



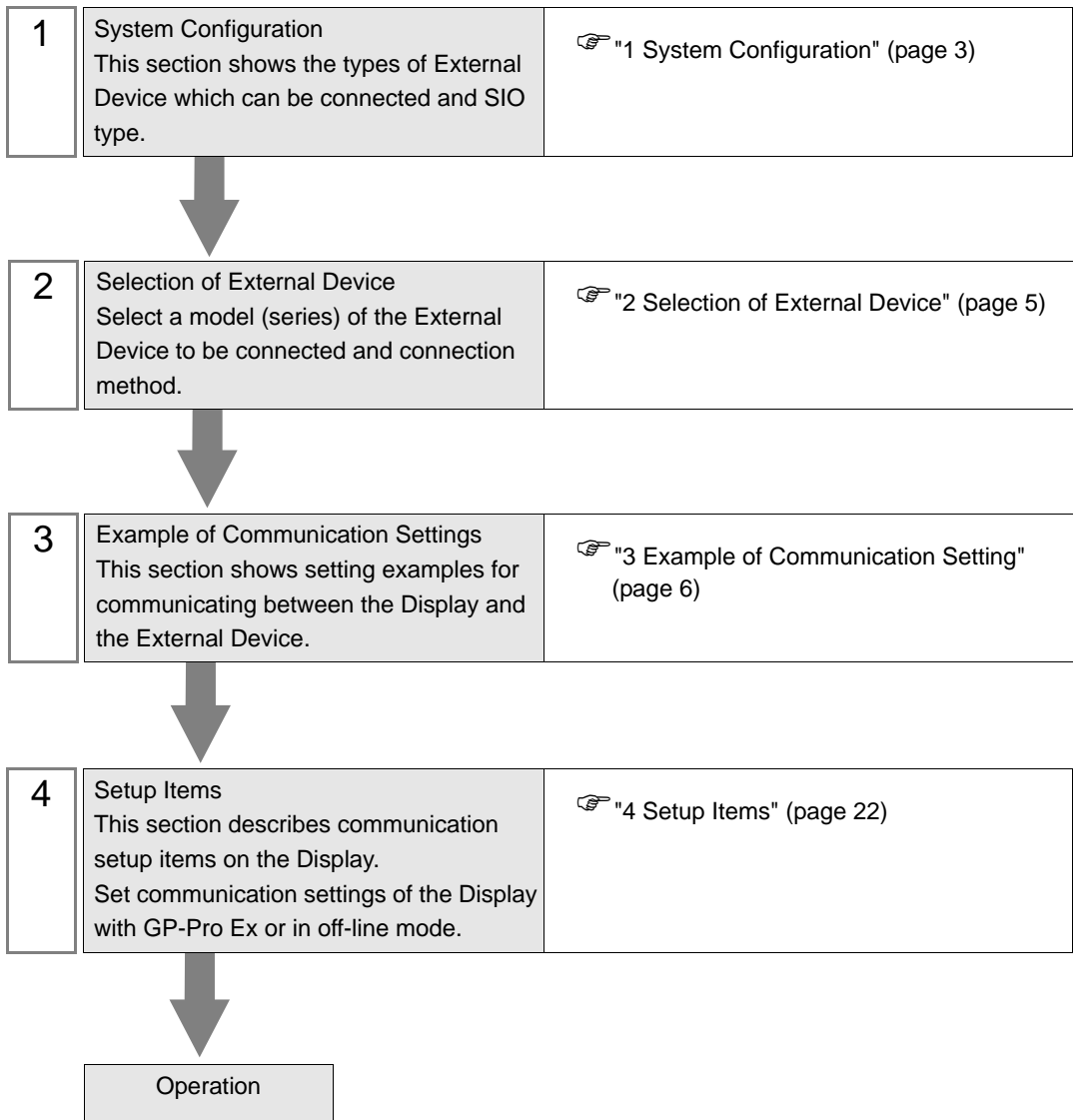
Personal Computer Link Ethernet Driver

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Introduction

This manual describes how to connect the Display (GP3000 series) and the External Device (target PLC).

