



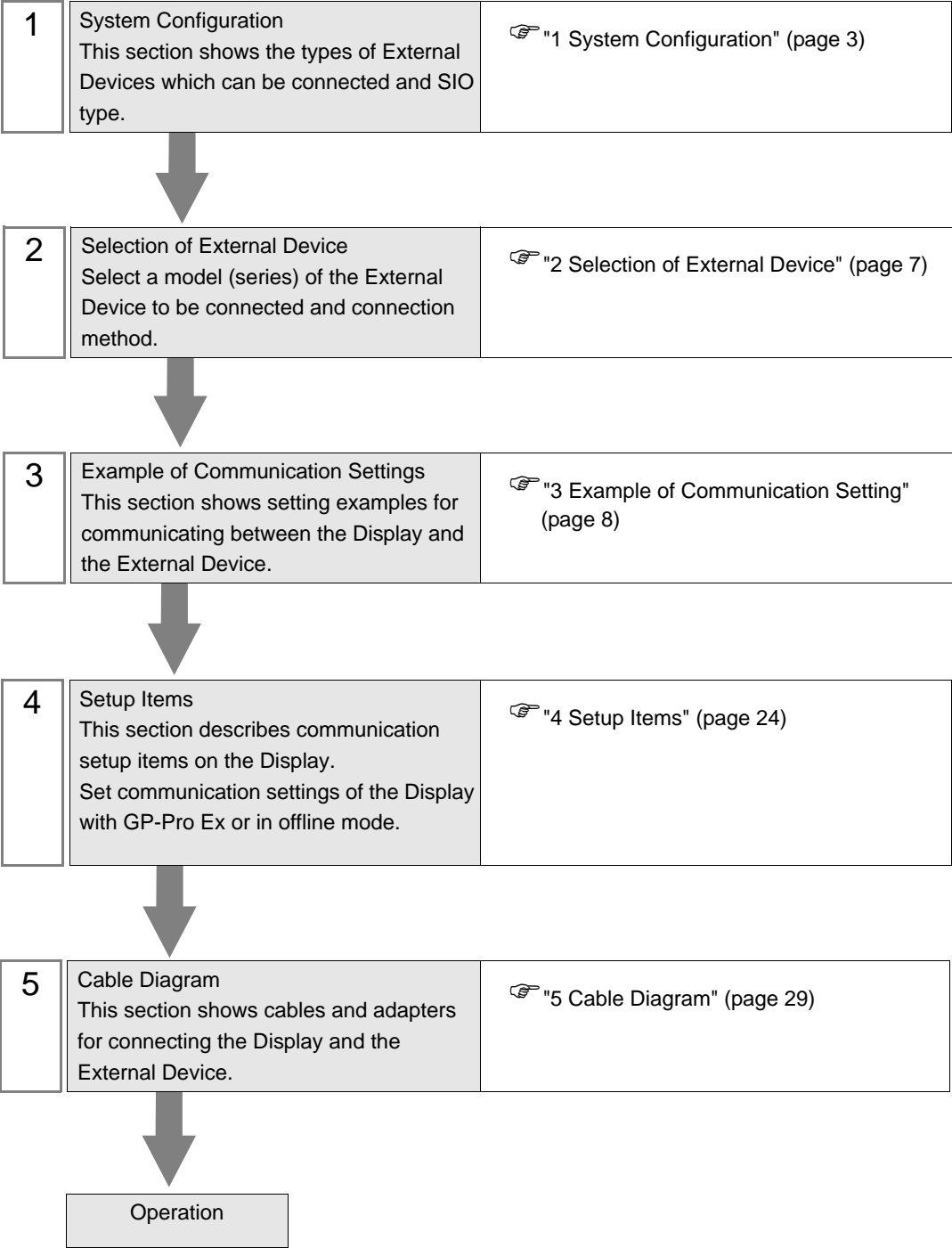
# GLOFA Series Cnet Driver

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Introduction

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

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



# 1 System Configuration

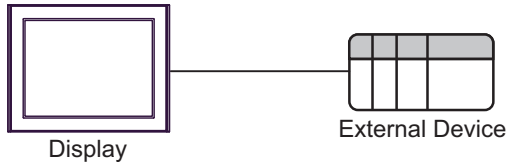
The system configuration in the case when the External Device of LS Industrial Systems Co., Ltd. and the Display are connected is shown.

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
GM1/2	GM1-CPUA GM1-CPUB GM2-CPUA GM2-CPUB	CH1 on G3L-CUEA	RS232C	"Setting Example 1" (page 8)	"Cable Diagram 1" (page 29)
		CH2 on G3L-CUEA	RS422/485 (4 wire)	"Setting Example 2" (page 10)	"Cable Diagram 2" (page 31)
GM3	GM3-CPUA	CH1 on G3L-CUEA	RS232C	"Setting Example 1" (page 8)	"Cable Diagram 1" (page 29)
		CH2 on G3L-CUEA	RS422/485 (4 wire)	"Setting Example 2" (page 10)	"Cable Diagram 2" (page 31)
GM4	GM4-CPUA GM4-CPUB GM4-CPUC	CH1 on G4L-CUEA	RS232C	"Setting Example 1" (page 8)	"Cable Diagram 1" (page 29)
		CH2 on G4L-CUEA	RS422/485 (4 wire)	"Setting Example 2" (page 10)	"Cable Diagram 2" (page 31)
GM6	GM6-CPUA GM6-CPUC	Port on CPU unit	RS232C	"Setting Example 3" (page 12)	"Cable Diagram 3" (page 38)
		G6L-CUEB	RS232C	"Setting Example 1" (page 8)	"Cable Diagram 1" (page 29)
		G6L-CUEC	RS422/485 (4 wire)	"Setting Example 2" (page 10)	"Cable Diagram 2" (page 31)
	GM6-CPUB	CH1 on CPU unit	RS422/485 (4 wire)	"Setting Example 4" (page 14)	"Cable Diagram 2" (page 31)
		G6L-CUEB	RS232C	"Setting Example 1" (page 8)	"Cable Diagram 1" (page 29)
		G6L-CUEC	RS422/485 (4 wire)	"Setting Example 2" (page 10)	"Cable Diagram 2" (page 31)
GM7	G7M-DR10A(/DC) G7M-DR20A(/DC) G7M-DR30A(/DC) G7M-DR40A(/DC) G7M-DR60A(/DC) G7M-DT10A G7M-DT20A G7M-DT30A G7M-DT40A G7M-DT60A	Port on CPU unit	RS232C	"Setting Example 5" (page 16)	"Cable Diagram 3" (page 38)
		G7L-CUEB	RS232C	"Setting Example 5" (page 16)	"Cable Diagram 1" (page 29)
		G7L-CUEC	RS422/485 (4 wire)	"Setting Example 6" (page 18)	"Cable Diagram 2" (page 31)

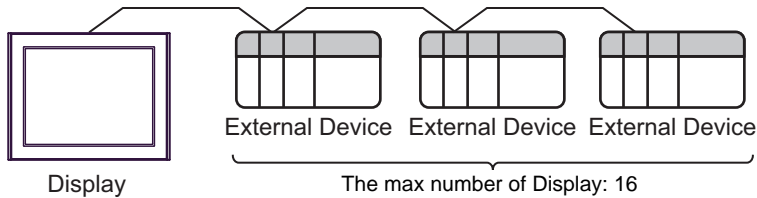
Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
GM7U	G7M-DR20U(/DC) G7M-DR30U(/DC) G7M-DR40U(/DC) G7M-DR60U(/DC) G7M-DRT20U(/DC) G7M-DRT30U(/DC) G7M-DRT40U(/DC) G7M-DRT60U(/DC)	Ch0 on CPU unit	RS232C	"Setting Example 7" (page 20)	"Cable Diagram 3" (page 38)
	G7M-DT20U(N)(/DC) G7M-DT30U(N)(/DC) G7M-DT40U(N)(/DC) G7M-DT60U(N)(/DC)	G7L-CUEB	RS232C	"Setting Example 7" (page 20)	"Cable Diagram 1" (page 29)
	G7M-DT20U(P)(/DC) G7M-DT30U(P)(/DC) G7M-DT40U(P)(/DC) G7M-DT60U(P)(/DC)	G7L-CUEC	RS422/485 (4 wire)	"Setting Example 8" (page 22)	"Cable Diagram 2" (page 31)

