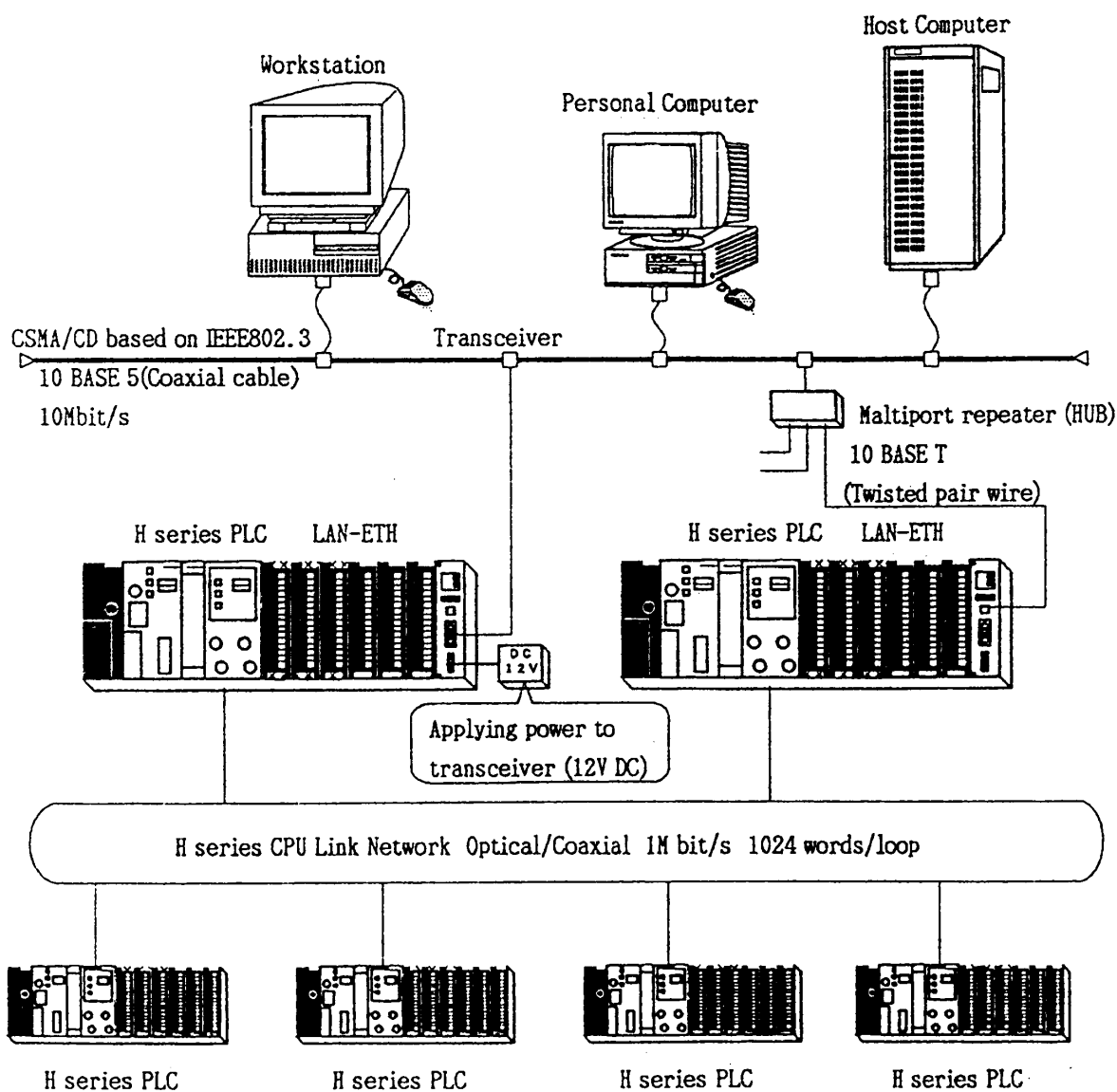


# CHAPTER1. INTRODUCTION

## 1. 1 What is LAN-ETH?

Intelligent Ethernet Interface Module, LAN-ETH, is H series module which is used to connect H series PLC to a CSMA/CD method Local Area Network based on IEEE802.3.

LAN-ETH operates as a station in network. LAN-ETH connected in network makes possible to communicate among H series PLC, workstations and personal computers.



