

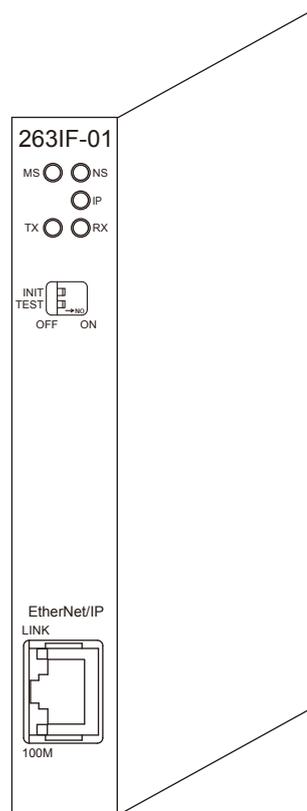
# Machine Controller MP2000 Series

## 263IF-01

### EtherNet/IP Communication Module

# USER'S MANUAL

Model JAPMC-CM2304-E



EtherNet/IP Communication **1**

263IF-01 Module **2**

Mounting and Starting the Module **3**

EtherNet/IP Transmission Definition **4**

Explicit Message and Explicit Message Send Function **5**

Troubleshooting **6**

Appendices **App**

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## Using this Manual

This manual describes EtherNet/IP Communication Module 263IF-01 for the MP2000-series Machine Controller. Read this manual thoroughly before using the 263IF-01. Keep this manual in a safe place for future reference.

### ■ Basic Terms

Unless otherwise specified, the following definitions are used:

- MP2000-series Machine Controllers: MP2100M, MP2200, MP2300, MP2310, MP2300S, and MP2500MD Machine Controllers
- PLC: Programmable Logic Controller
- MPE720: The Programming Device Software or a personal computer running the Programming Device Software

### ■ Manual Configuration

This manual consists of the chapters listed in the following table. Read the chapters of this manual as required by the purpose.

Chapter	Purpose	Selecting Models and Peripheral Devices	Studying Specifications and Ratings	Designing the System	Panel Installation and Wiring	Trial Operation	Maintenance and Inspection
Chapter 1	EtherNet/IP Communication	✓		✓			
Chapter 2	263IF-01 Module	✓	✓	✓	✓	✓	✓
Chapter 3	Mounting and Starting the Module		✓	✓	✓	✓	✓
Chapter 4	EtherNet/IP Transmission Definition		✓	✓		✓	✓
Chapter 5	Explicit Message and Explicit Message Send Function			✓		✓	
Chapter 6	Troubleshooting		✓	✓	✓	✓	✓

### ■ Graphic Symbols Used in this Manual

The graphic symbols used in this manual indicate the following type of information.



- This symbol is used to indicate important information that should be memorized or minor precautions, such as precautions that will result in alarms if not heeded.

### ■ Indication of Reverse Signals

In this manual, the names of reverse signals (ones that are valid when low) are written with a forward slash (/) before the signal name, as shown in the following example:

<Notation Examples>      $\overline{\text{S-ON}}$      =     /S-ON  
                                  $\overline{\text{P-CON}}$      =     /P-CON

## ■ Related Manuals

The following table lists the manuals relating to the 263IF-01 Module for the MP2000-series Machine Controller. Refer to these manuals as needed.

Manual Name	Manual Number	Contents
Machine Controller MP2100/MP2100M User's Manual Design and Maintenance	SIEPC88070001	Describes how to use the MP2100 and MP2100M Machine Controllers.
Machine Controller MP2200 User's Manual	SIEPC88070014	Describes how to use the MP2200 Machine Controller and the modules that can be connected.
Machine Controller MP2300 Basic Module User's Manual	SIEPC88070003	Describes how to use the MP2300 Basic Module and the modules that can be connected.
Machine Controller MP2310 Basic Module User's Manual	SIEPC88073201	Describes how to use the MP2310 Basic Module and the modules that can be connected.
Machine Controller MP2300S Basic Module User's Manual	SIEPC88073200	Describes how to use the MP2300S Basic Module and the modules that can be connected.
Machine Controller MP2500/MP2500M/MP2500D/MP2500MD User's Manual	SIEPC88075200	Describes how to use the MP2500, MP2500M, MP2500D, and MP2500MD Machine Controllers.
Machine Controller MP2000 Series Motion Module Built-in SVB/SVB-01 User's Manual	SIEPC88070033	Provides a detailed description on the MP2000 Series Machine Controller built-in SVB Module and slot-mounting optional SVB-01 Module.
Machine Controller MP2000 Series Communication Module User's Manual	SIEPC88070004	Provides the information on the Communication Module that can be connected to MP2000 Series Machine Controller and the communication methods.
Machine Controller MP2000 Series 262IF-01 FL-net Communication Module User's Manual	SIEPC88070036	Provides a detailed description of the FL-net Communication Module 262IF-01 that can be connected to an MP2000-series Machine Controller.
Machine Controller MP900/MP2000 Series User's Manual: Ladder Programming	SIEZ-C887-1.2	Describes the instructions used in MP900/MP2000 ladder programming.
Machine Controller MP900/MP2000 Series User's Manual: Motion Programming	SIEZ-C887-1.3	Describes the instructions used in MP900/MP2000 motion programming.
Machine Controller MP2000 Series MPE720 Programming Device Version 6 User's Manual	SIEPC880700 30	Describes how to install and operate the programming tool MPE720 version 6 for MP2000 Series Machine Controllers.
Machine Controller MP900/MP2000 Series MPE720 Software for Programming Device User's Manual	SIEPC88070005	Describes how to install and operate the MP900/MP2000 Series programming system (MPE720).
Machine Controller MP900/MP2000 Series New Ladder Editor Programming Manual	SIEZ-C887-13.1	Describes the programming instructions of the New Ladder Editor, which assists MP900/MP2000 Series design and maintenance.
Machine Controller MP900/MP2000 Series New Ladder Editor User's Manual	SIEZ-C887-13.2	Describes the operating methods of the New Ladder Editor, which assists design and maintenance of the MP900/MP2000 series Machine Controllers.
Machine Controller MP920 User's Manual Communication Modules	SIEZ-C887-2.6	Describes the functions, specifications, and application methods of the MP920 Communication Modules (217IF, 215IF, and 218IF).

## ■ Copyrights

- EtherNet/IP and DeviceNet are registered trademarks of the ODVA (Open DeviceNet Vendor Association Inc.).
- Ethernet is a registered trademark of the Xerox Corporation.
- Other product names and company names are the trademarks or registered trademarks of the respective company. "TM" and the ® mark do not appear with product or company names in this manual.

## Safety Information

The following conventions are used to indicate precautions in this manual. Information marked as shown below is important for the safety of the user. Always read this information and heed the precautions that are provided. The conventions are as follows:



**WARNING**

Indicates precautions that, if not heeded, could possibly result in loss of life or serious injury.



**CAUTION**

Indicates precautions that, if not heeded, could result in relatively serious or minor injury, or property damage.

If not heeded, even precautions classified under  CAUTION can lead to serious results depending on circumstances.



**PROHIBITED**

Indicates prohibited actions. Specific prohibitions are indicated inside .

For example,  indicates no fire or open flame.



**MANDATORY**

Indicates mandatory actions. Specific actions are indicated inside .

For example,  indicates that grounding is required.

## Safety Precautions

The following precautions are for checking products on delivery, storage, transportation, installation, wiring, operation, application, inspection, and disposal. These precautions are important and must be observed.

### ■ General Precautions

#### **WARNING**

- Before starting operation while connected to the machine, ensure that an emergency stop procedure has been provided and is working correctly.  
There is a risk of injury.
- Do not touch anything inside the product.  
There is a risk of electrical shock.
- Always keep the front cover attached when power is being supplied.  
There is a risk of electrical shock.
- Observe all procedures and precautions given in this manual for trial operation.  
Operating mistakes while the Servomotor and machine are connected can cause damage to the machine or even accidents resulting in injury or death.
- Do not remove the front cover, cables, connector, or options while power is being supplied.  
There is a risk of electrical shock.
- Do not damage, pull on, apply excessive force to, place heavy objects on, or pinch cables.  
There is a risk of electrical shock, operational failure of the product, or burning.
- Do not attempt to modify the product in any way.  
There is a risk of injury or device damage.
- Do not approach the machine when there is a momentary interruption to the power supply. When power is restored, the MP2000-series Machine Controller or machine connected to it may start operation suddenly. Provide suitable safety measures to protect people when operation restarts.  
There is a risk of injury.
- Do not allow installation, disassembly, or repairs to be performed by anyone other than specified personnel.  
There is a risk of electrical shock or injury.

## ■ Storage and Transportation

### CAUTION

- ♦ Do not store or install the product in locations subject to the following. There is a risk of fire, electric shock, and machine product damage.
  - ♦ Direct sunlight
  - ♦ Ambient temperatures exceeding the storage or operating conditions
  - ♦ Ambient humidity exceeding the storage or operating conditions
  - ♦ Extreme changes in temperature that would result in condensation
  - ♦ Corrosive or flammable gas
  - ♦ Excessive dust, dirt, salt, or metallic powder
  - ♦ Water, oil, or chemicals
  - ♦ Vibration or shock

- ♦ Do not overload the product during transportation.

There is a risk of injury or an accident.

- ♦ Never subject the product to an atmosphere containing halogen (fluorine, chlorine, bromine, or iodine) during transportation or installation.

There is a risk of device damage or an accident.

- ♦ If disinfectants or insecticides must be used to treat packing materials such as wooden frames, pallets, or plywood, the packing materials must be treated before the product is packaged, and methods other than fumigation must be used.

Example: Heat treatment, where materials are kiln-dried to a core temperature of 56°C for 30 minutes or more.

If the electronic products, which include stand-alone products and products installed in machines, are packed with fumigated wooden materials, the electrical components may be greatly damaged by the gases or fumes resulting from the fumigation process. In particular, disinfectants containing halogen, which includes chlorine, fluorine, bromine, or iodine can contribute to the erosion of the capacitors.

## ■ Installation

### CAUTION

- ♦ Never use the product in locations subject to water, corrosive atmospheres, or flammable gas, or near burnable objects.

There is a risk of electrical shock or fire.

- ♦ Do not step on the product or place heavy objects on the product.

There is a risk of injury.

- ♦ Do not block the air exhaust port on the product. Do not allow foreign objects to enter the product.

There is a risk of element deterioration inside, an accident, or fire.

- ♦ Always mount the product in the specified orientation.

There is a risk of an accident.

- ♦ Do not subject the product to strong shock.

There is a risk of an accident.

## ■ Wiring

### CAUTION

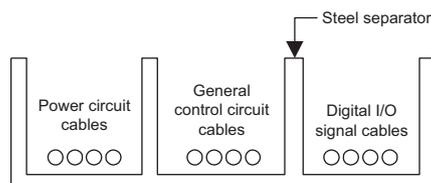
- ♦ Check the wiring to be sure it has been performed correctly.  
There is a risk of motor run-away, injury, or an accident.
- ♦ Always use a power supply of the specified voltage.  
There is a risk of burning.
- ♦ In places with poor power supply conditions, take all steps necessary to ensure that the input power is supplied within the specified voltage range.  
There is a risk of device damage.
- ♦ Install breakers and other safety measures to provide protection against shorts in external wiring.  
There is a risk of fire.
- ♦ Provide sufficient shielding when using the product in the locations subject to the following.  
There is a risk of device damage.
  - ♦ Noise, such as from static electricity
  - ♦ Strong electromagnetic or magnetic fields
  - ♦ Radiation
  - ♦ Near power lines

## ■ Selecting, Separating, and Laying External Cables

### CAUTION

- ♦ Consider the following items when selecting the I/O signal lines (external cables) to connect the product to external devices.
  - ♦ Mechanical strength
  - ♦ Noise interference
  - ♦ Wiring distance
  - ♦ Signal voltage, etc.
- ♦ Separate the I/O signal lines from the power lines both inside and outside the control box to reduce the influence of noise from the power lines.  
If the I/O signal lines and power lines are not separated properly, malfunctioning may result.

Example of Separated External Cables



## ■ Maintenance and Inspection Precautions

### CAUTION

- ♦ Do not attempt to disassemble the product.  
There is a risk of electrical shock or injury.
- ♦ Do not change wiring while power is being supplied.  
There is a risk of electrical shock or injury.

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■ Disposal Precautions

 CAUTION

- ◆ Dispose of the product as general industrial waste.

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# Contents

Using this Manual	iii
Safety Information	v
Safety Precautions	v
<b>1 EtherNet/IP Communication</b>	<b>1-1</b>
1.1 What is EtherNet/IP?	1-2
1.2 EtherNet/IP Features	1-3
1.3 EtherNet/IP (CIP) Communication Types	1-4
1.3.1 Explicit Message Communication	1-4
1.3.2 I/O Communication	1-4
<b>2 263IF-01 Module</b>	<b>2-1</b>
2.1 Features	2-2
2.1.1 I/O Communication	2-2
2.1.2 Explicit Message Communication	2-3
2.1.3 Engineering Communication	2-4
2.2 Specifications	2-5
2.2.1 Hardware Specifications	2-5
2.2.2 Transmission Specifications	2-6
2.2.3 Software Configuration	2-8
2.2.4 Operating Environment Specifications	2-9
2.3 Overview	2-10
2.3.1 Appearance and Connectors	2-10
2.3.2 Status Indicators (LEDs)	2-10
2.3.3 Communication Status Indicators (LEDs) (Contained in the Ethernet Connector)	2-11
2.3.4 Switch Settings	2-11
2.3.5 Offline Self-diagnostic Test	2-11
2.4 Connection Specifications	2-12
2.4.1 Connector Specifications	2-12
2.4.2 Cable Specifications	2-12
<b>3 Mounting and Starting the Module</b>	<b>3-1</b>
3.1 Applicable Machine Controllers and Supported Versions	3-2
3.1.1 Applicable Machine Controllers	3-2
3.1.2 Supported CPU and MPE720 Versions	3-2
3.2 Mounting and Removing a Module on the Machine Controller	3-3
3.2.1 Mounting a 263IF-01 Module	3-3
3.2.2 Removing a 263IF-01 Module	3-6
3.3 Setting the Communication Manager	3-8
3.3.1 Preparation of the Personal Computer	3-8
3.3.2 Setting the Communication Manager	3-10
3.4 Self-configuration	3-14
3.4.1 Executing Self-configuration	3-14

3.5	Starting the MPE720, and Setting Communication or Network Parameters	3-15
3.5.1	Starting MPE720 Ver. 6 and Setting Communication Parameters	3-15
3.5.2	Starting MPE720 Ver. 5.xx and Setting Network Parameters	3-16
4	EtherNet/IP Transmission Definition	4-1
4.1	Displaying the EtherNet/IP Transmission Configuration Window	4-2
4.1.1	Displaying the Module Configuration Window	4-2
4.1.2	Displaying the EtherNet/IP Transmission Configuration Window from the Module Configuration Window	4-3
4.2	EtherNet/IP Transmission Definition	4-4
4.2.1	Network Parameter Tab Page	4-4
4.2.2	Connection List Tab Page	4-6
4.2.3	IO Communication Detail Setting Window	4-10
4.2.4	NetWork Configuration Search Window	4-11
4.2.5	Status Detail Window	4-12
4.2.6	I/O Status Tab Page	4-13
4.2.7	Status Detail Window	4-14
4.2.8	Module Information Tab Page	4-16
5	Explicit Message and Explicit Message Send Function	5-1
5.1	Explicit Messages	5-2
5.1.1	Explicit Request Message	5-2
5.1.2	Explicit Response Message	5-3
5.2	Message Send Function	5-4
5.2.1	Outline Specifications	5-4
5.2.2	MSG-SND Function Setting Example	5-5
5.2.3	Inputs and Outputs for the Message Send Function	5-5
5.2.4	Parameter List for MSG-SND Function	5-10
5.2.5	Details of Parameters Used in Explicit Message	5-11
5.3	Displaying a Register List and Notes at Register Input	5-14
5.3.1	Displaying a Register List	5-14
5.3.2	Notes at Register Input	5-16
5.4	Programming Example	5-17
5.4.1	Procedure to Start Communication	5-17
5.4.2	Programming Example	5-18
6	Troubleshooting	6-1
6.1	Status Indication by LED Indicators	6-2
6.2	System I/O Error Status	6-3
6.2.1	System I/O Error Status by Controllers	6-3
6.2.2	Details on I/O Error Status	6-7
	Appendices	A-1
	Appendix A Details of Status Codes	A-2
	A.1 General Status Code Table	A-2
	A.2 Extended Status Code Table	A-3

Index

Revision History

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# EtherNet/IP Communication

This chapter gives an overview of EtherNet/IP communication.

1.1 What is EtherNet/IP? .....	1-2
1.2 EtherNet/IP Features .....	1-3
1.3 EtherNet/IP (CIP) Communication Types .....	1-4
1.3.1 Explicit Message Communication .....	1-4
1.3.2 I/O Communication .....	1-4

## 1.1 What is EtherNet/IP?

EtherNet/IP is a standard network in which the CIP (Common Industrial Protocol), defined by EN50170 and IEC61158 standards and proven in DeviceNet, is implemented over standard Ethernet and TCP/IP protocols.

EtherNet/IP can handle the I/O messages that are used to control devices or to perform interlock communication between the controllers in real time, and also the explicit messages that check the configuration of and diagnose field devices. Since EtherNet/IP uses routing technology that is compatible with DeviceNet, it is possible to send and receive messages between devices in different networks by simply connecting EtherNet/IP and DeviceNet with a CIP router (gateway), without using additional networking and programs.

The following figures show the protocol stack configuration of EtherNet/IP (includes DeviceNet) and the protocol stack concept of EtherNet/IP.

