

FATEK Automation Corporation

FB Series

Ethernet Driver

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 [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 9](#)

Describes how to set up communication for external devices.

5. Cable table [Page 10](#)

Describes the cable specifications required for connection.

6. Supported addresses [Page 11](#)

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

1. System configuration

The system configuration of TOP and "FATEK Automation Corporation – FB Series Ethernet" is as follows:

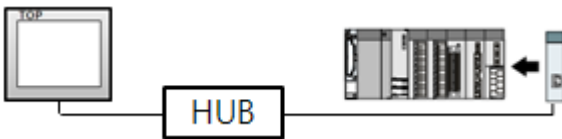
Series	CPU	Link I/F	Communication method	System setting	Cable	
FBs	FBs-10MA/MC FBs-14MA/MC FBs-20MA/MC FBs-24MA/MC FBs-32MA/MC FBs-40MA/MC FBs-60MA/MC	FBs-CBE	Ethernet (UDP)	3. TOP communication setting 4. External device setting	Twisted pair cable* Note 1	
	Ethernet (TCP)					
	FBs-CM25E FBs-CM55E	Ethernet (UDP)	3. TOP communication setting 4. External device setting	5.1. Cable table 1		
		Ethernet (TCP)				
	FBs-20MA/MC FBs-28MA/MC FBs-40MA/MC	FBs-DTBR-E	Ethernet (UDP)	3. TOP communication setting 4. External device setting		5.2. Cable table 2
			Ethernet (TCP)			

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

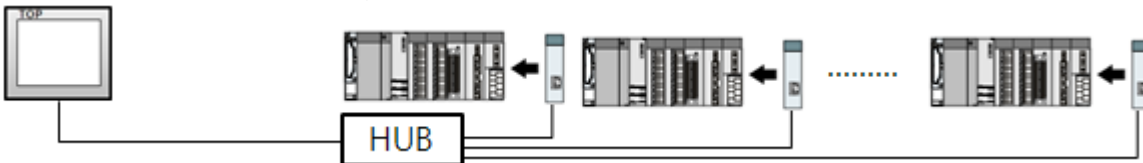
- Refers to STP (Shielded Twisted Pair Cable) or UTP (Unshielded Twisted Pair Cable) Category 3, 4, 5.
- Depending on the network configuration, you can connect to components such as the hub and transceiver, and in this case, use a direct cable.

■ Connectable configuration

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

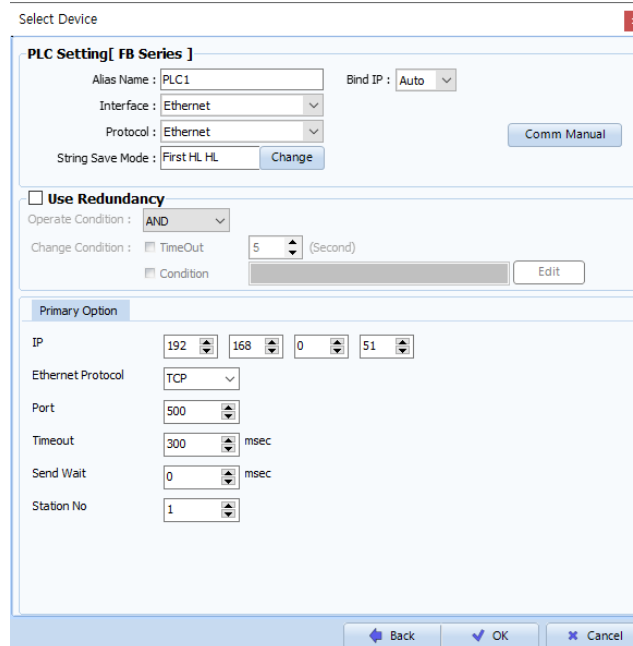
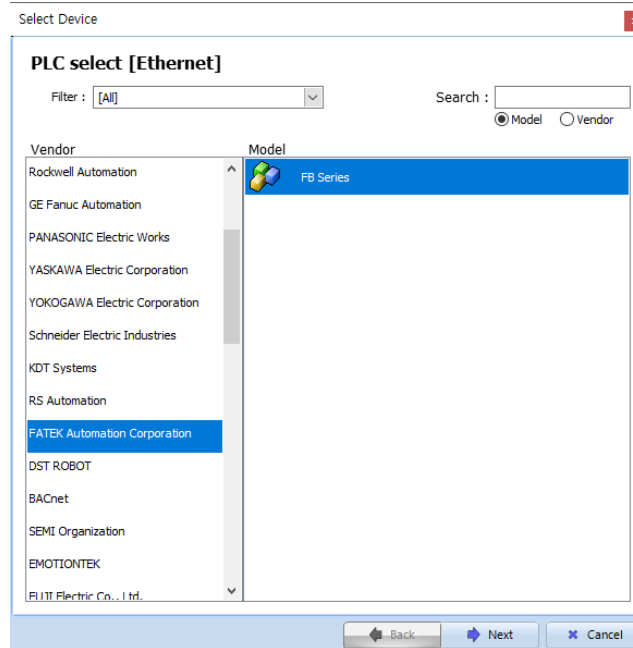


