MITSUBISHI Electric Corporation
MELSEC iQ-R Series
Ethernet Driver

Supported version TOP Design Studio V1.4.11.28 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 Page 2

Describes the devices required for connection, the setting of each device, cables, and configurable systems.

2. External device selection Page 3

Select a TOP model and an external device.

3. TOP communication setting Page 4

Describes how to set the TOP communication.

4. External device setting Page 9

Describes how to set up communication for external devices.

5. Supported addresses Page 11

Refer to this section to check the addresses which can communicate with an external device.

1. System configuration

The system configuration of TOP and "MITSUBISHI Electric Corporation - MELSEC IQ-R Ethernet" is as follows.

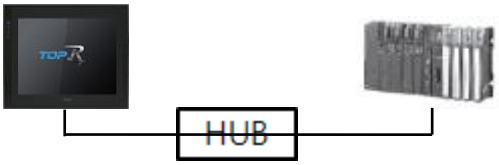
Series	CPU	Link I/F	Communication method	Communication setting	Cable
MELSEC iQ-R	R00CPU R01CPU R02CPU R04CPU R08CPU R16CPU R32CPU R120CPU R04ENCPU R08ENCPU R16ENCPU R32ENCPU R120ENCPU R08PCPU R16PCPU R32PCPU R120PCPU R08SFCPU R16SFCPU R32SFCPU R120SFCPU R08PSFCPU R16PSFCPU R32PSFCPU R120PSFCPU	Ethernet Port on CPU Unit	Ethernet (TCP/UDP)	3. TOP communication setting 4. External device setting	Twisted pair cable*Note 1)
		RJ71EN71			

*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

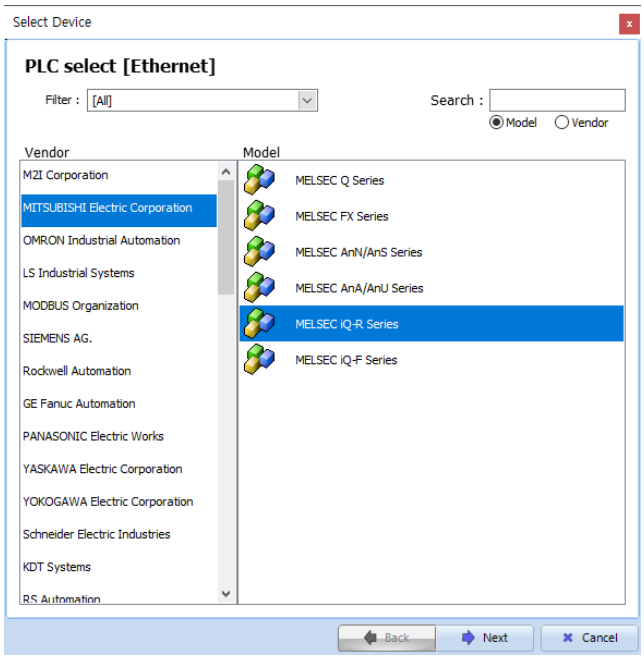
・1:1 connection

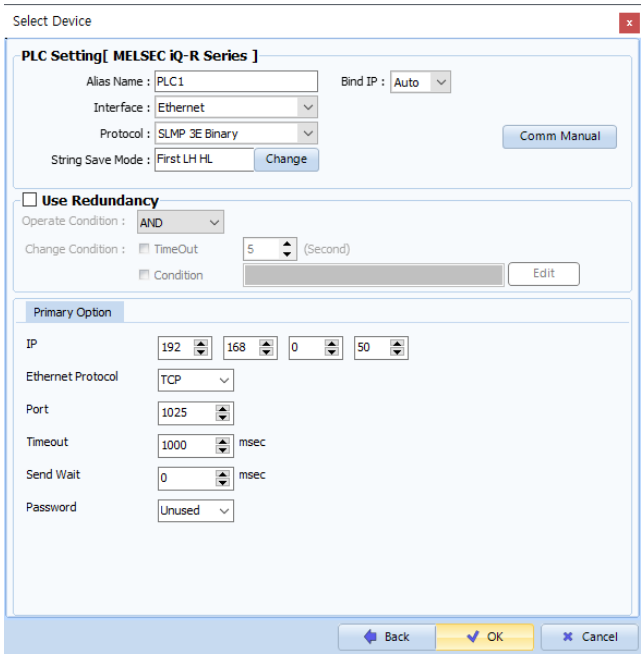


・1:N connection

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. Please select "MITSUBISHI Electric Corporation".
	PLC	Select the external device to be connected to the TOP.

Model	Interface	Protocol
MELSEC IQ-R Series	Ethernet	Set Users

Supported Protocol		
SLMP 3E Binary	SLMP 3E Ascii	MELSOFT Connection

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

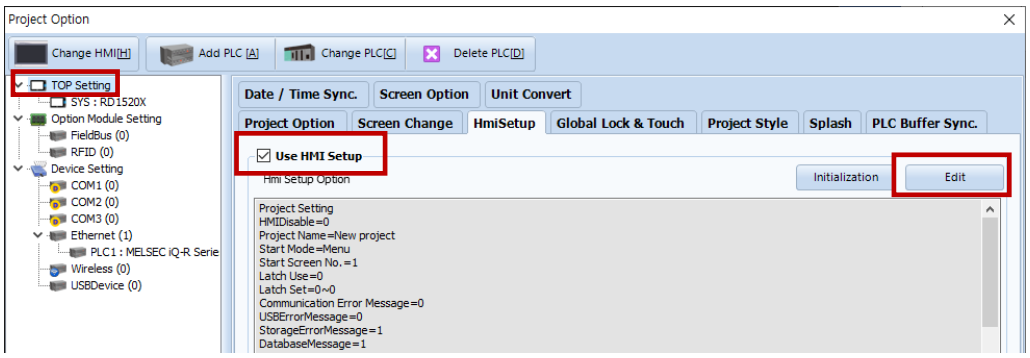
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

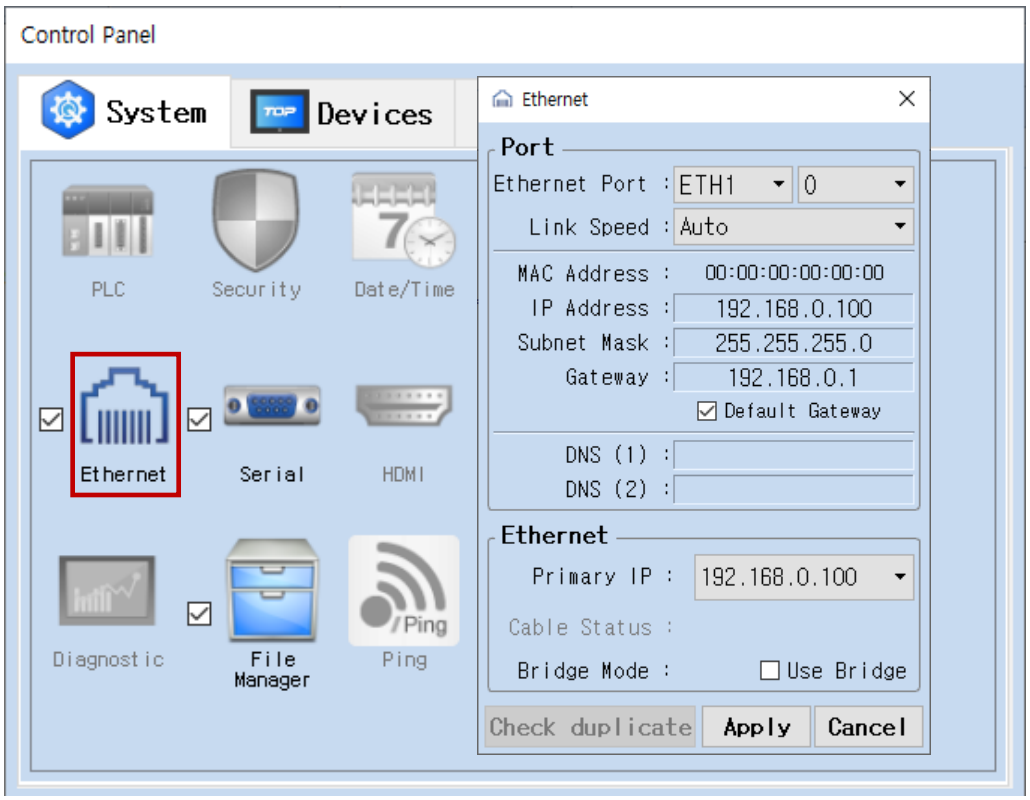
3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project] → [Property] → [TOP Setting] → [HMI Setup] → [Use HMI Setup Check] → [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.

