

DNP3

Ethernet Driver

Supported version TOP Design Studio V1.4.11.4 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 data addresses which can communicate with an external device.

1. System configuration

The system configuration of TOP and DNP3 is as follows:

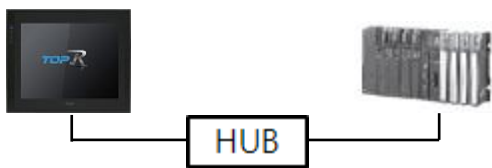
| Series | Link I/F | Communication method | System setting | Cable |
|--------|----------|----------------------|--|--|
| DNP3 | Ethernet | Ethernet (TCP/UDP) | 3. TOP communication setting | Twisted pair cable ^{*Note 1)} |

*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

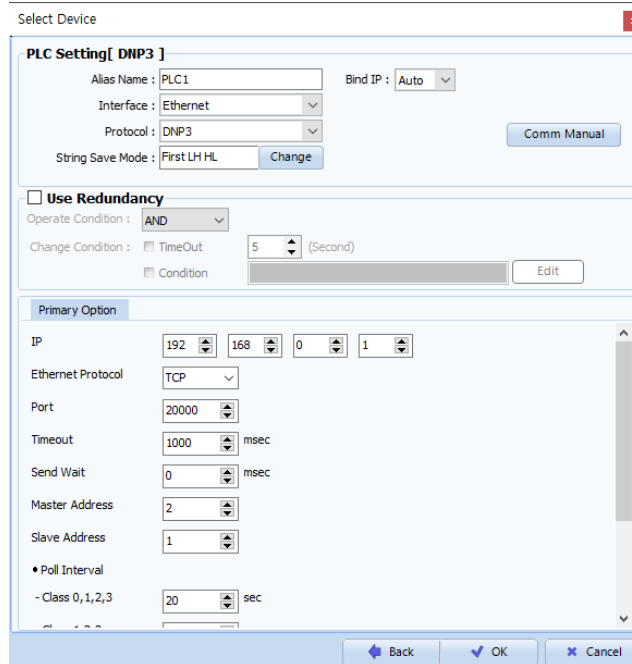
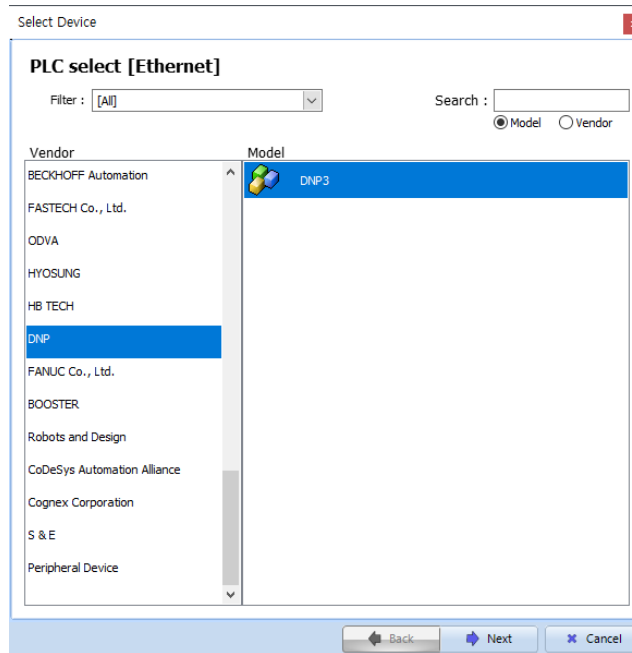


- 1:N connection



2. External device selection

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



| Settings | | Contents | | | | | |
|-----------------|-----------|--|-------|-----------|----------|------|----------|
| TOP | Model | Select the TOP model. | | | | | |
| External device | Vendor | Select the vendor of the external device. Select "DNP". | | | | | |
| | Model | Select the external device to be connected to the TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>DNP3</td> <td>Ethernet</td> <td>DNP3</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 | DNP3 | Ethernet |
| Model | Interface | Protocol | | | | | |
| DNP3 | Ethernet | DNP3 | | | | | |

