# Chapter 20   Ethernet Communication and Multi-HMIs Connection

By using the Ethernet network, the EB8000 provides following methods for data transmission:

1. HMI to HMI communication
2. PC to HMI communication
3. Operate the PLC connected with others HMI

There are two ways of the Ethernet communication; the one is to use RJ45 straight through cable with hub, and another one is to use RJ45 crossover cable. In the second way there is no need to use hub, and it is limited to the condition of point to point connection (HMI to HMI, or PC to HMI). The following descriptions will show how to set up and perform the Ethernet connection in each way.
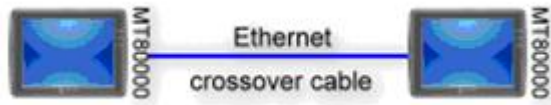
(a). With hub connection
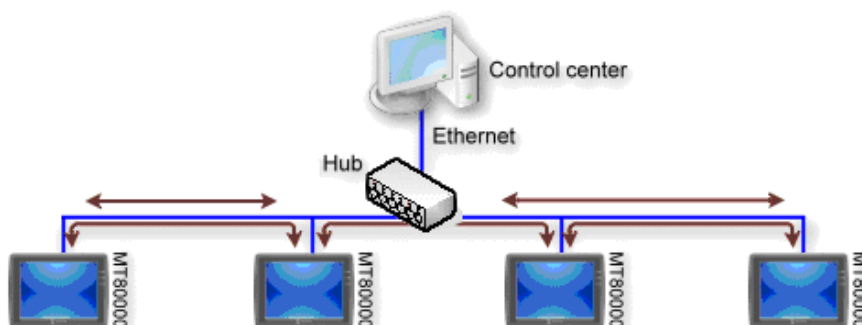
(b). With point to point connection

1. HMI to HMI Communication

Individual of HMI can monitor and control each other's data through the Ethernet network. By using the system reserved register (LB and LW). The one HMI can master performance of others HMI, and it can handle requests from a maximum of 32 others HMI simultaneously.

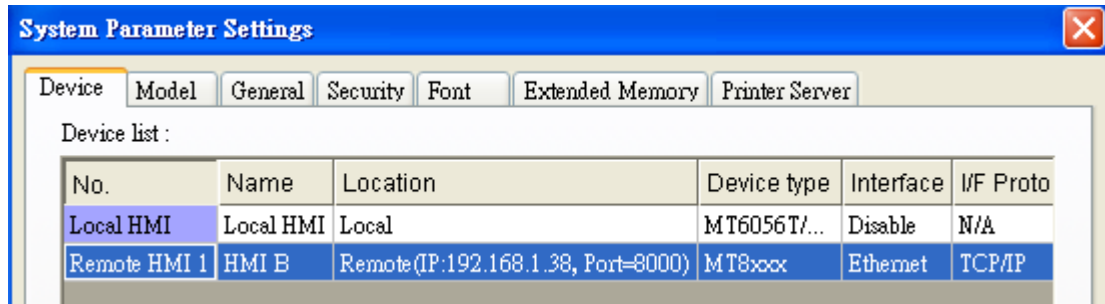Here is an example of communicating between two HMIs (HMI A and HMI B).

