

# MITSUBISHI Electric Corporation

## MELSEC-A Series

### ETHERNET Driver

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Compatible OS	4.0 or higher
version	XDesignerPlus 4.0.0.0 or higher

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## CONTENTS

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Thank you for using M2I's i°Touch Operation Panel(M2I TOP) Series;  
Please read out this manual and make sure to learn connection  
method and process of TOP – External device”

### 1. System

**System Structure** **Panel(M2I TOP)** **Page 2**

#### System Configuration

It explains device for connection, setup of, cable and structural  
system. Please choose proper system referring to this point.

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### 2. Selecting TOP model and external devices

**Page 3**

Select TOP model and external device..

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### 3. Example of system settings

**Page 4**

It explains setup example for communication connection  
between the device and external terminal.  
Select example according to the system you choose in “1.  
System structure”

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### 4. Communication settings details

**Page 6**

It explains the way of configuring TOP communication.  
If external setup is changed, make sure to have same setup of  
TOP with external device by referring to this chapter.

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### 5. Support address

**Page 10**

Check available addresses to communicate with external devices  
referring to this chapter.

# 1. System configuration

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System Configuration of TOP and "MITSUBISHI Electric Corporation's MELS

C-A Series ETHERNET" is as below.

Series	CPU	Link I/F	Method	System settings	Cable
MELSEC-A	A0J2H A2A A2A-S1 A3A A2U A2U-S1 A3U A4U A1N A2N	AJ71E71	Ethernet ( UDP )	3.1 Configuration Exercise 1	Twisted Pair Cable* <b>Caution1)</b>
	A2US A2US-S1 A1S A1S-C24 A1SJ A2S A2S-S1	A1SJ71E71-B2			
	A2US A2US-S1 A2USH-S1 A1SJ A2SJH A1SH A2SH A1S A2S	A1SJ71E71-B5			
	A2US A2US-S1 A2USH-S1 A1SJ A2SJH A1SH A2SH A1S A2S	A1SJ71E71-B2-S3			
	A2US A2US-S1 A2USH-S1 A1SJ A2SJH A1SH A2SH A1S A2S	A1SJ71E71-B5-S3			

\*Caution1) Twisted pair cable

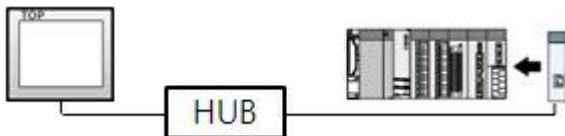
- This means STP(Shielded Twisted Pair cable) or UTP (Unshielded Twisted Pair cable) category 3,4,5.
- You can connect to other composition devices such as hub, transceiver depends on the configuration and in this case, use direct cable.

% Possible Connecting Configuration

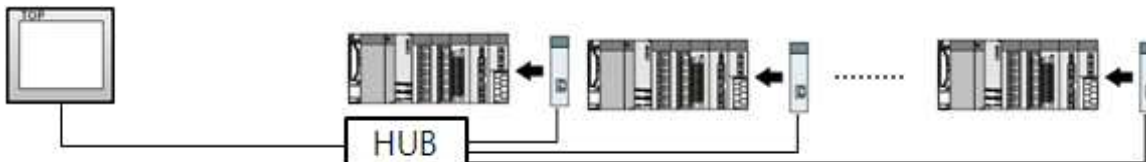
11:1 Connection (TOP 1 vs. external device)

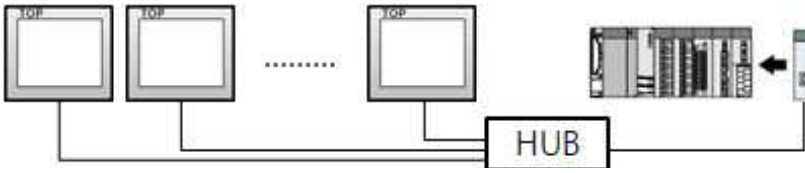
11 : N Con Possible Connecting Configuration

- 1:1 Connection (TOP 1 vs. external device)



- 1 : N Connection (1 TOP and several external devices)