## 1. 2 Features

- (1) Because LAN-ETH is a general purpose LAN, it has various connectable equipments (CSMA/CD 10 BASE 5 based on IEEE802.3).
- (2) It is possible to communicate with other equipments in high speed. (10Mbit/s)
- (3) You can select a communication protocol according to your needs (TCP/IP or UDP/IP).
- (4) It is possible to make several connections at once (6 for message communication and 2 for communication with task code).
- (5) 10 BASE T (Twisted pair wire) is also connectable.
- (6) You can send in broadcast. (UDP/IP only)

## 1. 3 Cautions

- (1) After applying the power to LAN-ETH module or press down RESET switch, it takes about 15 seconds until the module is ready. Please be care of this waiting time when you construct a system.
- (2) Because LAN-ETH module reads and writes CPU module internal output directly same like BASIC module, please use CPU module corresponding to BASIC module. (CPU2-\*\*H or CPU module which can be used with BASIC module described as (described as FOR BASIC) )
- (3) Because many internal outputs are used in message communication, we recommend to use enhance CPU that is higher than H-1002 (memory 48K words).
- (4) Static electricity may cause a serious trouble on LAN-ETH module. When you touch a terminal chassis, connector, module mounting screw and so on, discharge static electricity in your hands with an earth stick in advance.
- (5) The parts in LAN-ETH module and base mounting connector pin is not for user maintenance. Be careful not to touch them.
- (6) Never mount LAN-ETH on the base and remove it from the base when power is applied because the operations may cause troubles on the module. In the worst case, the whole system may be downed.
- (7) Be sure to earth FG terminal of power module in a base what LAN-ETH is mounted with less than 100  $\Omega$  safety and to prevent a fault operation with noise.
- (8) When you plug in/out 10 BASE 5 and 10 BASE T cable, make sure that a base what LAN-ETH is power off.
- (9) Be careful not to touch the signal pin of 10 BASE 5 and 10 BASE T cable and signal pin of connector for base. And make the pins clean. If you touch them directly accidentally or dust adheres them, wipe off them soft cloth and remove dust with a tweezers.
- (10) If you mount LAN-ETH to other manufacture's product, read the product's manual carefully before use.
- (11) In case of constructing network system using LAN-ETH, it is necessary to use software according to connected equipment (workstation, personal computer etc.). Please check up your system in detail and prepare (purchase or make newly) the needed software.
- (12) In case of extending the existing network system using LAN-ETH, be sure to check up the system with system manager to prevent that doubled address or mismatching on software occurs. Doubled address may cause to down the existed system.
- (13) In general, 2 sets of LAN-ETH can be mounted to CPU module (maximum). The mount capacity varies according to the other modules (ex. LAN-SNH ( This is a product for Japan only. ), BASIC-H, etc.), so that be sure to set module configuration post when you use the system.

## CHAPTER2. SYSTEM CONFIGURATION

### 2. 1 General Configuration

Using LAN-ETH, you can make a network system among the equipments has specification for network of CSMA/CD based on IEEE802.3.

