

# KEYENCE.

## KV Series Ethernet (MC Protocol) Driver

Supported version TOP Design Studio V1.4.9.85 or higher



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

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

# 1. System configuration

The system configuration of TOP and "Keyence KV Series Ethernet" is as follows:

Series	CPU	Link I/F	Communication method	Communication setting	Cable
KV Series Ethernet (MC Protocol)	KV-700 Series KV-1000 Series KV-3000 Series KV-5000 Series KV-7000 Series KV-8000 Series	Ethernet port	Ethernet (TCP/UDP)	<a href="#">3. TOP communication setting</a> <a href="#">4. External device setting</a>	Twisted pair cable* <a href="#">Note 1</a>

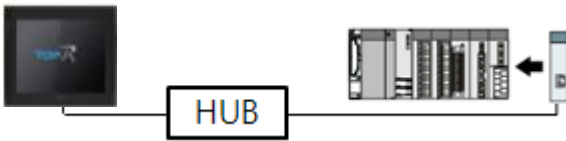
\*[Note 1](#)) Twisted pair cable

- Refer to STP (Shielded Twisted Pair Cable) or UTP (Unshielded Twisted Pair Cable) Category 3, 4, 5.

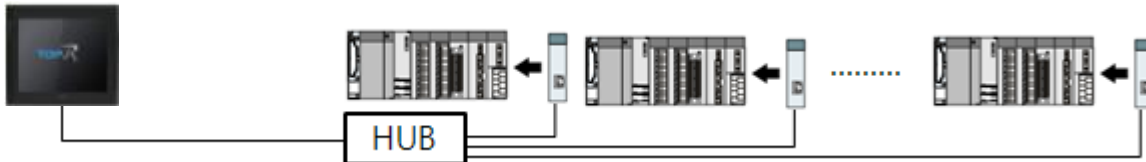
- Depending on the network configuration, you can connect to components such as the hub and transceiver, and in this case, use a direct cable.

