GE Fanuc Automation
Series 90-30/70
Ethernet Driver

Supported version TOP Design Studio V1.0 or higher

CONTENTS

We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

1. System configuration

The system configuration of TOP and "GE Fanuc Intelligent Platforms, Inc. – Series 90-30/70 PLC, PACSystems RX3i/7i Series" is as follows.

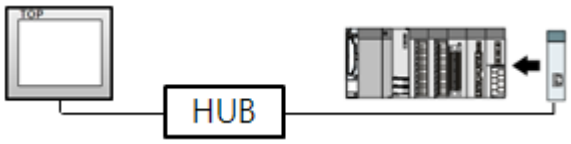
Series	CPU	Link I/F	Communication method	System setting	Cable
Series 90-30	IC693CPU311 IC693CPU313 IC693CPU323 IC693CPU331 IC693CPU340 IC693CPU341 IC693CPU350 IC693CPU351 IC693CPU352 IC693CPU360 IC693CPU363 IC693CSE311 IC693CSE313 IC693CSE323 IC693CSE331 IC693CSE340	IC693CMM321	Ethernet (TCP)	3. TOP communication setting 4.1. External device setting 1	Twisted pair cable*Note 1)
	IC693CPU364 IC693CPU374	Ethernet interface on CPU unit	Ethernet (TCP)	3. TOP communication setting 4.2. External device setting 2	Twisted pair cable*Note 1)
Series 90-70	IC697CPU731 IC697CPU771 IC697CPU772 IC697CPU780 IC697CPU781 IC697CPU782 IC697CPU788 IC697CPU789 IC697CPM790 IC697CPM915 IC697CPM925 IC697CSE784 IC697CSE924 IC697CSE925 IC697CPX772 IC697CPX782 IC697CPX928 IC697CPX935 IC697CGR772 IC697CGR935	IC697CMM742 (Type2)	Ethernet (TCP)	3. TOP communication setting 4.1. External device setting 1	Twisted pair cable*Note 1)
RX3i	IC695CPU310 IC695CPU320 IC695NIU001 IC695CMU310 IC695CRU320	IC695ETM001	Ethernet (TCP)	3. TOP communication setting 4.3 External device setting 3	Twisted pair cable*Note 1)
RX7i	IC698CPE010 IC698CPE020 IC698CRE020 IC698CPE030 IC698CRE030 IC698CPE040 IC698CRE040	Ethernet interface on CPU	Ethernet (TCP)	3. TOP communication setting 4.4. External device setting 4	Twisted pair cable*Note 1)

*Note 1) Twisted pair cable

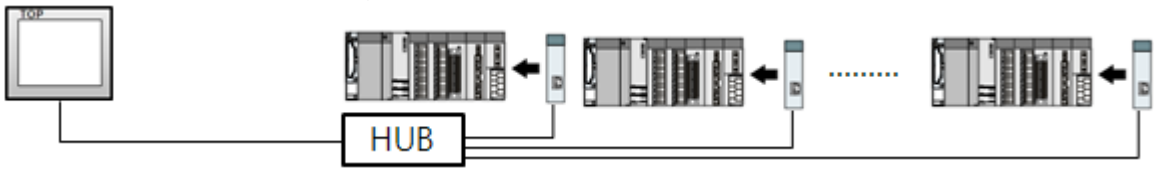
- Refer to STP (Shielded Twisted Pair Cable) or UTP (Unshielded Twisted Pair Cable) Category 3, 4, 5.
- Depending on the network configuration, you can connect to components such as the hub and transceiver, and in this case, use a direct cable.