When HMI A wants to use the set bit object to control the [LB123] node of HMI B, the procedure for setting the project on HMI A as follows:
Example the IP address of HMI A is "192.168.1.37" and HMI B is "192.168.1.38".
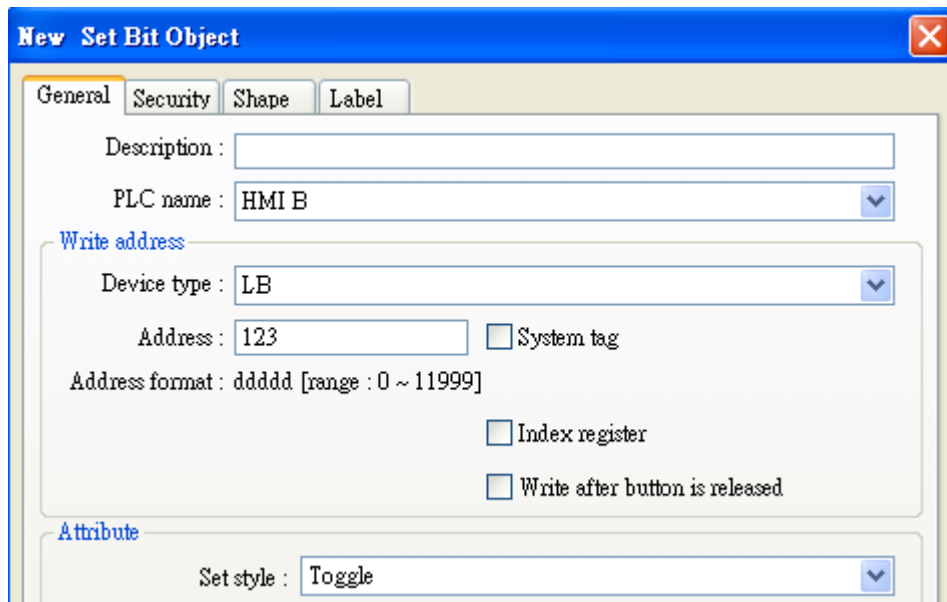
Step 1
Running the EB8000, and select [Device Table] tab on the [System Parameter Settings] menu, set a remote HMI and fill the IP address and Port number of HMI B. (The picture below shows the contents of HMI A's project.)
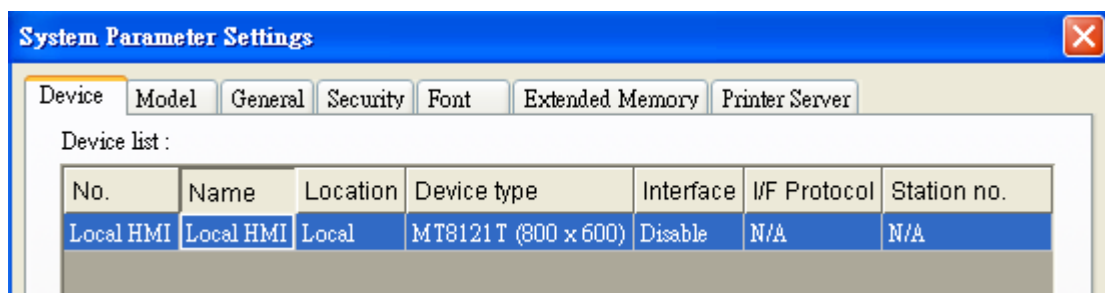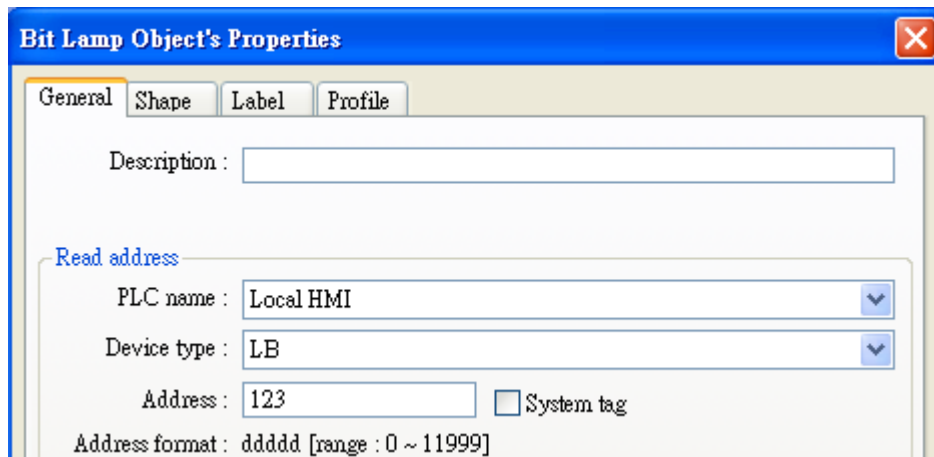
Step 2

Select "HMI B" for [PLC name] on the Set Bit Object's Properties, and download project to HMI A.

