RS Automation

X8 Series

X8_Xnet Ethernet

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".
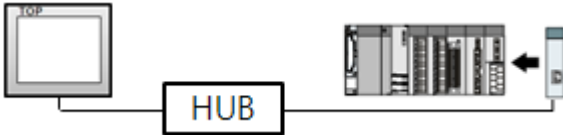
1. System configuration

The system configuration of TOP and "RS Automation – X8 Series" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
X8	X8-M32DDT X8-M14DDT X8-M16DDR	CPU Port	Ethernet (TCP)	3.1 Settings example 1 (Page 4)	Twisted pair Cable*Note 1)

■ Connectable configuration

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

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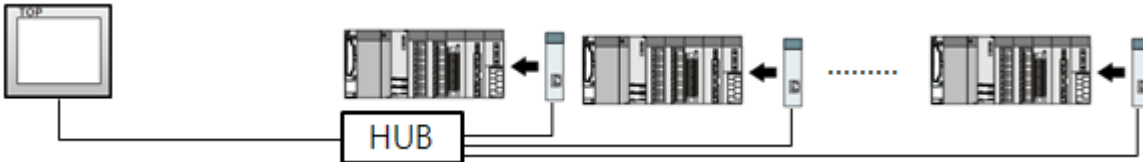
・N:1 connection (multiple TOPs and one external device) connection