■ Connectable configuration

・1:1 connection (one TOP and one external device) connection

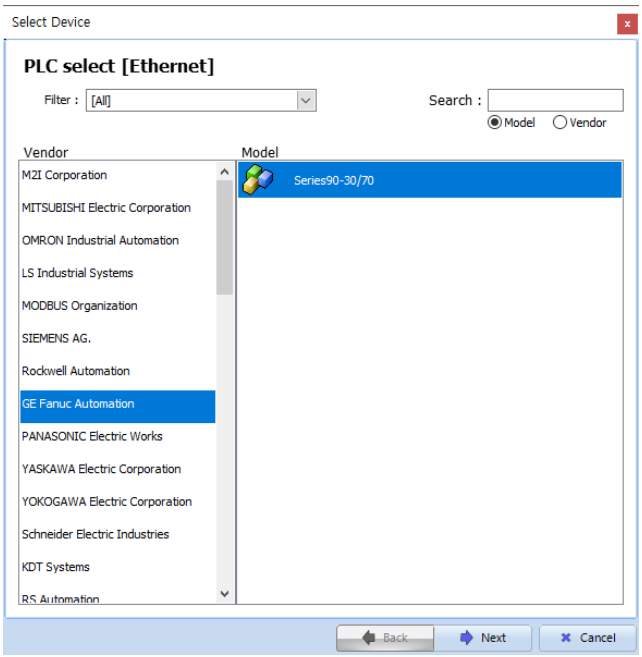


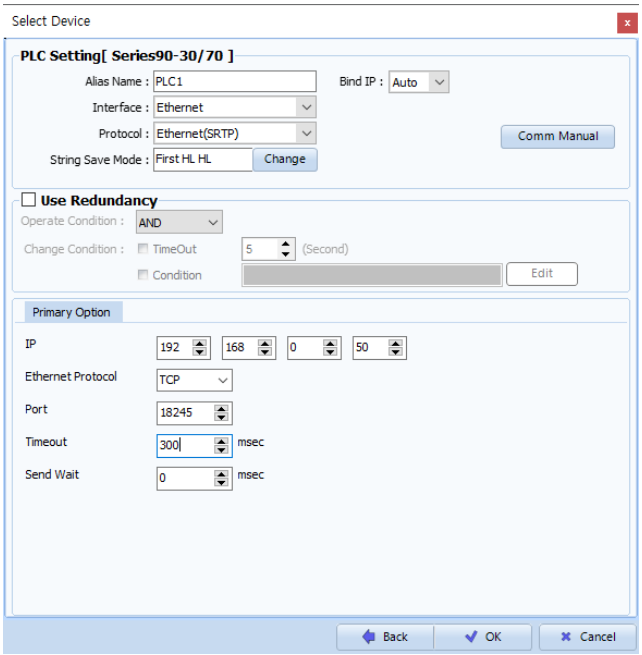
・1:N connection (one TOP and multiple external devices) connection



2. External device selection

■ Select a TOP model and a port, and then select an external device.





Settings		Contents
TOP	Model	Check the TOP display and process to select the touch model.
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "GE Fanuc Automation".
	PLC	Select the external device to be connected to the TOP.

Model	Interface	Protocol
Series 90-30/70	Ethernet	Ethernet (SRTP)

Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured.

3. TOP communication setting

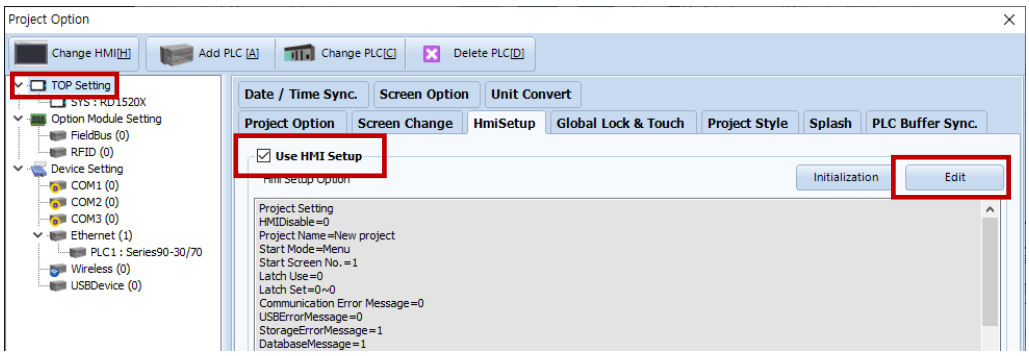
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

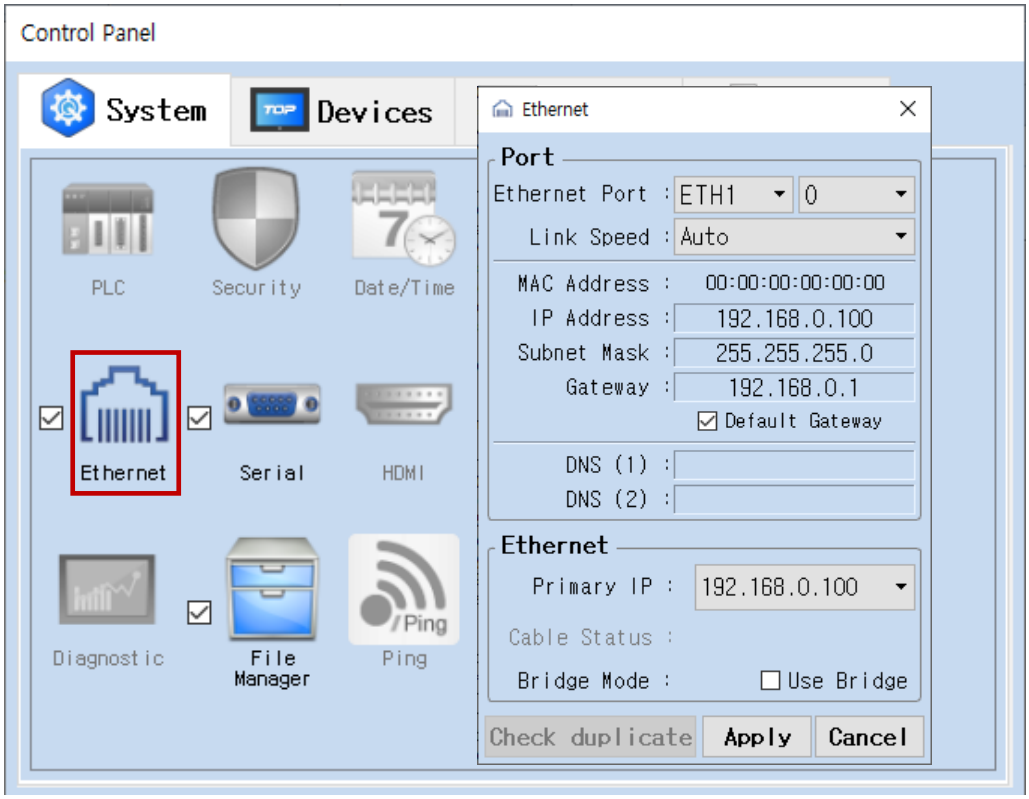
3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project properties > TOP settings] → [Project option > Check "Use HMI settings" > Edit > Ethernet]

– Set the TOP communication interface in TOP Design Studio.





