



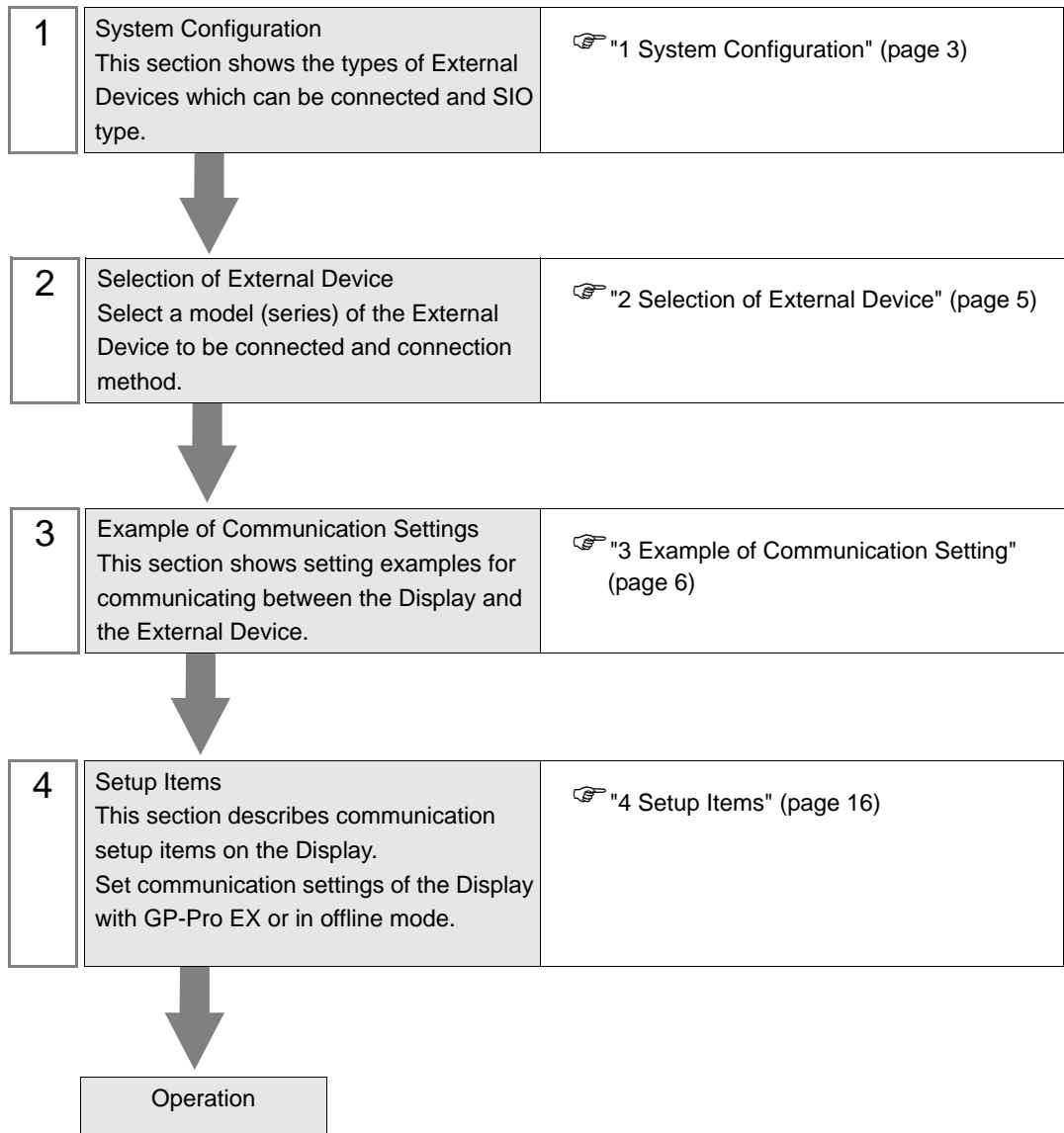
# XGT/XGB Series FEnet Driver

1	System Configuration.....	3
2	Selection of External Device .....	5
3	Example of Communication Setting.....	6
4	Setup Items.....	16
5	Supported Device.....	20
6	Device Code and Address Code.....	22
7	Error Messages.....	24