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



1 System Configuration

The system configuration in the case when the External Device of YOKOGAWA Electric Corp. and the Display are connected is shown.

Series	CPU	Link I/F	Port No.	SIO Type	Data Code Settings	Setting Example
FA-M3	F3SP21-0N F3SP25-2N F3SP28-3N F3SP35-5N F3SP38-6N F3SP53-4H F3SP58-6H F3SP28-3S F3SP38-4S F3SP53-4S F3SP58-6S F3SP59-7S	F3LE01-5T *1	12289	Ethernet (UDP)	Binary *2	Setting Example 1 (page 6)
					ASCII *3	Setting Example 2 (page 8)
				Ethernet (TCP)	Binary *2	Setting Example 5 (page 14)
					ASCII *3	Setting Example 6 (page 16)
		F3LE11-0T *1	12289	Ethernet (UDP)	Binary *2	Setting Example 1 (page 6)
					ASCII *3	Setting Example 2 (page 8)
				Ethernet (TCP)	Binary *2	Setting Example 5 (page 14)
					ASCII *3	Setting Example 6 (page 16)
		12291	Ethernet (UDP)	Binary *3	Setting Example 3 (page 10)	
				ASCII *2	Setting Example 4 (page 12)	
			Ethernet (TCP)	Binary *3	Setting Example 7 (page 18)	
				ASCII *2	Setting Example 8 (page 20)	

*1 In TCP connection, you can connect max 8 units of the External Device to 1 display unit.

*2 Set the data code setting to ON.

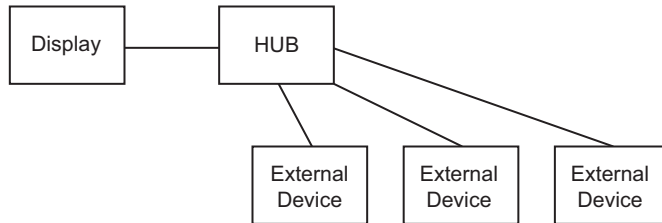
*3 Set the data code setting to OFF.