## ■ Connection configuration

- 1:1 connection

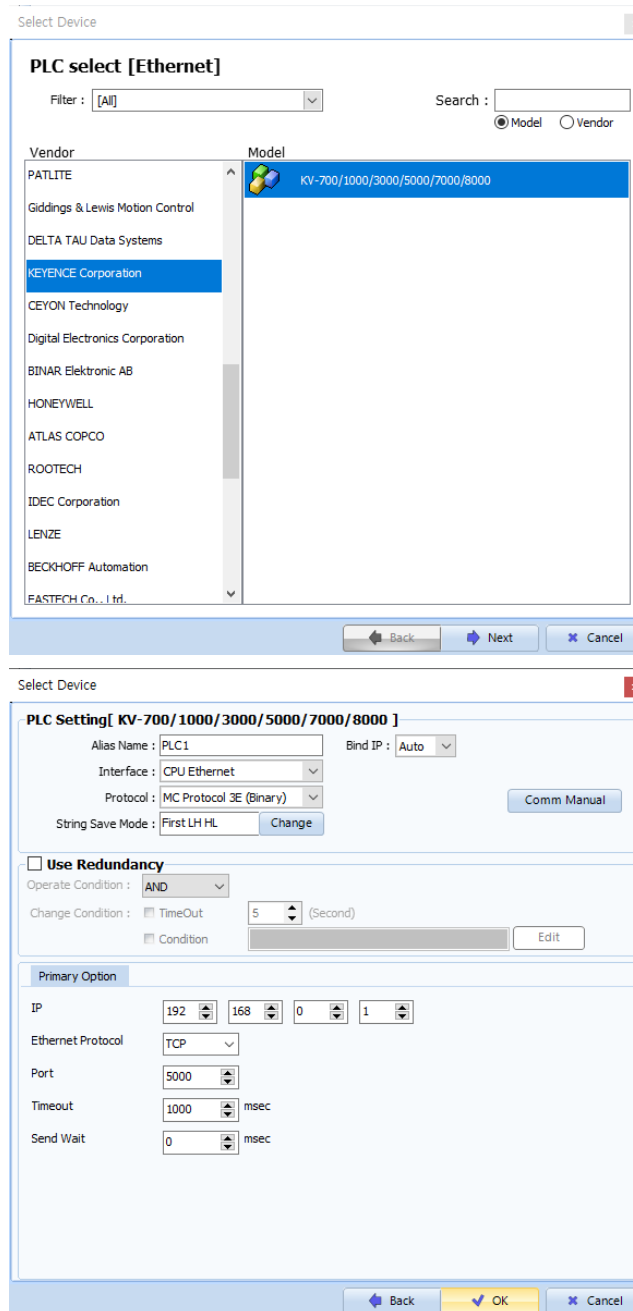


- 1:N connection



## 2. External device selection

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



Settings		Contents					
TOP	Model	Check the 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 "KEYENCE > KV-700/1000/3000/5000/7000/8000".					
	PLC	Select an external device to connect to TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: black; color: white;">Model</th> <th style="background-color: black; color: white;">Interface</th> <th