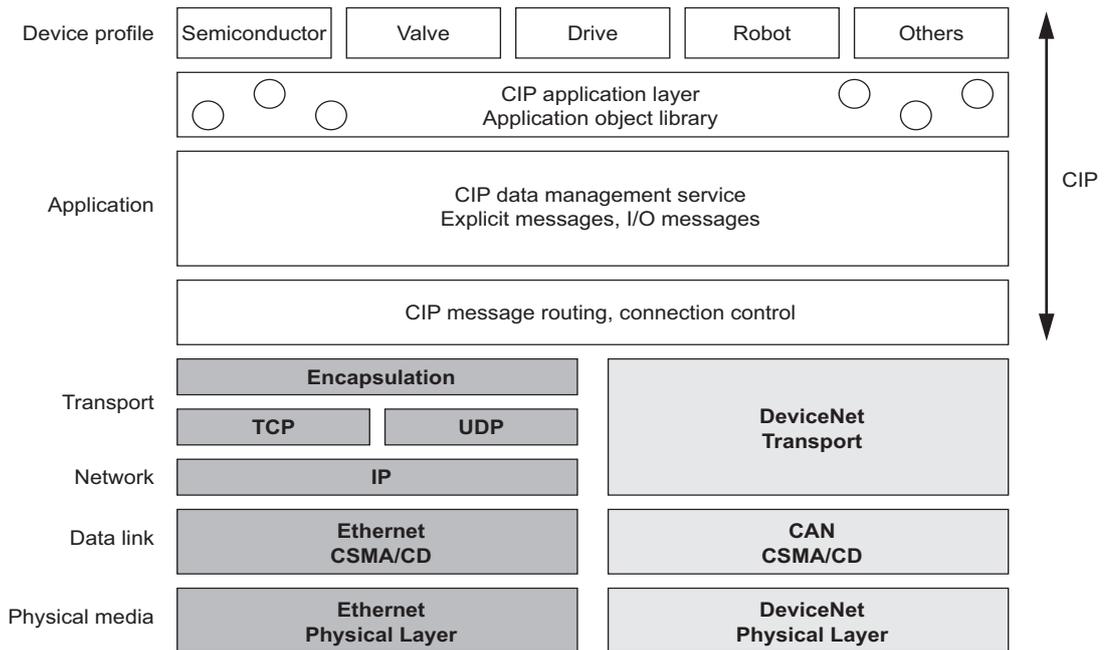


Fig. 1.1 Protocol Stack Configuration of EtherNet/IP (Includes DeviceNet)

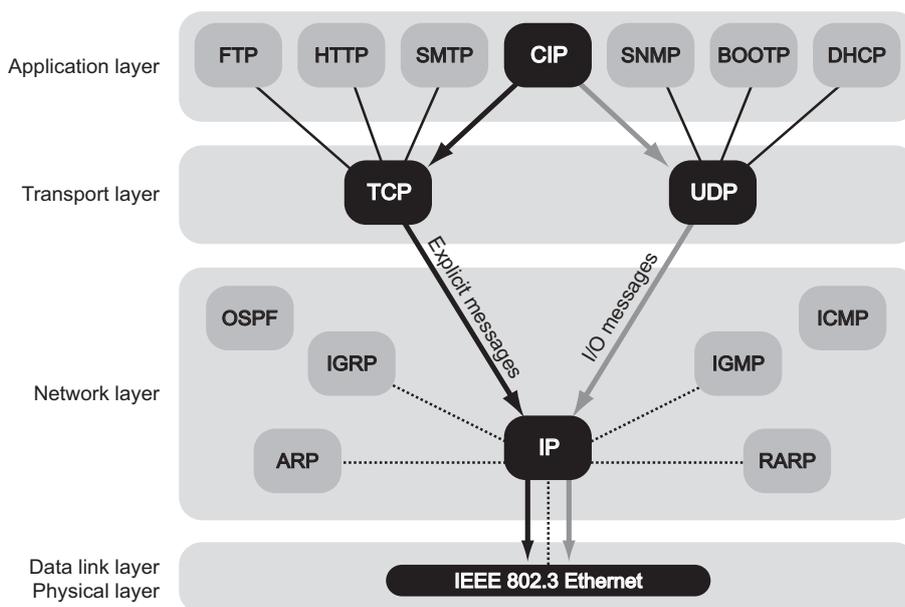


Fig. 1.2 Protocol Stack of EtherNet/IP

## 1.2 EtherNet/IP Features

EtherNet/IP is a standard network configured with standard worldwide protocols (Ethernet, TCP/IP, and CIP), it has the following features since it uses standard protocols.

- Can manage and integrate entire production systems, from field devices to the internet.
- Can control, set, diagnose the device and collect data on the same Ethernet.
- Can use a previously installed Ethernet for the information system.

The following figure illustrates how a system that connects EtherNet/IP devices and DeviceNet using EtherNet/IP may be arrayed.

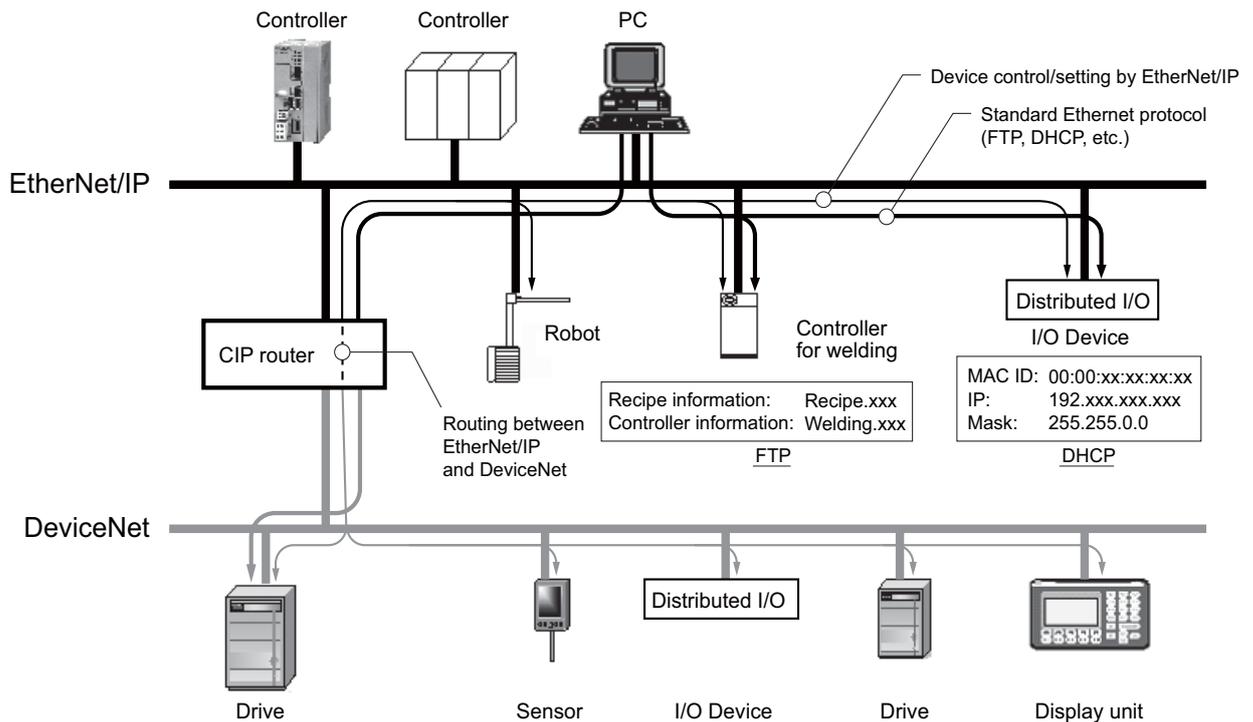


Fig. 1.3 Example of EtherNet/IP (Includes DeviceNet) System Configuration

## 1.3 EtherNet/IP (CIP) Communication Types

There are two kinds of CIP communication: Explicit message communication and I/O communication.

### 1.3.1 Explicit Message Communication

Explicit messages are used in general message communication between the client and the server (peer-to-peer communication).

- Two types of message communication is available, namely, connected message communication and unconnected message communication.
- An explicit message contains the communication destination object information and the request details.

#### ■ Major Applications

Program uploading/downloading, device setting, data collection, diagnosing, etc.

### 1.3.2 I/O Communication

I/O communication is used for time-critical control data communication.

- Efficient communication is possible since only data is sent/received in I/O communication.
- The meaning of the data is pre-defined for each connection (communication target application object).

#### ■ Major Applications

Transmission of control data for individual devices, etc.

## 263IF-01 Module

This chapter describes the external appearance and specifications of the 263IF-01 Module.

<b>2.1 Features</b>	<b>2-2</b>
2.1.1 I/O Communication	2-2
2.1.2 Explicit Message Communication	2-3
2.1.3 Engineering Communication	2-4
<b>2.2 Specifications</b>	<b>2-5</b>
2.2.1 Hardware Specifications	2-5
2.2.2 Transmission Specifications	2-6
2.2.3 Software Configuration	2-8
2.2.4 Operating Environment Specifications	2-9
<b>2.3 Overview</b>	<b>2-10</b>
2.3.1 Appearance and Connectors	2-10
2.3.2 Status Indicators (LEDs)	2-10
2.3.3 Communication Status Indicators (LEDs) (Contained in the Ethernet Connector)	2-11
2.3.4 Switch Settings	2-11
2.3.5 Offline Self-diagnostic Test	2-11
<b>2.4 Connection Specifications</b>	<b>2-12</b>
2.4.1 Connector Specifications	2-12
2.4.2 Cable Specifications	2-12

## 2.1 Features

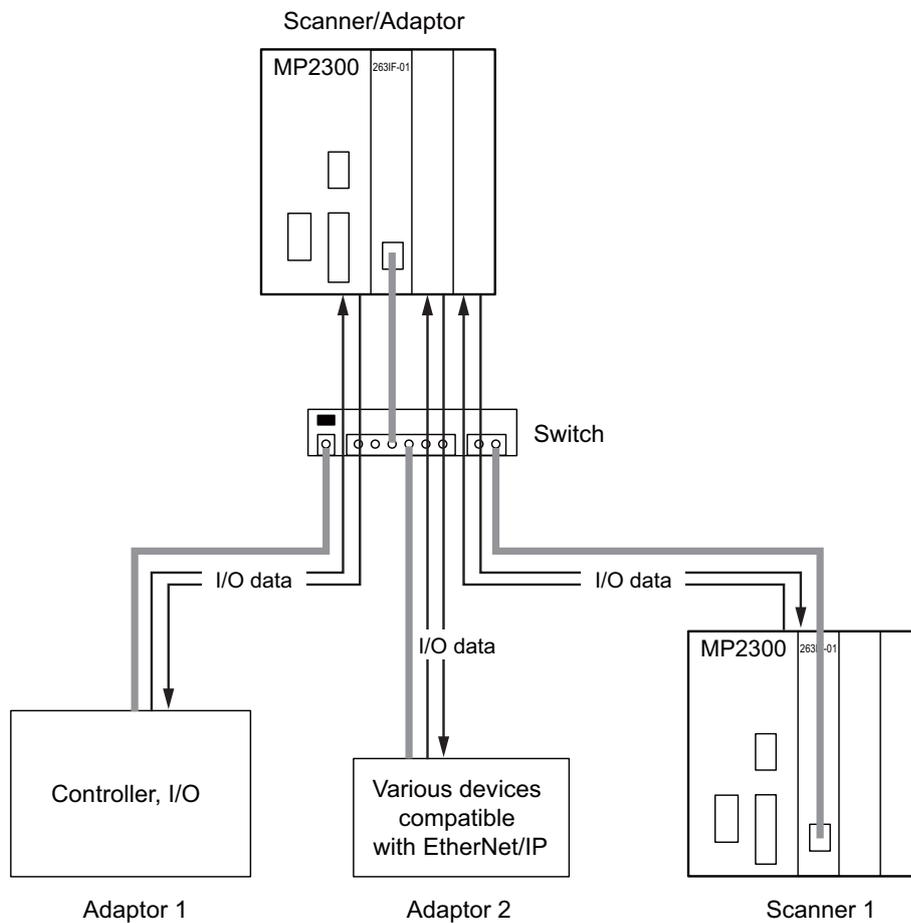
A 263IF-01 Module can perform I/O communication, explicit message communication and engineering communication.

### 2.1.1 I/O Communication

In I/O communication (Class 1), communication of time-critical control data is possible. This type of communication is mainly used between scanners and adaptors in a 1:1 or 1:N configuration.

I/O communication using the 263IF-01 Module provides both the scanner and adaptor functions and supports a maximum of 64 connected devices (scanner devices and adaptor devices). The scanner and adaptor functions operate simultaneously.

The following figure illustrates communication between scanners and adaptors.



The communication trigger for an I/O communication is as follows.

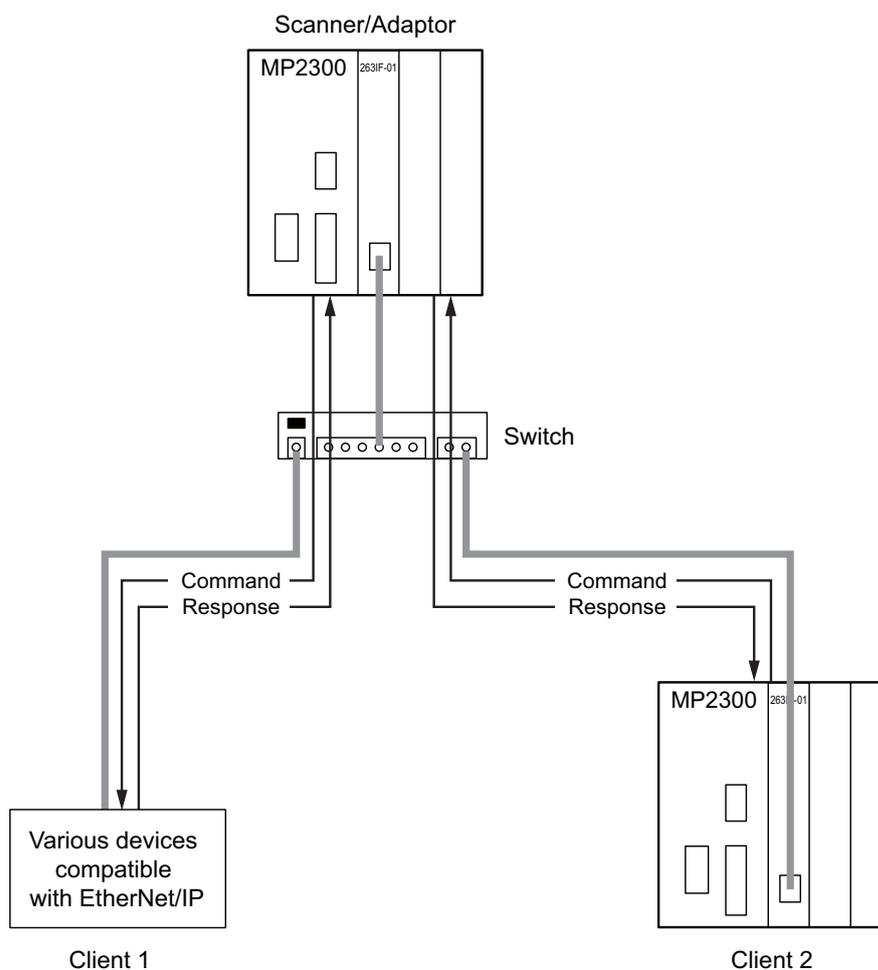
Type	Scanner/Adaptor	Remarks
Cyclic	Scanner, adaptor	Sends the data at specified intervals (at each timeup).

## 2.1.2 Explicit Message Communication

In explicit message communication, general message communication is possible.

In explicit message communication using the 263IF-01 Module, the Module provides both the client (UCMM) and server (Class 3, UCMM) functions, and is mainly used in communication between the client and server (maximum number of connected devices = 64) in 1:1 (peer-to-peer) configuration.

The following figure illustrates a layout for communication between clients and a server.



The following table shows the types of message communication and their communication triggers.

Communication Type		Remarks
Message Communication	Connected message communication	Performs message communication after establishing a CIP connection. Server: Supported Client: Not supported
	Unconnected (UCMM) message communication	Performs message communication without establishing a CIP connection.
Communication Trigger	Driven by application object (event)	Sends a message upon occurrence of an event. (Uses a message send function.)

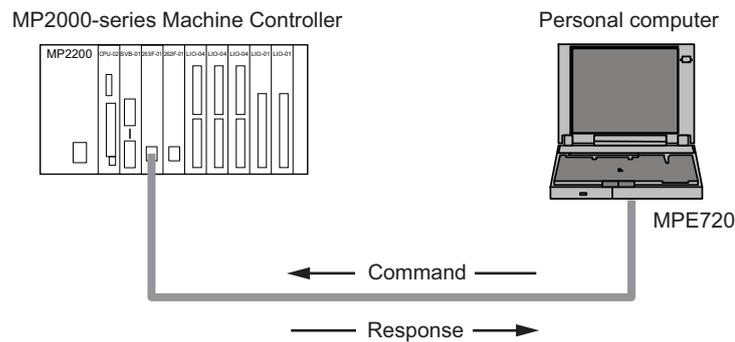
### 2.1.3 Engineering Communication

By connecting the 263IF-01 Module to the Programming Device MPE720, ladder programming and monitoring are possible through engineering communication.

The self configuration function of the MP2000-series Machine Controller enables an Ethernet connection between the personal computer where MPE720 is installed and the 263IF-01 Module, without requiring settings for connections at the 263IF-01 Module.

- ♦ The Communication Manager setting on the personal computer and connection setting on the MPE720 are necessary. For details, refer to 3.3.2 *Setting the Communication Manager* on page 3-10, 3.5.1 *Starting MPE720 Ver. 6 and Setting Communication Parameters* on page 3-15 and 3.5.2 *Starting MPE720 Ver. 5.xx and Setting Network Parameters* on page 3-16.

The following figure illustrates a layout for connection with the MPE720.