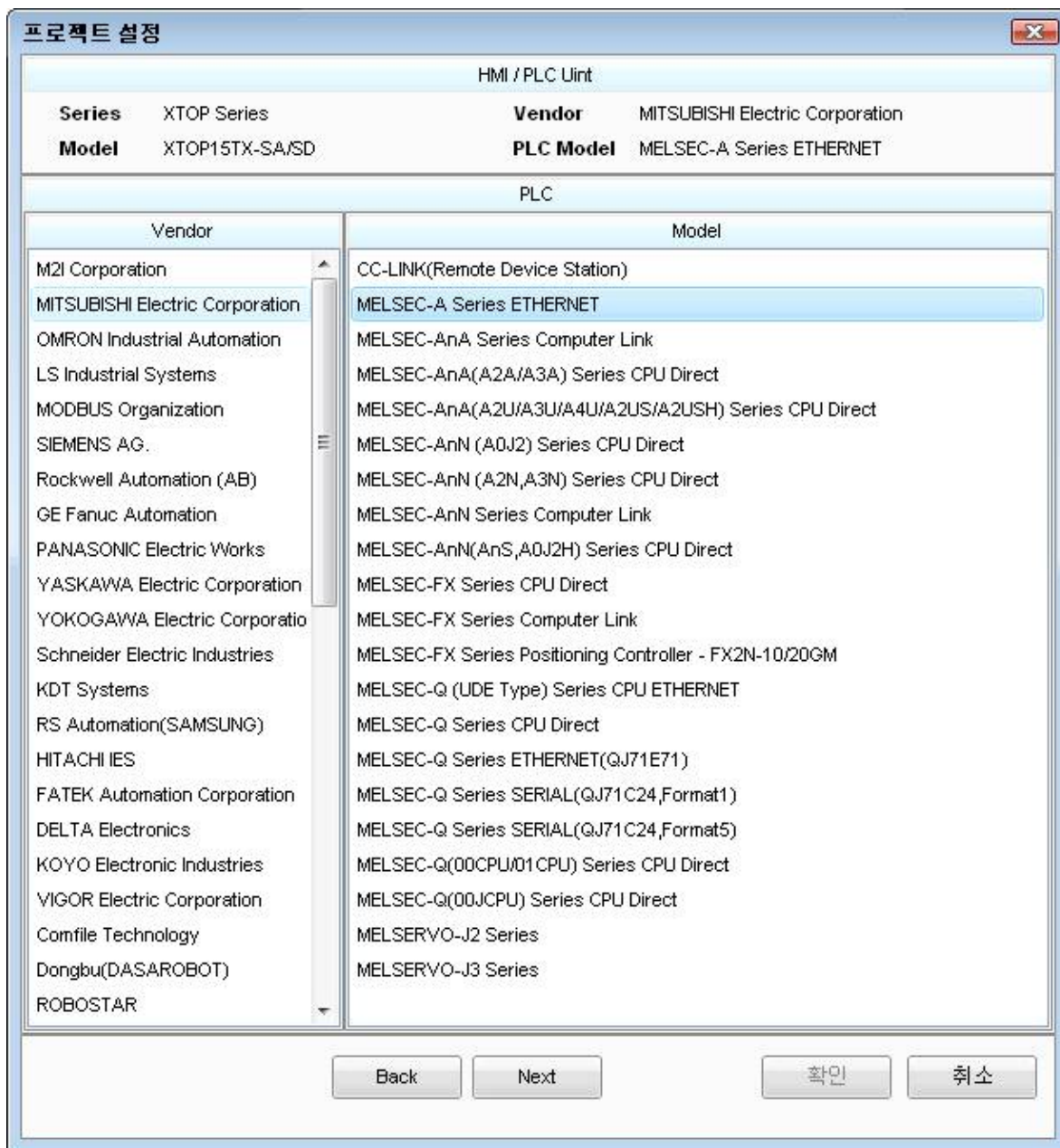






## 2. Selecting TOP model and external devices

Select the external devices to connect to TOP.



Setting details		Contents				
TOP	Series	Select the name of a TOP series that is to be connected to PLC. Before downloading the settings, install the OS version specified in the table below according to TOP series. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Series</th> <th>Version name</th> </tr> </thead> <tbody> <tr> <td>XTOP / HTOP</td> <td>V4.0</td> </tr> </tbody> </table>	Series	Version name	XTOP / HTOP	V4.0
	Series	Version name				
XTOP / HTOP	V4.0					
Name	Select the model name of TOP product.					
External device	Manufacturer	Select the manufacturer of external devices to be connected to TOP. Please Choose "MITSUBISHI Electric Corporation".				
	PLC	Select the model series of external devices to be connected to TOP. Please choose MELSEC-A Series ETHERNET. Please check, in the "1. System configuration", if the relevant external device is available to set a				

		system configuration.
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### 3. Example of system settings

For configuration of Ethernet communication between TOP and MELSEC-A Series, we suggest as below.