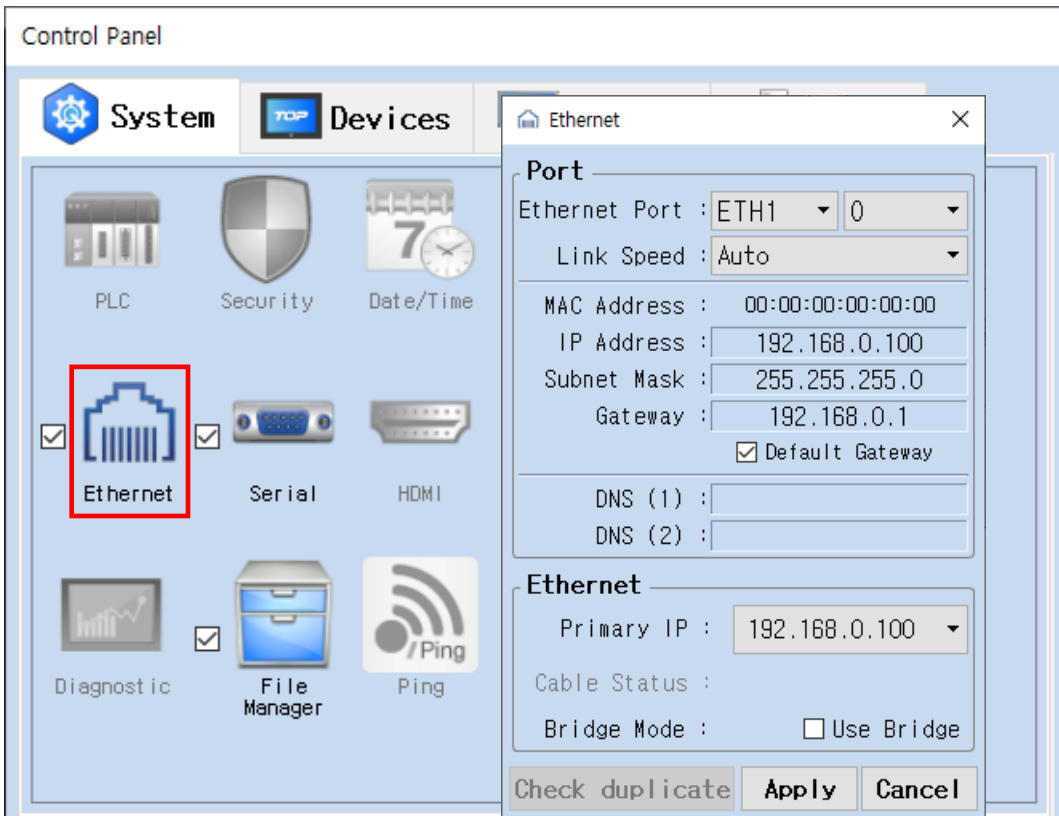
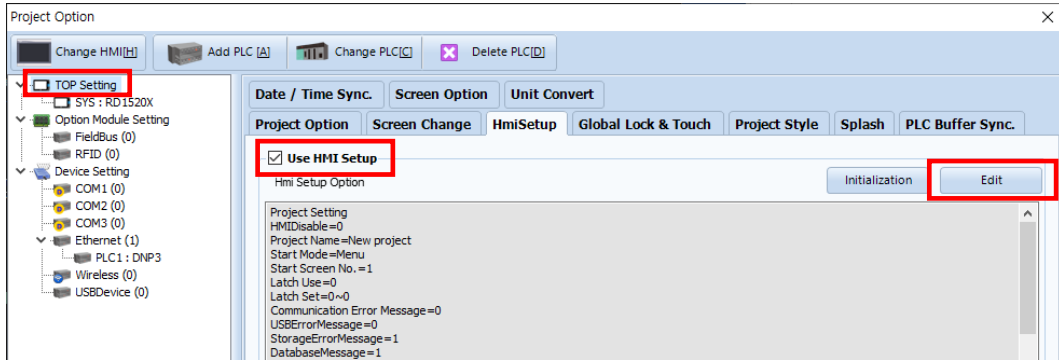
3. TOP communication setting

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] → [Use HMI Setup] → [HMI Setup Check] → [Edit] → [System] → [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 | |