## 2.2.2 Transmission Specifications

Item		Specifications	
Ethernet Transmission Specifications		100BASE-TX	10BASE-T
	Interface	RJ-45 connector	
	Compliance Standard	IEEE802.3u	IEEE802.3i
	Media Access Mode	CSMA/CD	
	Communication Mode	Full duplex/half duplex	
	Modulation Method	Baseband	
	Topology	Bus	
	Communication Protocol	TCP/UDP/IP/ICMP/IGMP	
	Baud Rate	100 Mbps	10 Mbps
	Maximum Number of Cascade Connections	2 levels	4 levels
	Transmission Path Length (Full length at repeater usage)	100 m (500 m max. *1)	100 m (205 m max. *1)
	Transmission Media	Twisted-pair cable (UTP) Category 5 or 5e Twisted-pair cable (STP) Category 5 or 5e (100 Ω)	Twisted-pair cable (UTP) Category 3, 4, 5, or 5e Twisted-pair cable (STP) Category 3, 4, 5, or 5e (100 Ω)
	Maximum Segment Length	100 m (distance between hub and node at UTP usage)	
	Link Function	Support for auto-negotiation (not possible to fix transmission and communication modes)	
	Support for Auto MDI/MDI-X		
EtherNet/IP Specifications	IP Address	To be set by Programming Device (DHCP and BOOTP are not supported.)	
	Port Number	I/O communication: The system uses one port at 2222 (0x08AE). *2 Explicit message communication: The system uses one port at 44818 (0xAF12). *2	
	Communication Protocol	Conforms to EtherNet/IP (CIP)	
	Device Type	Communication adaptor	
	Supported Objects *4	Mandatory objects • Identity • Message Router • Ethernet Link • TCP/IP Interface • Connection Manager Optional objects • Assembly • UCMM (Unconnected Message Manager; Non-object) • Port	
	Product Level	Level 4 I/O communication: Scanner and adaptor Explicit message communication: Client and server	
I/O Communication Specifications	Maximum Number of Connectable I/O Devices	64 units*3 (Does not include the devices used for explicit message communication)	
	Max. Number of I/O Bytes	Inputs/outputs: 8192 bytes each*3 per system (Total number of bytes of input/output data exchanged among all connected devices) Inputs/outputs: 500 bytes each*2 per device	
	Communication Mode	Scanner, adaptor	
	Communication Mode at Startup	Simultaneous start of scanners and adaptors	
	Communication Trigger	Cyclic	

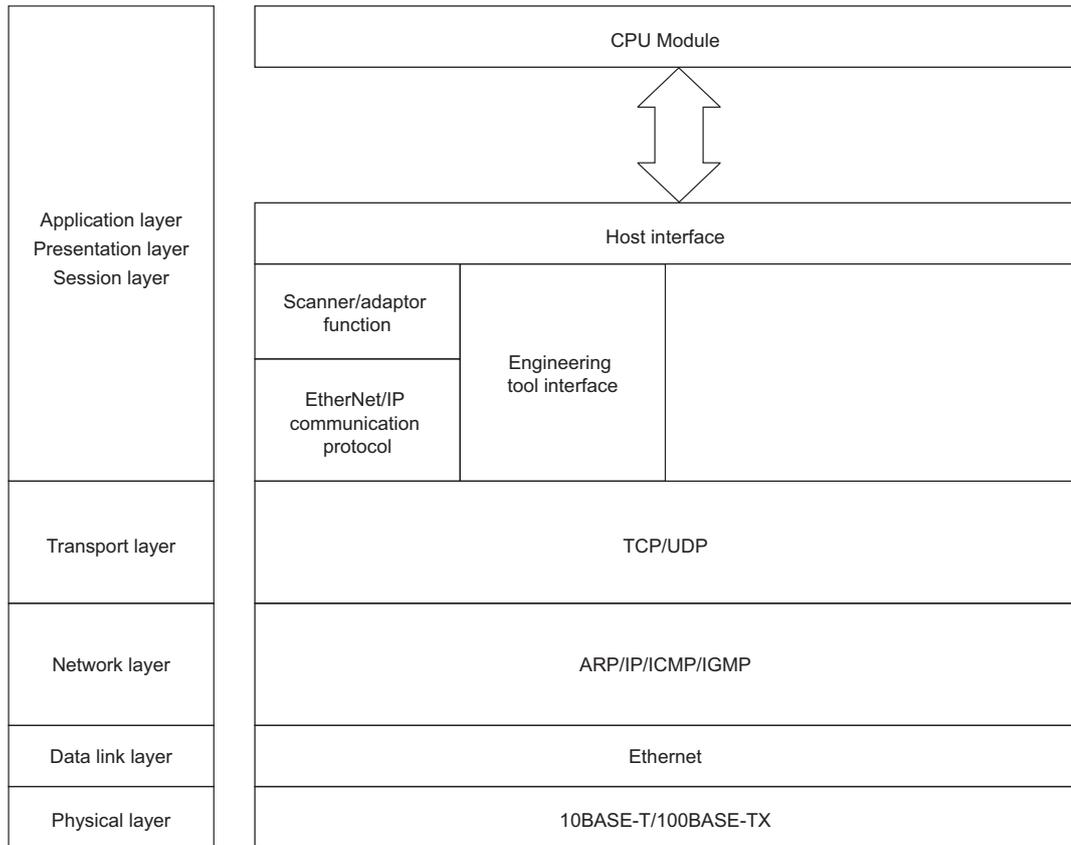
Item		Specifications
Explicit Message Specifications	Max. Number of Connectable Devices for Explicit Message Communication	64 units* <sup>3</sup> (Number of devices that can communicate simultaneously: 10)
	Number of Message Channels	10
	Max. Number of Message Bytes	504 bytes* <sup>2</sup>
	Function for Execution	MSG-SND Function
	Communication Mode	Client and server
	Connection Type	Unconnected type (UCMM) • When the Module functions as a server, connected type (class 3) is also supported.
	Communication Trigger	Application object driven

- \* 1. The maximum transmission path length when a switching hub is used.  
Use a switching hub for the Ethernet (available at any electronics shop)  
(A product manufactured by the Japan Electrical Manufacturers' Association is recommended.)
- \* 2. EtherNet/IP (CIP) specifications
- \* 3. Restrictions due to MP2000-series Machine Controller specifications
- \* 4. The following table describes objects in detail.

Object Name	Class ID	Optional/ Mandatory (See * <sup>2</sup> above)	Description
Identity	0x01	Mandatory	<ul style="list-style-type: none"> <li>Retains the identification information of a device. The device identification information can be obtained by reading the attributes of an Identity object.</li> <li>Supports device reset processing to be activated through the network.</li> </ul> <Attributes> Vendor ID, device type, product code, revision, status, product serial number, product name, state, etc.
Message Router	0x02	Mandatory	<ul style="list-style-type: none"> <li>Transfers the received explicit request to the specified object.</li> <li>To be specified in the connection path used when establishing the connection for explicit message communication.</li> </ul>
Assembly	0x04	Optional	Provides the access map for accessing attributes or I/O data in a device.
Connection Manager	0x06	Mandatory (conditional)	<ul style="list-style-type: none"> <li>Issues and receives the Forward_Open service and creates the CIP connection.</li> <li>Retains the CIP connection information and secures the necessary internal resources.</li> </ul>
Port	0xF4	Optional	<ul style="list-style-type: none"> <li>Retains the information of the connection ports that can be used in the CIP network.</li> <li>Used when searching for the CIP routing information.</li> </ul>
Ethernet Link	0xF5	Mandatory (conditional)	Provides the EtherNet/IP interface.
TCP/IP Interface	0xF6	Mandatory (conditional)	Provides the EtherNet/IP interface.

### 2.2.3 Software Configuration

The following figure illustrates the software configuration that provides the 263IF-01 Module functions.



The following table provides the details of the individual protocols.

Protocol	Details
TCP (Transmission Control Protocol)	Connection type transport layer protocol
UDP (User Datagram Protocol)	Connection type transport layer protocol
IP (Internet Protocol)	Protocol that establishes the communication path between computers
ICPM (Internet Control Message Protocol)	Protocol that handles error control in the IP protocol
IGMP (Internet Group Management Protocol)	Protocol used for IP multicast
ARP (Address Resolution Protocol)	Converts an IP address into a MAC address.

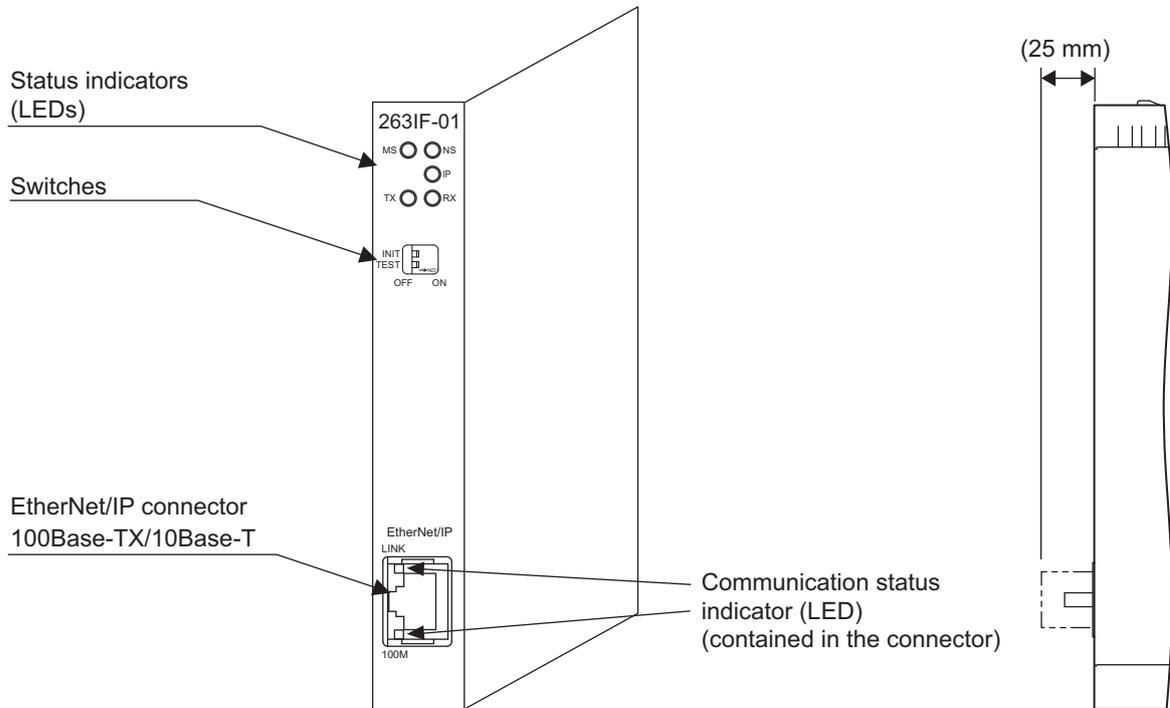
## 2.2.4 Operating Environment Specifications

Item		Specifications
Environmental Conditions	Ambient Operating Temperature	0 to +55 °C
	Ambient Storage Temperature	-25 to +85°C
	Ambient Operating Humidity	30% to 95% RH (with no condensation)
	Ambient Storage Humidity	5% to 95% RH (with no condensation)
	Pollution Level	Pollution level: 2 (conforming to JIS B3502)
	Corrosion Resistance	There must be no combustible or corrosive gas.
	Operating Altitude	2,000 m above sea level or lower
Mechanical Operating Conditions	Vibration Resistance	Conforming to JIS B3502 (1) Frequency: 16.7 Hz      Vibration strength: 14.7 m/s <sup>2</sup> (2) Frequency: 10 to 57 Hz      Vibration strength: 0.075 mm of single-amplitude (3) Frequency: 57 to 150 Hz      Vibration strength: 9.8 m/s <sup>2</sup> of fixed acceleration
	Shock Resistance	Conforming to JIS B3502 Peak acceleration of 147 m/s <sup>2</sup> (15G) twice for 11 ms each in the X, Y, and Z directions
Electrical Operating Conditions	Noise Resistance	Conforming to EN 61000-6-2, EN 55011 (Group 1, Class A) Power supply noise (FT noise):      ±2 kV min., for one minute Radiation noise (FT noise):      ±1 kV min., for one minute Ground noise (impulse noise):      ±1 kV min., for ten minutes Electrostatic noise (contact discharge method): ±6 kV min., ten times
Installation Requirements	Ground	Ground to 100 Ω max.
	Cooling Method	Natural cooling

## 2.3 Overview

### 2.3.1 Appearance and Connectors

The following illustration shows the appearance of the 263IF-01 Module and provides the external dimensions of the connector.



### 2.3.2 Status Indicators (LEDs)

The following table shows the status of the 263IF-01 Module indicated by the LED indicators.

Indicator	Color	Meaning When Lit	Meaning When Flashing	Meaning When Not Lit
MS	Green	Operating normally	Device not set	Module power supply disconnected/Startup failure
	Red	Module error (Unrecoverable)	Module error (Recoverable)	
	Alternately flashing green/red		During self-testing	
NS	Green	Operating normally	Connection being established, or no I/O allocations	Communication power supply disconnected/No IP address
	Red	Error (Duplicated IP address)	Communication error (Timeout)	
	Alternately flashing green/red		During self-testing	
IP	Green	IP address acquisition completed	–	IP address acquisition not completed
TX	Green	Sending data	–	Not sending data
RX	Green	Receiving data	–	Not receiving data

- ♦ For details on the Module status indicated by the LED indicators, refer to 6.1 Status Indication by LED Indicators on page 6-2.

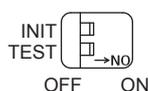
### 2.3.3 Communication Status Indicators (LEDs) (Contained in the Ethernet Connector)

The indicators (LEDs) contained in the EtherNet/IP connector indicate the status of EtherNet/IP communication.

Indicator	Color	Meaning When Lit	Meaning When Not Lit
LINK	Yellow	EtherNet/IP link established	EtherNet/IP link not established
100M	Green/orange	Green: 100 Mbps (Orange: 1 Gbps)	10 Mbps or not connected

### 2.3.4 Switch Settings

The following table shows the 263IF-01 Module switch settings.



Label (Switch No.)	Name	Status	Function	Factory Setting
INIT (2)	Transmission Parameters Start-up Selection (For Programming Device)	ON	Initial startup	OFF
		OFF	Normal operation mode	
TEST (1)	Operating Mode Selection	ON	Reserved by the system. • Always set to OFF.	OFF
		OFF		

- Always leave the unused switches (Nos. 3 and 4), located behind the faceplate, OFF.

### 2.3.5 Offline Self-diagnostic Test

The offline self-diagnostic test will be performed if the power is turned ON when the TEST switch is set to ON and all other switches are set to OFF.

When the self-diagnostic test is performed successfully, MS will be lit, NS will be lit, and all other indicators will be unlit repeatedly in this order.

If the offline self-diagnostic test finds a problem in the 263IF-01 Module, the indicators will be as shown in the following table.

Error Contents	Indicator Status When Error Is Detected			
	MS	NS	TX	RX
ROM Check Error	Not lit	Flashing (1)	Not lit	Not lit
RAM Check Error		Flashing (2)		
DRAM Check Error		Flashing (3)		
LAN/IF Check Error		Flashing (4)		

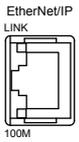
- The number in parentheses following "Flashing" indicates the number of flashes.

## 2.4 Connection Specifications

### 2.4.1 Connector Specifications

This section explains the connector specifications for the 263IF-01 Module.

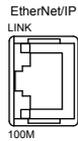
#### (1) Connector Specifications

Connector Shape	Name	Connector Name	No. of Pins	Connector Model		
				Module	Cable	Manufacturer
	EtherNet/IP	EtherNet/IP	8	JOG-0001NL (LED/Pulse transformer built-in modular jack)	–	Pulse Engineering

#### (2) Connector Pin Arrangement

The connector is used to connect the 263IF-01 Module to the devices in the EtherNet/IP network via an EtherNet/IP connection.

Pin Number	Signal Name	I/O	Description
1	DGB_TXD2	O	Send data
2	DGB_RXD2	I	Receive data
3	DGB_RTS2	O	Send request
4	DGB_CTS2	I	Ready to receive
5	GND	–	Ground
6	–	–	–
7	–	–	–
8	–	–	–



### 2.4.2 Cable Specifications

Yaskawa does not provide EtherNet/IP cables. Obtain commercially available category 5 cross or straight cables.

- The AUTO MDI/MDI-X function of the 263IF-01 Module automatically distinguishes between cross and straight cables.

## Mounting and Starting the Module

This chapter describes how to connect the 263IF-01 Module and start the system, focusing on mounting the 263IF-01 Module, communication process setting, and self-configuration.

3.1 Applicable Machine Controllers and Supported Versions	3-2
3.1.1 Applicable Machine Controllers	3-2
3.1.2 Supported CPU and MPE720 Versions	3-2
3.2 Mounting and Removing a Module on the Machine Controller	3-3
3.2.1 Mounting a 263IF-01 Module	3-3
3.2.2 Removing a 263IF-01 Module	3-6
3.3 Setting the Communication Manager	3-8
3.3.1 Preparation of the Personal Computer	3-8
3.3.2 Setting the Communication Manager	3-10
3.4 Self-configuration	3-14
3.4.1 Executing Self-configuration	3-14
3.5 Starting the MPE720, and Setting Communication or Network Parameters	3-15
3.5.1 Starting MPE720 Ver. 6 and Setting Communication Parameters	3-15
3.5.2 Starting MPE720 Ver. 5.xx and Setting Network Parameters	3-16

## 3.1 Applicable Machine Controllers and Supported Versions

### 3.1.1 Applicable Machine Controllers

The MP2000-series Machine Controllers to which the 263IF-01 Modules can be mounted are listed in the following table.

Name		Model	Max. No. of Connectable Modules	Remarks
MP 2200	Base Unit with 100/200-VAC input* <sup>1</sup>	JEPMC-BU2200	8 modules when using CPU-01	The maximum number of connectable Modules is the total for the maximum expansion to four Racks.* <sup>2</sup>
	Base Unit with 24-VDC input* <sup>1</sup>	JEPMC-BU2210	8 modules when using CPU-02	
MP2300		JEPMC-MP2300	2 modules	–
MP2310		JEPMC-MP2310-E	3 modules	–
MP2300S		JEPMC-MP2300S-E	1 module	–
MP2100M		JAPMC-MC2140	8 modules	The 263IF-01 Modules can be mounted on the Expansion Racks (which use the MP2200 Base Unit) connected to an Expansion Interface Board (MP2100MEX, model: JAPMC-EX2100) mounted on the Machine Controller. The maximum number of connectable Modules is the total for the maximum expansion to three Racks.* <sup>2</sup>
MP2500MD		JAPMC-MC2540-D	8 modules	

\* 1. A special CPU Module (the CPU-01 or CPU-02) is required.

For the CPU-01, use model JAPMC-CP2200, and for the CPU-02, use model JAPMC-CP2210 (with one slot for CF card and one USB port).

\* 2. An EXIOIF Inter-Rack Connection Module (model: JAPMC-EX2200) is required to add Expansion Racks.