## 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.

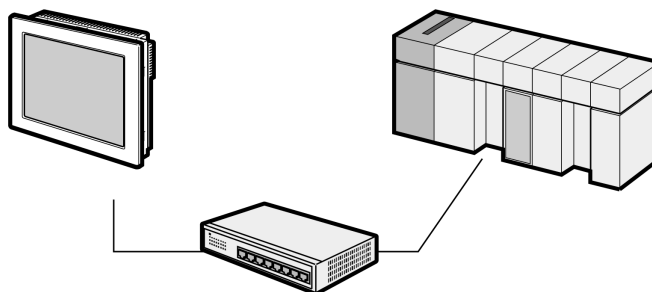
Series	CPU	Link I/F	Interface	Setting Example
XGT	XGK-CPUU XGK-CPUE XGK-CPUS XGK-CPUA XGK-CPUH	XGL-EFMT	Ethernet (UDP, TCP)	Setting Example 1 (page 6)
	XGI-CPUU/D XGI-CPUU XGI-CPUH XGI-CPUS XGI-CPUE	XGL-EFMT	Ethernet (UDP, TCP)	Setting Example 2 (page 8)
	XGR-CPUH/T	XGL-EFMT	Ethernet (UDP, TCP)	Setting Example 3 (page 10)
XGB	XBM-D***S	XBL-EMTA	Ethernet (UDP, TCP)	Setting Example 4 (page 12)
	XBC-D***H	XBL-EMTA	Ethernet (UDP, TCP)	Setting Example 4 (page 12)
	XEC-D***H	XBL-EMTA	Ethernet (UDP, TCP)	Setting Example 5 (page 14)

## NOTE

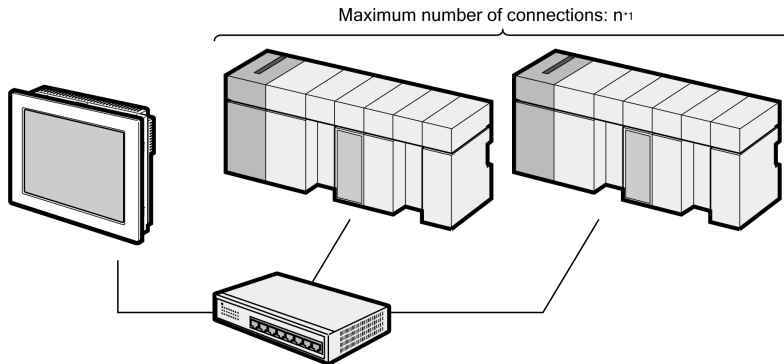
- Check the combination of the CPU version and the link I/F version with the external device manufacturer. When the versions which are not supported are used, some features may not work properly. Check the versions with the label of each unit or manufacturer's software.