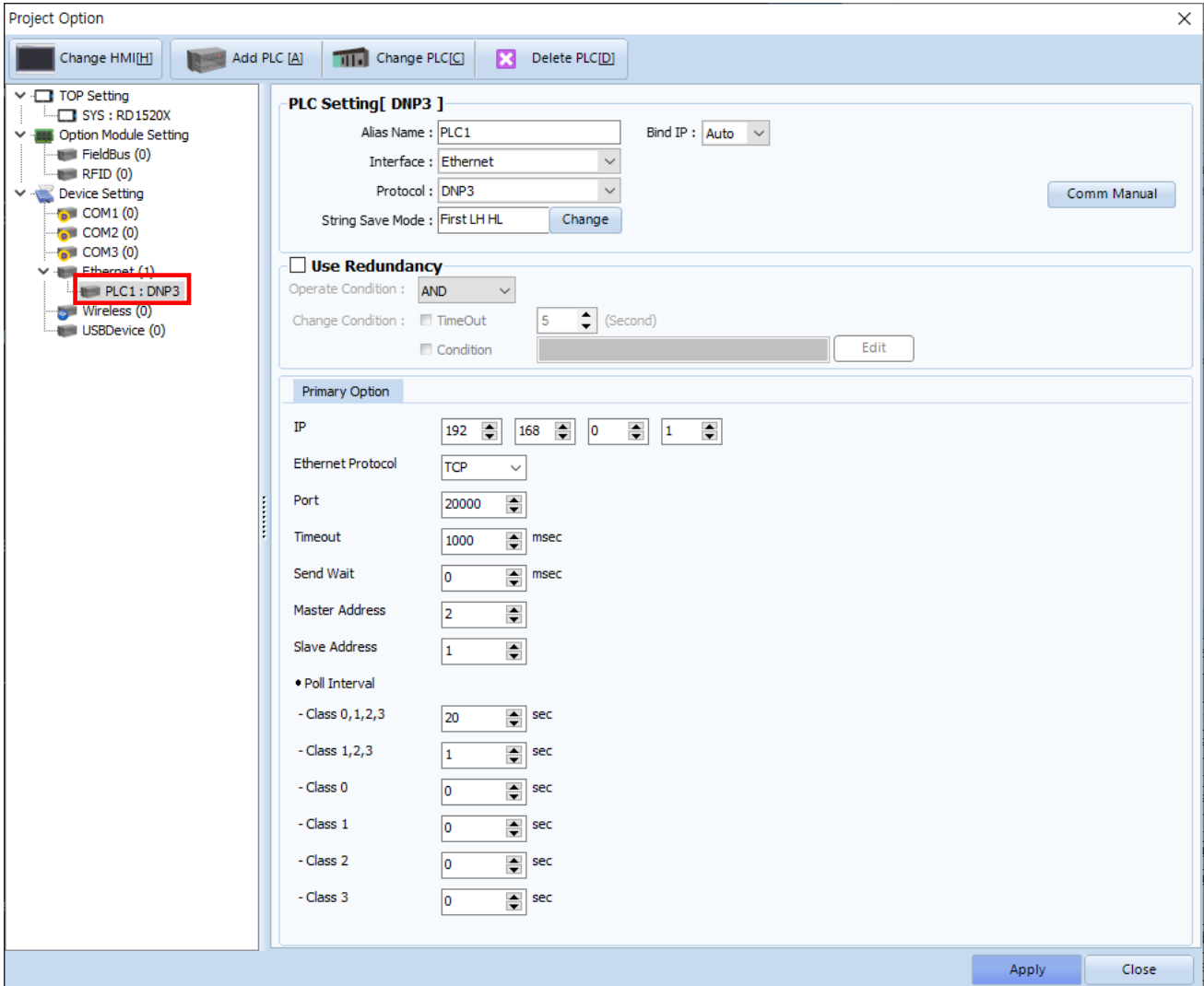
* The above settings are examples recommended by the company.

| 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 > DNP3]

- Set the options of the DNP3 communication driver in TOP Design Studio.



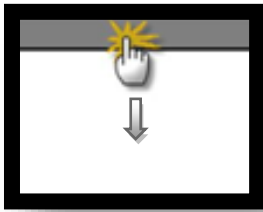
* The above settings are examples recommended by the company.

| Items | Settings | Remarks |
|-------------------|--|---|
| Interface | Select "Ethernet". | Refer to "2. External device selection" . |
| Protocol | Select 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 | |
| Master Address | Configure the Master Address. | |
| Slave Address | Enter the Slave(Outstation) Address. | |
| Poll Interval | Configure the data request cycle for each class. No data request occurs if set to 0. | |