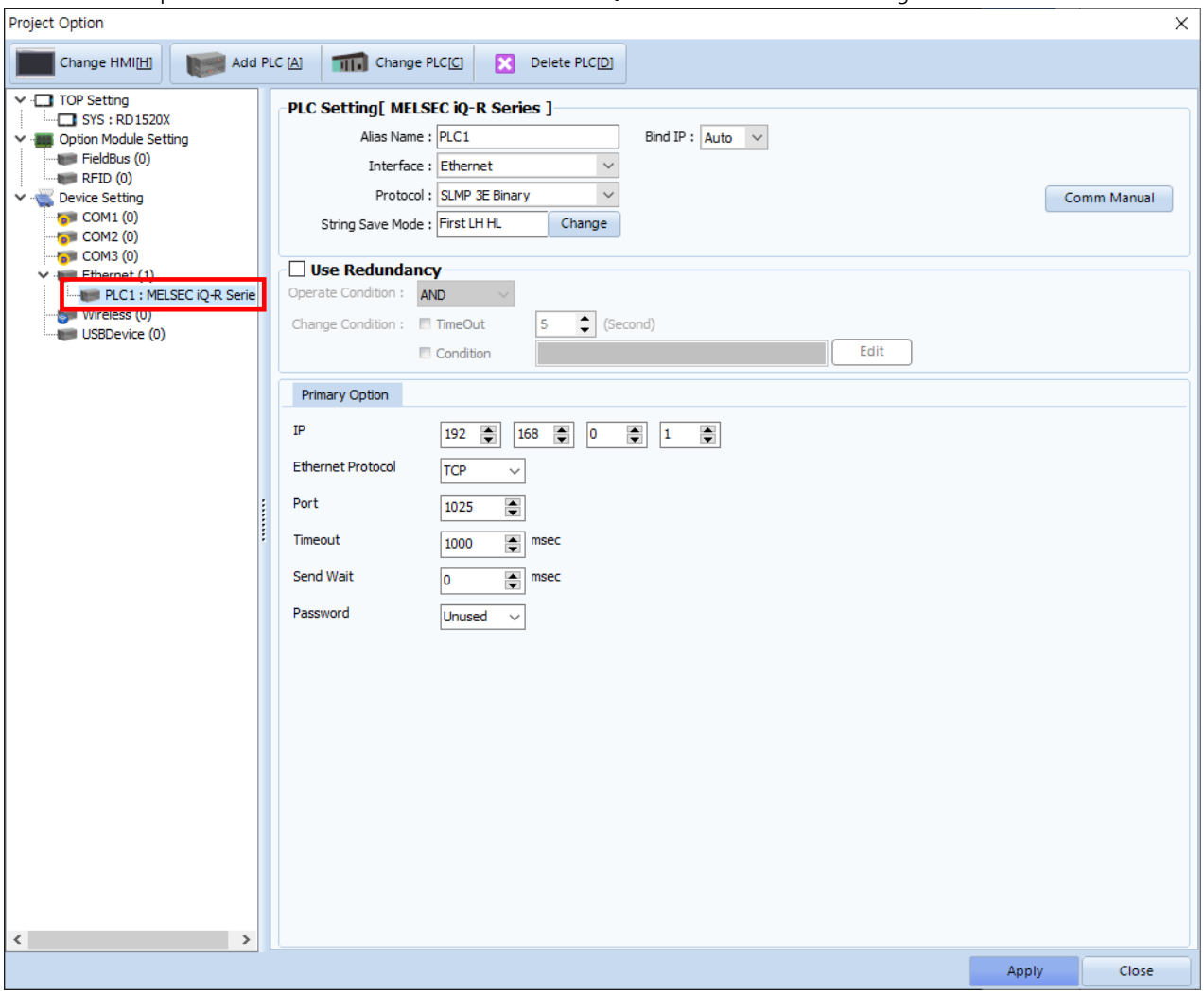
* The above settings are examples recommended by the company.

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 setting > ETHERNET > "PLC1 : MELSEC-IQ-R Series"]

– Set the options of the communication driver of MELSEC IQ-R Series Ethernet in TOP Design Studio.



Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select a communication protocol between TOP and the external device.	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select an Ethernet protocol between TOP and the external device.	
Port	Enter the Ethernet communication port number of an external device.	**Reference the table below**
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.	
Password	Enter the password set in the external device.	*Note 1)

*Note 1) It can be set only in SLMP 3E Protocol.

MELSOFT Connection communication port number

Protocol	Port number	Remarks
TCP	5007	Fixed
UDP	5006	Fixed

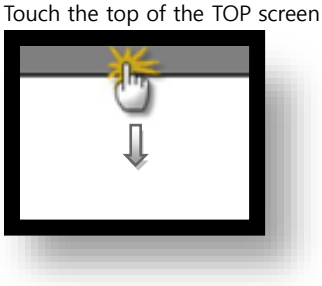
SLMP 3E Binary, Ascii communication port number

Protocol	Port number	Remarks
TCP / UDP	1025 ~ 65535	

3.2. Communication setting in TOP

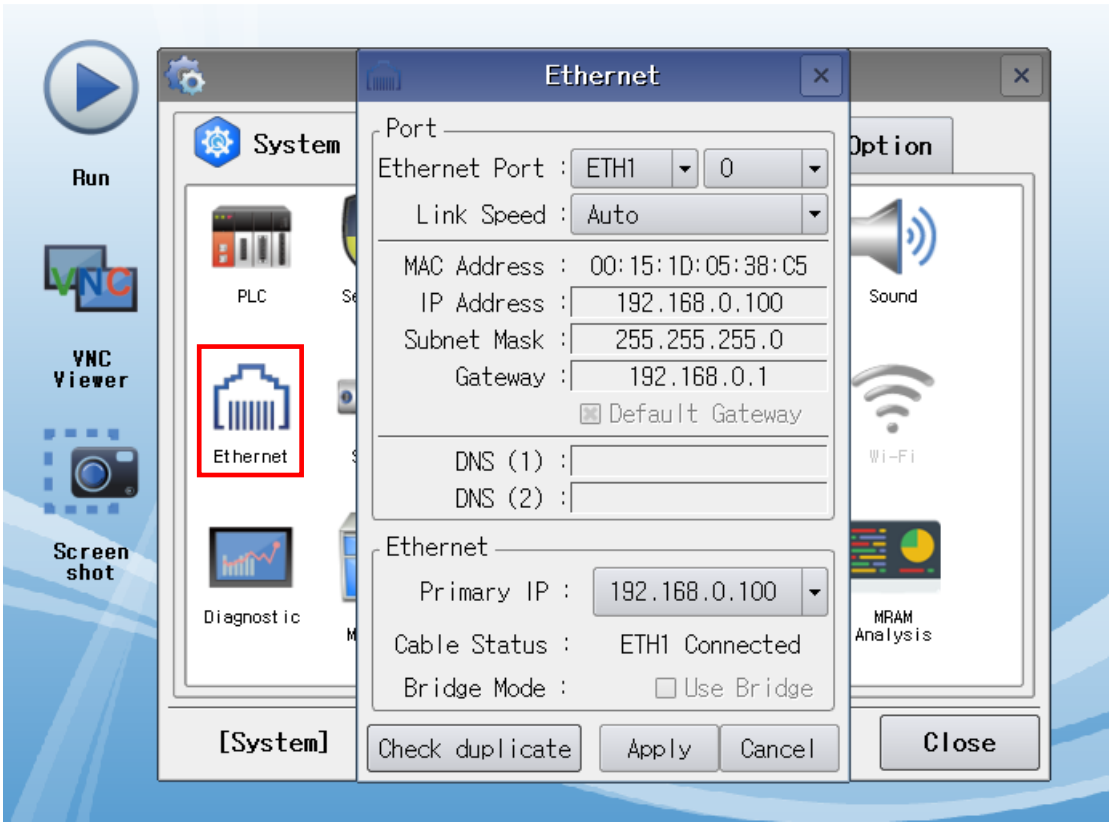
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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