Step 3

Create HMI B's project, no need to set remote HMI, just select "Local HMI" for [PLC name] on the Bit Lamp Object's Properties, and download project to HMI B. Now, HMI A can operate the content of the [LB123] of HMI B.

2. PC to HMI Communication

By using the simulator function of the EB8000, PC can catch data of HMI through the Ethernet network and save the data as files on computer.

PC can master HMI by operating the system reserved register (LB and LW) of HMI. In other words, also HMI can control PC's operation directly. For example, asking PC save data from HMI or PLC.

The number of HMIs mastered by PC is unlimited.

Example the PC is going to communicate with two HMIs (HMI A and HMI B), the procedure for setting project as follows:

Example the IP address of HMI A is "192.168.1.1" and HMI B is "192.168.1.2".

Step 1
Select "Local HMI" for [PLC name] on the Bit Lamp Object's Properties, and download project to HMI A and HMI B.
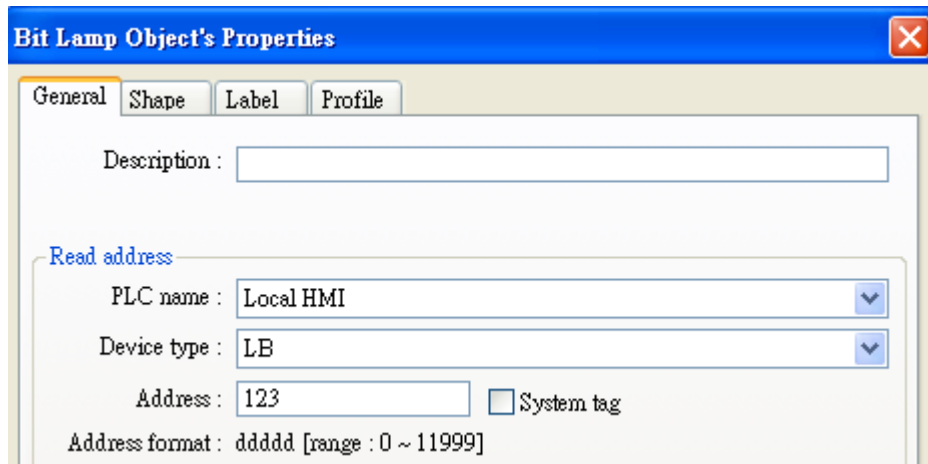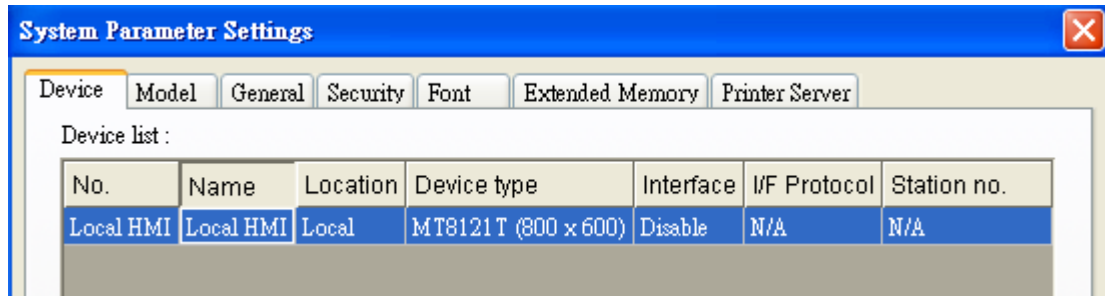
Step 2

Create PC's project, select the [Device Table] tab on the [System Parameter Settings], and then add two remote HMI, fill the IP addresses and Port number of HMI A and HMI B.

