

YASKAWA Electric Corporation

Machine Controller MP3000 Series

Extended MEMOBUS Driver

Supported version

TOP Design Studio

V1.4.3 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 10](#)

Describes how to set up communication for external devices.

5. Supported addresses [Page 15](#)

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

1. System configuration

The system configuration of TOP and “YASKAWA Electric Corporation – MP3000 Series Ethernet” is as follows:

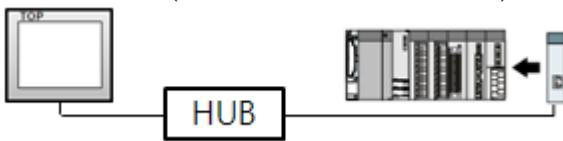
Series	CPU	Link I/F	Communication method	System setting	Cable
MP3000	CPU 201	Ethernet Connector on CPU unit	Ethernet(UDP)	3. TOP communication setting 4 Extended MEMOBUS	Twisted pair cable* Note 1)

*Note 1) Twisted pair cable

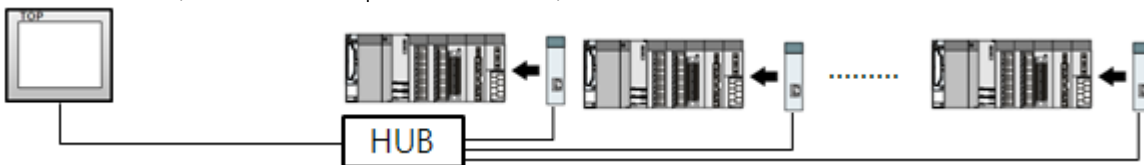
- Refer to STP (Shielded Twisted Pair Cable) or UTP (Unshielded Twisted Pair Cable) Category 3, 4, 5.
- Depending on the network configuration, you can connect to components such as the hub and transceiver, and in this case, use a direct cable.

■ Connectable configuration

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

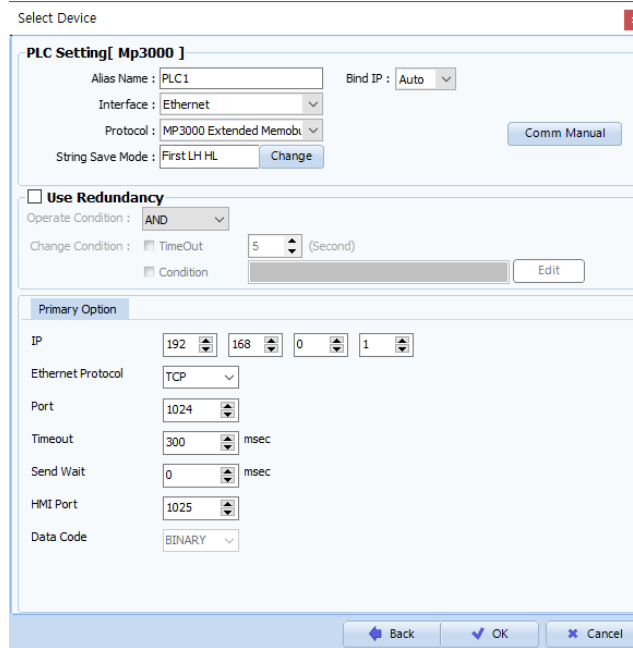
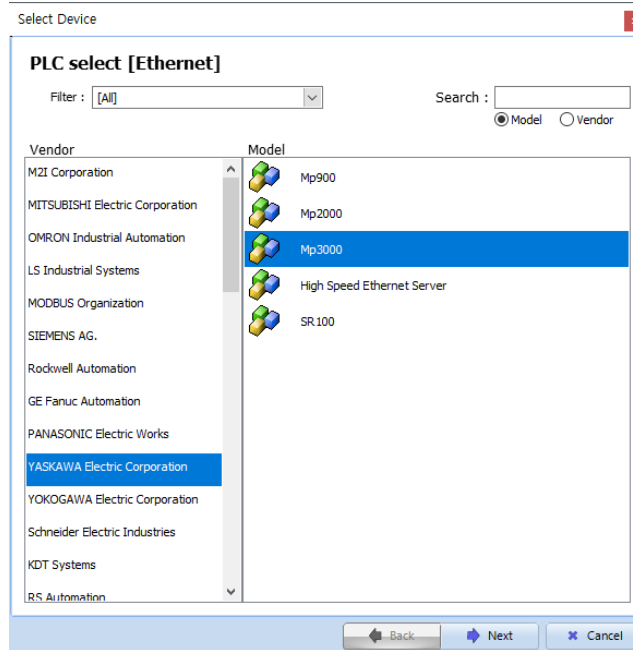