■ [Control Panel] → [Ethernet]



Items	TOP	External device	Remarks
IP Address*Note 1) Note 2)	192.168.0.100	192.168.0.50	*Note *Note 2)
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.

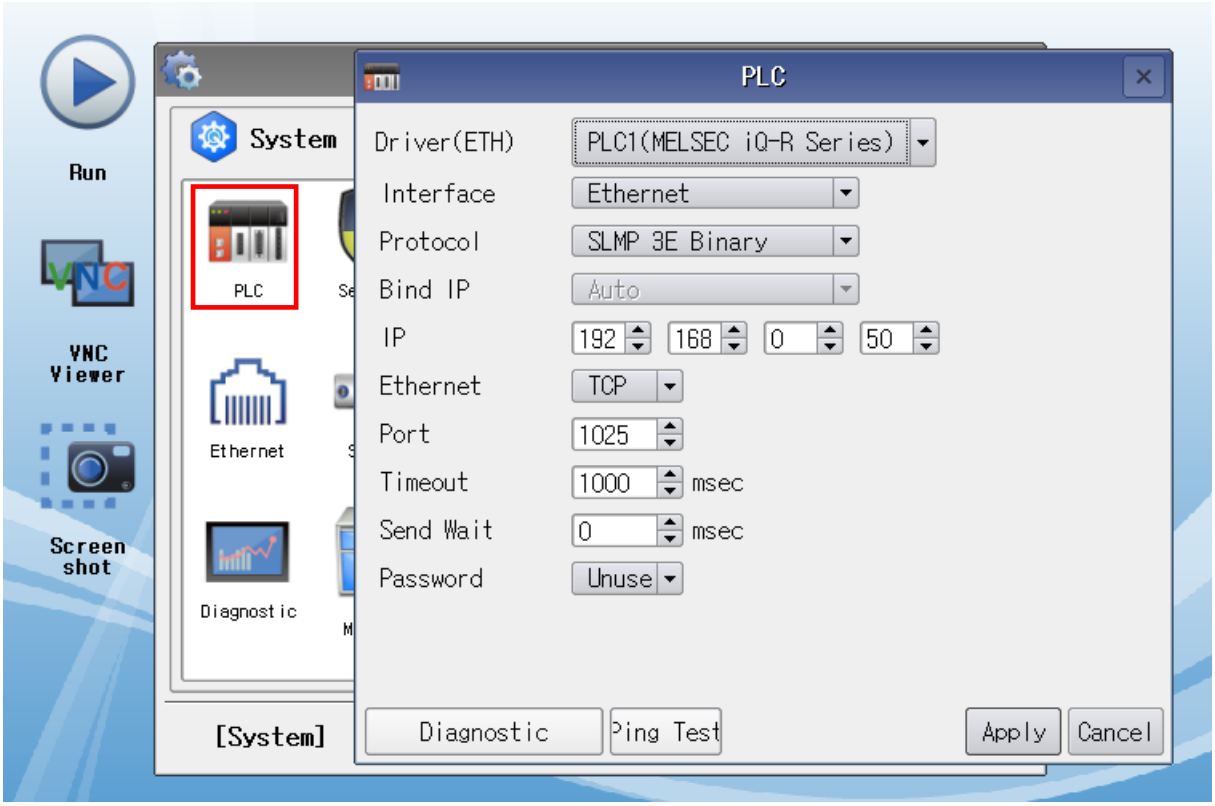
*Note 2) Do not use duplicate IP addresses over the same network.

* 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

■ [Control Panel] → [PLC]



Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select a communication protocol between TOP and the external device.	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select an Ethernet protocol between TOP and the external device.	
Port	Enter the Ethernet communication port number of an external device.	**Reference the table below**
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.	
Password	Enter the password set in the external device.	*Note 1)

*Note 1) It can be set only in SLMP 3E Protocol.

MELSOFT Connection communication port number

Protocol	Port number	Remarks
TCP	5007	Fixed
UDP	5006	Fixed

SLMP 3E Binary, Ascii communication port number

Protocol	Port number	Remarks
TCP / UDP	1025 ~ 65535	

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 port setting is correct 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

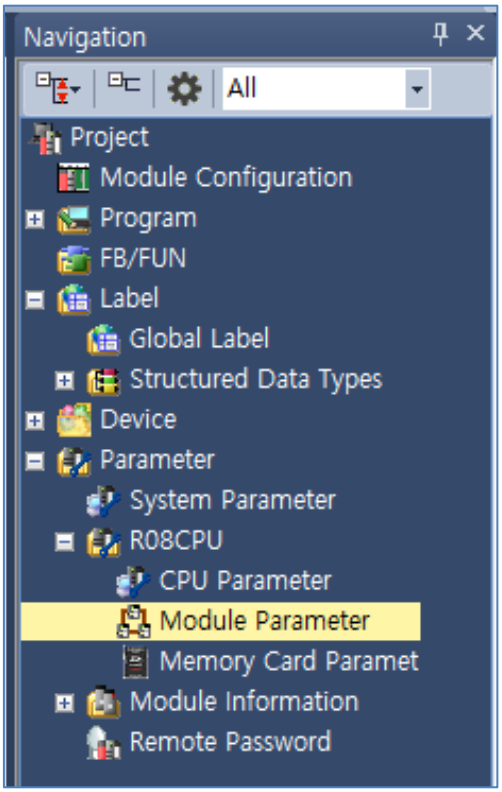
4.1 GX Works3 Connection Settings

Set as below using MELSEC Series Ladder Software "**GX Works3**". For more detailed setting method than that described in this example, refer to the PLC user manual.

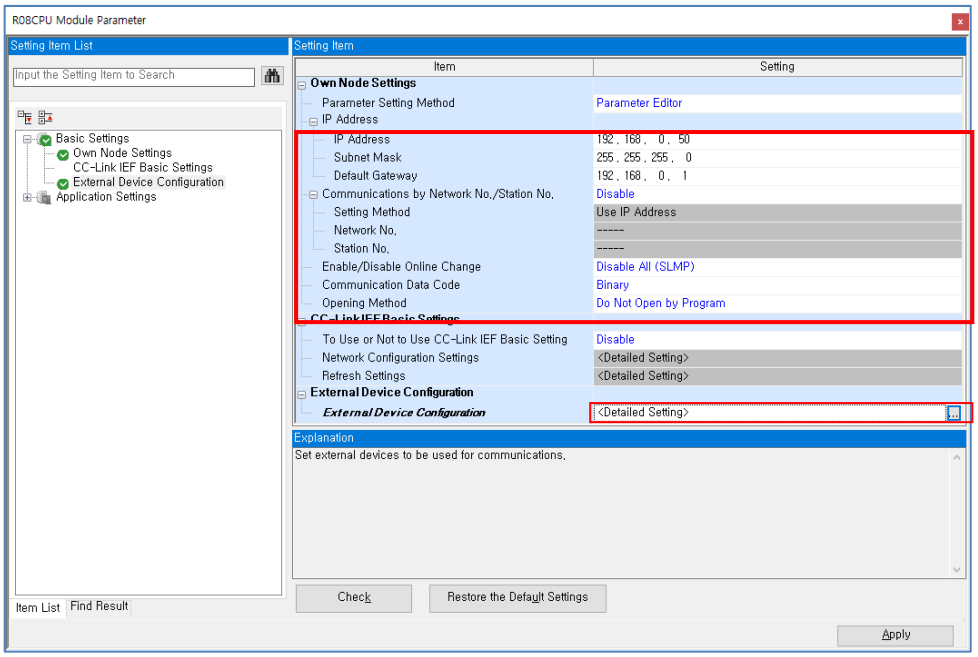
- The network addresses of the TOP and the external device (the first three digits of the IP, 192 . 168 . 0 . 0) should match.
- Do not use duplicate IP addresses over the same network.