Items	TOP	External device	Remarks
IP Address*Note 1) Note 2)	192.168.0.100	192.168.0.50	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

*Note 1) The network addresses of the TOP and the external device (the first three digits of the IP, 192 . 168 . 0 . 0) should match.

*Note 2) Do not use duplicate IP addresses over the same network.

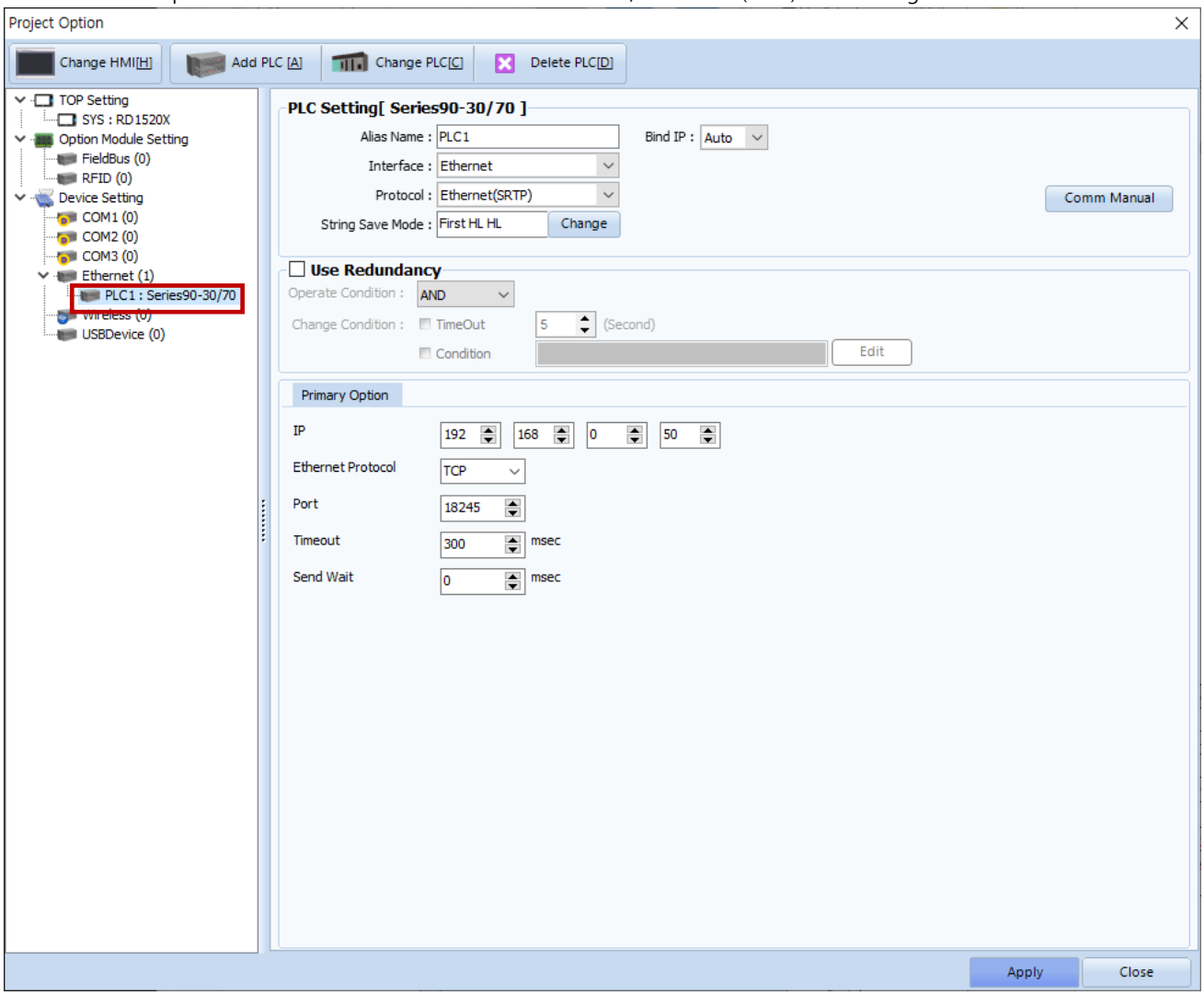
* The above settings are examples recommended by the company.

Items	Description
IP Address	Set an IP address to be used by the TOP to use over the network.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.

(2) Communication option setting

■ [Project > Project properties > PLC settings > ETHERNET > "PLC1 : Series90-30/70"]

– Set the options of the communication driver of Series 90-30/70 Ethernet(SRTP) in TOP Design Studio.