- 1:N connection (one TOP and multiple external devices) connection



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 "FATEK Automation Corporation".					
	PLC	Select the external device to be connected to the 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>FB Series</td> <td>Ethernet</td> <td>Ethernet</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	FB Series	Ethernet
Model	Interface	Protocol					
FB Series	Ethernet	Ethernet					

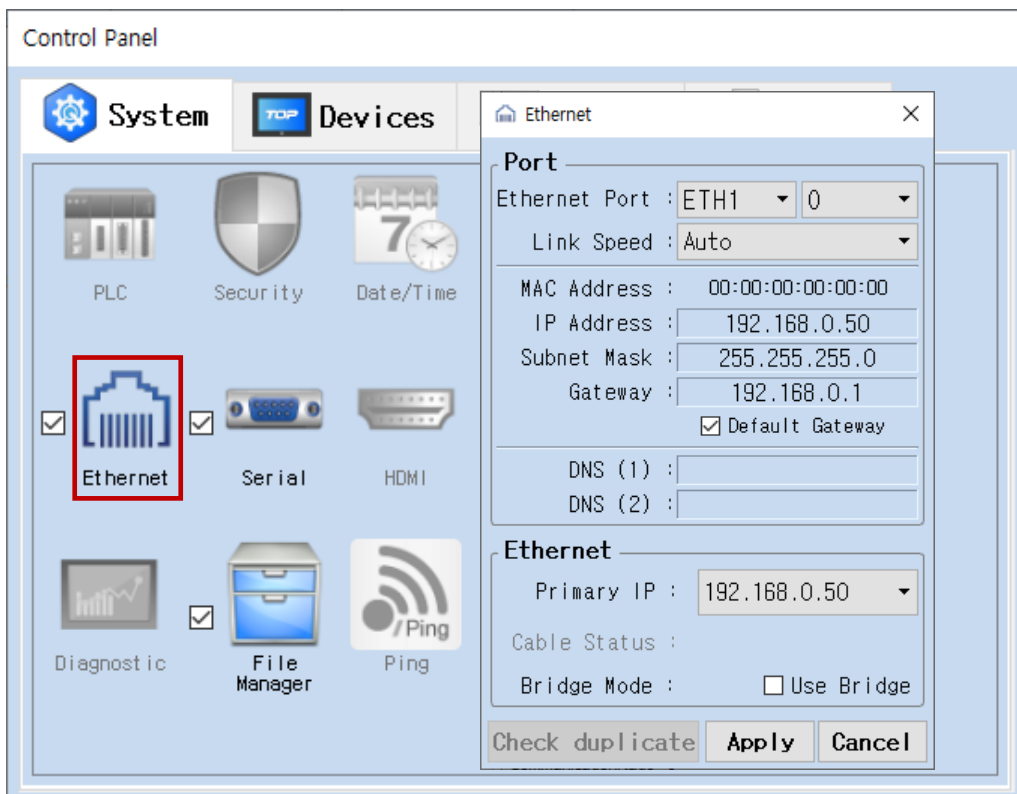
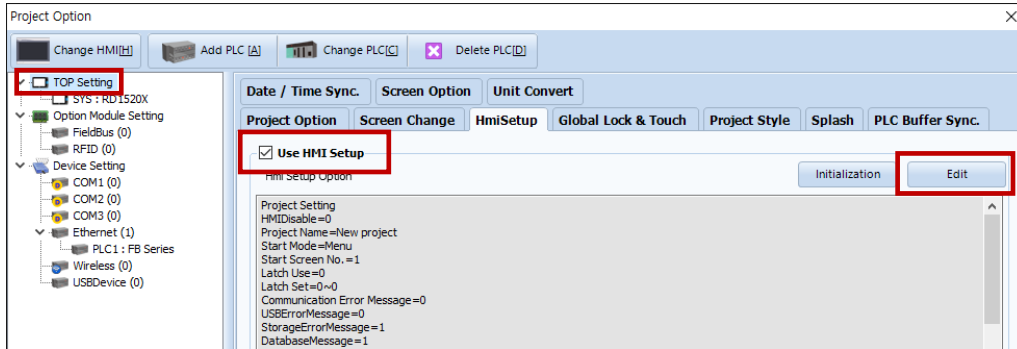
3. TOP communication setting

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.