■ 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 <sup>*1</sup> , COM2, COM3 <sup>*1</sup> , COM4	-	-
PS-3450A, PS-3451A, PS3000-BA, PS3001-BD	COM1, COM2 <sup>*1*2</sup>	COM2 <sup>*1*2</sup>	COM2 <sup>*1*2</sup>
PS-3650A (T41 model), PS-3651A (T41 model)	COM1 <sup>*1</sup>	-	-
PS-3650A (T42 model), PS-3651A (T42 model)	COM1 <sup>*1*2</sup> , COM2	COM1 <sup>*1*2</sup>	COM1 <sup>*1*2</sup>
PS-3700A (Pentium®4-M) PS-3710A	COM1 <sup>*1</sup> , COM2 <sup>*1</sup> , COM3 <sup>*2</sup> , COM4	COM3 <sup>*2</sup>	COM3 <sup>*2</sup>
PS-3711A	COM1 <sup>*1</sup> , COM2 <sup>*2</sup>	COM2 <sup>*2</sup>	COM2 <sup>*2</sup>
PS4000 <sup>*3</sup>	COM1, COM2	-	-
PL3000	COM1 <sup>*1*2</sup> , COM2 <sup>*1</sup> , COM3, COM4	COM1 <sup>*1*2</sup>	COM1 <sup>*1*2</sup>

\*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.

### DIP Switch setting: RS-232C

DIP Switch	Setting	Description
1	OFF <sup>*1</sup>	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)

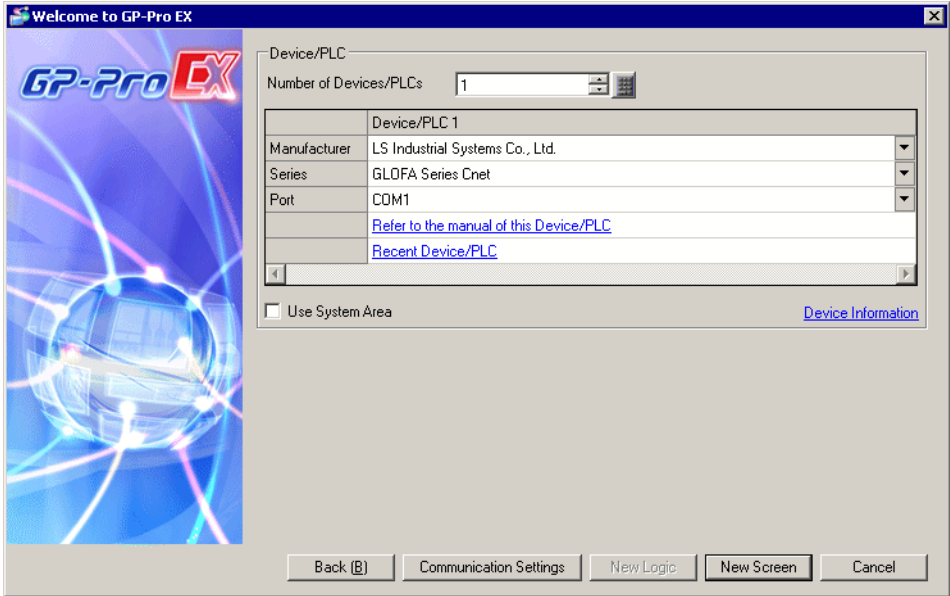
DIP Switch	Setting	Description
1	OFF	Reserved (always OFF)
2	ON	SIO type: RS-422/485
3	ON	
4	OFF	Output mode of SD (TXD) data: Always output
5	OFF	Terminal resistance (220Ω) insertion to SD (TXD): None
6	OFF	Terminal resistance (220Ω) insertion to RD (RXD): None
7	OFF	Short-circuit of SDA (TXA) and RDA (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
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 "LS Industrial Systems Co. Ltd."
Series	Select the External Device model (series) and the connection method. Select "GLOFA Series Cnet". In System configuration, make sure the External Device you are connecting is supported by "GLOFA Series Cnet". ☞ "1 System Configuration" (page 3)
Port	Select the Display port to connect to the External Device.
Use System Area	Check this option to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the External Device's ladder program to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This feature can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "System Settings [Display Unit] - [System Area] Settings Guide" Cf. Maintenance/Troubleshooting Guide "Main Unit - System Area Settings"

### 3 Example of Communication Setting

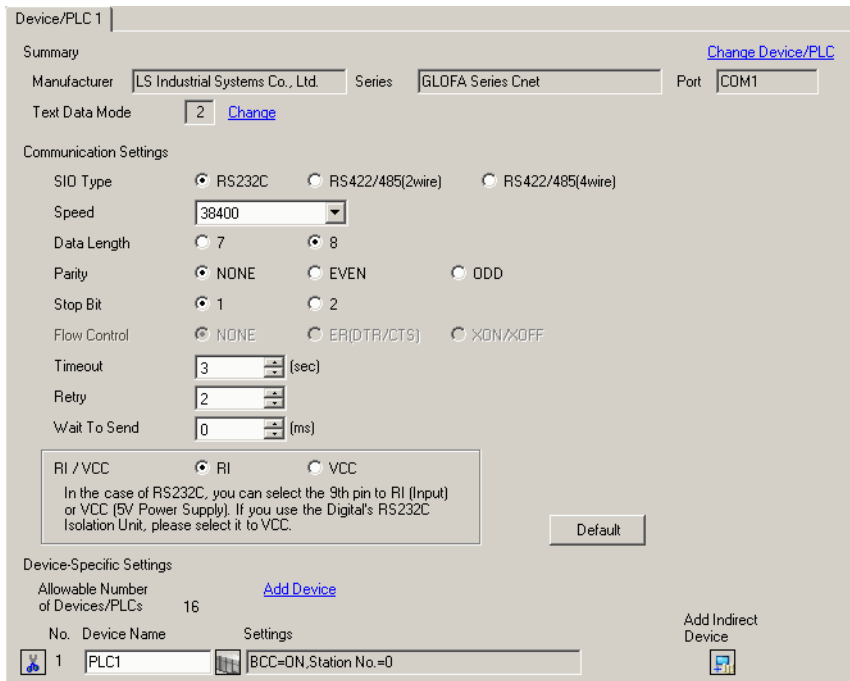
The following shows examples of communication settings of the Display and the External Device, which is recommended by Pro-face.

#### 3.1 Setting Example 1

##### ■ Settings of GP-Pro EX

##### ◆ Communication Settings

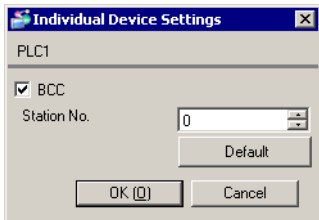
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



##### ◆ Device Setting

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

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





## ■ Settings of External Device

Use the mode switch on the link I/F and the setting tool (Cnet Frame Editor) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ Mode Switch

- When using G6L-CUEB/G6L-CUEC.

Rotary Switch	Setting Description
1	Dedicated

- When using G3L-CUEA/G4L-CUEA.

Rotary Switch	Setting Description
1*1	Dedicated

- \*1 Set to 1, when using in the External Device Interlocking mode.  
Set to 3, when using in the External Device Stand-alone mode.