## ■ Connection Configuration

- 1:1 Connection

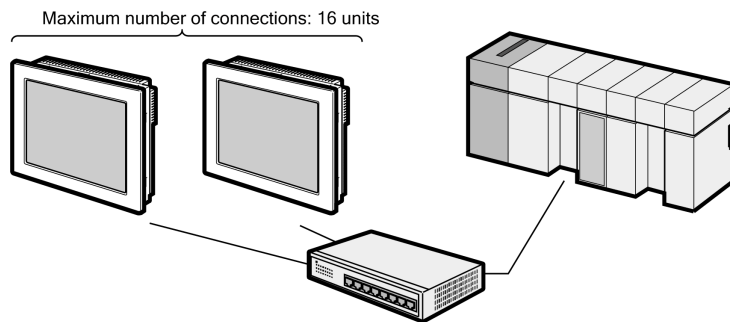


- 1:n Connection

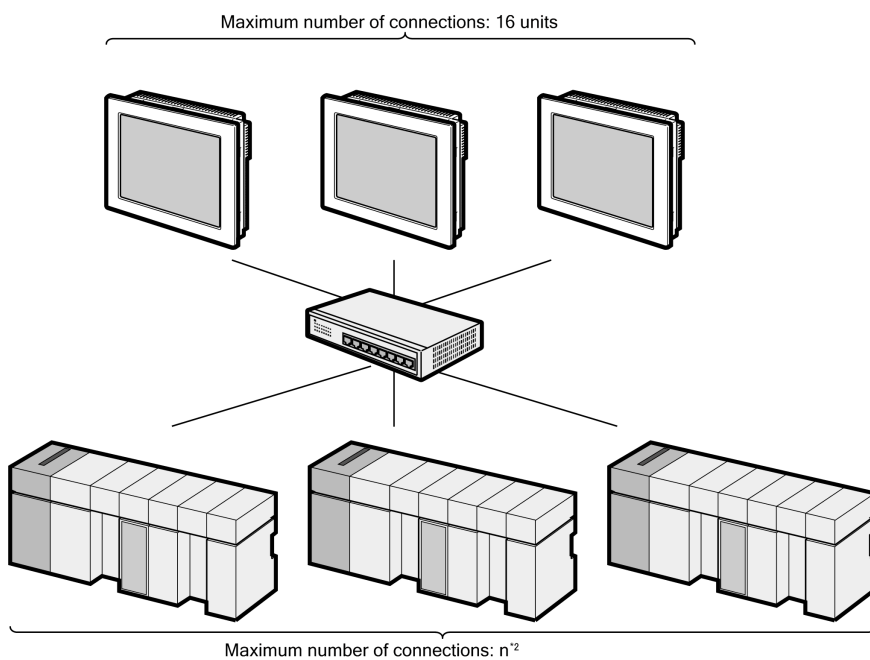


- \*1 The maximum 32 units connection by UDP connection, the maximum 16 units connection by TCP connection.

- n:1 Connection



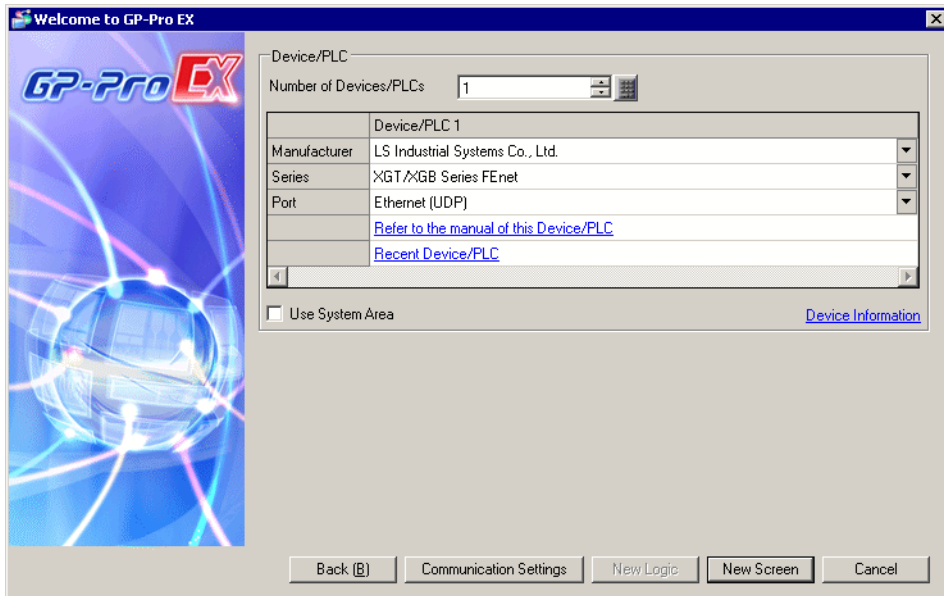
- n:m Connection



- \*2 The maximum 32 units connection by UDP connection, the maximum 16 units connection by TCP connection.

## 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 "XGT/XGB Series FEnet". In System configuration, make sure the External Device you are connecting is supported by "XGT/XGB Series FEnet". ☞ "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

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

### 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/PLC 1

Summary [Change Device/PLC](#)

Manufacturer LS Industrial Systems Co., Ltd. Series XGT/XGB Series FEnet Port Ethernet (UDP)

Text Data Mode 2 [Change](#)

Communication Settings

Port No. 1024  Auto

Timeout 3 (sec)

Retry 2

Wait To Send 0 (ms) [Default](#)

Device-Specific Settings

Allowable Number of Devices/PLCs 32 [Add Device](#)

No.	Device Name	Settings	Add Indirect Device
1	PLC1	IP address=192.168.000.001, Series=XGK	

##### ◆ 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.

Individual Device Settings

PLC1

Series  XGK  XGI/XGR  
 XBM/XBC  XEC

(If you change the series, please reconfirm all address settings.)

