KOSTAC/DL Series CCM SIO Driver

Introduction

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

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

1	System Configuration This section shows the types of External Devices which can be connected and SIO type.	☞ "1 System Configuration" (page 3)
2	Selection of External Device Select the model (series) of the External Device to be connected and its connection method.	☞ "2 Selection of External Device" (page 9)
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 10)
4	Setup Items This section describes communication setup items on the Display. Set the communication settings of the Display with GP-Pro EX or in off-line mode.	☞ "4 Setup Items" (page 57)
5	Cable Diagram This section shows cables and adapters for connecting the Display and the External Device.	☞ "5 Cable Diagram" (page 62)

Operation

1 System Configuration

The following shows the system configuration where the External Device of KOYO ELECTRONICS CO., LTD. and the Display are connected.

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
KOSTAC SG	SG-8	CN1 on G-01DM	RS422/485 (4wire)	Setting Example 2 (page 12)	Cable Diagram 2 (page 63)
		CN2 on G-01DM	RS232C	Setting Example 1 (page 10)	Cable Diagram 1 (page 62)
		General-purpose communication port on CPU[*1]	RS232C	Setting Example 3 (page 14)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 4 (page 16)	Cable Diagram 3 (page 69)
KOSTAC SU	SU-5	U-01DM	RS232C	Setting Example 5 (page 18)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 6 (page 20)	Cable Diagram 2 (page 63)
	SU-5E SU-6 SU-6B SU-6B-C	U-01DM	RS232C	Setting Example 5 (page 18)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 6 (page 20)	Cable Diagram 2 (page 63)
		General-purpose communication port on CPU	RS232C	Setting Example 7 (page 22)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 8 (page 24)	Cable Diagram 3 (page 69)

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
KOSTAC SU	SU-5M SU-5M-C	U-01DM	RS232C	Setting Example 5 (page 18)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 6 (page 20)	Cable Diagram 2 (page 63)
		General-purpose communication port 1 on CPU	RS232C	Setting Example 9 (page 26)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 10 (page 28)	Cable Diagram 3 (page 69)
		General-purpose communication port 2 on CPU	RS232C	Setting Example 11 (page 30)	Cable Diagram 4 (page 73)
	SU-6M SU-6M-C	U-01DM	RS232C	Setting Example 5 (page 18)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 6 (page 20)	Cable Diagram 2 (page 63)
		General-purpose communication port 1 on CPU	RS232C	Setting Example 9 (page 26)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 10 (page 28)	Cable Diagram 3 (page 69)
		General-purpose communication port 2 on CPU	RS232C	Setting Example 11 (page 30)	Cable Diagram 4 (page 73)
KOSTAC SZ	SZ-4	General-purpose communication port on CPU	RS232C	Setting Example 12 (page 32)	Cable Diagram 4 (page 73)
KOSTAC PZ3	PZ3-16ND1-16TD1 PZ3-T PZ3M	General-purpose communication port 2 on CPU	RS232C	Setting Example 23 (page 53)	Cable Diagram 6 (page 75)
			RS422/485 (4wire)	Setting Example 24 (page 55)	Cable Diagram 7 (page 76)
KOSTAC SR	SR-21 SR-22	E-02DM-R1	RS422/485 (4wire)	Setting Example 13 (page 34)	Cable Diagram 2 (page 63)

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
DL-205	D2-240	General-purpose communication port 2 on CPU	RS232C	Setting Example 14 (page 36)	Cable Diagram 4 (page 73)
	D2-250-1	General-purpose communication port 2 on CPU	RS232C	Setting Example 14 (page 36)	Cable Diagram 6 (page 75)
	D2-260	General-purpose communication port 2 on CPU	RS232C	Setting Example 14 (page 36)	Cable Diagram 6 (page 75)
			RS422/485 (4wire)	Setting Example 15 (page 38)	Cable Diagram 7 (page 76)
DL-405	D4--430	D4-DCM	RS232C	Setting Example 16 (page 40)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 17 (page 42)	Cable Diagram 2 (page 63)
	D4-440	D4-DCM	RS232C	Setting Example 16 (page 40)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 17 (page 42)	Cable Diagram 2 (page 63)
		General-purpose communication port on CPU	RS232C	Setting Example 18 (page 44)	Cable Diagram 1 (page 62)
			RS422/485 (4wire)	Setting Example 19 (page 46)	Cable Diagram 3 (page 69)
DL-305	D3-330	D3-DCM	RS422/485 (4wire)	Setting Example 20 (page 48)	Cable Diagram 2 (page 63)
DirectLogic 05	D0-05AA D0-05AD D0-05AR D0-05DA D0-05DD D0-05DD-D D0-05DR D0-05DR-D	General-purpose communication port 1 on CPU	RS232C	Setting Example 22 (page 52)	Cable Diagram 5 (page 74)
		General-purpose communication port 2 on CPU	RS232C	Setting Example 21 (page 50)	Cable Diagram 5 (page 74)

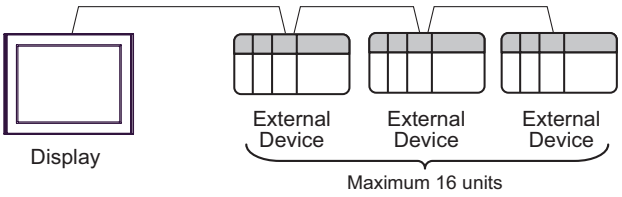
Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
DirectLogic 06	D0-06DD1 D0-06DD1-D D0-06DD2 D0-06DD2-D D0-06DR D0-06DR-D D0-06DA D0-06AR D0-06AA	General-purpose communication port 1 on CPU	RS232C	Setting Example 22 (page 52)	Cable Diagram 5 (page 74)
		General-purpose communication port 2 on CPU	RS232C	Setting Example 21 (page 50)	Cable Diagram 5 (page 74)

*1 Remove the instruction word programmer from the programmer communication port during communication.

■ Connection Configuration

- 1:1 Connection

- 1:n Connection



■ IPC COM Port

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

Usable port

Series	Usable Port		
	RS-232C	RS-422/485(4 wire)	RS-422/485(2 wire)
PS-2000B	COM1[*1], COM2, COM3[*1], COM4	-	-
PS-3450A, PS-3451A, PS3000-BA, PS3001-BD	COM1, COM2[*1*2]	COM2[*1*2]	COM2[*1*2]
PS-3650A, PS-3651A	COM1[*1]	-	-
PS-3700A (Pentium®4-M) PS-3710A	COM1[*1], COM2[*1], COM3[*2], COM4	COM3[*2]	COM3[*2]
PS-3711A	COM1[*1], COM2[*2]	COM2[*2]	COM2[*2]
PL-3000B, PL-3600T, PL-3600K, PL-3700T, PL-3700K, PL-3900T	COM1[*1*2], COM2[*1], COM3, COM4	COM1[*1*2]	COM1[*1*2]

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

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

DIP switch setting: RS-232C

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

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

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

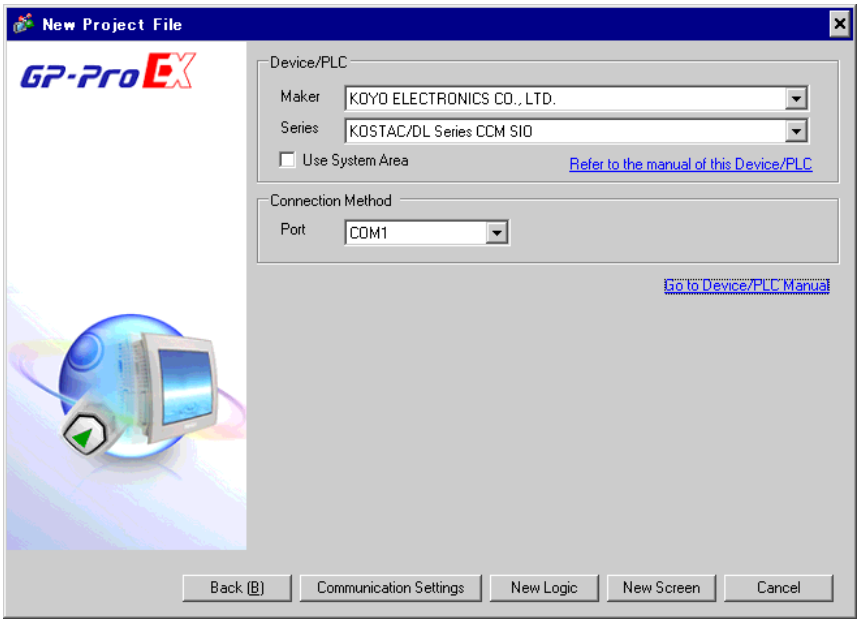
DIP switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA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

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

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

2 Selection of External Device

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Maker	Select the maker of the External Device to be connected. Select "KOYO ELECTRONICS CO., LTD."
Series	Select the model (series) of the External Device to be connected and its connection method. Select "KOSTAC/DL Series CCM SIO". Check the External Device which can be connected in "KOSTAC/DL Series CCM SIO" in system configuration. ☞ "1 System Configuration" (page 3)
Use System Area	Check this option when you synchronize the system data area of Display and the device (memory) of External Device. When synchronized, you can use the ladder program of External Device to switch the display or display the window on the display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This can also be set in GP-Pro EX or in the Display's off-line mode. Cf. GP-Pro EX Reference Manual "Display Unit (System Area) Settings Guide" Cf. Maintenance/Troubleshooting Manual "Main Unit - System Area Settings"
Port	Select the port of the Display to be connected to the External Device.

3 Example of Communication Setting

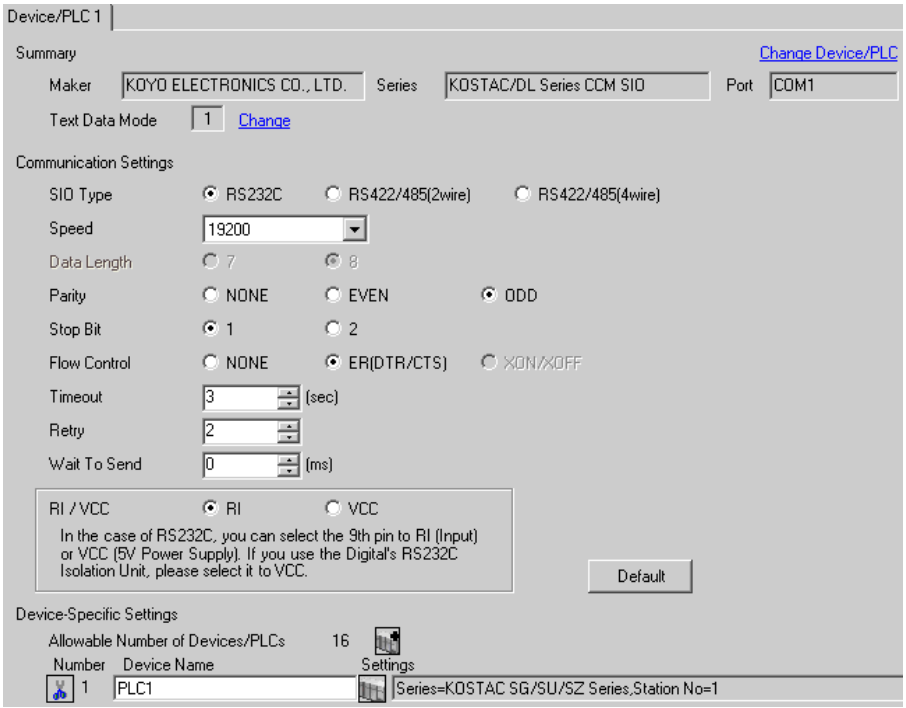
The following shows examples of communication settings of the Display and the External Device, which are recommended by Digital Electronics Corp.

3.1 Setting Example 1

■ Settings of GP-Pro EX

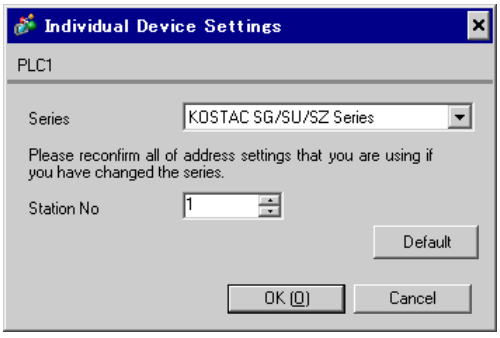
◆ Communication Settings

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



◆ Device Setting

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



■ Settings of External Device

For communication settings, use the DIP switches or the short plug on the side of the link I/F unit. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Configuration DIP Switch SW1

DIP Switch	Settings	Setup Description
1	ON	Child station No.: 1
2	OFF	
3	OFF	
4	OFF	
5	OFF	
6	OFF	
7	OFF	
8	OFF	Peer to Peer setting: 1:n mode
9	OFF	Master/Slave setting: Slave

◆ Configuration DIP Switch

DIP Switch	Settings	Setup Description
1	ON	Baud rate transmission speed: 19,200bps
2	ON	
3	ON	
4	ON	Parity enable/disable: Enabled (odd)
5	OFF	Self-diagnosis mode: OFF
6	OFF	Turnaround delay: None
7	OFF	Response delay time: 0 ms
8	OFF	
9	OFF	Transmission mode: HEX mode

◆ Short plug (2)

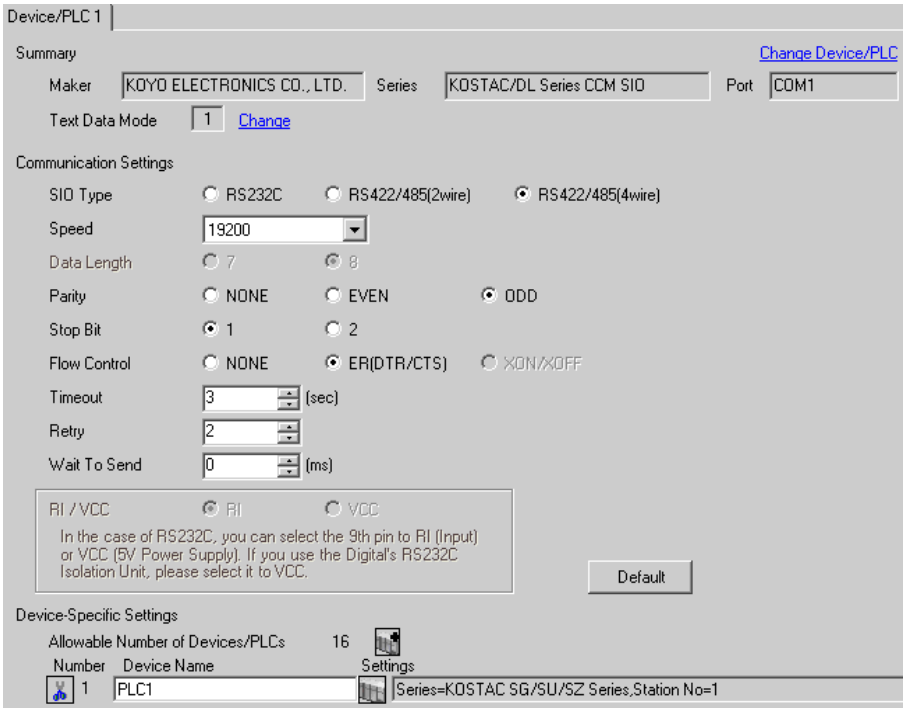
Short plug	Setup Description
232C ENABLE	SIO Type: RS232C

3.2 Setting Example 2

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the DIP switches or the short plug on the side of the link I/F unit. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Configuration DIP Switch SW1

DIP Switch	Settings	Setup Description
1	ON	Child station No.: 1
2	OFF	
3	OFF	
4	OFF	
5	OFF	
6	OFF	
7	OFF	
8	OFF	Peer to Peer setting: 1:n mode
9	OFF	Master/Slave setting: Slave

◆ Configuration DIP Switch

DIP Switch	Settings	Setup Description
1	ON	Baud rate transmission speed: 19,200bps
2	ON	
3	ON	
4	ON	Parity enable/disable: Enabled (odd)
5	OFF	Self-diagnosis mode: OFF
6	OFF	Turnaround delay: None
7	OFF	Response delay time: 0 ms
8	OFF	
9	OFF	Transmission mode: HEX mode

◆ Short plug (2)

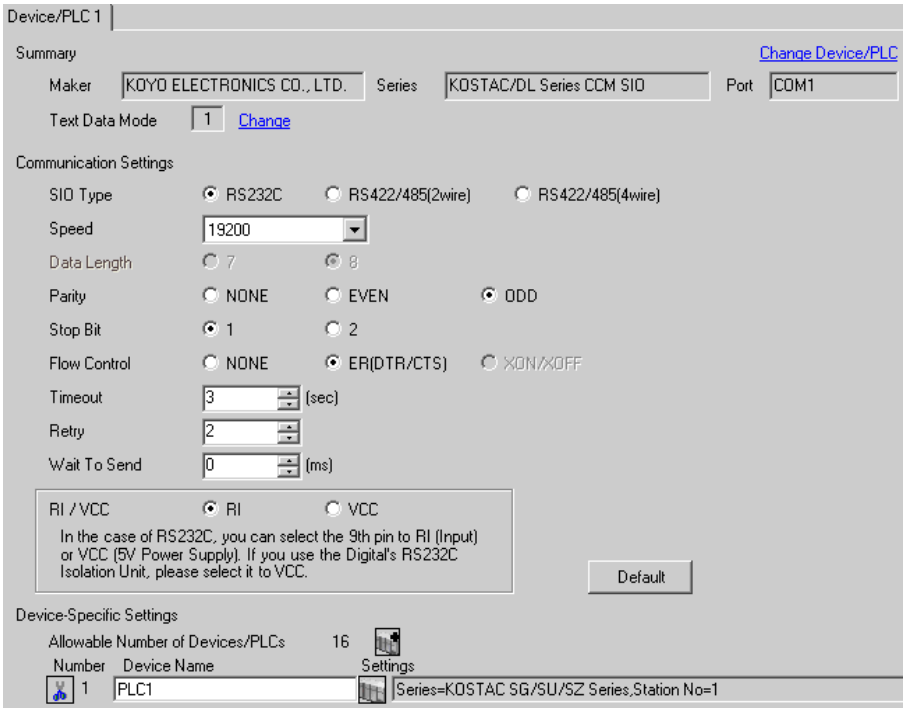
Short plug	Setup Description
232C DISABLE	SIO Type: RS422

3.3 Setting Example 3

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the DIP switches on the CPU unit. To set the station No., use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Communication Setting Switch

DIP Switch	Settings	Setup Description
SW1	ON	SIO Type: RS232C
SW2	OFF	CCM station No. setting: Enabled
SW3	ON	Baud rate transmission speed: 19,200bps
SW4	ON	

NOTE

- Setting SW2 to ON switches the transmission mode to ASCII mode and thus disables communication. Make sure to set it to OFF and set the CCM station No. and transmission mode.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

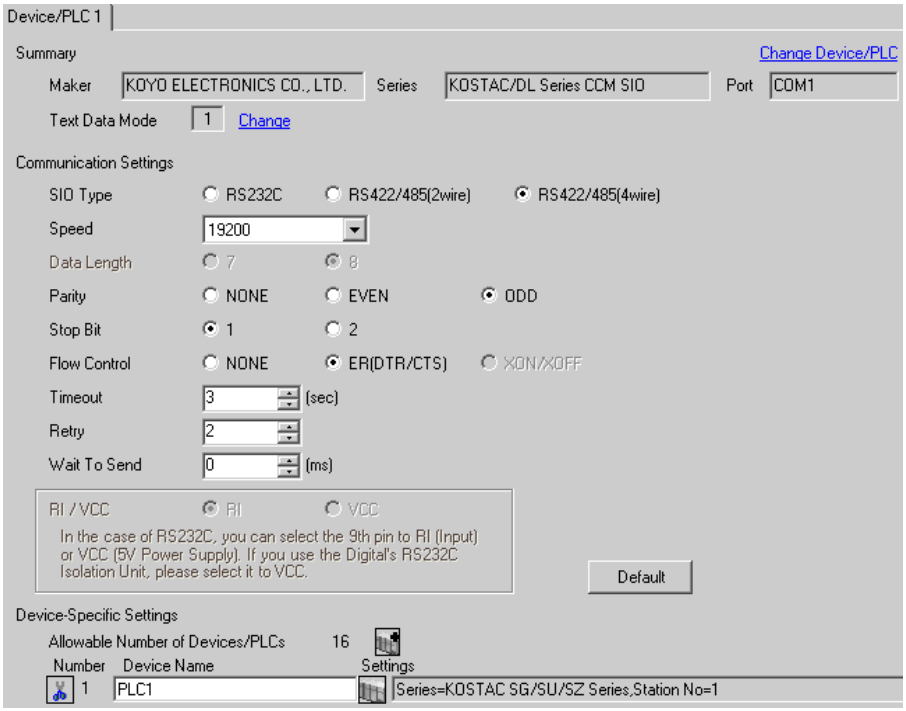
3 Set the transmission mode to "HEX", and then press the Enter key.