■ Connection Configuration

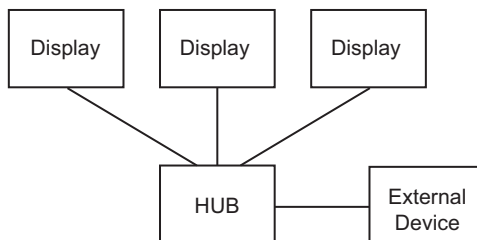
1:1 Connection



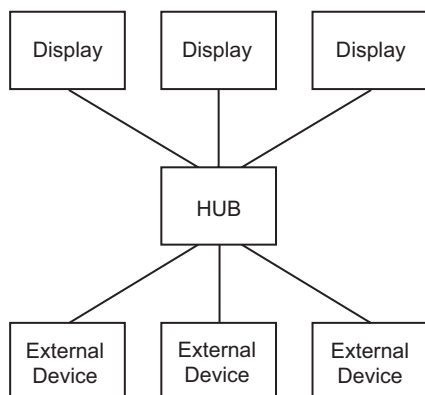
1:n Connection



n:1 Connection

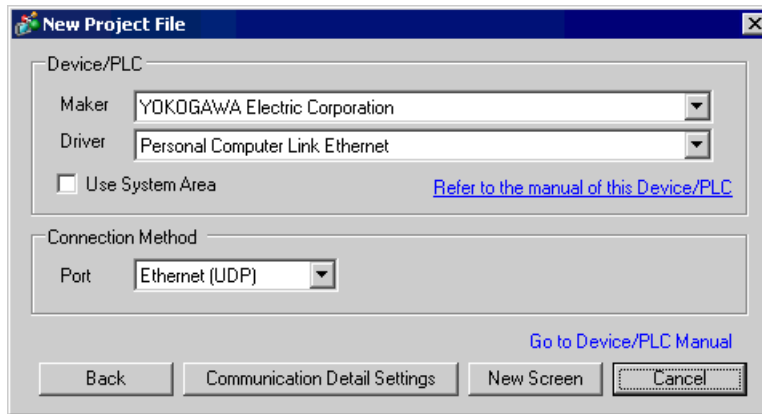


n:m Connection



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 "YOKOGAWA Electric Corporation".
Driver	Select a model (series) of the External Device to be connected and connection method. Select "Personal Computer Link Ethernet". Check the External Device which can be connected in "Personal Computer Link Ethernet" 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 "Appendix 1.4 LS Area (only for direct access method)" This can be also set with GP-Pro EX or in off-line mode of Display. Cf. GP-Pro EX Reference Manual " 6.13.6 Setting Guide of [System Setting Window]■[Main Unit Settings] Settings Guide◆System Area Setting" Cf. GP3000 Series User Manual "4.3.6 System Area Setting"
Port	Select the Display port to be connected to the External Device.

3 Example of Communication Setting

Examples of communication settings of the Display and the External Device, recommended by Pro-face, are shown.

When you use the FA-M3 Series, use GP-Pro EX and the ladder software to set as below.


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 External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.

■ Setting of External Device

Use the switches on the side of Ethernet module for setting the External Device.

◆ IP Address Setting Switch

Use 8 Hex rotary switches for setting.

Setup Items	Setup Description
IP Address Setting Rotary Switch	Option

◆ Port No.

Setup Items	Setup Description
Port No.	12289

◆ Condition Setting Switch

DIP Switch	Settings	Setup Description
SW1	ON	Binary
SW2	OFF	Not protect
SW3	---	(Reserved)
SW4	---	(Reserved)
SW5	---	(Reserved)
SW6	---	(Reserved)
SW7 ^{*1}	OFF	Close
SW8	OFF	Normal

*1 SW7 is available to set in F3LE01-5T only.

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.


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 External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.

■ Setting of External Device

Use the switches on the side of Ethernet module for setting the External Device.

◆ IP Address Setting Switch

Use 8 Hex rotary switches for setting.

Setup Items	Setup Description
IP Address Setting Rotary Switch	Option

◆ Port No.

Setup Items	Setup Description
Port No.	12289

◆ Condition Setting Switch

DIP Switch	Settings	Setup Description
SW1	OFF	ASCII
SW2	OFF	Not protect
SW3	---	(Reserved)
SW4	---	(Reserved)
SW5	---	(Reserved)
SW6	---	(Reserved)
SW7 ^{*1}	OFF	Close
SW8	OFF	Normal

*1 SW7 is available to set in F3LE01-5T only.

◆ Notes

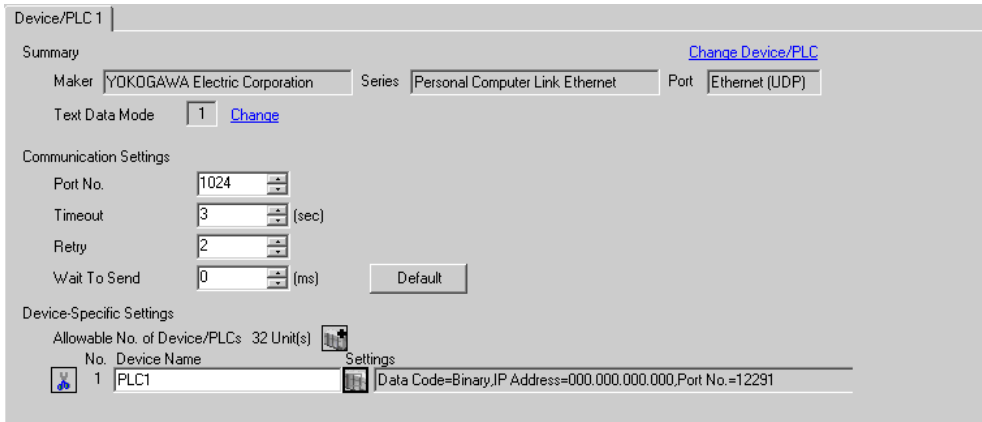
- Check with a network administrator about IP address. Do not set the duplicate IP address.

