Mitsubishi Heavy Industries, Ltd.

MHI STEP3 Ethernet Driver

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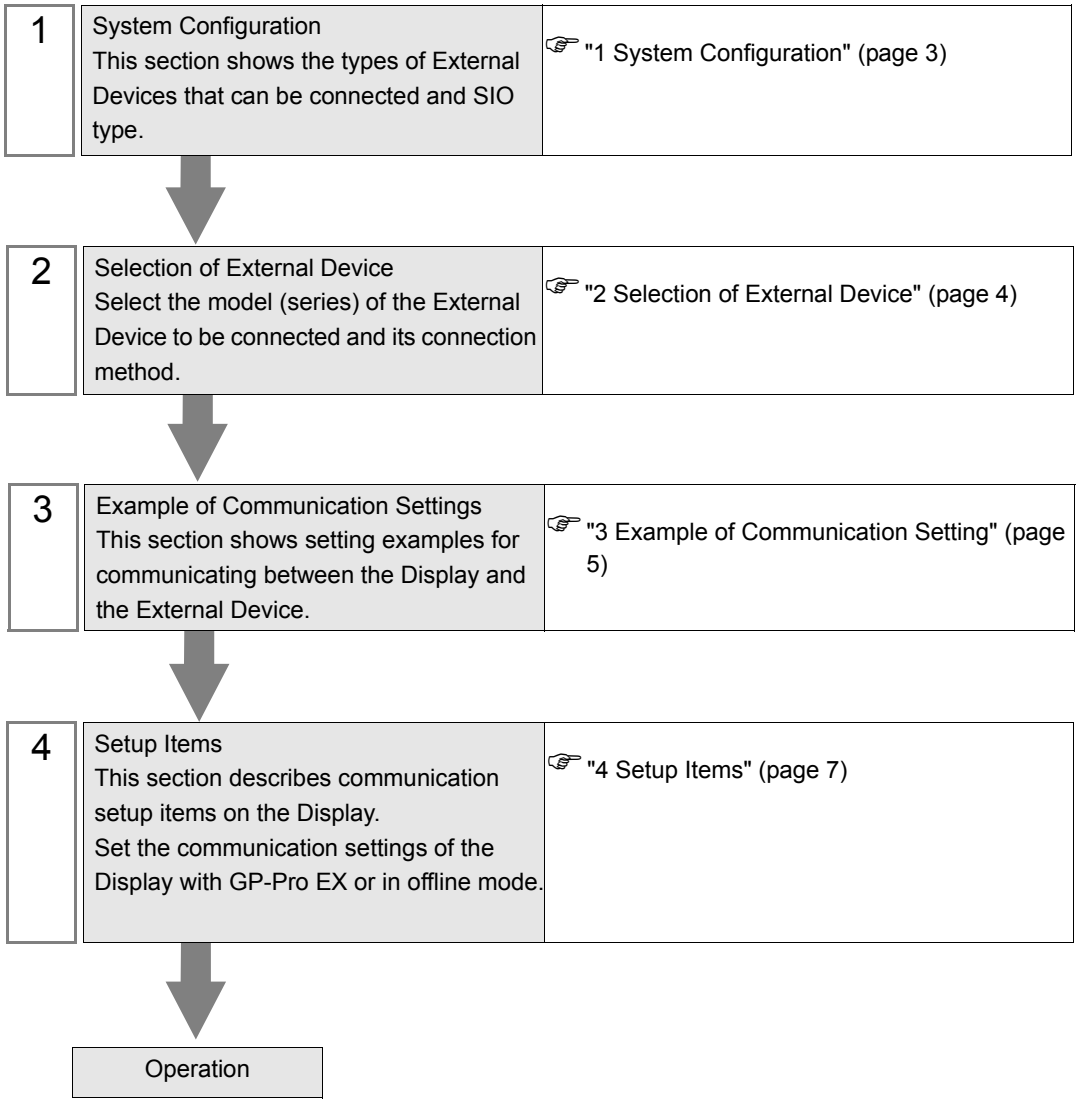
Introduction

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 sections below.