### ◆ Setting Tool

- 1 Start up the setting tool.
- 2 Set [channel] and [Basic Parameters] setup items as follows.

Setup Item	Setting Value
Channel	RS232 side
Station	0
Type	Null Modem
Baud Rate	38400
Data Bit	8
Parity	None
Stop Bit	1
Monitor Entry	16x20

- 3 Transfer the setting contents to External Device.


## 3.2 Setting Example 2

### ■ Settings of GP-Pro EX

#### ◆ Communication Settings

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

#### ◆ Device Setting

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

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

## ■ Settings of External Device

Use the mode switch on the link I/F and the setting tool (Cnet Frame Editor) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ Mode Switch

- When using G6L-CUEB/G6L-CUEC.

Rotary Switch	Setting Description
1	Dedicated

- When using G3L-CUEA/G4L-CUEA.

Rotary Switch	Setting Description
1*1	Dedicated

- \*1 Set to 1, when using in the External Device Interlocking mode.  
Set to 3, when using in the External Device Stand-alone mode.

### ◆ Setting Tool

- 1 Start up the setting tool.
- 2 Set [channel] and [Basic Parameters] setup items as follows.

Setup Item	Setting Value
Channel	RS422 side
Station	0
Type	Null Modem
Baud Rate	38400
Data Bit	8
Parity	None
Stop Bit	1
Monitor Entry	16x20

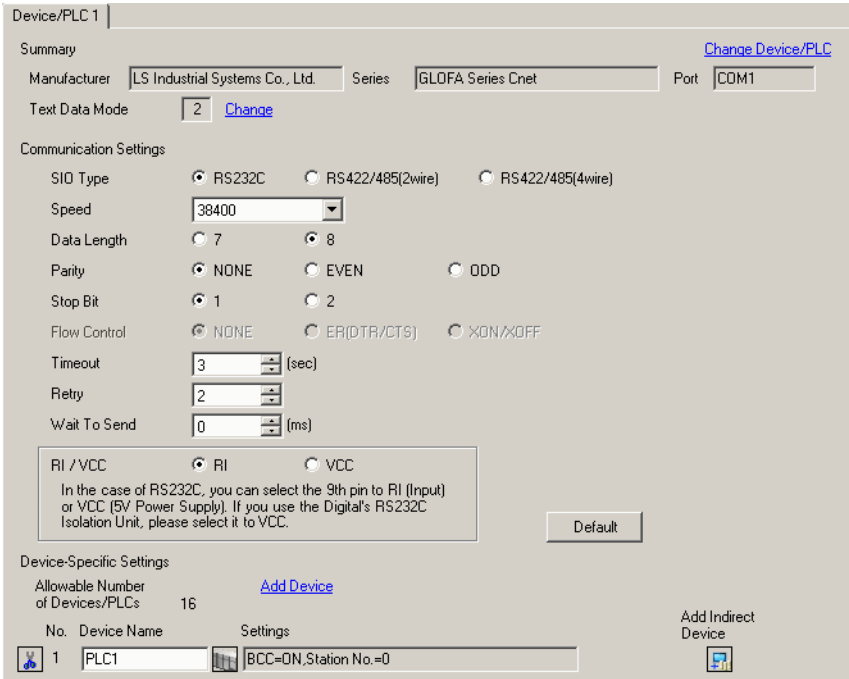
- 3 Transfer the setting contents to External Device.

### 3.3 Setting Example 3

#### ■ Settings of GP-Pro EX

##### ◆ Communication Settings

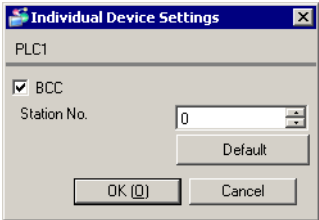
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



##### ◆ Device Setting

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

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



## ■ Settings of External Device

Use the ladder software (GMWIN) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- 1 Start up the ladder software.
- 2 Create the project. Select the using External Device.
- 3 Select [Basic Parameters] from [Parameter] tab of tree view.
- 4 Set the setting items as below in the displayed dialog box.

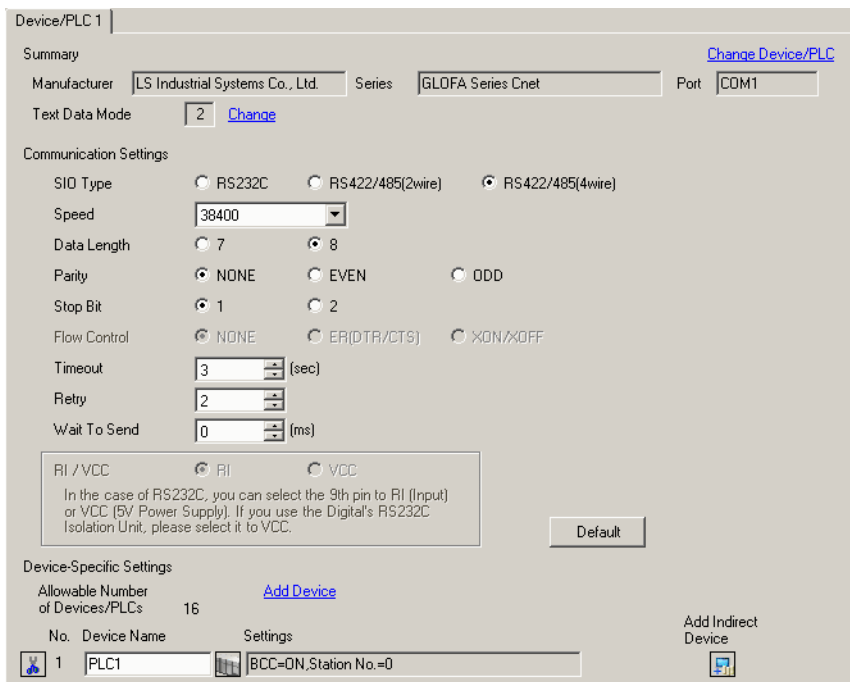
Setup Item	Setting Value
Station number	0
Baud rate	38400
Master/Slave	Slave

### 3.4 Setting Example 4

#### ■ Settings of GP-Pro EX

##### ◆ Communication Settings

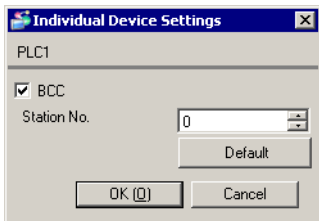
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



##### ◆ Device Setting

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

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



## ■ Settings of External Device

Use the ladder software (GMWIN) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- 1 Start up the ladder software.
- 2 Create the project. Select the using External Device.
- 3 Select [Basic Parameters] from [Parameter] tab of tree view.
- 4 Set the setting items as below in the displayed dialog box.

Setup Item	Setting Value
Station number	0
Baud rate	38400
Master/Slave	Slave


## 3.5 Setting Example 5

### ■ Settings of GP-Pro EX

#### ◆ Communication Settings

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

#### ◆ Device Setting

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

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



## ■ Settings of External Device

Use the dip switch on the CPU and the ladder software (GMWIN) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ Dip Switch

Dip Switch	Setting Value
BUILTIN CNET	ON

#### **NOTE**

- Turn OFF the BUILTIN CNET switch, when using the Cnet port on G7L-CUEB.

### ◆ Ladder Software

- 1 Start up the ladder software.
- 2 Create the project. Select the using External Device.
- 3 Select [Communication Parameters] from [Parameter] tab of tree view.
- 4 Set the setting items as below in the displayed dialog box.