3.3 Setting Example 3


■ Settings of GP-Pro EX


◆ Communication Settings

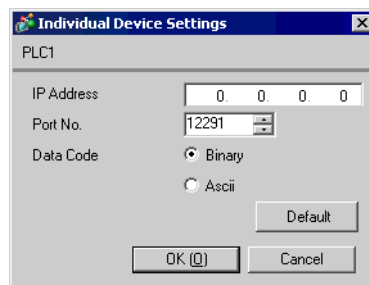
To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.



◆ Device Setting

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

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



◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.

■ Setting of External Device

Use the switches on the side of Ethernet module for setting the External Device.

◆ IP Address Setting Switch

Use 8 Hex rotary switches for setting.

Setup Items	Setup Description
IP Address Setting Rotary Switch	Option

◆ Port No.

Setup Items	Setup Description
Port No.	12291

◆ Condition Setting Switch

DIP Switch	Settings	Setup Description
SW1	OFF	Binary
SW2	OFF	Not protect
SW3	---	(Reserved)
SW4	---	(Reserved)
SW5	---	(Reserved)
SW6	---	(Reserved)
SW7	OFF	Close
SW8	OFF	Normal

◆ Notes

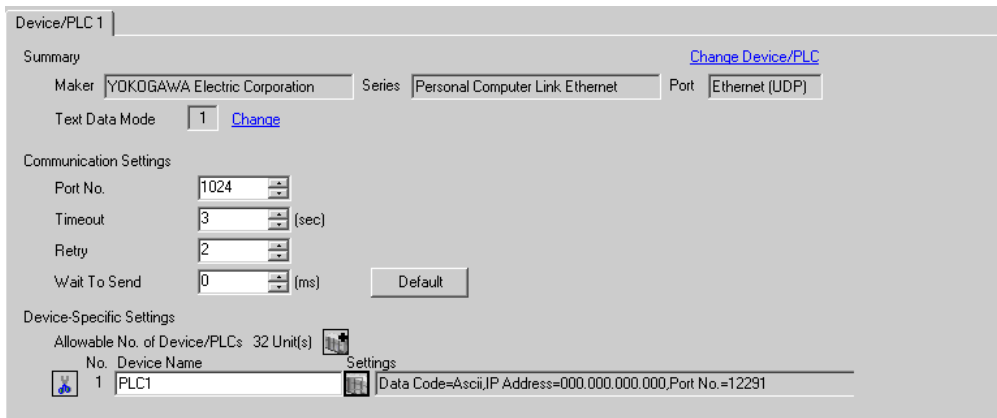
- Check with a network administrator about IP address. Do not set the duplicate IP address.

3.4 Setting Example 4


■ Settings of GP-Pro EX

◆ Communication Settings

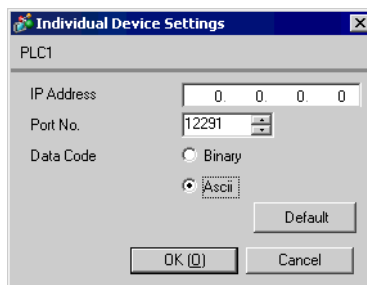
To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.



◆ Device Setting

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

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



◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.

■ Setting of External Device

Use the switches on the side of Ethernet module for setting the External Device.

◆ IP Address Setting Switch

Use 8 Hex rotary switches for setting.

Setup Items	Setup Description
IP Address Setting Rotary Switch	Option

◆ Port No.

Setup Items	Setup Description
Port No.	12291

◆ Condition Setting Switch

DIP Switch	Settings	Setup Description
SW1	ON	ASCII
SW2	OFF	Not protect
SW3	---	(Reserved)
SW4	---	(Reserved)
SW5	---	(Reserved)
SW6	---	(Reserved)
SW7	OFF	Close
SW8	OFF	Normal