1 System Configuration

The following shows the system configuration in which the External Device from Mitsubishi Heavy Industries, Ltd. and the Display are connected.

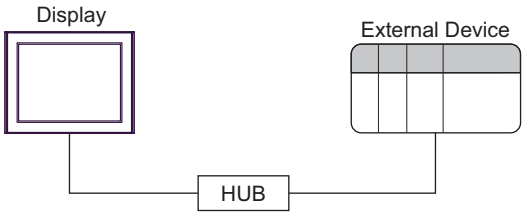
Series	CPU	Link I/F	SIO Type	Setting Example
UP/V	UP/V	Ethernet port on CPU	Ethernet (UDP)	Setting Example (page 5)

NOTE

- This driver does not support GP-4100 series (Monochrome Model), GP-4*01TM, GP-Rear Module, LT3000 series, LT-4*01TM and LT-Rear Module.

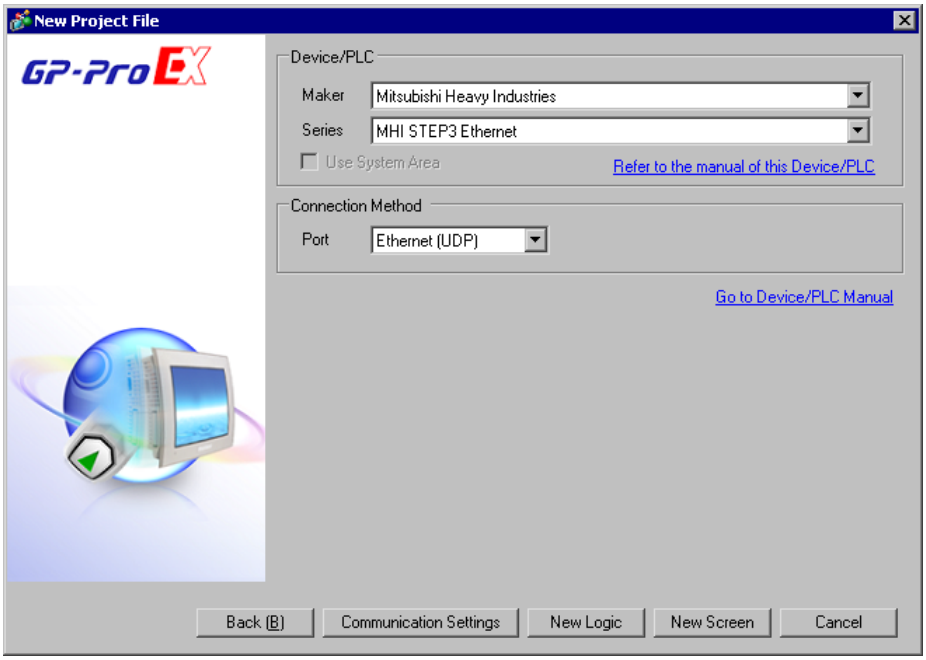
■ Connection Configuration

- 1:1 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 "Mitsubishi Heavy Industries".
Series	Select the model (series) of the External Device to be connected and its connection method. Select "MHI STEP3 Ethernet". Check the External Device that can be connected in "MHI STEP3 Ethernet" in system configuration. ☞ "1 System Configuration" (page 3)
Use System Area	Not available in this driver.
Port	Select the port of the Display to be connected to the External Device.