#### 3.1 Example of settings 1

The system is set as below.

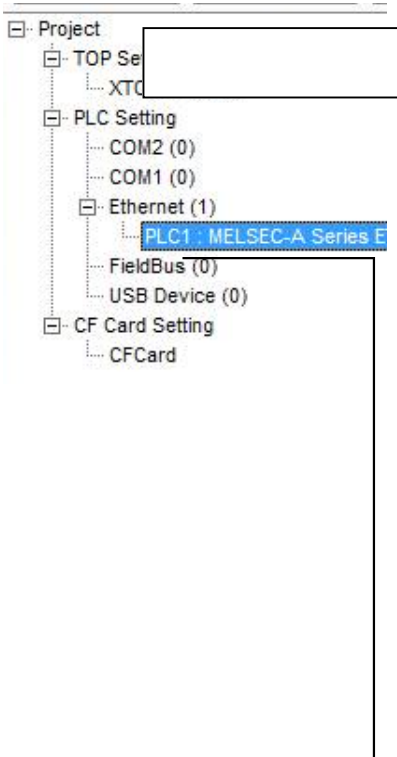
Details	TOP	MELSEC-A Series	Remark
IP Address* <b>Caution1</b> ) <b>Caution2</b> )	192.168.0.50	192.168.0.51	User setting
Protocol	UDP		User setting
Port	1024	5001	User setting

\*Caution1) The network address (the 3 front digits of IP, 192.168.000) TOP and external device must be identical.

\*Caution2) Please do not use the same IP address in the same network.

#### (1) XDesignerPlus setup

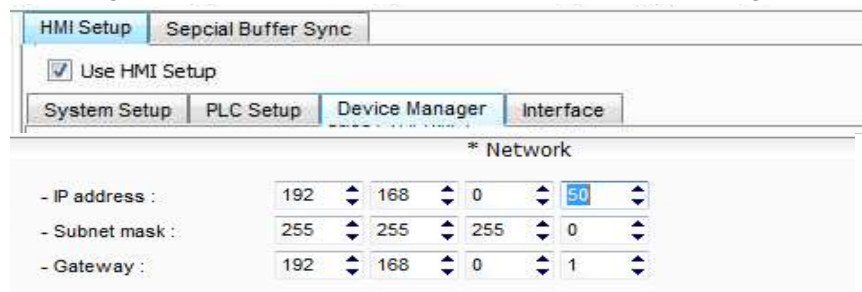
After setting the below details in [Project > Project Settings], download the detailed settings using TOP tool.



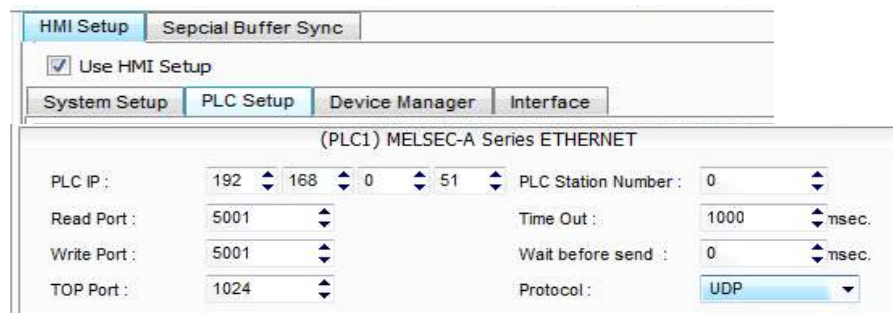
■ [ Project > Project Properties > Project > Settings > TOP Name ]

Set the communication interface of TOP tool.