2. External device selection

■ Select a TOP model and a port, and then select an external device.
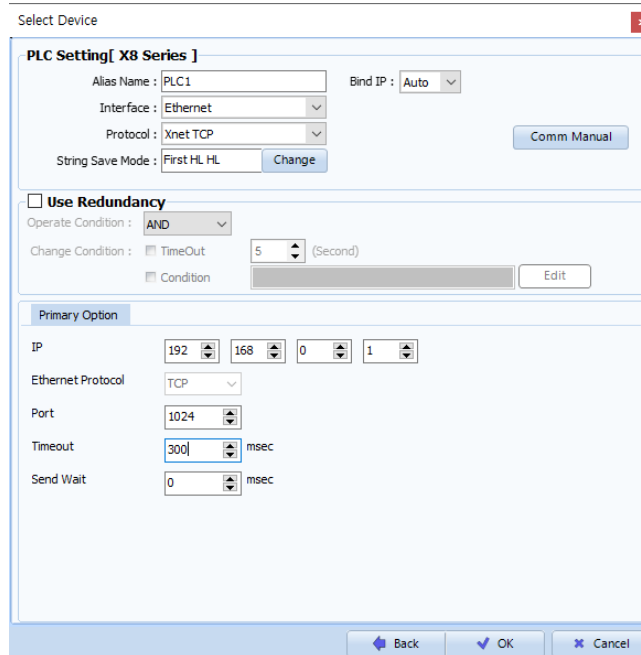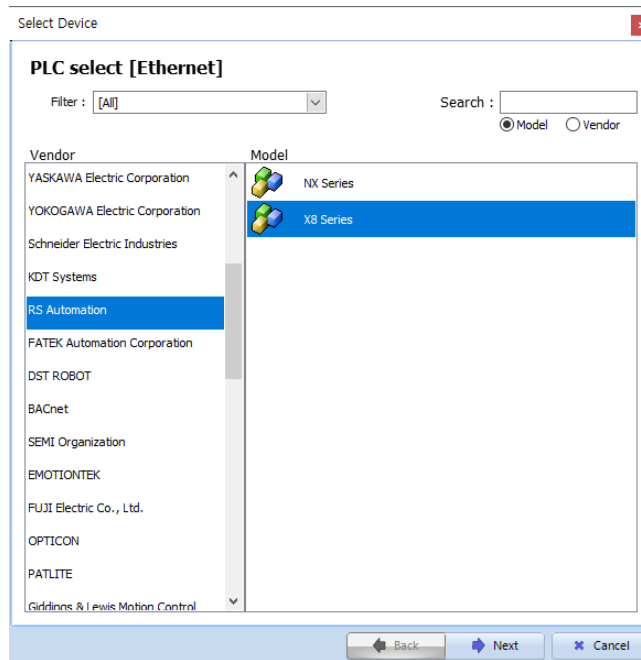
Settings		Contents
TOP	Model	Check the TOP display and process to select the touch model.
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "RS Autoamtion".
	PLC	Select the external device to be connected to the TOP. Select "X8 Xnet". Please check the system 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.
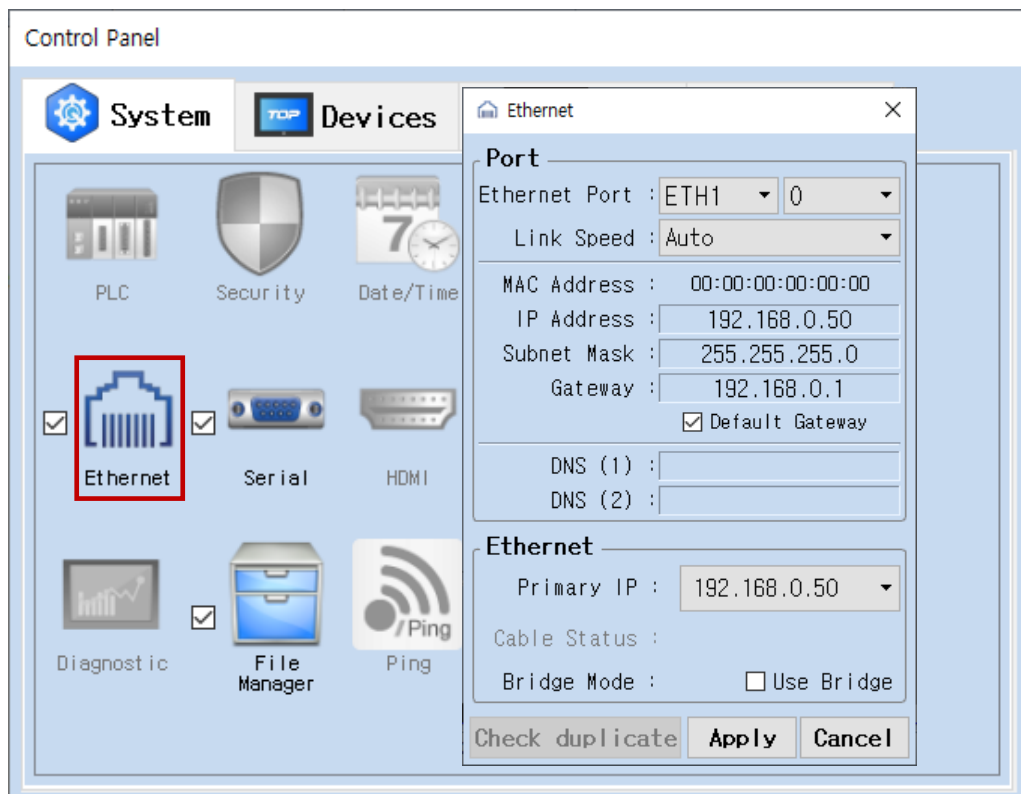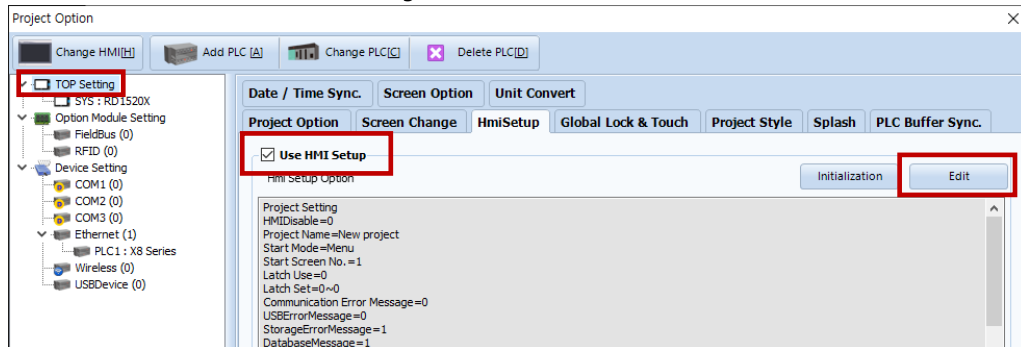
Items	TOP	External device	Remarks
IP Address*Note 1) Note 2)	192.168.0.50	192.168.0.51	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

*Note 1) The network address of TOP and the external device (the first three digits of the IP 192 . 168 . 0 . 0) must be the same.

