External Device.
The following table describes Command 0A data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
0A_00	Save Setting Values to EEPROM

*14 The device is allocated to Command 0B of the External Device.
The following table describes Command 0B data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.
In a Display, it is treated as 16-bit data.

Address	Description
0B_00	Re-calculate Internal Constant

*15 The device is allocated to Command 0E of the External Device.
The following table describes Command 0E data.
This address is read-only.

Address	Description
0E_00	Read Output Frequency Setting Value

NOTE

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.
  Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"
- Refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.4 SJ700-2 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Forward/Reverse/Stop Command	-	00_00		Bit 15 *1*2
Frequency Value Setup	-	01_00		*2*3*4
Intelligent Terminal Status Setup	-	02_00 - 02_01		Bit 31 *2*5
Monitor Data Batch Read	-	03_00 - 03_12		Bit 31 *6*7
Read Inverter Status	-	04_00 - 04_03		Bit 15 *6*8
Read Trip History	-	05_00 - 05_54		Bit 31 *6*9
Read/Set Setting Fields	-	F002 - F303	H / L	Bit 31 *10
	-	A001 - A393		Bit 31 *10
	-	b001 - b313		Bit 31 *10
	-	C001 - C169		Bit 31 *10
	-	H003 - H306		Bit 31 *10
	-	P001 - P131		Bit 31 *10
Re-initilaize Setting Values	-	08_00		*2*3*11
Check if Setting Value can be saved to EEPROM or not	-	09_00		Bit 15 *6*12
Save Setting Value to EEPROM	-	0A_00		*2*3*13
Re-calculate Internal Constant	-	0B_00		*2*3*14
Read Output Frequency Setting Value	-	0E_00		Bit 31 *6*15

*1 The device is allocated to Command 00 of the External Device.
The following table describes Command 00's write-only parameter number.

Address	Write Data	Description
00_00	0	Stop Command
	1	Forward Command
	2	Reverse Command

*2 Read disabled.

*3 Word access only

*4 The device is allocated to Command 01 of the External Device.
The following table describes Command 01's write-only parameter number.
In a Display, it is treated as 32-bit data.

Address	Description
01_00	Frequency Value Setup

*5 The device is allocated to Command 02 of the External Device.
The following table describes Command 02's write-only parameter number.
In the External Device, it is a 64-bit data block. However, in a Display, it is separated into two 32-bit data blocks.

Address	Description
02_00	Lower 32 bits of 64-bit Intelligent Terminal Status data block
02_01	Higher 32 bits of 64-bit Intelligent Terminal Status data block

The table below shows the set values of the External Device.
Refer to the External Device manual for set value details.

Data	Description
0x0000000000000001	[FW] Forward Command
0x0000000000000002	[RV] Reverse Command
0x0000000000000004	[CF1] Multi-level Speed 1 (Binary Operation)
0x0000000000000008	[CF2] Multi-level Speed 2 (Binary Operation)
0x0000000000000010	[CF3] Multi-level Speed 3 (Binary Operation)
⋮	⋮

E.g. 1) When you want the External Device to operate in Forward Command and also you want to activate Multi-level Speed 1 and Multi-level Speed 2, write the following data to the External Device:
Forward Command 0x0000000000000001 + Multi-level Speed 1 0x0000000000000004 + Multi-level Speed 2 0x0000000000000008 = 0x000000000000000D
When you want to write data only to address 02_00, "0" will be written to address 02_01.
Use D-scripts's memory copy to simultaneously write data in address 02_00 and 02_01.

E.g. 2) When you want to clear Forward Command and remote operation data, write data "0x0000000200000001" to the External Device. This 64-bit data will be divided into two units of 32-bit data each, and will be written to the LS area. E.g., "0x00000001" will be written to LS100, and "0x00000002" will be written to LS101.
Use memcpy() (memory copy) function to copy the LS area data to address 02_00. This writes data "0x0000000200000001" to the External Device.

◆D-Script Example
[w:01/LS0100]=0x00000001
[w:01/LS0101]=0x00000001
memcpy([w:01/02_00],[w:01/LS0100],2)

*6 Write disabled.

*7 The device is allocated to Command 03 of the External Device.
The following table describes Command 03's read-only data.