4.1.1 Ethernet Port on CPU Unit

Step 1. In [GX Works3] software project window [Parameter] – [relevant CPU model name] double-click and bring up [Module parameter] pop-up window



Step 2. In [Module parameter], select [Basic Settings] tab and set as follows:



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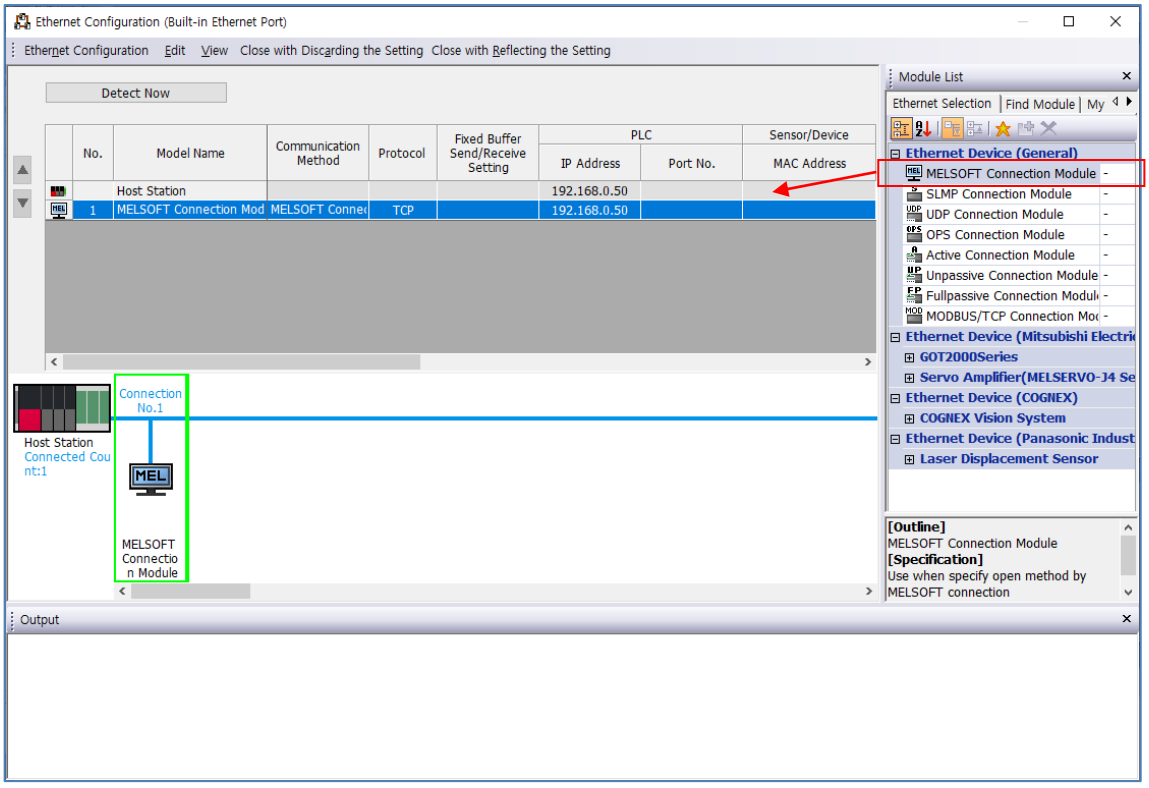
Items		Settings
IP address	IP	MELSEC-iQ-R CPU Ethernet Port Assignment IP
	Subnet mask pattern	Set when using subnet mask
	Default router IP	Set when using router
Enable/Disable Online Change		When using SLMP 3E Protocol, Enable All (SLMP) When using MELSOFT Connection, Disable All (SLMP)
Communication data code		When using SLMP 3E Binaray, Binaray When using SLMP 3E Ascii, Ascii When using MELSOFT Connection, Binaray

Step 3. Click [External Device Configuration] > [Detailed Setting].

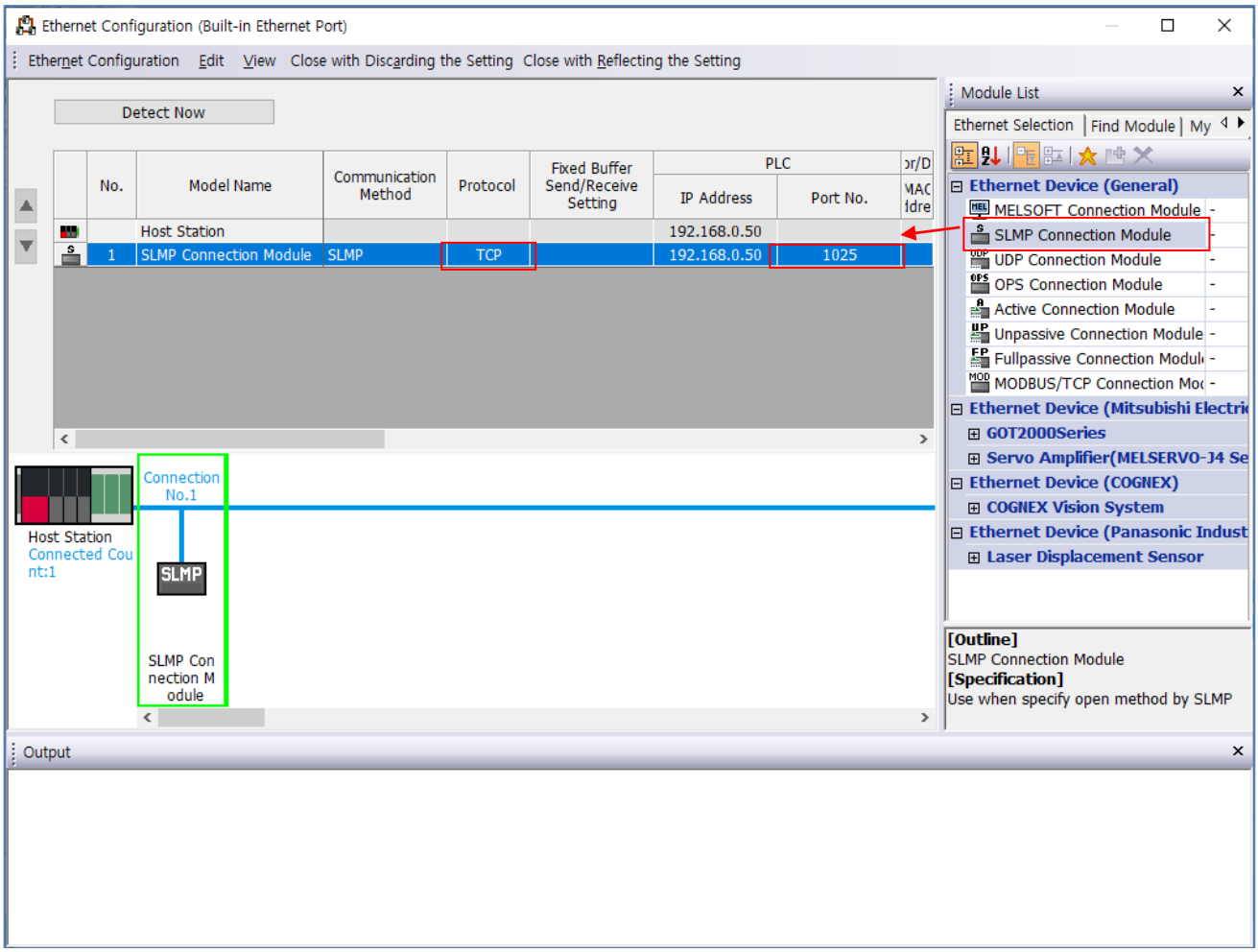
When using MELSOFT Connection

Select Ethernet Device (General) -> MELSOFT Connection Module on the right, and drag and add to the right.