3.4 Setting Example 4

■ Settings of GP-Pro EX

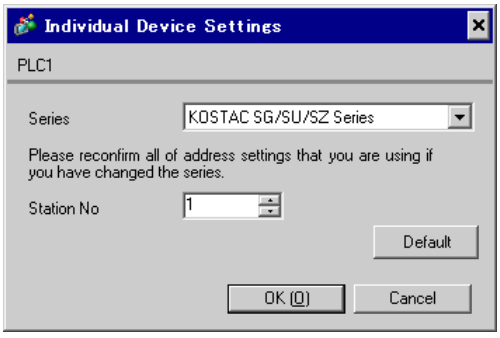
◆ Communication Settings

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



◆ 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].



■ Settings of External Device

For communication settings, use the DIP switches on the CPU unit. To set the station No., use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Communication Setting Switch

DIP Switch	Settings	Setup Description
SW1	OFF	SIO Type: RS422
SW2	OFF	CCM station No. setting: Enabled
SW3	ON	Baud rate transmission speed: 19,200bps
SW4	ON	

NOTE

- Setting SW2 to ON switches the transmission mode to ASCII mode and thus disables communication. Make sure to set it to OFF and set the CCM station No. and transmission mode.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

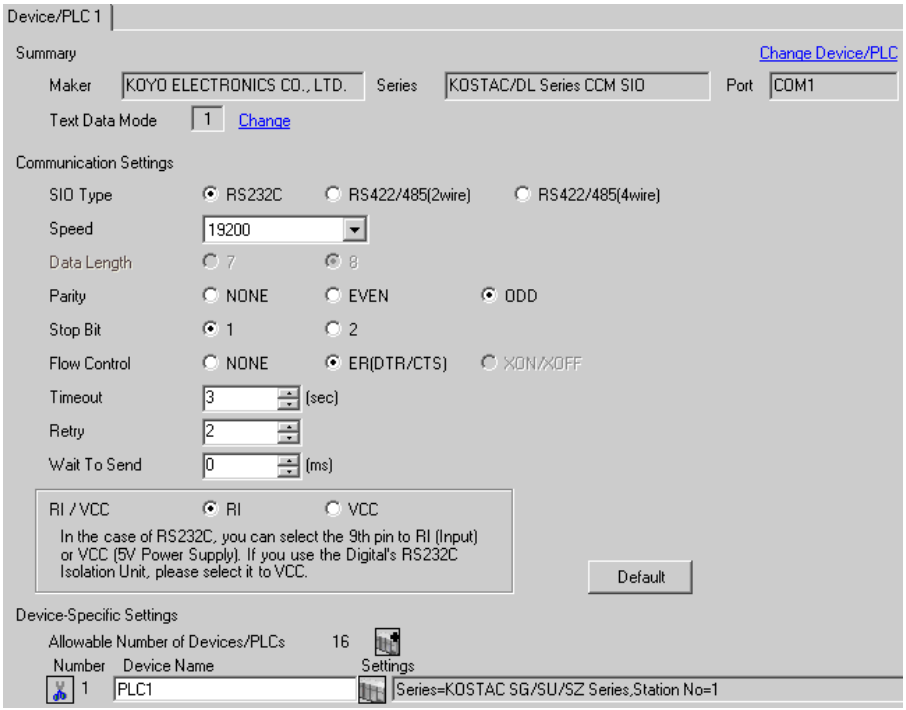
3 Set the transmission mode to "HEX", and then press the Enter key.

3.5 Setting Example 5

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the rotary switch on the front of the link I/F unit, or the DIP switches on its back. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Station No. Setting Rotary Switch

Rotary Switch	Settings	Setup Description
x10	0	Station No. of the External Device (tens digit)
x1	1	Station No. of the External Device (ones digit)

NOTE

- Enter the station No. set on the Display.

◆ Configuration DIP Switch SW4

DIP Switch	Settings	Setup Description
1	ON	Baud rate transmission speed: 19,200bps
2	ON	
3	ON	
4	ON	Parity enable/disable: Enabled (odd)
5	OFF	Self-diagnosis mode: OFF
6	OFF	Response delay time: 0 ms
7	OFF	
8	OFF	

◆ Configuration DIP Switch SW5

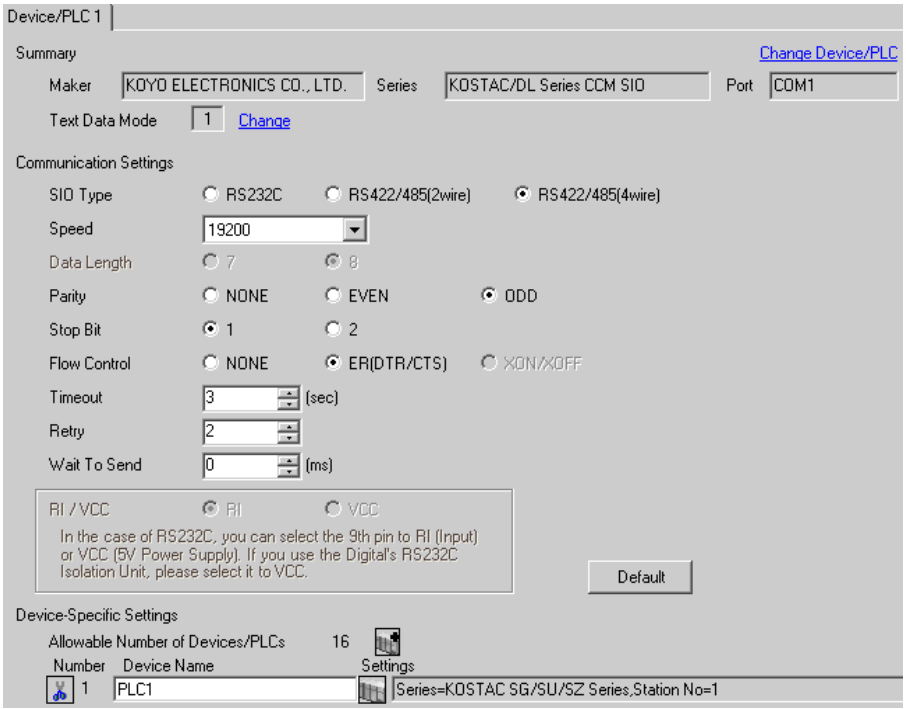
DIP Switch	Settings	Setup Description
1	OFF	Peer to Peer setting: 1:n mode
2	OFF	Master/Slave setting: Slave
3	OFF	Timeout enable/disable setting: Normal operation mode
4	OFF	Transmission mode: HEX mode

3.6 Setting Example 6

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the rotary switch on the front of the link I/F unit, or the DIP switches on its back. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Station No. Setting Rotary Switch

Rotary Switch	Settings	Setup Description
x10	0	Station No. of the External Device (tens digit)
x1	1	Station No. of the External Device (ones digit)

NOTE

- Enter the station No. set on the Display.

◆ Configuration DIP Switch SW4

DIP Switch	Settings	Setup Description
1	ON	Baud rate transmission speed: 19,200bps
2	ON	
3	ON	
4	ON	Parity enable/disable: Enabled (odd)
5	OFF	Self-diagnosis mode: OFF
6	OFF	Response delay time: 0 ms
7	OFF	
8	OFF	

◆ Configuration DIP Switch SW5

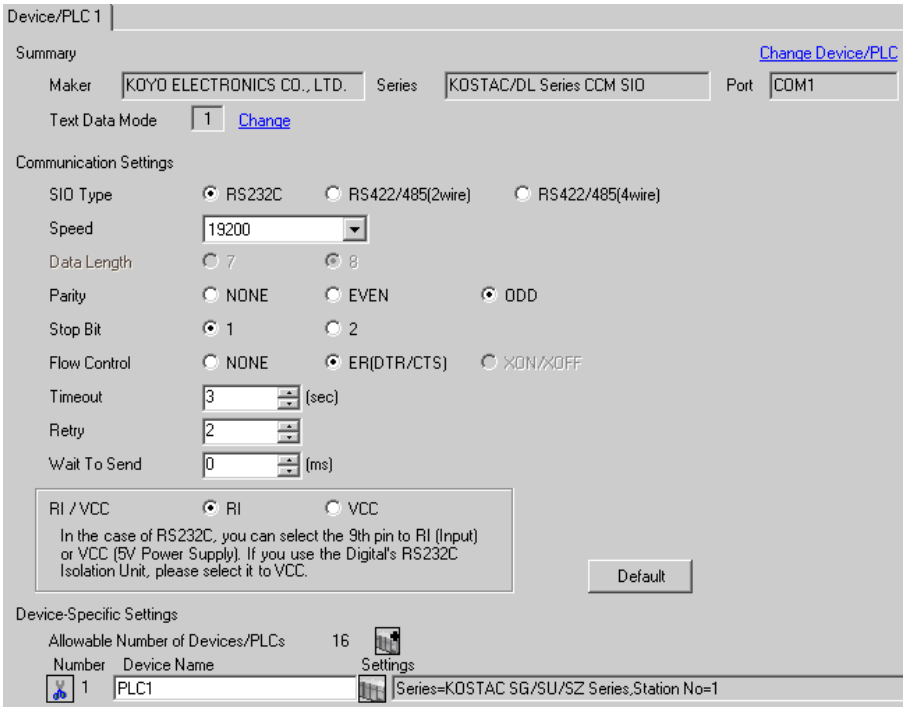
DIP Switch	Settings	Setup Description
1	OFF	Peer to Peer setting: 1:n mode
2	OFF	Master/Slave setting: Slave
3	OFF	Timeout enable/disable setting: Normal operation mode
4	OFF	Transmission mode: HEX mode

3.7 Setting Example 7

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ Device Setting

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

■ Settings of External Device

For communication settings, use the DIP switches on the CPU unit. To set the station No., use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Communication Setting Switch

DIP Switch	Settings	Setup Description
SW1	Optional	Battery mode: Adjust to the system.
SW2	OFF	CCM station No. setting: Enabled
SW3	ON	Baud rate transmission speed: 19,200bps
SW4	ON	

NOTE

- Setting SW2 to ON switches the transmission mode to ASCII mode and thus disables communication. Make sure to set it to OFF and set the CCM station No. and transmission mode.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

3 Set the transmission mode to "HEX", and then press the Enter key.

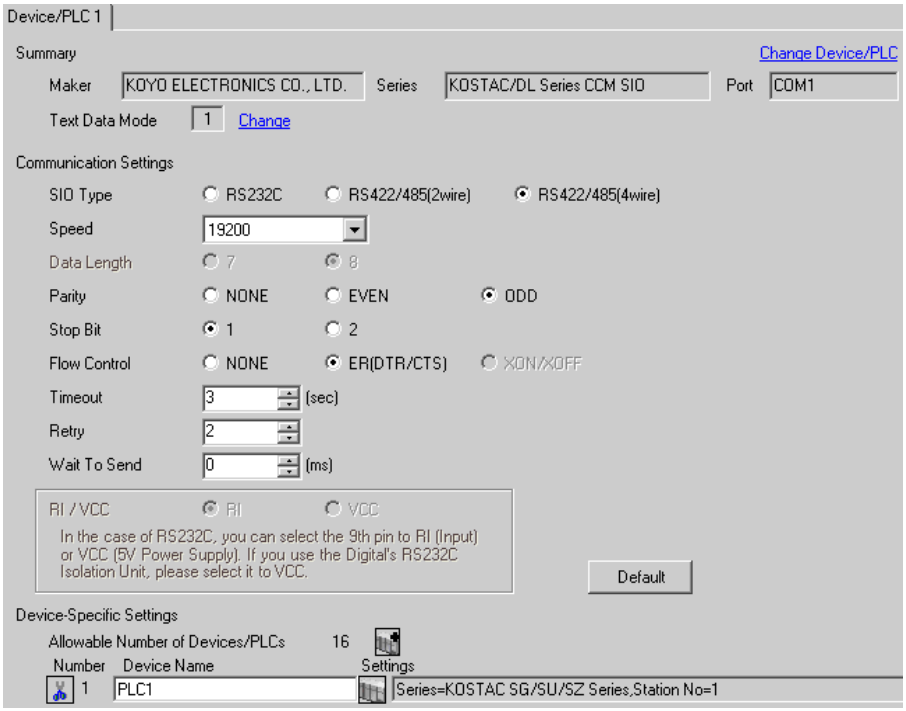
4 Set the parity to "ODD", and then press the Enter key.

3.8 Setting Example 8

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the DIP switches on the CPU unit. To set the station No., use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Communication Setting Switch

DIP Switch	Settings	Setup Description
SW1	Optional	Battery mode: Adjust to the system.
SW2	OFF	CCM station No. setting: Enabled
SW3	ON	Baud rate transmission speed: 19,200bps
SW4	ON	

NOTE

- Setting SW2 to ON switches the transmission mode to ASCII mode and thus disables communication. Make sure to set it to OFF and set the CCM station No. and transmission mode.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

3 Set the transmission mode to "HEX", and then press the Enter key.

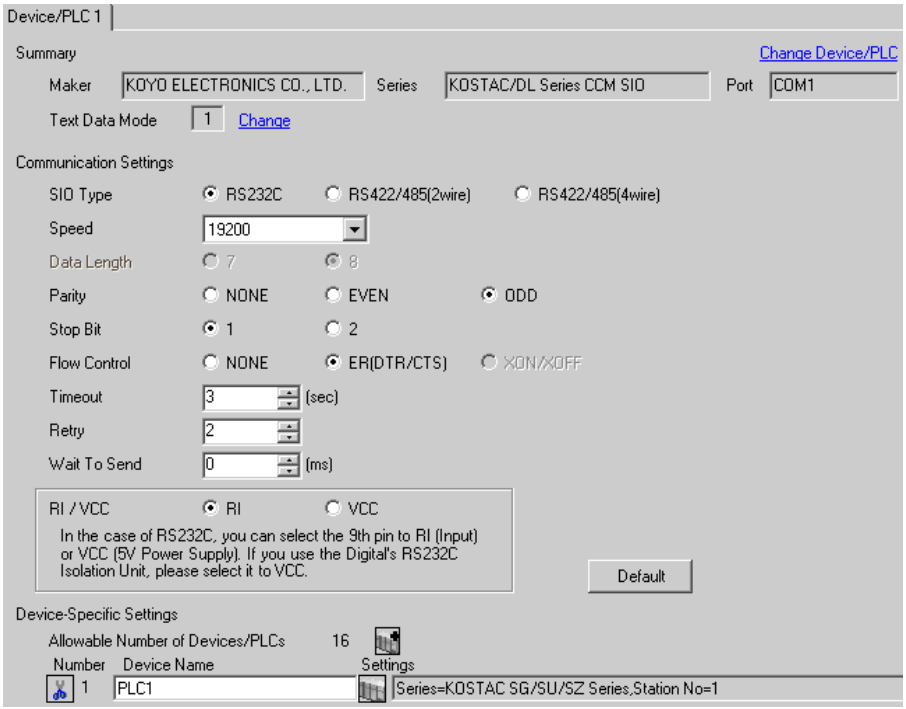
4 Set the parity to "ODD", and then press the Enter key.