3 Example of Communication Setting

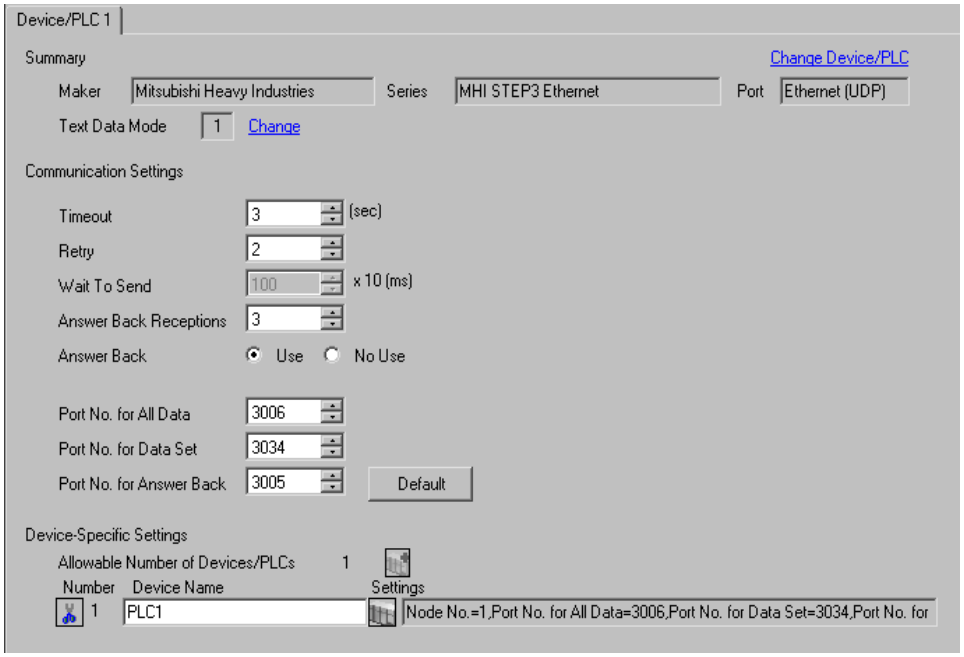
The following shows examples of communication settings for the Display and the External Device, which are recommended by Pro-face.

3.1 Setting Example

■ Settings of GP-Pro EX

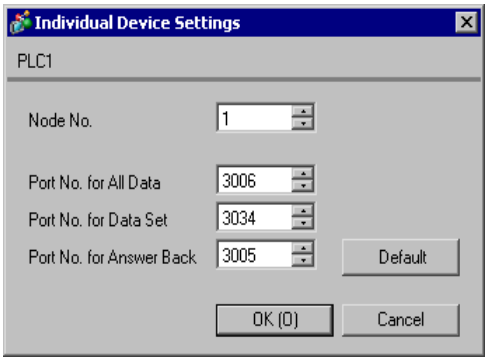
◆ Communication Settings

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



◆ Device Setting

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



◆ Notes

- Check with the network administrator about the IP address.
- Be sure not to duplicate IP addresses on the same network.
- You need to set the IP address of the Display in its offline mode.

■ Settings of External Device

Refer to your External Device manual for details.

◆ Setup Items

Setup Items	Settings
Node No.	1
Port No. for All Data	3006
Port No. for Data Set	3034
Port No. for Answer Back	3005

◆ Notes

Set the Port No. for All Data, Port No. for Data Set and Port No. for Answer Back according to the Display settings.

4 Setup Items

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

The setting of each parameter must match that of the External Device.

☞"3 Example of Communication Setting" (page 5)