style="background-color: black; color: white;">Protocol</th> </tr> </thead> <tbody> <tr> <td>KEYENCE KV Series Ethernet</td> <td>Ethernet</td> <td>MC Protocol</td> </tr> </tbody> </table> <p>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.</p>	Model	Interface	Protocol	KEYENCE KV Series Ethernet	Ethernet
Model	Interface	Protocol					
KEYENCE KV Series Ethernet	Ethernet	MC Protocol					

### 3. TOP communication setting

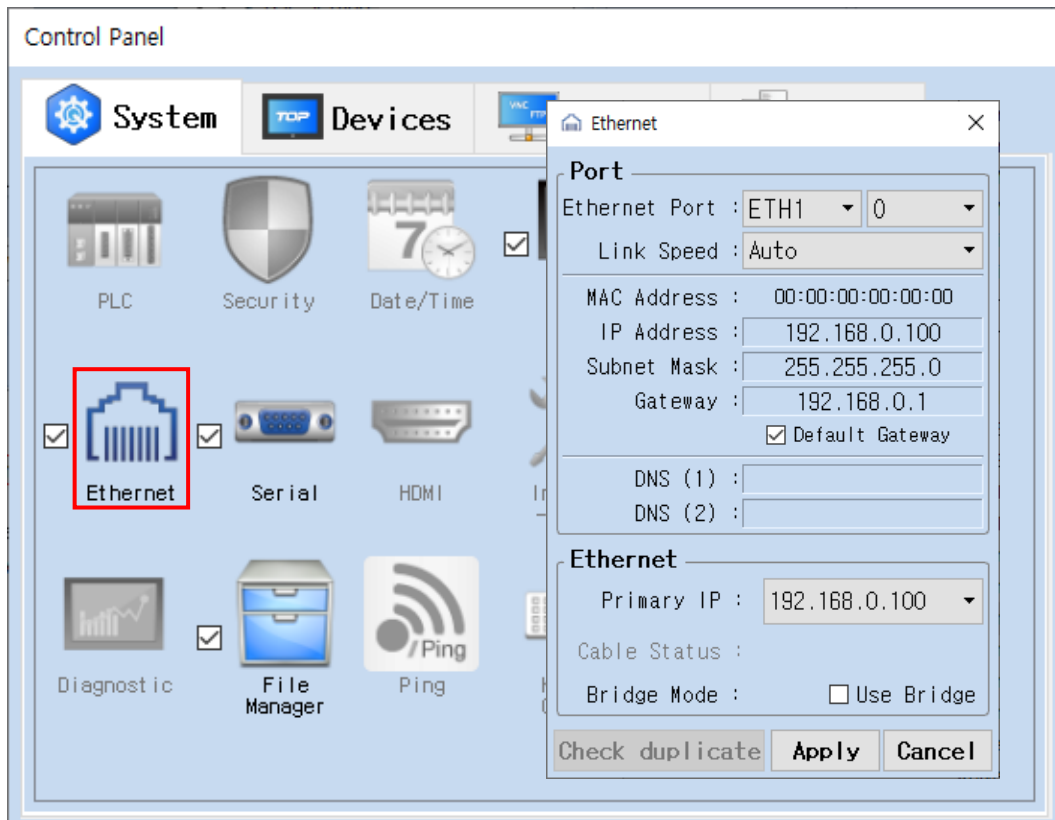
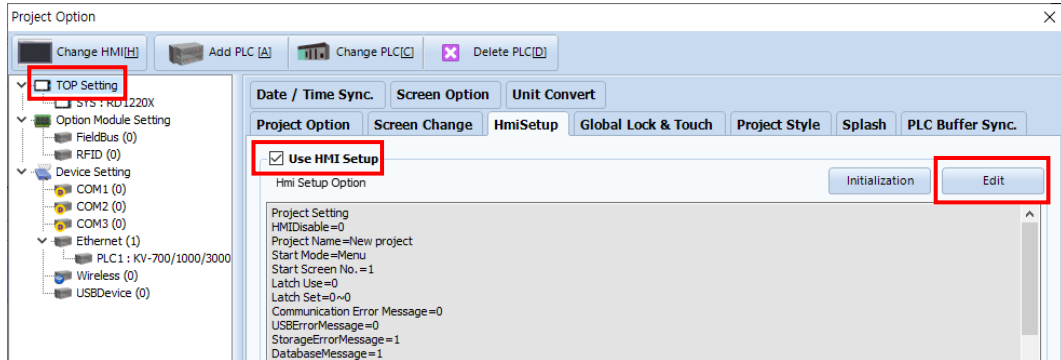
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