Setup Item	Setting Value
Station No.	0
Baud rate	38400
Data bit	8
Parity bit	None
Stop bit	1
Communication channel	RS232C Null Modem or RS422/485
Dedicated	Slave


## 3.6 Setting Example 6

### ■ Settings of GP-Pro EX

#### ◆ Communication Settings

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

#### ◆ Device Setting

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

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

## ■ Settings of External Device

Use the dip switch on the CPU and the ladder software (GMWIN) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ Dip Switch

Dip Switch	Setting Value
BUILTIN CNET	OFF

### ◆ Ladder Software

- 1 Start up the ladder software.
- 2 Create the project. Select the using External Device.
- 3 Select [Communication Parameters] from [Parameter] tab of tree view.
- 4 Set the setting items as below in the displayed dialog box.

Setup Item	Setting Value
Station No.	0
Baud rate	38400
Data bit	8
Parity bit	None
Stop bit	1
Communication channel	RS232C Null Modem or RS422/485
Dedicated	Slave


### 3.7 Setting Example 7

#### ■ Settings of GP-Pro EX

##### ◆ Communication Settings

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

##### ◆ Device Setting

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

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

## ■ Settings of External Device

Use the dip switch on the CPU and the ladder software (GMWIN) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ Dip Switch

Dip Switch	Setting Value
BUILTIN CNET	ON

#### **NOTE**

- Turn OFF the BUILTIN CNET switch, when using the Cnet port on G7L-CUEB.

### ◆ Ladder Software

- 1 Start up the ladder software.
- 2 Create the project. Select the using External Device.
- 3 Select [Communication Parameters] from [Parameter] tab of tree view.
- 4 Select [Channel 0] in [Communication Parameter Selection] dialog box.
- 5 Set the setting items as below in the displayed dialog box.

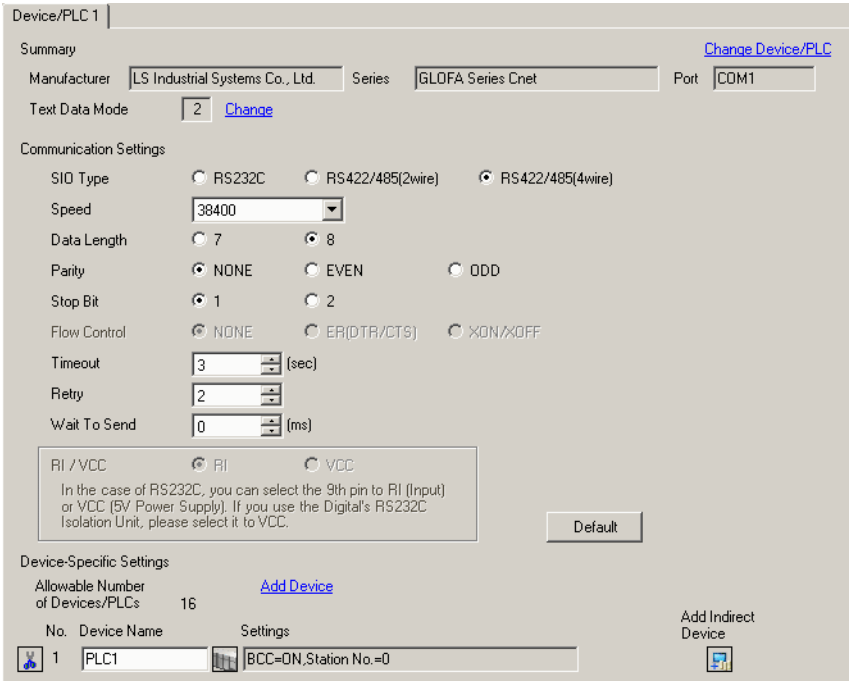
Setup Item	Setting Value
Station No.	0
Baud rate	38400
Data bit	8
Parity bit	None
Stop bit	1
Communication channel	RS232C Null Modem or RS422/485
Dedicated	Slave

### 3.8 Setting Example 8

#### ■ Settings of GP-Pro EX

##### ◆ Communication Settings

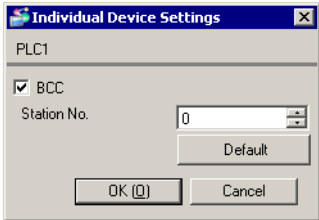
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



##### ◆ Device Setting

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

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



## ■ Settings of External Device

Use the dip switch on the CPU and the ladder software (GMWIN) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ Dip Switch

Dip Switch	Setting Value
BUILTIN CNET	OFF

### ◆ Ladder Software

- 1 Start up the ladder software.
- 2 Create the project. Select the using External Device.
- 3 Select [Communication Parameters] from [Parameter] tab of tree view.
- 4 Select [Channel 0] in [Communication Parameter Selection] dialog box.
- 5 Set the setting items as below in the displayed dialog box.

Setup Item	Setting Value
Station No.	0
Baud rate	38400
Data bit	8
Parity bit	None
Stop bit	1
Communication channel	RS232C Null Modem or RS422/485
Dedicated	Slave

## 4 Setup Items

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

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

 "3 Example of Communication Setting" (page 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.
Speed	Select speed between the External Device and the Display.
Data Length	Select data length.
Parity	Select how to check parity.
Stop Bit	Select stop bit length.
Flow Control	Display 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.




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

**NOTE**

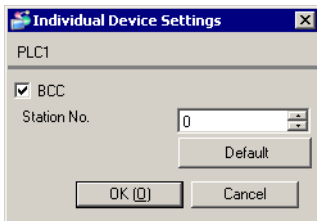
- Refer to the GP-Pro EX Reference Manual for Indirect Device.

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

■ Device Setting

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

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



Setup Items	Setup Description
BCC	BCC of the External Device is set to "Enable / Disable". (Initial value [Enable])
Station No.	Use an integer from 0 to 31 to enter the Station No. of the External Device. (Initial value [0])

## 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.

Comm.	Device	Option		
GLOFA Series Cnet		[COM1]	Page 1/1	
SIO Type	RS232C			
Speed	38400			
Data Length	<input type="radio"/> 7 <input checked="" type="radio"/> 8			
Parity	<input checked="" type="radio"/> NONE <input type="radio"/> EVEN <input type="radio"/> ODD			
Stop Bit	<input checked="" type="radio"/> 1 <input type="radio"/> 2			
Flow Control	NONE			
Timeout(s)	3			
Retry	2			
Wait To Send(ms)	0			
Exit		Back		2012/08/30 14:18:13

Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device. <b>IMPORTANT</b> To make the communication settings correctly, confirm the serial interface specifications of Display unit for [SIO Type]. We cannot guarantee the operation if a communication type that the serial interface does not support is specified. For details concerning the serial interface specifications, refer to the manual for Display unit.
Speed	Select speed between the External Device and the Display.
Data Length	Select data length.
Parity	Select how to check parity.
Stop Bit	Select stop bit length.
Flow Control	Display the communication control method to prevent overflow of transmission and reception data.

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

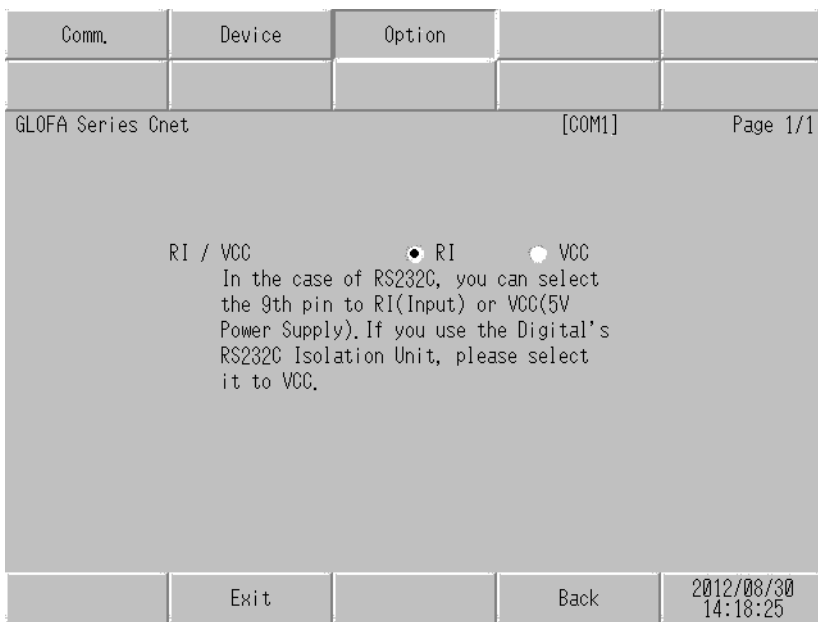
To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings]. Touch the External Device you want to set from the displayed list, and touch [Device].