♦ The 263IF-01 Modules cannot be mounted on the following MP2000-series Machine Controllers: MP2100, MP2400, MP2500, MP2500M, and MP2500D.

### 3.1.2 Supported CPU and MPE720 Versions

The following table lists the CPU and MPE720 versions that can be used with the 263IF-01 Module.

Machine Controller		Supported Versions		
		CPU	MPE720 (CPMC-720)	MPE720 Ver. 6 (CPMC-770)
MP2200	CPU-01	Ver. 2.64 or later	Ver. 5.42 or later	Ver. 6.08 or later
	CPU-02	Ver. 2.64 or later	Ver. 5.42 or later	Ver. 6.08 or later
MP2300		Ver. 2.64 or later	Ver. 5.42 or later	Ver. 6.08 or later
MP2310		Ver. 2.64 or later	Ver. 5.42 or later	Ver. 6.08 or later
MP2300S		Ver. 2.64 or later	Ver. 5.42 or later	Ver. 6.08 or later
MP2100M		Ver. 2.64 or later	Ver. 5.42 or later	Ver. 6.08 or later
MP2500MD		Ver. 2.64 or later	Ver. 5.42 or later	Ver. 6.08 or later

## 3.2 Mounting and Removing a Module on the Machine Controller

This section explains the procedure for mounting and removing a 263IF-01 Module.

### 3.2.1 Mounting a 263IF-01 Module

Use the following procedure to mount a 263IF-01 Module.

- Before replacing a 263IF-01 Module, remove the 263IF-01 Module that needs to be replaced referring to 3.2.2 *Removing a 263IF-01 Module* on page 3-6.

#### ( 1 ) Preparation

##### 1. Backup the Programs.

Save the programs written to the Machine Controller in the personal computer using MPE720.

- MPE720 Ver. 5.xx: Right-click the PLC folder and then select **Transfer - All Files - From Controller to MPE720**.

MPE720 Ver. 6.xx: Open the project file and then select **Online - Transfer - Read from Controller**.

##### 2. Save in the Flash Memory.

Save the programs written to the Machine Controller in the flash memory using the MPE720.

- MPE720 Ver. 5.xx: Right-click the PLC folder and then select **Transfer - Other - Save to Flash**.

MPE720 Ver. 6.xx: Open the project file and then select **Online - Transfer - Save to Flash**.

##### 3. Remove the Machine Controller and Expansion Rack.

Turn OFF the power supply and remove all the cables connected to the Machine Controller or Expansion Rack (MP2200 Base Unit). Then, remove the Machine Controller and Expansion Rack from the panel or rack, and place them where there is sufficient space, such as on a work table.

#### ( 2 ) Removing the Option Cover

If an Option Cover is attached to the slot into which the 263IF-01 Module is to be mounted, remove it using the following procedure.

##### 1. Remove the Battery Cover.

<MP2200/MP2300/MP2200 Base Unit>

Insert a hard thin metal object, such as a coin, into the notch on the side of the battery cover and open the cover forward to remove the battery cover.



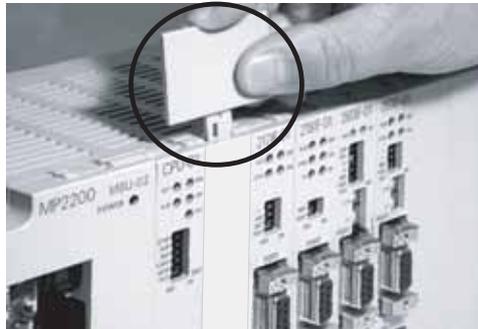
<MP2310/MP2300S>

Insert a finger in the lug on the lower part of the battery cover as shown in the figure and remove the battery cover.



**2. Remove the Option Cover.**

Hold the battery cover with the front facing forward, insert the protrusion on the battery cover into the notch at the top of the Option Cover, and release the hook on the Option Cover.



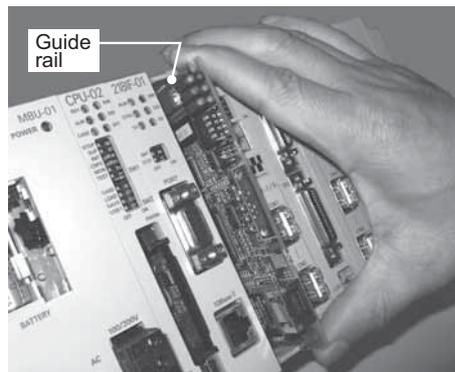
Release the hook on the bottom in the same way and remove the Option Cover.

**( 3 ) Mounting Procedures**

**1. Insert the 263IF-01 Module.**

Grip the top and bottom of the 263IF-01 Module, align the Module with the left side of the guide rail inside the option slot, and push the Module straight in.

- If the Module is not inserted along the guide rail correctly, the frame ground bar on the bottom of the slot may get damaged.

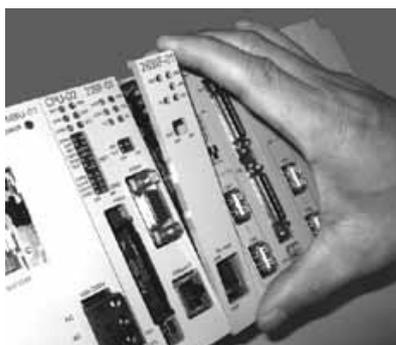


**2. Connect to the Mounting Base Connector.**

After inserting the Module completely, press the Module firmly until it connects securely with the Mounting Base connector. If the Module is connected securely, the front of the Module should approximately align with the hooks.

**3. Mount the Option Panel.**

Insert the bottom hook into the hole on the bottom of the operation panel and then securely insert the top hook into the hole.



This completes the mounting procedure.

#### ( 4 ) After Mounting the Module

##### 1. Connect to the Hub.

Connect the 263IF-01 Module and the hub using the Ethernet cable.

- Refer to 2.4.2 *Cable Specifications* on page 2-12 for cables that can be used.

##### 2. Create Module Configuration Definitions.

###### a) After Mounting New Modules

Execute self-configuration for each slot in which a 263IF-01 Module has been newly mounted.

- Refer to 3.4 *Self-configuration* on page 3-14 for more information.

###### b) After Replacing Modules

Turn OFF the CNFG and INIT DIP switches on the Machine Controller and turn ON the power supply.

After turning ON the power, modify the module configuration as required.

- Refer to 4.1.1 *Displaying the Module Configuration Window* on page 4-2 for information on the Module configuration definitions.

### 3.2.2 Removing a 263IF-01 Module

Use the following procedure to remove a 263IF-01 Module.

#### ( 1 ) Preparation

##### 1. Backup the Programs.

Save the programs written to the Machine Controller in the personal computer using MPE720.

- MPE720 Ver. 5.xx: Right-click the PLC folder and then select **Transfer - All Files - From Controller to MPE720**.
- MPE720 Ver. 6.xx: Open the project file and then select **Online - Transfer - Read from Controller**.

##### 2. Remove the Machine Controller and Expansion Rack.

Turn OFF the power supply and remove the cables connected to the Machine Controller or Expansion Rack.

Then, remove the Machine Controller and Expansion Rack from the panel or rack and place them where there is sufficient space, such as on a work table.

#### ( 2 ) Removing Procedures

##### 1. Remove the Battery Cover.

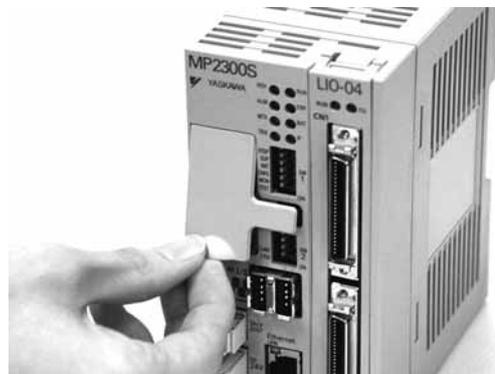
<MP2200/MP2300/MP2200 Base Unit>

Insert a hard thin metal object, such as a coin, into the notch on the side of the battery cover and open the cover forward to remove the battery cover.



<MP2310/MP2300S>

Insert a finger in the lug on the lower part of the battery cover as shown in the figure and remove the battery cover.



##### 2. Remove the Option Panel.

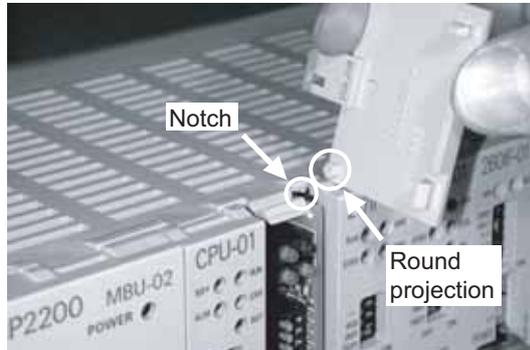
Hold the battery cover with the front facing forward, insert the protrusion on the battery cover into the notch at the top of the Module's option panel, and release the hook on the option panel.



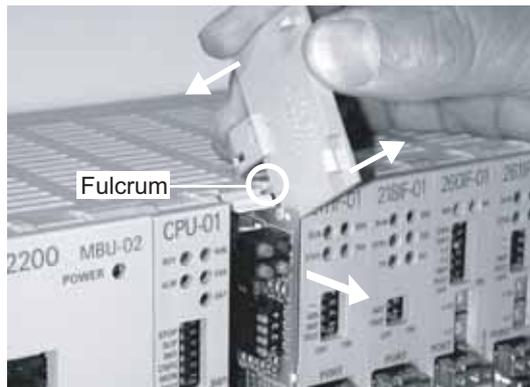
Release the hook on the bottom in the same way and remove the option panel.

### 3. Remove the 263IF-01 Module from the Mounting Base.

Pull the top of the option panel to remove it. A notch can be seen in the 263IF-01 Module from the gap in the panel. Insert the round projection on the battery cover (see the following figure) into the gap in the panel so that it engages the notch in the Module.

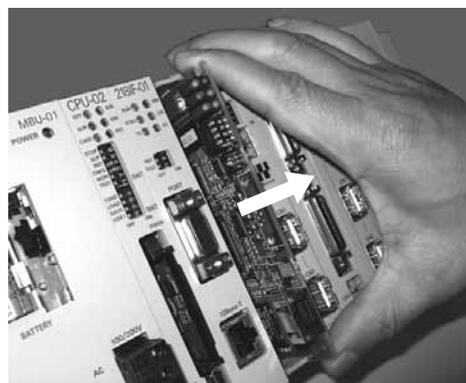


Hold the battery cover as shown in the following figure and rotate it toward the rear, using the round projection as a fulcrum to disconnect the Module from the Mounting Base connector. The Module will come out toward the front.



### 4. Pull Out the 263IF-01 Module.

Hold onto the top and bottom of the Module with your fingers and pull the Module straight out. Be sure to hold onto the edges of the Module. Do not touch the components mounted to the Module.



Place the Module that you removed into the bag that it was delivered in and store it.



- Always attach an Option Cover (JEPMC-OP2300) to any unused slot.

## 3.3 Setting the Communication Manager

This section describes the software called the Communication Manager that is used to set the communication method for engineering communication between the personal computer running the MPE720 and the MP2000-series Machine Controller.

When a 263IF-01 Module is used for communication between the MPE720 (personal computer) and a Machine Controller, set the communication method with the Communication Manager in accordance with the Module to be used. Set the communication conditions with the Communication Manager after the MPE720 Programming Device has been installed. Once they have been set, you do not need to set them for subsequent start-ups, except when other conditions are to be added.

### 3.3.1 Preparation of the Personal Computer

Before starting EtherNet/IP connection, a general-purpose Ethernet board or PCMCIA Ethernet card must be installed on the personal computer. Before making the settings, the IP address of the personal computer must be set.

#### ( 1 ) Mounting an Ethernet Card

Mount a general-purpose Ethernet board or PCMCIA Ethernet card on the specified connector of the personal computer. Also, install the driver provided with the Ethernet card.

#### ( 2 ) Setting the IP Address

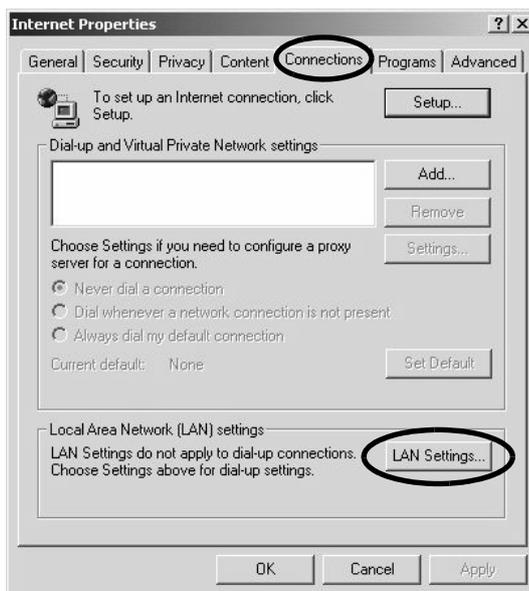
Before making the settings for EtherNet/IP connections, the IP address of the personal computer must be set. Set the IP address by the procedure below:

- Make the following settings with the LAN cable connected.

**1.** Click the Windows **Start** button and select **Settings - Control Panel - Internet Options**.

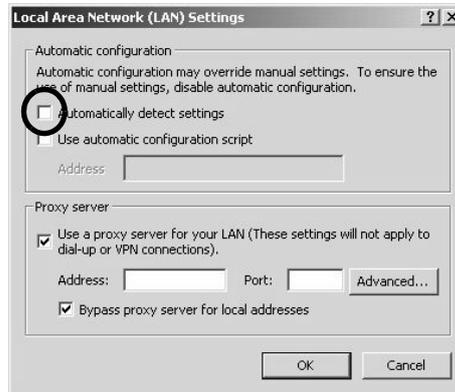
The **Internet Properties** dialog box will be displayed.

**2.** Click the **Connections** tab to display the tab page. Click the **LAN Settings...** button.



The **Local Area Network (LAN) Settings** dialog box will be displayed.

3. Check that the **Automatically detect settings** check box is cleared, and click the **OK** button to close the dialog box.

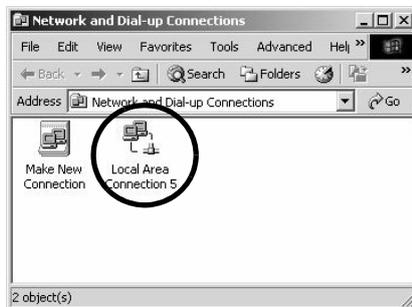


4. For a computer running Windows 2000, click the Windows **Start** button and select **Settings - Control Panel - Network and Dial-up Connections**.  
 For a computer running Windows XP, click the Windows **Start** button and select **Settings - Control Panel - Network Connections**.

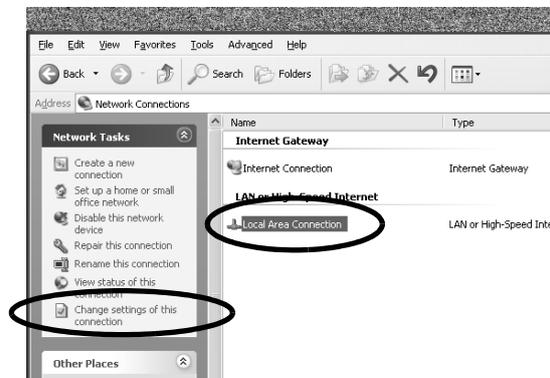
On a computer running Windows 2000, the **Network and Dial-up Connections** window will be displayed. On a computer running Windows XP, the **Network Connections** window will be displayed.

5. On a computer running Windows 2000, double-click the **Local Area Connection** icon.  
 On a computer running Windows XP, click **Local Area Connection** and click **Change settings of this connection** in the **Network Tasks** menu.

Windows 2000

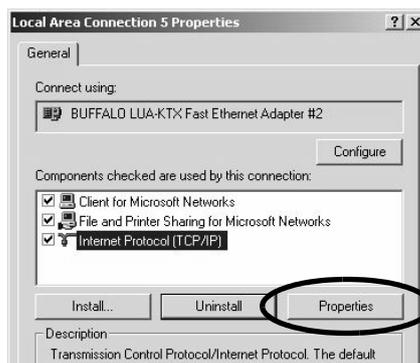


Windows XP



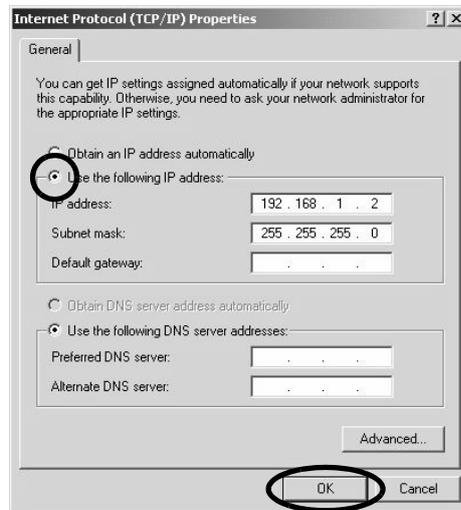
The **Local Area Connection Properties** dialog box will be displayed.

6. Select **Internet Protocol (TCP/IP)** and click the **Properties** button.



The **Internet Protocol (TCP/IP) Properties** dialog box will be displayed.

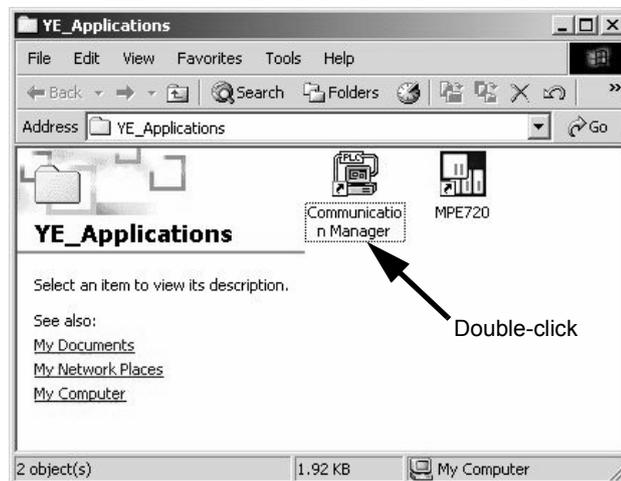
7. Select **Use the following IP address** and enter “192.168.1.2” for **IP address** and “255.255.255.0” for **Subnet mask**. Then click the **OK** button to close the dialog box.