#### 3.1 Communication setting in TOP Design Studio

##### (1) Communication interface setting

■ [Project > Project 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* <a href="#">Note 1</a> <a href="#">Note 2</a> )	192.168.0.100	192.168.0.1	
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.

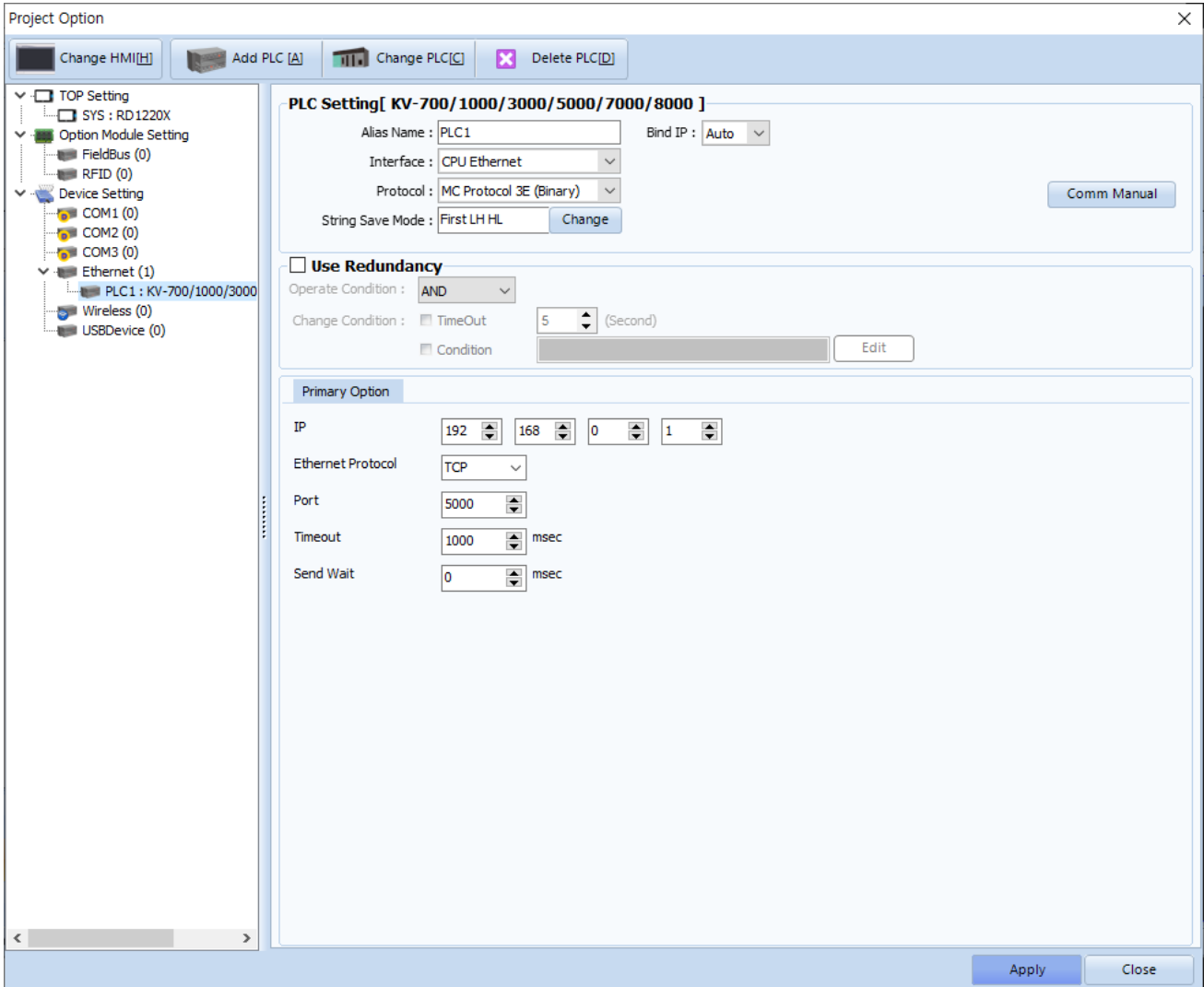
\* The above settings are examples recommended by the company.

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 Property > Device Settings > Ethernet > PLC1 : KV-700/1000/3000/5000/7000/8000]

Set the options of the communication driver in TOP Design Studio.

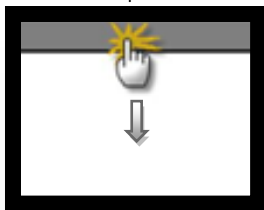


Items	Settings	Remarks
Interface	Select "Ethernet".	<a href="#">Refer to "2. External device selection".</a>
Protocol	Select the communication protocol between the TOP and an external device.	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet communication port number of the external device. Default port is 5000.	
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.	
Retry	Set the number of times the TOP sends a request when it fails to receive a response from an external device.	UDP