*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 : RS Automation X8 Series]

– Set the options of the communication driver of Control/Compact Logix Series Ethernet in TOP Design Studio.

* The above settings are examples recommended by the company.

Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select "EtherNet/IP".	
IP	Enter the IP address of the external device.	
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.	
Port	Enter "1024", the Ethernet communication port number of the external device.	Fixed

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]
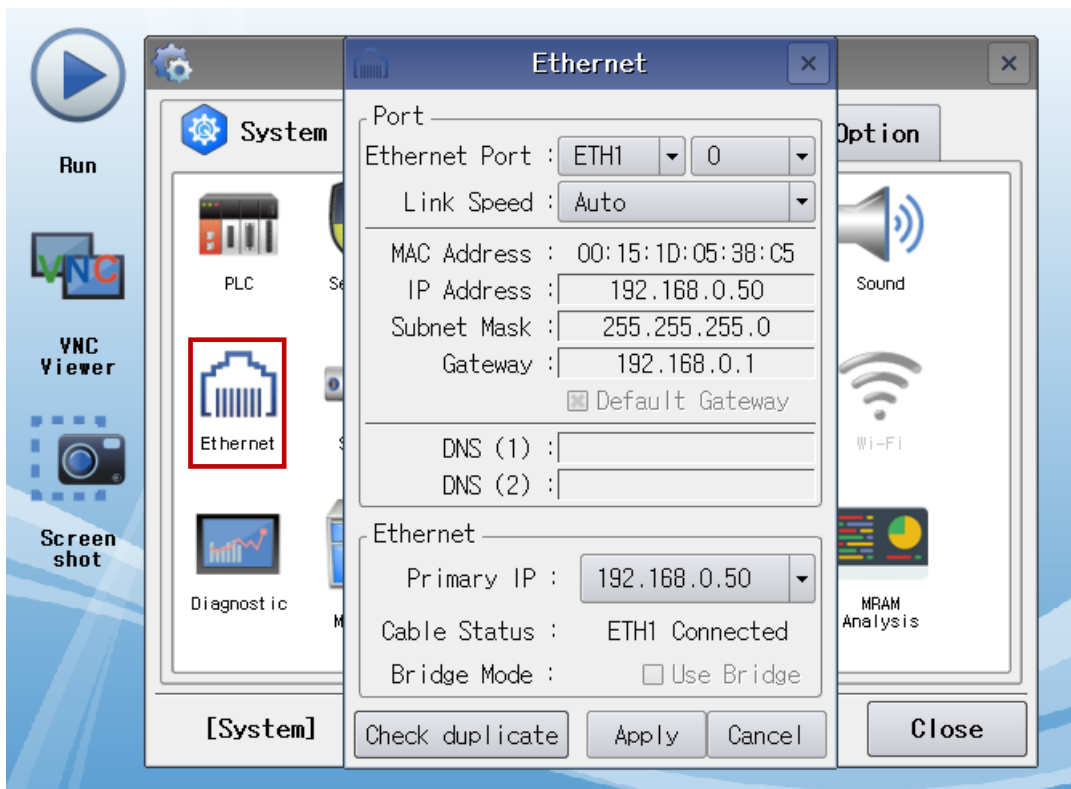
Items	TOP	External device	Remarks
IP Address*Note 1) Note 2)	192.168.0.50	192.168.0.51	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

*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.

