RS Automation

NX Series

Ethernet Driver

Supported version TOP Design Studio V1.4.11.16 or higher

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We want to thank our customers who use the Touch Operation Panel.

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Describes how to set up communication for external devices.

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

1. System configuration

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

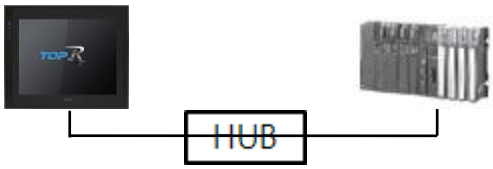
Series	Model	Interface	Communication method	System setting	Cable
NX	CPU750A CPU750B CPU750C CPU760C CPU760CM CPU750D	EtherNet Unit (NX-ETHERNET)	Ethernet (TCP/UDP)	3. TOP communication setting 4. External device setting	Twisted pair cable*Note 1)

*Note 1) Twisted pair cable

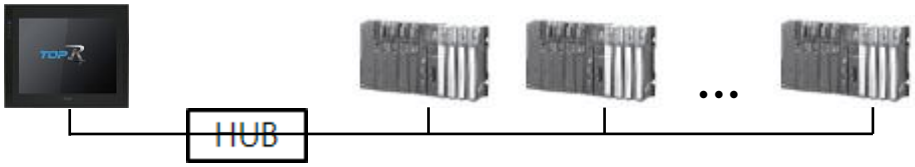
- Refer to STP (Shielded Twisted Pair Cable) or UTP (Unshielded Twisted Pair Cable) Category 3, 4, 5.
- Depending on the network configuration, you can connect to components such as the hub and transceiver, and in this case, use a direct cable.

■ Connectable configuration

・1:1 connection

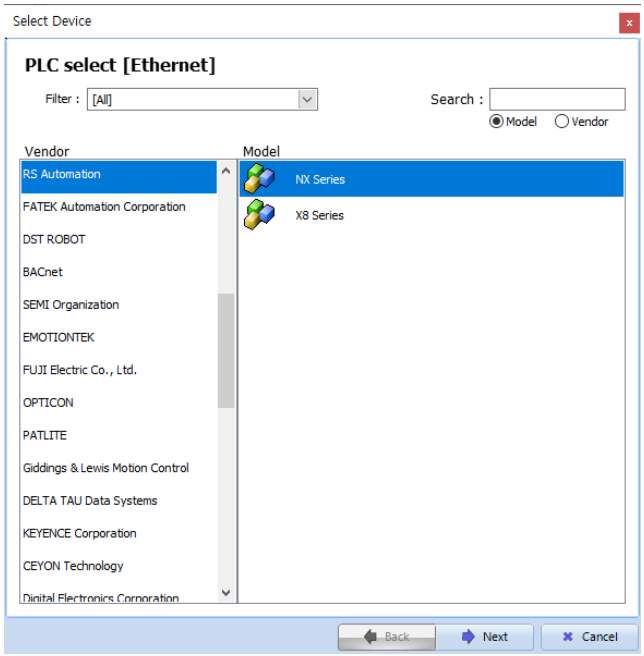


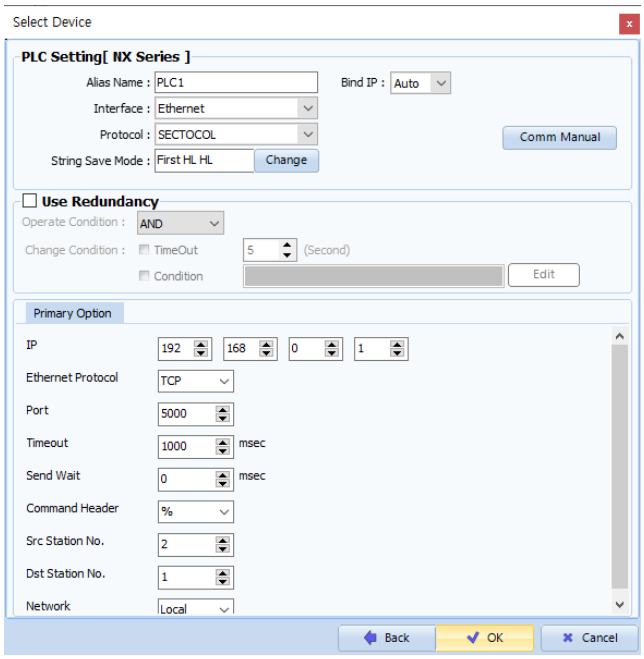
・1:N connection



2. External device selection

Select an external device to connect to TOP.