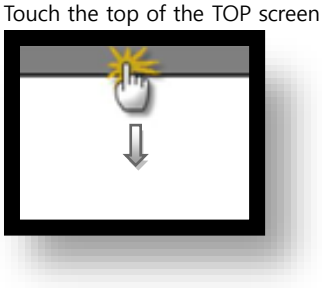


Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select "Ethernet(SRTP)".	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet communication port number of the external device **18245**.	Fixed
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	

3.2. Communication setting in TOP

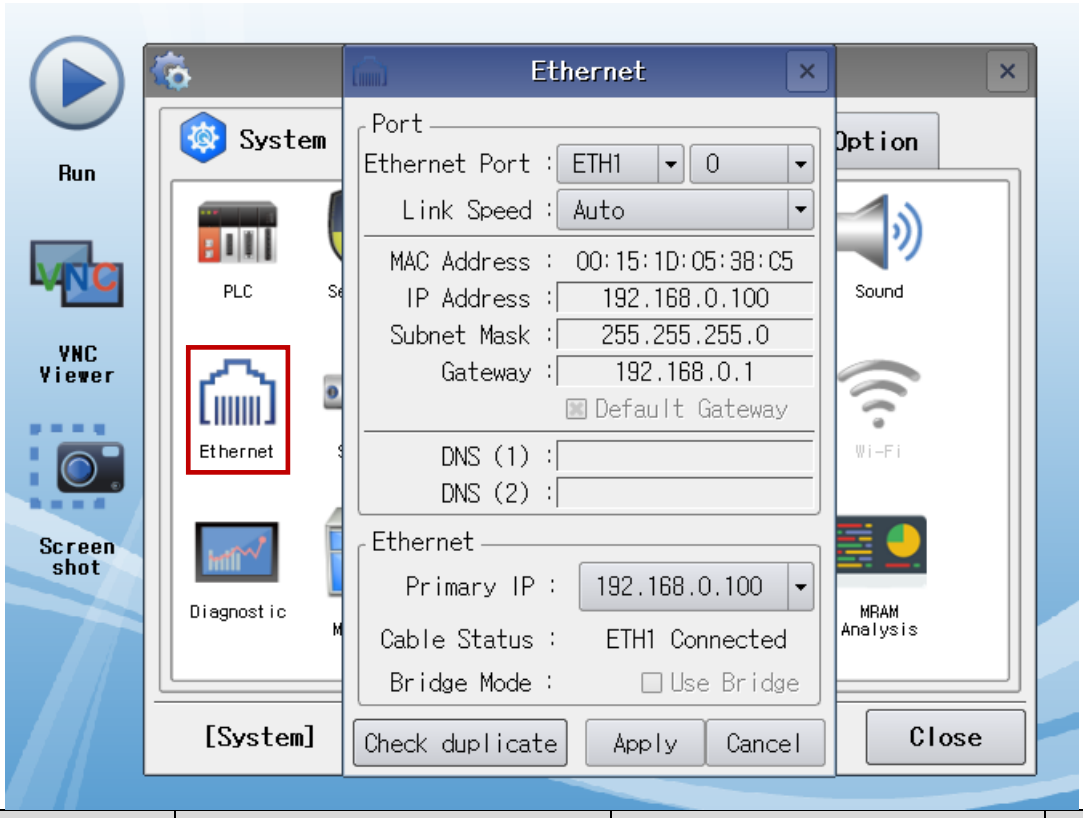
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Main screen > Control panel > Ethernet]



Items	TOP	External device	Remarks
IP Address*Note 1) Note 2)	192.168.0.100	192.168.0.50	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

*Note 1) The network addresses of the TOP and the external device (the first three digits of the IP, 192 . 168 . 0 . 0) should match.