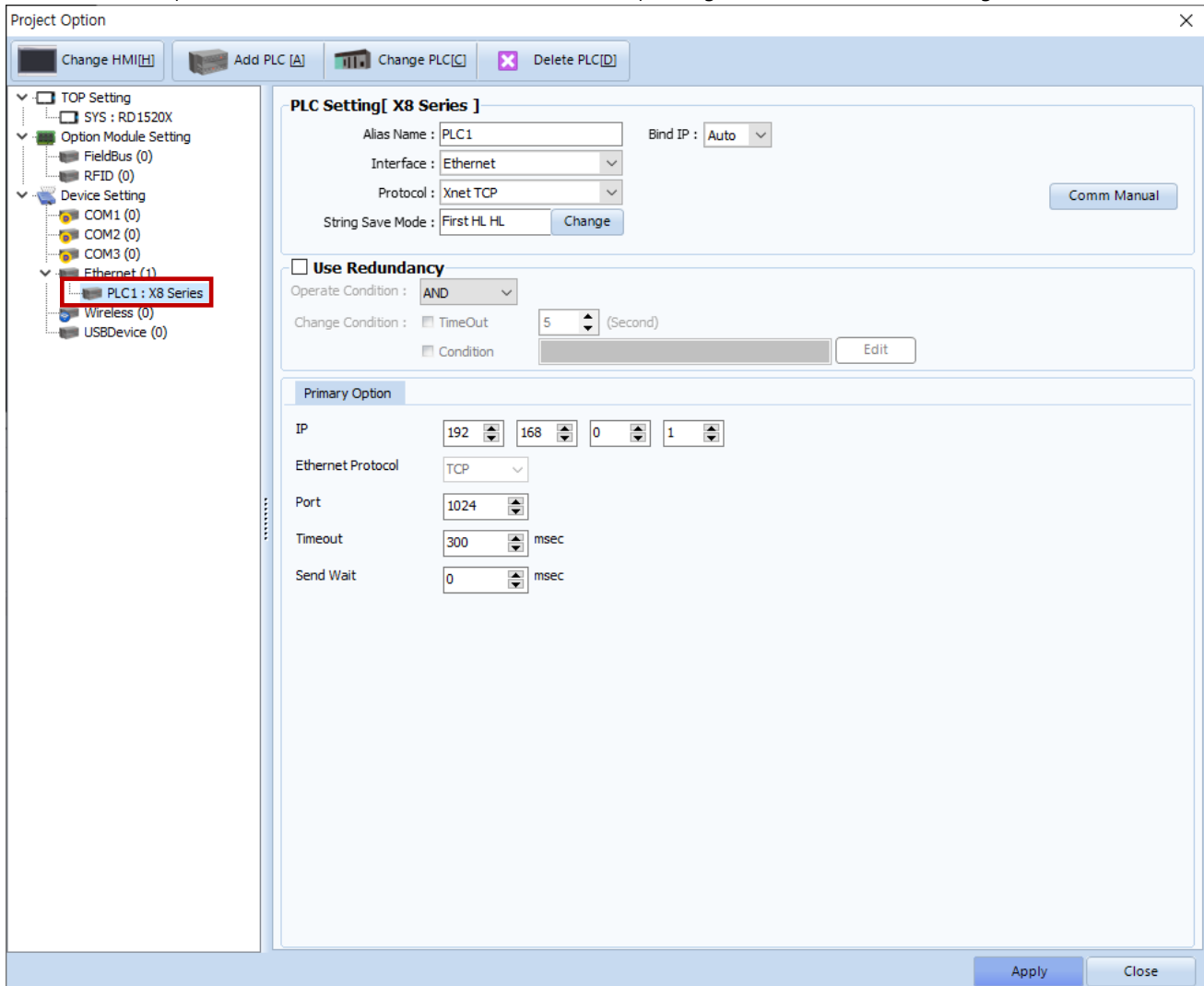*Note 2) Do not use duplicate IP addresses over the same network.

   * 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]

* The above settings are examples recommended by the company.

| Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select "EtherNet/IP".	
IP	Enter the IP address of the external device.	
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.	
Port	Enter "1024", the Ethernet communication port number of the external device.	Fixed

3.3 Communication diagnostics

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

- Touch the top of the TOP screen and <u>drag</u> 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

Set as below using "X8 Series Ladder Software XGPC".