◆ Notes

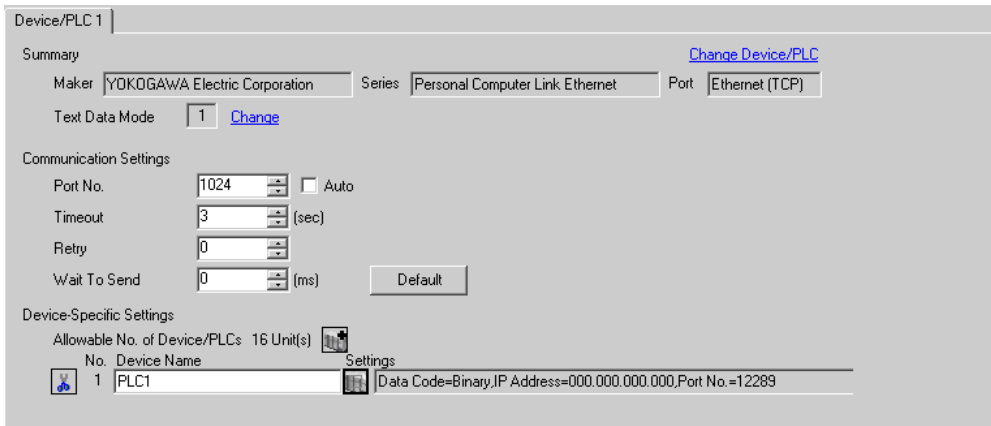
- Check with a network administrator about IP address. Do not set the duplicate IP address.

3.5 Setting Example 5


■ Settings of GP-Pro EX


◆ Communication Settings

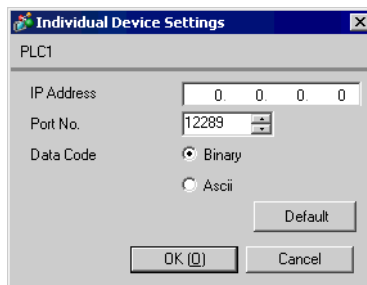
To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.



◆ Device Setting

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

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



◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.

■ Setting of External Device

Use the switches on the side of Ethernet module for setting the External Device.

◆ IP Address Setting Switch

Use 8 Hex rotary switches for setting.

Setup Items	Setup Description
IP Address Setting Rotary Switch	Option

◆ Port No.

Setup Items	Setup Description
Port No.	12289

◆ Condition Setting Switch

DIP Switch	Settings	Setup Description
SW1	ON	Binary
SW2	OFF	Not protect
SW3	---	(Reserved)
SW4	---	(Reserved)
SW5	---	(Reserved)
SW6	---	(Reserved)
SW7 ^{*1}	OFF	Close
SW8	OFF	Normal

*1 SW7 is available to set in F3LE01-5T only.

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.


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 External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.

■ Setting of External Device

Use the switches on the side of Ethernet module for setting the External Device.

◆ IP Address Setting Switch

Use 8 Hex rotary switches for setting.

Setup Items	Setup Description
IP Address Setting Rotary Switch	Option

◆ Port No.

Setup Items	Setup Description
Port No.	12289

◆ Condition Setting Switch

DIP Switch	Settings	Setup Description
SW1	OFF	ASCII
SW2	OFF	Not protect
SW3	---	(Reserved)
SW4	---	(Reserved)
SW5	---	(Reserved)
SW6	---	(Reserved)
SW7 ^{*1}	OFF	Close
SW8	OFF	Normal

*1 SW7 is available to set in F3LE01-5T only.

◆ Notes

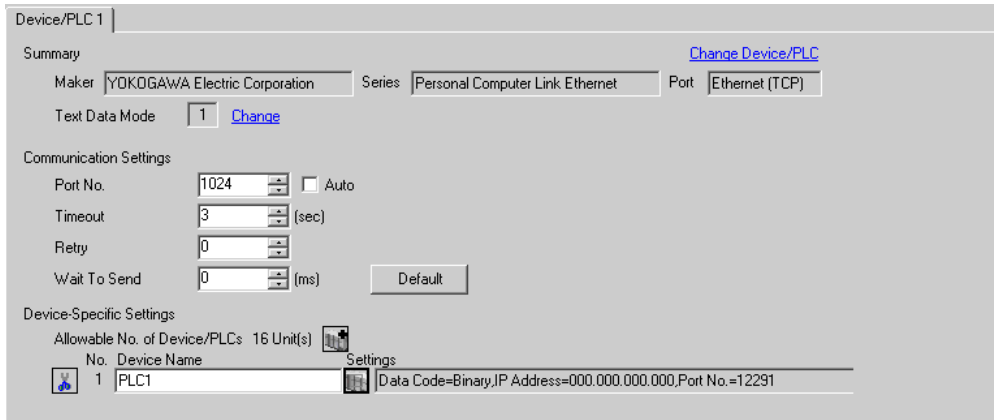
- Check with a network administrator about IP address. Do not set the duplicate IP address.