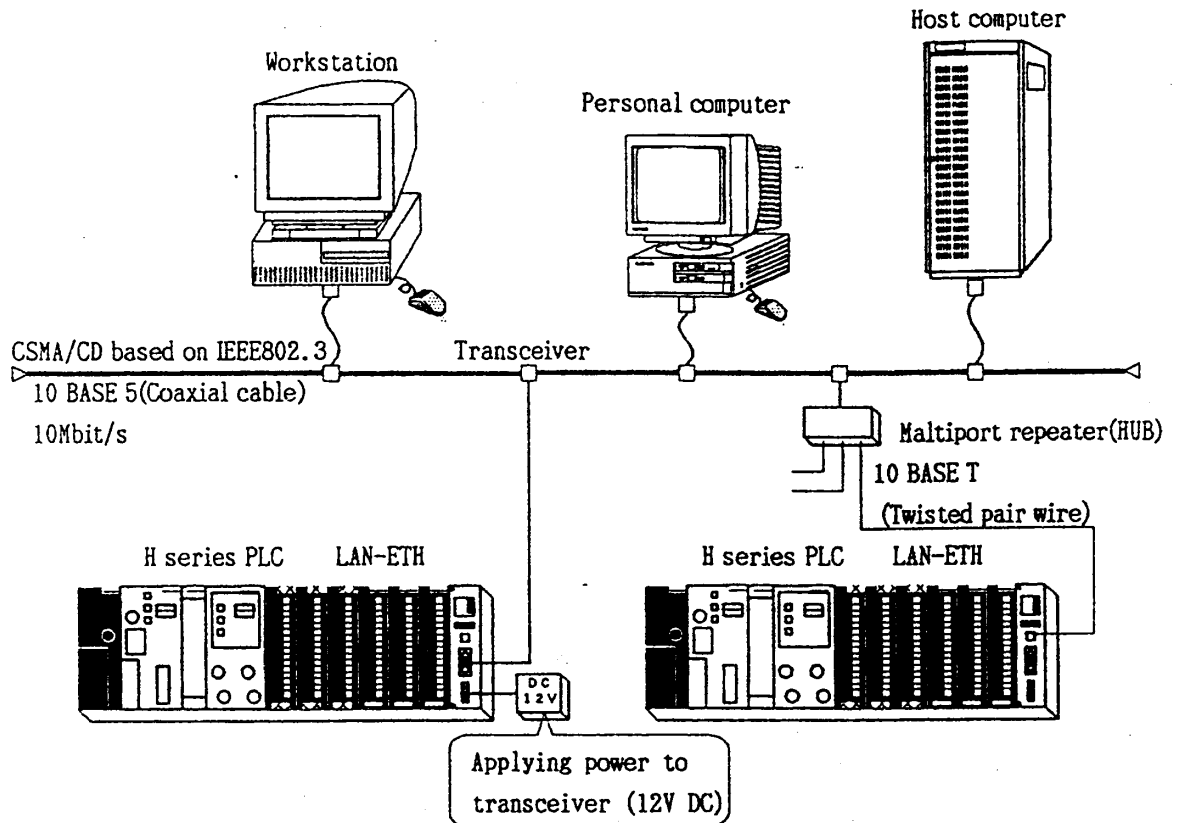
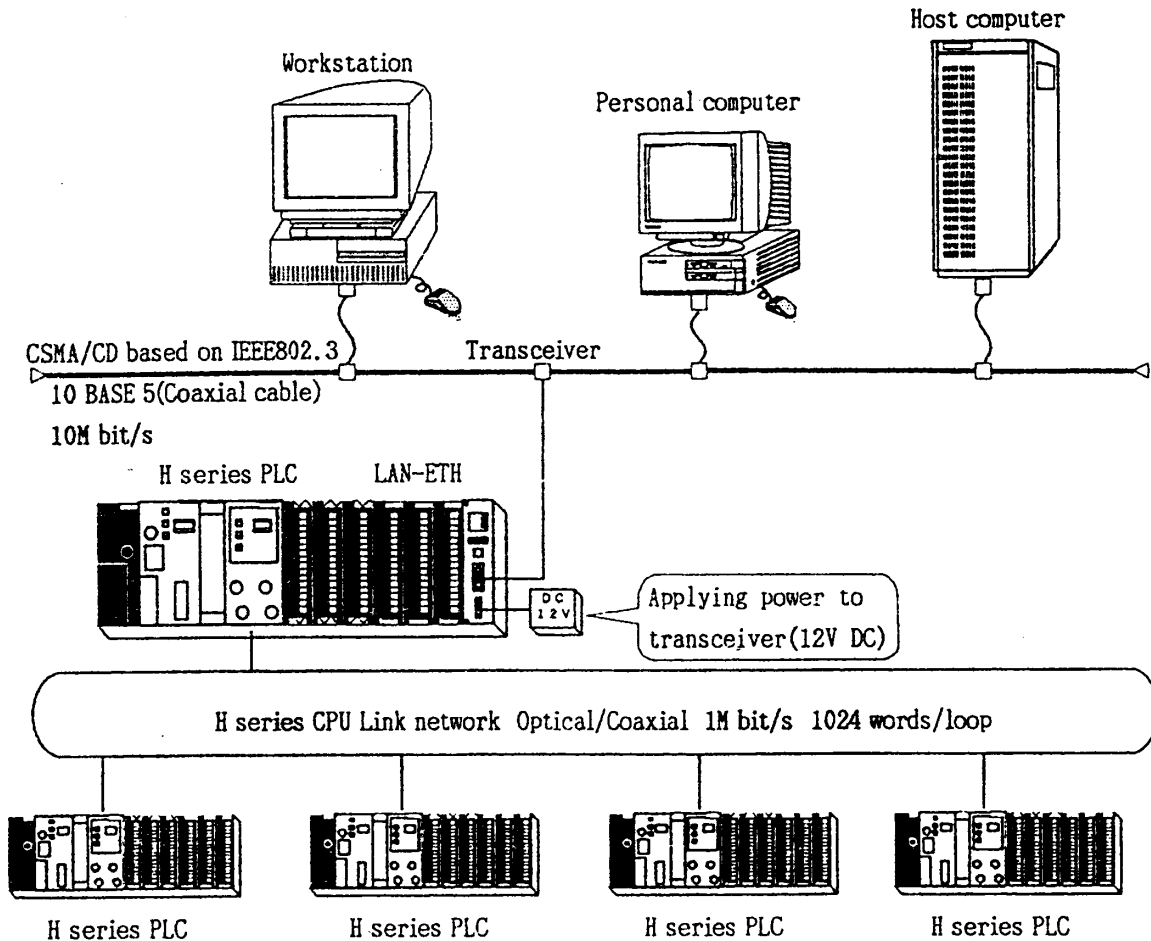