NOTE

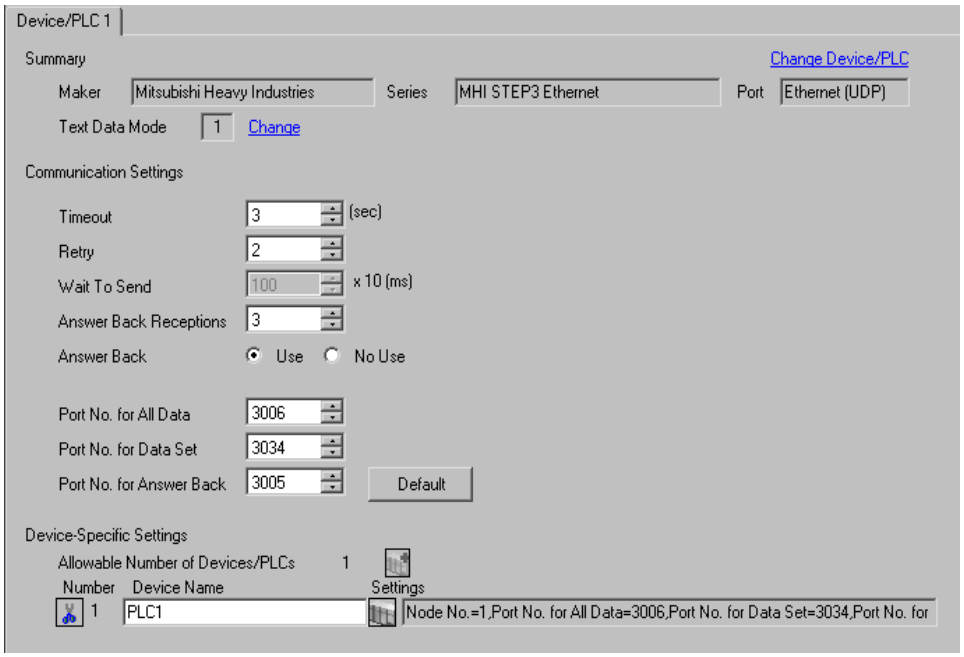
- Set the Display's IP address in offline mode.

  Cf. Maintenance/Troubleshooting Guide "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
Timeout	Enter the time (s) for which the Display waits for the response from the External Device, from "1 to 127". **NOTE** • You can enter the [Timeout] option only when you select "Use" for [Answer Back].
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255". **NOTE** • You can enter the [Retry] option only when you select "Use" for [Answer Back].

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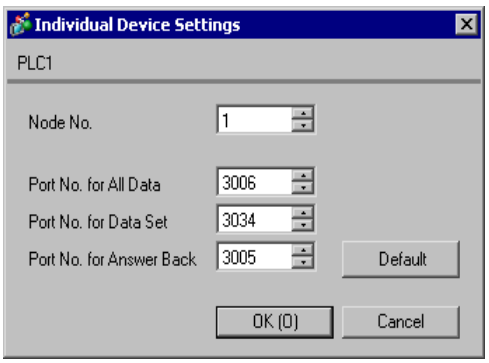
Setup Items	Setup Description
Wait To Send	Enter the standby time (ms) from when the Display receives packets until it transmits the next command, from "0 to 500" (x 10). **NOTE** • You can enter the [Wait To Send] option only when you select "No Use" for [Answer Back].
Answer Back Receptions	Enter the number of answer back to receive, from 1 to 3. **NOTE** • You can enter the [Answer Back Receptions] option only when you select "Use" for [Answer Back]. • Set the value to the number of answer back sent from the External Device.
Answer Back	Select "Use" or "No Use" for the answer back setting.
Port No. for All Data	Enter the reception port number for all data on the Display, from "1024 to 65535".
Port No. for Data Set	Enter the transmission port number for data set on the Display, from "1024 to 65535".
Port No. for Answer Back	Enter the reception port number for answer back on the Display, from "1024 to 65535".

■ Device Setting

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



Setup Items	Setup Description
Node No.	Use an integer from 1 to 254 to enter the node No. of the External Device.
Port No. for All Data	Enter the transmission port number for all data on the External Device, from "1024 to 65535".
Port No. for Data Set	Enter the recepton port number for data set on the External Device, from "1024 to 65535".
Port No. for Answer Back	Enter the transmission port number for answer back on the External Device, from "1024 to 65535".