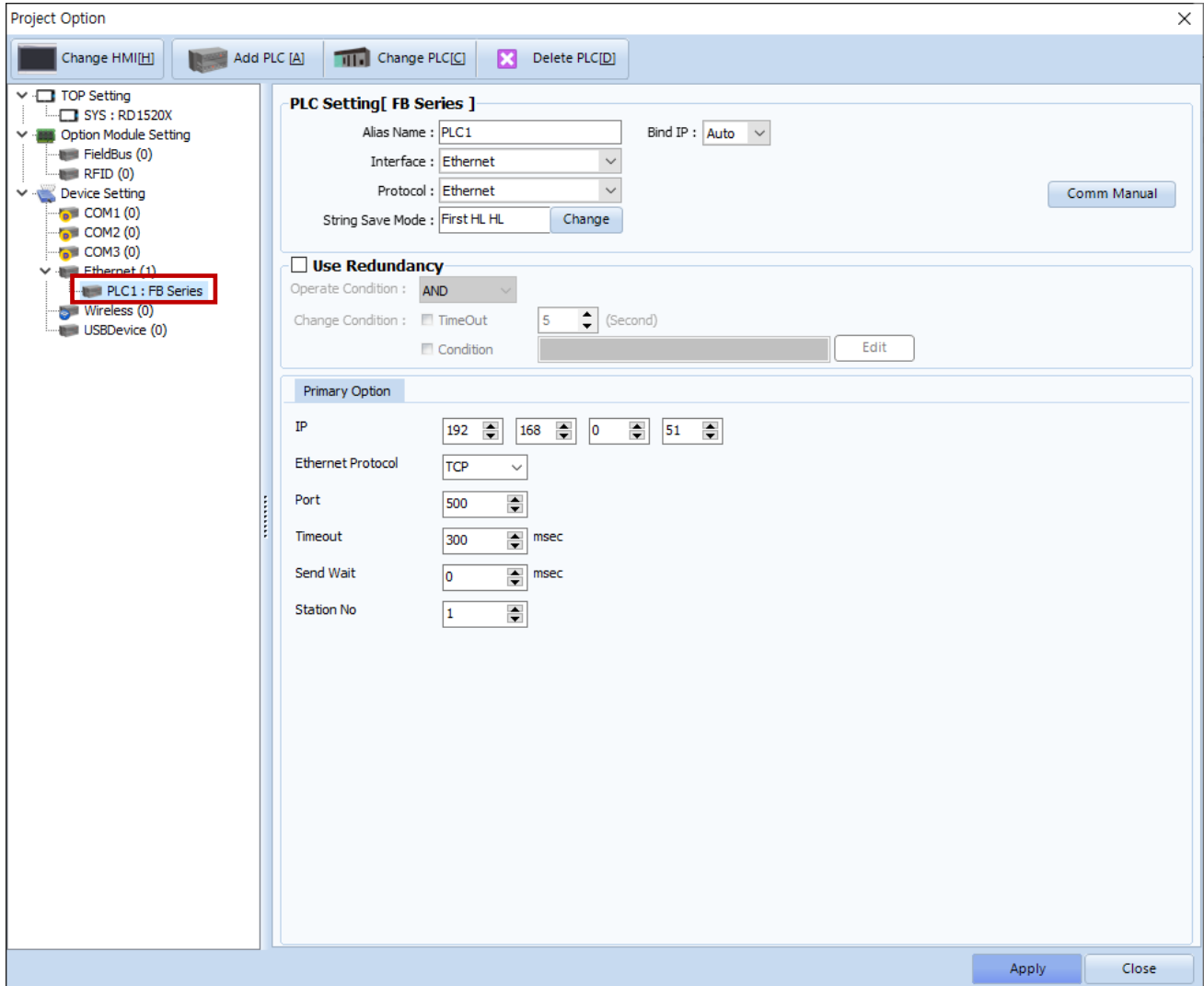
* The above settings are examples recommended by the company.