IP address 192.168.0.1 [Default](#)

[OK \(O\)](#) [Cancel](#)

##### ◆ 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 offline mode of the display.

## ■ Settings of External Device

Use the LS Industrial Systems setting tool (XG-PD Editor) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ EtherNet module Setting

- 1 Start up the setting tool.
- 2 From the [File] menu, select [New File], and create the project.
- 3 From the [Online] menu, select [Connect].
- 4 From the [Online] menu, select [Read IO Information].
- 5 Double-click [FEnet] displayed in the tree view and set EtherNet module.

Setup Items	Setup Description
IP Address	192.168.0.1
Subnet mask	255.255.255.0
Driver	XGT server

- 6 Select [Write Parameter(Standard Settings,HS Link,P2P)] from the [Online] menu after selecting [Connect] from the [Online] menu and connecting External Device with communication setting software.
- 7 Select [Reset] from the [Online] menu, and reboot External Device.

### ◆ Notes

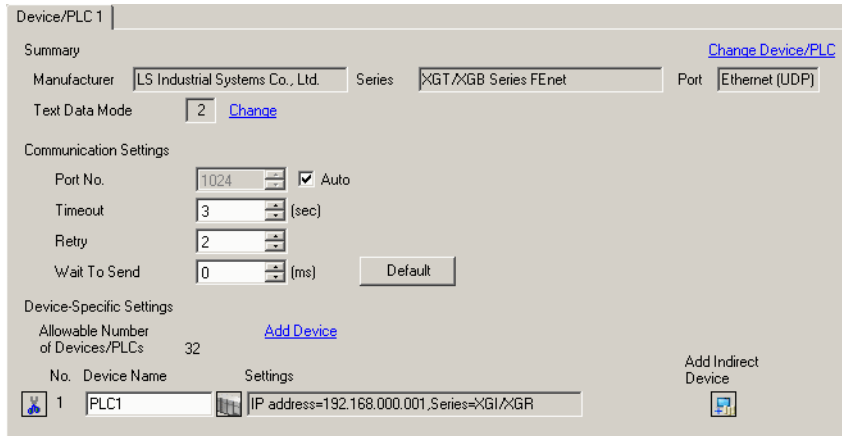
- Check with a network administrator about IP address.  
Do not set the duplicate IP address.

## 3.2 Setting Example 2

### ■ Settings of GP-Pro EX

#### ◆ Communication Settings

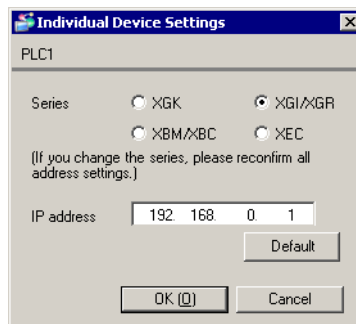
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



#### ◆ 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.



#### ◆ 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 offline mode of the display.



## ■ Settings of External Device

Use the LS Industrial Systems setting tool (XG-PD Editor) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ EtherNet module Setting

- 1 Start up the setting tool.
- 2 From the [File] menu, select [New File], and create the project.
- 3 From the [Online] menu, select [Connect].
- 4 From the [Online] menu, select [Read IO Information].
- 5 Double-click [FEnet] displayed in the tree view and set EtherNet module.

Setup Items	Setup Description
IP Address	192.168.0.1
Subnet mask	255.255.255.0
Driver	XGT server

- 6 Select [Write Parameter(Standard Settings,HS Link,P2P)] from the [Online] menu after selecting [Connect] from the [Online] menu and connecting External Device with communication setting software.
- 7 Select [Reset] from the [Online] menu, and reboot External Device.