- 1:N connection (one TOP and multiple external devices) connection



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 "YASKAWA Electric Corporation".					
	PLC	Select the external device to be connected to the TOP. <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>MP3000 Series</td> <td>Ethernet</td> <td>MP3000 Extended Memobus RTU</td> </tr> </tbody> </table>	Model	Interface	Protocol	MP3000 Series	Ethernet
Model	Interface	Protocol					
MP3000 Series	Ethernet	MP3000 Extended Memobus RTU					

3. TOP communication setting

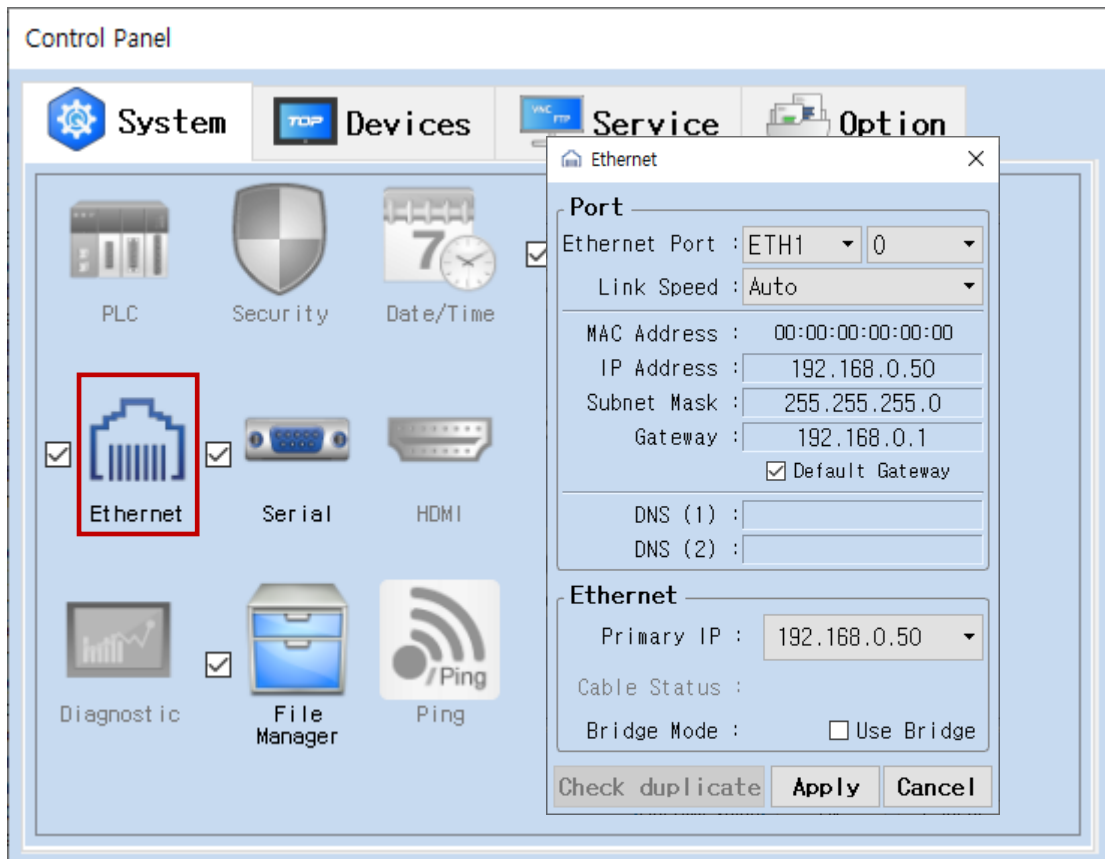
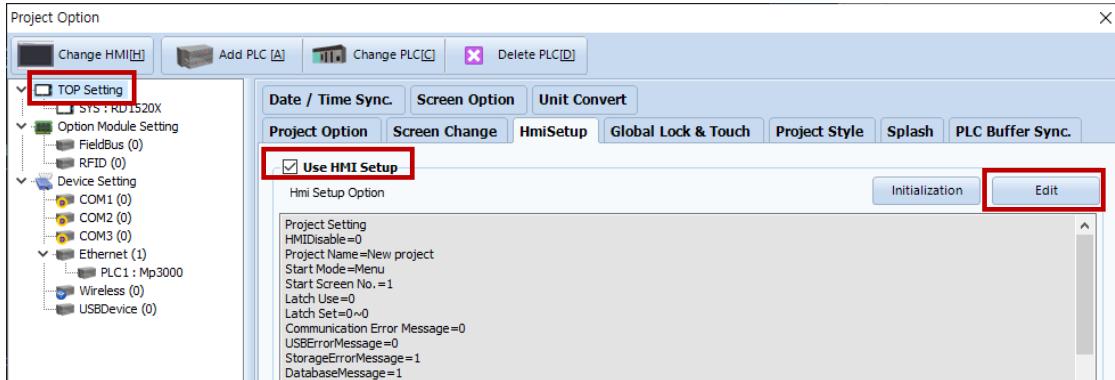
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Option > "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)	192.168.0.50	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.