Settings		Contents
TOP	Model	Check the display and process of TOP to select the touch model.
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select “RS Automation”.
	PLC	Select the external device to be connected to the TOP. **Model** / **Interface** / **Protocol** NX Series / Ethernet / SECTOCOL 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

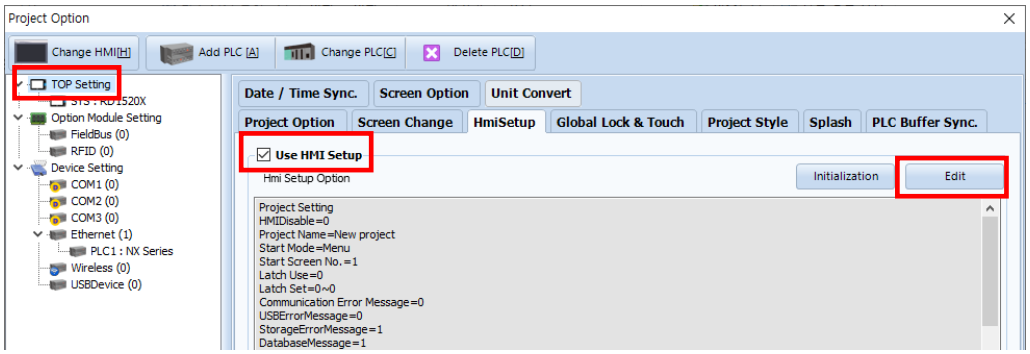
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

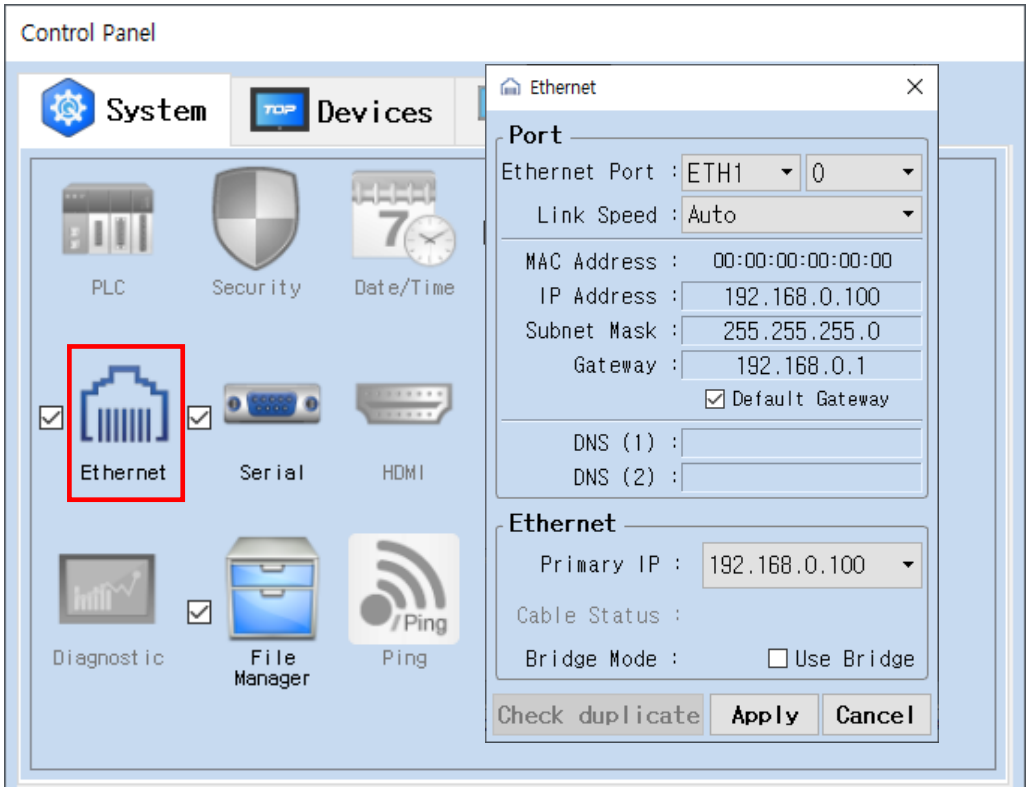
3.1 Communication setting in TOP Design Studio

(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	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	