(The picture below shows the contents of PC's project.)
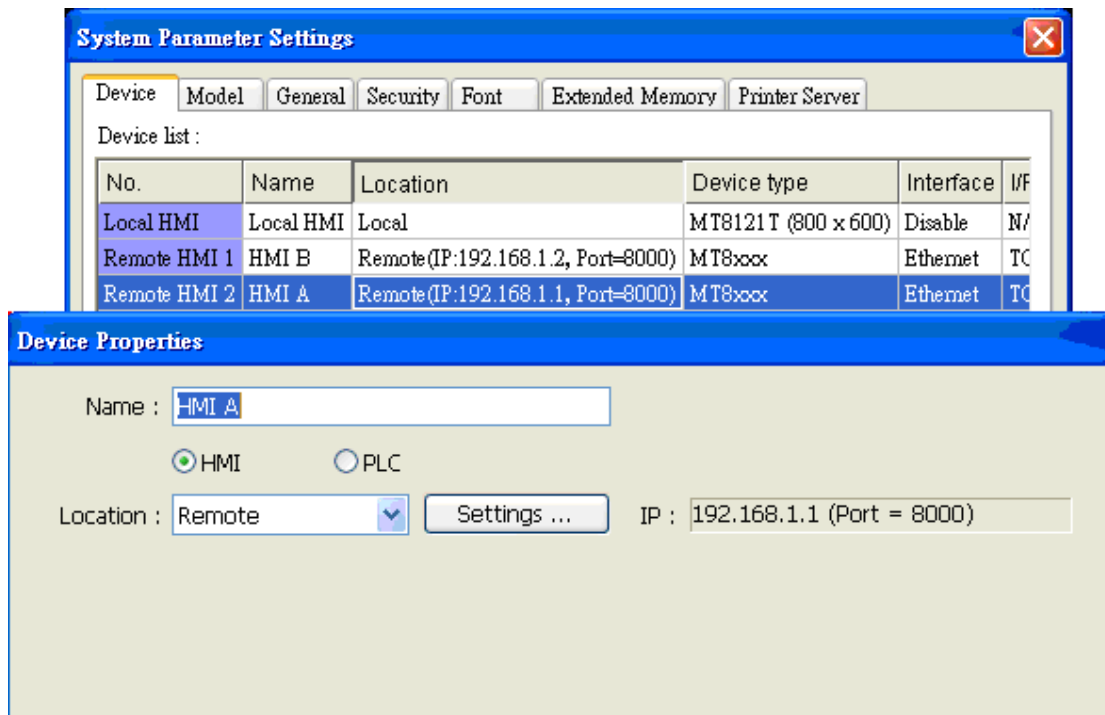
Step 3

Select target of PLC for [PLC name] on the Set Bit Object's Properties. If you intend to control the LB of HMI A, you have to select "HMI A" for [PLC name]. See the picture below.

Step 4
Now, running this project on PC to performing the simulator function (either online or offline mode), and then LB123 of HMI A or B can be controlled by PC.

3. Operate the PLC connected with others HMI

Through the Ethernet network, PC or HMI A can operate remote PLC that is connected to HMI B; for example there is a Mitsubishi PLC connected to HMI B's COM 1, when PC or HMI A wants to read data of the PLC, the procedure for setting as follows:

Example the IP address of HMI B is "192.168.1.2".