When using SLMP 3E Protocol

Select Ethernet Device (General) -> SLMP Connection Module on the right, and drag and add to the right.

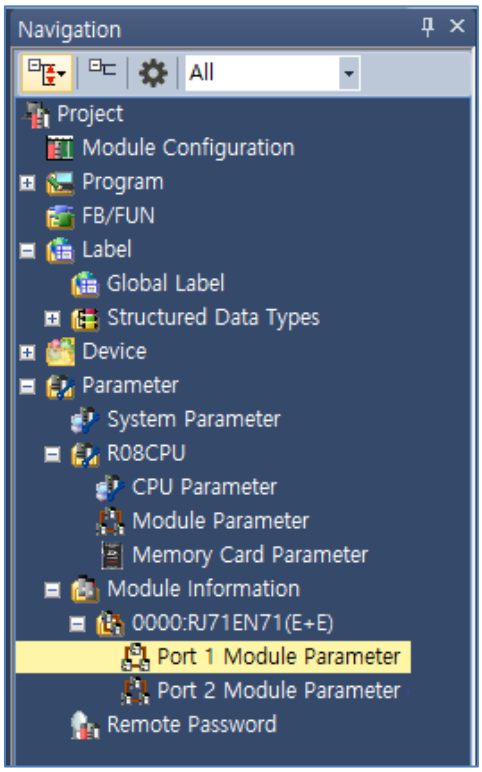


Items	Description
Protocol	TCP or UDP
PLC Port No	1025 ~ 65535

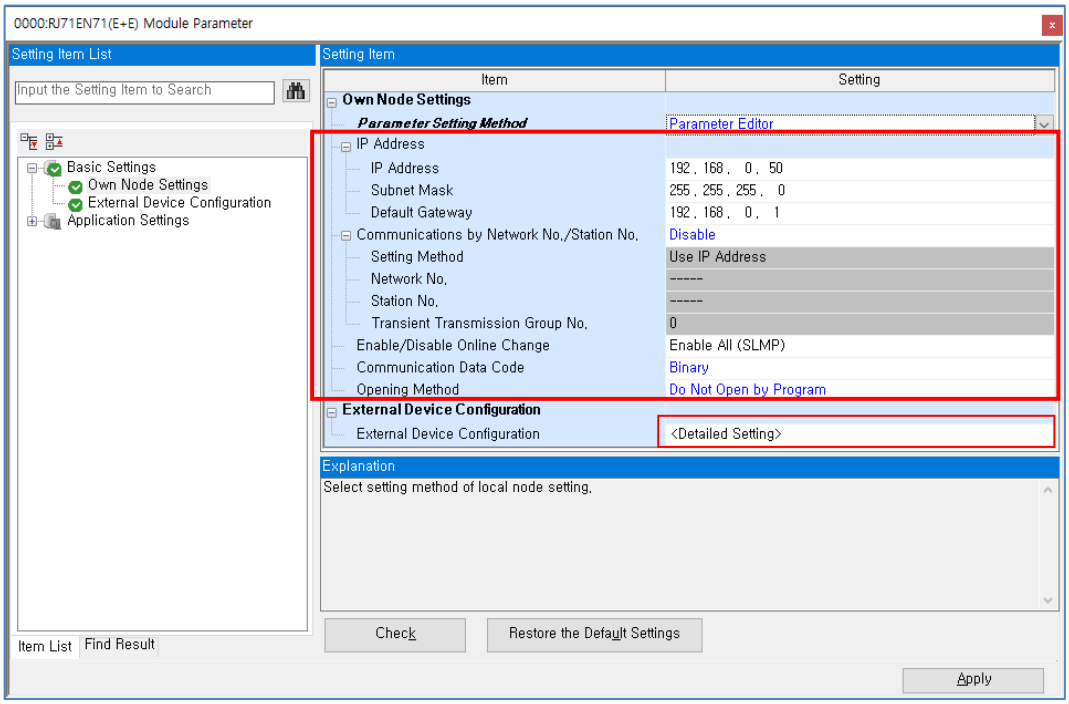
Step 4 Download the [Online] → [Write to PLC] execution program and reset.

4.1.2 Ethernet Link Uint (RJ71EN71)

Step 1. Pop-up the [Module Information] – [Module parameter] window in the [GX Works3] software's project window.



Step 2. In [Module parameter], select [Basic Settings] tab and set as follows:



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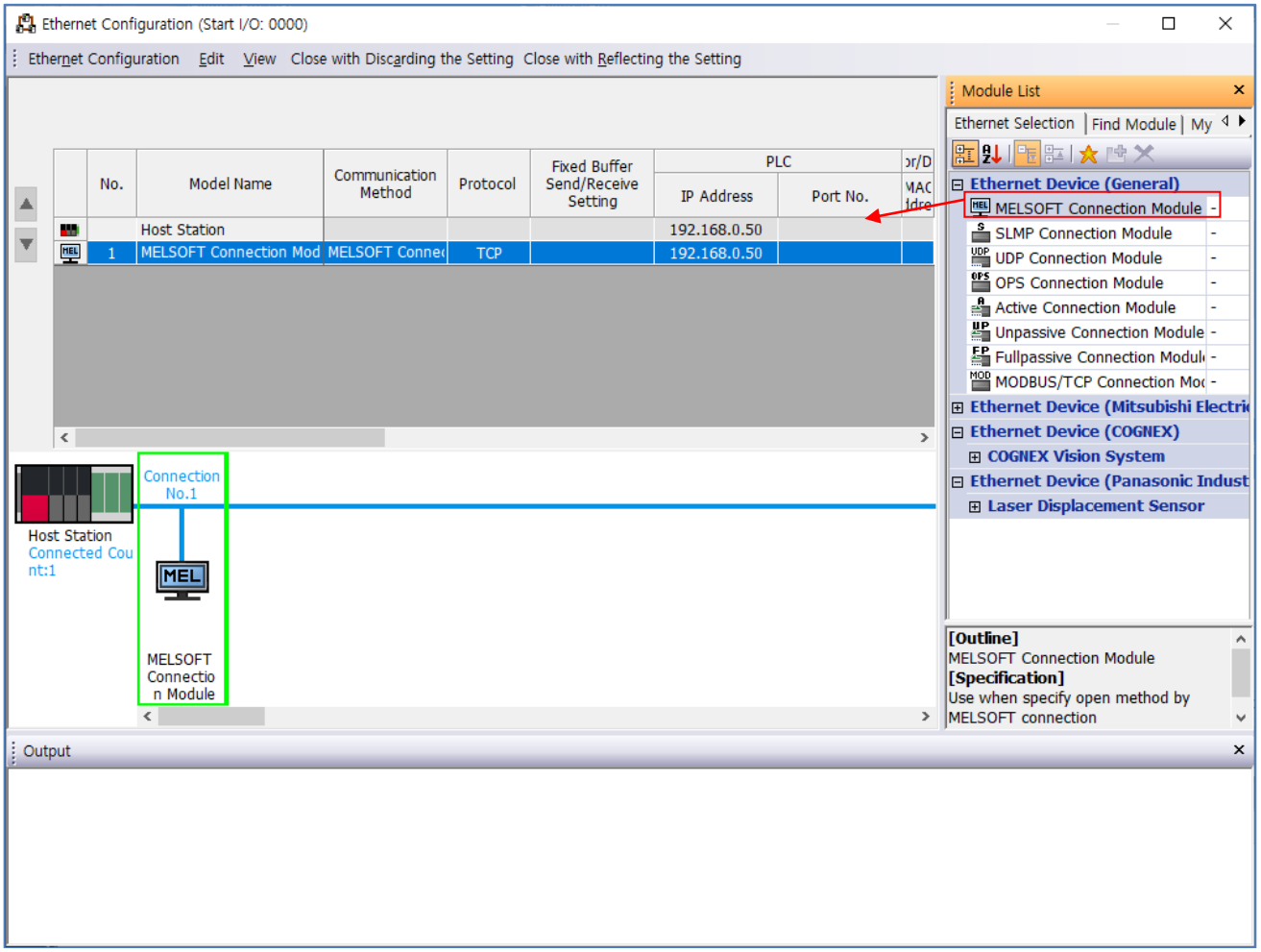
Items		Settings
IP address	IP	MELSEC-iQ-R CPU Ethernet Port Assignment IP
	Subnet mask pattern	Set when using subnet mask
	Default router IP	Set when using router
Enable/Disable Online Change		When using SLMP 3E Protocol, Enable All (SLMP) When using MELSOFT Connection, Disable All (SLMP)
Communication data code		When using SLMP 3E Binaray, Binaray When using SLMP 3E Ascii, Ascii When using MELSOFT Connection, Binaray