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(1) > "PLC1 : FB Series"]

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



* The above settings are examples recommended by the company.

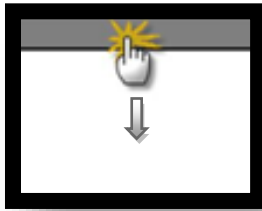
Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection" .
Protocol	Select "Ethernet".	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet communication port number of an 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.	
Station No	Enter the prefix of an external device.	

※ If you use external device prefix 0, all devices on the connected track will respond. Use the designated prefix from 1 to 254 to operate only the relevant number.

3.2. Communication setting in TOP

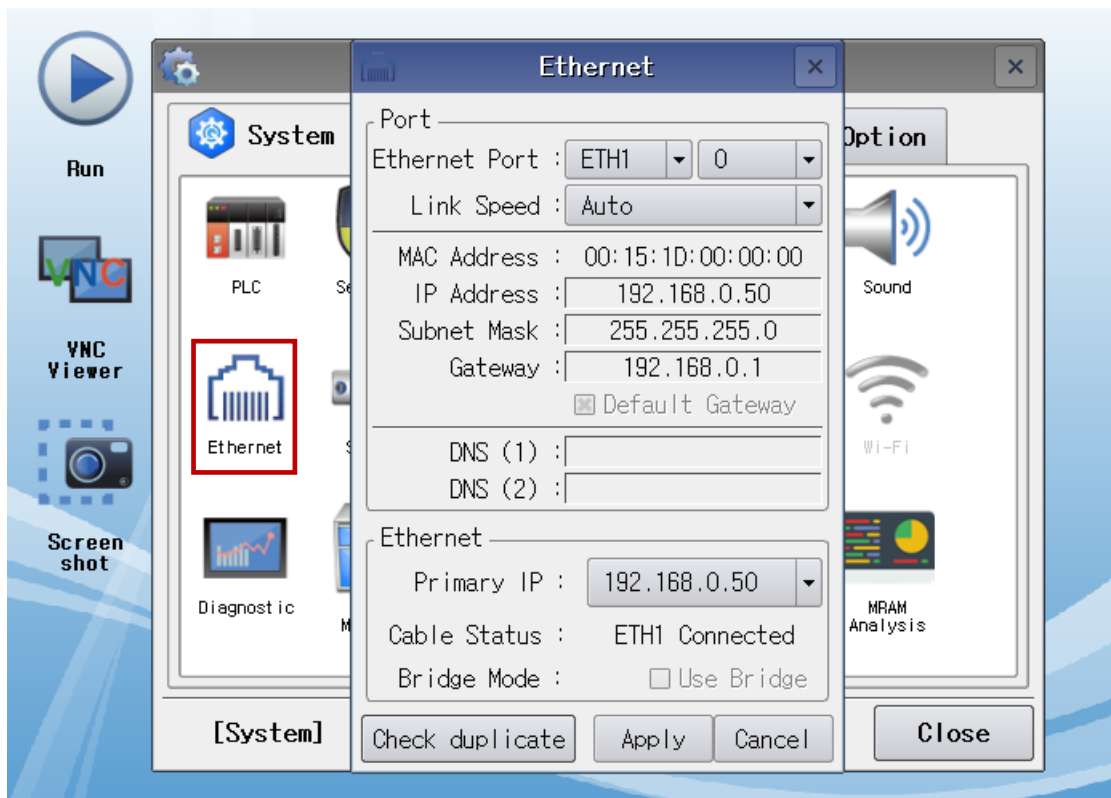
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ 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.