Figure 2.1 General system configuration

LAN-ETH can connect to network in 2 ways. One of them is a way using transceiver cable to connect to 10 BASE 5 as shown in the left half of Figure 2.1. And the other is a way to use 10 BASE T to connect 10 BASE 5. In case you use transceiver cable to connect to 10 BASE 5, it is necessary to connect 12V DC power supply to input terminal. Make sure your transceiver's specification and prepare power supply you need.

2. 2 Extend system configuration

When H series PLC mounting H series CPU Link is used as a gateway, it makes communication with task code among hosts on ethernet (workstation, personal computer, etc.) and CPU linked via CPU Link network.



Note

There are 2 types of H series CPU Link. One of them has coaxial type transmission path (LINK-H), and the other has optical (OLINK-H). But it is prohibited to use both type of link in a CPU Link network. 64 units of H series PLC can be connected to a loop (maximum).

Point

- What is communication with task code ? -

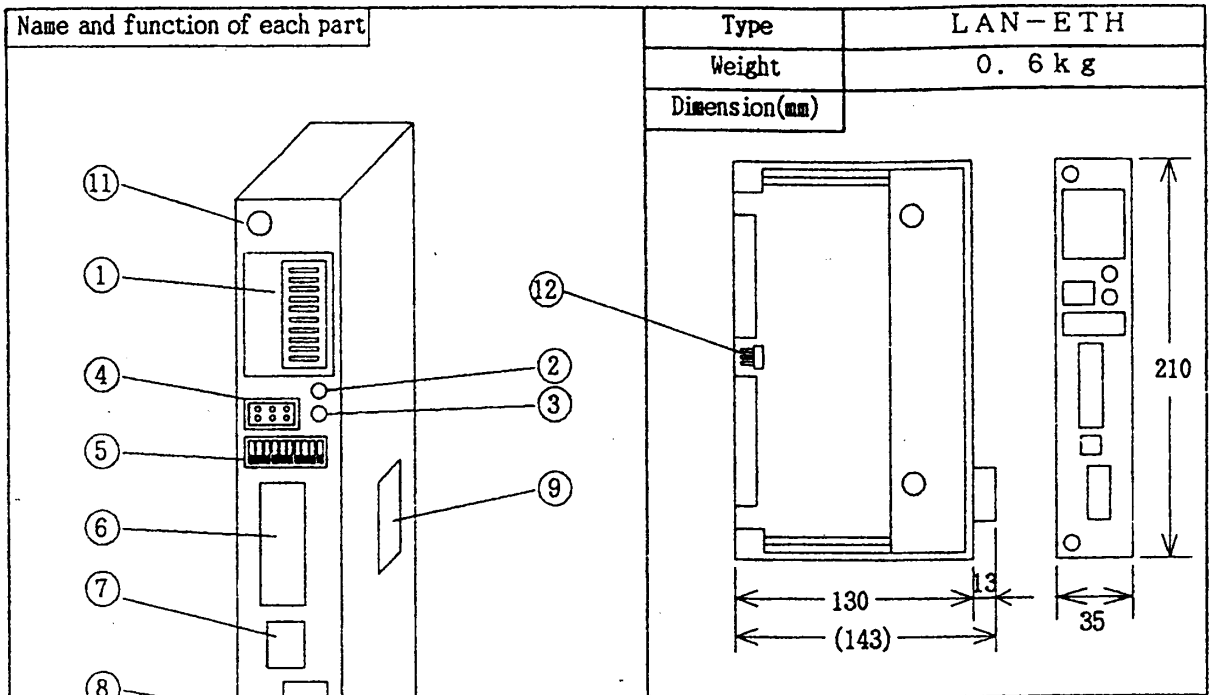
In protocol for H series, task code (command code) and transmission control procedure are specified definitely.