Step 3. Click [External Device Configuration] > [Detailed Setting].

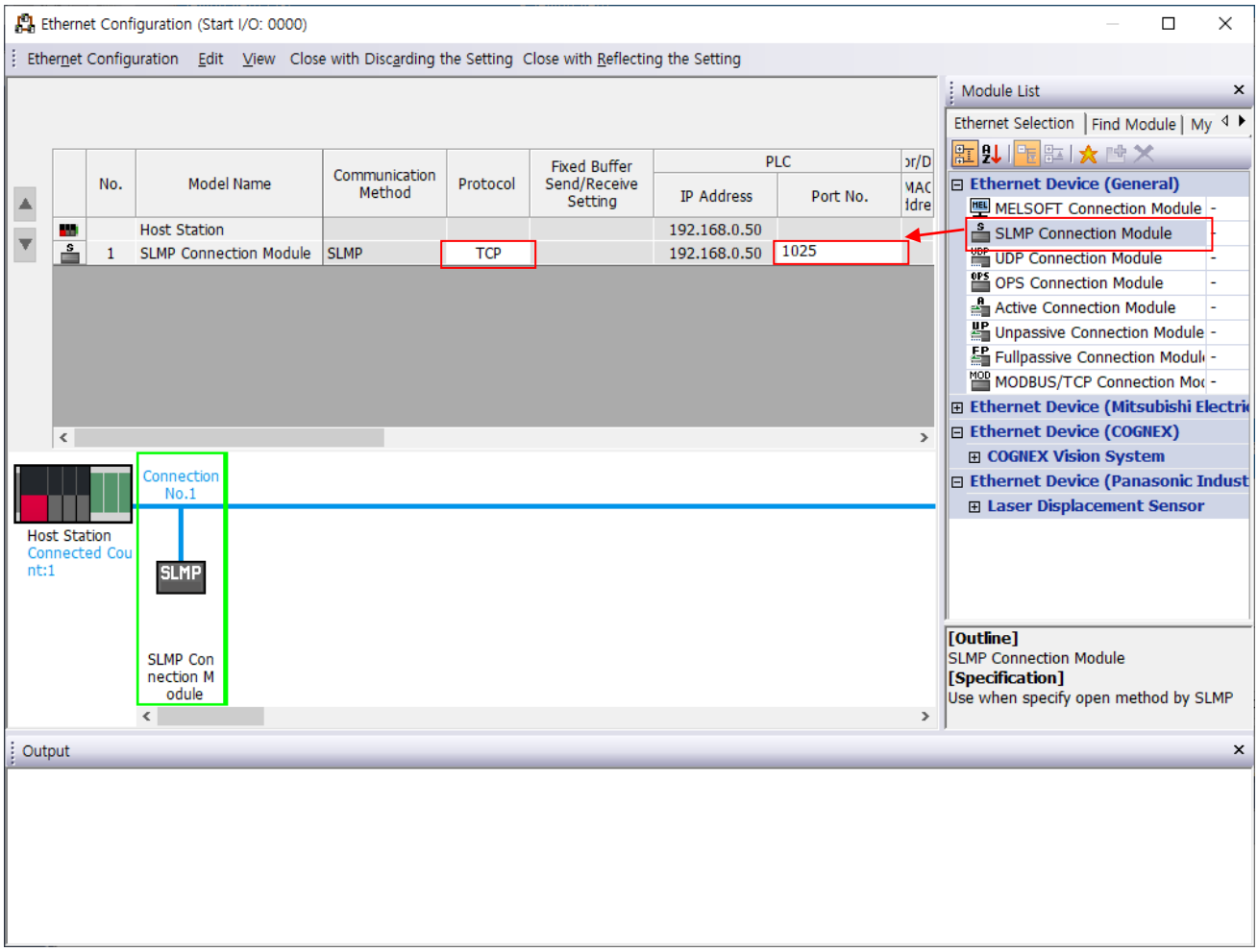
When using MELSOFT Connection

Select Ethernet Device (General) -> MELSOFT Connection Module on the right, and drag and add to the right.



When using SLMP 3E Protocol

Select Ethernet Device (General) -> SLMP Connection Module on the right, and drag and add to the right.