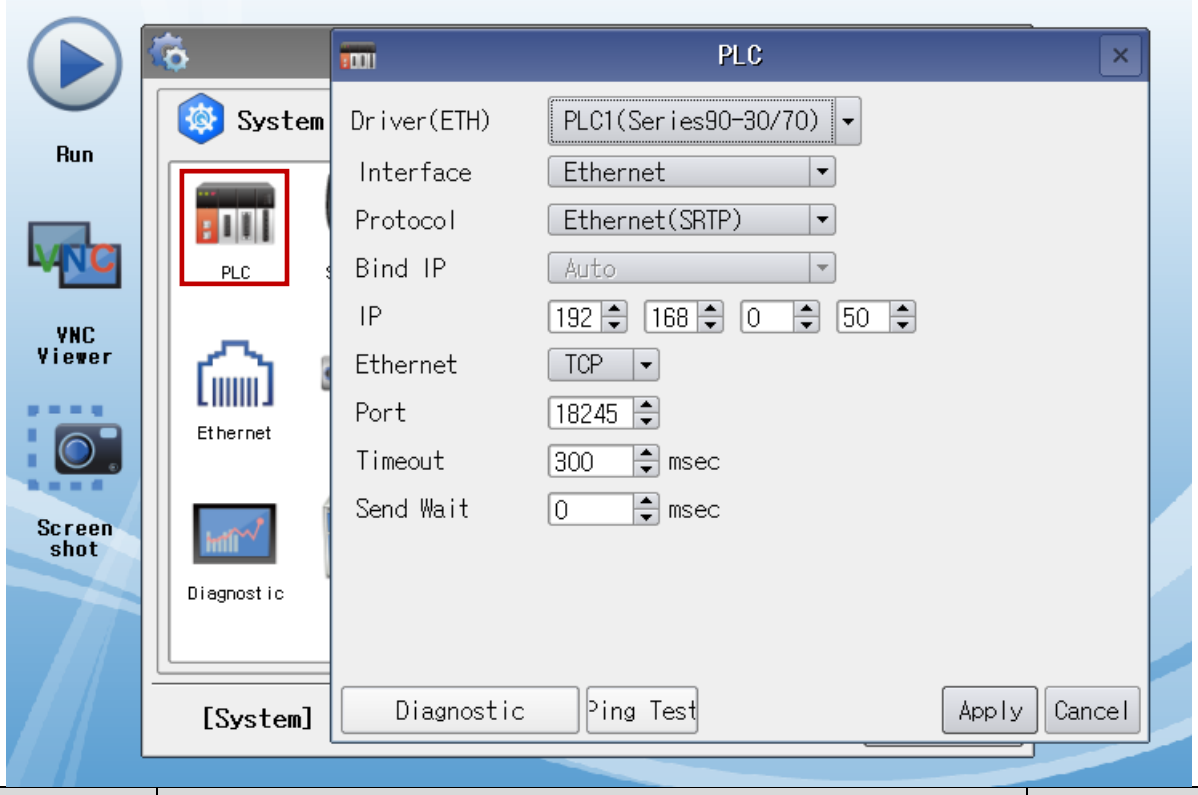
*Note 2) Do not use duplicate IP addresses over the same network.

* The above settings are examples recommended by the company.

Items	Description
IP Address	Set an IP address to be used by the TOP to use over the network.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.

(2) Communication option setting

■ [Main screen > Control panel > PLC]



Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select "Ethernet(SRTP)".	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet communication port number of the external device **18245**.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	

3.3 Communication diagnostics

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- - Check whether the ETH port settings you want to use are the same as those of the external device in [Control Panel > Ethernet].

■ Diagnosis of whether the port communication is normal or not

- Touch "Communication diagnostics" in [Control Panel > PLC].
- The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

OK	**Communication setting normal**
Time Out Error	**Communication setting abnormal** - Check the cable, TOP, and external device setting status. **(Reference: Communication diagnostics sheet)**

■ Communication diagnostics sheet

- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Contents		Check		Remarks
System configuration	How to connect the system		OK	NG	1. System configuration
	Connection cable name		OK	NG	
TOP	Version information		OK	NG	2. External device selection 3. Communication setting
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	Relative prefix	Project setting	OK	NG	
		Communication diagnostics	OK	NG	
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
External device	CPU name		OK	NG	4. External device setting
	Communication port name (module name)		OK	NG	
	Protocol (mode)		OK	NG	
	Setup Prefix		OK	NG	
	Other detailed settings		OK	NG	
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
	Check address range		OK	NG	5. Supported addresses (For details, please refer to the PLC vendor's manual.)

4. External device setting

4.1 External device setting 1 (IC693CMM321, IC697CMM742)

Set as follows through Ladder Software "CIMPLICITY Machine Edition" for communication settings. For more detailed setting method than described in this example, refer to PLC user manual. After completing the settings, download the settings to the corresponding device.

Do not use duplicate IP addresses over the same network.

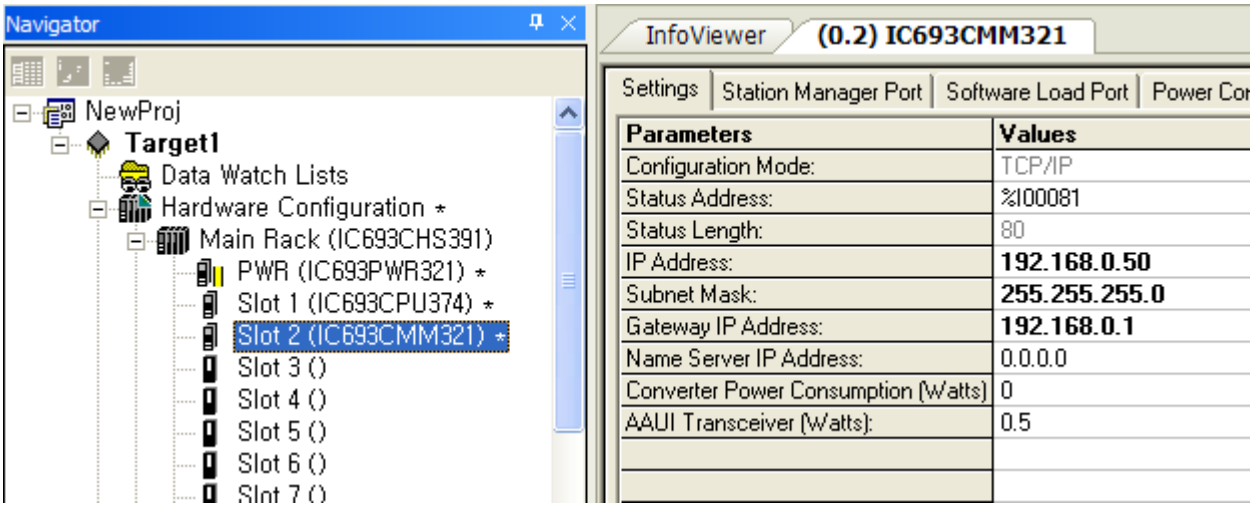
Step 1. Select [Project] – [Add Target] – [GE Fanuc Controller] – [Series 90-30 PLC] or [Series 90-70 PLC] in the main menu tool bar of [CIMPLICITY Machine Edition]. ➔Activate the "Target" you want to use.