3.9 Setting Example 9

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.
2 Set the protocol to "CCM2", and then press the Enter key.
3 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

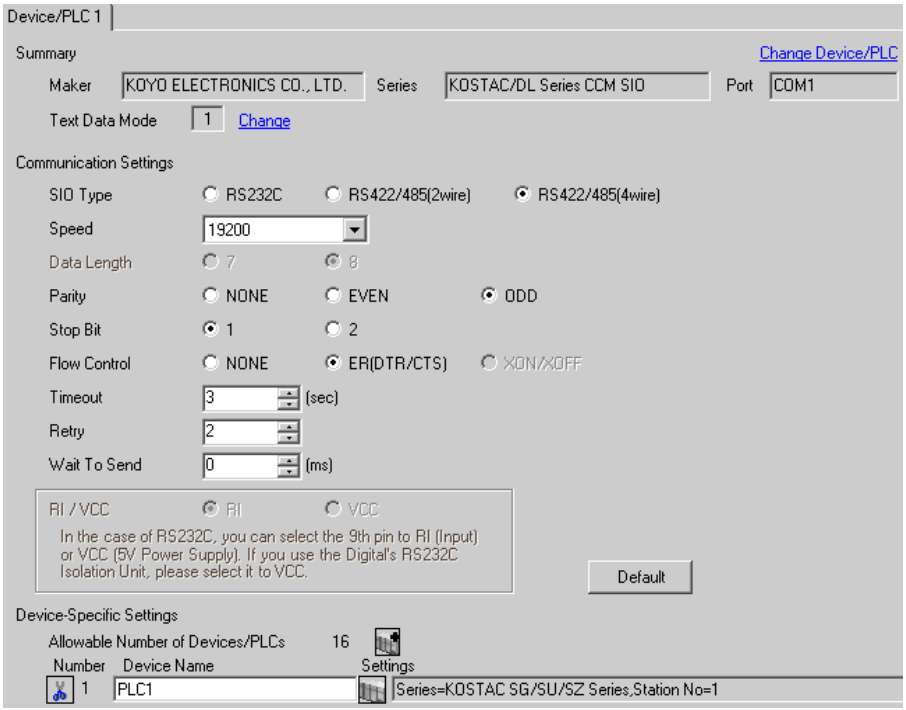
4 Set the transmission mode to "HEX", and then press the Enter key.
5 Set the transmission speed to "19200", and then press the Enter key.
6 Set the stop bit to "1", and then press the Enter key.
7 Set the parity to "ODD", and then press the Enter key.

3.10 Setting Example 10

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.
2 Set the protocol to "CCM2", and then press the Enter key.
3 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

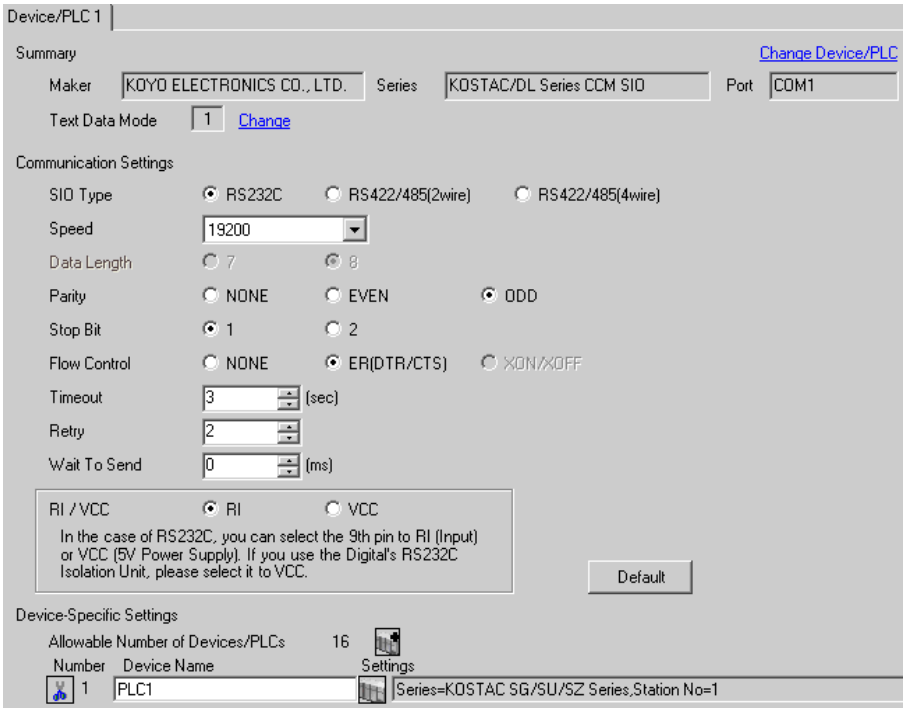
4 Set the transmission mode to "HEX", and then press the Enter key.
5 Set the transmission speed to "19200", and then press the Enter key.
6 Set the stop bit to "1", and then press the Enter key.
7 Set the parity to "ODD", and then press the Enter key.

3.11 Setting Example 11

■ Settings of GP-Pro EX

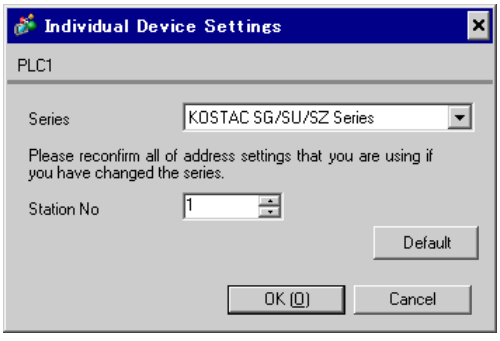
◆ Communication Settings

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



◆ 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].



■ Settings of External Device

For communication settings, use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.
2 Set the protocol to "CCM2", and then press the Enter key.
3 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

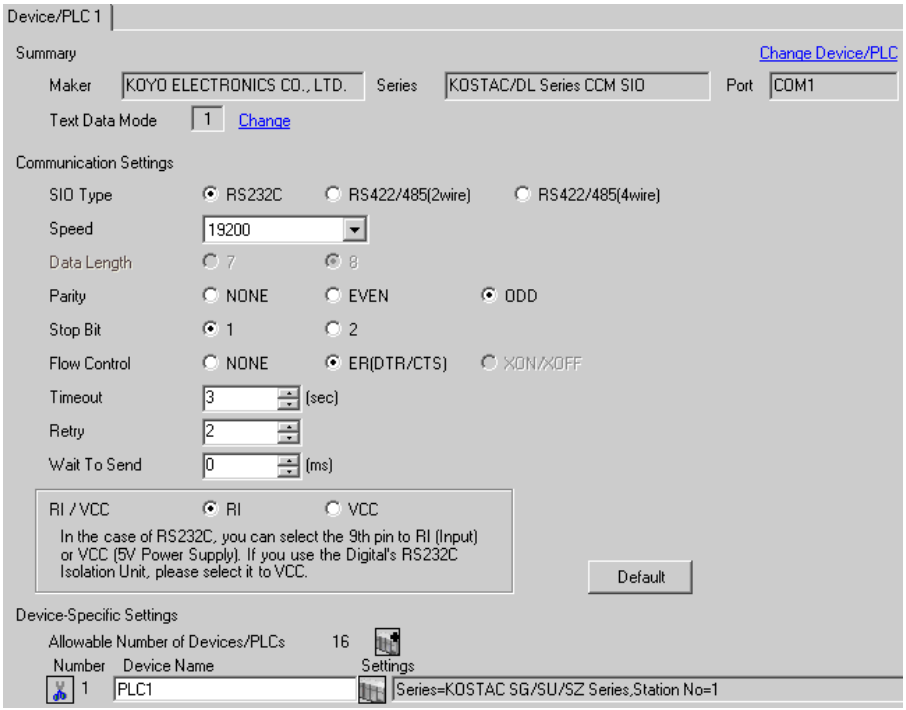
4 Set the transmission mode to "HEX", and then press the Enter key.
5 Set the transmission speed to "19200", and then press the Enter key.
6 Set the stop bit to "1", and then press the Enter key.
7 Set the parity to "ODD", and then press the Enter key.

3.12 Setting Example 12

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

NOTE

- Set the mode selector switch to TERM in the setup process.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

3 Set the transmission mode to "HEX", and then press the Enter key.

4 Set the parity to "ODD", and then press the Enter key.

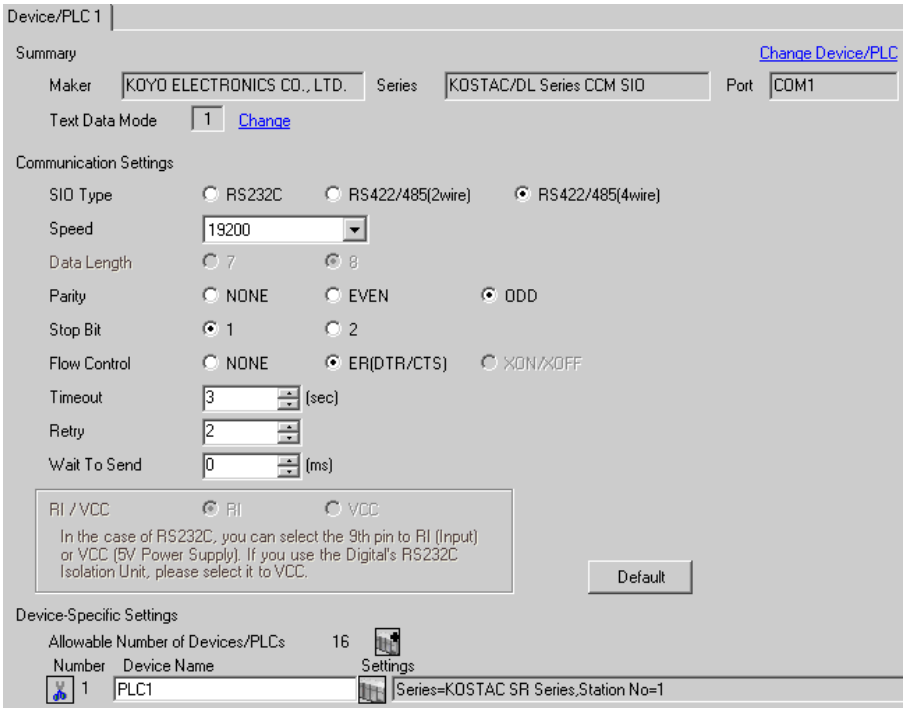
5 Set the transmission speed to "19200", and then press the Enter key.

3.13 Setting Example 13

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the DIP switches on the side of the link I/F unit. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Configuration DIP Switch SW1

DIP Switch	Settings	Setup Description
1	ON	Baud rate transmission speed: 19,200bps
2	ON	
3	OFF	Parity enable/disable: Disabled
4	ON	Self-diagnosis mode: OFF
5	OFF	Turnaround delay: None
6	OFF	Power-on mode: Adjust to the system.
7	OFF	Always OFF
8	OFF	Transmission mode: HEX mode

◆ Configuration DIP Switch SW2

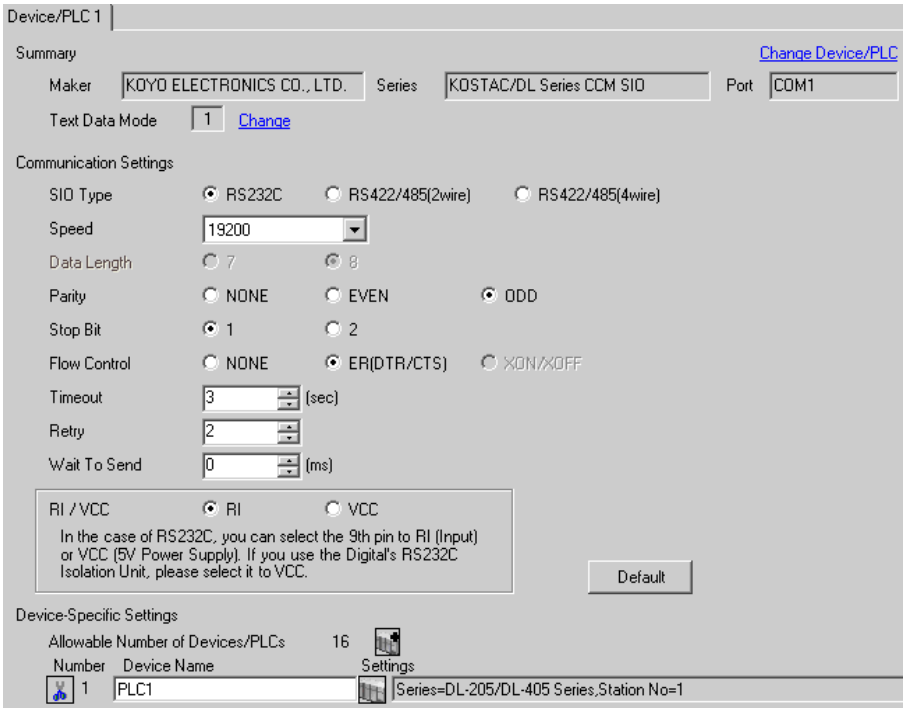
DIP Switch	Settings	Setup Description
1	ON	Child station No.: 1
2	OFF	
3	OFF	
4	OFF	
5	OFF	
6	OFF	
7	OFF	
8	OFF	Always OFF

3.14 Setting Example 14

■ Settings of GP-Pro EX

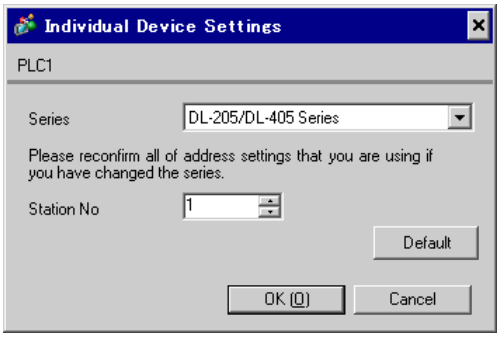
◆ Communication Settings

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



◆ 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].



■ Settings of External Device

For communication settings, use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

NOTE

- Set the mode selector switch to TERM in the setup process.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

3 Set the transmission mode to "HEX", and then press the Enter key.

4 Set the parity to "ODD", and then press the Enter key.

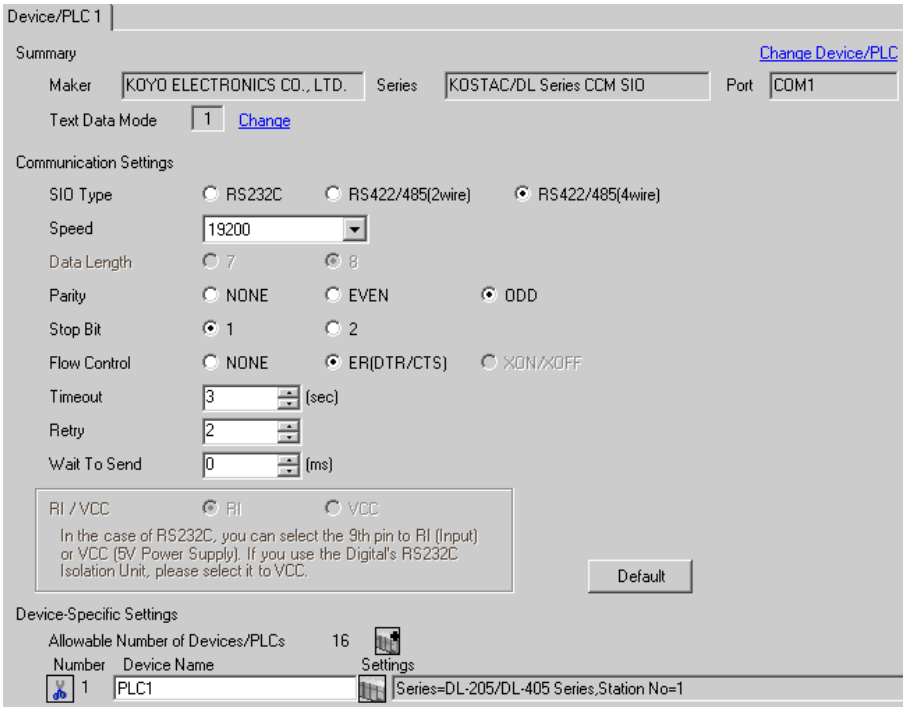
5 Set the transmission speed to "19200", and then press the Enter key.

3.15 Setting Example 15

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

NOTE

- Set the mode selector switch to TERM in the setup process.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

3 Set the transmission mode to "HEX", and then press the Enter key.

4 Set the parity to "ODD", and then press the Enter key.

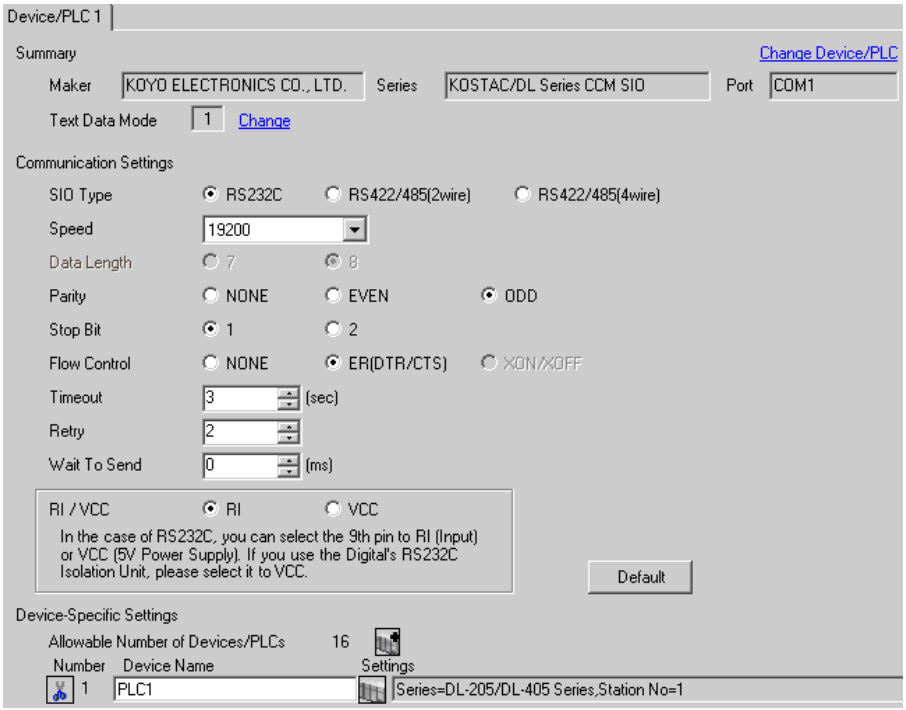
5 Set the transmission speed to "19200", and then press the Enter key.

3.16 Setting Example 16

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the rotary switch on the front of the link I/F unit, or the DIP switches on its back. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Station No. Setting Rotary Switch

Rotary Switch	Settings	Setup Description
x10	0	Station No. of the External Device (tens digit)
x1	1	Station No. of the External Device (ones digit)

NOTE

- Enter the station No. set on the Display.