3.2. Communication setting in TOP

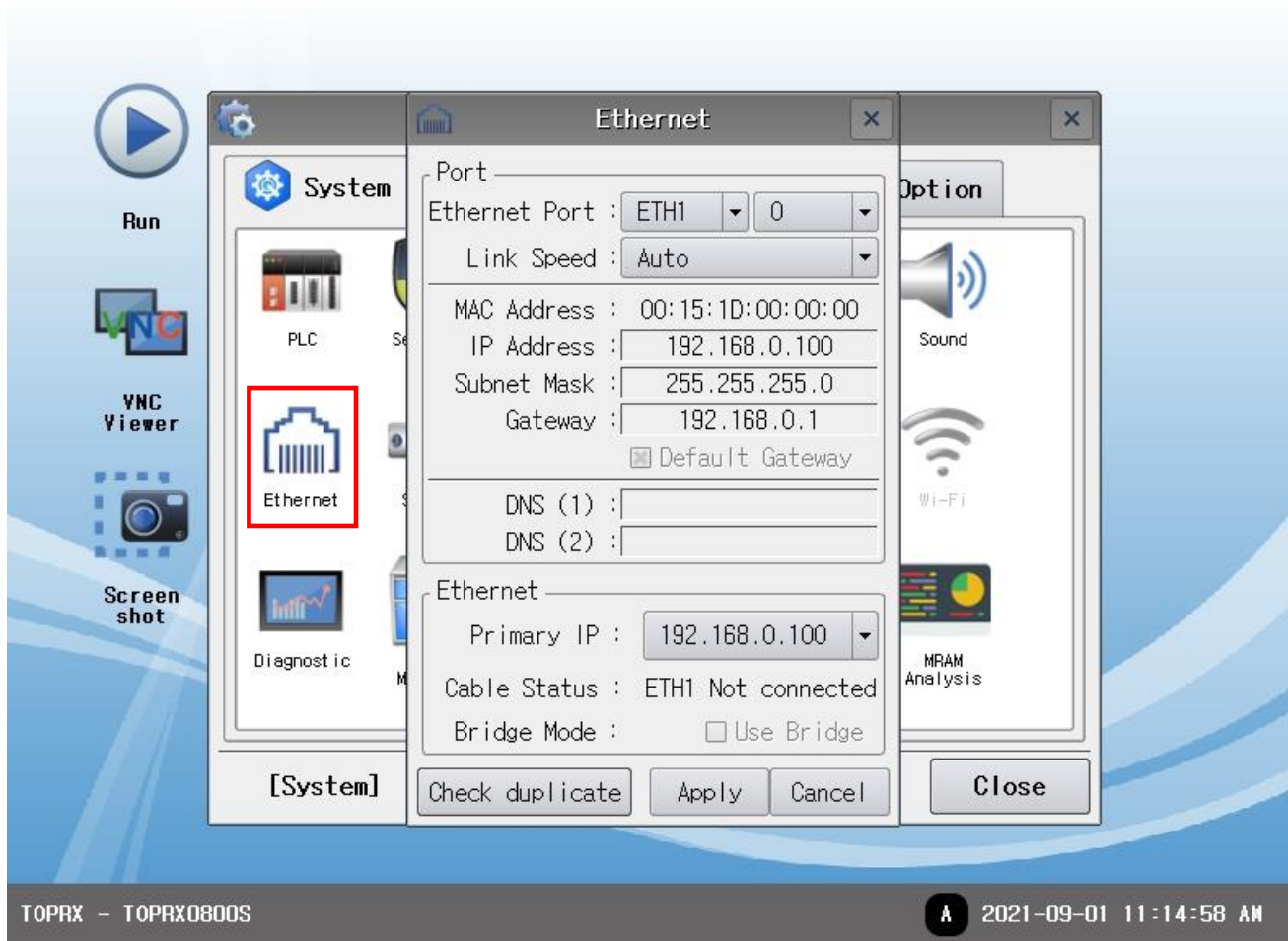
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ Touch the top of the TOP-R 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]