Step 2. Select [Right-click the corresponding "Slot"] – [Replace Module], [Add module...] to register "**CPU unit**" and "**Ethernet Module**" you want to use in [Target] – "Hardware Configuration" – "Main Rack" – corresponding "Slot" you want to use in the project tree of the [Navigator]. ➔ Select the Ethernet Module listed in the table below according to CPU Series.

Contents	Module Name
Series 90-30 PLC	IC693CMM321(Ethernet interface)
Series 90-70 PLC	IC697CMM742 (Ethernet Controller Type2)

Step 3. Double-click the "Slot" where the "Ethernet interface Module" is registered. ➔The setting window is displayed.

Step 4. Register the IP information in the [Settings] tab of the setting window as follows.



Contents	Settings	Descriptions
IP Address	192.168.0.50	**IP Information of the Ethernet Communication Module, Essential setting**
Subnet Mask *Note 1)	255.255.255.0	–
Gateway IP Address *Note 1)	192.168.0.1	–
Name Server IP Address *Note 1)	0.0.0.0	–

*Note 1) This is not an essential setting. Keep the default value of "0.0.0.0" when not used.

4.2 External device setting 2 (Ethernet Interface on CPU Unit of Series 90-30/70)

Set as follows through Ladder Software "CIMPLICITY Machine Edition" for communication settings. For more detailed setting method than described in this example, refer to PLC user manual. After completing the settings, download the settings to the corresponding device.

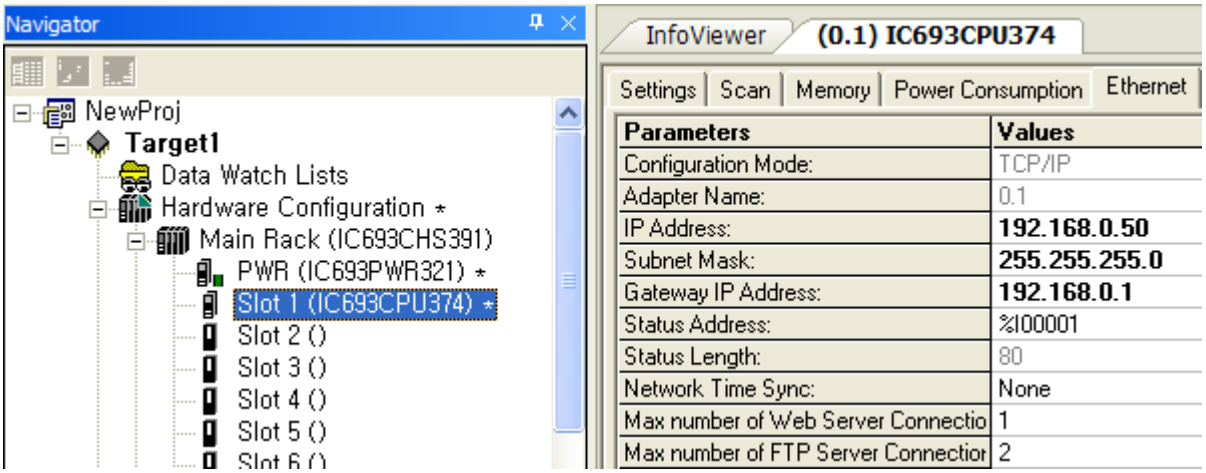
Do not use duplicate IP addresses over the same network.

Step 1. Select [Project] – [Add Target] – [GE Fanuc Controller] – [Series 90-30 PLC] or [Series 90-70 PLC] in the main menu tool bar of [CIMPLICITY Machine Edition]. ➔Activate the "Target" you want to use.

Step 2. Select [Right-click the corresponding "Slot"] – [Replace Module] to register "CPU unit" you want to use in [Target] – "Hardware Configuration" – "Main Rack" – corresponding "Slot" you want to use in the project tree of the [Navigator]. ➔ When activated, the automatically registered CPU is changed and registered as the module you want to use.

3. Double-click [Target] – "Hardware Configuration" – "Main Rack" – CPU to display CPU setting window.

4. Register the IP information in the [Ethernet] tab of the setting window as follows.



Contents	Settings	Descriptions
IP Address	192.168.0.50	**IP information of the Ethernet Communication Module, Essential setting**
Subnet Mask *Note 1)	255.255.255.0	–
Gateway IP Address *Note 1)	192.168.0.1	–

*Note 1) This is not an essential setting. Keep the default value of "0.0.0.0" when not used.

