

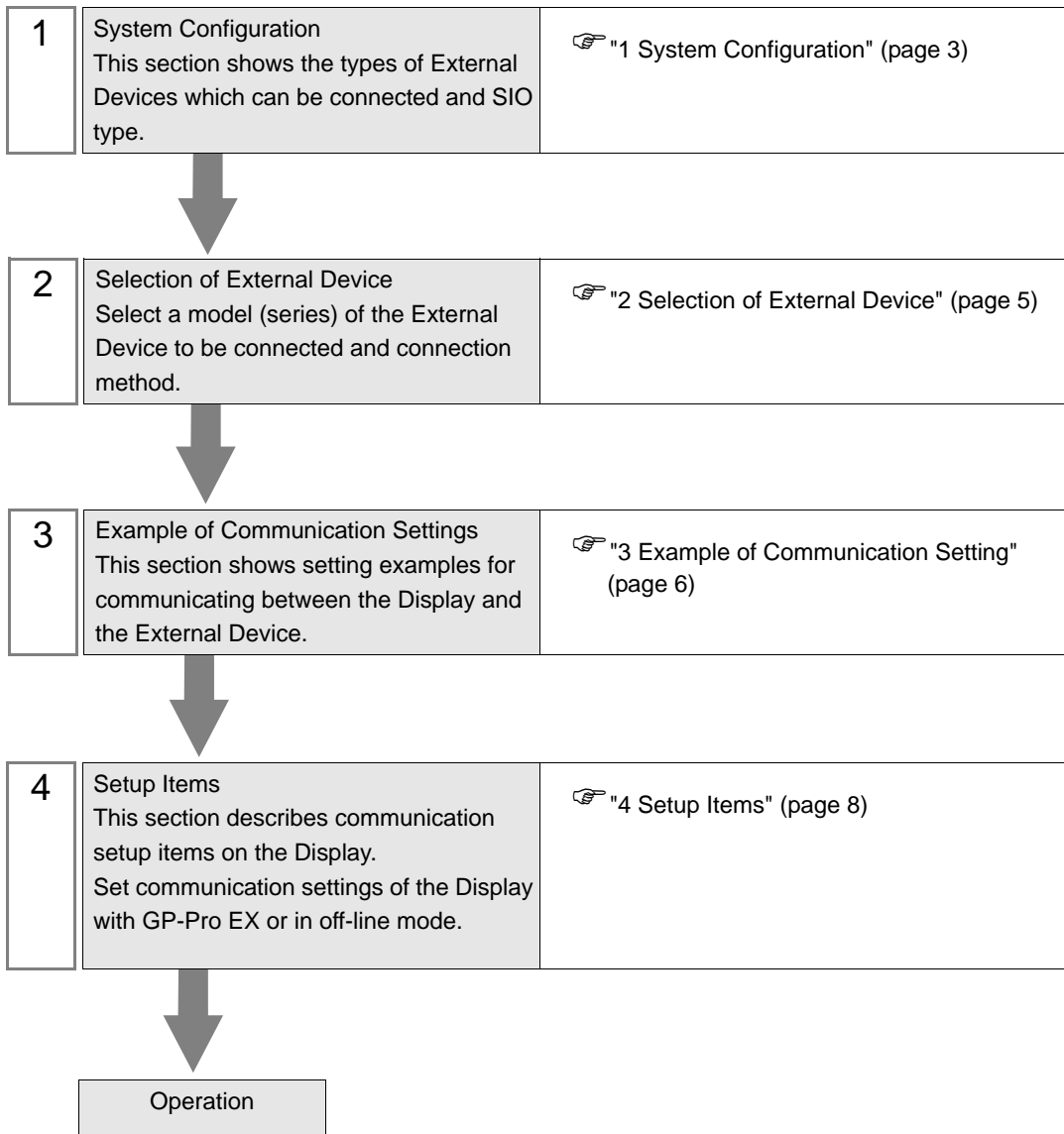
XGT Series FEnet Driver

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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

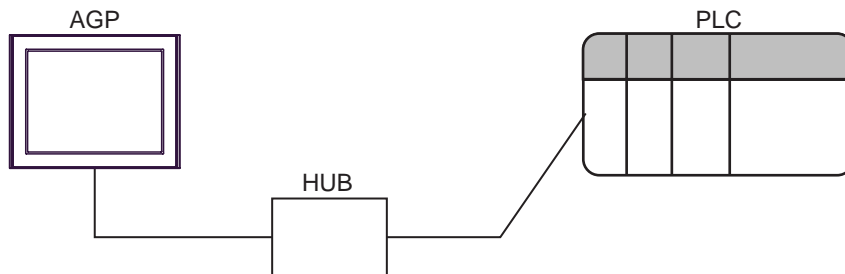
The system configuration in the case when the External Device of LS Industrial Systems and the Display are connected is shown.