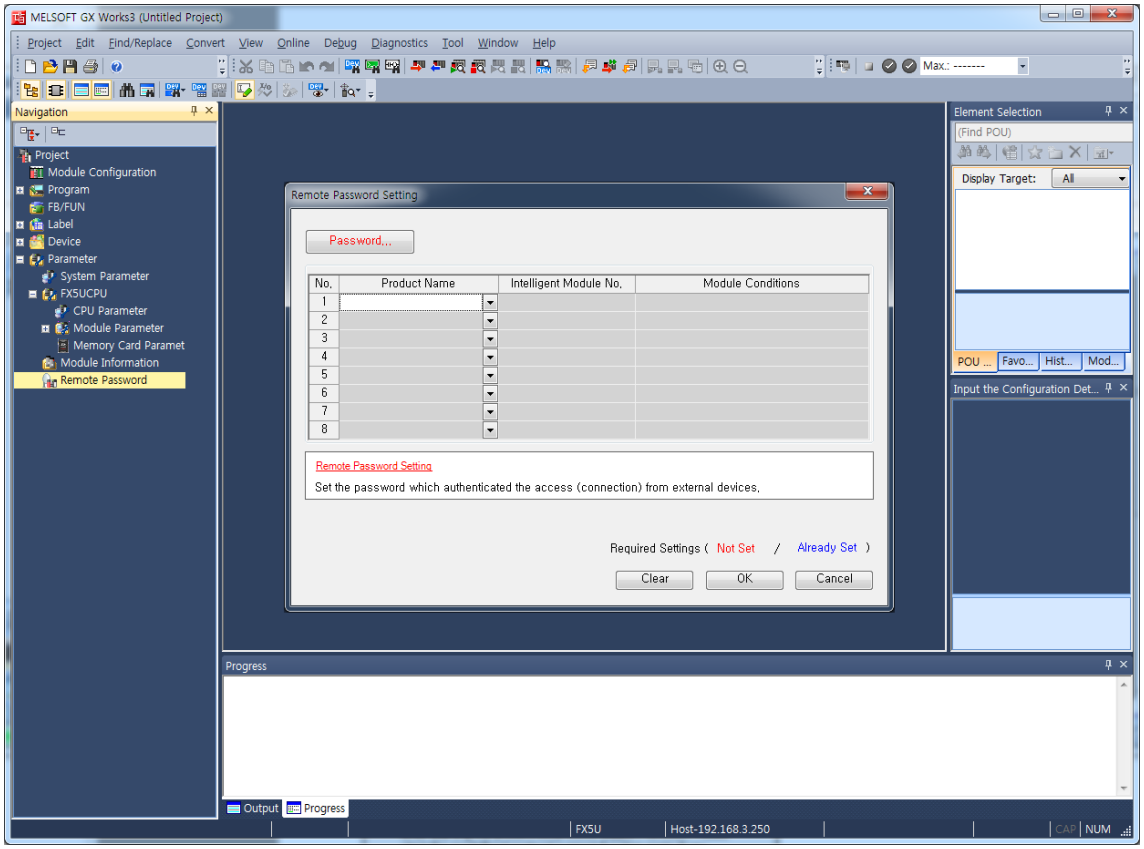


Items	Description
Protocol	TCP or UDP
PLC Port No	1025 ~ 65535

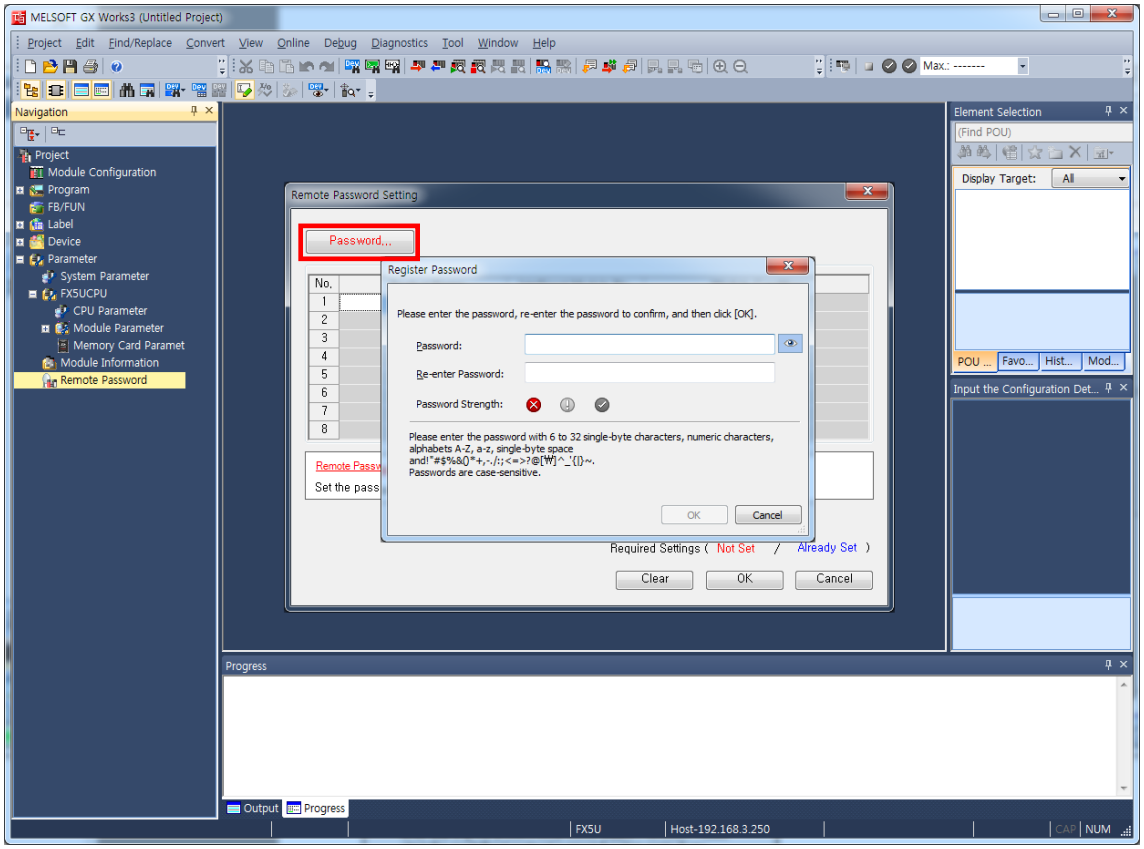
Step 4 Download the [Online] → [Write to PLC] execution program and reset.

※ Remote Password (Optional) Only available for SLMP 3E Procotol

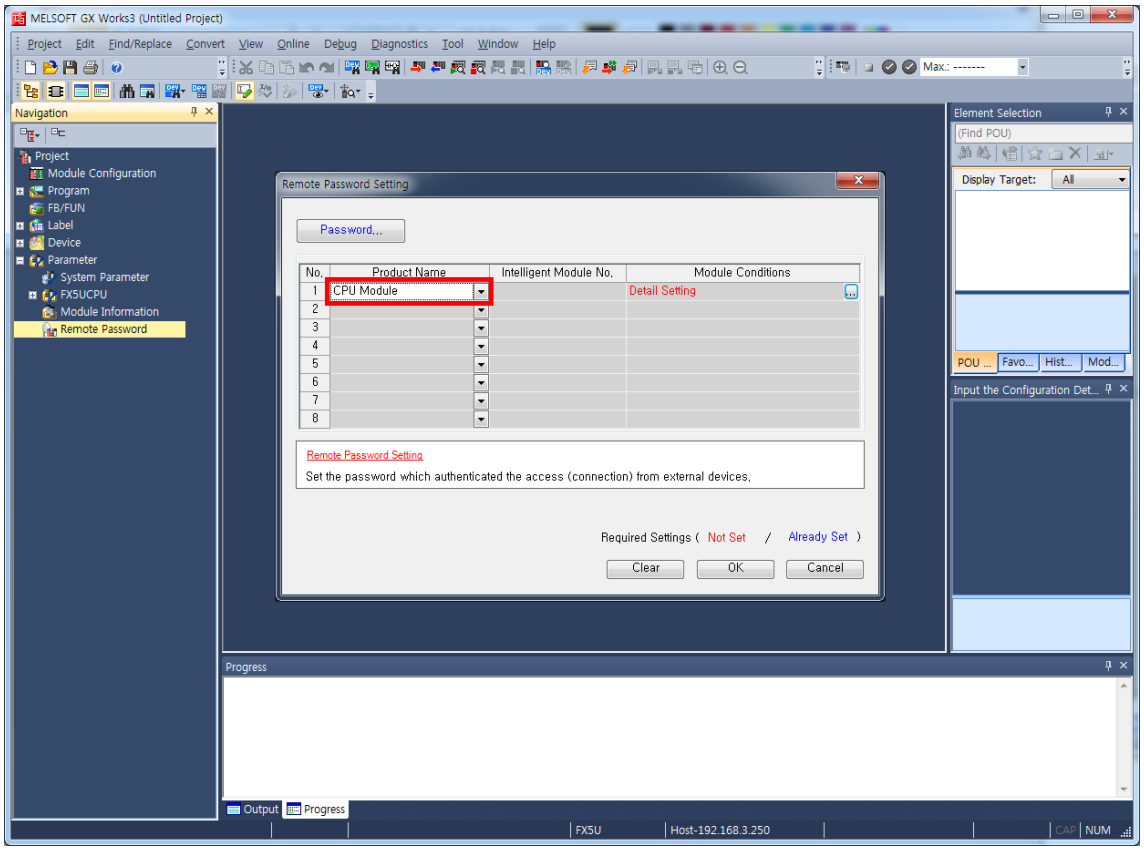
① Navigation window → [Parameter] → [Remote Password]