Comm.	Device	Option		
GLOFA Series Cnet		[COM1]	Page 1/1	
Device/PLC Name		[PLC1]		
BCC		<input type="radio"/> Disable <input checked="" type="radio"/> Enable		
Station No.		[0]		
Exit		Back		2012/08/30 14:18:20

Setup Items	Setup Description
Device/PLC name	Select the External Device to set. The device name is set up in GP-Pro EX. (Initial value [PLC1])
BCC	BCC of the External Device is set to "Enable / Disable". (Initial value [Enable])
Station No.	Use an integer from 0 to 31 to enter the Station No. of the External Device. (Initial value [0])

■ Option

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



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

**NOTE**

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

## 5 Cable Diagram


The cable diagram shown below may be different from the cable diagram recommended by LS Industrial Systems Co., Ltd. Please be assured there is no operational problem in applying the cable diagram shown in this manual.

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

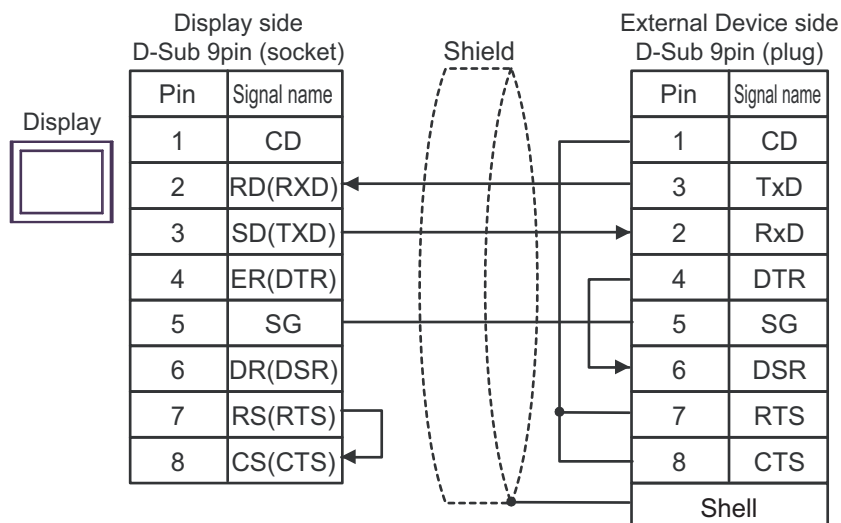
Cable Diagram 1

Display (Connection Port)	Cable		Notes
GP3000 (COM1) GP4000* <sup>1</sup> (COM1) SP5000 (COM1/2) ST (COM1) LT3000 (COM1) IPC* <sup>2</sup> PC/AT	1A	User-created cable	Cable length: 15m or less
GP-4105 (COM1)	1B	User-created cable	Cable length: 15m or less
LT-4*01TM (COM1) LT-Rear Module (COM1)	1C	RJ45 RS-232C Cable (5m) by Pro-face PFXZLMCBJR21	Cable length: 5m or less

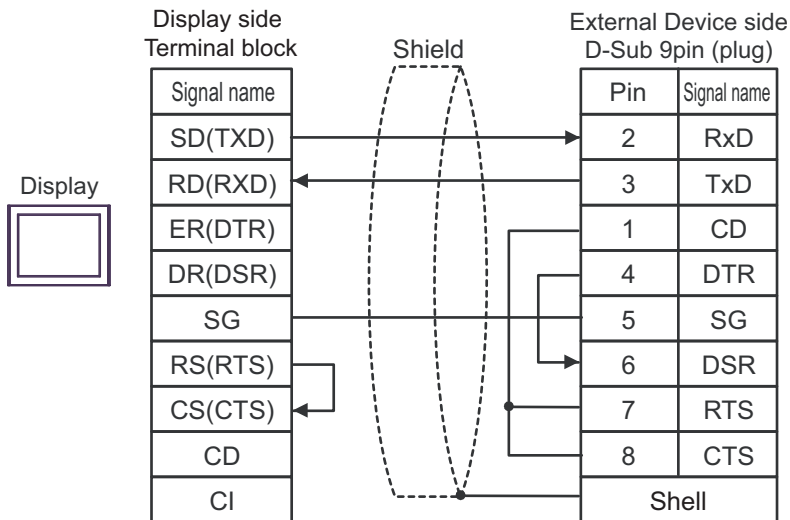
\*1 All GP4000 models except GP-4100 Series and GP-4203T

\*2 Only the COM port which can communicate by RS-232C can be used.  
 "■ IPC COM Port" (page 5)

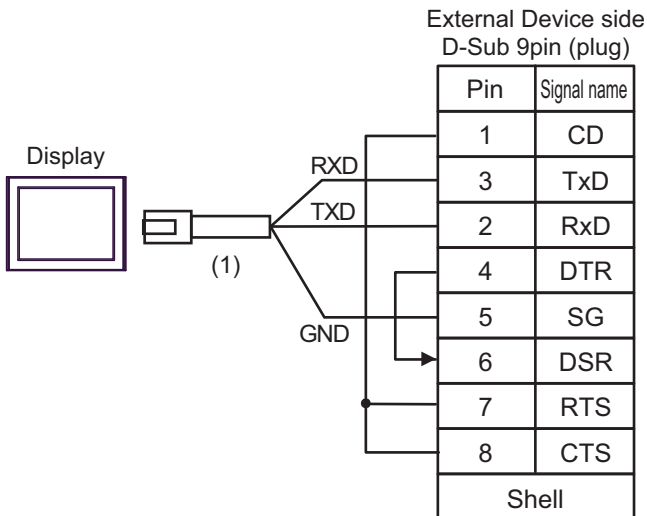
1A)



1B)



1C)



Number	Name	Notes
(1)	RJ45 RS-232C Cable (5m) by Pro-face PFXZLMCBRJ21	

Cable Diagram 2

Display (Connection Port)	Cable		Notes
GP3000* <sup>1</sup> (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) ST* <sup>2</sup> (COM2) LT3000 (COM1) IPC* <sup>3</sup>	2A	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: 500m or less
	2B	User-created cable	
GP3000* <sup>4</sup> (COM2)	2C	Online adapter by Pro-face CA4-ADPONL-01 + Terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	Cable length: 500m or less
	2D	Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	
GP-4106 (COM1)	2E	User-created cable	Cable length: 500m or less
GP4000* <sup>5</sup> (COM2) GP-4201T (COM1) SP5000 (COM1/2)	2F	RS-422 Terminal Block Conversion Adapter by Pro-face PFXZCBADTM1* <sup>6</sup> + User-created cable	Cable length: 500m or less
	2B	User-created cable	

\*1 All GP3000 models except AGP-3302B

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

\*3 Only the COM port which can communicate by RS-422/485 (4 wire) can be used.  
☞ "■ IPC COM Port" (page 5)