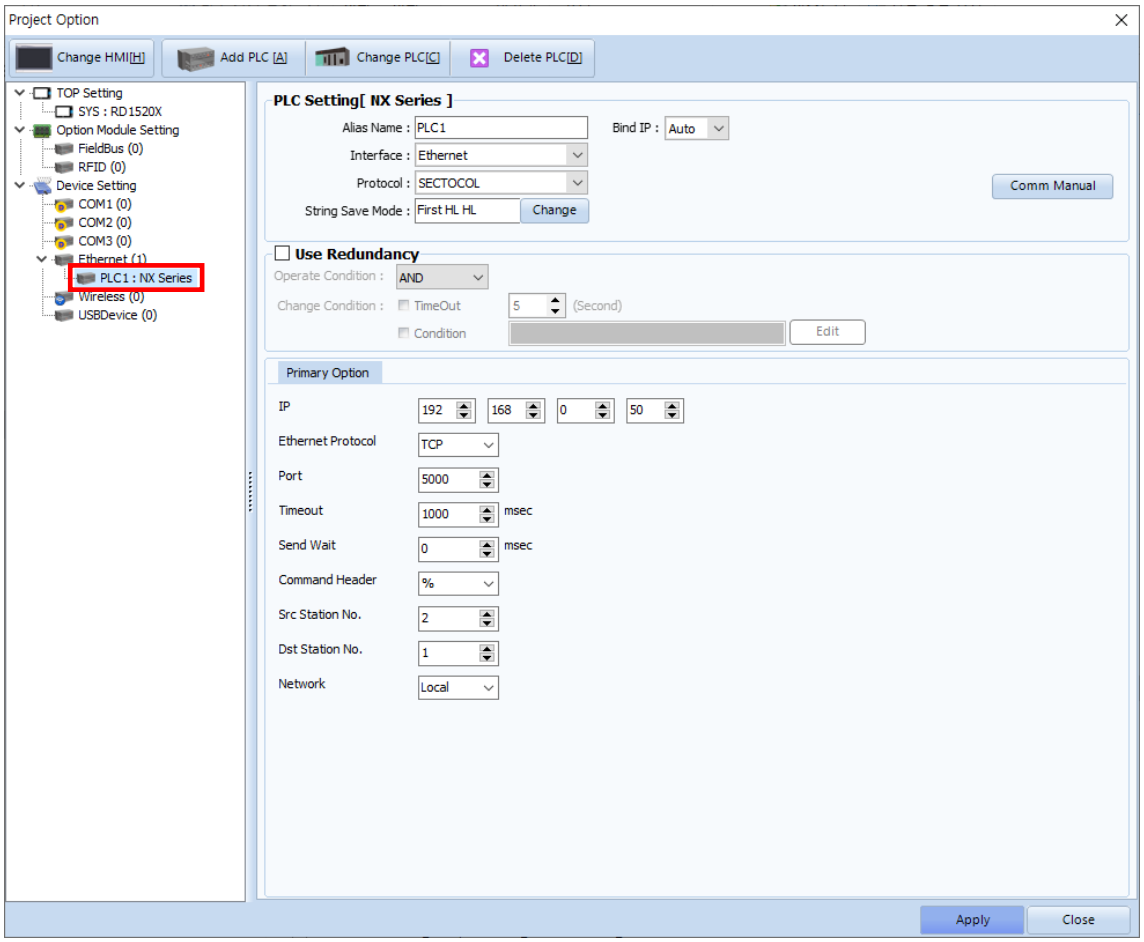
* The above settings are examples recommended by the company.

Items	Description
IP Address	Set the IP address of the TOP.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.

(2) Communication option setting

■ [Project] → [Project Property] → [Device Setting > Ethernet > NX Series]

– Set the options of the NX Series communication driver in TOP Design Studio.

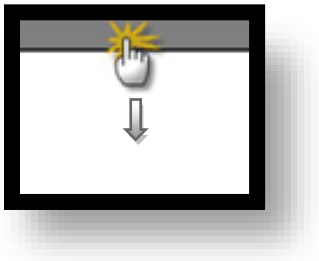


Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select the communication protocol between the TOP and an external device.	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet communication port number of the external device.	
Timeout	Set the time for the TOP to wait for a response from an external device.	
Send Wait	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Command Header	Select header for SECTOCOL. Changes the maximum length of the message. %: 118 characters <: 2048 characters (restrictions based on model)	
Src Station No.	Set the prefix of TOP.	
Dst Station No.	Enter the prefix of PLC.	
Network	Select the network configuration between TOP and external device.	
Number of Routers	Configure the number of routers connecting the TOP and external device.	
1_{st} Router Station No.	Enter the prefix of the 1st router.	
1_{st} Router Loop No.	Enter the link unit number of the 1st router.	
2_{nd} Router Station No.	Enter the prefix of the 2nd router.	
2_{nd} Router Loop No.	Enter the link unit number of the 2nd router.	
...		
5_{th} Router Station No.	Enter the prefix of the 5th router.	
5_{th} Router Loop No.	Enter the link unit number of the 5th router.	