In protocol, a command code is assigned to each functions, such as I/O control, CPU control, memory read/write. By sending this code (task code) what you need to H series PLC, you can use a function you need without making a program on H series PLC side.

LAN-ETH supports the function for communication with task code on TCP/IP or UDP/IP. In others, there are Intelligent serial port module (COMM-2H) that supports communication with task code on RS-232C, etc. And, CPU module peripheral port (PERIPHERAL) also supports communication with task code on RS-232C.

## CHAPTER3. PRODUCT STRUCTURE , INSTALLATION AND SETTING

### 3. 1 Structure



No.	Name	Function
1	Status LED	Indicates the status of LAN-ETH. (See 3. 4 about the detail)
2	Error clear switch (E. CLR)	Makes error bit and ERR LED clear.
3	Reset switch (RESET)	Makes LAN-ETH hardware reset.
4	Diagnosis connector (DIAG)	Is a port for maintenance.
5	Mode setting switch (MODE)	Is used to change between 10 BASE 5/10 BASE T and set test mode. (See 3. 3 about the detail)
6	10 BASE 5 connector (10B5)	A transceiver cable for 10 BASE 5 (coaxial cable) is connected
7	10 BASE T connector (10BT)	A cable for 10 BASE T (twisted pair) is connected.
8	Terminal chassis for transceiver power supply	A power supply for transceiver (12V DC) is connected.
9	Specification name plate	Product name and manufacturing No. are described.
10	Revision name plate	Product revision No. is described.
11	Module mounting screw	A screw to mount the module to basic base.
12	Module configuration post	Is set according to the mount condition of module. (In factory, 2-3 short.)

### 3. 2 Installation and Setting

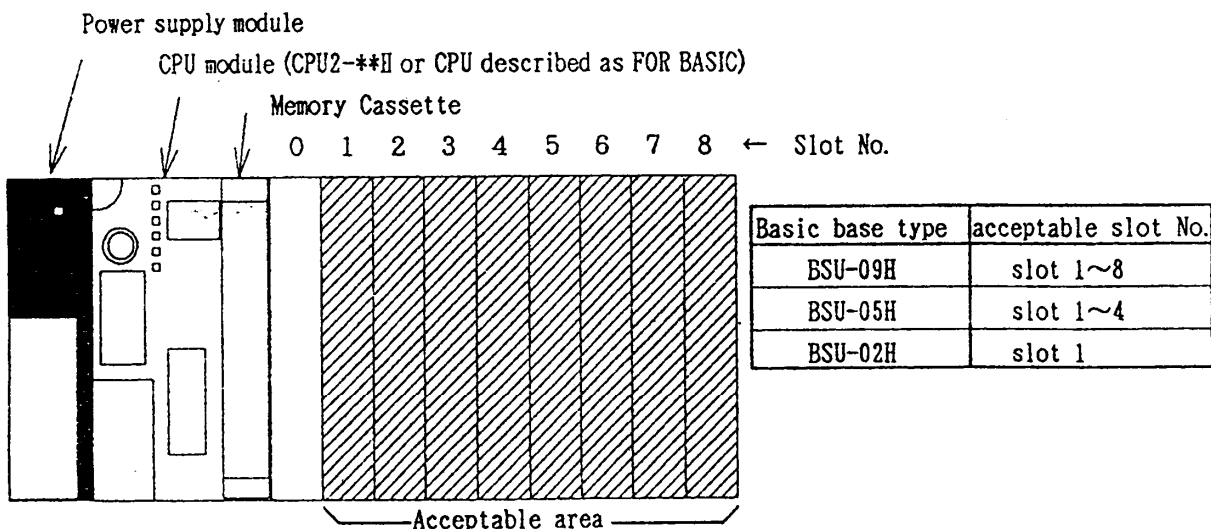
(1) Install condition (General specification)

Chart 3. 1 shows the install condition for LAN-ETH (general specification).