4.3 External device setting 3 (IC695ETM001)

Set as follows through Ladder Software "CIMPLICITY Machine Edition" for communication settings. For more detailed setting method than described in this example, refer to PLC user manual. After completing the settings, download the settings to the corresponding device.

Do not use duplicate IP addresses over the same network.

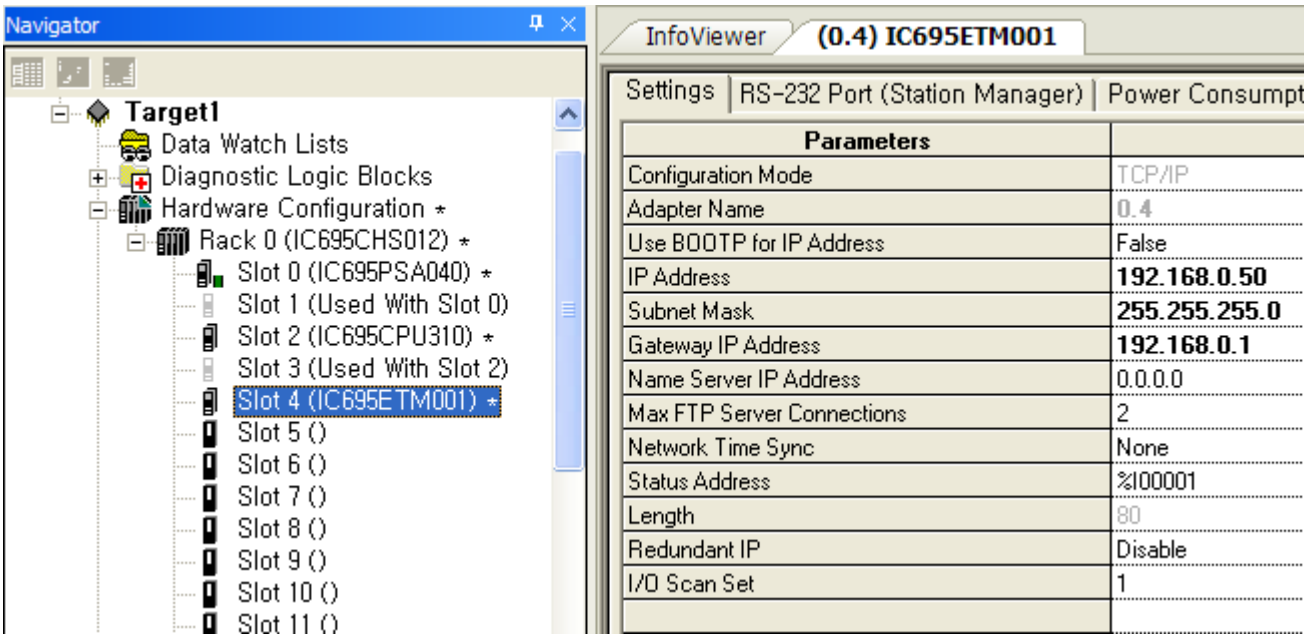
Step 1. Select [Project] – [Add Target] – [GE Fanuc Controller] – [PACSystems RX3i] in the main menu tool bar of [CIMPLICITY Machine Edition]. ➔Activate the "Target" you want to use.

Step 2. Select [Right-click the corresponding "Slot"] – [Replace Module], [Add module...] to register "**CPU unit**" and "**Ethernet Module**" you want to use in [Target] – "Hardware Configuration" – "Main Rack" – corresponding "Slot" you want to use in the project tree of the [Navigator]. ➔ Select the Ethernet Module listed in the table below according to CPU Series.

GE Fanuc Controller	Module Name
PACSystems RX3i	IC695ETM001 (Ethernet interface Module)

3. Double-click the "Slot" where the "Ethernet interface Module" is registered. ➔The setting window is displayed.

4. Register the IP information in the [Settings] tab of the setting window as follows.



Contents	Settings	Descriptions
IP Address	192.168.0.50	**IP information of the Ethernet Communication Module, Essential setting**
Subnet Mask *Note 1)	255.255.255.0	–
Gateway IP Address *Note 1)	192.168.0.1	–
Name Server IP Address *Note 1)	0.0.0.0	–

*Note 1) This is not an essential setting. Keep the default value of "0.0.0.0" when not used.

4.4 External device setting 4 (Ethernet Interface on CPU Unit of RX7i)

Set as follows through Ladder Software "CIMPLICITY Machine Edition" for communication settings. For more detailed setting method than described in this example, refer to PLC user manual. After completing the settings, download the settings to the corresponding device.