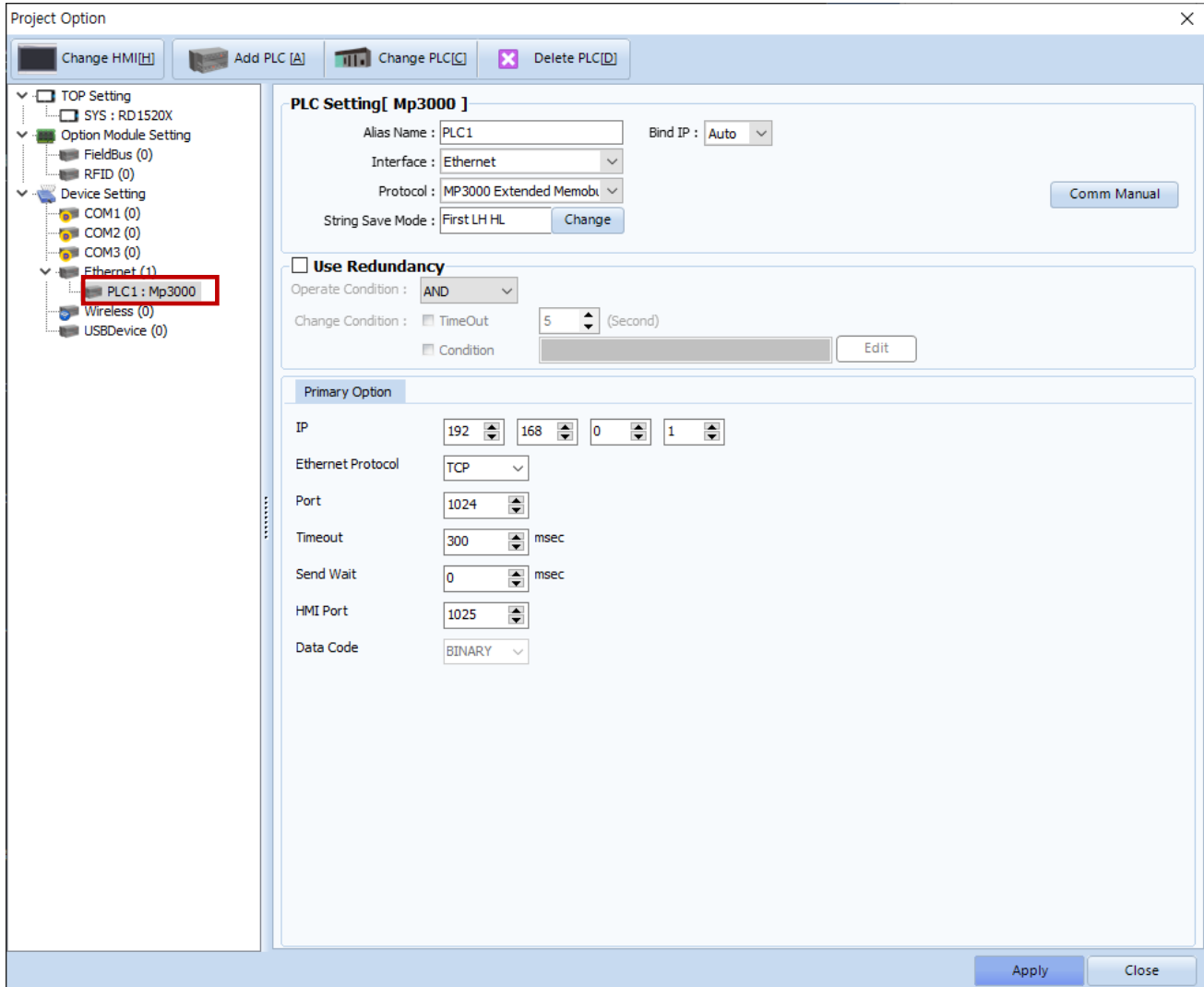
*[Note 2](#)) Do not use duplicate IP addresses over the same network.