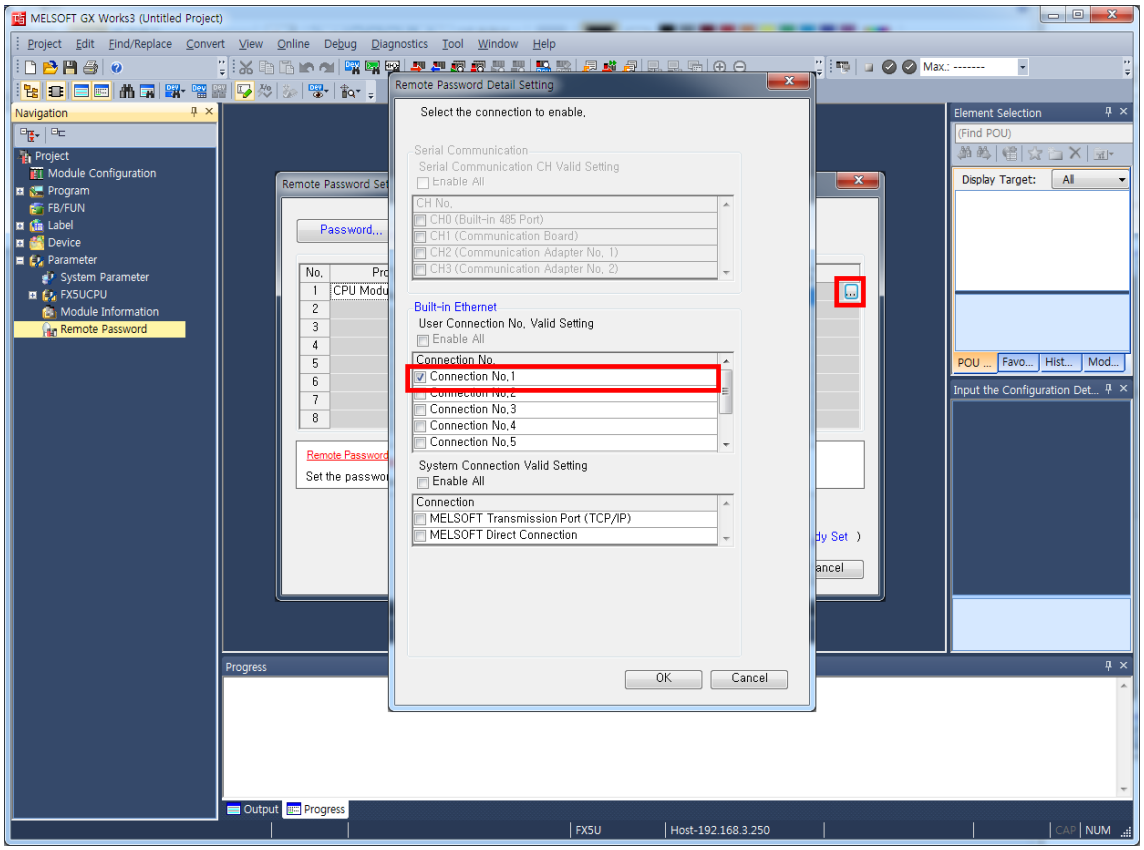
② Set the password.



③ Select a module to apply the password to.



④ Select a connection to apply the password to in the Remote Password Detail Setting window.



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	Remarks
Input Relay		X0000 ~ X3FFF(HEX)	X0000 ~ X3FF0(HEX)	
Output Relay		Y0000 ~ Y3FFF(HEX)	Y0000 ~ Y3FF0(HEX)	
Internal Relay		M0 ~ M99999999	M0 ~ M99999984	
Link Relay		B0 ~ B9A61FFF(HEX)	B0 ~ B9A61FF0(HEX)	
Special Link Relay		SB0 ~ SB9A61FFF(HEX)	SB0 ~ SB9A61FF0(HEX)	
Annunciator		F0 ~ F32767	F0 ~ F32752	
Edge Relay		V0 ~ V32767	V0 ~ V32752	
Timer	Contact	TS0 ~ TS 8993439		
	Coil	TC0 ~ TC 8993439		
	Current		TN ~ TN 8993439	
Aggregate Timer	Contact	SS0 ~ SS 8993439		
	Coil	SC0 ~ SC 8993439		
	Current		SN ~ SN 8993439	
Counter	Contact	CS0 ~ CS 8993439		
	Coil	CC0 ~ CC 8993439		
	Current		CN0 ~ CN8993439	
Long Timer	Contact	LTS0 ~ LTS 2529407		*Note *Note 2)
	Coil	LTC0 ~ LTC 2529407		*Note *Note 2)
	Current		LTN ~ LTN 2529407	*Note 2)
Long Aggregate Timer	Contact	LSS0 ~ LSS 2529407		*Note *Note 2)
	Coil	LSC0 ~ LSC 2529407		*Note *Note 2)
	Current		LSN ~ LSN 2529407	*Note 2)
Long Counter	Contact	LCS0 ~ LCS 4761215		*Note 2)
	Coil	LCC0 ~ LCC 4761215		*Note 2)
	Current		LCN0 ~ LCN 4761215	*Note 2)
Data Register		D0.00 ~ D10117631.15	D0 ~ D10117631	
Link Register		W0.00 ~ W9A61FF.15(HEX)	W0 ~ W9A61FF(HEX)	
Link Special Register		SW0.00 ~ SW9A61FF.15(HEX)	SW0 ~ SW9A61FF(HEX)	
Latch Relay		L0 ~ L32767	L0 ~ L32752	
Special Relay		SM0 ~ SM4095	SM0 ~ SM4080	
Special Data Register		SD0.00 ~ SD4095.15	SD0 ~ SD4095	
Index Register		Z0.00 ~ Z23.15	Z0 ~ Z23	*Note 2)
Long Index Register		LZ0.00 ~ LZ11.31	LZ0 ~ LZ11	*Note 2)
File Register		R0.00 ~ R32767.15	R0 ~ R32767	*Note 2)
Extension File Register		ZR0.00 ~ ZR10027007.15	ZR0 ~ ZR10027007	*Note 2)
Link Direct Input		JX 001-0000 ~ JX 255-3FFF(HEX)	JX 001-0000 ~ JX 255-3FF0(HEX)	*Note 2)
Link Direct Output		JY 001-0000 ~ JY 255-3FFF(HEX)	JY 001-0000 ~ JY 255-3FF0(HEX)	*Note 2)
Link Direct Relay		JB 001-0000 ~ JB 255-7FFF(HEX)	JB 001-0000 ~ JB 255-7FF0(HEX)	*Note 2)
Link Direct Special Relay		JSB 001-0000 ~ JSB 255-1FF(HEX)	JSB 001-0000 ~ JSB 255-1F0(HEX)	*Note 2)
Link Direct Register		JW 001-0000.00 ~ JW 255-1FFFF.15(HEX)	JW 001-0000 ~ JW 255-1FFFF(HEX)	*Note 2)
Link Direct Special Register		JSW 001-0000.00 ~ JSW 255-1FF.15(HEX)	JSW 001-0000 ~ JW 255-1FFFF(HEX)	*Note 2)
Module Access Device		UG 000-00000000.00 ~ UG 255-99999999.15	UG 000-00000000 ~ UG 255-99999999	*Note 2)
CPU Buffer Memory Access Device		U3E0G 00000000.00 ~ U3E3G 99999999.15	U3E0G 00000000 ~ U3E3G 99999999	*Note 2)
CPU Buffer Memory Fixed Scanned Communications Area		U3E0HG 00000.00 ~ U3E3HG 12287.15	U3E0HG 00000 ~ U3E3HG 12287	*Note 2)

*Note 1) For SLMP 3E Protocol, only Read is possible.

*Note 2) It is a device that can be available only when it is set separately in the GX Works3 program. Refer to the PLC manual.