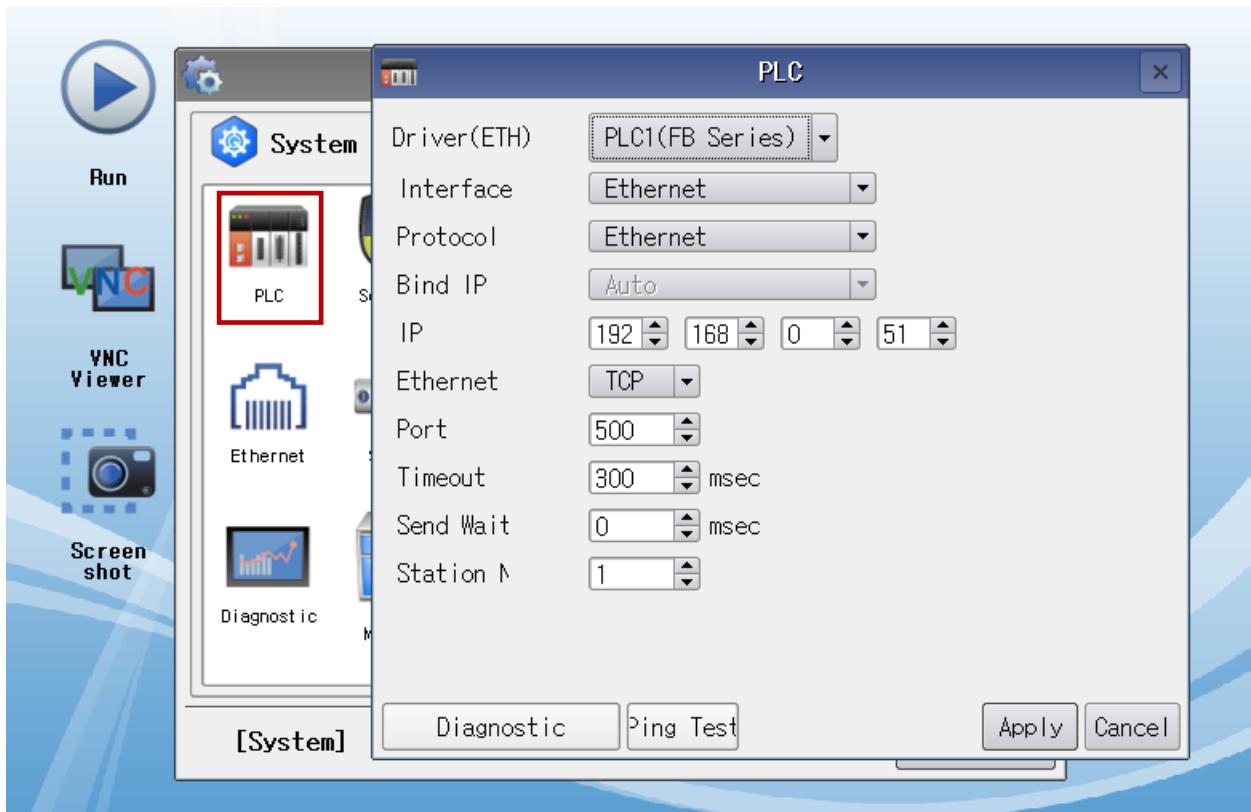
*[Note 2](#)) Do not use duplicate IP addresses over the same network.

* 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".	Refer to "2. External device selection".
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 an 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.	
Station No	Enter the prefix of an external device.	

※ If you use external device prefix 0, all devices on the connected track will respond. Use the designated prefix from 1 to 254 to operate only the relevant number.

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	6. Supported addresses (For details, please refer to the PLC vendor's manual.)	

4. External device setting

Use "Ether_cfg.exe" (Configuration Software of FB Series Ethernet Module) to set up as follows. After setup is complete, download (click the [Export] button) and reboot power to the FB Series.

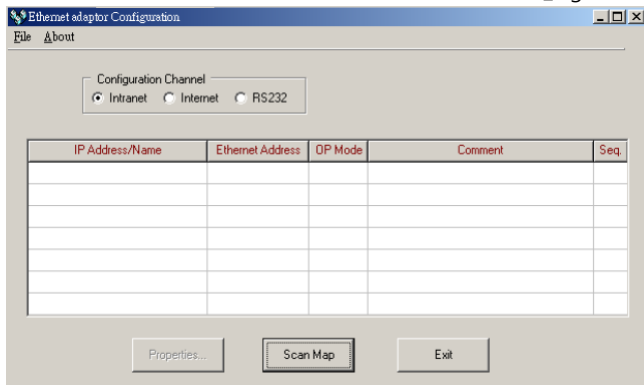
For more detailed setting method than that described in this example, refer to the PLC user manual.



Do not use duplicate IP addresses over the same network.