Chart 3. 1 Install condition of LAN-ETH

Item	Specification
Power consumption	5V DC, 1. 6A (supplying power from power supply module on basic base. )
External Power Supply Terminal Capacity	12V DC, 0. 5A (supplying power terminal chassis for transceiver power supply)
Temperature, Humidity (operating)	0-55°C , 20-90%RH (noncondensing)
Temperature, Humidity (Storage)	-10~75°C, 10-90% RH (noncondensing, except for terminal chassis cover and connector cover)
Noise resistance	<ul style="list-style-type: none"> <li>• Noise voltage 1500Vp-p, Noise width 100ns, 1 μs (Test method:apply noise to input terminal on power supply module with noise simulator. )</li> <li>• According to NEMA ICS 2-230-42~45 (except for input module)</li> <li>• Static electric noise is acceptable up to 3000V on metallic face.</li> </ul>
Environment	No corrosive gas and oil, Dust is general level.
Configuration and Cooling	Open type module case Natural air cooling
Occupation slot number	1 slot width
I/O assignment	COMM
Dimension, weight	210H×35W×130D (when including terminal chassis, 143) (mm), approx 0. 6kg

(2) Installing Location

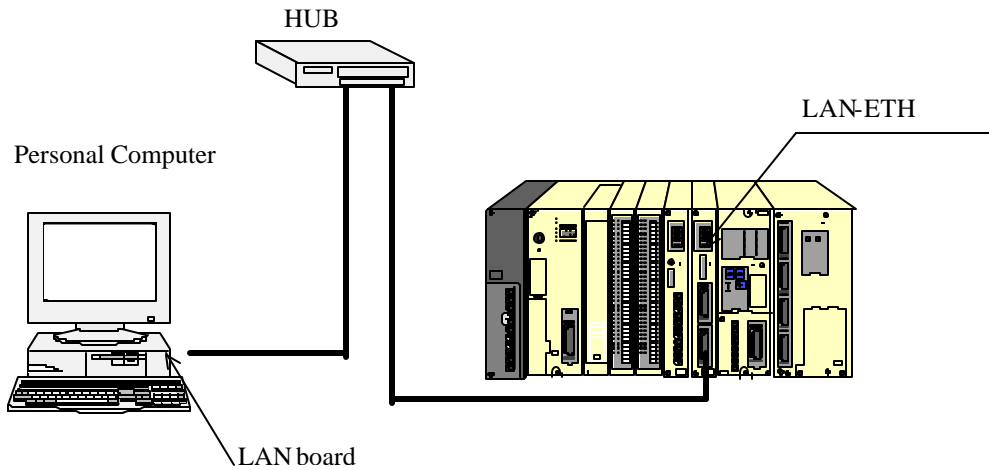


LAN-ETH can be installed to any slot on basic base except slot 0 and occupies 1 slot as installation space (it can not be installed to extend base).

You can install LAN-ETH up to 2 (maximum) on basic base. The number of LAN-ETH can be limited under influence of other modules. Please see 3. 3 (2) module configuration post to verify and set the necessities before installing the module.

## Appendix: Connect with Ethernet Module

Device components (Minimum scale) Example of 10 BASE T



### 1. Setting of LAN-ETH (Intelligent Ethernet Interface Module) side

#### (1) IP Address Information Setting

Home station IP address, Other station address, Home station logical port No.

Item	Example of Setting
Home station IP address	192.0.0.1
Home station logical port No. (Task port 1 or 2)	3004 (Decimal)
Service type	1 (TCP/IP)

Please refer to “Chapter 5 5.2 Setting of IP Address” in the manual of LAN-ETH for the setting method. There is no need to set other station address in LAN-ETH side.

#### (2) Each Setting of LAN-ETH

Please refer to the manual of LAN-ETH for each setting.

## 2. Setting of Personal Computer

### (1) Install of TCP/IP Protocol

To communicate with LAN-ETH, TCP/IP protocol should be installed in a personal computer.