Address	Description	Address	Description
03_00	Output frequency	03_07	Output torque monitor
03_01	Output current	03_08	Output voltage monitor
03_02	Direction of rotation	03_09	Electric power monitor
03_03	PID feedback monitor	03_10	Reserved
03_04	Intelligent input monitor	03_11	Run Mode time monitor
03_05	Intelligent output monitor	03_12	Power ON time monitor
03_06	Frequency converting monitor		

*8 The device is allocated to Command 04 of the External Device.
The following table describes Command 04's read-only data.

Address	Description	Address	Description
04_03	Inverter Status A	04_01	Inverter Status C
04_02	Inverter Status B	04_00	Reserved (default: 0)

*9 The device is allocated to Command 05 of the External Device.
The following table describes Command 05's read-only data.

Address	Description	Remarks
05_00	Total count	Total accumulated number of 6-trip events
05_01	Trip factor	Trip 1 (8 bytes)
05_02	Inverter Status A	
05_03	Inverter Status B	
05_04	Inverter Status C	
05_05	Output frequency	
05_06	Accumulated Run Mode time	
05_07	Output current	
05_08	Output voltage	
05_09	Power ON time	
⋮	⋮	⋮
05_46	Trip factor	Trip 6 (8 bytes)
05_47	Inverter Status A	
05_48	Inverter Status B	
05_49	Inverter Status C	
05_50	Output frequency	
05_51	Accumulated Run Mode time	
05_52	Output current	
05_53	Output voltage	
05_54	Power ON time	

*10 Some setting items are read-only or write-only. Check the setting permissions in the External Device manual before reading/writing a setting item.

*11 The device is allocated to Command 08 of the External Device.
The following table describes Command 08 data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
08_00	Re-initialize Setting Values

*12 The device is allocated to Command 09 of the External Device.
The following table describes Command 09 data.

Address	Description
09_00	Check if Setting Values can be saved to EEPROM or not. When it saves, it sets to 1.

*13 The device is allocated to Command 0A of the External Device.
The following table describes Command 0A data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
0A_00	Save Setting Values to EEPROM

*14 The device is allocated to Command 0B of the External Device.
The following table describes Command 0B data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.
In a Display, it is treated as 16-bit data.

Address	Description
0B_00	Re-calculate Internal Constant

*15 The device is allocated to Command 0E of the External Device.
The following table describes Command 0E data.
This address is read-only.

Address	Description
0E_00	Read Output Frequency Setting Value

NOTE

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.
  Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"
- Refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.5 HFC-VAH3 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Forward/Reverse/Stop Command	-	00_00		Bit15 *1*2
Frequency Value Setup	-	01_00		*2*3*4
Intelligent Terminal Status Setup	-	02_00 - 02_01		Bit31 *2*5
Monitor Data Batch Read	-	03_00 - 03_12		Bit31 *6*7
Read Inverter Status	-	04_00 - 04_03		Bit15 *6*8
Read Trip History	-	05_00 - 05_54		Bit31 *6*9
Read/Set Setting Fields	-	F002 - F803	H/L	Bit31 *10
	-	A001 - A893		Bit31 *10
	-	b004 - b813		Bit31 *10
	-	C001 - C123		Bit31 *10
	-	H080 - H885		Bit31 *10
	-	P001 - P031		Bit31 *10
Re-initilaize Setting Values	-	08_00		*2*3*11
Check if Setting Value can be saved to EEPROM or not	-	09_00		Bit15 *6*12
Save Setting Value to EEPROM	-	0A_00		*2*3*13
Re-calculate Internal Constant	-	0B_00		*2*3*14
Read Output Frequency Setting Value	-	0E_00		Bit31 *6*15

*1 The device is allocated to Command 00 of the External Device.
The following table describes Command 00's write-only parameter number.

Address	Write Data	Description
00_00	0	Stop Command
	1	Forward Command
	2	Reverse Command

*2 Read disabled.

*3 Word access only

*4 The device is allocated to Command 01 of the External Device.
The following table describes Command 01's write-only parameter number.
In a Display, it is treated as 32-bit data.

Address	Description
01_00	Frequency Value Setup

*5 The device is allocated to Command 02 of the External Device.
The following table describes Command 02's write-only parameter number.
In the External Device, it is a 64-bit data block. However, in a Display, it is separated into two 32-bit data blocks.