3.2. Communication setting in TOP

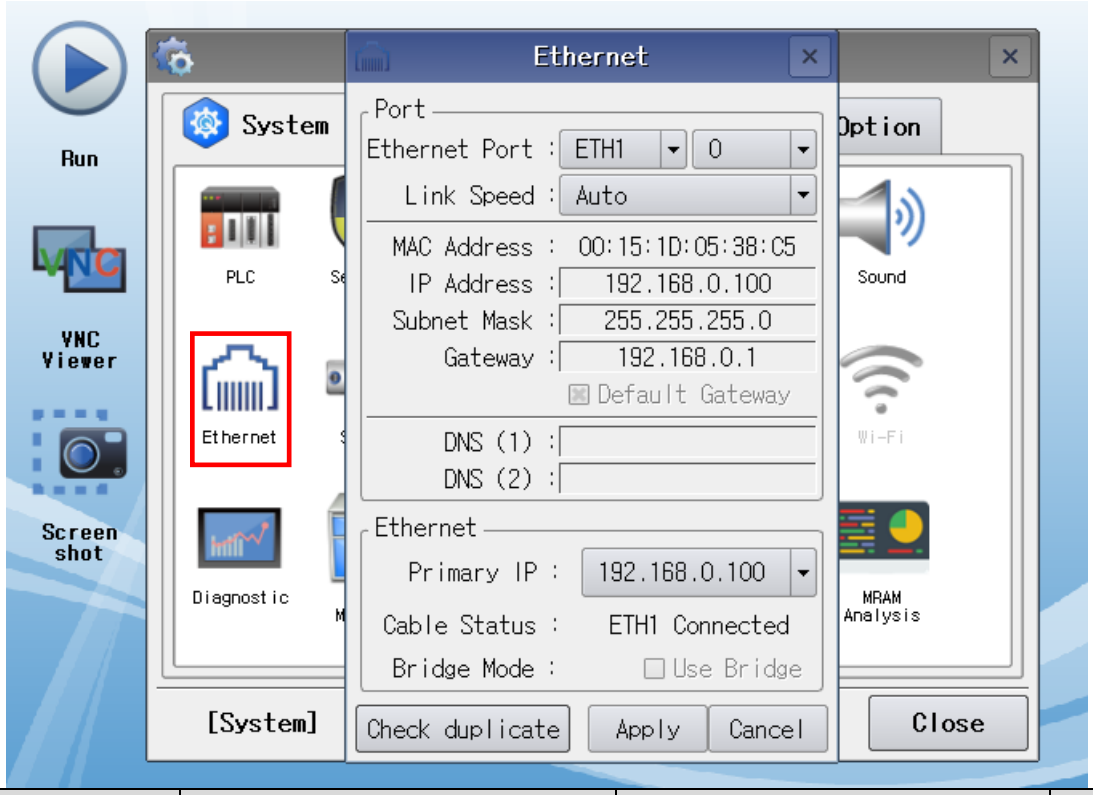
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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]