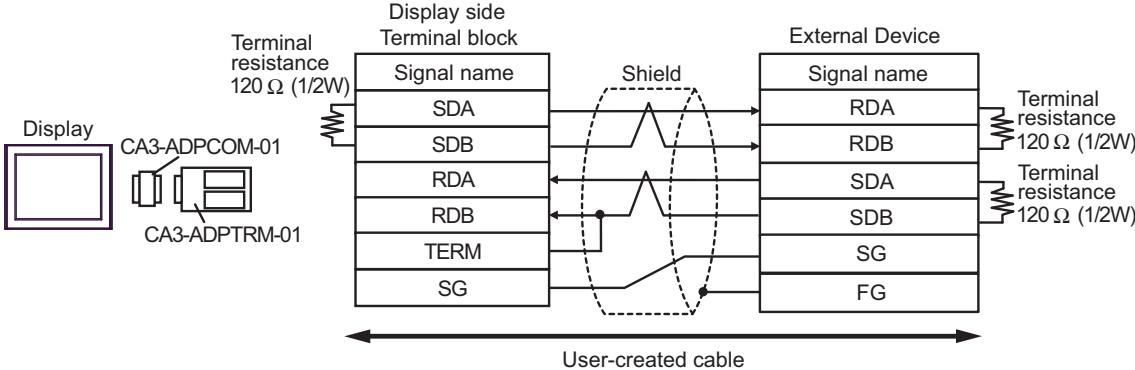
\*4 All GP3000 models except GP-3200 series and AGP-3302B

\*5 All GP4000 models except GP-4100 Series, GP-4\*01TM, GP-4201T and GP-4\*03T

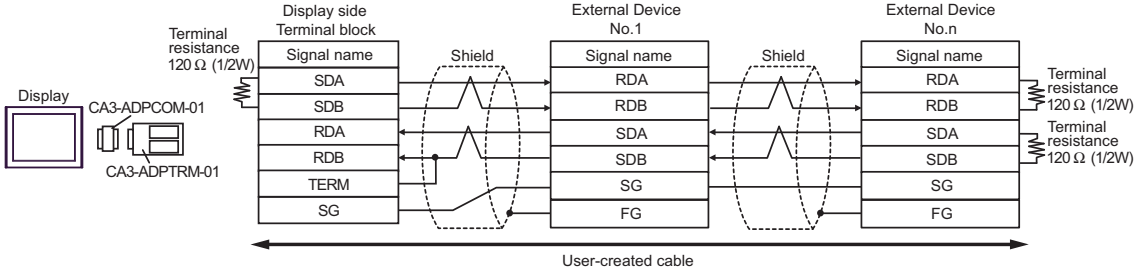
\*6 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 2A.

2A)

- 1:1 Connection



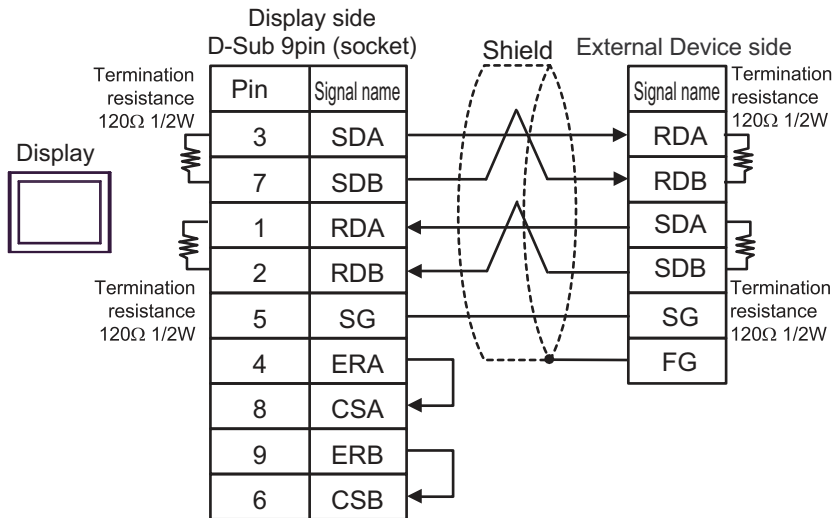
- 1:n Connection



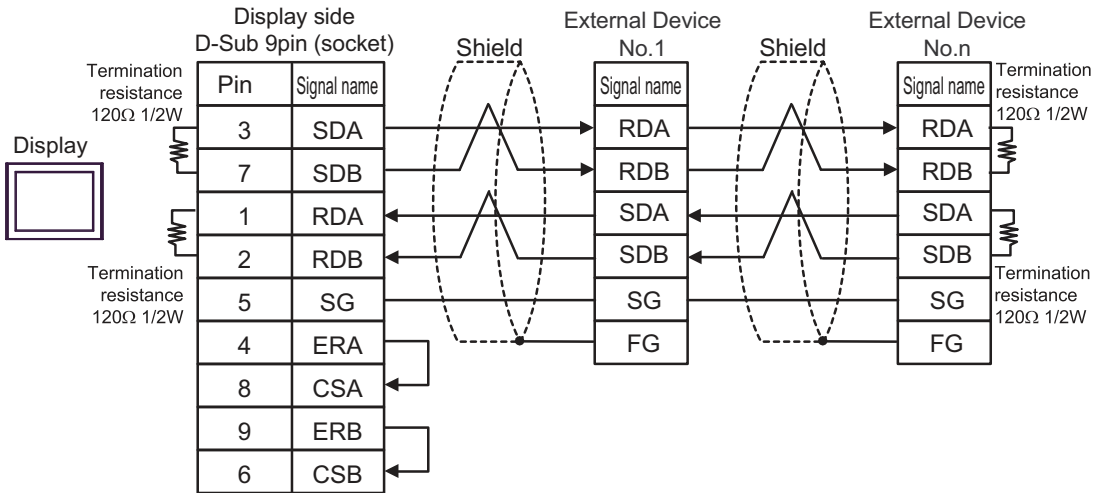


2B)

- 1:1 Connection

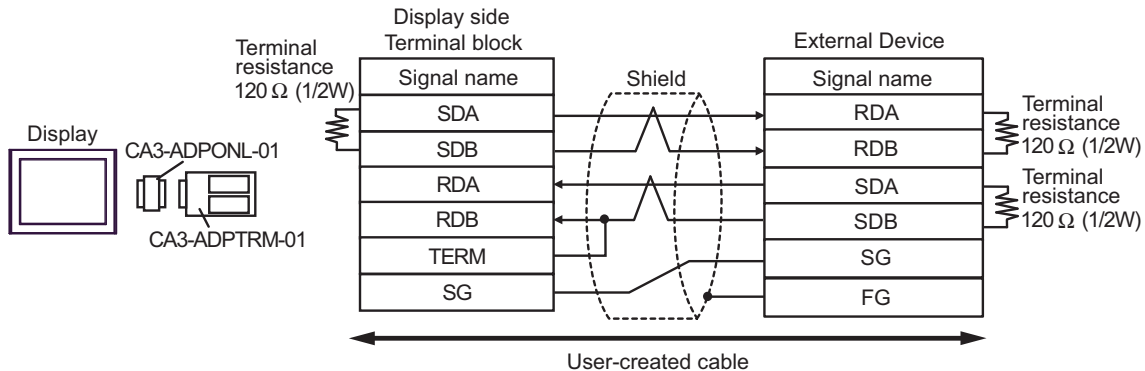


- 1:n Connection

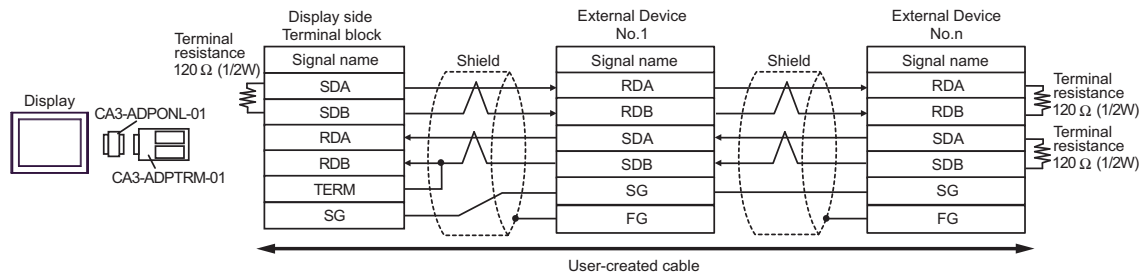


2C)