In the right window [ HMI setup > check "Use HMI setup" > device manager ]

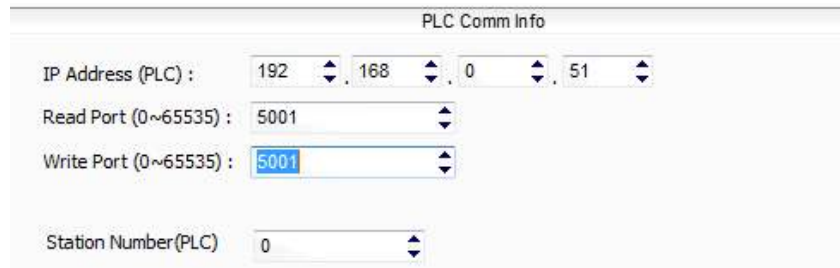


- At the right window, [ HMI setup > Check "Use HMI setup" > PLC setup]



■ External device settings

It sets the option for "MELSEC-A Series ETHERNET" communication driver.



- IP Address (PLC): Type the IP address that the external device was given.

-Reading port / writing port: Choose the port number that will be used for Ethernet communication.

- PLC address (PLC) : External device setting address



## (2) External device settings

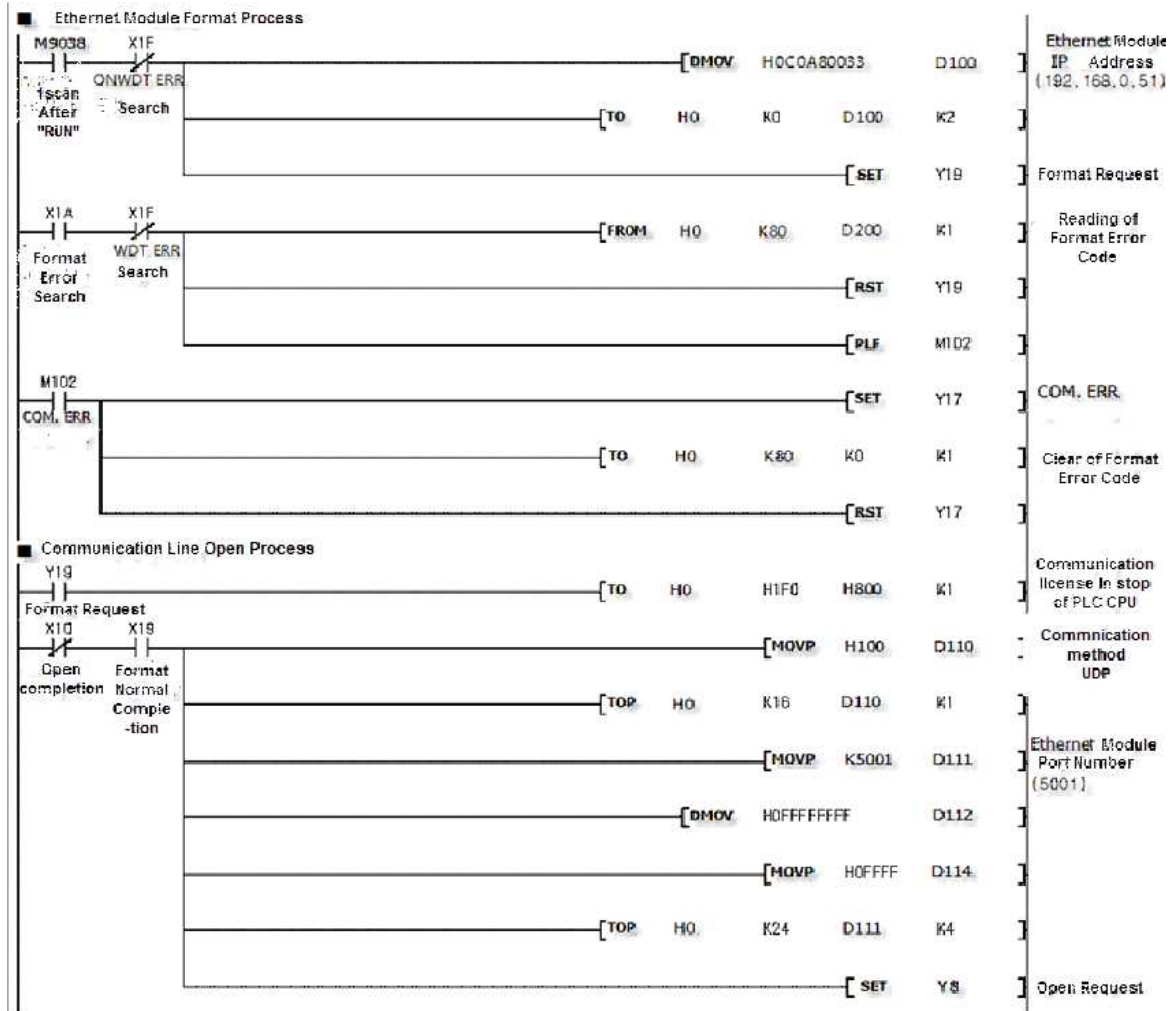
Please set the DIP Switch in the Ladder Software and device for communication setting of MELSEC-A Series Ethernet communication module. Please see PLC User Manual for more detail setup method.