### ◆ Notes

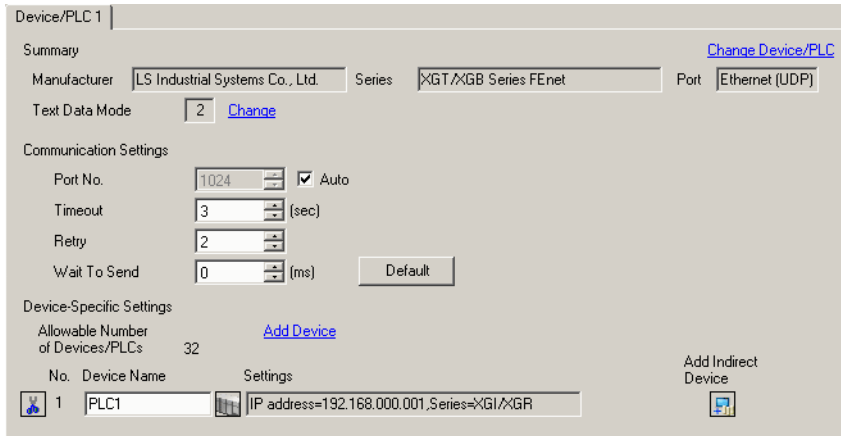
- Check with a network administrator about IP address.  
Do not set the duplicate IP address.

### 3.3 Setting Example 3

#### ■ Settings of GP-Pro EX

##### ◆ Communication Settings

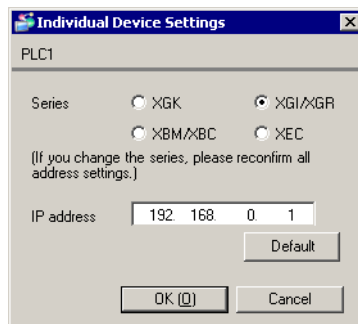
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



##### ◆ 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.



##### ◆ Notes

- When you use the Redundancy System of the External Device, the number of External Device you will set varies depending on whether you use ONE IP Solution.  
When you use the ONE IP Solution, one External Device number is to be set. When you do not use the ONE IP Solution, you must set the A-Side and B-Side respectively as an individual External Device.
- 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 offline mode of the display.

## ■ Settings of External Device

Use the LS Industrial Systems setting tool (XG-PD Editor) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ EtherNet module Setting

- 1 Start up the setting tool.
- 2 From the [File] menu, select [New File], and create the project.
- 3 From the [Online] menu, select [Connect].
- 4 From the [Online] menu, select [Read IO Information].
- 5 Double-click [FEnet] displayed in the tree view and set EtherNet module.

Setup Items	Setup Description
IP Address	192.168.0.1
Subnet mask	255.255.255.0
Driver	XGT server

- 6 Select [Write Parameter(Standard Settings,HS Link,P2P)] from the [Online] menu after selecting [Connect] from the [Online] menu and connecting External Device with communication setting software.
- 7 Select [Reset] from the [Online] menu, and reboot External Device.

### ◆ Notes

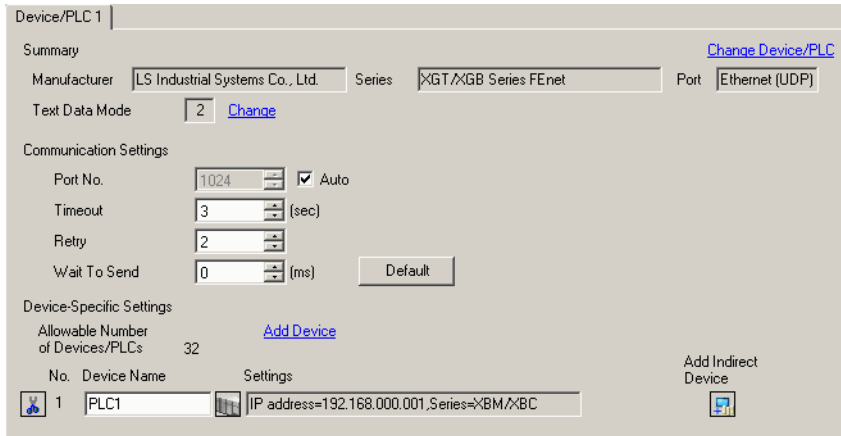
- Check with a network administrator about IP address.  
Do not set the duplicate IP address.