Step 1
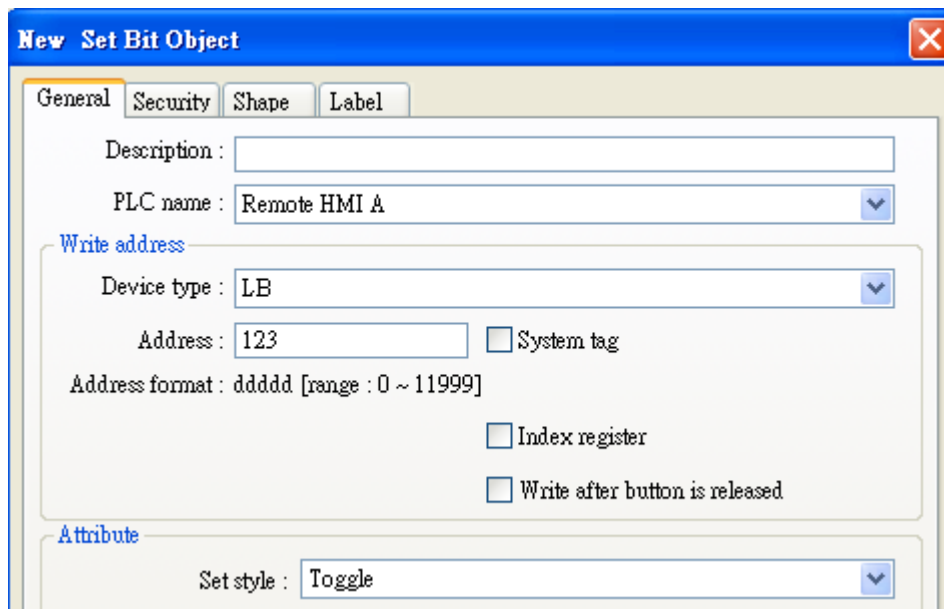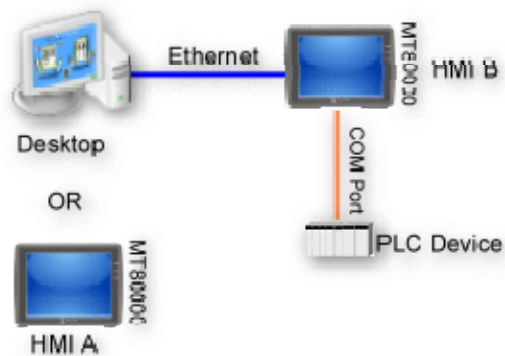Select the [Device] tab on the [System Parameter Settings], and add Local PLC for Mitsubishi PLC type, setting all parameter of PLC correctly. And select target of PLC for [PLC name] on the Set Bit Object's Properties.
After finished all of settings, download to HMI B.

As below is shows the project contents of HMI B.

System Parameter Settings

| Device | Model | General | Security | Font | Extended Memory | Printer Server |

Device list :

No.	Name	Location	Device type	Interface	I/F Protocol	Sta
Local HMI	Local HMI	Local	MT8121 T (800 x 600)	Disable	N/A	N/A
Local PLC 1	PLC 1	Local	MITSUBISHI FX0n/FX2	COM1 (9600,E,7,1)	RS485 4W	0

Device Properties

Name : PLC 1

○ HMI   ● PLC

Location : Local   ▼   Settings ...

PLC type : MITSUBISHI FX0n/FX2   ▼

V.1.00, MITSUBISHI_FX0N.so

PLC I/F : RS-485 4W   ▼   PLC default station no. : 0

COM : COM1 (9600,E,7,1)   Settings ...

☐ Use broadcast command

Interval of block pack (words) : 5   ▼

Max. read-command size (words) : 32   ▼

Max. write-command size (words) : 32   ▼

OK   Cancel

Set Bit Object's Properties

| General | Security | Shape | Label | Profile |

Description :

PLC name : MITSUBISHI FX0n/FX2   ▼

Write address

Device type : X   ▼

Address : 123

Address format : ooo [range : 0 ~ 377]