### 3.3.2 Setting the Communication Manager

#### ( 1 ) Opening the Communication Manager

1. Double-click the **Communication Manager** icon in the **YE\_Applications** folder on the desktop to start the Communication Manager. Or, select **All Programs - YE\_Applications - Communication Manager** under the Windows **Start** button.



The **Communication Manager** icon will be displayed in the task tray at the right bottom of the window.

2. Double-click the **Communication Manager** icon in the task tray.



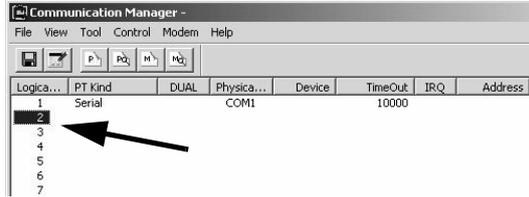
**Communication Manager** icon

The **Communication Manager** window will open.

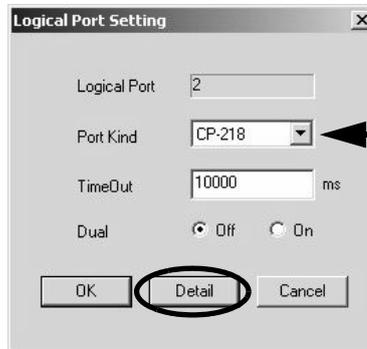
Logical ports for up to 16 channels can be set in the **Communication Manager** window.

( 2 ) Setting the Ethernet Communication Port

1. In the **Communication Manager** window, double-click the number in the Logical PT column of a line which has not been set (In the following example, Line 2 and subsequent lines have not been set.) to view the **Logical Port Setting** dialog box.

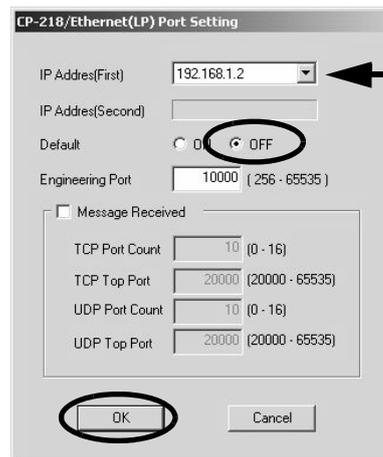


2. Select **Ethernet** or **CP-218** under **Port Kind** in the **Logical Port Setting** dialog box and click the **Detail** button.
  - **Ethernet** and **CP-218** require the same communication specifications. Either can be set for EtherNet/IP (10BASE-T) communication.

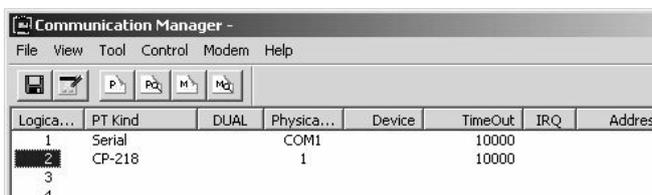


The **CP-218 Port Setting** dialog box will be displayed.

3. Enter the IP address of computer and click **OFF** for **Default**. Leave the other items on their default settings. Click the **OK** button to close the dialog box.



4. Click the **OK** button in the **Logical Port Setting** dialog box. The display will return to the **Communication Manager** window. Confirm that CP-218 (Ethernet connection) is allocated to the Logical Port number that you selected.



5. Save the settings and restart the Communication Manager.

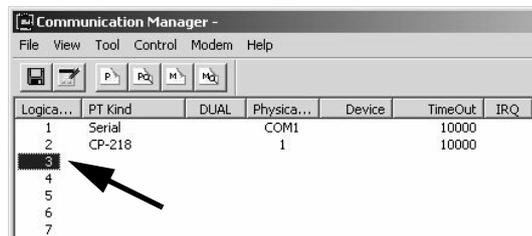
Refer to 3.3.2 ( 4 ) *Saving the Communication Port Settings and Restarting the Communication Manager* on page 3-13 for the procedure.

### ( 3 ) Setting the Ethernet (LP) Communication Port

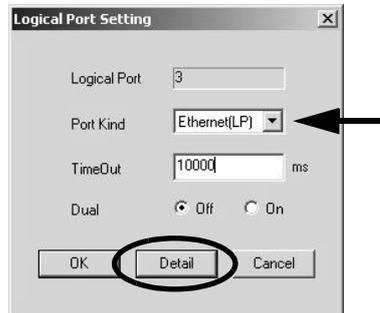
These settings are optimum for performing engineering via the Ethernet communication port of the 263IF-01 Module.

Since the engineering message size is expanded at the Ethernet (LP) communication port compared with the conventional Ethernet communication port (CP218/Ethernet), high-speed engineering communication is possible.

1. In the **Communication Manager** window, double-click the number in the Logical PT column of a line which has not been set ([3] and greater in the figure below) to display the **Logical Port Setting** dialog box.

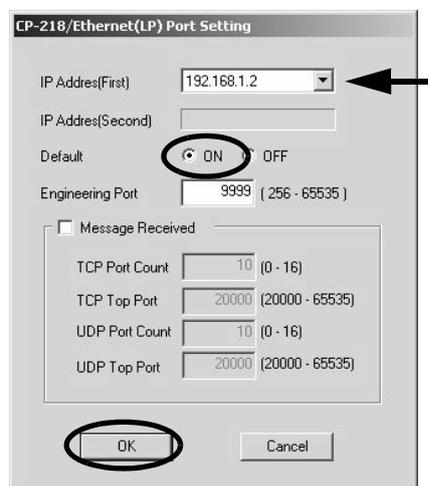


2. Select **Ethernet (LP)** under **Port Kind** in the **Logical Port Setting** dialog box and click the **Detail** button.



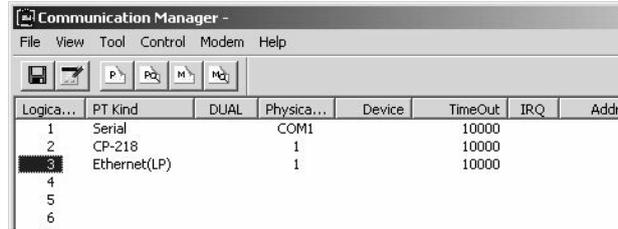
The **CP-218/Ethernet (LP) Port Setting** dialog box will be displayed.

3. Enter the IP address of the computer in the **IP Address (First)** box, and confirm that the rest of the settings are as shown here. Then click the **OK** button.



The **CP-218/Ethernet (LP) Port Setting** dialog box is closed and the display will return to the **Logical Port Setting** dialog box.

- Click the **OK** button in the **Logical Port Setting** dialog box. The display will return to the **Communication Manager** window. Confirm that Ethernet (LP) is allocated to the selected Logical Port number.



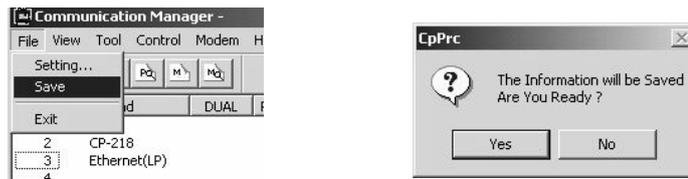
- Save the settings and restart the Communication Manager.

Refer to 3.3.2 (4) *Saving the Communication Port Settings and Restarting the Communication Manager* on page 3-13 for the procedure.

#### (4) Saving the Communication Port Settings and Restarting the Communication Manager

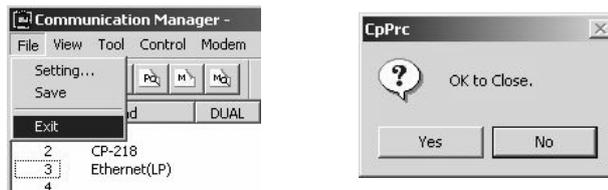
Save the communication port settings, and restart the Communication Manager to validate the settings.

- Select **File - Save**. A save confirmation message will be displayed. Click the **Yes** button to save the communication port settings.

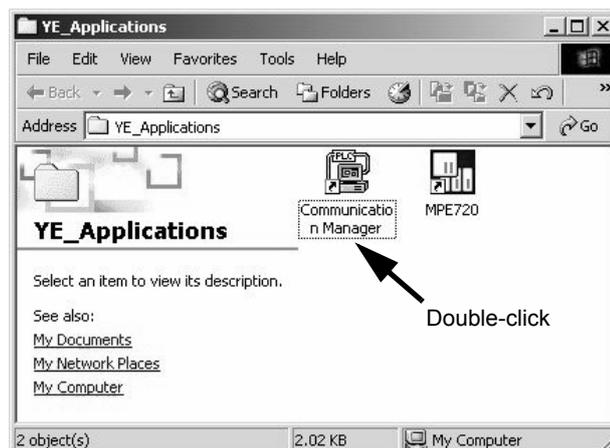


These settings will be used as the communication port information whenever the Communication Manager is started.

- Close the **Communication Manager** window and restart to validate the settings. Select **File - Exit** to close the **Communication Manager** window. A confirmation message will be displayed. Click the **Yes** button to close the **Communication Manager** window.



- Double-click the **Communication Manager** icon in the **YE\_Applications** folder to reopen the **Communication Manager** window.



## 3.4 Self-configuration

The self-configuration function automatically detects the Option Modules connected to the Machine Controller and automatically generates the files for the Module configuration definitions and the detailed definition of each Module. Executing self-configuration will greatly reduce the system startup procedure.



- After executing self-configuration, always save data to flash memory so that the results of self-configuration are saved to the Machine Controller.

### 3.4.1 Executing Self-configuration

The methods used to execute self-configuration are described below.

#### ( 1 ) Setting the CNFG DIP Switch Pin and Turning the Power ON (MP2200/MP2300/MP2310/MP2300S)

Self-configuration can be executed by turning ON the CNFG DIP switch pin on the Machine Controller and then turning the power ON. The result will depend on the setting of the INIT DIP switch pin.

CNFG	INIT	Result
ON	ON	<ul style="list-style-type: none"> <li>• The Module configuration definitions are updated.</li> <li>• The default values are allocated in the definitions for all of the Modules that are detected.</li> </ul>
ON	OFF	<ul style="list-style-type: none"> <li>• The Module configuration definitions are updated.</li> <li>• The definitions for any Modules for which definitions already exist are not changed.</li> <li>• The default values are allocated in the definitions for any new Modules that are detected.</li> </ul>

- The DIP switch is not normally used for the MP2100M/MP2500MD. For these Machine Controllers, execute self-configuration by following the procedure described in (2) *Using the MPE720 (MP2100M/MP2500MD)* below.

#### ( 2 ) Using the MPE720 (MP2100M/MP2500MD)

After starting the MPE720, start the Engineering Manager, and then select **Order - Self Configure All Modules** from the main menu in the **Module Configuration** window. Alternatively, select the Module for which self-configuration is to be executed in the **Module Configuration** window, and then select **Order - Module Self-configuration** from the Main Menu.

- Refer to 4.1.1 *Displaying the Module Configuration Window* on page 4-2 for the procedure to display the **Module Configuration** window.

The result depends on the command that is used, as described below.

Command	Result
Self-configuration for all Modules	<ul style="list-style-type: none"> <li>• The Module configuration definitions are updated.</li> <li>• The definitions for any Modules for which definitions already exist are not changed.</li> <li>• The default values are allocated in the definitions for any new Modules that are detected.</li> </ul>
Module Self-configuration	<ul style="list-style-type: none"> <li>• Definitions are allocated only for the selected Module.</li> <li>• The definitions for any Modules for which definitions already exist are not changed.</li> <li>• The default values are allocated in the definitions for any new Modules that are detected.</li> </ul>

## 3.5 Starting the MPE720, and Setting Communication or Network Parameters

This section describes how to start the MPE720, and how to set the communication parameters in the object file (MPE720 Ver. 6) or the network parameters in the PLC folder (MPE720 Ver. 5.xx).

### 3.5.1 Starting MPE720 Ver. 6 and Setting Communication Parameters

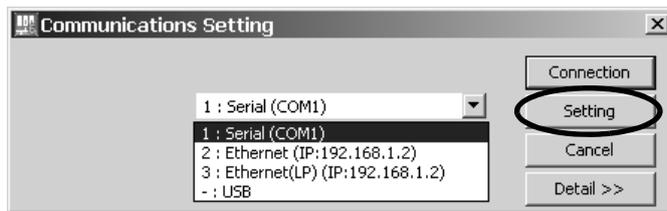
This section describes how to start MPE720 Ver. 6 and set the communication parameters in the object file.

- Disconnect the Machine Controller when setting the parameters.
- Create the object file in advance.

1. Select **Online - Communications Setting** from the Main Menu. Or, select **Controller - Communications Setting** (or **Project - Communications Setting** in the Start window).

The **Communications Setting** dialog box will be displayed.

2. Select the logical port number to connect to the Machine Controller, and click the **Setting** button.
  - Settings for the logical port numbers are made with the Communication Manager. Refer to 3.3 *Setting the Communication Manager* on page 3-8 for the Communication Manager setting procedure.



Communication will be set and the dialog box will close.

- The **Connection** and **Setting** buttons will be disabled while the Machine Controller is connected, preventing communication settings from being made.

### 3.5.2 Starting MPE720 Ver. 5.xx and Setting Network Parameters

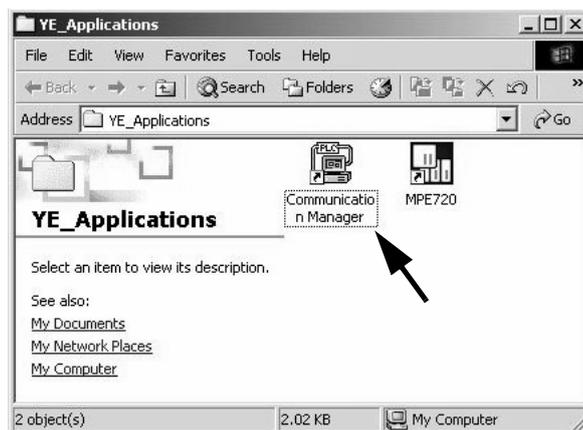
This section describes how to start the MPE720 and set the network parameters in the PLC folder.

- Create the PLC folder in advance.

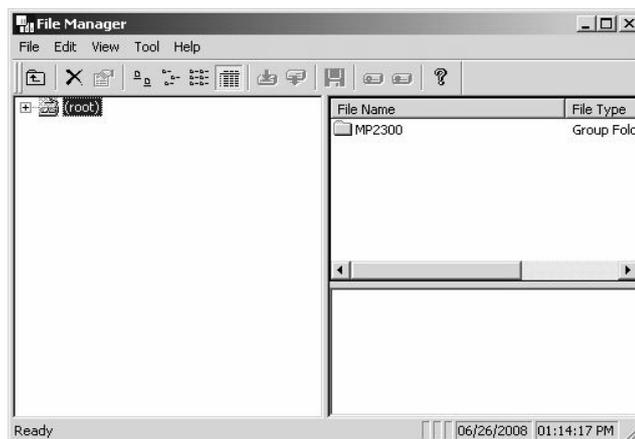
**1.** Open the **YE\_Applications** folder and double-click the **MPE720** icon.

Alternatively, select **MPE720** from the **Start** menu.

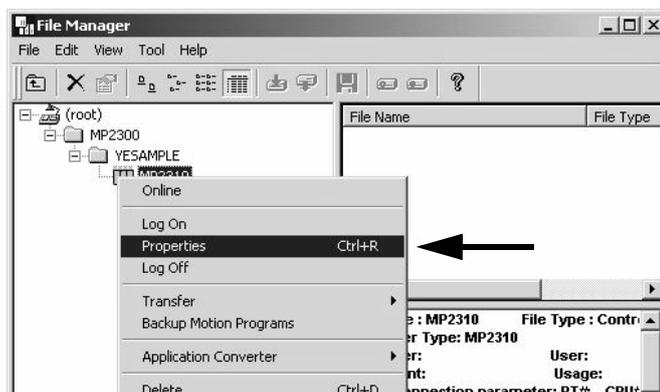
- The procedure for selecting the network will vary, depending on the operating system.



The MPE720 will start and the **File Manager** window will be displayed.

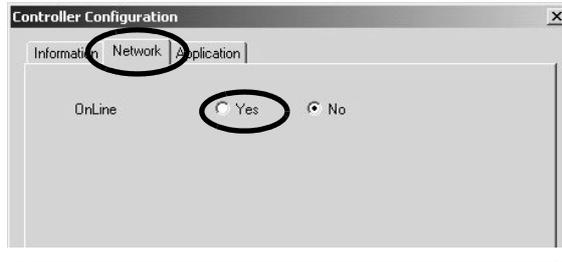


**2.** Open the root, group, and then order folder, right-click the desired PLC folder, and select **Properties** from the pop-up menu that is displayed.



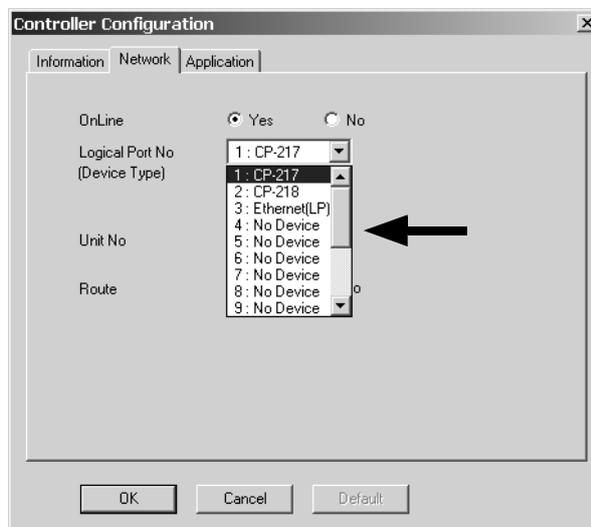
The **Controller Configuration** dialog box will be displayed.

3. Click the **Network** tab and select **Yes** for **OnLine**.



Fields will be displayed for the logical port number, unit number, and route so that they can be set.