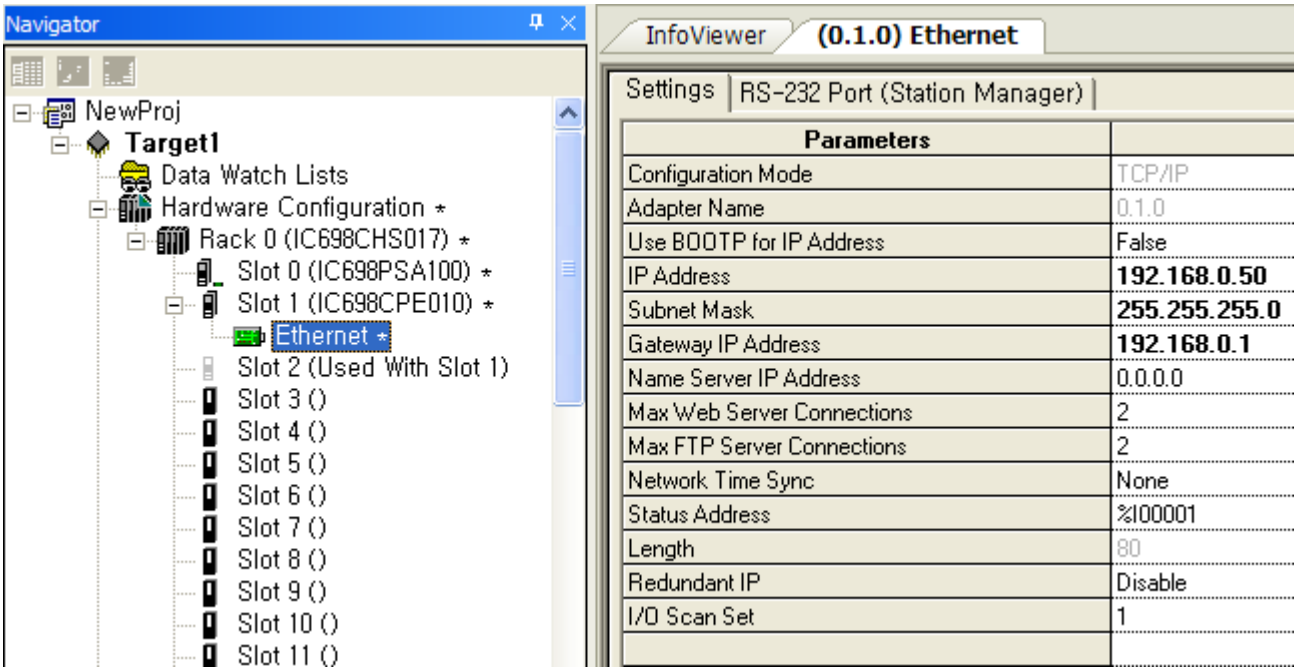
Do not use duplicate IP addresses over the same network.

Step 1. Select [Project] – [Add Target] – [GE Fanuc Controller] – [PACSystems RX7i]] in the main menu tool bar of [CIMPLICITY Machine Edition]. ➔Activate the "Target" you want to use.

Step 2. Select [Right-click the corresponding "Slot"] – [Replace Module...] to register "CPU unit" you want to use in [Target] – "Hardware Configuration" – "Main Rack" – corresponding "Slot" you want to use in the project tree of the [Navigator]. ➔ When activated, the automatically registered CPU is changed and registered as the module you want to use.

3. Double-click the Sub-node in the [Target] – "Hardware Configuration" – "Main Rack" – CPU Slot to display CPU setting window.

4. Register the IP information in the [Settings] tab of the setting window as follows.



Contents	Settings	Descriptions
IP Address	192.168.0.50	**IP information of the Ethernet Communication Module, Essential setting**
Subnet Mask *Note 1)	255.255.255.0	–
Gateway IP Address *Note 1)	192.168.0.1	–

*Note 1) This is not an essential setting. Keep the default value of "0.0.0.0" when not used.

5. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

Device	Bit Address	Word Address	Word Address NOTE	32 BIT
Input Relay	I00001 – I32768	I00001 – I32753	I00001 + 16*n *Note 1)	L/H*Note 2)
Output Relay	Q00001 – Q32768	Q00001 – Q32753	Q00001 + 16*n *Note 1)	
Internal Relay	M00001 – M32768	M00001 – M32753	M00001 + 16*n *Note 1)	
Global Relay	G0001 – G7680	G0001 – G7665	G0001 + 16*n *Note 1)	
Momentary Relay	T001 – T1024	T001 – T1009	T001 + 16*n *Note 1)	
System Function Relay	S001 – S128 SA001 – SA128 SB001 – SB128 SC001 – SC128	S001 – S113 SA001 – SA113 SB001 – SB113 SC001 – SC113	S001 + 16*n *Note 1)	
Register	R00001.0 – R32640.15	R00001 – R32640		
Analog Input	AI0001.0 – AI32640.15	AI0001 – AI32640		
Analog Output	AQ0001.0 – AQ32640.15	AQ0001 – AQ32640		

*Note 1) When using a bit address that uses decimals, use a word address in units of "16"

*Note 2) The lower 16-bit data of 32-bit data is saved in the screen-registered address, and the upper 16-bit data is saved in the address following the screen-registered address.

Ex. When saving 32BIT data hexadecimal data 12345678 in address D00100, it is saved to 16BIT device address as follows:

Items	32BIT	16BIT	
Address	D00100	D00100	D00101
Input data (hexadecimal)	12345678	5678	1234