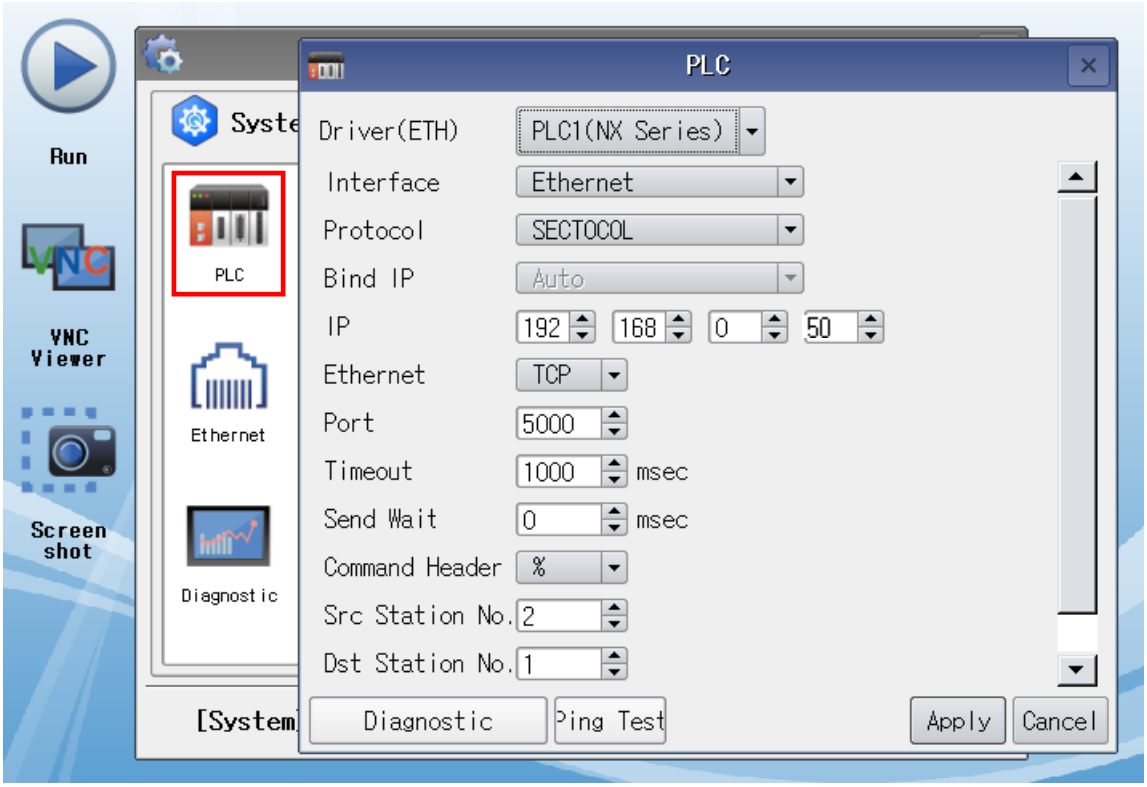
Items	TOP	External device	Remarks
IP Address	192.168.0.100	192.168.0.50	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

* The above settings are examples recommended by the company.

Items	Description
IP Address	Set the IP address of the TOP.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.

(2) Communication option setting

■ [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 the communication protocol between the TOP and an external device.	
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.	
Timeout	Set the time for the TOP to wait for a response from an external device.	
Send Wait	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Command Header	Select header for SECTOCOL. Changes the maximum length of the message. %: 118 characters <: 2048 characters (restrictions based on model)	
Src Station No.	Set the prefix of TOP.	
Dst Station No.	Enter the prefix of PLC.	
Network	Select the network configuration between TOP and external device.	
Number of Routers	Configure the number of routers connecting the TOP and external device.	
1_{st} Router Station No.	Enter the prefix of the 1st router.	
1_{st} Router Loop No.	Enter the link unit number of the 1st router.	
2_{nd} Router Station No.	Enter the prefix of the 2nd router.	
2_{nd} Router Loop No.	Enter the link unit number of the 2nd router.	
...		
5_{th} Router Station No.	Enter the prefix of the 5th router.	
5_{th} Router Loop No.	Enter the link unit number of the 5th router.	

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 that the settings of the connected ports in [Control Panel] → [Ethernet] are the same as the settings of the external device.

■ Diagnosis of whether the port communication is normal or not

- Touch "Communication diagnostics" in [Control Panel] → [PLC].
- Check whether communication is connected or not.

Communication diagnostics succeeded	**Communication setting normal**
Error message	**Communication setting abnormal** - Check the cable, TOP, and external device settings. (Refer to Communication diagnostics sheet.)

■ Communication diagnostics sheet

- If there is a problem with the communication connection with an external device, 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. TOP 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

4. External device setting

Configure the Ethernet, IP, and port number of the external device by referring to the vendor's user manual.
For TCP, configure to "Unpassive".

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.

Address	Bit	Word	32 bit	Remarks
External input relay	X0000 ~ X511F	WX000 ~ WX511		*Note 1)
External output relay	Y0000 ~ Y511F	WY000 ~ WY511		*Note 1)
Internal relay	R0000 ~ R886F	WR000 ~ WR886		*Note 1)
Link relay	L0000 ~ L639F	WL000 ~ WL639		*Note 1)
Special relay	R9000 ~ R910F	WR900 ~ WR910		*Note 1)
Timer	T0000 ~ T3071	-		
Counter	C0000 ~ C3071	-	L/H	
Data register	DT00000.00 ~ DT10239.15 DT90000 ~ DT90511.15	DT00000 ~ DT10239 DT90000 ~ DT90511		
File register	FL00000.00 ~ FL32764.15	FL00000 ~ FL32764		
Link register	LD00000.00 ~ LD08447.15	LD0000 ~ LD8447		
Timer/counter set value	SV00000.00 ~ SV03071.15	SV0000 ~ SV3071		
Timer/counter elapsed value	EV00000 ~ EV03071.15	EV0000 ~ EV3071		

*Note 1) When using a bit address, mark the bit location as "0-F(hexadecimal)". The position above the lowest position should be a decimal.