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 External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

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



◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.

■ Setting of External Device

Use the switches on the side of Ethernet module for setting the External Device.

◆ IP Address Setting Switch

Use 8 Hex rotary switches for setting.

Setup Items	Setup Description
IP Address Setting Rotary Switch	Option

◆ Port No.

Setup Items	Setup Description
Port No.	12291

◆ Condition Setting Switch

DIP Switch	Settings	Setup Description
SW1	OFF	Binary
SW2	OFF	Not protect
SW3	---	(Reserved)
SW4	---	(Reserved)
SW5	---	(Reserved)
SW6	---	(Reserved)
SW7	OFF	Close
SW8	OFF	Normal

◆ Notes

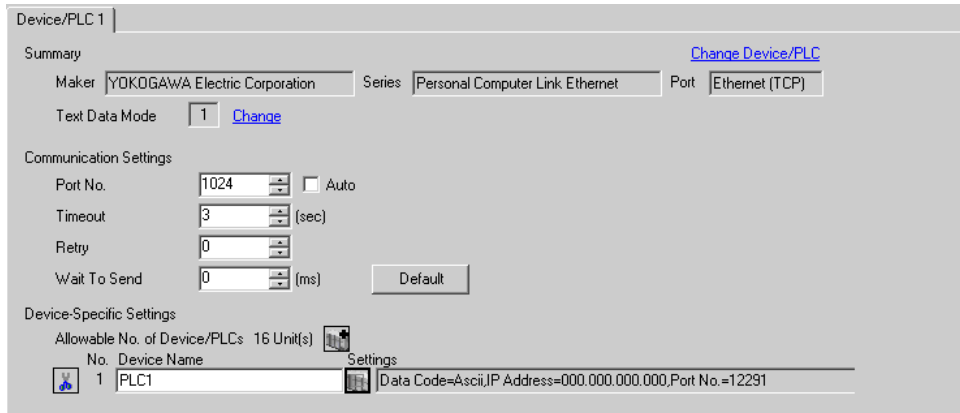
- Check with a network administrator about IP address. Do not set the duplicate IP address.

3.8 Setting Example 8


■ Settings of GP-Pro EX


◆ Communication Settings

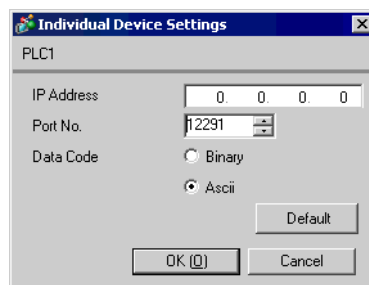
To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.



◆ Device Setting

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

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



◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.
- Set IP address on the External Device for IP address in Device-specific settings.
- You need to set IP address on the Display in the off-line mode of the Display.

■ Setting of External Device

Use the switches on the side of Ethernet module for setting the External Device.

◆ IP Address Setting Switch

Use 8 Hex rotary switches for setting.

Setup Items	Setup Description
IP Address Setting Rotary Switch	Option

◆ Port No.

Setup Items	Setup Description
Port No.	12291

◆ Condition Setting Switch

DIP Switch	Settings	Setup Description
SW1	ON	ASCII
SW2	OFF	Not protect
SW3	---	(Reserved)
SW4	---	(Reserved)
SW5	---	(Reserved)
SW6	---	(Reserved)
SW7	OFF	Close
SW8	OFF	Normal

◆ Notes

- Check with a network administrator about IP address. Do not set the duplicate IP address.

