Series 90 Ethernet Driver

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 This section shows the types of External Devices which can be connected and SIO type.	☞ "1 System Configuration" (page 3)

2	Selection of External Device Select a model (series) of the External Device to be connected and connection method.	☞ "2 Selection of External Device" (page 4)

3	Example of Communication Settings This section shows setting examples for communicating between the Display and the External Device.	☞ "3 Example of Communication Setting" (page 5)

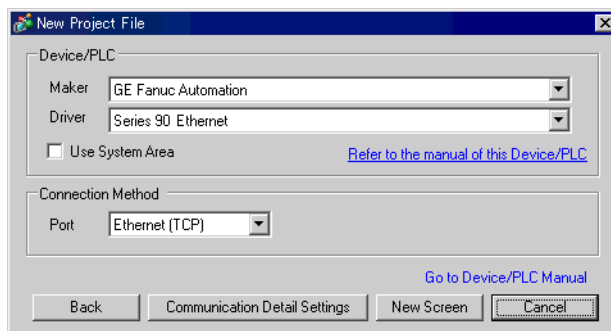| 4	Setup Items This section describes communication setup items on the Display. Set communication settings of the Display with GP-Pro Ex or in off-line mode.	☞ "4 Setup Items" (page 8)

Operation

1   System Configuration

The system configuration in the case when the External Device of GE Fanuc Automation and the Display are connected is shown.

Series Name	CPU	Link I/F	SIO Type	Setting Example
Series 90-30	CPU311 CPU313 CPU323 CPU331 CPU340 CPU341 CPU350 CPU351 CPU352 CPU360 CPU363 CSE311 CSE313 CSE323 CSE331 CSE340	IC693CMM321	Ethernet (TCP)	"Setting Example 1" (page 5)
	CPU364 CPU374	Ethernet interface on CPU		"Setting Example 2" (page 7)
Series 90-70	CPU731 CPU771 CPU772 CPU780 CPU781 CPU782 CPU788 CPU789 CPM790 CPM915 CPM925 CSE784 CSE924 CSE925 CPX772 CPX782 CPX928 CPX935 CGR772 CGR935	IC697CMM742(Type2)		"Setting Example 1" (page 5)

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 "GE Fanuc Automation".
Series	Select a model (series) of the External Device to be connected and connection method. Select "Series 90 Ethernet". Check the External Device which can be connected in "Series 90 Ethernet" in system configuration.)"1 System Configuration" (page 3)
Use System Area	Check this option when you synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the ladder program of the External Device to switch the display or display the window on the Display. Cf.　　GP-Pro EXReference 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 the Display. Cf.　　GP-Pro EX Reference Manual "6.13.6[Setting Guide of [System Setting Window], Setting Guide of [Main Unit Settings], System Area Setting" Cf.　　GP3000 Series User's 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 Digital Electronics Corp., are shown.
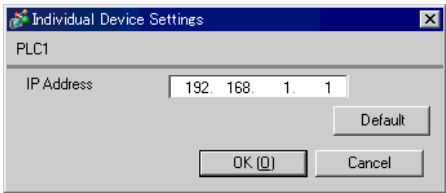
3.1 Setting Example 1

■ Settings of GP-Pro EX

◆ Communication Settings

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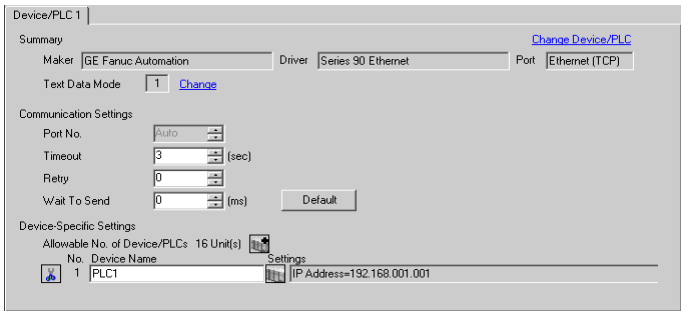
◆ Device Setting

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

■ Settings of External Device

Use the ladder software for communication setting. (Operation confirmed using CIMPLICITY Machine Edition V4.50)

1. Select "GE Fanuc PLC" of "Add Target" from "Project" in the tool bar.
2. When the target is displayed in the project, open "Main Rack" from "Hardware Configuration" in the tree view and assign the using link I/F to the Slot.

> **MEMO**
> • Rack or Slot number to be assigned varies depending on your environment. Check the environment before assignment.

3. Double-click the assigned link I/F to display the setting window.
4. Set IP Address and other items.
5. Download the setting in the External Device and restart the 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.

- Please refer to the manual of the ladder software for more detail on other setting description.

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.
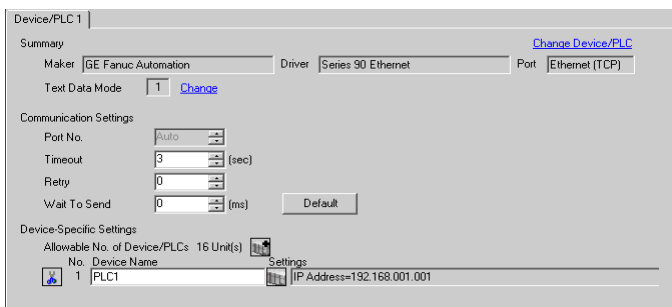
◆ Device Setting

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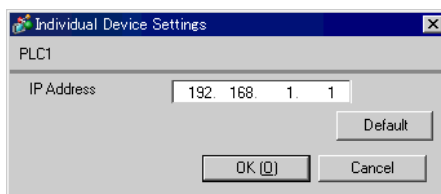
■ Settings of External Device

Use the ladder software for communication setting. (Operation confirmed using CIMPLICITY Machine Edition V4.50)

1. Select "GE Fanuc PLC" of "Add Target" from "Project" in the tool bar.

2. When the selected Series are displayed in the project, open "Main Rack" from "Hardware Configuration" in the tree view and assign the using CPU to the Slot.