### 3.2. Communication setting in TOP

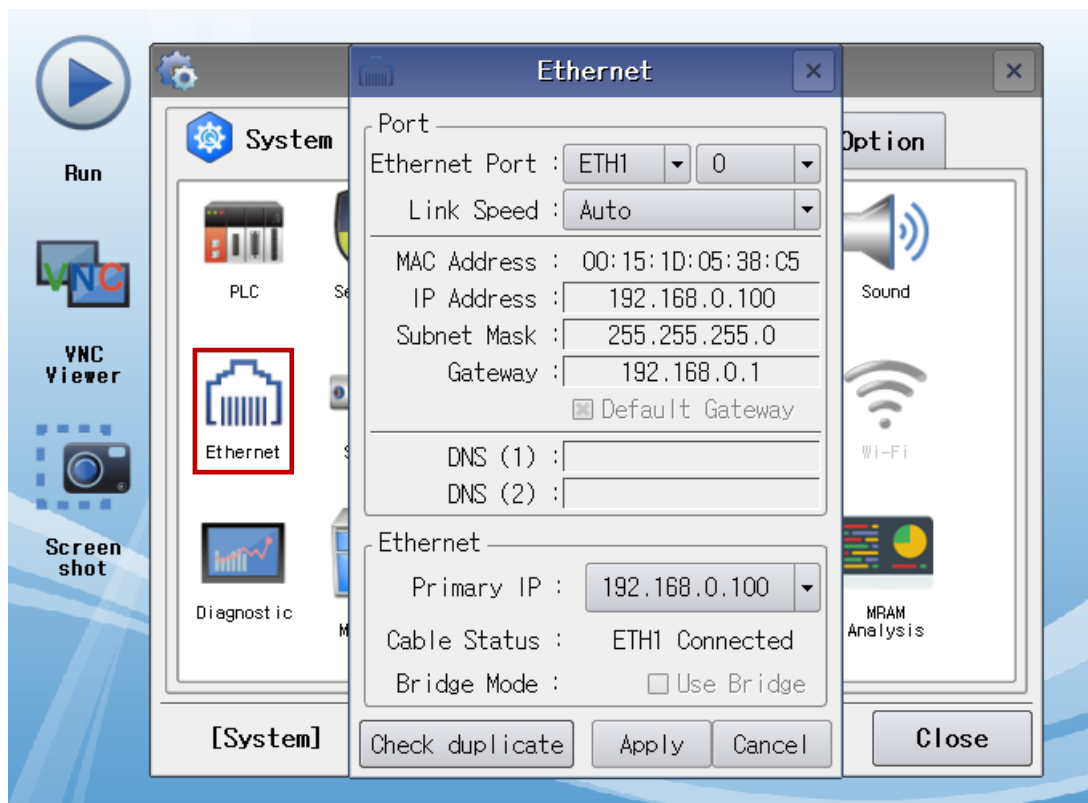
\* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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* <a href="#">Note 1</a> <a href="#">Note 2</a> )	192.168.0.100	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.

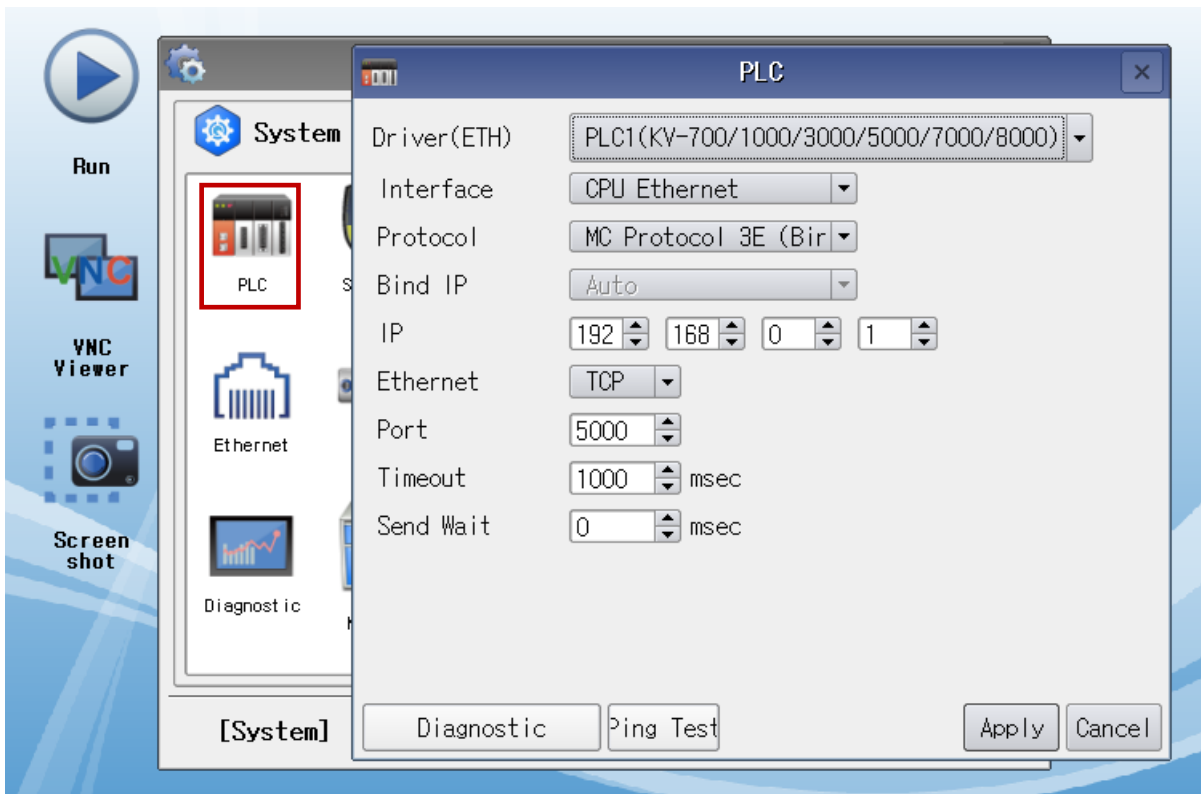
\*[Note 2](#)) Do not use duplicate IP addresses over the same network.