Please do not use the same IP address in the same network.

1. After typing down like the sequence program example below, download to PLC.

(This example is the ethernet resetting program when ethernet card is installed at slot 0. If the location of ethernet card slot gets changed, the address of X and Y that are written in the example must be changed as well. For example, let's say if we have a card on the slot 0 that takes 32 point, and we have ethernet card on slot 1, X1F that are written on the line 0 on the example will be +32 point, therefore it will be X3F. H0(Buffer Memory Start Address) of 'To order' or 'From order' will be exchanged to word so it will be (32 point = 2 words) H2.)




Buffer Memory Setting Information			User setting device	
Address	Setting Information	Setting (Range)	Address	Setting Information
0~1	Ethernet card IP address	C0A80033H (192.168.0.51)	M102	COM.ERR lights out order
16	Use purpose setting	100H(fixed)	D100	Ethernet card IP address
24	Ethernet card port number	5001	D110	Use purpose setting
25~26	Confront device (TOP) IP address	FFFFFFFH(fixed)	D111	Ethernet card port number
27	Confront device (TOP) Port number	FFFFH(fixed)	D112~D113	Confront device (TOP) IP address
80	Reset problem code	-	D114	Confront device (TOP) Port number
			D200	Reset problem code




2. Set up Dip Switch in front of module once the sequence program transmission is complete.

(1) Driving mode setting switch


Driving mode setting switch	Contents	Setting value
	Online	0 (fixed)

(2) Communication condition setting switch

◆ Please set up as below in case of AJ71E71 / AJ71E71-S3

Communication condition setting switch	DIP Switch	Contents	Setting value
	SW1	Line process if error occurs in TCP timeout	OFF
	SW2	Data code setting (Binary code)	OFF
	SW3	Not using	OFF
	SW4		OFF
	SW5		OFF
	SW6		OFF
	SW7	CPU communication timing setting (Writing permission when RUN)	ON
	SW8	Resetting Timing setting	OFF

◆ Please set as the table below if it's A1SJ71E71-B2 / A1SJ71E71-B5 / A1SJ71E71-B2-S3 / A1SJ71E71-B2 -S3.

Communication condition setting switch	DIP Switch	Contents	Setting value
	SW1	Line process if error occurs in TCP timeout	OFF
	SW2	Data code setting (Binary code)	OFF
	SW3	CPU communication timing setting (Writing permission when RUN)	ON
	SW4	Resetting Timing setting	OFF

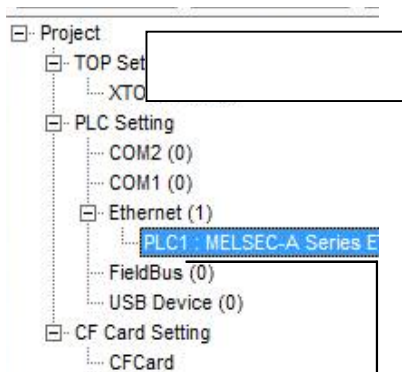
3. Power reset after setting Dip Switch.

## 4. Communication settings details

Communication settings are available at XDesignerPlus or TOP main menu. Communication settings must be identical with the external devices.

### 4.1 XDesignerPlus settings details

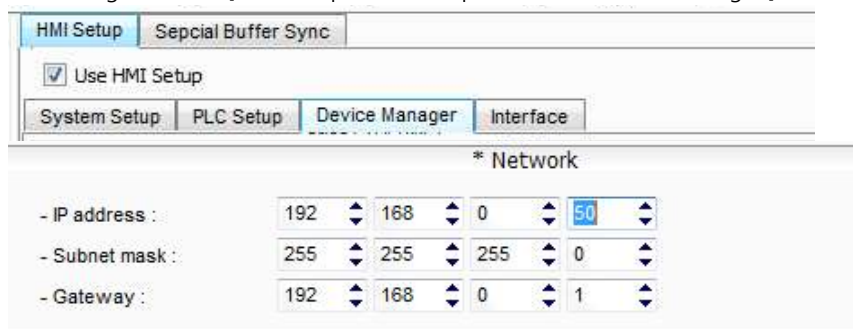
Select [Project > Project attributes] to show the below window.