* 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

- [Project > Project Property > Device Setting > ETHERNET > "PLC1 : Mp3000"]
 – Set the options of the MP3000 Series Ethernet communication driver in TOP Design Studio.



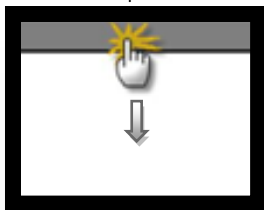
* The above settings are examples recommended by the company.

Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select the communication protocol between the TOP and an external device.	
① Communication options when selecting Extended Memobus RTU		
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 (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.	
HMI Port	Enter the Ethernet communication port number of the TOP.	
Data Code	Select the data code between the TOP and an external device.	
② Communication options when selecting MP Extension Ethernet		
IP	Enter the IP address of the external device.	
Port	Enter the Ethernet communication port number 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.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	

3.2. Communication setting in TOP

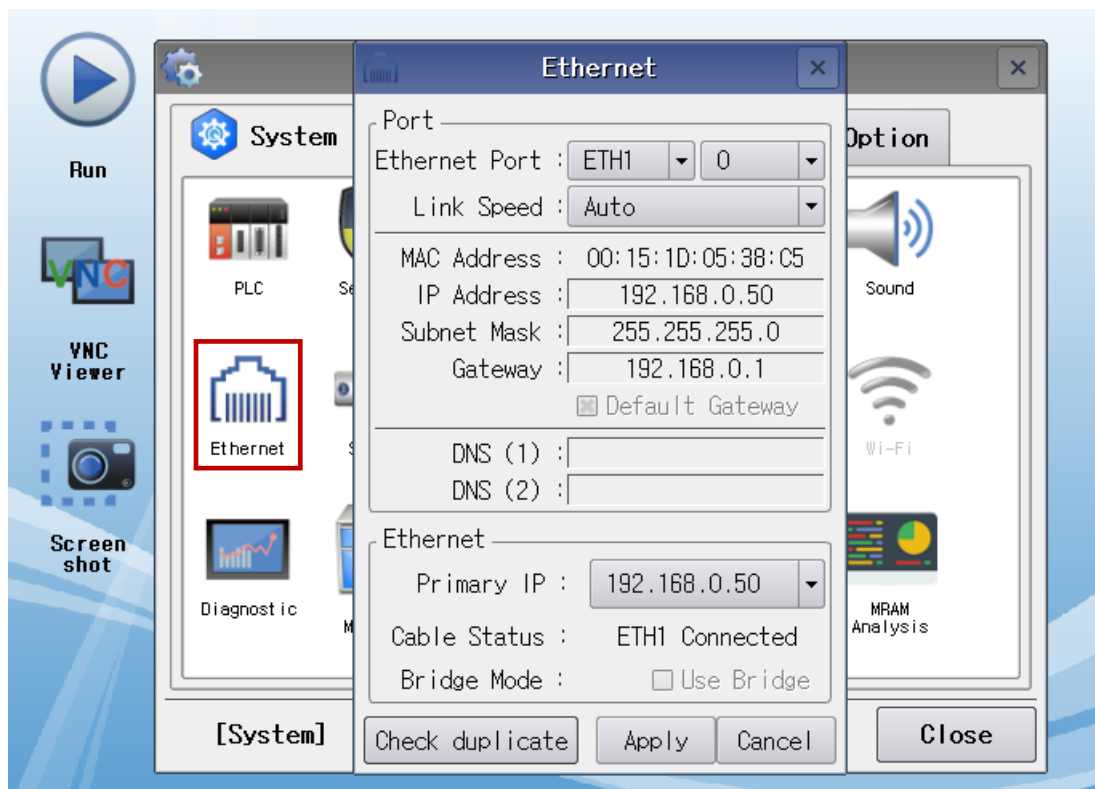
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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.