## 3.4 Setting Example 4

### ■ Settings of GP-Pro EX

#### ◆ Communication Settings

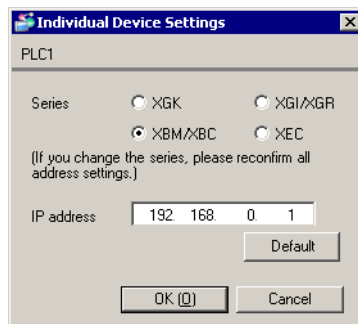
To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



#### ◆ 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.



#### ◆ 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 offline mode of the display.

## ■ Settings of External Device

Use the LS Industrial Systems setting tool (XG-PD Editor) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ EtherNet module Setting

- 1 Start up the setting tool.
- 2 From the [File] menu, select [New File], and create the project.
- 3 From the [Online] menu, select [Connect].
- 4 From the [Online] menu, select [Read IO Information].
- 5 Double-click [FEnet] displayed in the tree view and set EtherNet module.

Setup Items	Setup Description
IP Address	192.168.0.1
Subnet mask	255.255.255.0
Driver	XGT server

- 6 Select [Write Parameter(Standard Settings,HS Link,P2P)] from the [Online] menu after selecting [Connect] from the [Online] menu and connecting External Device with communication setting software.
- 7 Select [Reset] from the [Online] menu, and reboot External Device.

### ◆ Notes

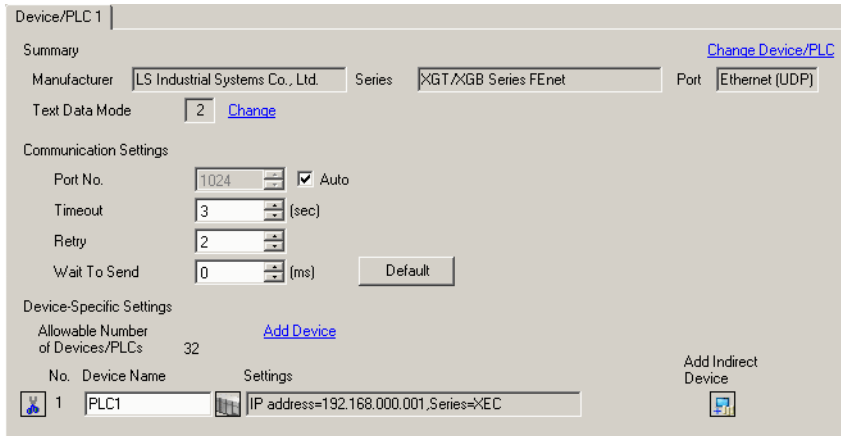
- Check with a network administrator about IP address.  
Do not set the duplicate IP address.

## 3.5 Setting Example 5

### ■ Settings of GP-Pro EX

#### ◆ Communication Settings

To display the 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.



#### ◆ 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 offline mode of the display.

## ■ Settings of External Device

Use the LS Industrial Systems setting tool (XG-PD Editor) to configure communication settings for the External Device.

Refer to your External Device manual for details.

### ◆ EtherNet module Setting

- 1 Start up the setting tool.
- 2 From the [File] menu, select [New File], and create the project.
- 3 From the [Online] menu, select [Connect].
- 4 From the [Online] menu, select [Read IO Information].
- 5 Double-click [FEnet] displayed in the tree view and set EtherNet module.

Setup Items	Setup Description
IP Address	192.168.0.1
Subnet mask	255.255.255.0
Driver	XGT server

- 6 Select [Write Parameter(Standard Settings,HS Link,P2P)] from the [Online] menu after selecting [Connect] from the [Online] menu and connecting External Device with communication setting software.
- 7 Select [Reset] from the [Online] menu, and reboot External Device.

### ◆ 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 offline mode of the Display.

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

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

**NOTE** • Set the Display's IP address in offline mode.

Cf. Maintenance/Troubleshooting Manual "Ethernet Settings"

### 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].

Device/PLC 1

Summary [Change Device/PLC](#)

Manufacturer LS Industrial Systems Co., Ltd. Series XGT/XGB Series FEnet Port Ethernet (UDP)

Text Data Mode 2 [Change](#)

Communication Settings

Port No. 1024  Auto

Timeout 3 (sec)

Retry 2

Wait To Send 0 (ms) [Default](#)

Device-Specific Settings

Allowable Number of Devices/PLCs 32 [Add Device](#)

No.	Device Name	Settings	Add Indirect Device
1	PLC1	IP address=192.168.000.001, Series=XGK	