4.2 Setup Items in Offline Mode

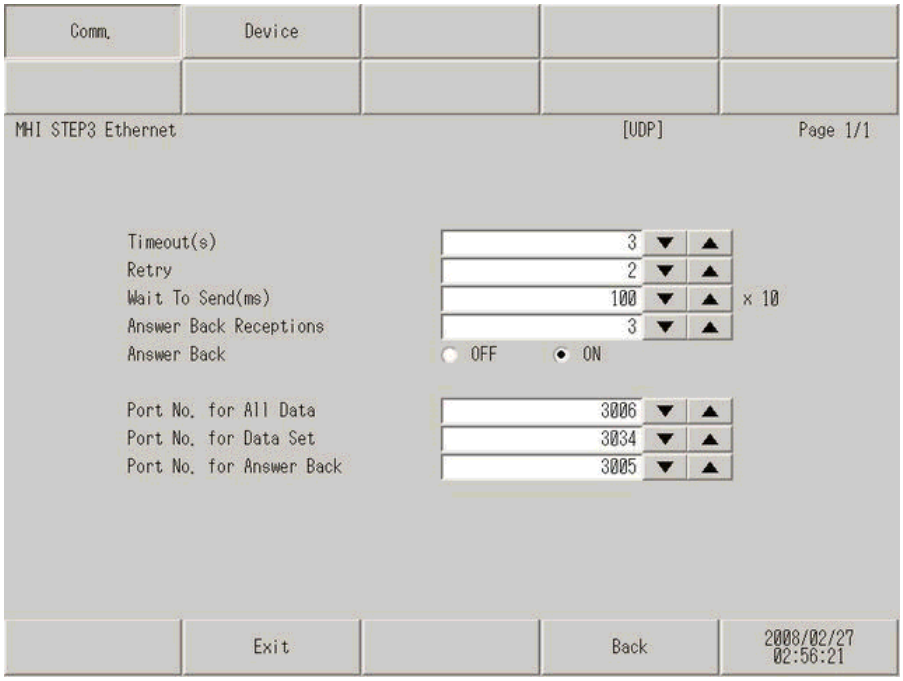
NOTE

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

  Cf. Maintenance/Troubleshooting Guide "Offline Mode"

■ Communication Settings

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



Setup Items	Setup Description
Timeout	Enter the time (s) for which the Display waits for the response from the External Device, from "1 to 127". The [Timeout] option is enabled only when you select "ON" for [Answer Back]. Disabled when "OFF" is selected.
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255". The [Retry] option is enabled only when you select "ON" for [Answer Back]. Disabled when "OFF" is selected.
Wait To Send	Enter the standby time (ms) from when the Display receives packets until it transmits the next command, from "0 to 500" (x 10). The [Wait To Send] option is enabled only when you select "OFF" for [Answer Back]. Disabled when "ON" is selected.
Answer Back Receptions	Enter the number of Answer Back to receive, from 1 to 3. The [Answer Back Receptions] option is enabled only when you select "ON" for [Answer Back]. Disabled when "OFF" is selected. Set the value to the number of answer back sent from the External Device.