\* 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]



Items	Settings	Remarks
Interface	Select "Ethernet".	<a href="#">Refer to "2. External device selection"</a> .
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. Default port is 5000.	
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.	
Retry	Set the number of times the TOP sends a request when it fails to receive a response from an external device.	UDP

### 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 if the port (ETH1/ETH2) settings you want to use in [Control Panel > Ethernet] are the same as those of the external device.
- 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.

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

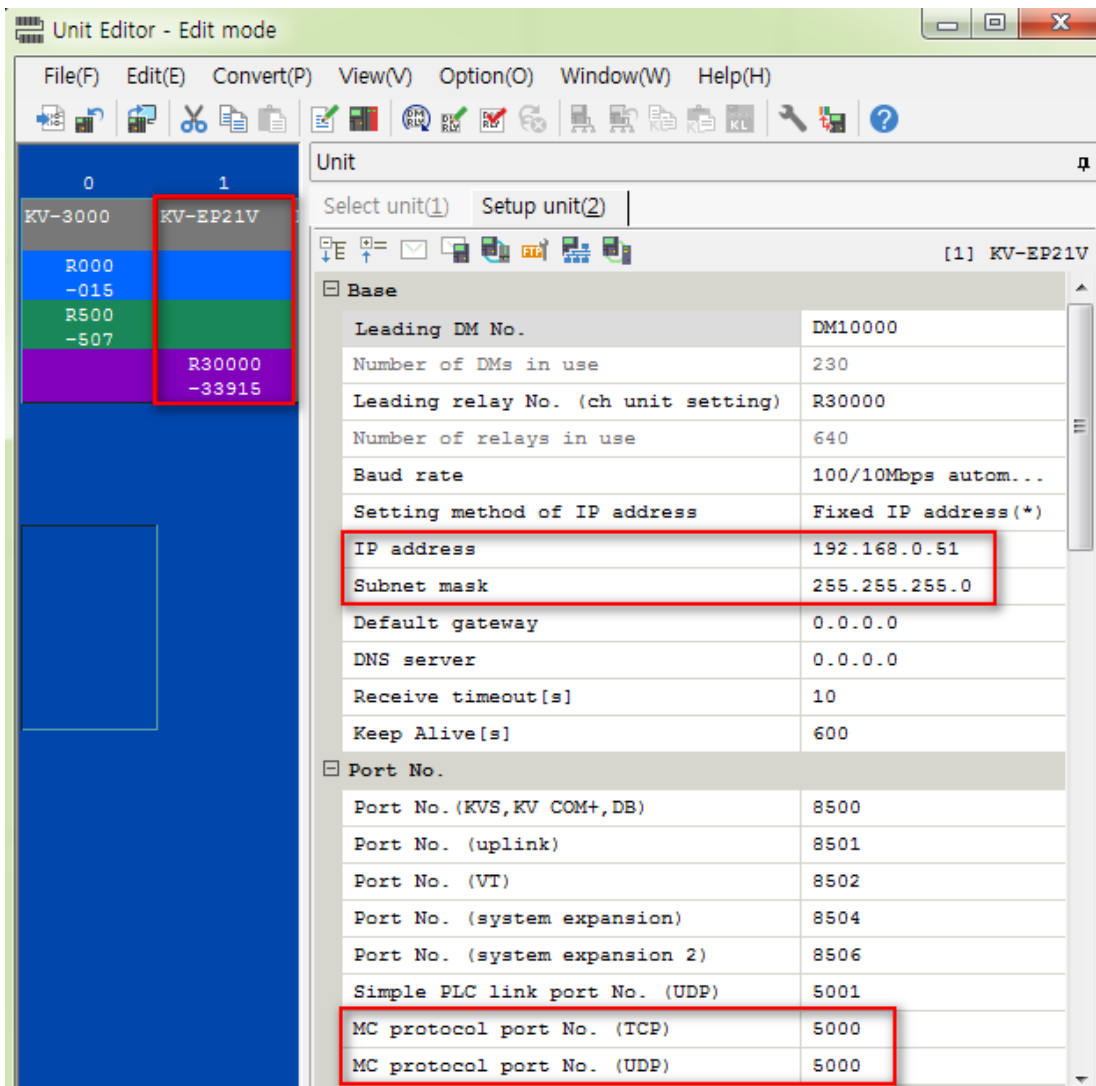
- Communication diagnostics sheet
  - If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Contents	Check		Remarks	
System configuration	How to connect the system	OK	NG	<a href="#">1. System configuration</a>	
	Connection cable name	OK	NG		
TOP	Version information	OK	NG	<a href="#">2. External device selection</a> <a href="#">3. Communication setting</a>	
	Port in use	OK	NG		
	Driver name	OK	NG		
	Other detailed settings	OK	NG		
	Relative prefix	Project setting	OK		NG
		Communication diagnostics	OK		NG
	Serial Parameter	Transmission Speed	OK		NG
Data Bit		OK	NG		
Stop Bit		OK	NG		
Parity Bit		OK	NG		