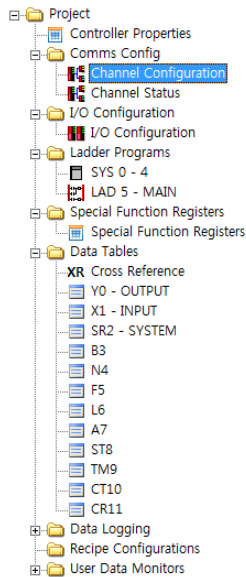Reboot the external device after downloading the configuration

For a more detailed setting method than described in this example, refer to the user manual of the external device.

⚠ Check the node address and line control method.

Step 1. Upload the PC and XGPC S/W.

Step 2.

```
□ Project
    Controller Properties
    □ Comms Config
        Channel Configuration
        Channel Status
    □ I/O Configuration
        I/O Configuration
    □ Ladder Programs
        SYS 0 - 4
        LAD 5 - MAIN
    □ Special Function Registers
        Special Function Registers
    □ Data Tables
        XR Cross Reference
        Y0 - OUTPUT
        X1 - INPUT
        SR2 - SYSTEM
        B3
        N4
        F5
        L6
        A7
        ST8
        TM9
        CT10
        CR11
    □ Data Logging
    □ Recipe Configurations
    □ User Data Monitors
```
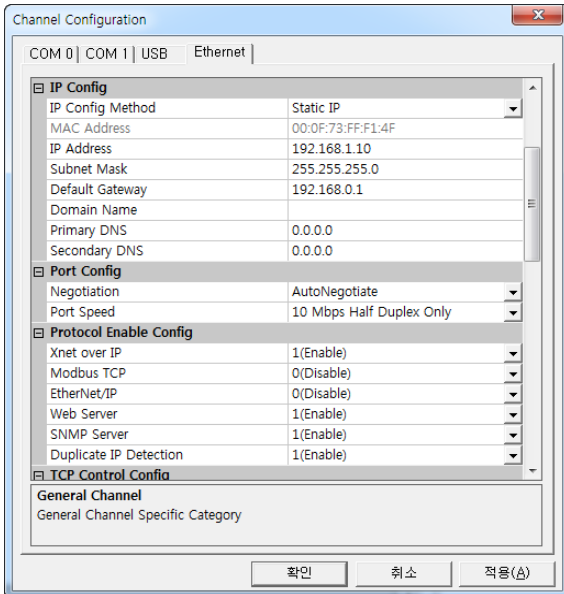
From the tool bar left of the XGPC S/W, double click Channel Configuration.

(X8-M Toolbar → 'Comms Config' → 'Channel Configuration' → 'Ethernet')

Step 3.

Channel Configuration

COM 0 | COM 1 | USB | Ethernet

IP Config	
IP Config Method	Static IP
MAC Address	00:0F:73:FF:F1:4F
IP Address	192.168.1.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Domain Name	
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0
Port Config	
Negotiation	AutoNegotiate
Port Speed	10 Mbps Half Duplex Only
Protocol Enable Config	
Xnet over IP	1(Enable)
Modbus TCP	0(Disable)
EtherNet/IP	0(Disable)
Web Server	1(Enable)
SNMP Server	1(Enable)
Duplicate IP Detection	1(Enable)
TCP Control Config	

General Channel
General Channel Specific Category

확인   취소   적용(A)

From the Channel Configuration window, configure the Parameter.

■ IP Config

▷ IP Config Method : Static IP

- BOOTH Client: If BOOTP is selected, X8 PLC tries to acquire network-related parameters through BOOTP request when the power is turned on.

- DHCP Client: If DHCP is selected, the DHCP server automatically assigns network-related parameters to the X8 PLC when logging into the TCP/IP network.

- Static IP: If Static IP is selected, you can input and set IP address, Subnet mask, Default gateway, Domain name and DNS at the bottom.

■ Port Config

▷ Negotiation : AutoNegotiate

▷ Port Speed : Half Duplex

■ Protocol Enable Config *Remark1)

▷ Xnet over IP : 1(Enable)

(Check '1(Enable)' when using the X8 official communication protocol.)