4 Setup Items

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

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

☞ "3 Example of Communication Setting" (page 6)

IMPORTANT

- You need to set IP address on the display in the off-line mode of the display.
Cf. GP3000 Series User Manual "4.3.7 Ethernet Settings"


4.1 Setup Items in GP-Pro EX

■ Communication Settings

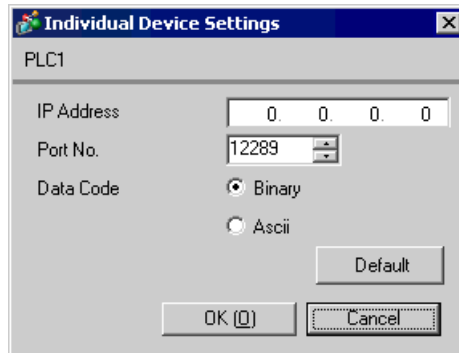
To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.

Setup Items	Setup Description
Port No.	Use an integer from 1024 to 65535 to enter the port No. of the Display. When you check the option of [Auto Assign], the port No. will be automatically set. NOTE • [Auto Assign] option is available to set only when you select "Ethernet (TCP)" in [Connecting Method].
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.

■ Device Setting

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

When [Allowable No. of Device/PLCs] is multiple, click  from [Device-Specific Settings] of [Device/PLC Settings] to add another External Device.



Setup Items	Setup Description
IP Address	Set IP address of the External Device. NOTE <ul style="list-style-type: none"> Check with a network administrator about IP address. Do not set the duplicate IP address.
Port No.	Use an integer 12289 or 12291 to enter the port No. of the External Device.
Data Code	Select the data format to communicate with the External Device from "Binary" or "ASCII".

4.2 Setup Items in Off-Line Mode

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

Cf. GP3000 Series User Manual "Chapter 4 Settings"

■ Communication Settings

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

Comm.	Device			
Personal Computer Link Ethernet			[UDP]	Page 1/1
Port No.	<input checked="" type="radio"/> Fixed <input type="radio"/> Auto		1024	▼ ▲
Timeout(s)			3	▼ ▲
Retry			2	▼ ▲
Wait To Send(ms)			0	▼ ▲
	Exit		Back	2005/09/01 19:39:44

Setup Items	Setup Description
Port No.	Set the Port No. of the Display. In UDP connection, entered port No. will be assigned regardless of whether you select [Fixed] or [Auto]. In TCP connection, select either of [Fixed] or [Auto]. When you select [Fixed], use an integer from 1024 to 65535 to enter the port No. of the Display. When you select [Auto], the port No. will be automatically assigned regardless of the entered value.
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.

■ Device Setting

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

Comm.	Device			
Personal Computer Link Ethernet		[UDP]	Page 1/1	
Device/PLC Name	[PLC1]			
IP Address	0 0 0 0			
Port No.	12289			
Data Code	Binary			
Exit		Back		2005/09/01 19:39:47

Setup Items	Setup Description
Device/PLC Name	Select the External Device for device setting. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1])
IP Address	Set IP address of the External Device. NOTE <ul style="list-style-type: none"> Check with a network administrator about IP address. Do not set the duplicate IP address.
Port No.	Use an integer 12289 or 12291 to enter the port No. of the External Device.
Data Code	Select the data format to communicate with the External Device from "Binary" or "ASCII".

5 Supported Device

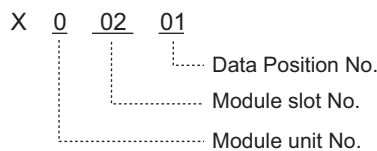
Range of supported device address is shown in the table below. Please note that the actually supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

 This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Notes
Input Relay	X00201 to X71664	X00201 to X71649	L / H	-16+ 1 *1*2
Output Relay	Y00201 to Y71664	Y00201 to Y71649		-16+ 1 *1
Internal Relay	I00001 to I65535	I0001 to I65521		-16+ 1
Common Relay	E0001 to E4096	E0001 to E4081		-16+ 1
Special Relay	M0001 to M9984	M0001 to M9969		-16+ 1
Link Relay	L00001 to L78192	L00001 to L78177		-16+ 1 *3
Timer (Contact)	TU0001 to TU3072	---		
Counter (Contact)	CU000 to CU3072	---		
Timer (Current Value)	---	TP0001 to TP3072		
Timer (Setting Value)	---	TS0001 to TS3072		*2
Counter (Current Value)	---	CP0001 to CP3072		
Counter (Setting Value)	---	CS001 to CS3072		*2
Data Register	---	D00001 to D65535		Bi 15
Common Register	---	B000001 to B262144		Bi 15
General Register	---	R0001 to R4096		Bi 15
Special Register	---	Z0001 to Z1024		Bi 15
Link Register	---	W00001 to W78192		Bi 15 *3