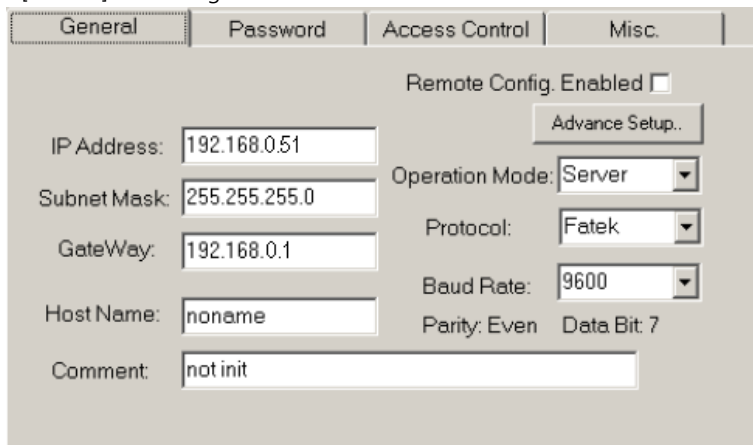
Step 1. FB Series and "Ether_cfg.exe" connection

– When running "Ether_cfg.exe" for first time, the appearing "Ethernet adaptor Configuration" window shows [Intranet/Internet/RS232]; select 1 of 3 methods and connect FB Series with "Ether_cfg.exe".



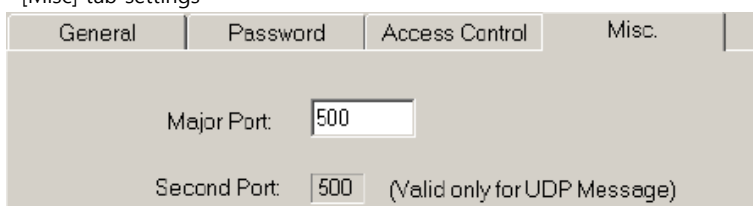
Step 2. "Adaptors Properties" window settings : Set the FB Series side settings on the [General] and [Misc.] tabs.

– [General] tab settings



Items	Settings	Remarks
IP Address	192.168.0.51	Set Users
Subnet Mask	255.255.255.0	Set Users
Gate Way	192.168.0.1	Set Users
Operation Mode	Server	Fixed
Protocol	Fatek	Fixed

– [Misc] tab settings



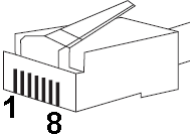
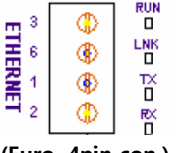
Items	Settings	Remarks
Major Port (TCP port)	500	Set Users
Second Port (UDP port)	500	Set Users

5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.
 (The cable diagram described in this section may differ from the recommendations of "FATEK Automation Corporation")

5.1. Cable table 1 (FBs-CM25E, FBs-CM55E)

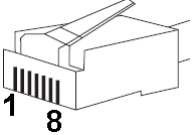
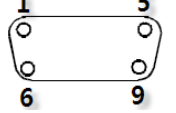
■ ETHERNET (1:1 connection)

ETHERNET			Cable connection	FBs-CM25E/FBs-CM55E		
Pin arrangement* Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement* Note 1)
 <p>Based on communication cable connector front, 8-pin male RJ45 (Male, convex)</p>		1		1		 <p>(Euro. 4pin con.)</p>
		2		2		
		3		3		
		4		6		
		5				
		6				
		7				
		8				
		9				

***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

5.2. Cable table 2 (FBe-DTBR-E)

■ ETHERNET (1:1 connection)

ETHERNET			Cable connection	FBe-DTBR-E(D-SUB 9 pin)		
Pin arrangement* Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement* Note 1)
 <p>Based on communication cable connector front, 8-pin male RJ45 (Male, convex)</p>		1		1		 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>
		2		2		
		3		3		
		4		4		
		5		5		
		6		6		
		7		7		
		8		8		
		9		9		

***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

6. 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	32 Bits	Remarks
Input relay	X000 ~ X255	WX000 ~ WX240	L/H	
Output relay	Y000 ~ Y255	WY000 ~ WY240		
Step relay	S000 ~ S999	WS000 ~ WS976		
Internal relay	M0000 ~ M1911	WM0000 ~ WM1888		
Special relay	M1912 ~ M2001	WM1912 ~ WM1976		
Timer(Contact)	T000 ~ T255	WT000 ~ WT240		
Counter(Contact)	C000 ~ C255	WC000 ~ WC240		
Timer(Current value)	TMR000.00 ~ TMR255.15	TMR000 ~ TMR255		
Counter(Current value)	CTR000.00 ~ CTR199.15	CTR000 ~ CTR199		
	——	CTR200 ~ CTR255		
Data register	R00000.00 ~ R65535.15	R00000 ~ R65535		
Data register	D00000.00 ~ D65535.15	D00000 ~ D65535		