☐ Index register

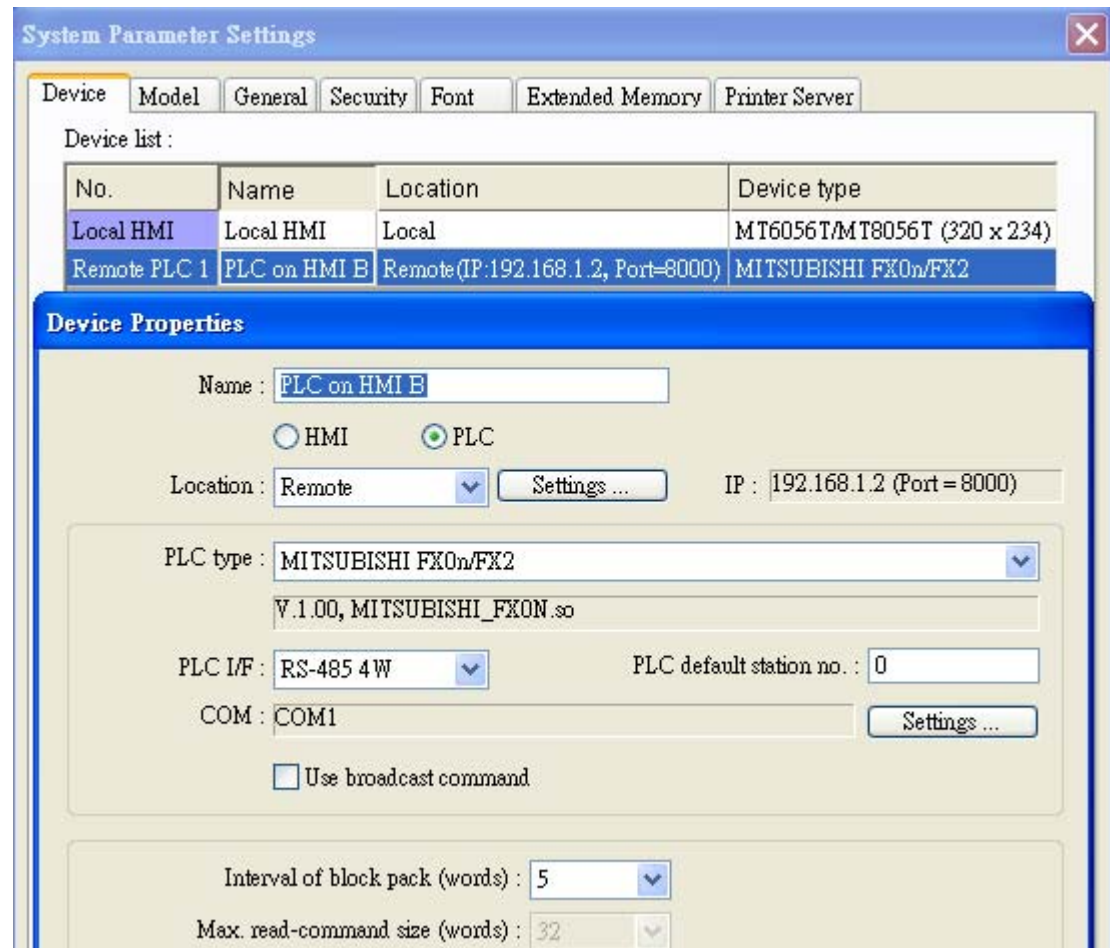☐ Write after button is released

Attribute

Set style : Toggle   ▼

Step 2
Create new project for HMI A or PC, select the [Device] tab on the [System
Parameter Settings], then add a remote PLC device. The IP address of remote PLC
please set HMI B's. And others setting of PLC parameter must same as HMI B.

Step 3
In this case of using the set bit object to operate the Mitsubishi PLC connected to
HMI B. Just need to select "PLC on HMI B" for [PLC name] on the Set Bit Object's
Properties, then it is able to operate remote PLC connected to HMI B through PC
execute simulator function or download to HMI A.

Set Bit Object's Properties

General | Security | Shape | Label | Profile

Description :

PLC name : PLC on HMI B

Write address

Device type : X

Address : 123

Address format : ooo [range : 0 ~ 377]

☐ Index register

☐ Write after button is released

Attribute

Set style : Toggle