Address	Description
02_00	Lower 32 bits of 64-bit Intelligent Terminal Status data
02_01	Higher 32 bits of 64-bit Intelligent Terminal Status data

The table below shows the set values of the External Device.
Refer to the External Device manual for set value details.

Data	Description
0x0000000000000001	[FW] Forward Command
0x0000000000000002	[RV] Reverse Command
0x0000000000000004	[CF1] Multi-level Speed 1 (Binary Operation)
0x0000000000000008	[CF2] Multi-level Speed 2 (Binary Operation)
0x0000000000000010	[CF3] Multi-level Speed 3 (Binary Operation)
⋮	⋮

E.g. 1) When you want the External Device to operate in Forward Command and also you want to activate Multi-level Speed 1 and Multi-level Speed 2, write the following data to the External Device:
Forward Command 0x0000000000000001 + Multi-level Speed 1 0x0000000000000004 + Multi-level Speed 2 0x0000000000000008 = 0x000000000000000D
When you want to write data only to address 02_00, "0" will be written to address 02_01.
Use D-scripts's memory copy to simultaneously write data in address 02_00 and 02_01.

E.g. 2) When you want to clear Forward Command and remote operation data, write data "0x0000000200000001" to the External Device. This 64-bit data will be divided into two units of 32-bit data each, and will be written to the LS area. E.g., "0x00000001" will be written to LS100, and "0x00000002" will be written to LS101.
Use memcpy() (memory copy) function to copy the LS area data to address 02_00. This writes data "0x0000000200000001" to the External Device.

◆D-Script Example
[w:01/LS0100]=0x00000001
[w:01/LS0101]=0x00000001
memcpy([w:01/02_00],[w:01/LS0100],2)

*6 Write disabled.

*7 The device is allocated to Command 03 of the External Device.
The following table describes Command 03's read-only data.

Address	Description	Address	Description
03_00	Output frequency	03_07	Output torque monitor
03_01	Output current	03_08	Output voltage monitor
03_02	Direction of rotation	03_09	Electric power monitor
03_03	PID feedback monitor	03_10	Reserved
03_04	Intelligent input monitor	03_11	Run Mode time monitor
03_05	Intelligent output monitor	03_12	Power ON time monitor
03_06	Frequency converting monitor		

*8 The device is allocated to Command 04 of the External Device.
The following table describes Command 04's read-only data.

Address	Description	Address	Description
04_03	Inverter Status A	04_01	Inverter Status C
04_02	Inverter Status B	04_00	Reserved (default: 0)

*9 The device is allocated to Command 05 of the External Device.
The following table describes Command 05's read-only data.

Address	Description	Remarks
05_00	Total count	Total accumulated number of 6-trip events
05_01	Trip factor	Trip 1 (8 bytes)
05_02	Inverter Status A	
05_03	Inverter Status B	
05_04	Inverter Status C	
05_05	Output frequency	
05_06	Accumulated Run Mode time	
05_07	Output current	
05_08	Output voltage	
05_09	Power ON time	
⋮	⋮	⋮
05_46	Trip factor	Trip 6 (8 bytes)
05_47	Inverter Status A	
05_48	Inverter Status B	
05_49	Inverter Status C	
05_50	Output frequency	
05_51	Accumulated Run Mode time	
05_52	Output current	
05_53	Output voltage	
05_54	Power ON time	

*10 Some setting items are read-only or write-only. Check the setting permissions in the External Device manual before reading/writing a setting item.

*11 The device is allocated to Command 08 of the External Device.
The following table describes Command 08 data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
08_00	Re-initialize Setting Values

*12 The device is allocated to Command 09 of the External Device.
The following table describes Command 09 data.

Address	Description
09_00	Check if Setting Values can be saved to EEPROM or not. When it saves, it sets to 1.

*13 The device is allocated to Command 0A of the External Device.
The following table describes Command 0A data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
0A_00	Save Setting Values to EEPROM

*14 The device is allocated to Command 0B of the External Device.
The following table describes Command 0B data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.
In a Display, it is treated as 16-bit data.

Address	Description
0B_00	Re-calculate Internal Constant

*15 The device is allocated to Command 0E of the External Device.
The following table describes Command 0E data.
This address is read-only.