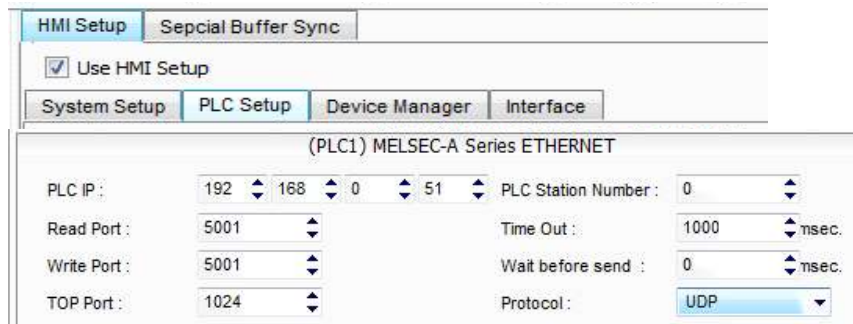
■ [ Project > Project Properties > Project > Settings > TOP Name ]

Set the communication interface of TOP tool.

In the right window [ HMI setup > HMI setup use check > device manager ]



- At the right window, [ HMI setup > Check the HMI setup use box > PLC setup ]



■ External device settings

It sets the option for "MELSEC-A Series ETHERNET" communication driver.



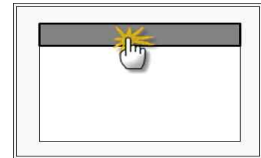
#### ■ Communication Interface Settings

Details	Contents
IP Address	Setup the IP address that TOP receives in the network.
Subnet mask	Input subnet mask of network
Gateway	Input subnet mask of network
PLC IP address	Input IP address that external device gets received.
Read Port / Write Port	Choose port number that will be used for ethernet communication of external device.
TOP port	Port number will be automatically setup if ethernet communication with external device is in progress.
PLC address [0~65535]	Address of other device. Select between [0 - 65535].
Ethernet time out	Set up TOP's waiting time from external device at [0 - 99] x 100mSec.
Delay time of transmission [ x1	Set up TOP's waiting time between response receiving – next command request transmission

msec ]	from external device at [ 0 – 5000 ] x 1 mSec.
Protocol	Choose the protocol type that is authorized to use following external devices and setup port number.

## 4.2 TOP main menu setup item

- When a buzzer is on during the power reset, touch 1 spot at the upper LCD to move to "TOP Management Main" display.
- Set up driver interface at TOP according to Step1 → Step2 below.  
(Press "TOP Ethernet setup" in Step 1 to change setup at Step 2.)



### Step 1. [ PLC setup ] .Setup driver interface.

PLC setup	
PLC IP : 192 . 168 . 00 . 51	Communication Interface Setting
Protocol : UDP	
PLC Read Port : 5001	
PLC Write Port : 5001	
TOP Port : 1025	
PLC Address : 0	
Timeout : 1000 [mSec]	
Delay time of transmission : 0 [mSec]	
TOP IP : 192 . 168 . 0 . 50	
<input type="button" value="TOP Ethernet setting"/> <input type="button" value="communication diagnosis"/>	

#### Step 1-Reference.

Details	Contents
PLC IP	It is an IP address that external device was given.
Protocol	Choose the protocol type that is authorized to use following external devices and setup port number.
PLC Read Port	It is the port address that will be used for Ethernet of external device.
PLC Write Port	It is the port address that will be used for Ethernet of external device.
TOP port	Port number will be automatically setup if Ethernet communication with external device is in progress.
PLC address [0~65535]	Address of other device. Select between [0 - 65535].
Timeout [ x1 mSec ]	Set up TOP's response waiting time from external device at [ 0 – 5000 ] x 1 mSec.
Transmitting Delay Time [ x1 mSec]	Set up TOP's waiting time between response receiving – next command request transmission from external device at [ 0 – 5000 ] x 1 mSec.
TOP IP	Setup the IP address that TOP receives in the network.