- 1:1 Connection

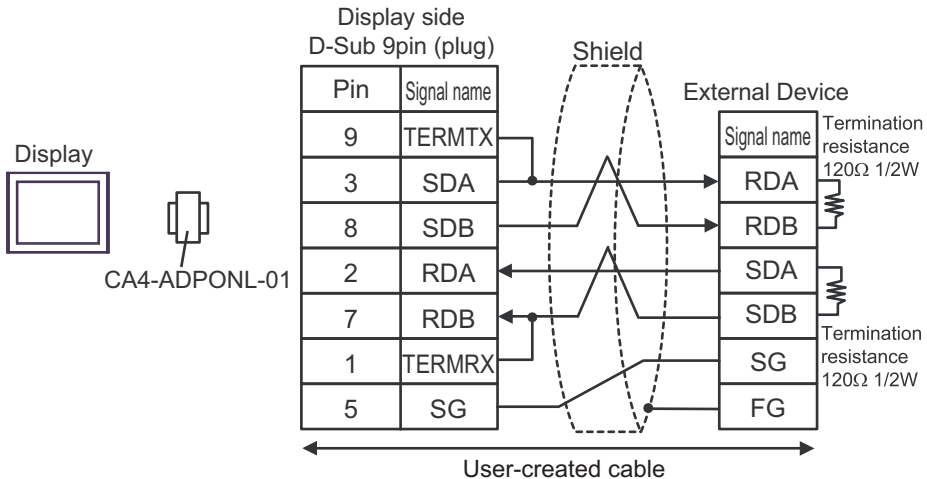


- 1:n Connection

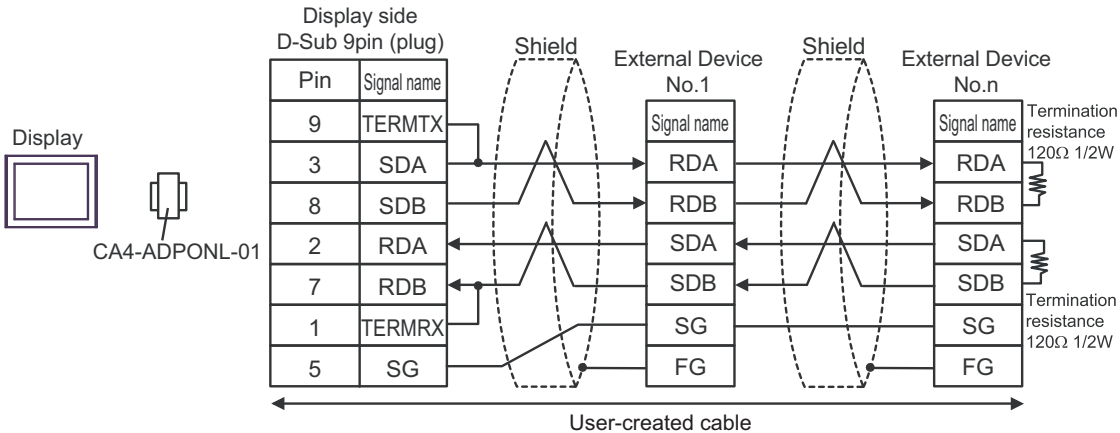


2D)

- 1:1 Connection

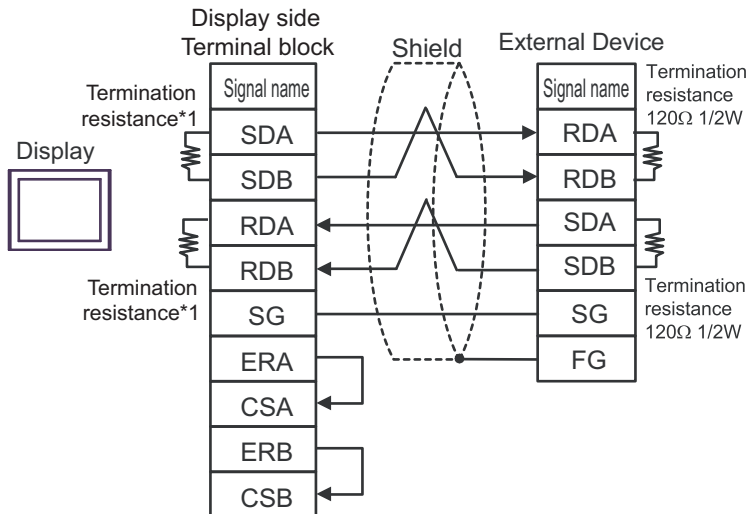


- 1:n Connection

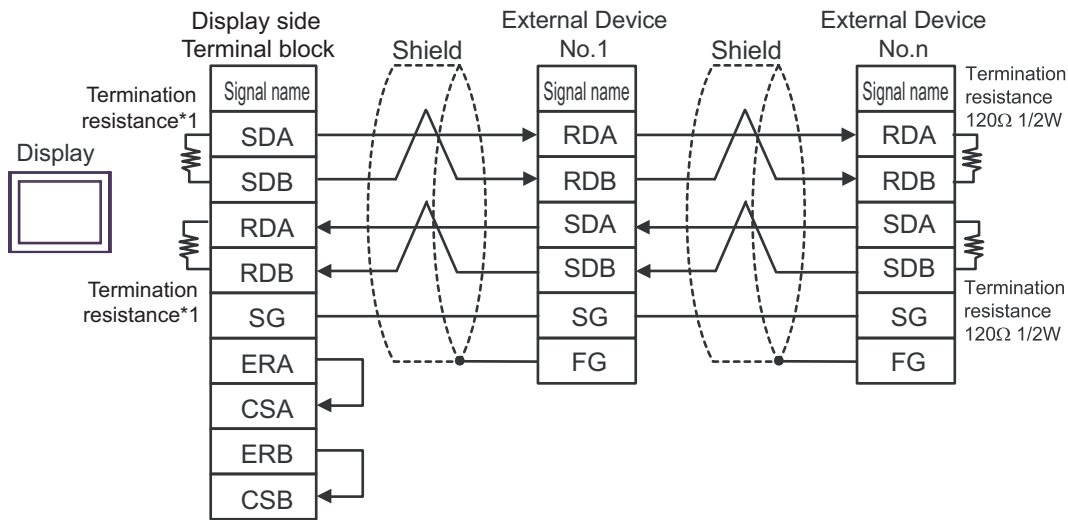


2E)