Address	Description
0E_00	Read Output Frequency Setting Value

NOTE

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.
  Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"
- Refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

6.6 SJH300 series

This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Forward/Reverse/Stop Command	-	00_00		Bit 15 *1*2
Frequency Value Setup	-	01_00		*2*3*4
Intelligent Terminal Status Setup	-	02_00 - 02_01		Bit 31 *2*5
Monitor Data Batch Read	-	03_00 - 03_12		Bit 31 *6*7
Read Inverter Status	-	04_00 - 04_03		Bit 15 *6*8
Read Trip History	-	05_00 - 05_54		Bit 31 *6*9
Read/Set Setting Fields	-	F002 - F503	H / L	Bit 31 *10
	-	A001 - A596		Bit 31 *10
	-	b001 - b523		Bit 31 *10
	-	C001 - C541		Bit 31 *10
	-	H003 - H506		Bit 31 *10
	-	P001 - P131		Bit 31 *10
Re-initilaize Setting Values	-	08_00		*2*3*11
Check if Setting Value can be saved to EEPROM or not	-	09_00		Bit 15 *6*12
Save Setting Value to EEPROM	-	0A_00		*2*3*13
Re-calculate Internal Constant	-	0B_00		*2*3*14
Read Output Frequency Setting Value	-	0E_00		Bit 31 *6*15

*1 The device is allocated to Command 00 of the External Device.
The following table describes Command 00's write-only parameter number.

Address	Write Data	Description
00_00	0	Stop Command
	1	Forward Command
	2	Reverse Command

*2 Read disabled.

*3 Word access only

*4 The device is allocated to Command 01 of the External Device.
The following table describes Command 01's write-only parameter number.
In a Display, it is treated as 32-bit data.

Address	Description
01_00	Frequency Value Setup

*5 The device is allocated to Command 02 of the External Device.
The following table describes Command 02's write-only parameter number.
In the External Device, it is a 64-bit data block. However, in a Display, it is separated into two 32-bit data blocks.

Address	Description
02_00	Lower 32 bits of 64-bit Intelligent Terminal Status data block
02_01	Higher 32 bits of 64-bit Intelligent Terminal Status data block

The table below shows the set values of the External Device.
Refer to the External Device manual for set value details.

Data	Description
0x0000000000000001	[FW] Forward Command
0x0000000000000002	[RV] Reverse Command
0x0000000000000004	[CF1] Multi-level Speed 1 (Binary Operation)
0x0000000000000008	[CF2] Multi-level Speed 2 (Binary Operation)
0x0000000000000010	[CF3] Multi-level Speed 3 (Binary Operation)
⋮	⋮

E.g. 1) When you want the External Device to operate in Forward Command and also you want to activate Multi-level Speed 1 and Multi-level Speed 2, write the following data to the External Device:
Forward Command 0x0000000000000001 + Multi-level Speed 1 0x0000000000000004 + Multi-level Speed 2 0x0000000000000008 = 0x000000000000000D
When you want to write data only to address 02_00, "0" will be written to address 02_01.
Use D-scripts's memory copy to simultaneously write data in address 02_00 and 02_01.

E.g. 2) When you want to clear Forward Command and remote operation data, write data "0x0000000200000001" to the External Device. This 64-bit data will be divided into two units of 32-bit data each, and will be written to the LS area. E.g., "0x00000001" will be written to LS100, and "0x00000002" will be written to LS101.
Use memcpy() (memory copy) function to copy the LS area data to address 02_00. This writes data "0x0000000200000001" to the External Device.

◆D-Script Example
[w:01/LS0100]=0x00000001
[w:01/LS0101]=0x00000001
memcpy([w:01/02_00],[w:01/LS0100],2)

*6 Write disabled.

*7 The device is allocated to Command 03 of the External Device.
The following table describes Command 03's read-only data.

Address	Description	Address	Description
03_00	Output frequency	03_07	Output torque monitor
03_01	Output current	03_08	Output voltage monitor
03_02	Direction of rotation	03_09	Electric power monitor
03_03	PID feedback monitor	03_10	Reserved
03_04	Intelligent input monitor	03_11	Run Mode time monitor
03_05	Intelligent output monitor	03_12	Power ON time monitor
03_06	Frequency converting monitor		

*8 The device is allocated to Command 04 of the External Device.
The following table describes Command 04's read-only data.

Address	Description	Address	Description
04_03	Inverter Status A	04_01	Inverter Status C
04_02	Inverter Status B	04_00	Reserved (default: 0)

*9 The device is allocated to Command 05 of the External Device.
The following table describes Command 05's read-only data.