> **MEMO**　• Rack or Slot number to be assigned varies depending on your environment. Check the environment before assignment.

3. Double-click the assigned CPU to display the CPU setting window.

4. Click the [Ethernet] tab to set IP address and other items.

5. Download the setting in the External Device and restart the 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.

• Please refer to the manual of the ladder software for more detail on other setting description.

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 5)

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.	Assign the port No. of the External Device automatically.
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 the External Device you want to set from [Device-Specific Settings] of [Device/PLC Settings].

When connecting multiple External Devices, you can click from [Device-Specific Settings] of [Device/PLC Settings] to add the External Device which is available to set.
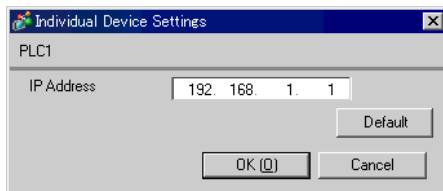
Setup Items	Setup Description
IP Address	Set IP address of the External Device. **MEMO** • Check with a network administrator about IP address. Do not set the duplicate IP address.

4.2 Settings in Off-Line Mode

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

Cf. GP3000 Series User's Manual "Chapter 4 Setting"

■ Communication Settings

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

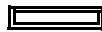| Setup Items	Setup Description
Port No.	Assign the port No. of the External Device automatically.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which the display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 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 Equipment Settings]. Touch the External Device you want to set from the displayed list, and touch [Device Settings].

Comm.	Device			

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Device/PLC Name   PLC1   ▼

IP Address   192 168   1   1

	Exit		Back	2006/01/17 17:20:27

Setup Items	Setup Description
Device name	Select the External Device to set. Device name is a title of the External Device set with GP-Pro EX. (Default value [PLC1])
IP Address	Set IP address of the External Device. **MEMO** • 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 bit	Remarks
Input Relay(%I)	%I00001-%I32768	%I00001-%I32753		÷16+ 1)
Output Relay(%Q)	%Q00001-%Q32768	%Q00001-%Q32753		÷16+ 1)
Global Relay(%G)	%G00001-%G07680	%G00001-%G07665		÷16+ 1)
Internal Relay(%M)	%M00001-%M32768	%M00001-%M32753		÷16+ 1)
Temporary Relay(%T)	%T00001-%T01024	%T00001-%T01009		÷16+ 1)
System Status Relay(%S)	%S00001-%S00128	%S00001-%S00113		÷16+ 1) *1
System Status Relay(%SA)	%SA00001-%SA00128	%SA00001-%SA00113	L / H	÷16+ 1)
System Status Relay(%SB)	%SB00001-%SB00128	%SB00001-%SB00113		÷16+ 1)
System Status Relay(%SC)	%SC00001-%SC00128	%SC00001-%SC00113		÷16+ 1)
Register(%R)	-	%R00001-%R32640		Bit 15)
Analog Input(%AI)	-	%AI00001-%AI32640		Bit 15)
Analog Output(%AQ)	-	%AQ00001-%AQ32640		Bit 15)

*1　　Write disable

> **MEMO**
>
> • 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	%I	0080	(Word Address - 1) /16
Output Relay	%Q	0081	(Word Address - 1) /16
Global Relay	%G	0082	(Word Address - 1) /16
Internal Relay	%M	0083	(Word Address - 1) /16
Temporary Relay	%T	0084	(Word Address - 1) /16
System Status Relay	%S	0085	(Word Address - 1) /16
	%SA	0086	(Word Address - 1) /16
	%SB	0087	(Word Address - 1) /16
	%SC	0088	(Word Address - 1) /16
Register	%R	0000	Word Address - 1
Analog Input	%AI	0001	Word Address - 1
Analog Output	%AQ	0002	Word Address - 1

7 Error Messages

Error messages are displayed on the screen of the 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 error occurs. Device name is a title of the External Device set with GP-Pro EX.(Initial value[PLC1])
Error Message	Displays messages related to the error which occurs.
Error Occurrence Area	Displays IP address or device address of the External Device where error occurs, or error codes received from the External Device. **MEMO** • IP address is displayed such as "IP address(Decimal): MAC address(Hex)". • Device address is displayed such as "Address: Device addressî. • 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])"

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

■ Driver-Specific Error Messages

Driver-specific error code is displayed in 2 Bytes; "Major Error Status Code(1 Byte)" and "Minor Error Status Code(1 Byte)". When receiving the error code from the External Device, added to the following message, "Major Error Status Code" followed by "Major" and followed by "Minor" are displayed. Please refer to the manual of the External Device for more detail on error codes.

Driver-specific error messages are shown below.

MessageID	Error Message	Description
RHxx130	(Device name): Error has been responded for device read command(Major: [Hex], Minor: [Hex])	Displayed when error occurs by device read command.
RHxx131	(Device name): Error has been responded for device read command(Major: [Hex], Minor: [Hex])	Displayed when error occurs by device write command.