External device	CPU name	OK	NG	<a href="#">4. External device setting</a>	
	Communication port name (module name)	OK	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings	OK	NG		
	Serial Parameter	Transmission Speed	OK		NG
		Data Bit	OK		NG
		Stop Bit	OK		NG
Parity Bit		OK	NG		
Check address range		OK	NG	<a href="#">5. Supported addresses</a> (For details, please refer to the PLC vendor's manual.)	



## 4. External device setting

Configure the Unit Editor's setup unit as shown in the figure below,



## 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
Data Memory	DM0000.00 – DM65534.15	DM0000 – DM65534	
Control Memory	CM0000.00 – CM7599.15	CM0000 – CM7599	
Expansion Data Memory	EM00000.00 – EM65534.15	EM00000 – EM65534	
File Register – Current Bank	FM00000.00 – FM32767.15	FM00000 – FM32767	
Link Register	W0000.0 – W7FFF.F	W0000 – W7FFF	
File Register – Consecutive Number mode	ZF000000.00 – ZF524287.15	ZF000000 – ZF524287	
Input/Output	R000000 – R199915	R0000 – R1999	
Control Relay	CR0000 – CR7915	CR00 – CR79	
Internal Auxiliary Relay	MR000000 – MR399915	MR0000 – MR3999	
Latch Relay	LR00000 – LR99915	LR000 – LR999	
Link Relay	B0000 – B7FFF		
Timer	Contact	TC0000 – TC3999	—
	Current value	—	T0000 – T3999 *Note 1)
Counter	Contact	CC0000 – CC3999	—
	Current value	—	C0000 – C3999 *Note 1)

\*Note 1) If the current value is greater than 65535, only this value will be displayed.