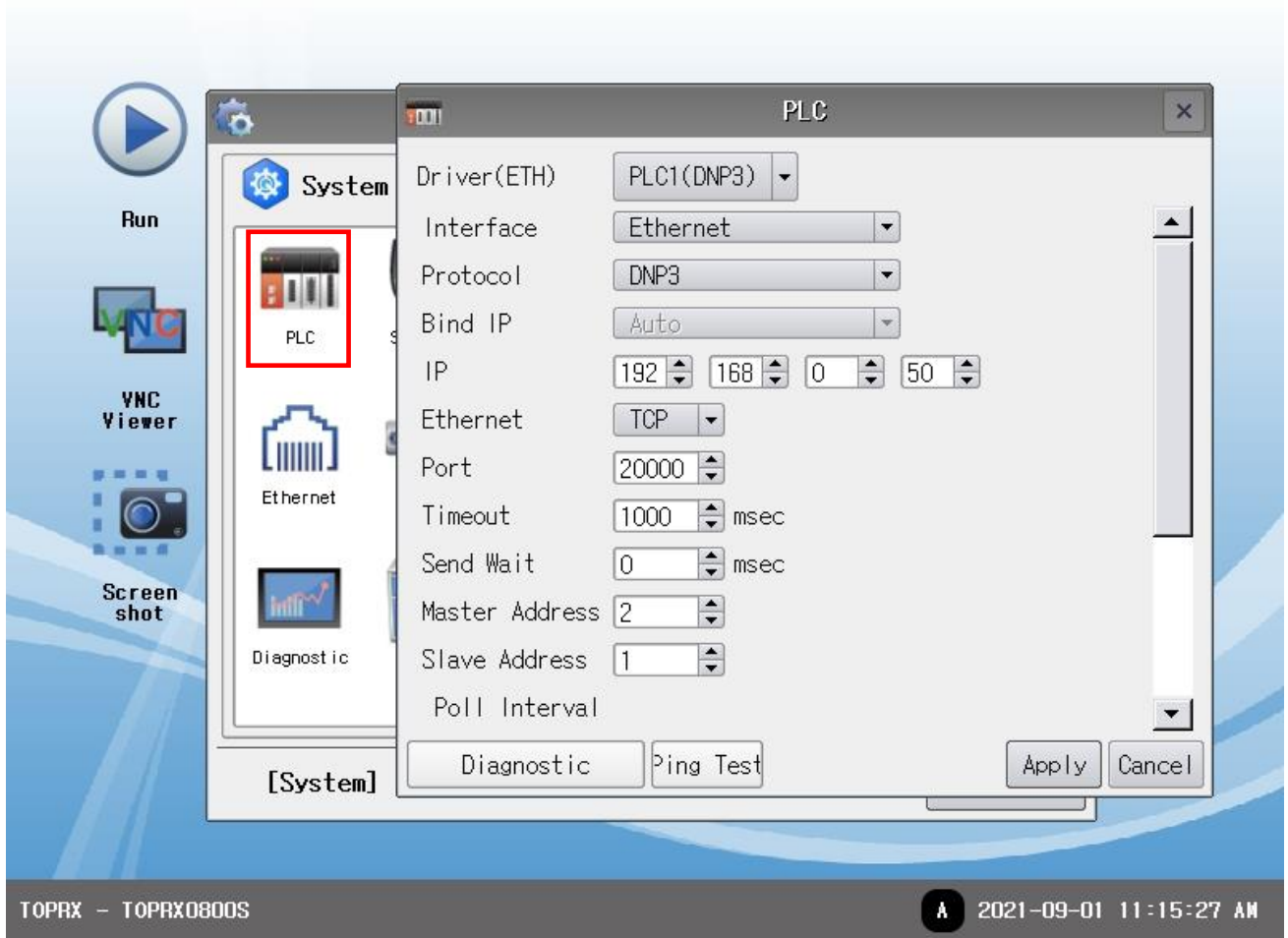
| Items | TOP | External device | Remarks |
|-------------|---------------|-----------------|---------|
| IP Address | 192.168.0.100 | 192.168.0.50 | |
| Subnet Mask | 255.255.255.0 | 255.255.255.0 | |
| Gateway | 192.168.0.1 | 192.168.0.1 | |

* 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 | |
| Master Address | Configure the Master Address. | |
| Slave Address | Enter the Slave(Outstation) Address. | |
| Poll Interval | Configure the data request cycle for each class. No data request occurs if set to 0. | |

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

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. Supported addresses | |
| | 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 | | |

4. 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 | Remarks |
|------------------|--|--|---------|
| BINARY INPUT | BINARY_INPUT:00000 – BINARY_INPUT:65535 | | |
| DOUBLE BIT INPUT | DOUBLE_BIT_INPUT:00000 – DOUBLE_BIT_INPUT:65535 | | |
| BINARY OUTPUT | DOUBLE_BIT_OUTPUT:00000 – DOUBLE_BIT_OUTPUT:65535 | | |
| COUNTER | COUNTER:00000.00 – COUNTER:65535.31 | COUNTER:00000 – COUNTER:65535 | |
| FROZEN COUNTER | FROZEN_COUNTER:00000.00 – FROZEN_COUNTER:65535.31 | FROZEN_COUNTER:00000 – FROZEN_COUNTER:65535 | |
| ANALOG INPUT | ANALOG_INPUT:00000.00 – ANALOG_INPUT:65535.31 | ANALOG_INPUT:00000 – ANALOG_INPUT:65535 | |
| ANALOG OUTPUT | ANALOG_OUTPUT:00000.00 – ANALOG_OUTPUT:65535.31 | ANALOG_OUTPUT:00000 – ANALOG_OUTPUT:65535 | |