◆ Configuration DIP Switch SW4

DIP Switch	Settings	Setup Description
1	ON	Baud rate transmission speed: 19,200bps
2	ON	
3	ON	
4	ON	Parity enable/disable: Enabled (odd)
5	OFF	Self-diagnosis mode: OFF
6	OFF	Response delay time: 0 ms
7	OFF	
8	OFF	

◆ Configuration DIP Switch SW5

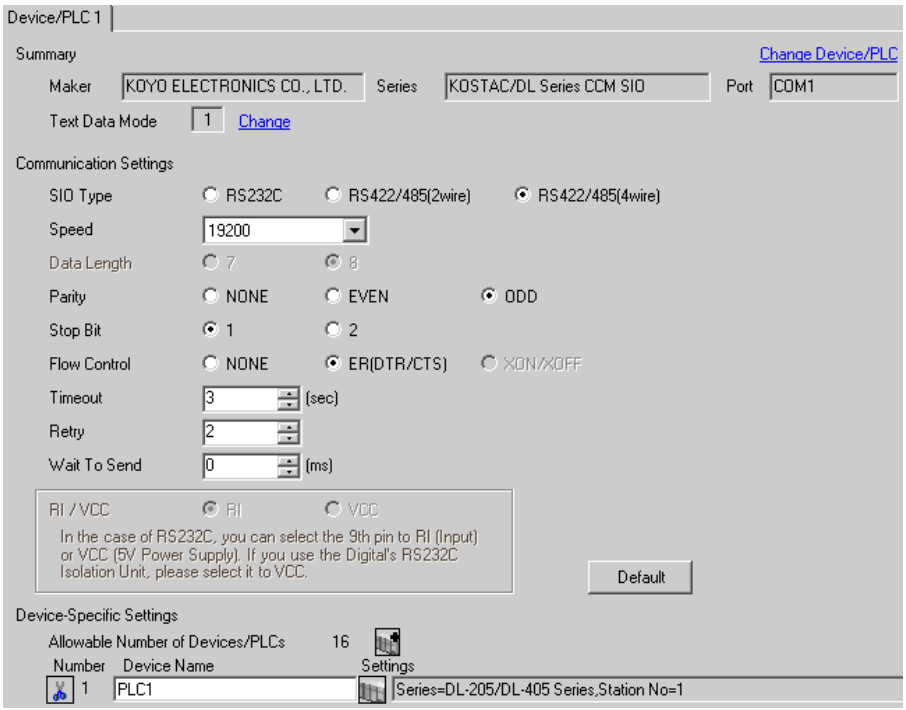
DIP Switch	Settings	Setup Description
1	OFF	Peer to Peer setting: 1:n mode
2	OFF	Master/Slave setting: Slave
3	OFF	Timeout enable/disable setting: Normal operation mode
4	OFF	Transmission mode: HEX mode

3.17 Setting Example 17

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the rotary switch on the front of the link I/F unit, or the DIP switches on its back. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Station No. Setting Rotary Switch

Rotary Switch	Settings	Setup Description
x10	0	Station No. of the External Device (tens digit)
x1	1	Station No. of the External Device (ones digit)

NOTE

- Enter the station No. set on the Display.

◆ Configuration DIP Switch SW4

DIP Switch	Settings	Setup Description
1	ON	Baud rate transmission speed: 19,200bps
2	ON	
3	ON	
4	ON	Parity enable/disable: Enabled (odd)
5	OFF	Self-diagnosis mode: OFF
6	OFF	Response delay time: 0 ms
7	OFF	
8	OFF	

◆ Configuration DIP Switch SW5

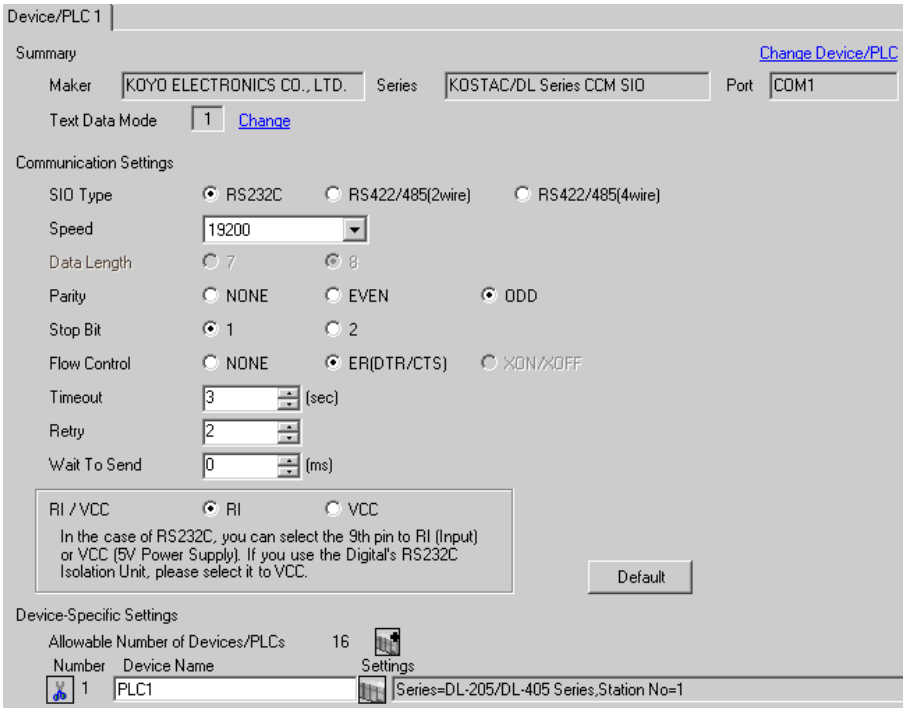
DIP Switch	Settings	Setup Description
1	OFF	Peer to Peer setting: 1:n mode
2	OFF	Master/Slave setting: Slave
3	OFF	Timeout enable/disable setting: Normal operation mode
4	OFF	Transmission mode: HEX mode

3.18 Setting Example 18

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the DIP switches on the CPU unit. To set the station No., use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Communication Setting Switch

DIP Switch	Settings	Setup Description
SW1	Optional	Battery mode: Adjust to the system.
SW2	OFF	CCM station No. setting: Enabled
SW3	ON	Baud rate transmission speed: 19,200bps
SW4	ON	

NOTE

- Setting SW2 to ON switches the transmission mode to ASCII mode and thus disables communication. Make sure to set it to OFF and set the CCM station No. and transmission mode.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

3 Set the transmission mode to "HEX", and then press the Enter key.

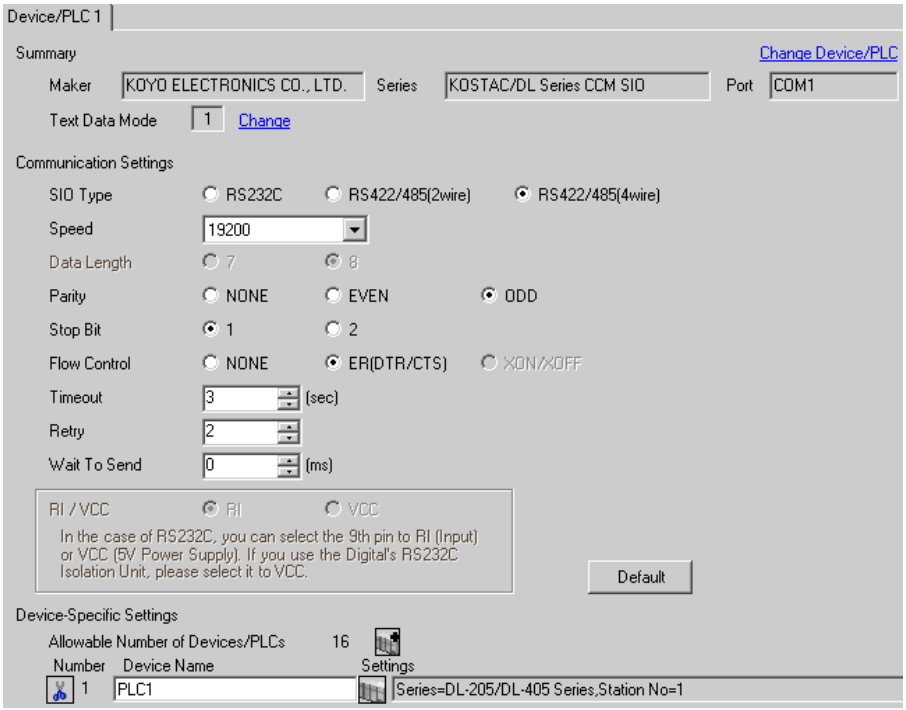
4 Set the parity to "ODD", and then press the Enter key.

3.19 Setting Example 19

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the DIP switches on the CPU unit. To set the station No., use the instruction word programmer (S-01P). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Communication Setting Switch

DIP Switch	Settings	Setup Description
SW1	Optional	Battery mode: Adjust to the system.
SW2	OFF	CCM station No. setting: Enabled
SW3	ON	Baud rate transmission speed: 19,200bps
SW4	ON	

NOTE

- Setting SW2 to ON switches the transmission mode to ASCII mode and thus disables communication. Make sure to set it to OFF and set the CCM station No. and transmission mode.

◆ CCM Station No. Setting

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.

2 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

3 Set the transmission mode to "HEX", and then press the Enter key.

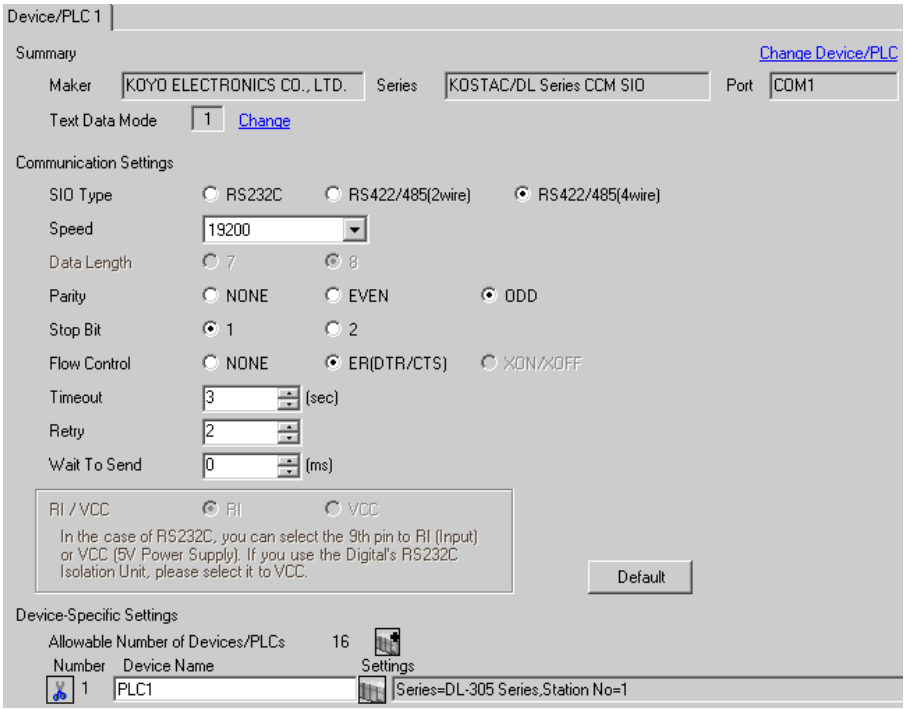
4 Set the parity to "ODD", and then press the Enter key.

3.20 Setting Example 20

■ Settings of GP-Pro EX

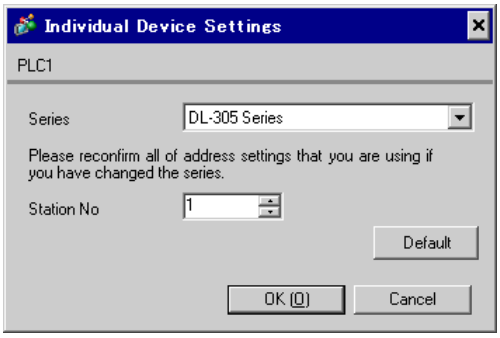
◆ Communication Settings

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



◆ 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].



■ Settings of External Device

For communication settings, use the DIP switches on the side of the link I/F unit. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

◆ Configuration DIP Switch SW1

DIP Switch	Settings	Setup Description
1	ON	Baud rate transmission speed: 19,200bps
2	ON	
3	OFF	Parity enable/disable: Disabled
4	ON	Self-diagnosis mode: OFF
5	OFF	Turnaround delay: None
6	OFF	Power-on mode: Adjust to the system.
7	OFF	Always OFF
8	OFF	Transmission mode: HEX mode

◆ Configuration DIP Switch SW2

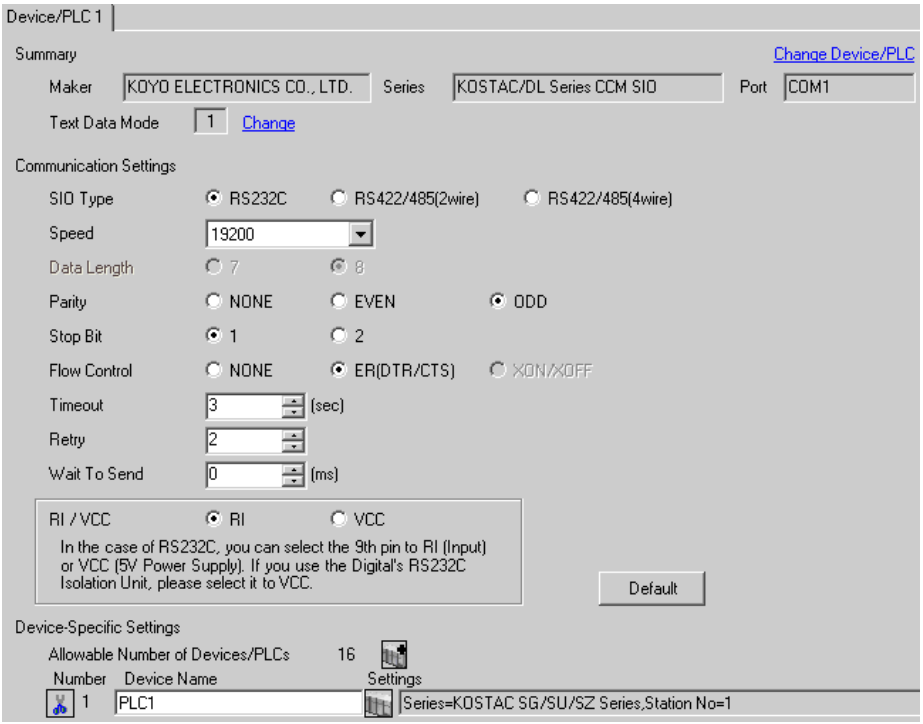
DIP Switch	Settings	Setup Description
1	ON	Child station No.: 1
2	OFF	
3	OFF	
4	OFF	
5	OFF	
6	OFF	
7	OFF	
8	OFF	Always OFF

3.21 Setting Example 21

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

For communication settings, use the instruction word programmer (Z-20JP). After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

1 Select Menu 56. Press [Clear], [5], [6], [Menu], and then press the Enter key.
2 Set the protocol to "CCM2", and then press the Enter key.
3 Enter the CCM station No. Press [0], [1], and then press the Enter key.

NOTE

- Enter the station No. set on the Display.

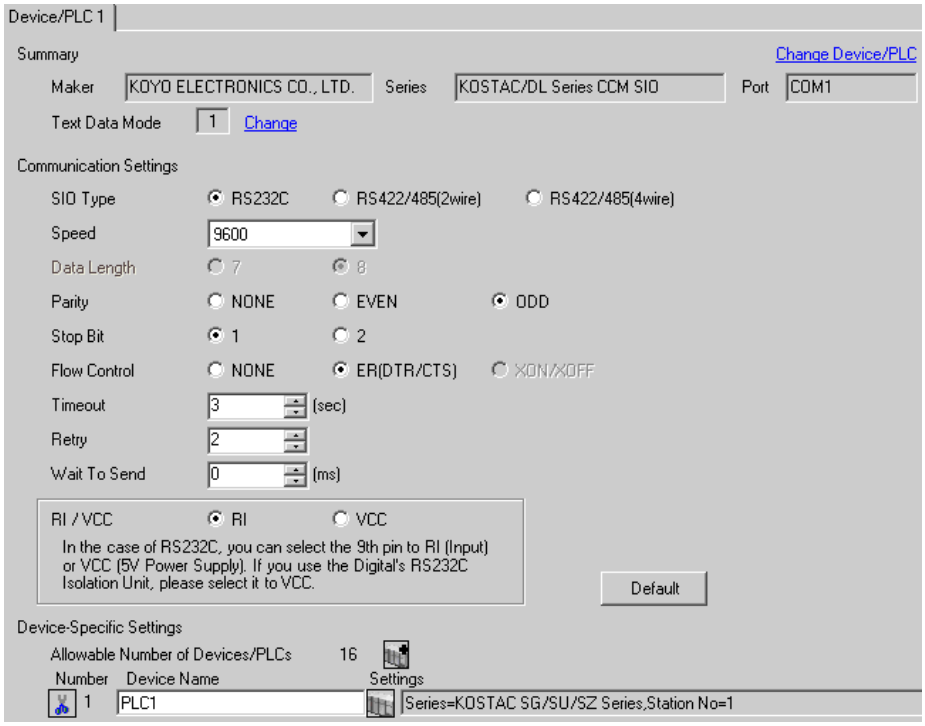
4 Set the transmission mode to "HEX", and then press the Enter key.
5 Set the transmission speed to "19200", and then press the Enter key.
6 Set the stop bit to "1", and then press the Enter key.
7 Set the parity to "ODD", and then press the Enter key.

3.22 Setting Example 22

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

The communication device does not require any communication settings.

The baud rate transmission speed and the station address are fixed.