Series	CPU ^{*1}	Link I/F	Interface	Setting Example
XGK	XGK-CPUE XGK-CPUS XGK-CPUA XGK-CPUH	XGL-EFMT	Ethernet (UDP, TCP)	Setting Example 1 (page 6)

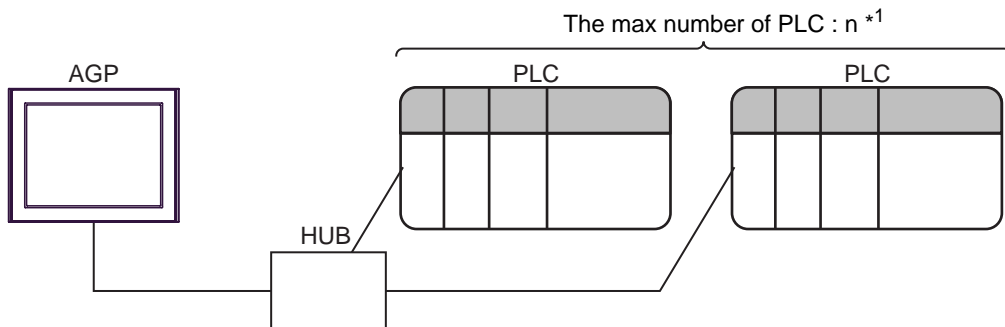
^{*1} It must be used in CPU v1.1 or later. Confirm the version of CPU with the label of CPU unit.

■ Connection Configuration

- 1:1 Connection

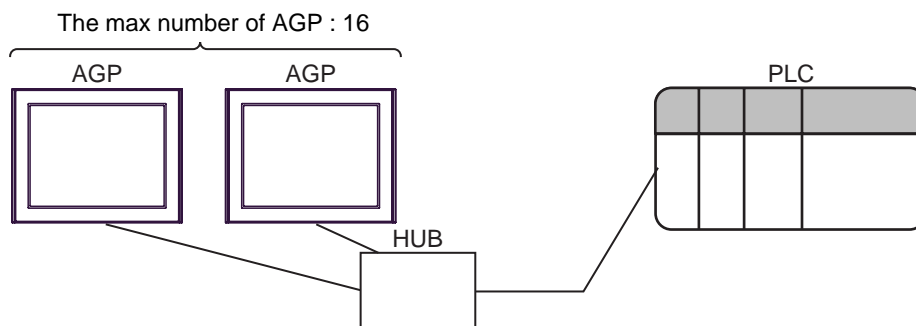


- 1:n Connection

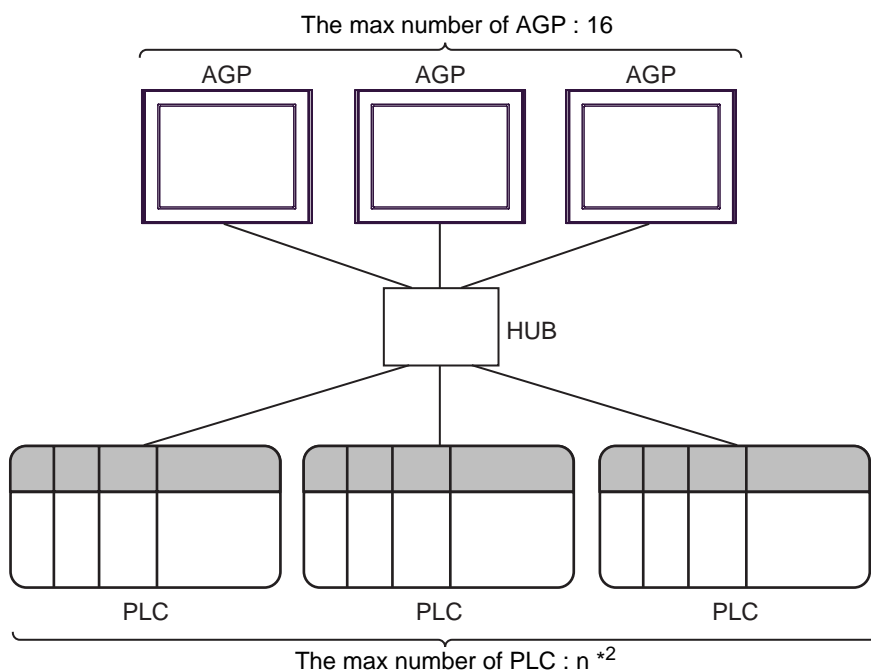


^{*1} The maximum 32 PLCs connection by UDP connection, the maximum 16 PLCs connection by TCP connection.