*1 Address for input relay and output relay can be specified when data position number (bit) 01 to 49 for lower 2 digits is the value of (multiples of 16) + 1 only.

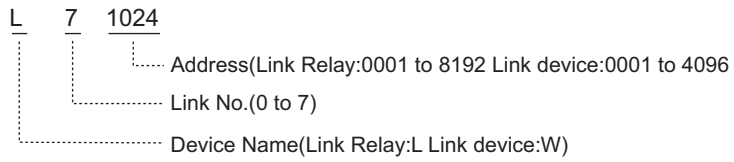
Example: X00201




*2 Write disable

*3 In link relay (L) and link register (W), the upper 1st digit on address input area shows the link number, and lower 4th digit shows the address. Specify the word address for link relay (L) and link register (W) with the value of (multiples of 16) + 1.

Example: When specifying L71024 of link relay



NOTE

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

6 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 Relay	1X	0080	$(\text{Module unit No.} \times 0x40) + ((\text{Module slot No.} - 1) \times 0x4) + ((\text{Terminal No.} - 1) \text{ divided by } 16)$
	2X	0180	
	3X	0280	
	4X	0380	
Output Relay	1Y	0081	$(\text{Module unit No.} \times 0x40) + ((\text{Module slot No.} - 1) \times 0x4) + ((\text{Terminal No.} - 1) \text{ divided by } 16)$
	2Y	0181	
	3Y	0281	
	4Y	0381	
Internal Relay	1I	0082	Value of (word address - 1) divided by 16
	2I	0182	
	3I	0282	
	4I	0382	
Common Relay	1E	0084	Value of (word address - 1) divided by 16
	2E	0184	
	3E	0284	
	4E	0384	
Special Relay	1M	0083	Value of (word address - 1) divided by 16
	2M	0183	
	3M	0283	
	4M	0383	
Link Relay	1L	0088	$(\text{Link No.} \times 0x10000) + ((\text{word address} - 1) \text{ divided by } 16)$
	2L	0188	
	3L	0288	
	4L	0388	
Timer (Current Value)	1TP	0060	Value of word address from which 1 is deducted
	2TP	0160	
	3TP	0260	
	4TP	0360	

continued to next page

Device	Device Name	Device Code (HEX)	Address Code
Timer (Setting Value)	1TS	0063	Value of word address from which 1 is deducted
	2TS	0163	
	3TS	0263	
	4TS	0363	
Counter (Current Value)	1CP	0061	Value of word address from which 1 is deducted
	2CP	0161	
	3CP	0261	
	4CP	0361	
Counter (Setting Value)	1CS	0064	Value of word address from which 1 is deducted
	2CS	0164	
	3CS	0264	
	4CS	0364	
Data Register	1D	0000	Value of word address from which 1 is deducted
	2D	0100	
	3D	0200	
	4D	0300	
Common Register	1B	0004	Value of word address from which 1 is deducted
	2B	0104	
	3B	0204	
	4B	0304	
General Register	1R	0003	Value of word address from which 1 is deducted
	2R	0103	
	3R	0203	
	4R	0303	
Special Register	1Z	0001	Value of word address from which 1 is deducted
	2Z	0101	
	3Z	0201	
	4Z	0301	
Link Register	1W	0002	(Link No. x 0x10000) + ((word address - 1) divided by 16)
	2W	0102	
	3W	0202	
	4W	0302	

7 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>NOTE</p> <ul style="list-style-type: none"> Received error codes are displayed such as "Decimal [Hex]". IP address is displayed such as "IP address (Decimal): MAC address (Hex)".

Display Examples of Error Messages

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

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