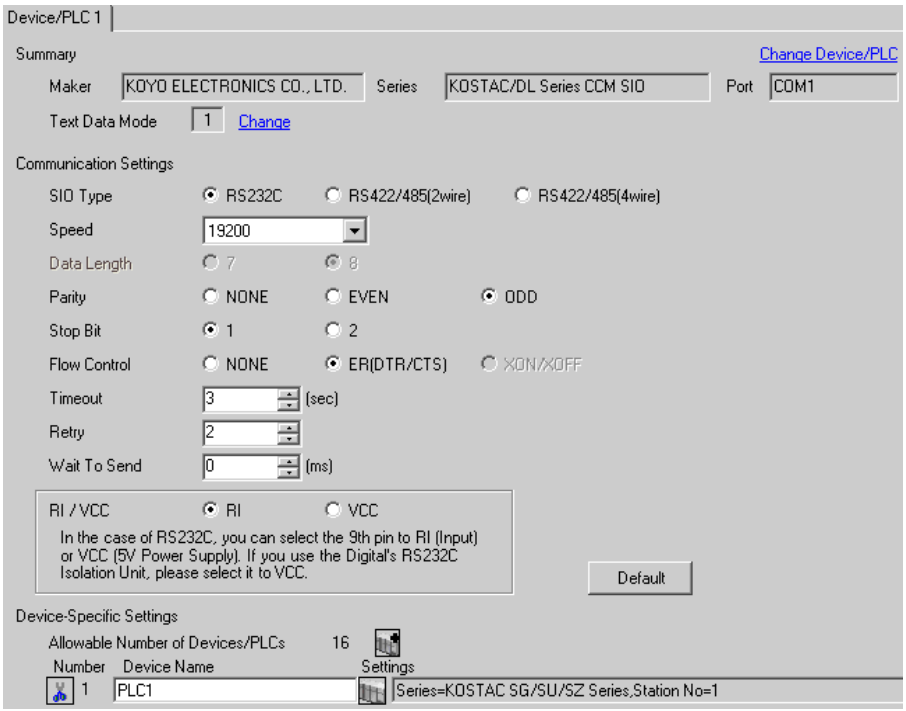
The parity, data length, and stop bit also cannot be changed.

3.23 Setting Example 23

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

Use the ladder software (DirectSOFT32 programming version 4.0) for communication settings. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

1 Start the ladder software (DirectSOFT32) and go online with the External Device.

2 From the [PLC] menu, select [Settings] - [General-purpose port settings].

3 In the [Communication port settings] dialog box, configure the following communication settings.

Item	Settings
Port	Port 2
Protocol	CCM Net (DirectNET)
Timeout	500 ms
RTS on Delay Time	20 ms
Station No.	1
Speed	19,200bps
Stop Bit	1
Parity	Odd
Data Format	Hex

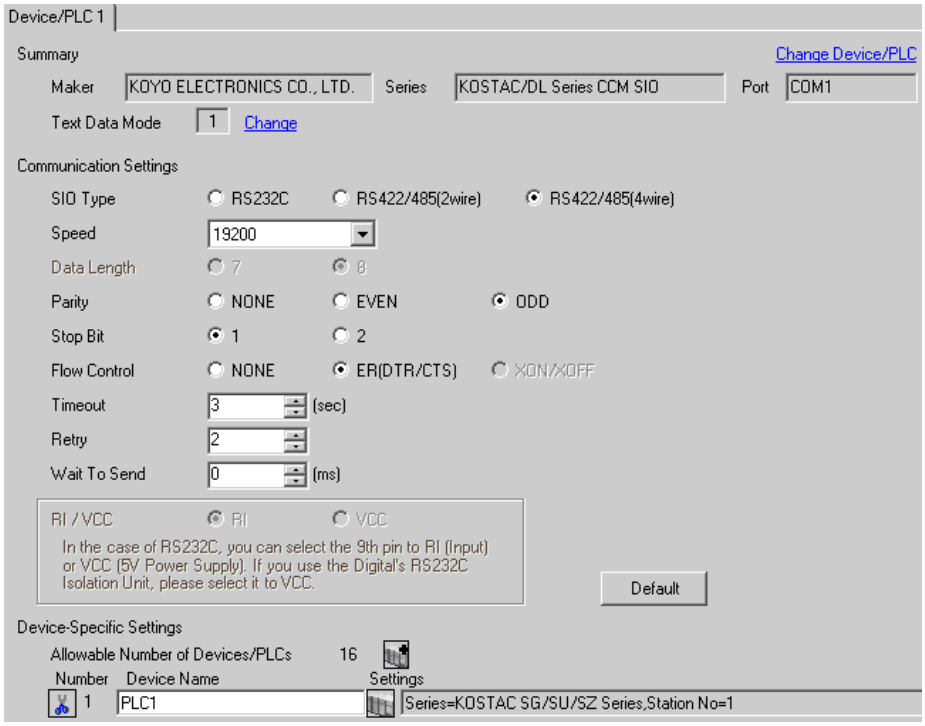
4 When the settings are complete, click [Transfer] to transfer them to the External Device.

3.24 Setting Example 24

■ Settings of GP-Pro EX

◆ Communication Settings

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



◆ 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].

■ Settings of External Device

Use the ladder software (DirectSOFT32 programming version 4.0) for communication settings. After completing the settings, reboot the External Device to enable them. Please refer to the manual of the External Device for details.

1 Start the ladder software (DirectSOFT32) and go online with the External Device.

2 From the [PLC] menu, select [Settings] - [General-purpose port settings].

3 In the [Communication port settings] dialog box, configure the following communication settings.

Item	Settings
Port	Port 2
Protocol	CCM Net (DirectNET)
Timeout	500 ms
RTS on Delay Time	20 ms
Station No.	1
Speed	19,200bps
Stop Bit	1
Parity	Odd
Data Format	Hex

4 When the settings are complete, click [Transfer] to transfer them to the External Device.

4 Setup Items

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

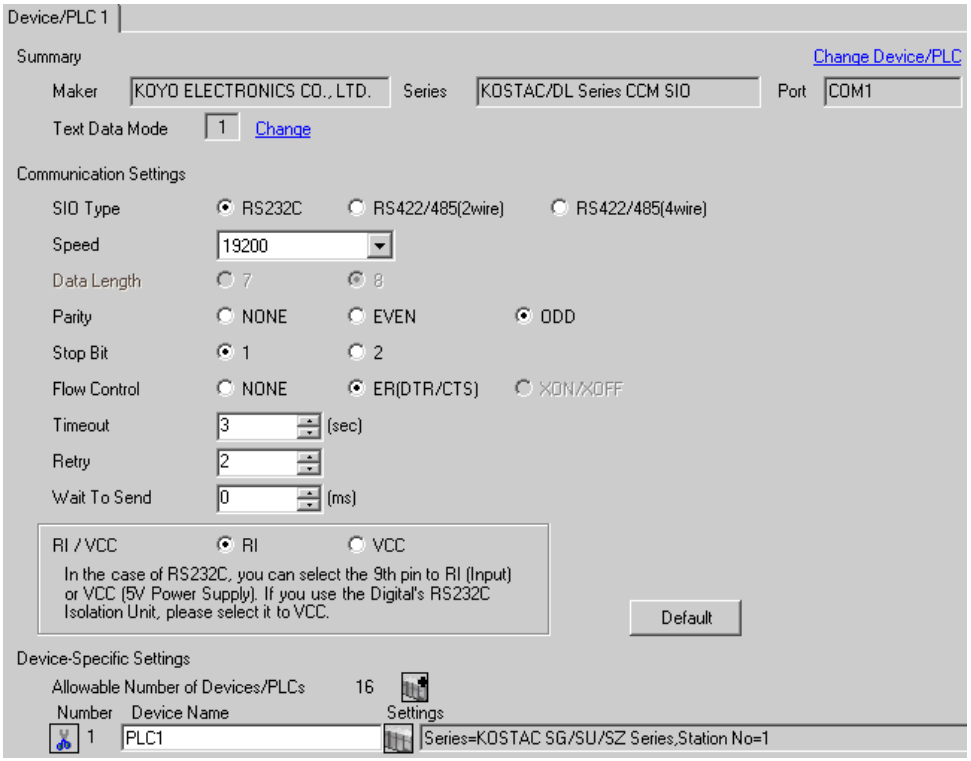
The setting of each parameter must be identical to that of the External Device.

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

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 for communicating with the External Device.
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.
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.

Continued to next page.

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

■ Device Setting

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

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

Setup Items	Setup Description
Series	Select the series of the External Device.
Station No.	Enter the station No. of the External Device, from "1 to 90".

4.2 Settings in Off-Line Mode

NOTE

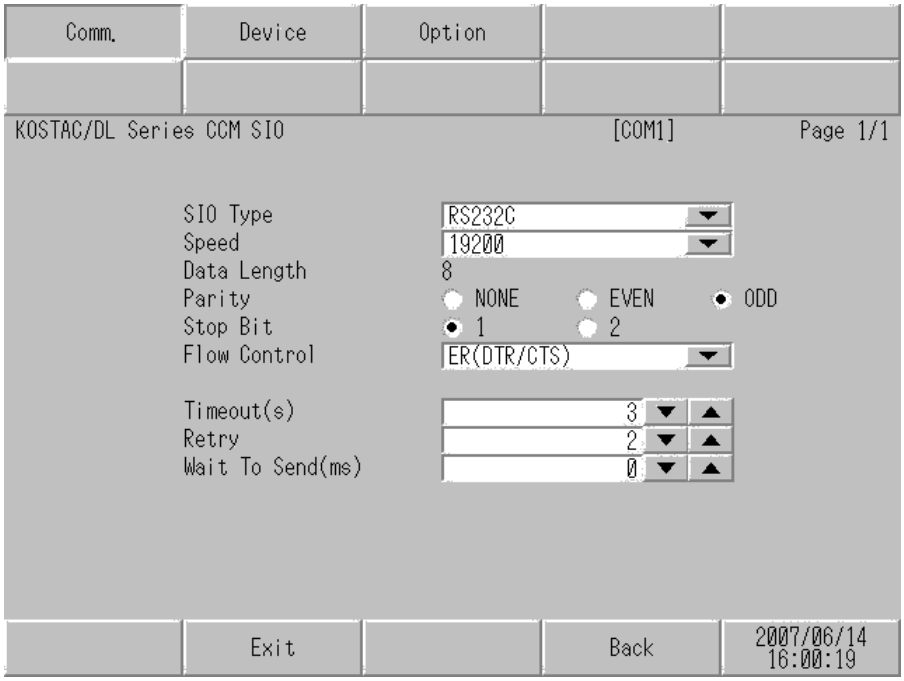
- Refer to the Maintenance/Troubleshooting manual for information on how to enter off-line mode or about the operation.

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

- The number of the setup items to be displayed for 1 page in the off-line 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 Equipment Settings] in off-line mode. Touch the External Device you want to set from the list that appears.



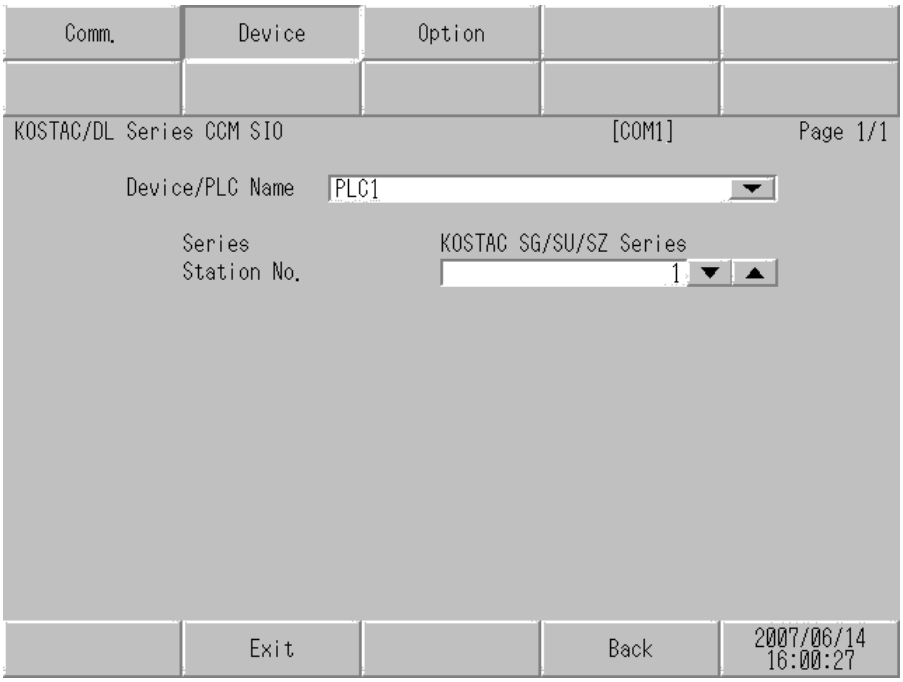
Setup Items	Setup Description
SIO Type	Select the SIO type for communicating with the External Device. **IMPORTANT** In the communication settings, confirm the serial interface specifications of the Display and set [SIO Type] correctly. If you select an SIO type that the serial interface does not support, we cannot guarantee the operation. Please refer to the manual of the Display for more details on the serial interface specifications.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Select data length.

Continues to the next page.

Setup Items	Setup Description
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 the standby time (ms) from when the Display receives packets until it transmits the next command.

■ Device Setting

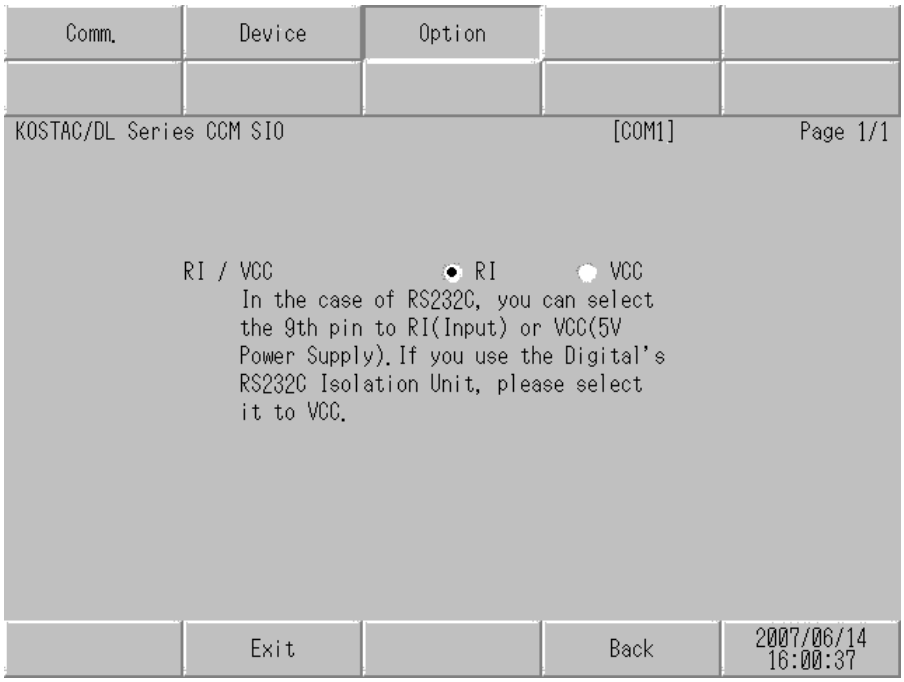
To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings]. Touch the External Device you want to set from the list that appears, and touch [Device Settings].



Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. Device name is the title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Series	Displays the series of the External Device.
Station No.	Enter the station No. of the External Device, from "1 to 90".

■ Option Settings

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



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

NOTE

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

5 Cable Diagram

The following cable diagram may be different from the one recommended by KOYO ELECTRONICS CO., LTD. Please be assured, however, there is no operational problem in applying the cable diagram shown in this manual.

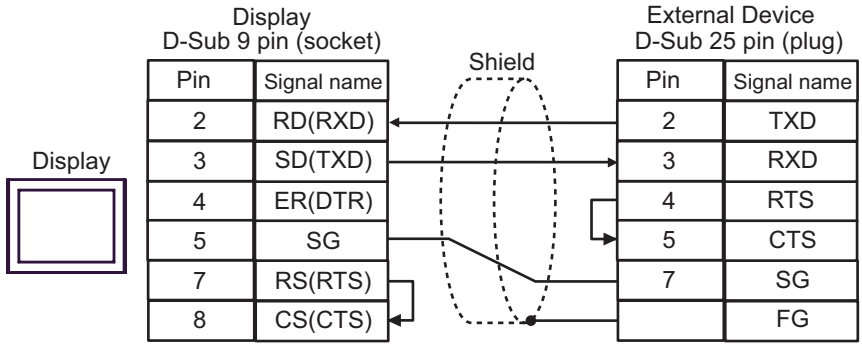
- The FG pin on the External Device must be D-class grounded. Please refer to the manual of the External Device for details.
- The SG and FG are connected inside the Display. If you connect the External Device to the SG, do not form any short-circuit loop in the system design.
- If the communication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

Cable Diagram 1

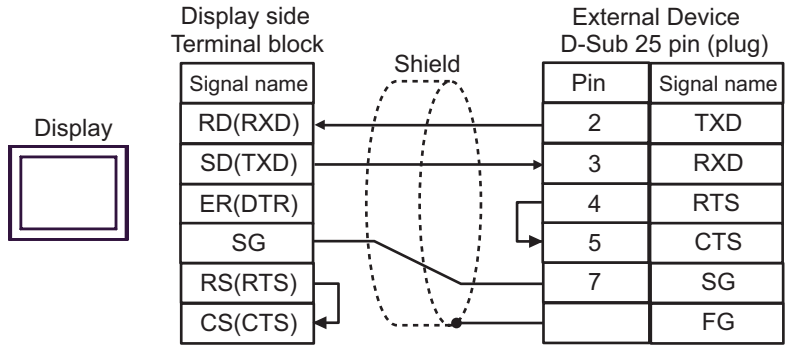
Display (Connection Port)	Cable		Remarks
GP3000 (COM1) ST (COM1) IPC*1 PC/AT	1A	User-created cable	Cable length: 15m or less
GP-4105 (COM1)	1B	User-created cable	

*1 Available only with the COM ports that support RS-232C.
☞ ■ IPC COM Port (page 7)

1A)



1B)



Cable Diagram 2

Display (Connection Port)	Cable		Remarks
GP3000[*1] (COM1) AGP3302B (COM2) ST[*2] (COM2) IPC[*3]	2A	COM port conversion adapter by Digital Electronics Corp. CA3-ADPCOM-01 + Connector terminal block conversion adapter by Digital Electronics Corp. CA3-ADPTRM-01 + User-created cable	Cable length: 600m or less
	2B	User-created cable	
GP3000[*4] (COM2)	2C	Online adapter by Digital Electronics Corp. CA4-ADPONL-01 + Connector terminal block conversion adapter by Digital Electronics Corp. CA3-ADPTRM-01 + User-created cable	
	2D	Online adapter by Digital Electronics Corp. CA4-ADPONL-01 + User-created cable	
GP-4106 (COM1)	2E	User-created cable	