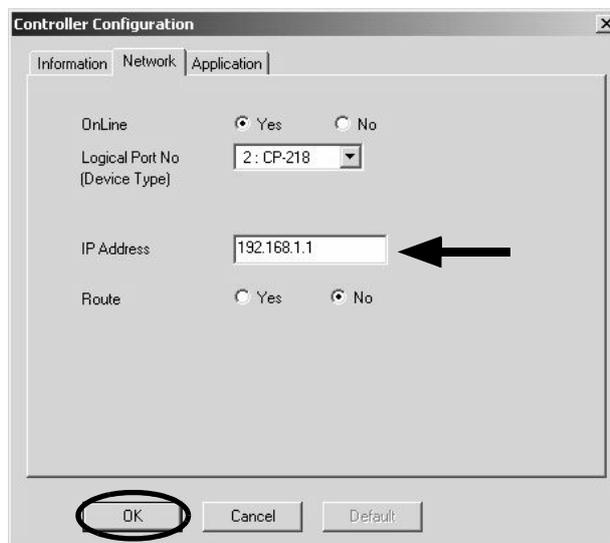
4. For **Logical Port No. (Device Type)**, select the logical port number to be used from the logical port numbers that were set with the Communication Manager.



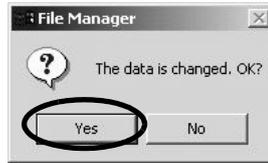
The contents display on the tab page may change depending on the port that is selected.

<Ethernet/EtherNet(LP) Connection>

Enter the IP address of the personal computer, and click the **OK** button.



5. A confirmation dialog box will be displayed. Click the **Yes** button. This completes selecting the logical port.



Be sure to continue the setting of the transmission definition for the 263IF-01 Module. For details of the transmission definition setting, refer to *Chapter 4 EtherNet/IP Transmission Definition*.

## EtherNet/IP Transmission Definition

To perform EtherNet/IP communication with the 263IF-01 using an MP2000-series Machine Controller, an EtherNet/IP transmission definition file must be created. This chapter describes how to set the EtherNet/IP transmission definition on the MPE720 screen.

4.1 Displaying the EtherNet/IP Transmission Configuration Window	4-2
4.1.1 Displaying the Module Configuration Window	4-2
4.1.2 Displaying the EtherNet/IP Transmission Configuration Window from the Module Configuration Window	4-3
4.2 EtherNet/IP Transmission Definition	4-4
4.2.1 Network Parameter Tab Page	4-4
4.2.2 Connection List Tab Page	4-6
4.2.3 IO Communication Detail Setting Window	4-10
4.2.4 NetWork Configuration Search Window	4-11
4.2.5 Status Detail Window	4-12
4.2.6 I/O Status Tab Page	4-13
4.2.7 Status Detail Window	4-14
4.2.8 Module Information Tab Page	4-16

## 4.1 Displaying the EtherNet/IP Transmission Configuration Window

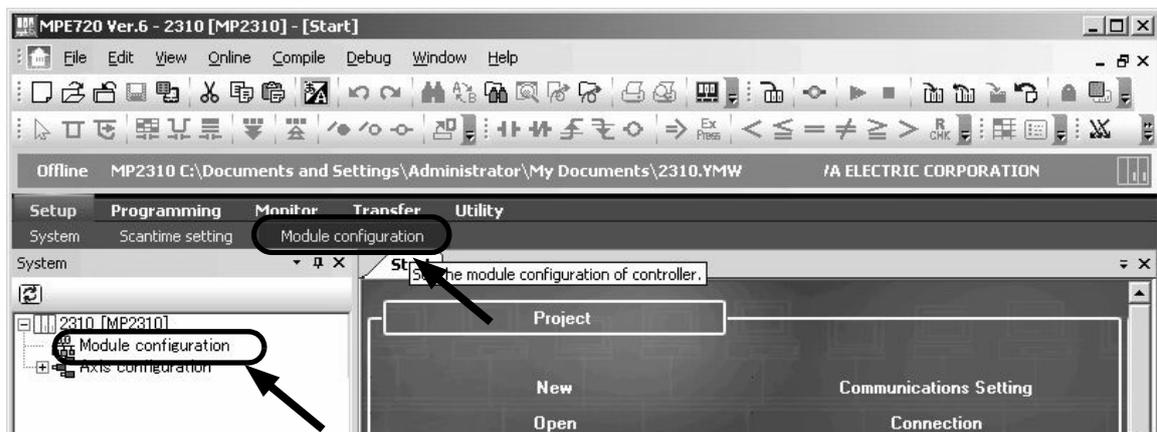
This section describes how to open the **Module Configuration** window from the MPE720, open the **EtherNet/IP Transmission Configuration** window from the **Module Configuration** window, and set the transmission definition for the EtherNet/IP Module.

### 4.1.1 Displaying the Module Configuration Window

Use the following procedure to display the **Module Configuration** window.

#### ( 1 ) MPE720 Ver. 6

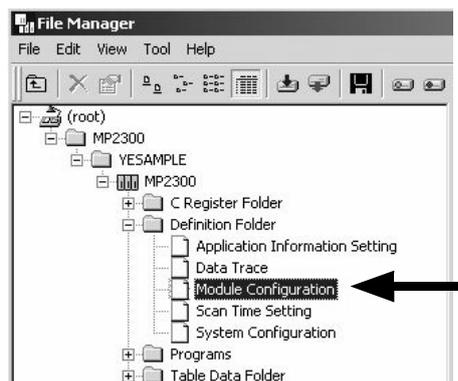
1. Start the MPE720 on the personal computer connected to the Machine Controller, and open the project file.
  - For information on starting the MPE720, refer to *Machine Controller MPE720 Programming Device Ver. 6 User's Manual (Manual No.: SIEPC88070030)*.
2. Select **Setup - Module configuration** in the Launcher, or double-click the **Module configuration** icon in the system subprogram.



The Engineering Manager will launch and the **Module Configuration** window will open (refer to page 4-3).

#### ( 2 ) MPE720 Ver. 5

1. Start the MPE720 on the personal computer connected to the Machine Controller and use the File Manager to log in and go online with the application for the Machine Controller.
  - For information on starting the MPE720 and logging on, refer to *MPE720 Software for Programming Device User's Manual (Manual No.: SIEPC88070005)*.
2. Double-click the **Module Configuration** icon in the **Definition Folder**.

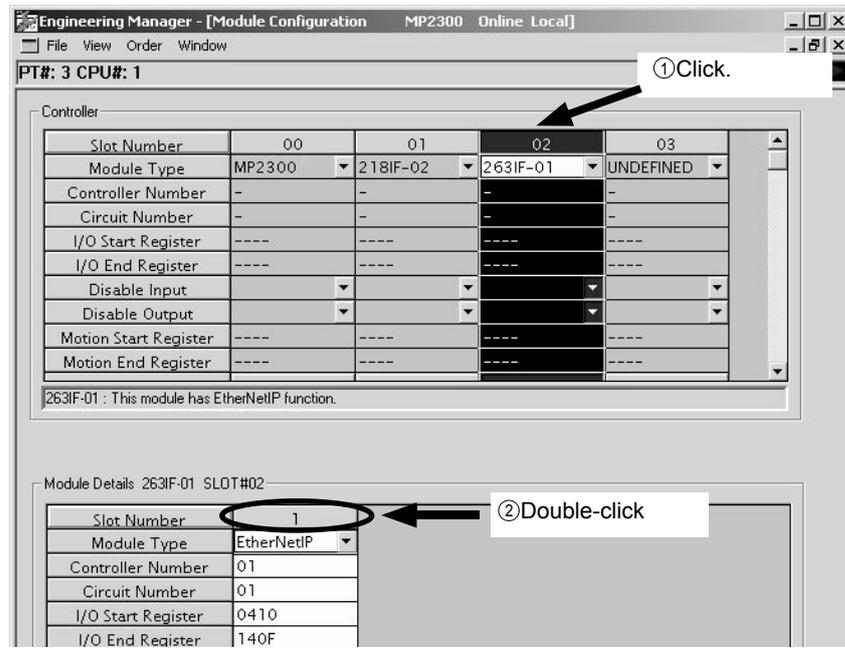


The Engineering Manager will launch and the **Module Configuration** Window will open (refer to page 4-3).

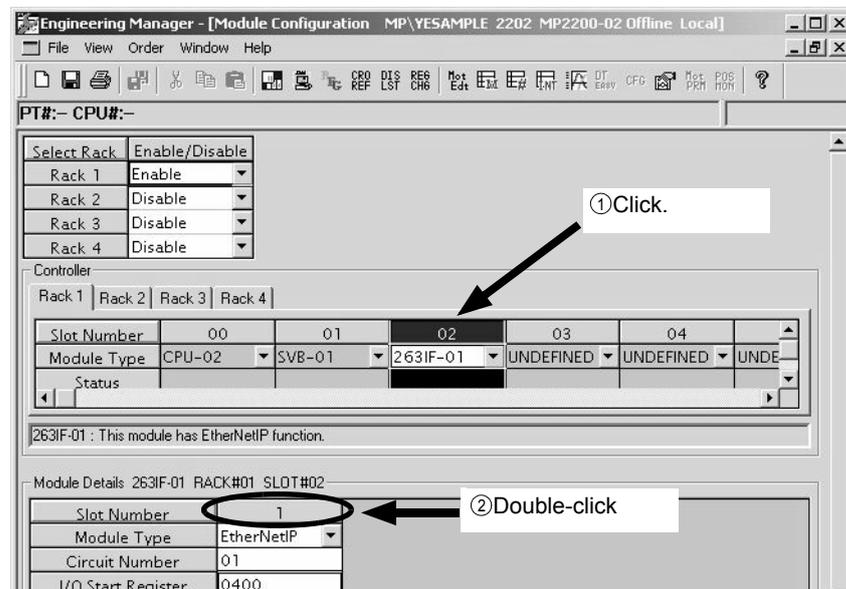
## 4.1.2 Displaying the EtherNet/IP Transmission Configuration Window from the Module Configuration Window

As the result of executing self-configuration, all Option Modules connected to the Machine Controller will be displayed in the **Controller** area of the **Module Configuration** window. (Refer to 3.4.1 *Executing Self-configuration* on page 3-14.)

<MP2300/MP2310/MP2300S Module Configuration Window>



<MP2100M, MP2200, or MP2500MD Module Configuration Window>



In the **Controller** area, select the 263IF-01 cell and then double-click the slot number cell of EtherNet/IP in the **Module Details** area. The **EtherNet/IP Transmission Configuration** window (refer to the next page) will then open.

- If the **Transmission Configuration** window is being opened for the first time, a “new file” message box will be displayed and the **EtherNet/IP Transmission Configuration** window will open when the **OK** button is clicked.

In Online Mode, the EtherNet/IP transmission definition data saved in the Machine Controller is displayed. In Offline Mode, the EtherNet/IP transmission definition data saved in the personal computer on which MPE720 is running is displayed.

Refer to 4.2 *EtherNet/IP Transmission Definition* on page 4-4 to perform EtherNet/IP transmission definition settings.

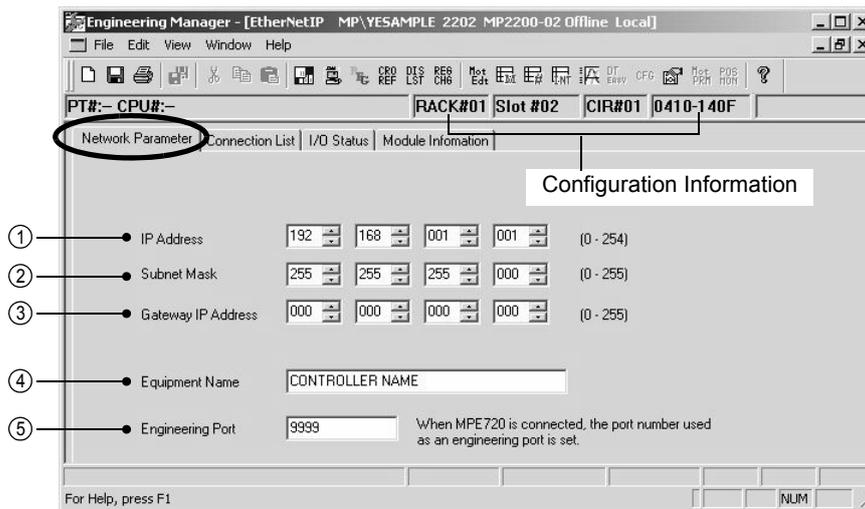
## 4.2 EtherNet/IP Transmission Definition

The **EtherNet/IP Transmission Configuration** window has four tab pages, namely Network Parameters, Connection List, I/O Status and Module Information. Select the appropriate tab page to perform setting and monitoring.

### 4.2.1 Network Parameter Tab Page

On the Network Parameter tab page, set the network parameters required to perform EtherNet/IP communication. The following explains the details of the network parameter setting.

- After changing the setting on the Network Parameter Setting tab page, save the definition data by selecting **File - Save to Flash** from the Main Menu.



#### ■ Configuration Information

Displays the 263IF-01 Module configuration information. The configuration information is the same as the information displayed in the **Module Details** area in the **Module Configuration** window.

**RACK#:** The rack number of the rack in which the 263IF-01 is defined.

**Slot#:** The slot number of the slot in which the 263IF-01 is defined.

**CIR#:** The circuit number of the EtherNet/IP port on the 263IF-01.

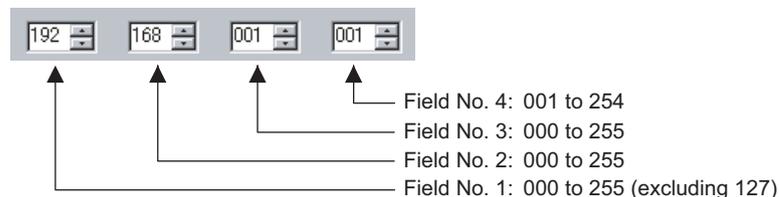
- When the MSG-SND function is used, set the circuit number displayed here for Circuit Number.

#### ■ Network Parameters

##### ① IP Address

Set the IP address of the local station.

There are four 8-bit fields delimited by periods (.). Input a decimal number for each field.



- Contact the network administrator for the available IP address.
- Do not use an address already set for another station. If an IP address is duplicated, the Network Status will be set to **IP Duplicated** on the **Module Information** screen (refer to page 4-16). If this happens, the module cannot join the network.

##### ② Subnet Mask

Enter the subnet mask for the IP address of the local station.

The range that can be entered in fields 1 to 3 is 0 to 255. The range that can be entered in field 4 is 0 to 254.

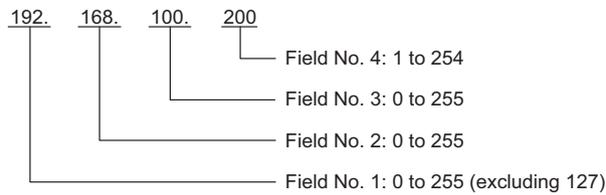
### ③ Gateway IP Address

When communication is performed with other networks connected through a gateway (router), enter the IP address of the gateway.

If there is no gateway or a gateway is not used, enter 0 for fields No. 1 to No. 4 of the gateway IP address.

The data input range for the gateway IP address varies according to the field.

Setting example



- Do not set the same address for the IP addresses and the gateway IP address.

### ④ Device Name

Any desired name can be set for a local station within 16 characters.

### ⑤ Engineering Port

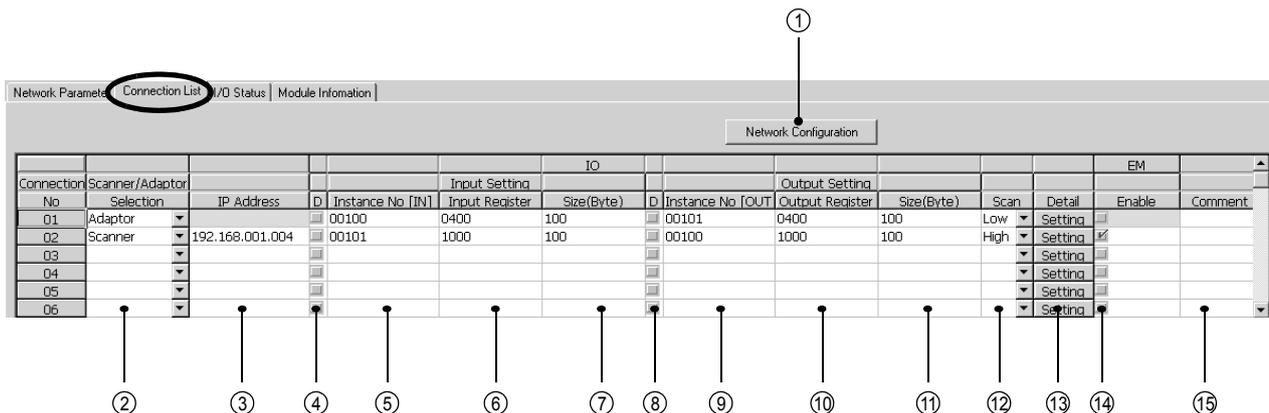
Enter the port number of the engineering port (communication port used for communication with the MPE720) in the range of 256 to 65535. Remember that 2222, 9998, and 10000 cannot be used.

## 4.2.2 Connection List Tab Page

### ( 1 ) Details of the Connection List Tab Page

Make a list of devices connected to the EtherNet/IP on the **Connection List** tab page.

- The IP address of the device that is assigned to the list as a scanner must be identical to the IP address actually set for that device. Before assigning a scanner to the list, get the IP address of that device or confirm the IP address of that device by opening the **Network Configuration Search** window (refer to page 4-11) while the device is connected to the EtherNet/IP.
- After changing the setting on the **Connection List** tab page, save the definition data by selecting **File - Save to Flash** from the Main Menu.



The following shows the details of the items.

#### ① Network Configuration Button

Valid only in Online Mode.

When the button is clicked, the **Network Configuration Search** window that shows what devices are connected to the EtherNet/IP opens.

Selecting **Edit - Network Configuration** from the Main Menu will also open the **Network Configuration Search** window.

- For details of the **Network Configuration Search** window, refer to 4.2.4 *NetWork Configuration Search Window* on page 4-11.

#### ② Scanner/Adaptor Selection

Select the adaptor or scanner for the devices to be assigned to the list.

Select **Adaptor** when the local station is used as a adaptor for other stations. Setting at multiple stations is possible.