1. Open [Start] - [Set] - [Control Panel].

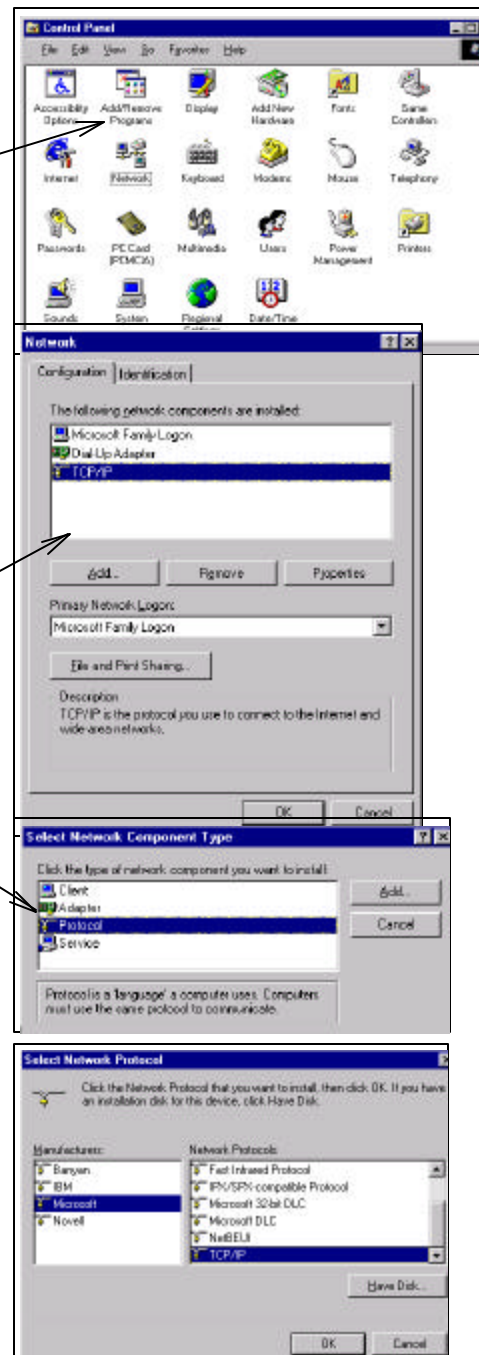
2. Double click Network.

3. Check the existence of TCP/IP in the window of “The following network components are installed”. If it has been already installed, move to “(2) Setting of IP Address”.

4. Click the [Add] button.

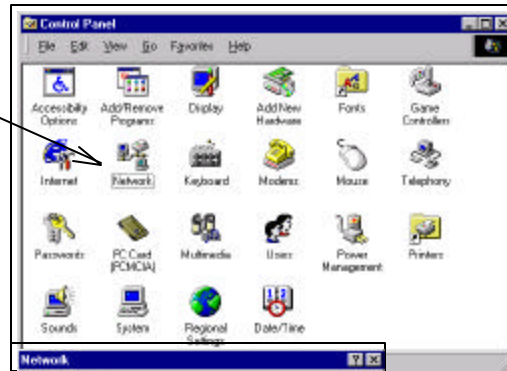
5. Click [Protocol] and click [Add]

6. Click in order of Microsoft, TCP/IP, then click the [OK] button.

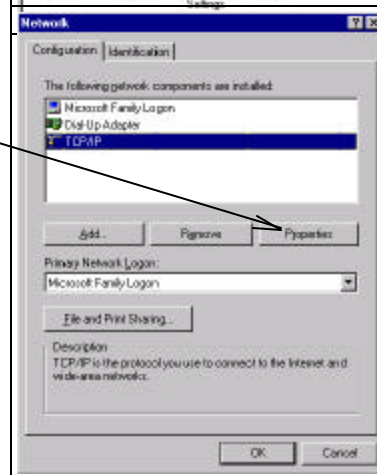


(2) Setting of IP Address

1. Double click Network in [Control Panel].



2. Click TCP/IP in the window of “The following network components are installed”, then click the [Property] button.



3. Click [IP Address Specification], and input IP address of PC side to [IP Address]. Please ask to the network manager about the subnet mask. In this case, the subnet is set as 255.0.0.0. Click the [OK] button, and close the property of TCP/IP and each dialog box of the network.