*1 All GP3000 models except AGP-3302B

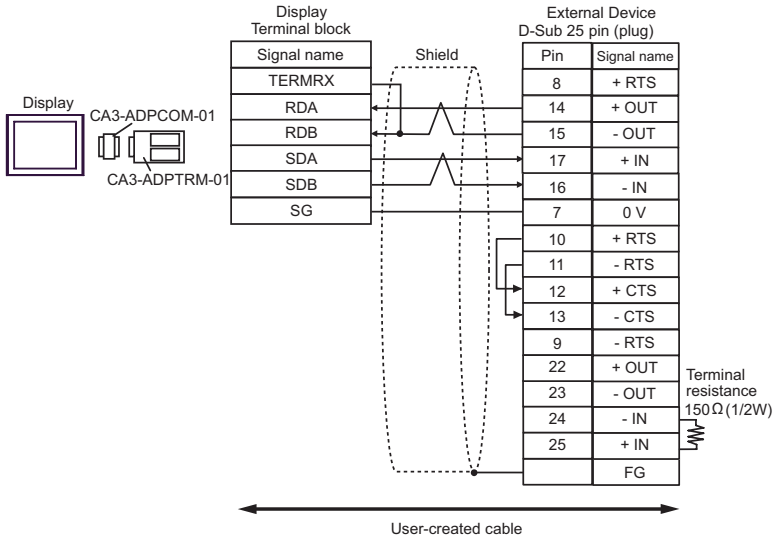
*2 All ST models except AST-3211A and AST-3302B

*3 Available only with the COM ports that support RS-422/485 (4wire).
☞ ■ IPC COM Port (page 7)

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

2A)

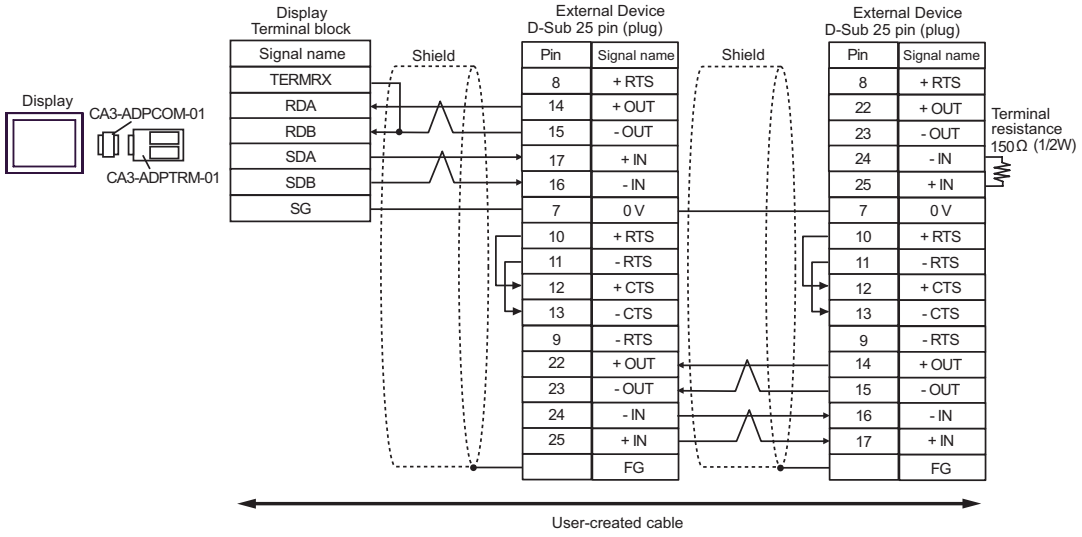
- 1:1 Connection



NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

- 1:n Connection

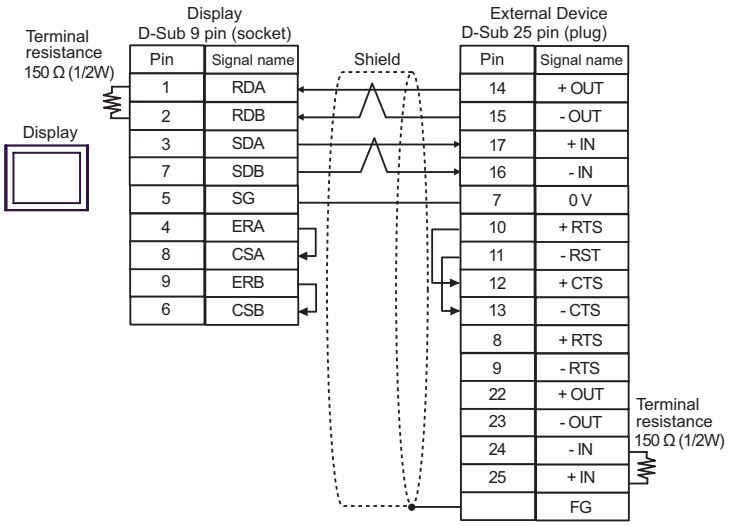


NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

2B)

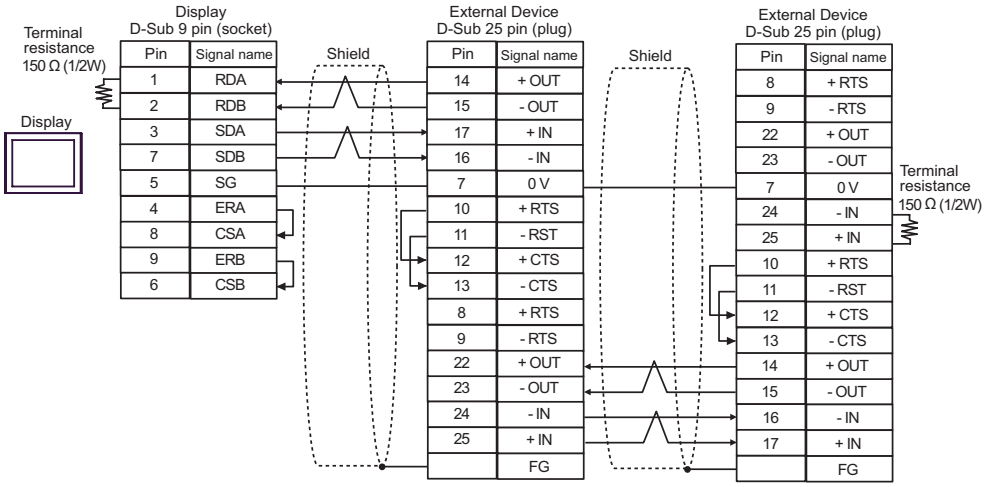
- 1:1 Connection



NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

- 1:n Connection

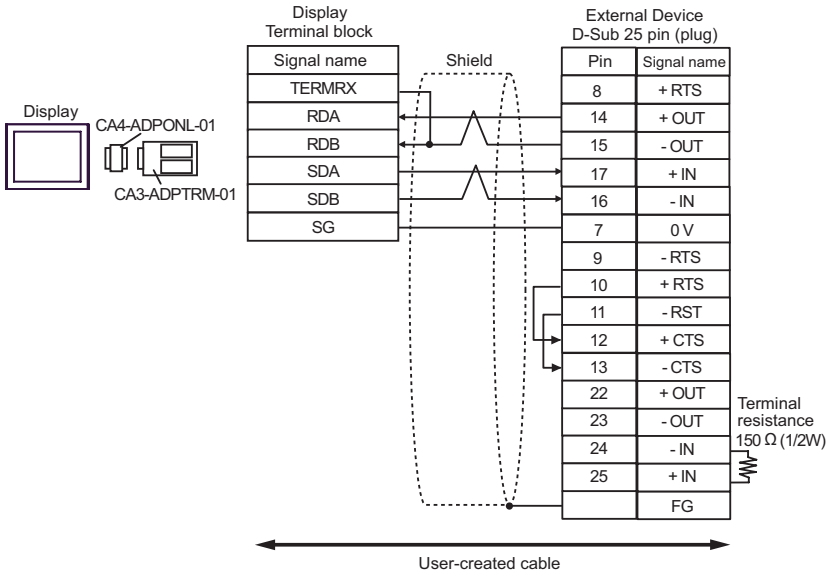


NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

2C)

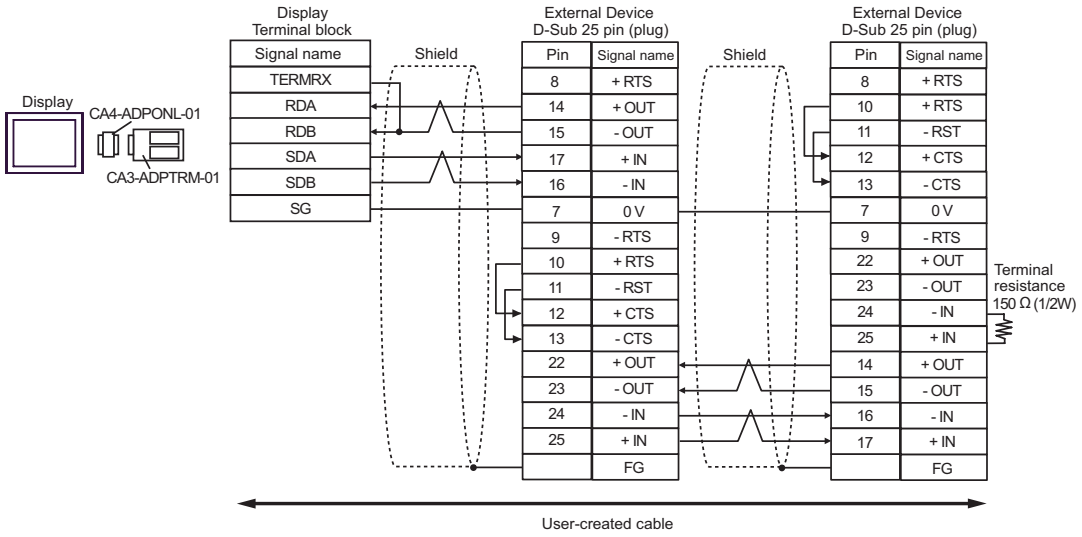
- 1:1 Connection



NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

- 1:n Connection

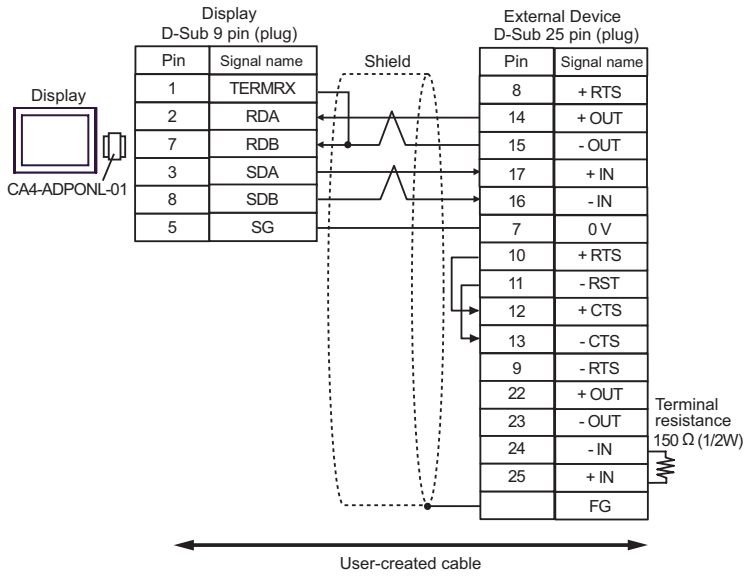


NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

2D)

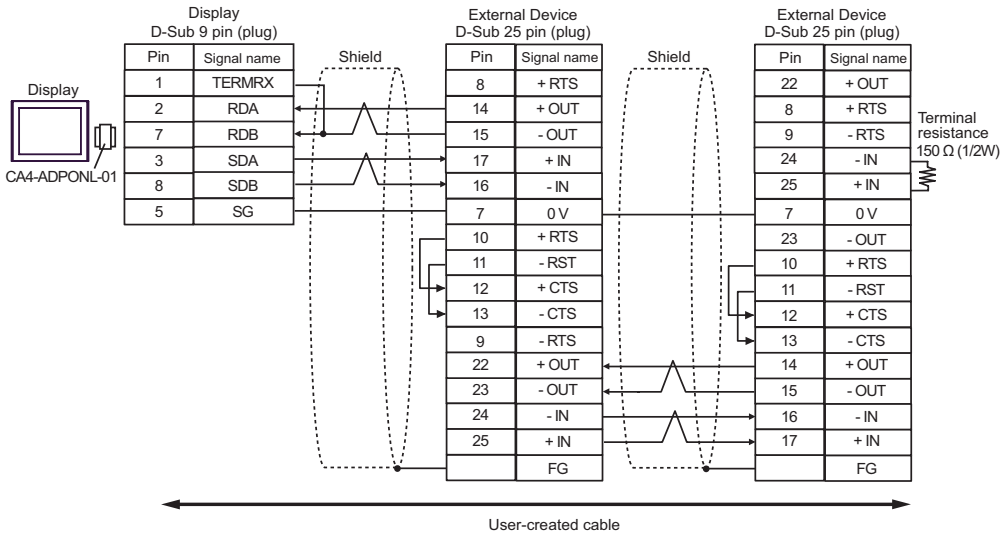
- 1:1 Connection



NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

- 1:n Connection

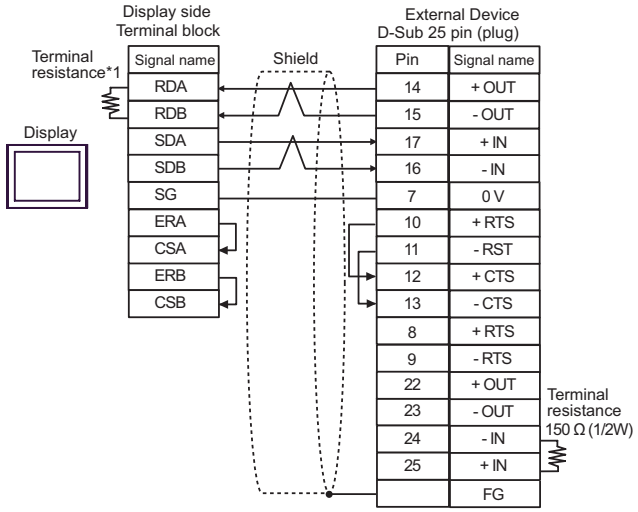


NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

2E)

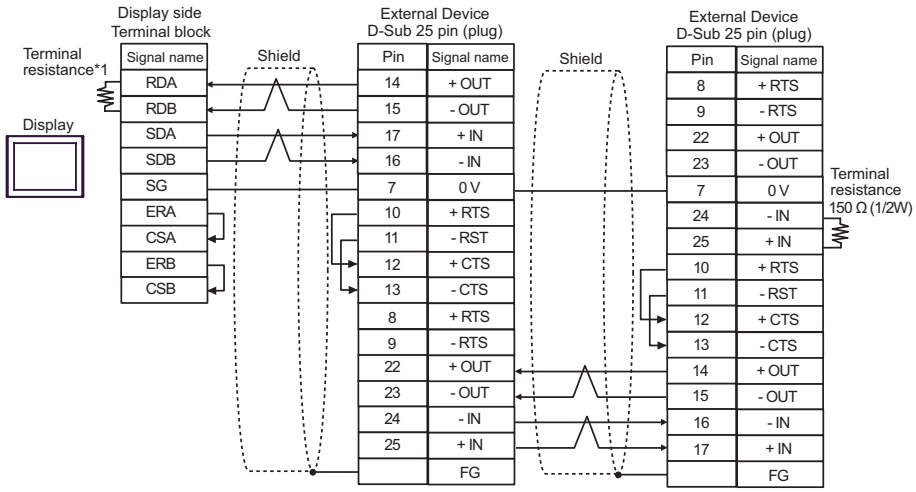
- 1:1 Connection



NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

- 1:n Connection



NOTE

- Connect a 150Ω termination resistor to the +IN and -IN that are not used.

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

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

Cable Diagram 3

Display (Connection Port)	Cable		Remarks
GP3000[*1] (COM1) AGP3302B (COM2) ST[*2] (COM2) IPC[*3]	3A	COM port conversion adapter by Digital Electronics Corp. CA3-ADPCOM-01 + Connector terminal block conversion adapter by Digital Electronics Corp. CA3-ADPTRM-01 + User-created cable	Cable length: 600m or less
	3B	User-created cable	
GP3000[*4] (COM2)	3C	Online adapter by Digital Electronics Corp. CA4-ADPONL-01 + Connector terminal block conversion adapter by Digital Electronics Corp. CA3-ADPTRM-01 + User-created cable	
	3D	Online adapter by Digital Electronics Corp. CA4-ADPONL-01 + User-created cable	
GP-4106 (COM1)	3E	User-created cable	

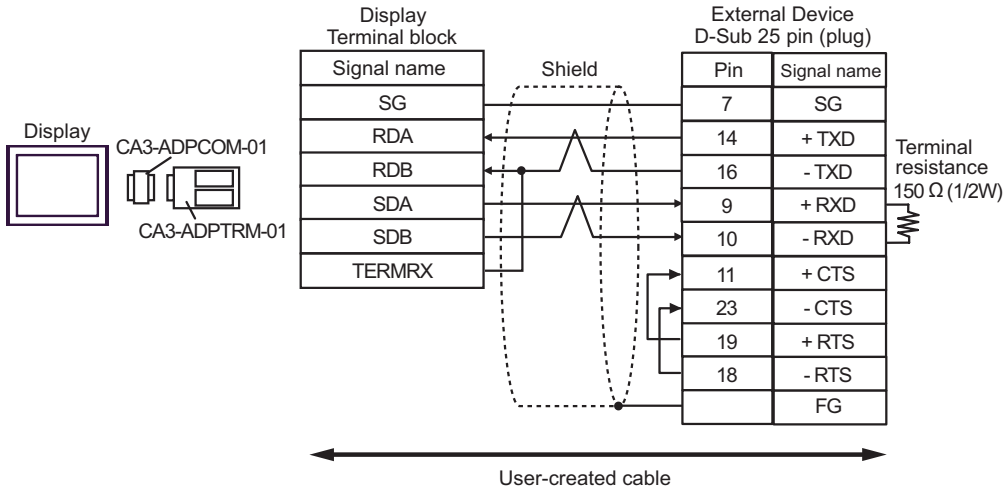
*1 All GP3000 models except AGP-3302B

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

*3 Available only with the COM ports that support RS-422/485 (4wire).
☞ ■ IPC COM Port (page 7)