Select **Scanner** when setting the remote station of I/O communication. Setting at multiple stations is possible.

- If the setting is changed after setting Scanner or Adaptor, the message box shown to the right will be displayed. Clicking the **Yes** button will delete the contents that have been assigned to the Connection No. whose setting has been changed.



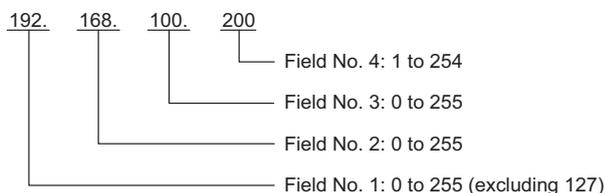
#### ③ IP Address

Enter the IP address of the remote station for which the **Scanner** is selected.

If the **Adaptor** is selected, the IP address cannot be entered.

The data input range for the IP address varies in accordance with the field used as shown here.

Setting example



## ■ I/O Communication Setting – Input Setting

### ④ D

Set whether the controller CPU exchanges the input data with the EtherNet/IP.  
When a checkmark is entered, data exchange is not performed.

### ⑤ Instance No. [IN]

Set an input instance number in the following range.

Scanner: 1 to 65534

Adaptor: 100 to 199, and 768 to 1279

- When 198 is set for the device set as Adaptor, entry in the Size field is disabled and 0 (bytes) is assigned.
- Duplication of the input instance numbers and output instance numbers is checked. When Scanner is selected, the instance number and the size must agree with those set at the remote station. For details, refer to 4.2.2 ( 2 ) *Cautions on Setting Instance No. [IN] and Instance No. [OUT]* on page 4-8.

### ⑥ Input Register

Set the leading address of the input area (input register IWxxxx) to be allocated to the corresponding device as a hexadecimal word. The setting range is 0 to 7FFF.

### ⑦ Size (Byte)

Set the size of the input area (input registers IWxxxx to IWyyyy) to be allocated to the corresponding device in bytes. The setting range is 1 to 500 bytes.

## ■ I/O Communication Setting – Output Setting

### ⑧ D

Set whether the controller CPU exchanges the output data with the EtherNet/IP.  
When a check mark is entered, data exchange is not performed.

### ⑨ Instance No. [OUT]

Set an output instance number in the following range.

Scanner: 1 to 65534

Adaptor: 100 to 199, and 768 to 1279

Duplication with other instance numbers (IN/OUT) is not allowed.

- When 198 is set for the device set as Adaptor, entry in the Size field is disabled and 0 (bytes) is assigned.
- Duplication of the input instance numbers and output instance numbers is checked. When Scanner is selected, the instance number and the size must agree with those set at the remote station. For details, refer to 4.2.2 ( 2 ) *Cautions on Setting Instance No. [IN] and Instance No. [OUT]* on page 4-8.

### ⑩ Output Register

Set the leading address of the output area (output register OWxxxx) to be allocated to the corresponding device as a hexadecimal word. The setting range is 0 to 7FFF.

### ⑪ Size (Byte)

Set the size of the output area (output registers OWxxxx to OWyyyy) to be allocated to the corresponding device in bytes. The setting range is 1 to 500 bytes.

## ■ I/O Communication Setting – Others

### ⑫ Scan

Select the scan timing with which the controller CPU exchanges the I/O data with the EtherNet/IP from High and Low. The data exchange cycle of the controller CPU is asynchronous with I/O transmission.

High: The I/O data is exchanged at the high-speed scan timing of the controller CPU.

Low: The I/O data is exchanged at the low-speed scan timing of the controller CPU.

### ⑬ Setting (Detail) button

When Scanner is selected, clicking this button will open the **IO Communication Detail Setting** window where I/O communication details are set for the selected device.

When Adaptor is selected, the **IO Communication Detail Setting** window is not displayed even if this button is clicked.

- For details of the **IO Communication Detail Setting** window, refer to *4.2.3 IO Communication Detail Setting Window* on page 4-10.

## ■ EM Communication Setting

### ⑭ Enable

Set enable or disable for explicit message communication. Entering a check mark in this field will enable explicit message communication. Setting is not possible when Adaptor is selected.

### ⑮ Comment

A comment within 16 characters can be entered as desired.

## ( 2 ) Cautions on Setting Instance No. [IN] and Instance No. [OUT]

### ■ Restrictions on Duplication

The following restrictions are applied to the instance numbers.

- The input instance number and output instance number must not be duplicated at the same connection number.
- For Scanner, duplication of input and output instance numbers is permitted if the connection number differs.
- For Adaptor, duplication of input and output instance numbers is not permitted even if the connection number differs.

An error will occur when saving the settings if the restrictions above are not observed.

### ■ Instance Number and Size for Scanner

When setting the instance number and size for Scanner, the input/output instance numbers and sizes must agree with those set for Adaptor at the remote station. The setting is replaced as shown in examples below. That is, the input setting of Adaptor at the remote station is replaced with the Scanner output setting, and the output setting of Adaptor at the remote station is replaced with the Scanner input setting.

#### <Examples>

If the Adaptor setting at remote station is: Input instance number 100 and Size 100, Output instance number 101 and Size 50,  
then, the Scanner setting must be: Input instance number 101 and Size 50, Output instance number 100 and Size 100.

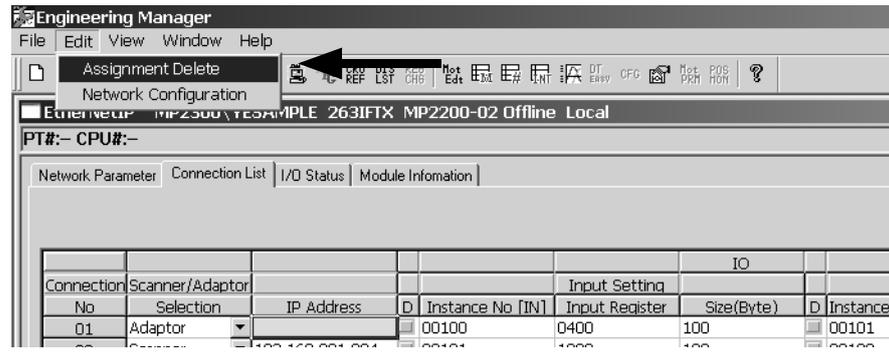
## ( 3 ) Deleting the Assigned Devices

The following explains the procedure for deleting the devices assigned to the list.

- Care should be taken in assignment deletion. The deleted assignment cannot be restored.

1. Click any cell of the device to be deleted on the **Connection List** tab page.

2. Select **Edit - Assignment Delete** from the Main Menu.



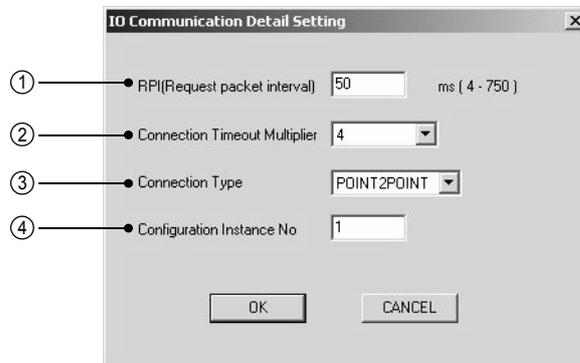
The assignment of the selected device is deleted and the line is left blank.

### 4.2.3 IO Communication Detail Setting Window

The **IO Communication Detail Setting** window opens when the **Setting** button of Scanner is clicked on the **Connection List** tab page.

- If Adaptor is selected, this window does not open even if the **Setting** button is clicked.

The following explains the details of the **IO Communication Detail Setting** window and the setting details.



#### ① RPI (Request packet interval)

Set the request packet interval of the CIP connection in units of “ms”. The value set for this item is also used as the RPI value of adaptor devices.

The setting range is 4 to 750 (ms).

#### ② Connection Timeout Multiplier

The CIP connection timeout value is calculated by multiplying the RPI value by the value set for Connection Timeout Multiplier. The timeout value is also used as the timeout value of adaptor devices.

The CIP connection is shut off when timeout is detected.

The setting range is 4 to 64.

#### ③ Connection Type

Select the CIP connection type for I/O communication from [POINT2POINT] (1 to 1 communication) and [MULTICAST] (1 to n communication).

#### ④ Configuration Instance No.

Set the number for the instance to be set in this window within the range of 1 to 65534. Duplication of the instance number with the number of another configuration instance and input/output instance is permitted.

The size of the configuration instance to be set is fixed at 2 bytes.

Click the **OK** button after completely setting the items above. The window will close and the display will return to the **Connection List** tab page.



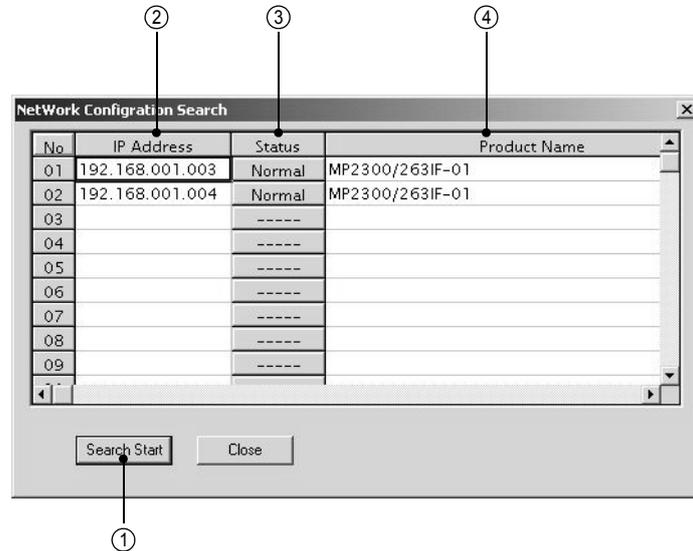
- A switching hub delay of 1 ms to 10 ms can occur, depending on the number of connected devices and the amount of communication data. (The delay time differs according to the manufacturer of the switching hub to be used). If connection timeouts occur frequently during I/O communication, adjust the RPI and Connection Timeout Multiplier values in accordance with the network system configuration.
- If engineering communication and I/O communication are performed simultaneously by connecting the Programming Device (MPE720) to the EtherNet/IP port of the 263IF-01 Module, the I/O transmission interval may become greater than the RPI value by up to about 5 ms.

## 4.2.4 NetWork Configuration Search Window

The **NetWork Configuration Search** window opens when the **Network Configuration** button is clicked on the **Connection List** tab page.

- In offline mode, the **Network Configuration** button is disabled.

The following explains the details of the **NetWork Configuration Search** window.



### ① Search Start Button

Displays the information for all EtherNet/IP devices currently connected to the same network when clicked. The information is updated to the latest data each time the **Search Start** button is clicked.

### ② IP Address

Displays the IP address of the EtherNet/IP device found.

### ③ Status (button)

Displays the status (Normal/Abnormal) of the EtherNet/IP device found in the form of a button.

Clicking the button that shows the status will open the **Status Detail** window to allow monitoring of the detailed status of the device.

- For details on the **Status Detail** window, refer to *4.2.5 Status Detail Window* on page 4-12.

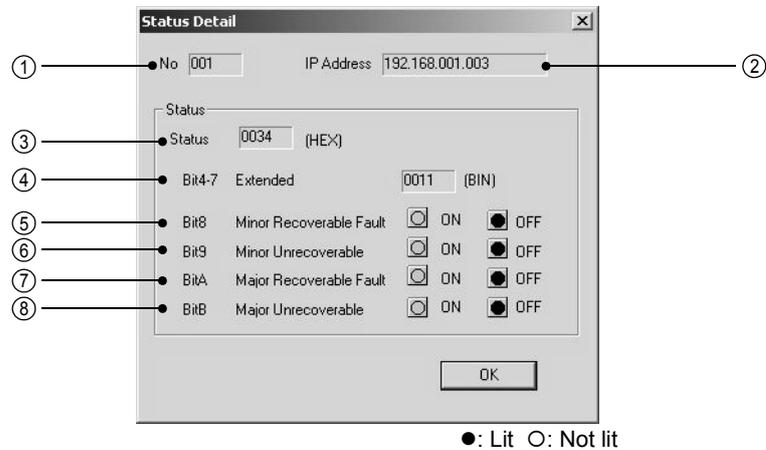
### ④ Product Name

Displays the product name (Machine Controller name/communication module name) of the EtherNet/IP device found.

When the **Close** button is clicked, the **NetWork Configuration Search** window will close and the display will return to the **Connection List** tab page.

## 4.2.5 Status Detail Window

The **Status Detail** window opens when the status button (Normal/Abnormal) is clicked on the **Network Configuration Search** window. Details of the status of the corresponding device can be monitored on the **Status Detail** window.



The following explains each item displayed in the **Status Detail** window.

### ① No

Displays the connection number of the selected device.

### ② IP Address

Displays the IP address of the selected device.

### ③ Status

Displays the status of the Identity object of the selected device as set in hexadecimal code.

- For details of the code, refer to the EtherNet/IP (CIP) Specifications.

### ④ Bit4-7 Extended Device Status

Indicates the extended status of the selected device in binary code.

- For details of the code, refer to the EtherNet/IP (CIP) Specifications or the specifications of the device.

### ⑤ Bit8 Minor Recoverable Fault

The ON lamp lights when a minor recoverable fault has occurred.

### ⑥ Bit9 Minor Unrecoverable Fault

The ON lamp lights when a minor unrecoverable fault has occurred.

### ⑦ BitA Major Recoverable Fault

The ON lamp lights when a major recoverable fault has occurred.

### ⑧ BitB Major Unrecoverable Fault

The ON lamp lights when a major unrecoverable fault has occurred.

When the **OK** button is clicked, the **Status Detail** window will close and the display will return to the **Network Configuration Search** window.

## 4.2.6 I/O Status Tab Page

The **I/O Status** tab page displays the I/O status of the devices assigned on the **Connection List** tab page. On this tab page, setting is not possible.

No	IP Address	Instance No. [IN]	Size(Byte)	Instance No. [OUT]	Size(Byte)	Status	Comment
01		00100	100	00101	100	Wait	
02	192.168.001.004	00101	100	00100	100	Connect	
03						Wait	
04						Wait	
05						Wait	
06						Wait	
07						Wait	
08						Wait	
09						Wait	
10						Wait	

The following explains each item displayed on the **I/O Status** tab page.

① IP Address

Displays the IP address of the corresponding device.  
For devices set as Adaptor, IP address is not displayed.

② Instance No. [IN]

Displays the input instance number assigned to the corresponding device.

③ Size (Byte)

Displays the size of the input area (IWxxxx to IWyyyy) allocated to the corresponding device in bytes.

④ Instance No. [OUT]

Displays the output instance number assigned to the corresponding device.

⑤ Size (Byte)

Displays the size of the output area (OWxxxx to OWyyyy) allocated to the corresponding device in bytes.

⑥ Status (button)

Displays the I/O status of the devices in the form of a button.  
The status is displayed as shown below.

Wait: The status in which communication has not started.

Connect: The status in which communication is in progress.

Pause: The status in which communication has stopped for some reason, although it did start.

The **Status Detail** window opens when the status button (Wait/Connect/Pause) is clicked. Details of the I/O status of the corresponding device can be monitored in the **Status Detail** window.

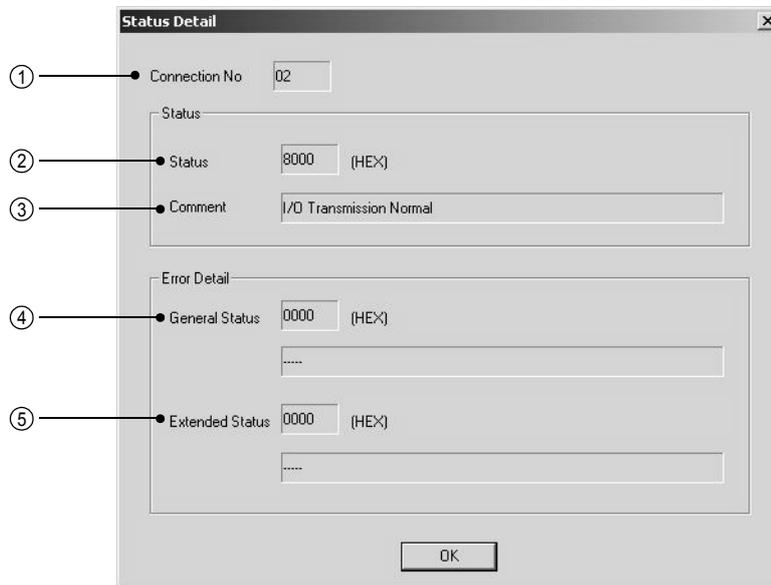
- For details on the **Status Detail** window, refer to 4.2.7 *Status Detail Window* on page 4-14.

⑦ Comment

Displays the comment set for the corresponding device.

## 4.2.7 Status Detail Window

The **Status Detail** window will open when the status button (Wait/Connect/Pause) is clicked on the **I/O Status** tab page. Details of the I/O status of the corresponding device can be monitored in the **Status Detail** window.



### ( 1 ) Details of Status Display Window

The following explains each item displayed in the **Status Detail** window.

#### ① Connection No.

Displays the connection number of the selected device.

#### ② Status

Displays the status code of the selected device in hexadecimal.

#### ③ Comment

Displays the details of the status code in text.

- For details of the contents of the status code, refer to 4.2.7 ( 2 ) *Status Code Table* on page 4-15.

#### ④ General Status and ⑤ Extended Status

If the status code of ② is *4003H (error details returned from the target)*, more details will be indicated in the status code (hexadecimal) and text. In other cases, *0000* is displayed as the status code.

- For details of the code displayed at **General Status**, refer to *A.1 General Status Code Table* on page A-2.
- For details of the code displayed at **Extended Status**, refer to *A.2 Extended Status Code Table* on page A-3.

When the **OK** button is clicked, the **Status Detail** window will close and the display will return to the **I/O Status** tab page.