- n:1 Connection



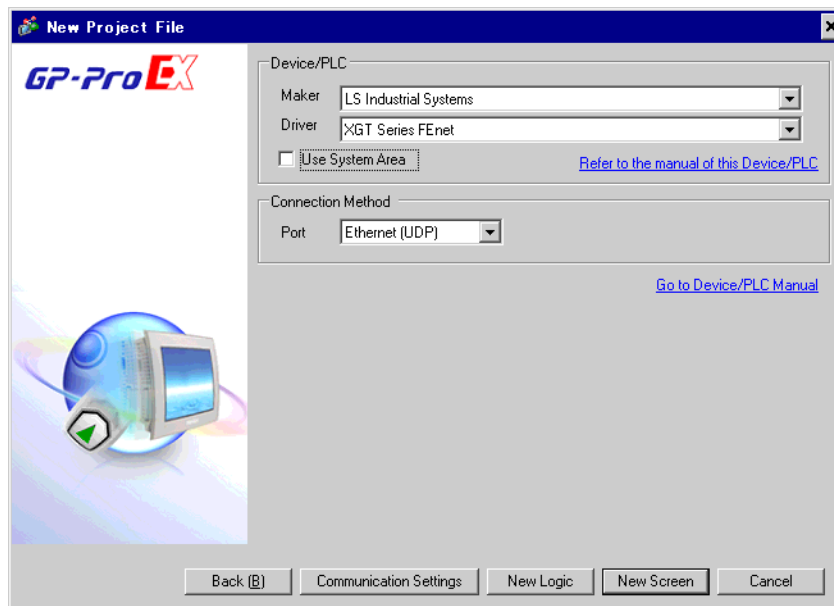
- n:m Connection



*2 The maximum 32 PLCs connection by UDP connection, the maximum 16 PLCs connection by TCP 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 "LS Industrial Systems".
Driver	<p>Select a model (series) of the External Device to be connected and connection method. Select "XGT Series FENet".</p> <p>Check the External Device which can be connected in "XGT Series FENet" in system configuration.</p> <p>☞ "1 System Configuration" (page 3)</p>
Use System Area	<p>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.</p> <p>Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for direct access method)"</p> <p>This can be also set with GP-Pro EX or in off-line mode of Display.</p> <p>Cf. GP-Pro EX Reference Manual " 5.14.6 Setting Guide of [System Setting Window]■[Main Unit Settings] Settings Guide◆System Area Setting"</p> <p>Cf. Maintenance/Troubleshooting "2.14.1 Settings common to all Display models ◆System Area Settings"</p>
Port	Select the Display port connected with connected External Device from "Ethernet (UDP)" and "Ethernet (TCP)".

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 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.

■ Settings of External Device

Communication setting of EtherNet module by communication setting software (XG-PD).

Please refer to the manual of the External Device for more detail.

◆ EtherNet module Setting

- 1 Start communication setting software.
- 2 Select the [PLC Type Settings] of the [Open] menu, and display [PLC Type Settings] dialog box.
Select the series of connected External Device from the [Type].
- 3 Select the [Connection Settings] of the [Online] menu, and display [Online Settings] dialog box.
Set the connection of communication setting software to External Device.
- 4 Double-click the slot number of the base unit in which EtherNet module is installed from the tree view of communication setting software.
Select "FEnet" from [Type] of the displayed [Communication Module Settings] dialog box.
- 5 Double-click [FEnet] displayed in the tree view and set EtherNet module.

Setup Items	Setup Description
IP Address	EtherNet module IP address
Subnet mask	EtherNet subnet mask
Driver	XGT server

- 6 Transmit a setup description to External Device.
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 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)

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.