*Remark 1) Protocol Enable Conifg additional description

- Xnet Over IP: When using X8 official communication protocol

- Modbus TCP: When using Modbus protocol of MODICON

- EtherNet/IP: When using a protocol officially supported by ODVA

- Web Server: When using X8 PLC communication for HTTP communication

- Duplicate IP Detection: Used for detecting duplicated IP

■ Xnet over IP Config

▷ Local TCP Port Number : ex)1024 (TCP connect 'Port' Number)

Check the above information and press confirm.

Step 4. From the top tool bar go to 'Online' → Click 'Download'.

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.

Contents		Bit Address	Word Address	32 Bit	Remarks
Input	X	1.0.0.0 ~ 1.1535.0.15	1.0.0 ~ 1.1535.0		
Output	Y	0.0.0.0 ~ 0.1535.0.15	0.0.0 ~ 0.1535.0		
Input(by slot)	X(by slot)	1.0.0.0 ~ 1:96.511.15	1.0.0 ~ 1.96.511		*Note 1)
Output(by slot)	Y(by slot)	0.0.0.0 ~ 0.96.0.15	0.0.0 ~ 0.96.511		*Note 1)
System Register	SR	2.0.0.0 ~ 2.127.0.15	2.0.0 ~ 2.127.0		
Binary	B	3.0.0.0 ~ 1535.1535.0.15	3.0.0 ~ 1535.1535.0		
Integer	N	3.0.0.0 ~ 1535.1535.0.15	3.0.0 ~ 1535.1535.0		
Floating Point	F	–	3.0.0 ~ 1535.1535.0		
Long	L	3.0.0.0 ~ 1535.1535.0.15	3.0.0 ~ 1535.1535.0		
ASCII	A	3.0.0.0 ~ 1535.1535.0.15	3.0.0 ~ 1535.1535.0		
String	ST	–	3.0.0 ~ 1535.799.41		
Timer	TM	3.0.0.0 ~ 1535.1535.4.15	3.0.0 ~ 1535.1535.4		*Note 2)
Timer Preset	TM Preset	3.0.1.0 ~ 1535.1535.1.31	3.0.1 ~ 1535.1535.1	∨	
Timer Accumulator	TM Accumulator	3.0.3.0 ~ 1535.1535.3.31	3.0.3 ~ 1535.1535.3	∨	
Counter	CT	3.0.0.0 ~ 1535.1535.4.15	3.0.0 ~ 1535.1535.4		*Note 3)
Counter Preset	CT Preset	3.0.1.0 ~ 1535.1535.1.31	3.0.1 ~ 1535.1535.1	∨	
Counter Accumulator	CT Accumulator	3.0.3.0 ~ 1535.1535.3.31	3.0.3 ~ 1535.1535.3	∨	
Control	CR	3.0.0.0 ~ 1535.1535.4.15	3.0.0 ~ 1535.1535.4		*Note 4)
Control Length	CR Length	3.0.1.0 ~ 1535.1535.1.31	3.0.1 ~ 1535.1535.1		
Control Position	CR Position	3.0.3.0 ~ 1535.1535.3.31	3.0.3 ~ 1535.1535.3		

*Note 1) X (by slot), Y (by slot) Device Format

Ex) Configurations for 1, 2, 3, and 4 of X (by slot) are as follows: (Same for Y (by slot).)

Notation	X	1	.2	.3	.4
Description	Device Name	Table Address	Slot Number	Word Offset	Bit Position

*Note 2) TM Address Details

Details for each bit of the 16 bit data of the TM address are as follows.

8th Bit	9th Bit	13th Bit	14th Bit	15th Bit
Time Base 0	Time Base 1	Done	Timer Timing	Enable

*Note 3) CT Address Details

Details for each bit of the 16 bit data of the CT address are as follows.

11th Bit	12th Bit	13th Bit	14th Bit	15th Bit
Underflow	Overflow	Done	Count Down	Count Up

*Note 4) CR Address Details

Details for each bit of the 16 bit data of the CR address are as follows.

8th Bit	9th Bit	10th Bit	11th Bit
Found	Inhibit	Unload	Error
12th Bit	13th Bit	14th Bit	15th Bit
Empty	Done	Enable. Unload	Enable