### Step 2. [PLC Setup] > [TOP Ethernet Setup] - Setup the serial parameter of correspond port.

Port Settings	
* Ethernet Communication	Ethernet Port Communication Interface Settings
+ Network setting	
- MAC : 00 - 15 - ID - 00 - 30 - 52 (each device has different address)	
- IP Address : 192 . 168 . 0 . 50	
- Subnet mask : 255. 255 . 255 . 0	
- Gateway : 192 168 . 0 . 1	

#### Step 2-Reference.

Details	Contents
MAC	Physical official address in the network.
IP Address	Setup the IP address that TOP receives in the network.
Subnet mask	An address that divides the network ID and host ID regarding of IP address.

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Gateway

An address that connects a network to another network.

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### 4.3 Communication diagnosis

- TOP - Confirming interface setting condition between external devices
- Move to Menu by clicking the top side of LCD screen as resetting the power of TOP.
- [Main Menu >Communication setting] Confirm if detail in number 20~24 is identical to the setup information of "■Setup exercise 1".
- PLC Setup > Click the button in "Communication diagnosis" of TOP Ethernet.
- Diagnosis dialog box will pop up on the screen, you can judge by following information that is shown on box no. 3 section.

**OK! Communication setting normal**

**Time Out Error!** Abnormal Communication setting  
 - **Error in the setting situation of Cable and TOP / External device**  
 (reference : Communication Diagnosis sheet)

■ Communication Diagnosis Sheet

- Please refer to the information below if you have a problem between external devices and communication connection.

Details	Contents			Confirm				
TOP	Version Information	xDesignerPlus :	O.S :					
	Name of Driver				OK	NG		
	External device information (xDesignerPlus Project setting)	IP Address				OK	NG	
		Subnet mask				OK	NG	
		Gateway				OK	NG	
	TOP Information (Main Device Menu Setting)	Protocol	UDP/IP	TCP/IP	OK	NG		
		IP Address				OK	NG	
			Subnet mask				OK	NG
			Gateway				OK	NG
Other specified setting info				OK	NG			
System configuration	System Connection Method	1:1	1:N	N:1	OK	NG		
	Name of cable (Hub usage)	Direct (Use Hub)	Cross (No Hub)		OK	NG		
External device	Name of CPU				OK	NG		
	Name of communication device				OK	NG		
	Protocol(mode)				OK	NG		
	Other specified setting info				OK	NG		
	IP Address	(Local)	(Destination)		OK	NG		
	Port number	(Local)	(Destination)		OK	NG		
	Subnet mask				OK	NG		
	Gateway				OK	NG		
Address range confirm (other docs)				OK	NG			



## 5. Support Address

Devices that are usable with TOP is as below.

There might be difference in the range of device (address) by type / series of CPU module TOP series supports the maximum address range that external device series use Please refer to each CPU module user manual carefully for devices that you desired to use to prevent not getting out of range.

Name	Device	Bit Address	Word Address
X	Input Relay	X0000 ~ X07FF	X0000 ~ X07F0
Y	Output Relay	Y0000 ~ Y07FF	Y0000 ~ Y07F0
M	Internal Relay	M0000 ~ M8191	M0000 ~ M8176
M	Special Relay	M9000 ~ M9255	M9000 ~ M9240
L	Latch Relay	L0000 ~ L8191	L0000 ~ L8176
F	Annunciator	F0000 ~ F2047	F0000 ~ F2032
B	Link Relay	B0000 ~ B0FFF	B0000 ~ B0FF0
TS	Timer (contact)	TS0000 ~ TS2047	-
TC	Timer (coil)	TC0000 ~ TC2047	-
CS	Counter (contact)	CS0000 ~ CS2047	-
CC	Counter (coil)	CC0000 ~ CC2047	-
TN	Timer (current value)		TN0000 ~ TN2047
CN	Counter (current value)		CN0000 ~ CN1023
D	Data Register	D0000.0 ~ D6143.15	D0000 ~ D6143
D	Special Register	D9000.0 ~ D9255.15	D9000 ~ D9255
W	Link Register	W0000.0 ~ W0FFF.15	W0000 ~ W0FFF
R	File register	R0000.0 ~ R8191.15	R0000 ~ R8191