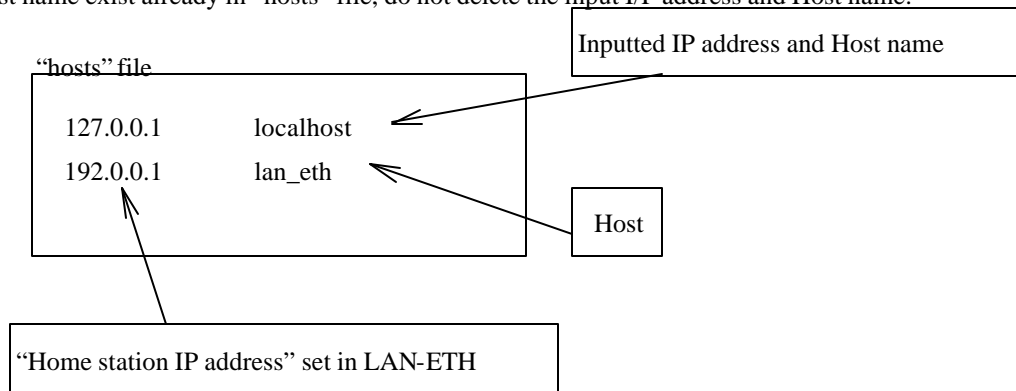


4. Restart Windows according to the message displayed.

(3) Editing of hosts file

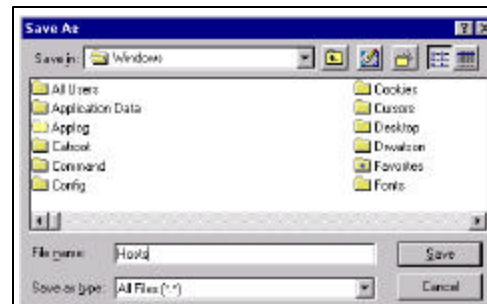
Edit the file “hosts” (no extended code) in the directly (usually in Windows) which Windows 95, 98 is installed by the following process.

1. Open the file “hosts” with the memo.
2. Input “Home IP address” and “Host name” which were set in LAN-ETH to the last line. “Host name” is optional but it has to agree (distinguish large and small letters) with “Host name” which is input in Environment Setting of Ladder Editor for Windows. And, when another IP address and Host name exist already in “hosts” file, do not delete the input I/P address and Host name.



3. Save “hosts” file.

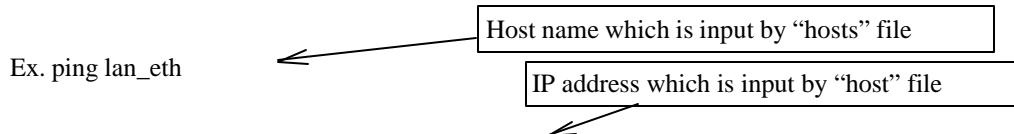
In the [Save as] dialog box of Memo, make the file type as all file (\*.\*) for the file name for no extended code file type, then click the [Save] button.



When save the file as the text file (.txt), the input “Home station IP address” and “Host name” becomes illegal.

4. Finish Windows and restart it.
5. After restart Windows, check the connected condition.

Connect a personal computer and LAN-ETH to HUB (or Network), and start MSDOS prompt. Execute ping command.

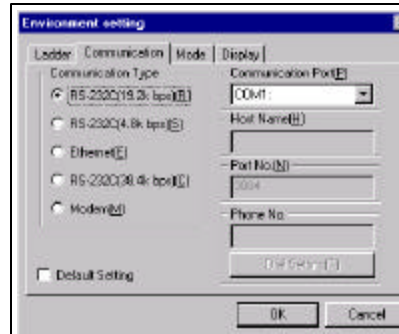


```
Pinging lan_eth [192.0.0.1] with 32 bytes of data:
Reply from 192.0.0.1 bytes=5ms TTL=32
```

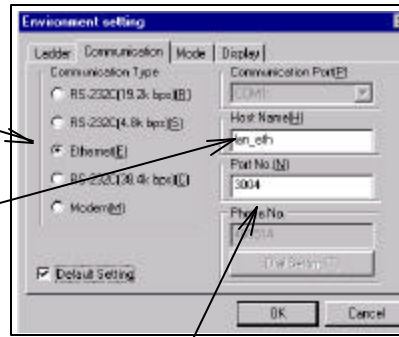
The connected condition is OK when it displays as above. A “\_” part will be changed.

## (4) Setting of Ladder Editor for Windows®

1. Choose [Environment Set] in the [Utility] menu in the offline mode.
2. It displays the [Communication] dialog box.



3. Select [Ethernet] for the communication type



4. Input the same host name which was input in “hosts” file to [Host Name].

5. Input “Logical Port”, set in LAN-ETH”, by the decimal to [Logical Port].

6. Click [Make the setting default], and click the [OK] button.

All setting are completed with these processes.

**(Caution)**

After setting Ethernet connection, it takes about 45 seconds to display “Communication Error” message in the following cases. This happens because of Windows 95, 98 internal processing.

- (a) When OFF the power of the CPU which install the connecting Ethernet module (LAN-ETH).
- (b) When making online/on-direct connecting to Ethernet module which the power is not ON.
- (c) When the connecting Ethernet module (LAN-ETH) is broken.
- (d) When the Ethernet cable is taken off or cut off while online communicating.