Setup Items	Setup Description
Port No.	Enter a port number of the Display, using 1024 to 65535. Check into [Auto], and a port number is set automatically.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which Display waits for the response from External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

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

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



## ■ Device Setting

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

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



Setup Items	Setup Description
Series	Select the series of the External Device.
IP Address	Set IP address of the External Device. <b>NOTE</b> <ul style="list-style-type: none"> <li>Check with a network administrator about IP address. Do not set the duplicate IP address.</li> </ul>

## 4.2 Setup Items in Offline Mode

**NOTE**

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

Cf. Maintenance/Troubleshooting Manual "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			
XGT/XGB Series FEnet			[UDP]	Page 1/1
Port No.	<input type="radio"/> Fixed <input checked="" type="radio"/> Auto	1024	▼ ▲	
Timeout(s)		3	▼ ▲	
Retry		2	▼ ▲	
Wait To Send(ms)		0	▼ ▲	
	Exit		Back	2012/07/20 01:20:09

Setup Items	Setup Description
Port No.	Enter a port number of the Display. Select either of "Fixed" "Auto". Enter a port number of the Display with "1024-65535", when select "Fixed". Assign automatically without affecting the input value, when select "Auto".
Timeout	Use an integer from 1 to 127 to enter the time (s) for which Display waits for the response from 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			
XGT/XGB Series FEnet	[UDP]			Page 1/1
Device/PLC Name	[PLC1]			
Series	XGK			
IP address	[192 168 0 1]			
	Exit		Back	2012/07/20 01:20:14

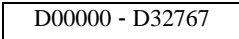




Setup Items	Setup Description
Device/PLC Name	Select the External Device for device setting. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1])
Series	Display the series of the External Device.
IP Address	Set IP address of the External Device. <b>NOTE</b> <ul style="list-style-type: none"> <li>Check with a network administrator about IP address. Do not set the duplicate IP address.</li> </ul>

## 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.

### 5.1 XGK / XBM / XBC

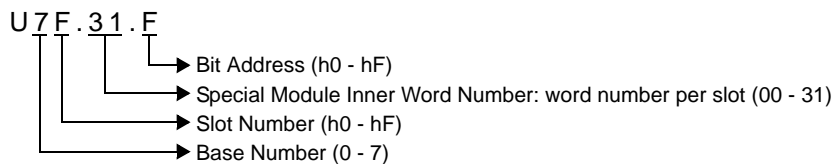
 This address can be specified as system data area.

Device	Bit address	Word address	32 bits	Remarks
Input / Output Relay	P00000 - P2047F	P0000 - P2047	<b>L/H</b>	
Auxiliary Relay	M00000 - M2047F	M0000 - M2047		
Keep Relay	K00000 - K4095F	K0000 - K4095		*1
Link Relay	L000000 - L11263F	L00000 - L11263		
Special Relay	F00000 - F2047F	F0000 - F2047		*2
Timer (Contact)	T0000 - T2047	-		
Counter (Contact)	C0000 - C2047	-		
Timer (Current Value)	-	T0000 - T2047		
Counter (Current Value)	-	C0000 - C2047		
Data Register	-	 D00000 - D32767		
Special Module Register	-	U00.00 - U7F.31		*3 
Index Register	-	Z000 - Z127		
Communication Data Register	-	N00000 - N21503		
File Register	-	R00000 - R32767		*4 
File Register	-	ZR00000 - ZR65535	*4 	

\*1 If the CPU is XGK, the bit address is "K00000 - K2047F" and the word address is "K0000 - K2047".

\*2 Write disable


\*3 The feature of U Device is like this:



\*4 XBM does not support the File Register.

XBC supports only File Register R. (File Register R and ZR are the same device in the XBC.)

#### NOTE

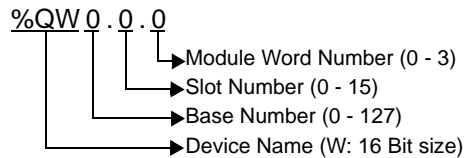
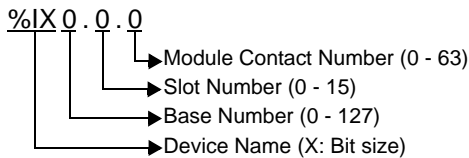
- Please refer to the GP-Pro EX Reference Manual for system data area.  
Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.  
 "Manual Symbols and Terminology"

## 5.2 XGI / XGR / XEC

L/H This address can be specified as system data area.