Address	Description	Remarks
05_00	Total count	Total accumulated number of 6-trip events
05_01	Trip factor	Trip 1 (8 bytes)
05_02	Inverter Status A	
05_03	Inverter Status B	
05_04	Inverter Status C	
05_05	Output frequency	
05_06	Accumulated Run Mode time	
05_07	Output current	
05_08	Output voltage	
05_09	Power ON time	
⋮	⋮	⋮
05_46	Trip factor	Trip 6 (8 bytes)
05_47	Inverter Status A	
05_48	Inverter Status B	
05_49	Inverter Status C	
05_50	Output frequency	
05_51	Accumulated Run Mode time	
05_52	Output current	
05_53	Output voltage	
05_54	Power ON time	

*10 Some setting items are read-only or write-only. Check the setting permissions in the External Device manual before reading/writing a setting item.

*11 The device is allocated to Command 08 of the External Device.
The following table describes Command 08 data.
This command is an instruction and is write-only.
In Display, writing data issues instructions to the External Device.

Address	Description
08_00	Re-initialize Setting Values

*12 The device is allocated to Command 09 of the External Device.
The following table describes Command 09 data.

Address	Description
09_00	Check if Setting Values can be saved to EEPROM or not. When it saves, it sets to 1.

*13 The device is allocated to Command 0A of the External Device.
The following table describes Command 0A data.
This command is an instruction and is write-only.
In a Display, writing data issues instructions to the External Device.

Address	Description
0A_00	Save Setting Values to EEPROM

*14 The device is allocated to Command 0B of the External Device.
The following table describes Command 0B data.
This command is an instruction and is write-only.
In a Display, writing data issues instructions to the External Device.
In a Display, it is treated as 16-bit data.

Address	Description
0B_00	Re-calculate Internal Constant

*15 The device is allocated to Command 0E of the External Device.
The following table describes Command 0E data.
This address is read-only.

Address	Description
0E_00	Read Output Frequency Setting Value

NOTE

- You can only set the Read Area Size for the system area available to use in the External Device. Please refer to the GP Pro-EX Reference Manual for Read Area Size.
  Cf. GP Pro-EX Reference Manual "LS Area (Direct Access Method Area)"
- Refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

7 Device Code and Address Code

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

Device	Device Name	Device Code (HEX)	Address Code
Forward/Reverse/Stop Command	00_	0006	Word Address
Frequency Value Setup	01_	0060	Word Address
Intelligent Terminal Status Setup	02_	0007	Word Address
Monitor Data Batch Read	03_	0008	Word Address
Read Inverter Status	04_	0009	Word Address
Read Trip History	05_	000A	Word Address
Read/Set Setting Fields	A	0000	Word Address
	F	0001	Word Address
	b	0002	Word Address
	C	0003	Word Address
	H	0004	Word Address
	P	0005	Word Address
Re-initilaize Setting Values	08_	0061	Word Address
Check if Setting Value can be saved to EEPROM or not	09_	000B	Word Address
Save Setting Value to EEPROM	0A_	0062	Word Address
Re-calculate Internal Constant	0B_	0063	Word Address
Read Output Frequency Setting Value	0E_	000C	Word Address

8 Error Messages

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

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

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 "Display-related errors" in "Maintenance/Troubleshooting Guide" for details on the error messages common to the driver.

■ Error Codes Unique to External Device

Error Code	Description
11H	Abnormal command code error
16H	Abnormal parameter code/value error

■ Error Messages Unique to External Device

Message ID	Error Message	Description
RHxx128	(Node Name): The Setting value for device 00 is illegal. Please check the inverter manuals.	Only the value of 0 - 9 can be accepted by Operation Command 00. When you want to set the data more than 9, the Display will display this message.
RHxx129	(Node Name): The Setting value for device 01 is illegal. Please check the inverter manuals.	Only the value of 0 - 999999 can be accepted by Operation Command 01. When you want to set the data more than 999999, the Display will display this message.
RHxx130	(Node Name): The length of the data written to (Device Address) is out of range, the writing operation can not be implemented.	For write Command 07, the valid range of data length is 8 bytes, if the length of written data is out of 8 bytes, this error message will be displayed and command is not sent.