Device/PLC 1

Summary

Maker LS Industrial Systems Driver XGT Series FEnet Port Ethernet (UDP) [Change Device/PLC](#)

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 No. of Device/PLCs 32 Unit(s) [Settings](#)

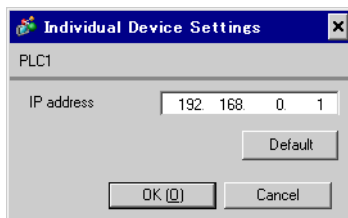
No.	Device Name	Settings
1	PLC1	IP address=192.168.0.001

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.

■ 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.



Setup Items	Setup Description
IP Address	<p>Set IP address of the External Device.</p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">NOTE</div> <ul style="list-style-type: none"> • Check with a network administrator about IP address. Do not set the duplicate IP address.

4.2 Setup Items in Off-Line Mode

NOTE

- Please refer to Maintenance/Troubleshooting for more information on how to enter off-line mode or about operation.

Cf. Maintenance/Troubleshooting "2.2 Offline Mode"

■ 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.

The screenshot shows the 'Device/PLC Settings' screen for the XGT Series FEnet. The top bar has tabs for 'Comm.', 'Device', and others. The main area contains the following settings:

- Port No.:** Radio buttons for 'Fixed' and 'Auto' (selected). A text field shows '1024' with up/down arrow buttons.
- Timeout(s):** A text field showing '3' with up/down arrow buttons.
- Retry:** A text field showing '2' with up/down arrow buttons.
- Wait To Send(ms):** A text field showing '0' with up/down arrow buttons.

The bottom bar contains 'Exit', 'Back', and a timestamp '2006/08/17 15:11:48'.

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].

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. <div style="border: 1px solid black; padding: 2px; display: inline-block;">NOTE</div> <ul style="list-style-type: none"> Check with a network administrator about IP address. Do not set the duplicate IP address.

5 Supported Device

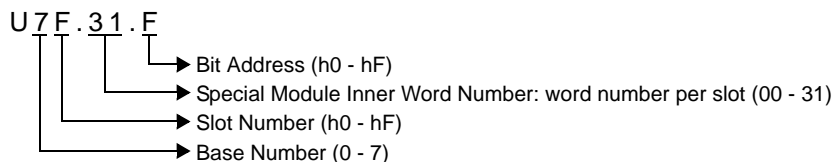
Range of supported device address is shown in the table below. Please note that the actually supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

 This address can be specified as system data area.


Device	Bit address	Word address	32 bits	Remarks
Input / Output Relay	P00000 - P2047F	P0000 - P2047		
Auxiliary Relay	M00000 - M2047F	M0000 - M2047		
Keep Relay	K00000 - K2047F	K0000 - K2047		
Link Relay	L000000 - L11263F	L00000 - L11263		
Special Relay	F00000 - F2047F	F0000 - F2047		*1
Timer (Contact)	T0000 - T2047	-		
Counter (Contact)	C0000 - C2047	-		
Timer (Current Value)	-	T0000 - T2047		
Counter (Current Value)	-	C0000 - C2047		
Step Controller	-	S000 - S127		
Data Register	-	 D00000 - D32767		
Special Module Register	-	U00.00 - U7F.31		*2 
Index Register	-	Z000 - Z127		
Communication Data Register	-	N00000 - N21503		
File Register	-	R00000 - R32767		
File Register	-	ZR00000 - ZR65535		

*1 Write disable

*2 The feature of U Device is like this:



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 / 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 ^{*1}
Timer (Current Value)	T	0060	Word Address
Counter (Current Value)	C	0061	Word Address
Step Controller	S	0062	Word Address
Data Register	D	0000	Word Address
Special Module Register	U	0002	Word Address ^{*2}
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 Internally 'Address Indirect specification' is supported in case of U device.

When it is Uxx.dd, the converted formula is like this:

Hex type: ['xx' part] × h20 + [the hexadecimal value of 'dd' part]

Dec type: [the decimal value of 'xx' part] × 32 + ['dd' part]

(Here, 'xx' is also a hexadecimal type, 'dd' is also a decimal type.)

For example, '01.00' is converted into '0x20 (=32)', '10.00' is converted into '0x200 (=512)', '7F.00' is converted into '0xFE0 (=4064)' and so on.

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"> • IP address is displayed such as "IP address (Decimal): MAC address (Hex)". • Device address is displayed such as "Address: Device address". • Received error codes are displayed such as "Decimal [Hex]".

Display Examples of Error Messages

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

NOTE

- Please refer to the manual of External Device for more detail of received error codes.
- Please refer to "When an error message is displayed (Error code list)" of "Maintenance/Troubleshooting" for a common error message to the driver.