- 1:1 Connection



- 1:n Connection

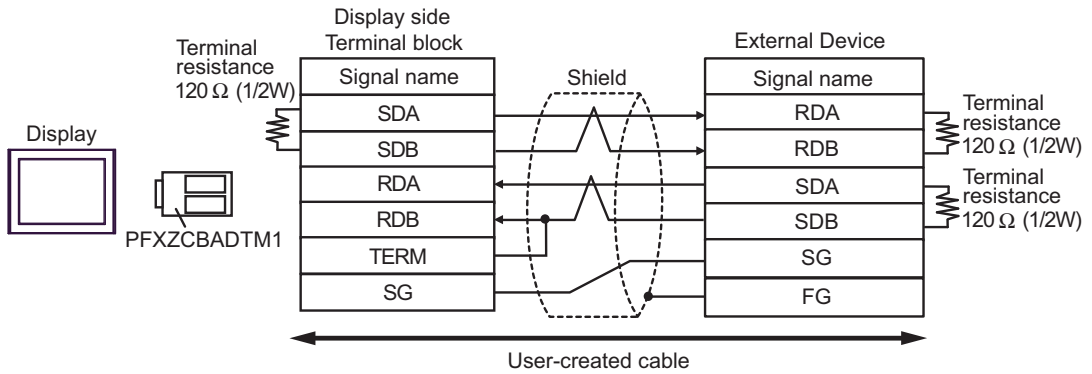


\*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

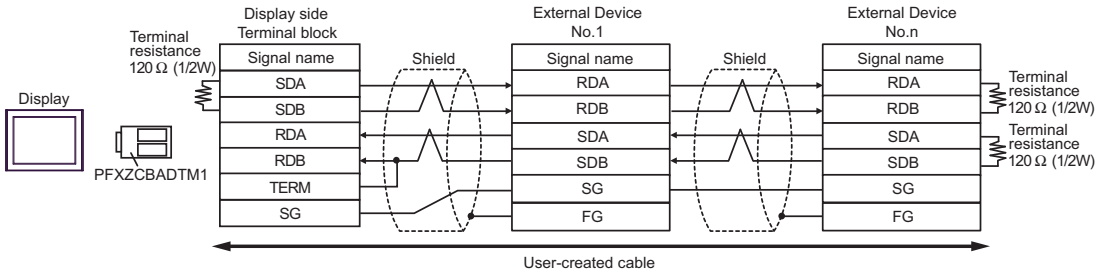
DIP Switch No.	Set Value
1	ON
2	ON
3	ON
4	ON

2F)

- 1:1 Connection



- 1:n Connection



Cable Diagram 3

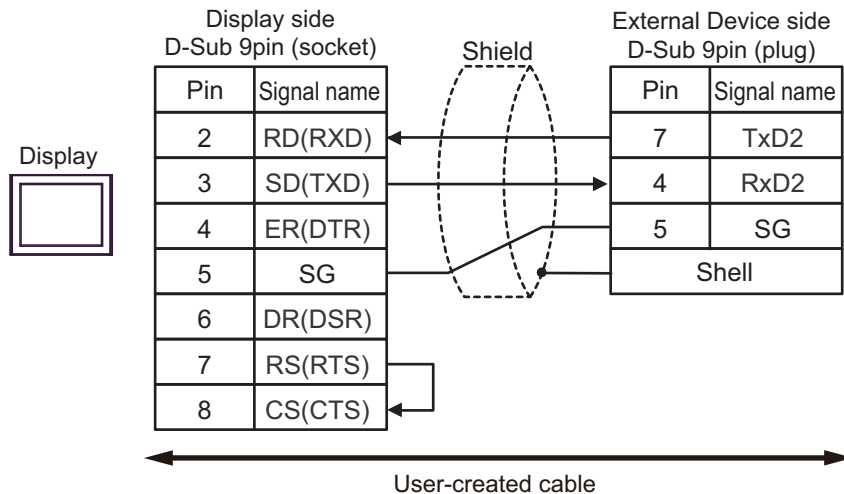
Display (Connection Port)	Cable		Notes
GP3000 (COM1) GP4000*1 (COM1) SP5000 (COM1/2) ST (COM1) LT3000 (COM1) IPC*2 PC/AT	3A	User-created cable	Cable length: 15m or less
GP-4105 (COM1)	3B	User-created cable	Cable length: 15m or less
LT-4*01TM (COM1) LT-Rear Module (COM1)	3C	RJ45 RS-232C Cable (5m) by Pro-face PFXZLMCBJR21	Cable length: 5m or less

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

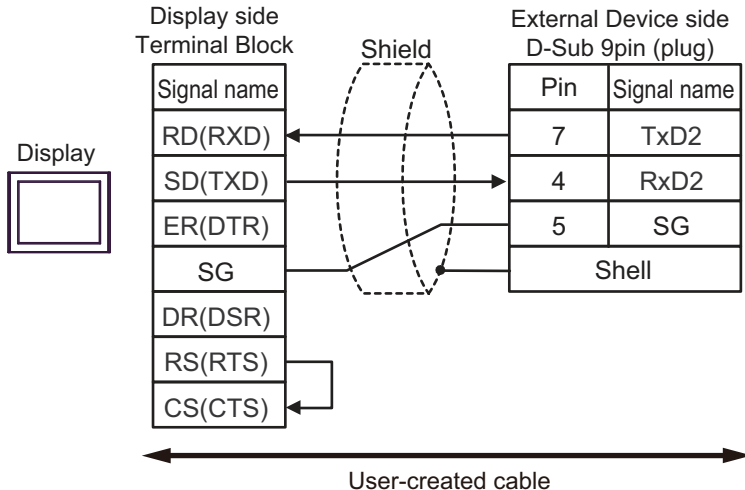
\*2 Only the COM port which can communicate by RS-232C can be used.

☞ "■ IPC COM Port" (page 5)

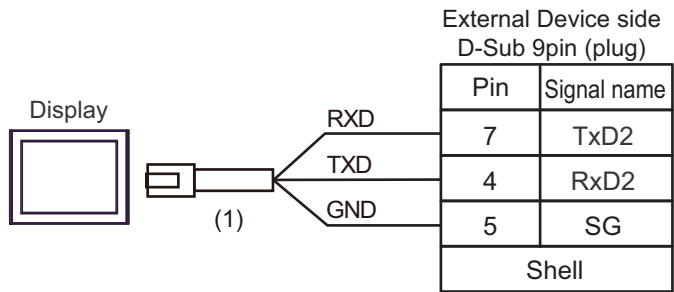
3A)



3B)



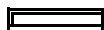
3C)


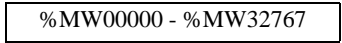


Number	Name	Notes
(1)	RJ45 RS-232C Cable (5m) by Pro-face PFXZLMCBRJ21	

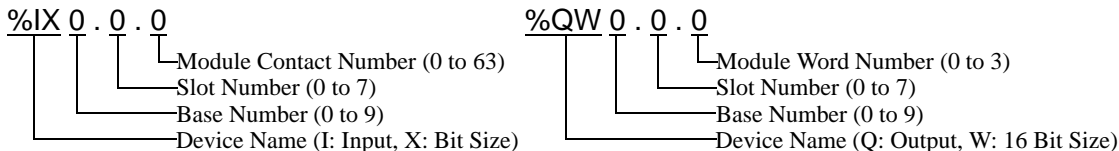
## 6 Supported Device


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

 This address can be specified as system data area.

Device	Bit Address	Word Address	32bits	Notes
Input Points	%IX0.0.0 - %IX9.7.63	%IW0.0.0 - %IW9.7.3		*1
Output Points	%QX0.0.0 - %QX9.7.63	%QW0.0.0 - %QW9.7.3		*1
Data Memory	%MX000000 - %MX524287	 %MW00000 - %MW32767		

\*1 Device explanation:



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



## 7 Device Code and Address Code

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

Device	Device Name	Device Code (HEX)	Address Code
Input Points	%IX	0080	Word Address
	%IW		
Output Points	%QX	0081	Word Address
	%QW		
Data Memory	%MX	0082	Word Address
	%MW		

## 8 Error Messages

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

Item	Description
No.	Error No.
Device Name	Name of External Device where error occurs. Device name is a title of External Device set with GP-Pro EX. (Initial value [PLC1])
Error Message	Displays messages related to the error which occurs.
Error Occurrence Area	<p>Displays IP address or device address of External Device where error occurs, or error codes received from External Device.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• IP address is displayed such as "IP address (Decimal): MAC address (Hex)".</li> <li>• Device address is displayed such as "Address: Device address".</li> <li>• Received error codes are displayed such as "Decimal [Hex]".</li> </ul>

Display Examples of Error Messages

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

**NOTE**

- Refer to your External Device manual for details on received error codes.
- Refer to "Display-related errors" in "Maintenance/Troubleshooting Guide" for details on the error messages common to the driver.