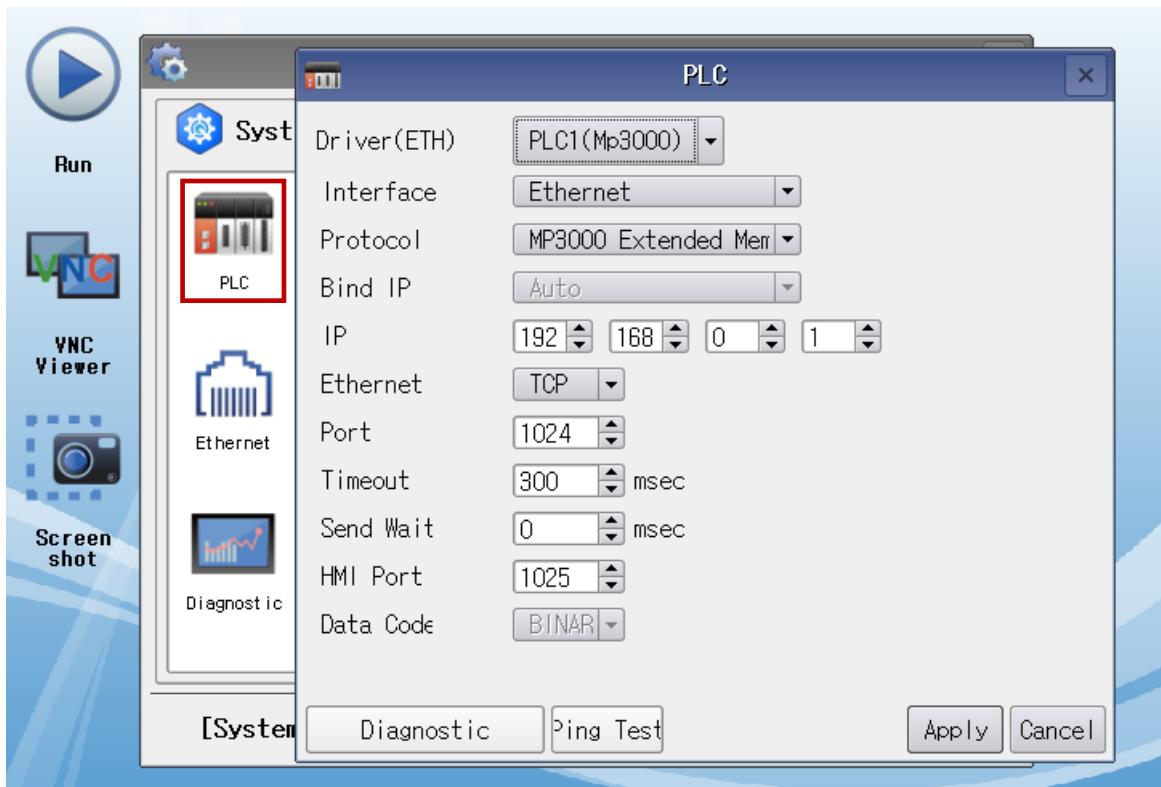
*Note 2) Do not use duplicate IP addresses over the same network.

* 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 the communication protocol between the TOP and an external device.	Refer to "2. External device selection".
Communication options when selecting Extended Memobus RTU		
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 (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.	
HMI Port	Enter the Ethernet communication port number of the TOP.	
Data Code	Select the data code between the TOP and an external device.	
② Communication options when selecting MP Extension Ethernet		
IP	Enter the IP address of the external device.	
Port	Enter the Ethernet communication port number 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.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	

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.

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 "MP Series" Ladder Software "MPE720". For more detailed setting method than that described in this example, refer to the PLC user manual.



Do not use duplicate IP addresses over the same network.

1. Run the "MPE720" software.
2. Create a new project file or open an existing file.
3. Click "Module Configuration".
4. Double-click "218FD" to open the configuration window.
5. Configure as follows. (Example shown below.)

Detail - [218FD]

File Edit View

PT#:- CPU#:- CIR#05 00000-007FF

Transmission Parameters | Status |

Transmission Parameters

IP Address : [192] . [168] . [1] . [1] (0-255)
 Subnet Mask : [255] . [255] . [255] . [0] (0-255)
 Gateway IP Address : [0] . [0] . [0] . [0] (0-255)

Module Name Definition
 Equipment name [CONTROLLER NAME] [Detail Definition]

Connection Parameter

Message Communication

Easy setting | The following parameters for message communications can be easily set. Connections(C NO) 01-10 can be set to receive data automatically.

CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	Node Name
01	05100	192.168.001.002	05000	UDP	Extended MEMOBUS	BIN	Setting*	
02	----						Setting*	
03	----						Setting*	
04	----						Setting*	
05	----						Setting*	
06	----						Setting*	
07	----						Setting*	

Cannot the overlap to local station port number used by the communicate the I/O message.

I/O Message Communication

Disable
 Enable

Easy setting | It is possible to set easily that communicate the I/O message.

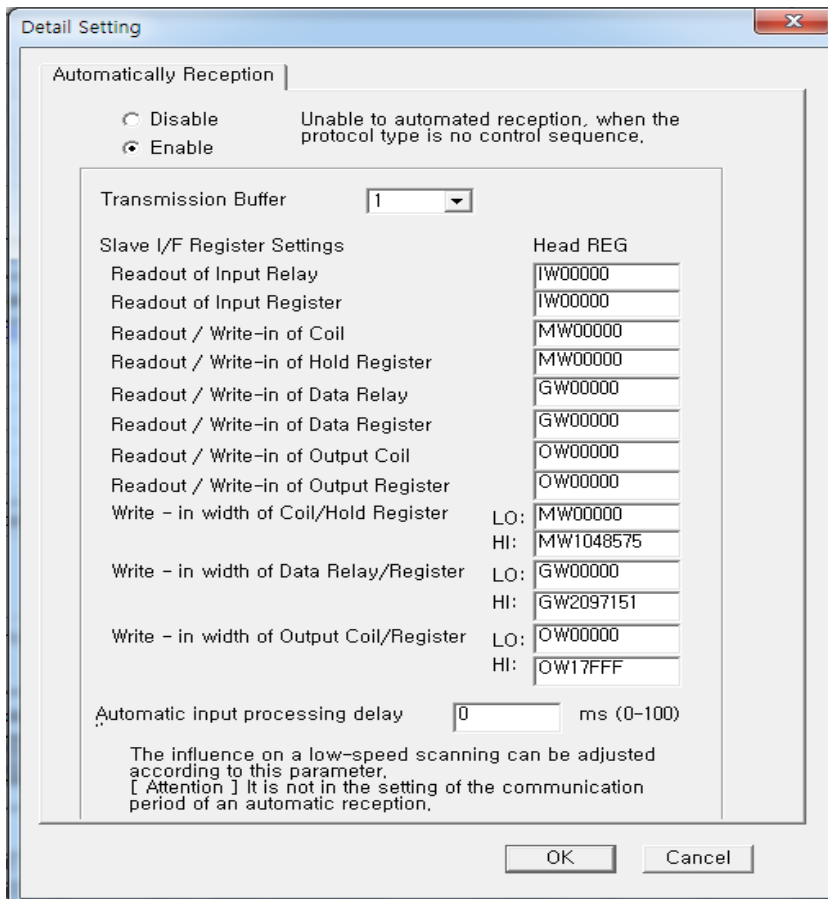
Data update timing [Low] Scan

Read/Write	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	Node Name

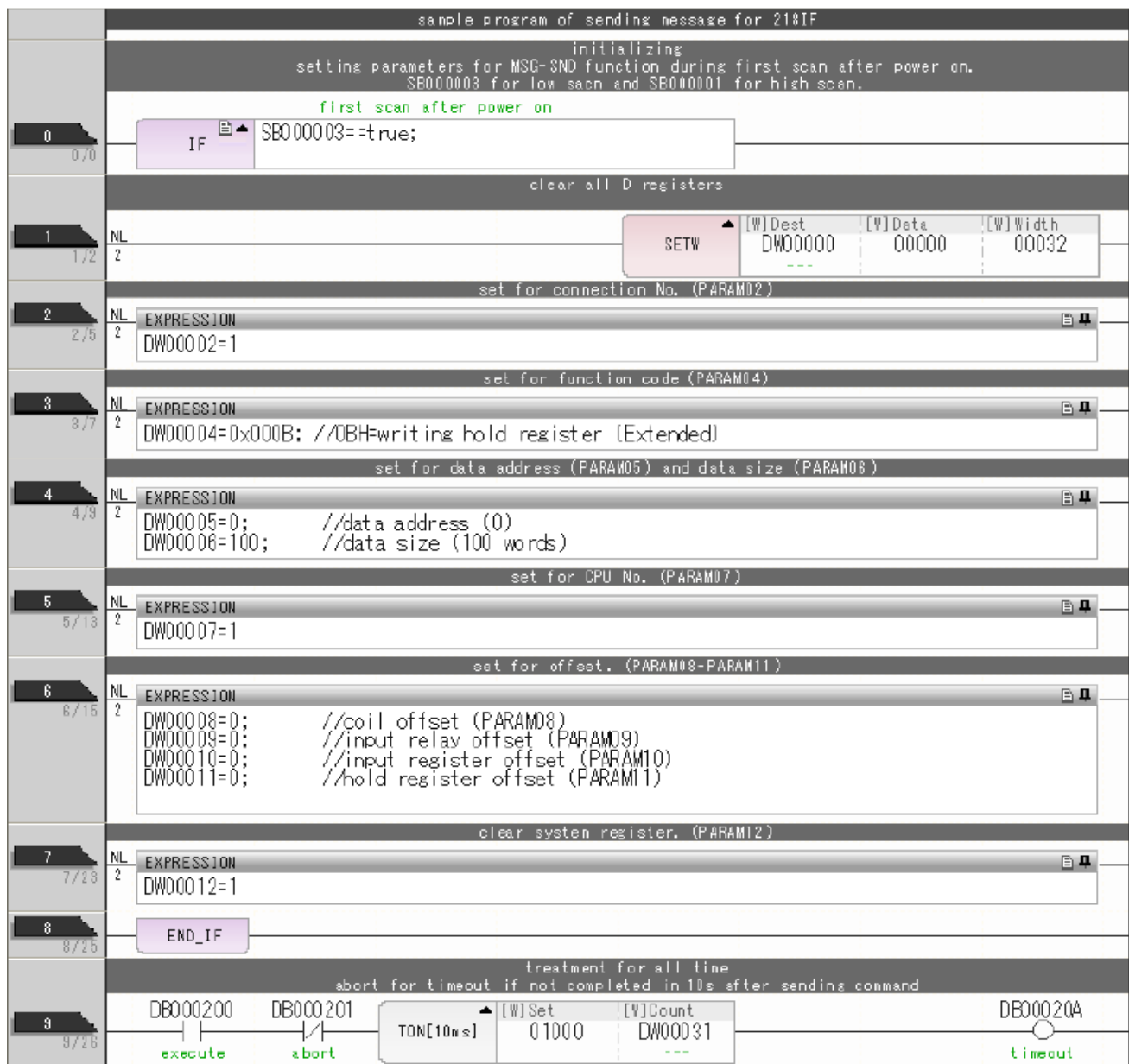
For Help, press F1 NUM

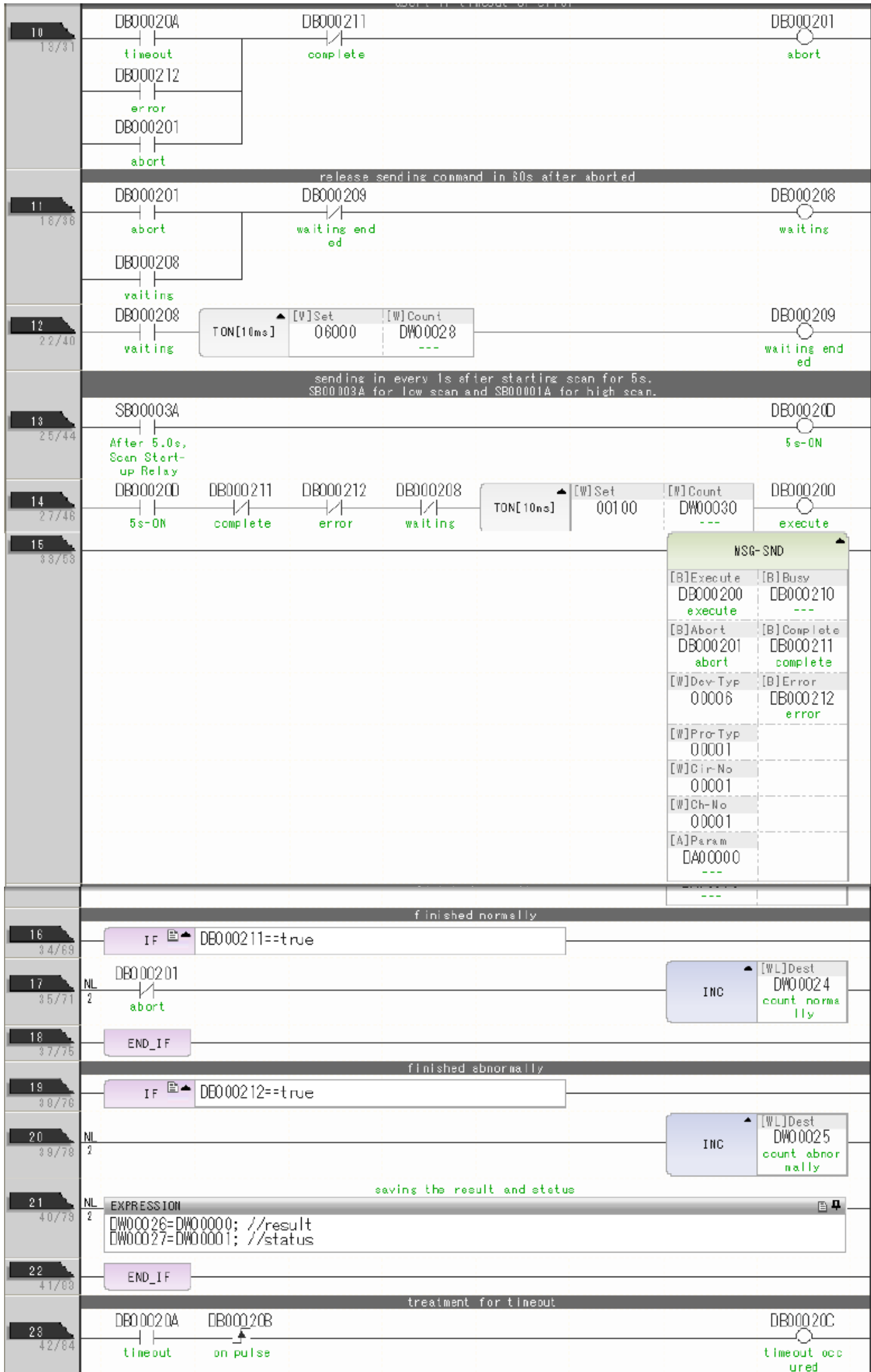
(For more details on configuration, refer to the Ladder Software manual.)

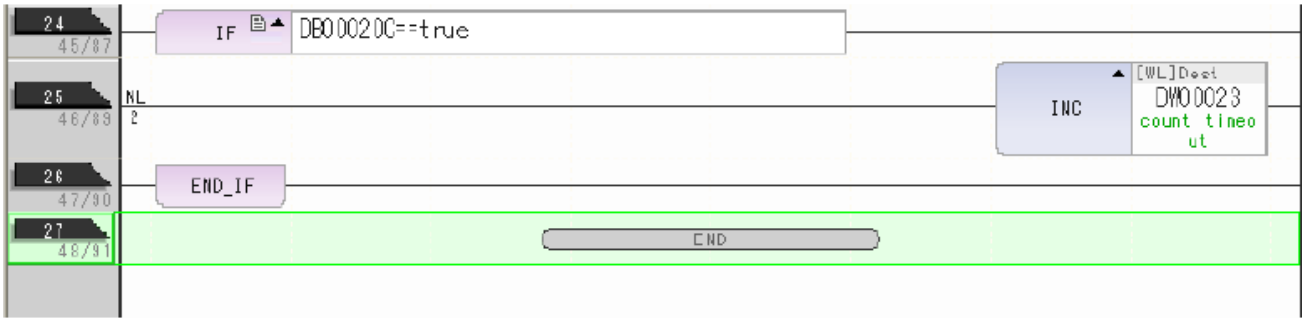
6. Double-click "Detail" to open the configuration window.



7. Write the "MSG-SND LADDER PROGRAM".







7. Send the configuration details to the device by using "Transfer".
8. Boot up the device once the transfer is complete.

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	32bit	Remarks
Holding Registers	MB 0 – 1048576F	MW 0 – 1048576	L/H	
Data Registers	GB 0 – 2097152F	GW 0 – 2097152		
Input Registers	IB 0 – 17FFFF	IW 0 – 17FFF		*Note 1)
Output Registers	OB 0 – 17FFFF	OW 0 – 17FFF		
System Registers	SB 0 – 65534F	SW 0 – 65534		*Note 1)

*Note 1) Cannot be written