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

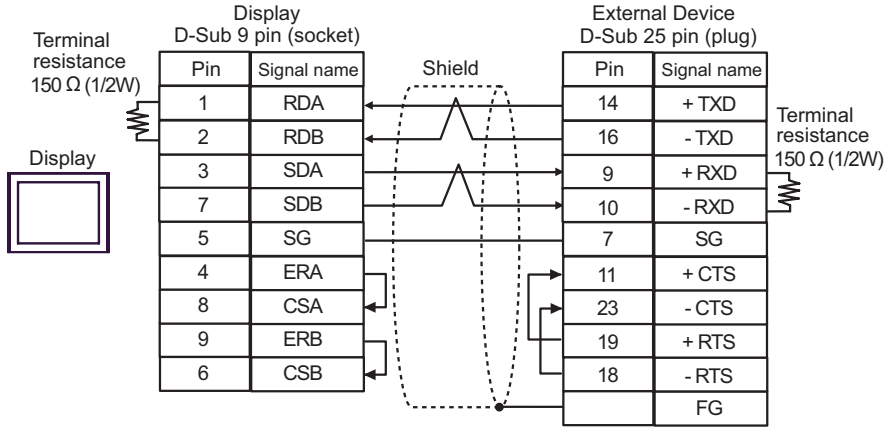
3A)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

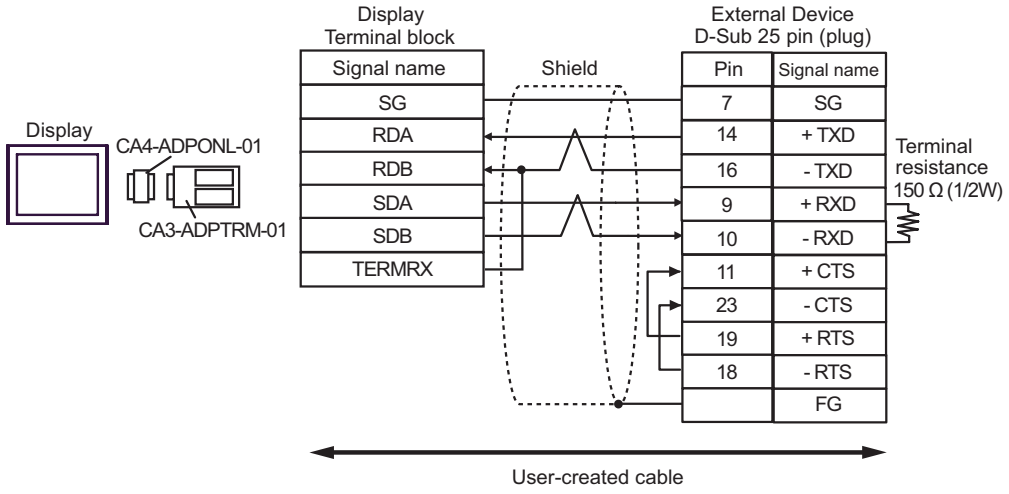
3B)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

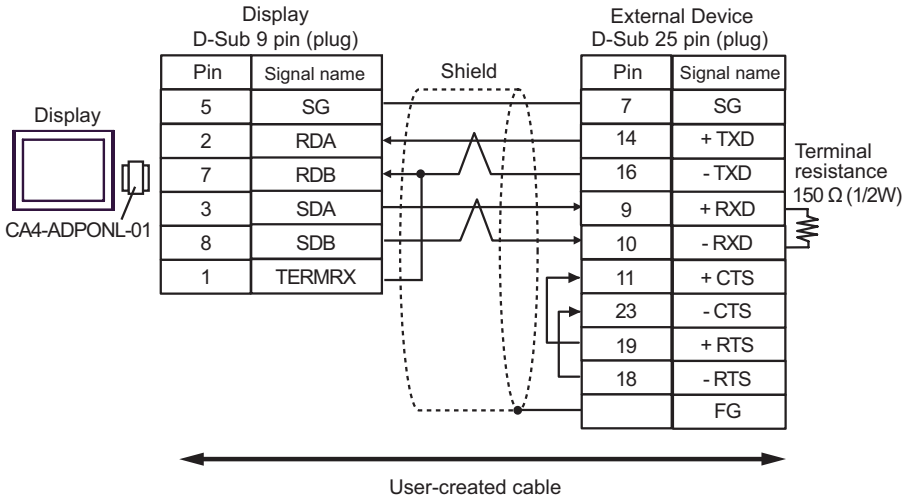
3C)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

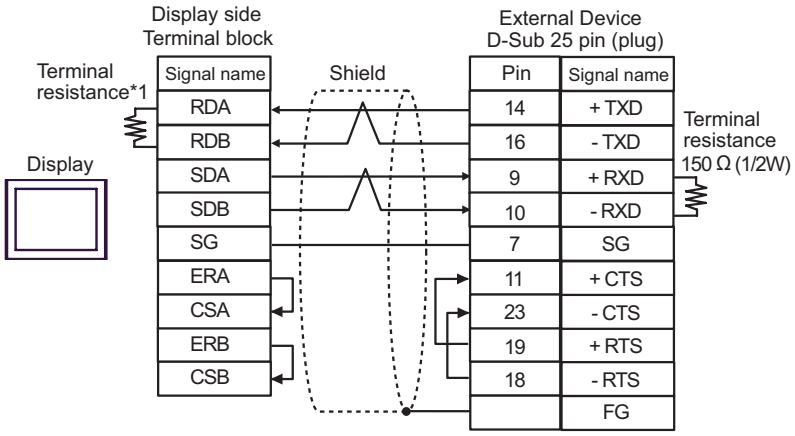
3D)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

3E)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

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

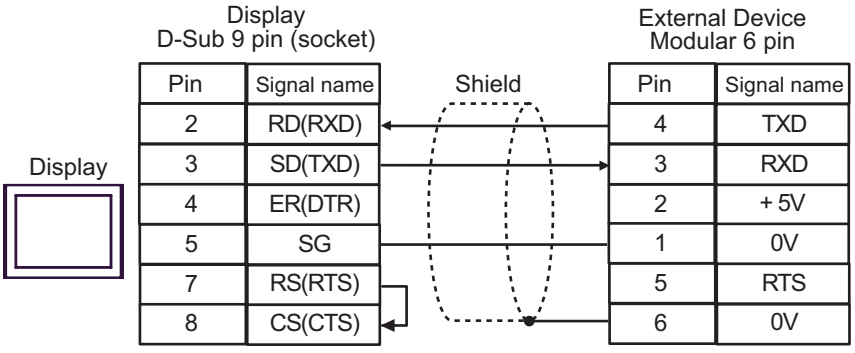
DIP Switch No.	Set Value
1	OFF
2	OFF
3	ON
4	ON

Cable Diagram 4

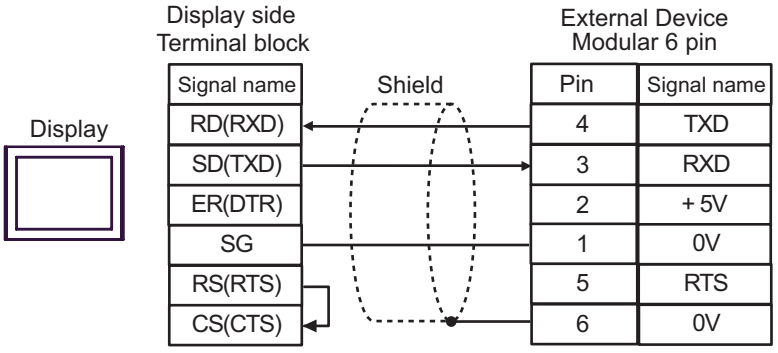
Display (Connection Port)	Cable		Remarks
GP3000 (COM1) ST (COM1) IPC*1 PC/AT	4A	User-created cable	Cable length: 15m or less
GP-4105 (COM1)	4B	User-created cable	

*1 Available only with the COM ports that support RS-232C.
☞ ■ IPC COM Port (page 7)

4A)



4B)

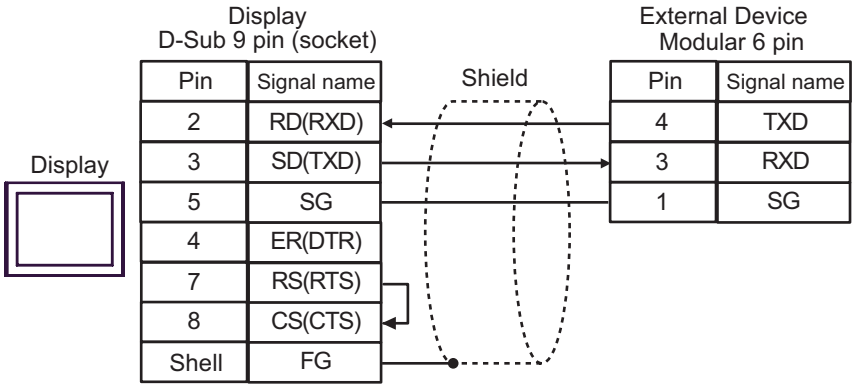


Cable Diagram 5

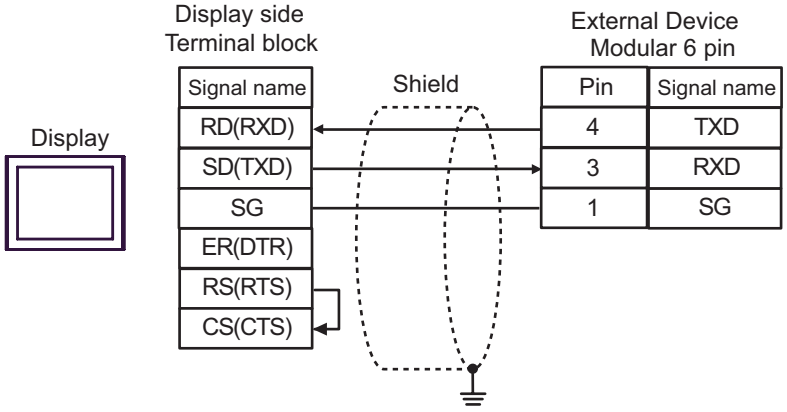
Display (Connection Port)	Cable		Remarks
GP3000 (COM1) ST (COM1) IPC*1 PC/AT	5A	User-created cable	Cable length: 3m or less
GP-4105 (COM1)	5B	User-created cable	

*1 Available only with the COM ports that support RS-232C.
☞ ■ IPC COM Port (page 7)

5A)



5B)

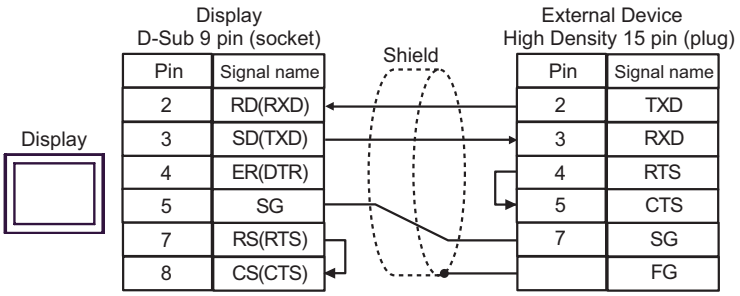


Cable Diagram 6

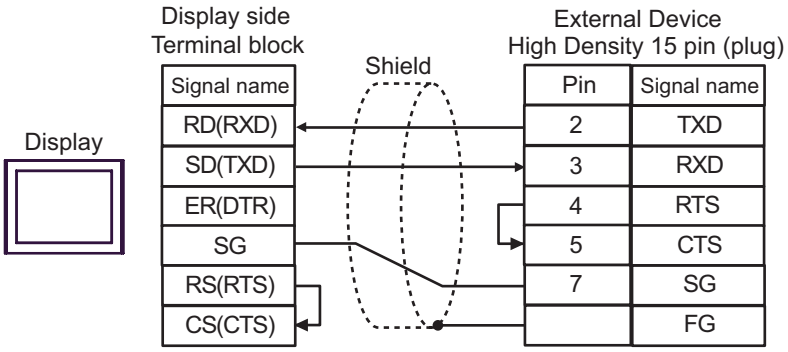
Display (Connection Port)	Cable		Remarks
GP3000 (COM1) ST (COM1) IPC*1 PC/AT	6A	User-created cable	Cable length: 15m or less
GP-4105 (COM1)	6B	User-created cable	

*1 Available only with the COM ports that support RS-232C.
☞ ■ IPC COM Port (page 7)

6A)



6B)



Cable Diagram 7

Display (Connection Port)	Cable		Remarks
GP3000[*1] (COM1) AGP-3302B (COM2) ST[*2] (COM2) IPC[*3]	7A	COM port conversion adapter by Digital Electronics Corp. CA3-ADPCOM-01 + Connector terminal block conversion adapter by Digital Electronics Corp. CA3-ADPTRM-01 + User-created cable	Cable length: 600m or less
	7B	User-created cable	
GP3000[*4] (COM2)	7C	Online adapter by Digital Electronics Corp. CA4-ADPONL-01 + Connector terminal block conversion adapter by Digital Electronics Corp. CA3-ADPTRM-01 + User-created cable	
	7D	Online adapter by Digital Electronics Corp. CA4-ADPONL-01 + User-created cable	
GP-4106 (COM1)	7E	User-created cable	

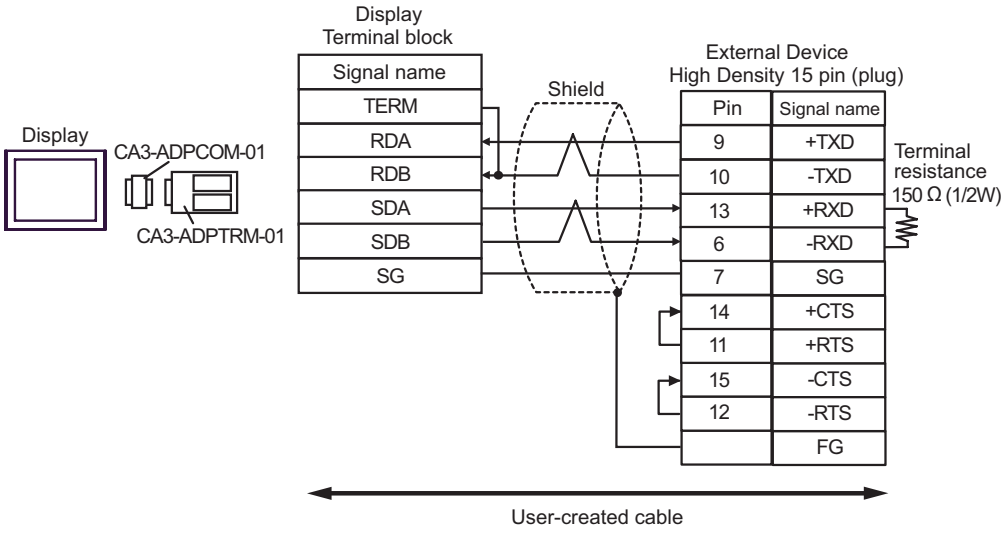
*1 All GP3000 models except AGP-3302B

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

*3 Available only with the COM ports that support RS-422/485 (4wire).
☞■ IPC COM Port (page 7)

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

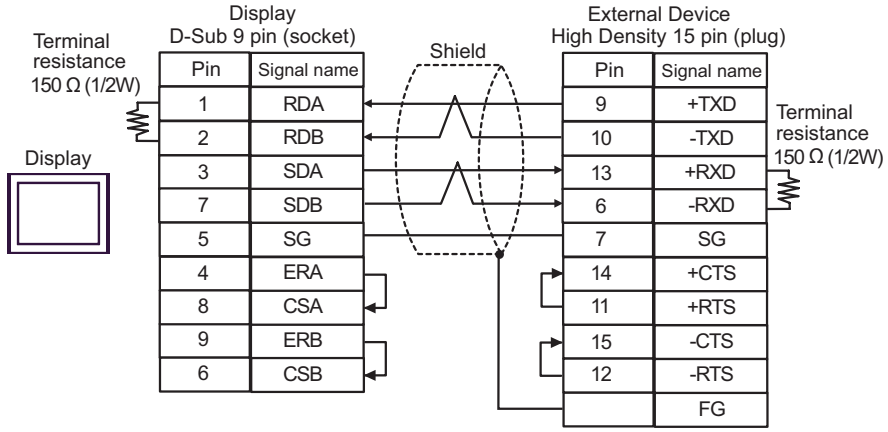
7A)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

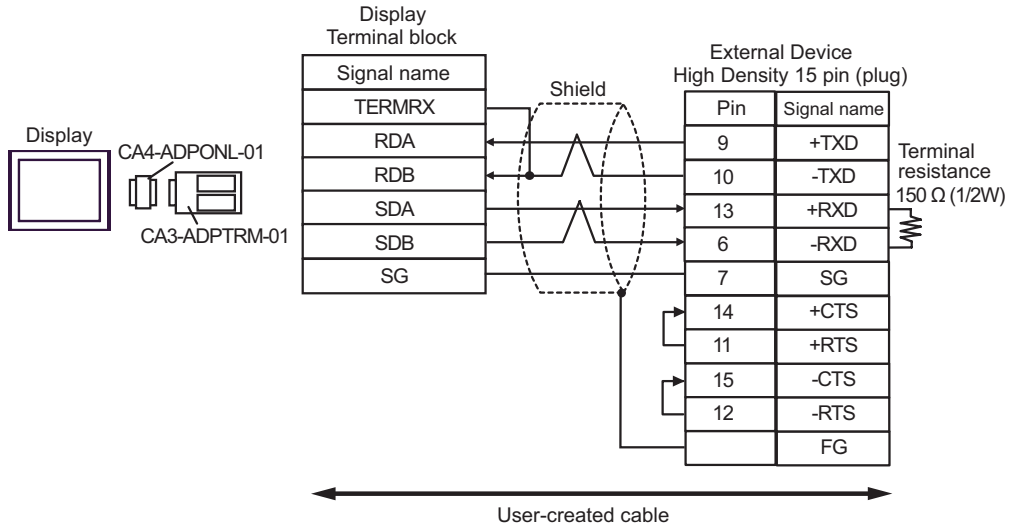
7B)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

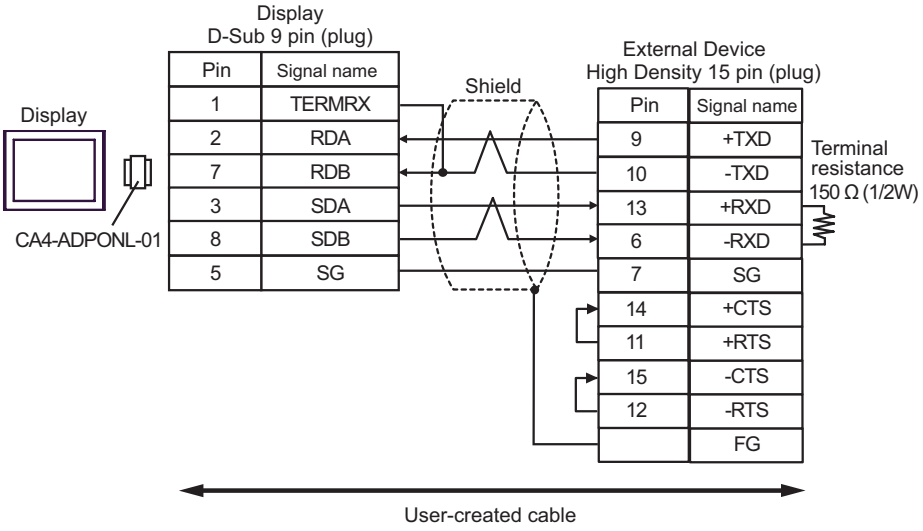
7C)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

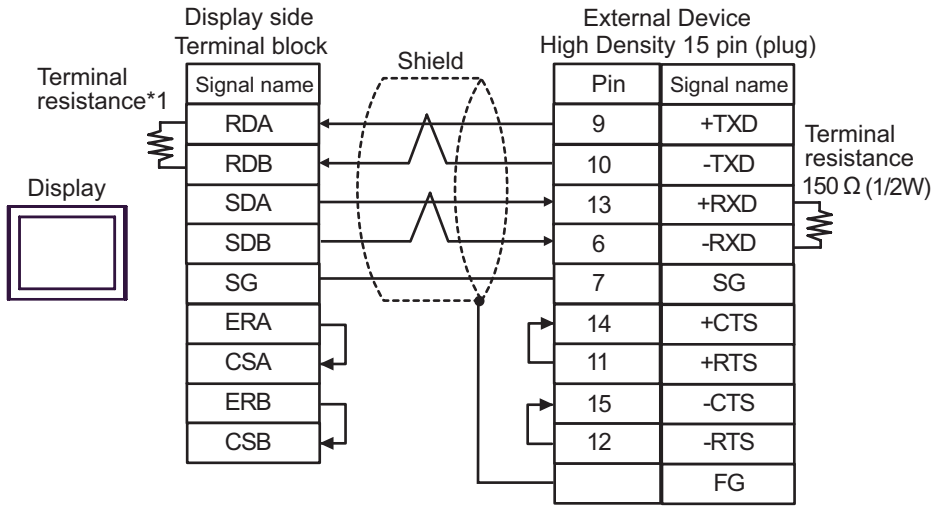
7D)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

7E)



NOTE

- Connect a 150Ω termination resistor to the +RXD and -RXD.