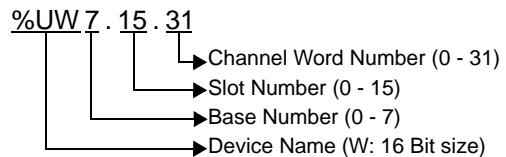
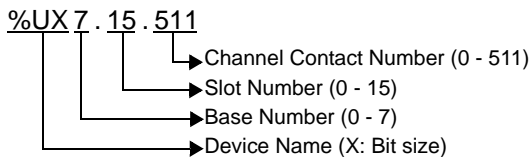
Device	Bit address	Word address	32 bits	Remarks
Input Points	%IX000.00.00 - %IX127.15.63	%IW000.00.0 - %IW127.15.3	<span style="border: 1px solid black; padding: 2px;">L/H</span>	*1
Output Points	%QX000.00.00 - %QX127.15.63	%QW000.00.0 - %QW127.15.3		*1
Automatic Variable	%AX0000000 - %AX4194303	%AW0000000 - %AW262143		
Direct Variable	%MX0000000 - %MX2097151	%MW000000 - %MW131071		
	%RX000000 - %RX524287	%RW00000 - %RW32767		
	%WX000000 - %WX8388607	%WW000000 - %WW524287		
System Flag	%FX00000 - %FX32767	%FW0000 - %FW2047		*2
PID Flag	%KX000000 - %KX134399	%KW0000 - %KW8399		
HS link Flag	%LX000000 - %LX180223	%LW00000 - %LW11263		
Analog refresh Flag	%UX0.00.000 - %UX7.15.511	%UW0.00.00 - ~%UW7.15.31	*3	

\*1 The feature of device is like this:



\*2 Write disable

\*3 The feature of device is like this:

**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 Area)"
- 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.

### 6.1 XGK / XBM / XBC

Device	Device Name	Device Code (HEX)	Address Code
Input / Output Relay	P	0080	Word Address
Auxiliary Relay	M	0082	Word Address
Keep Relay	K	0083	Word Address
Link Relay	L	0084	Word Address
Special Relay	F	0085	Word Address <sup>*1</sup>
Timer (Current Value)	T	0060	Word Address
Counter (Current Value)	C	0061	Word Address
Data Register	D	0000	Word Address
Special Module Register	U	0002	Word Address <sup>*2</sup>
Index Register	Z	0063	Word Address
Communication Data Register	N	0064	Word Address
File Register	R	0001	Word Address
File Register	ZR	0003	Word Address

\*1 Write disable

\*2 If the Word Address of Uxx.dd be specified indirectly, please calculate the following formula.  
 Word Address = [Convert 'xx' parts to the decimal value from the hexadecimal value] x 32 + [dd]  
 For example, 01.00 is 32, 10.00 is 512, 7F.00 is 4064.

## 6.2 XGI / XGR / XEC

Device	Device Name	Device Code (HEX)	Address Code
Input Points	%IX	0080	Word Address
	%IW		Word Address <sup>*1</sup>
Output Points	%QX	0081	Word Address
	%QW		Word Address <sup>*1</sup>
Automatic Variable	%AX	0001	Word Address
	%AW		Word Address
Direct Variable	%MX	0000	Word Address
	%MW		Word Address
	%RX	0002	Word Address
	%RW		Word Address
	%WX	0003	Word Address
	%WW		Word Address
System Flag	%FX	0004	Word Address
	%FW		Word Address
PID Flag	%KX	0005	Word Address
	%KW		Word Address
HL Link Flag	%LX	0006	Word Address
	%LW		Word Address
Analog refresh Flag	%UX	0082	Word Address
	%UW		Word Address <sup>*2</sup>

\*1 If the Word Address be specified indirectly, please calculate the following formula.  
 Word Address = [Base Number x 64] + [Slot Number x 4] + [Module Word Number]

\*2 If the Word Address be specified indirectly, please calculate the following formula.  
 Word Address = [Base Number x 512] + [Slot Number x 32] + [Module Word Number]

## 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><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 Manual" for details on the error messages common to the driver.