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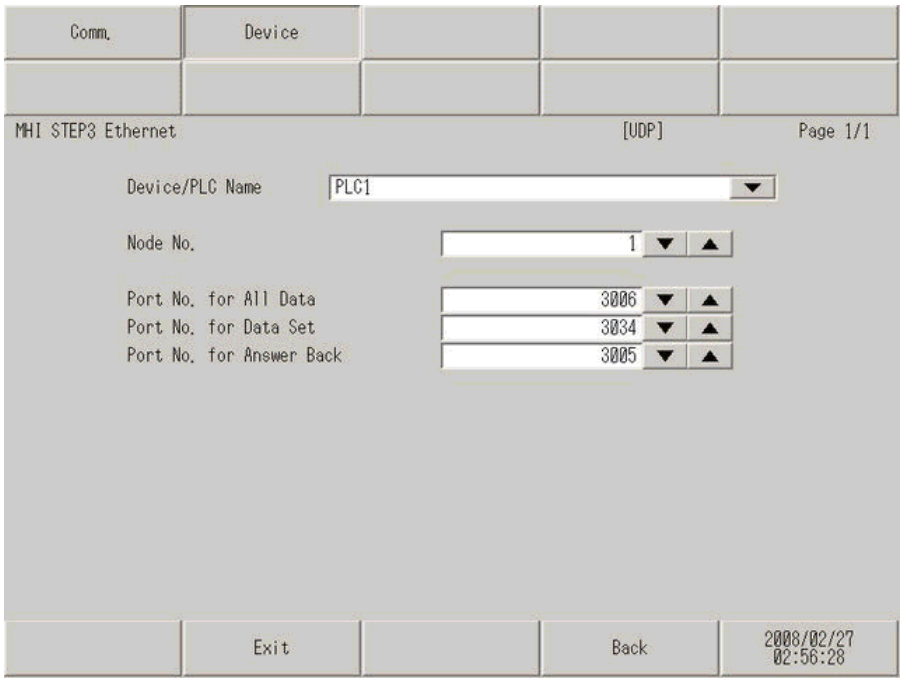
Setup Items	Setup Description
Answer Back	Select "OFF" or "ON" for the Answer Back setting.
Port No. for All Data	Enter the reception port number for all data on the Display, from "1024 to 65535".
Port No. for Data Set	Enter the transmission port number for data set on the Display, from "1024 to 65535".
Port No. for Answer Back	Enter the reception port number for answer back on the Display, from "1024 to 65535".

■ Device Setting

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



Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. The device name is the title of the External Device set with GP-Pro EX. (Initial value [PLC])
Node No.	Use an integer from 1 to 254 to enter the node No. of the External Device.
Port No. for All Data	Enter the transmission port number for all data on the External Device, from "1024 to 65535".
Port No. for Data Set	Enter the reception port number for data set on the External Device, from "1024 to 65535".
Port No. for Answer Back	Enter the transmission port number for answer back on the External Device, from "1024 to 65535".

5 Supported Device

The following table shows the range of supported device addresses. Note that the actually supported range varies depending on the External Device. Consult your External Device manual for the range.

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Digital I/O Data	LD1025 - LD3584	LD1025 - LD3569	H / L	*1
Digital Input Data	DI1025 - DI3584	DI1025 - DI3569		
Analog I/O Data	-	LA1025 - LA2024		*2
Analog Input Data	-	AI1025 - AI2024		

*1 Bit device. Address of (a multiple of 16) + 1 for word specification.

*2 Float Device

NOTE

- You can set only the reading area size in the Controller's system area setting. Refer to the GP-Pro EX Reference Manual for the reading area size.

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

- 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 set "Device Type & Address" for the address type of the data display or other devices.

Device	Device Name	Device Code (HEX)	Address Code
Digital I/O Data	LD	0080	Value of (word address -1025) divided by 16
Digital Input Data	DI	0081	Value of (word address -1025) divided by 16
Analog I/O Data	LA	0000	Word Address
Analog Input Data	AI	0001	Word Address

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 the External Device where an error has occurred. The device name is the title of the External Device set with GP-Pro EX.(Initial value [PLC1])
Error Message	Displays messages related to an error that has occurred.
Error Occurrence Area	Displays the IP address or device address of the External Device where an error has occurred, or error codes received from the External Device. NOTE • IP address is displayed as "IP address (Decimal): MAC address (Hex)". • Device address is displayed as "Address: Device address". • Received error codes are displayed as "Decimal [Hex]".

Display Examples of Error Messages

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

NOTE

- Refer to "Display-related errors" in "Maintenance/Troubleshooting Guide" for details on the error messages common to the driver.
- The External Device will not respond if an incorrect access occurs.

■ Error Messages Specific to the External Device

Error No.	Message	Description
RHxx128	(Node Name) Too many data set requests. The request was ignored.	When too many writing requests occur and cannot be performed.