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

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

6 Supported Device

The following table shows the range of supported device addresses. Available type and range of device may vary depending on the CPU. Be sure to check them in each CPU manual before use.

6.1 KOSTAC SG Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	I0000 - I1777	R40400 - R40477		OCT 8 *1
Output Relay	Q0000 - Q1777	R40500 - R40577		OCT 8 *1
All Station Transmission Relay (Input)	GI0000 - GI3777	R40000 - R40177		OCT 8 *1
Special Station Transmission Relay (Output)	GQ0000 - GQ3777	R40200 - R40377		OCT 8 *1
Internal Relay	M0000 - M3777	R40600 - R40777		OCT 8 *1
Special Relay	SP000 - SP777	R41200 - R41237	L / H	OCT 8 *1
Timer (Contact)	T000 - T377	R41100 - R41117		OCT 8 *1
Counter (Contact)	C000 - C377	R41140 - R41157		OCT 8 *1
Stage	S0000 - S1777	R41000 - R41077		OCT 8 *1
Timer (Elapsed Value)	-	R0000 - R0377		OCT 8
Counter (Elapsed Value)	-	R1000 - R1377		OCT 8
Data Register 1	-	R400 - R777		OCT 8 BIT 15
Data Register 2	-	R1400 - R7377		OCT 8 BIT 15
Special Register	-	R7400 - R7777		OCT 8 BIT 15
Data Register 3	-	R10000 - R37777		OCT 8 BIT 15

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.2 KOSTAC SU Series

■ SU-5/5E/6 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	I000 - I477	R40400 - R40423	L/H	OCT8 *1
Output Relay	Q000 - Q477	R40500 - R40523		OCT8 *1
Link Relay/Link Input	GI0000 - GI1777	R40000 - R40077		OCT8 *1
Internal Relay	M0000 - M0737	R40600 - R40635		OCT8 *1
Special Relay	SP000 - SP137 SP320 - SP617	R41200 - R41205 R41215 - R41230		OCT8 *1
Timer (Contact)	T000 - T177	R41100 - R41107		OCT8 *1
Counter (Contact)	C000 - C177	R41140 - R41147		OCT8 *1
Stage	S0000 - S0577	R41000 - R41027		OCT8 *1
Timer (Elapsed Value)	-	R0000 - R0177		OCT8
Counter (Elapsed Value)	-	R1000 - R1177		OCT8
Data Register	-	R1400 - R7377		OCT8 BIT15
Special Register*2	-	R7400 - R7777		OCT8 BIT15

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

*2 Data cannot be written.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

■ SU-6B/6B-C Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	I000 - I477	R40400 - R40423	L/H	OCT8 *1
Output Relay	Q000 - Q477	R40500 - R40523		OCT8 *1
Link Relay/Link Input	GI0000 - GI1777	R40000 - R40077		OCT8 *1
Internal Relay	M0000 - M1777	R40600 - R40677		OCT8 *1
Special Relay	SP000 - SP137 SP320 - SP717	R41200 - R41205 R41215 - R41234		OCT8 *1
Timer (Contact)	T000 - T377	R41100 - R41117		OCT8 *1
Counter (Contact)	C000 - C177	R41140 - R41147		OCT8 *1
Stage	S0000 - S1777	R41000 - R41077		OCT8 *1
Timer (Elapsed Value)	-	R0000 - R0377		OCT8
Counter (Elapsed Value)	-	R1000 - R1177		OCT8
Data Register	-	R1400 - R7377		OCT8 BIT15
Special Register*2	-	R700 - R737 R7400 - R7777		OCT8 BIT15
Extension Register	-	R10000 - R17777		OCT8 BIT15

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

*2 Data cannot be written.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

■ SU-5M/5M-C/6M/6M-C Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	I0000 - I1777	R40400 - R40477	L/H	OCT 8 *1
Output Relay	Q0000 - Q1777	R40500 - R40577		OCT 8 *1
Link Relay/Link Input	GI0000 - GI3777	R40000 - R40177		OCT 8 *1
Special Station Transmission Relay (Output)	GQ0000 - GQ3777	R40200 - R40377		OCT 8 *1
Internal Relay	M0000 - M3777	R40600 - R40777		OCT 8 *1
Special Relay	SP000 - SP777	R41200 - R41237		OCT 8 *1
Timer (Contact)	T000 - T377	R41100 - R41117		OCT 8 *1
Counter (Contact)	C000 - C377	R41140 - R41157		OCT 8 *1
Stage	S0000 - S1777	R41000 - R41077		OCT 8 *1
Timer (Elapsed Value)	-	R0000 - R0377		OCT 8
Counter (Elapsed Value)	-	R1000 - R1377		OCT 8
Data Register	-	R1400 - R7377		OCT 8 BIT 15
Special Register*2	-	R700 - R777 R7400 - R7777		OCT 8 BIT 15
Extension Register	-	R10000 - R36777		OCT 8 BIT 15

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

*2 Data cannot be written.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.3 KOSTAC SZ Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	I0000 - I0477	R40400 - R40423	L/H	OCT 8 *1
Output Relay	Q0000 - Q0477	R40500 - R40523		OCT 8 *1
Internal Relay	M0000 - M0377	R40600 - R40617		OCT 8 *1
Special Relay	SP000 - SP137 SP540 - SP617	R41200 - R41205 R41226 - R41230		OCT 8 *1
Timer (Contact)	T000 - T177	R41100 - R41107		OCT 8 *1
Counter (Contact)	C000 - C177	R41140 - R41147		OCT 8 *1
Stage	S000 - S777	R41000 - R41037		OCT 8 *1
Timer (Elapsed Value)	-	R000 - R177		OCT 8
Counter (Elapsed Value)	-	R1000 - R1177		OCT 8
Data Register	-	R2000 - R3777		OCT 8 BIT 15
Special Register	-	R7746 - R7777		OCT 8 BIT 15

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.4 KOSTAC PZ3 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	I0000 - I0777	R40400 - R40437	L/H	OCT *1
Output Relay	Q0000 - Q0777	R40500 - R40537		OCT *1
Internal Relay	M0000 - M1777	R40600 - R40677		OCT *1
Special Relay	SP000 - SP777	R41200 - R41237		OCT *1
Timer (Contact)	T000 - T377	R41100 - R41117		OCT *1
Counter (Contact)	C000 - C177	R41140 - R41147		OCT *1
Stage	S0000 - S1777	R41000 - R41037		OCT *1
Timer (Elapsed Value)	-	R00000 - R41177		OCT
Counter (Elapsed Value)	-	R01000 - R41147		OCT
Data Register	-	R1400 - R7377 R10000 - R17777		OCT Bit
Special Register	-	R41200 - R41237		OCT Bit

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.5 KOSTAC SR Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
I/O Relay	000 - 157 700 - 767	R000 - R014 R070 - R076 (first half 1 byte)	L/H	OCT 8 ÷ 2 *1
Internal Relay	160 - 377 770 - 777	R016 - R036 R076 (latter half 1 byte)		OCT 8 ÷ 2 *1
Shift Register	400 - 577	R040 - R056		OCT 8 ÷ 2 *1
Timer/Counter (Contact)	600 - 677	R060 - R066		OCT 8 ÷ 2 *1
Timer/Counter (Elapsed Value)	-	R600 - R677		OCT 8
Data Register	-	R400 - R576		OCT 8 BIT 15 ÷ 2

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.6 DL-205 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	X0000 - X0477	V40400 - V40423	L/H	OCT *1
Output Relay	Y0000 - Y0477	V40500 - V40523		OCT *1
Control Relay	C0000 - C0377	V40600 - V40617		OCT *1
Special Relay	SP000 - SP137 SP320 - SP617	V41200 - V41205 V41215 - V41230		OCT *1
Timer (Contact)	T000 - T177	V41100 - V41107		OCT *1
Counter (Contact)	CT000 - CT177	V41140 - V41147		OCT *1
Stage	S000 - S777	V41000 - V41037		OCT *1
Timer (Elapsed Value)	-	V0000 - V0177		OCT
Counter (Elapsed Value)	-	V1000 - V1177		OCT
Data Register	-	V2000 - V3777		OCT BIT 15
Special Register	-	V7746 - V7777		OCT BIT 15

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.7 DL-305 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
I/O Relay	000 - 157 700 - 767	V000 - V014 V070 - V076 (first half 1 byte)	L/H	OCT 8 ÷ 2 *1
Control Relay	160 - 377 770 - 777	V016 - V036 V076 (latter half 1 byte)		OCT 8 ÷ 2 *1
Shift Register	400 - 577	V040 - V056		OCT 8 ÷ 2 *1
Timer/Counter (Contact)	600 - 677	V060 - V066		OCT 8 ÷ 2 *1
Timer/Counter (Elapsed Value)	-	V600 - V677		OCT 8 ÷ 2
Data Register	-	V400 - V576		OCT 8 BIT 15 ÷ 2

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.8 DL-405 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	X000 - X477	V40400 - V40423	L / H	OCT 8 *1
Output Relay	Y000 - Y477	V40500 - V40523		OCT 8 *1
Link Relay	GX0000 - GX1777	V40000 - V40077		OCT 8 *1
Link Output Relay	GY0000 - GY3777	V40200 - V40377		OCT 8 *1
Control Relay	C0000 - C1777	V40600 - V40677		OCT 8 *1
Special Relay	SP000 - SP137 SP320 - SP717	V41200 - V41205 V41215 - V41234		OCT 8 *1
Timer (Contact)	T000 - T377	V41100 - V41117		OCT 8 *1
Counter (Contact)	CT000 - CT177	V41140 - V41147		OCT 8 *1
Stage	S0000 - S1777	V41000 - V41077		OCT 8 *1
Timer (Elapsed Value)	-	V0000 - V0377		OCT 8
Counter (Elapsed Value)	-	V1000 - V1177		OCT 8
Data Register 1	-	V400 - V777		OCT 8 Bit 15
Data Register 2	-	V1400 - V7377		OCT 8 Bit 15
Special Register	-	V7400 - V7777		OCT 8 Bit 15
Data Register 3	-	V10000 - V37777		OCT 8 Bit 15

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.9 Direct Logic 05 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	I0000 - I0377	R40400 - R40417	L / H	OCT 8 *1
Output Relay	Q0000 - Q0377	R40500 - R40517		OCT 8 *1
Internal Relay	M0000 - M0777	R40600 - R40637		OCT 8 *1
Special Relay	SP000 - SP777	R41200 - R41237		OCT 8 *1
Timer (Contact)	T000 - T177	R41100 - R41107		OCT 8 *1
Counter (Contact)	C000 - C177	R41140 - R41147		OCT 8 *1
Stage	S000 - S377	R41000 - R41017		OCT 8 *1
Timer (Elapsed Value)	-	R000 - R177		OCT 8
Counter (Elapsed Value)	-	R1000 - R1177		OCT 8
V-Memory	-	R1200 - R7377		OCT 8 Bit 15 *2
V-Memory Nonvolatile	-	R7400 -R7577		OCT 8 Bit 15
System Parameter	-	R7600 - R7777		OCT 8 Bit 15

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

*2 No bits can be set for R1200 to R1377.

NOTE

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

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

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

  ☞ "Manual Symbols and Terminology"

6.10 Direct Logic 06 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bit	Remarks
Input Relay	I0000 - I0777	R40400 - R40437	L / H	OCT *1
Output Relay	Q0000 - Q0777	R40500 - R40537		OCT *1
Internal Relay	M0000 - M1777	R40600 - R40677		OCT *1
Special Relay	SP000 - SP777	R41200 - R41237		OCT *1
Timer (Contact)	T000 - T377	R41100 - R41117		OCT *1
Counter (Contact)	C000 - C177	R41140 - R41147		OCT *1
Stage	S0000 - S1777	R41000 - R41077		OCT *1
Timer (Elapsed Value)	-	R000 - R377		OCT
Counter (Elapsed Value)	-	R1000 - R1177		OCT
V-Memory	-	R0400 - R0677 R1200 - R7377 R10000 - R17777		OCT BIT *2
V-Memory Nonvolatile	-	R7400 -R7577		OCT BIT
System Parameter	-	R700 - R777 R7600 - R7777 R36000 - R37777		OCT BIT

*1 When bits are written, the Display reads the corresponding word address from the External Device, sets particular bits of that word address to ON, and then returns the resulting address to the External Device. Note that the correct data may not be written if you change the word address using the ladder program while the Display reads data from the External Device and returns it.

*2 No bits can be set for R1200 to R1377.

NOTE

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

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

- 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 of the data display or other devices.

■KOSTAC SG/KOSTAC SU/KOSTAC SZ/KOSTAC PZ3/Direct Logic 05/Direct Logic 06 Series

Device	Device Name	Device Code (HEX)	Address Code
Input Relay	I/R	0080	Word Address
Output Relay	Q/R	0081	Word Address
Link Relay	GI/R	0082	Word Address
Link Output Relay	GQ/R	0083	Word Address
Internal Relay	M/R	0084	Word Address
Special Relay	SP/R	0085	Word Address
Timer (Contact)	T/R	00E0	Word Address
Counter (Contact)	C/R	00E1	Word Address
Stage	S/R	0004	Word Address
Timer (Elapsed Value)	R	0060	Word Address
Counter (Elapsed Value)	R	0061	Word Address
Data Register 1	R	0000	Word Address
Data Register 2	R	0001	Word Address
Special Register	R	0002	Word Address
Data Register 3	R	0003	Word Address

■KOSTAC SR Series

Device	Device Name	Device Code (HEX)	Address Code
I/O Relay (R000 - R014)	.../R	0080	Value of word address divided by 2
I/O Relay (R070 - R076)			
Internal Relay (R016 - R036)			
Internal Relay (R076)			
Shift Register			
Timer/Counter (Contact)			
Timer/Counter (Elapsed Value)	R	0060	Word Address
Data Register	R	0000	Value of word address divided by 2

■DL-205/DL-405 Series

Device	Device Name	Device Code (HEX)	Address Code
Input Relay	X/V	0080	Word Address
Output Relay	Y/V	0081	Word Address
Link Relay	GX/V	0082	Word Address
Link Output Relay	GY/V	0083	Word Address
Control Relay	C/V	0084	Word Address
Special Relay	SP/V	0085	Word Address
Timer (Contact)	T/V	00E0	Word Address
Counter (Contact)	CT/V	00E1	Word Address
Stage	S/V	0004	Word Address
Timer (Elapsed Value)	V	0060	Word Address
Counter (Elapsed Value)	V	0061	Word Address
Data Register 1	V	0000	Word Address
Data Register 2	V	0001	Word Address
Special Register	V	0002	Word Address
Data Register 3	V	0003	Word Address

■DL-305 Series

Device	Device Name	Device Code (HEX)	Address Code
I/O Relay (V000 - V014)	.../V	0080	Value of word address divided by 2
I/O Relay (V070 - V076)			
Control Relay (V016 - V036)			
Control Relay (V076)			
Shift Register			
Timer/Counter (Contact)			
Timer/Counter (Elapsed Value)	V	0060	Word Address
Data Register	V	0000	Value of word address divided by 2

8 Error Messages

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

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

Display Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 1[01H])"

NOTE

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

■ Error Codes Specific to the External Device

Error codes specific to the External Device are shown below.

Error Code	Description
01	A timeout has occurred on the serial link.
04	Unavailable I/O data has been requested.
0C	During the header transfer, an error has occurred even after three retries.
0D	During the data transfer, an error has occurred even after three retries.
14	During the data block transfer, one or more of the following errors have occurred: - Invalid STX has been received. - Invalid ETB has been received. - Invalid ETX has been received. - Invalid LRC has been received. - A parity error, framing error, or overrun error has occurred.
15	EOT reception from the parent station has resulted in failure.
16	ACK/NAK reception has resulted in failure during the wait state.

Error Code	Description
1D	Except during the header/data transfer, one or more of the following errors have occurred: - Invalid STX has been received. - Invalid ETB has been received. - Invalid ETX has been received. - Invalid LRC has been received. - A parity error, framing error, or overrun error has occurred.
1E	During the header transfer, one or more of the following errors have occurred: - Invalid SOH has been received. - Invalid ETB has been received. - Invalid LRC has been received. - A parity error, framing error, or overrun error has occurred.