## ( 2 ) Status Code Table

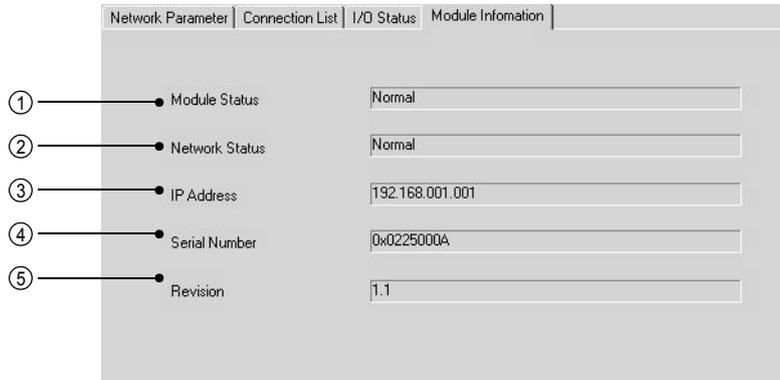
The following table lists the status codes and their details.

Status Code	Contents	Description
0000H	Waiting	I/O communication has not been started.
8000H	I/O communication normal	I/O communication is being correctly performed.
4001H	Connection error	Connection to the target failed.
4002H	Connection timeout	Although connection to the target was successful, no response for the ForwardOpen service was returned.
4003H	Error details returned from the target	Although connection to the target was successful, an error response was received for the ForwardOpen service.
4004H	Connection shutoff	Timeout was detected while establishing the connection
4005H	Request send error	Sending the request to the specified path failed.
4006H	Request timeout	No response was returned for the request. (After establishing the session)
4007H	Memory error	Failed to secure memory.
4008H	Socket error	An error occurred with the socket function.
4009H	Session number error	The number of sessions exceeded the limit.
400AH	Connection number error	The number of connections exceeded the limit.
400BH	Request number error	The number of requests exceeded the limit.
400CH	Request receiving error	The device is not in response receivable status, or the request transmission target remote station does not exist.

- If the status code is "4003H," more details are displayed in the **General Status** and **Extended Status** fields. For details of the code displayed in these fields, refer to *A.1 General Status Code Table* on page A-2 and *A.2 Extended Status Code Table* on page A-3.

## 4.2.8 Module Information Tab Page

The **Module Information** tab page displays the information of the EtherNet/IP Module (local station). On this tab page, setting is not possible.



The following explains each item displayed on the **Module Information** tab page.

### ① Module Status

- Displays information that shows the current status of the local station. The module status will be displayed in one of the five categories shown below.
- Operating normally
  - Device not set
  - Module error (unrecoverable)
  - Module error (recoverable)
  - Self-testing

### ② Network Status

- Displays the current status of the EtherNet/IP network. The network status will be displayed in one of the five categories shown below.
- Operating normally
  - No I/O allocations or connection being established
  - IP duplicated
  - Communication timeout
  - Self-testing

### ③ IP Address

Displays the IP address of the local station.

### ④ Serial Number

Displays the serial number of EtherNet/IP.

### ⑤ Revision

Displays the revision number of EtherNet/IP.

## Explicit Message and Explicit Message Send Function

This chapter describes explicit messages and the message send function (MSG-SND) used to send and receive explicit messages in detail, and shows examples of the programs required for transmission.

5.1	Explicit Messages	5-2
5.1.1	Explicit Request Message	5-2
5.1.2	Explicit Response Message	5-3
5.2	Message Send Function	5-4
5.2.1	Outline Specifications	5-4
5.2.2	MSG-SND Function Setting Example	5-5
5.2.3	Inputs and Outputs for the Message Send Function	5-5
5.2.4	Parameter List for MSG-SND Function	5-10
5.2.5	Details of Parameters Used in Explicit Message	5-11
5.3	Displaying a Register List and Notes at Register Input	5-14
5.3.1	Displaying a Register List	5-14
5.3.2	Notes at Register Input	5-16
5.4	Programming Example	5-17
5.4.1	Procedure to Start Communication	5-17
5.4.2	Programming Example	5-18

## 5.1 Explicit Messages

The message send function (MSG-SND) is used to send and receive explicit messages. The MSG-SND function sends a request message and receives a response message when it is executed once.

The following explains the explicit request and response messages.

### 5.1.1 Explicit Request Message

The explicit request message is written to the area set by PARAM05 (data address) in the parameter list\* in the following format.

Offset Word Address	Meaning
00000	Request service code
00001	Class ID
00002	Instance ID
00003	Attribute ID
00004	(Message data to write service code)
•	
•	

- ♦ For details, refer to the EtherNet/IP Specifications.

Request service codes include Read (0EH) and Write (10H).

If Read request service code is used, set 8 to PARAM06 (data size) in the parameter list\*.

If Write request service code is used, set 8 + (write data size) to PARAM06 (data size) in the parameter list\*.

- \* Refer to 5.2.4 *Parameter List for MSG-SND Function* on page 5-10 for information on the parameter list.

#### ■ Example of Vendor ID Read Request Message

The following is an example of an explicit request message for reading the vendor ID when 1000 is set to PARAM05 (data address).

Word Address	Explicit Request Message
MW01000	000EH (Get_Attribute_Single service code)
MW01001	0001H (Class ID)
MW01002	0001H (Instance ID)
MW01003	0001H (Attribute ID)

## 5.1.2 Explicit Response Message

The explicit response message is written to the area set by PARAM05 (data address) in the parameter list\* in the following format.

Offset Word Address	Meaning
00000	Response service code
00001	General error code
00002	Extended error code
00003	Response message data
•	
•	

- ♦ For details, refer to the EtherNet/IP Specifications.
- \* Refer to 5.2.4 *Parameter List for MSG-SND Function* on page 5-10 for information on the parameter list.

### ■ Example of Vendor ID Read Response Message

The following is an example of an explicit response message for reading the vendor ID when 1000 is set at PARAM05 (data address).

Word Address	Explicit Response Message
MW01000	008EH
MW01001	0000H
MW01002	0000H
MW01003	002CH (Vendor ID)

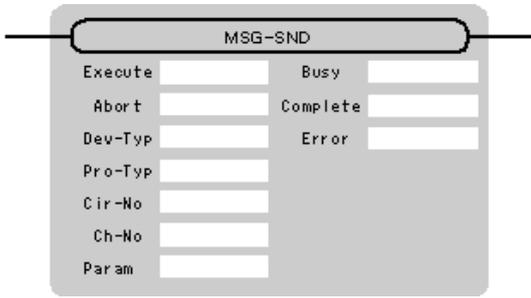
In this case, 8 which includes 6 bytes of response service code, general error code, and extended error code, is written to PARAM06 (data size).

## 5.2 Message Send Function

If a request is sent assuming that the 263IF-01 is a client for explicit message transmission or a response is sent as a server, the message send function (MSG-SND) is used.

If a response is not returned from the remote station within 10 seconds after sending a message, the 263IF-01 detects a timeout and the MSG-SND function ends abnormally.

### 5.2.1 Outline Specifications

Function Name	MSG-SND			
Function	Sends a message to a remote station on the circuit specified by the Transmission Device Type (Dev-Typ). The Execute command must be held ON until the Complete or Error output turns ON.			
Function Definition				
I/O Definitions	No.	Name	I/O Designation*	Description
Inputs	1	Execute	B-VAL	Send Message command
	2	Abort	B-VAL	Send Message Abort command
	3	Dev-Typ	I-REG	Transmission Device Type EtherNet/IP = 17
	4	Pro-Typ	I-REG	Communication Protocol MEMOBUS = 1 ♦ Non-procedure protocols 1 and 2 are not used.
	5	Cir-No	I-REG	Circuit Number EtherNet/IP = 1 to 8
	6	Ch-No	I-REG	Transmission Buffer Channel Number EtherNet/IP = 1 to 10
	7	Param	Address input	Parameter list leading address (MA, DA)
Outputs	8	Busy	B-VAL	Actively Processing
	9	Complete	B-VAL	Processing completed
	10	Error	B-VAL	Error occurred

\* The I/O designations are as follows:

B-VAL: I/O is specified as bit data.

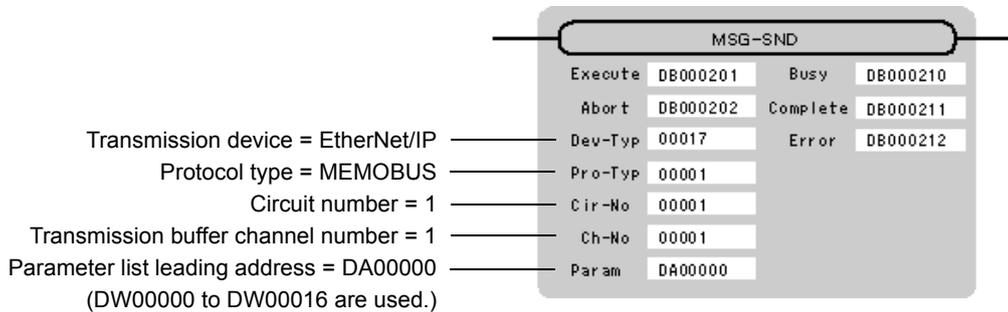
I-REG: I/O is specified as integer data. Specify the number of an integer register.

Constants (immediate data) can also be specified for inputs.

Address input: The address of the specified register (any integer register) is passed to the function.

## 5.2.2 MSG-SND Function Setting Example

This example illustrates the settings needed when using the EtherNet/IP as the transmission device.



The protocol type is set to MEMOBUS.

Set the circuit number in accordance with the circuit number assigned to the corresponding 263IF-01 Module.

Transmission buffer channel numbers in the same circuit must all be unique.

For details on settings, refer to *5.2.3 Inputs and Outputs for the Message Send Function* on page 5-5.

## 5.2.3 Inputs and Outputs for the Message Send Function

The following table lists the registers that can be used for the inputs and outputs.

	Item	I/O Designation	Applicable Registers
Input	Execute Abort	B-VAL	Any bit registers (including those with subscripts) except for # and C registers
	Dev-Typ Pro-Typ Cir-No Ch-No	I-REG	Any integer registers (including those with subscripts) and constants
	Param	Address input	Any register addresses (including those with subscripts) except for # and C registers
Output	Busy Complete Error	B-VAL	Any bit registers (including those with subscripts) except for # and C registers

The following describes the inputs and outputs in more detail.

### ( 1 ) Execute (Send Message Execute Command)

Specify the bit that will be used to control execution of the Message Send function.

Message send processing is started when the Execute command turns ON. To execute processing, this bit must be turned ON and OFF from the ladder program or other programs.

- The Execute command must be held ON until the Complete or Error output turns ON. The message is sent when the Execute command turns ON. To send another message consecutively, always turn OFF the Execute command for at least one scan.

### ( 2 ) Abort (Send Message Abort Command)

Specify the bit that will be used to abort the Message Send function.

Sending the message will be aborted when the Abort command turns ON. The Abort command takes priority over the Execute command.

To abort processing, this bit must be turned ON and OFF from the ladder program or other programs.

### ( 3 ) Dev-Typ (Transmission Device Type)

Specify the Dev-Typ to specify the transmission device type.

The transmission device type of EtherNet/IP is 17.

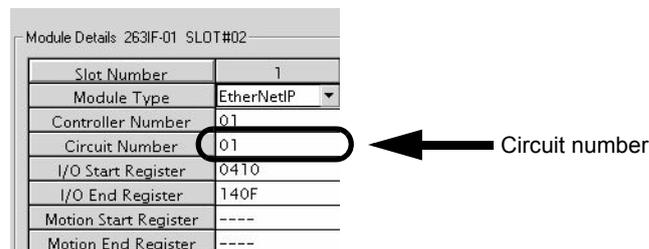
#### ( 4 ) Pro-Typ (Communication Protocol)

The Pro-Typ input specifies the communication protocol as shown in the following table.  
For EtherNet/IP, select 1 (MEMOBUS).

Type Code	Communication Protocol	Remarks
1	MEMOBUS	Used for performing explicit message communication with EtherNet/IP.
2	Non-procedure 1 (in units of words)	Not used in EtherNet/IP.
3	Non-procedure 2 (in units of bytes)	Not used in EtherNet/IP.

#### ( 5 ) Cir-No (Circuit Number)

The Cir-No input specifies the circuit number of the transmission device.  
Set the circuit number to the value displayed in the **MPE720 Module Configuration** window.



The valid range of EtherNet/IP circuit numbers is 1 to 8.

#### ( 6 ) Ch-No (Transmission Buffer Channel Number)

The Ch-No input specifies the channel number of the transmission buffer.

Any channel number can be specified, as long as it is within the valid range. If more than one function is being executed at the same time, do not specify the same channel number more than once for the same circuit number. (The same channel number can be used as long as the functions are not executed at the same time.)

The valid range of EtherNet/IP channel numbers is 1 to 10.

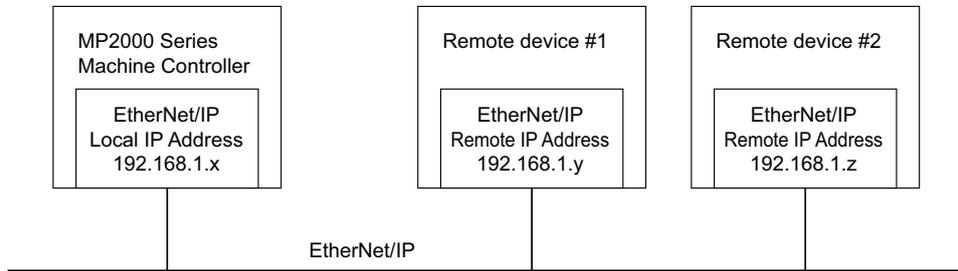
##### <Examples>

EtherNet/IP (263IF-01) has 10 transmission buffer channels, so simultaneous transmission on 10 channels is made possible by using 10 channel numbers (1 to 10).

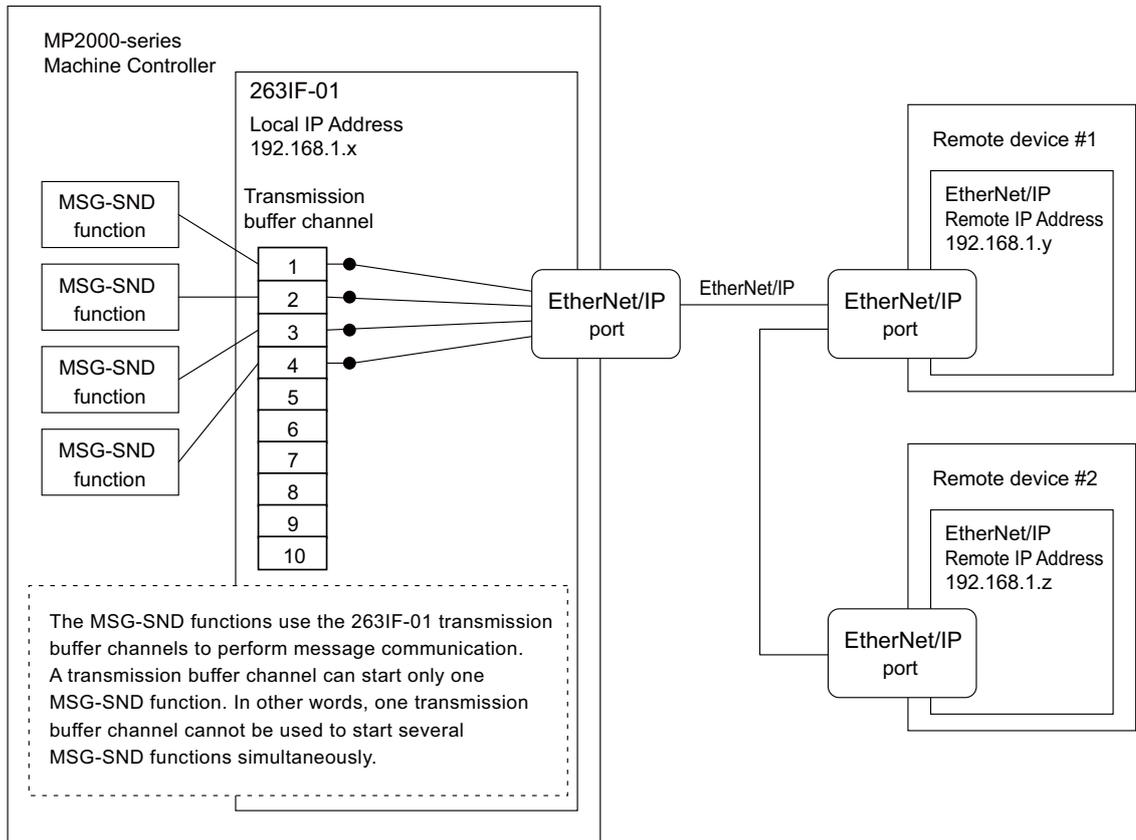
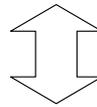
- One MSG-SND function must be programmed for each of the circuits being used at the same time.

■ Conceptual Diagram of Transmission Buffer Channels

The following is a conceptual diagram of the transmission buffer channels.



Network Configuration Diagram



- Even if different transmission buffer channels are used, it is not possible to start the MSG-SND functions simultaneously for one device (IP address). If this is attempted, an error occurs when the MSG-SND function is executed.

**( 7 ) Param (Parameter List Leading Address)**

The PARAM input specifies the leading address of the parameter list. A parameter list will be automatically created from the 17 words starting with the specified address. Use the parameter list to input the function code and other related parameters. The processing results and status are also output to the parameter list.

- Refer to 5.2.4 *Parameter List for MSG-SND Function* on page 5-10 for information on the parameter list.

Example: The following parameter list will be created when the Parameter List Leading Address is set to DA000000.

Register	Parameter F . . . . . 0
DW00000	PARAM00
DW00001	PARAM01
DW00002	PARAM02
DW00003	PARAM03
DW00004	PARAM04
DW00005	PARAM05
DW00006	PARAM06
DW00007	PARAM07
DW00008	PARAM08
DW00009	PARAM09
DW00010	PARAM10
DW00011	PARAM11
DW00012	PARAM12
DW00013	PARAM13
DW00014	PARAM14
DW00015	PARAM15
DW00016	PARAM16

**( 8 ) Busy (Processing in Progress)**

Specify the bit that will report when sending the message is being processed.

The Busy output will be ON while message send processing or abort processing is in progress.

Keep the Execute command or Abort command ON while the Busy output is ON.

**( 9 ) Complete (Processing Completed)**

Specify the bit that will report when processing to send the message has been completed.

The Complete output will be ON for only one scan after message send processing or abort processing has been completed normally.

**( 10 ) Error (Error Occurred)**

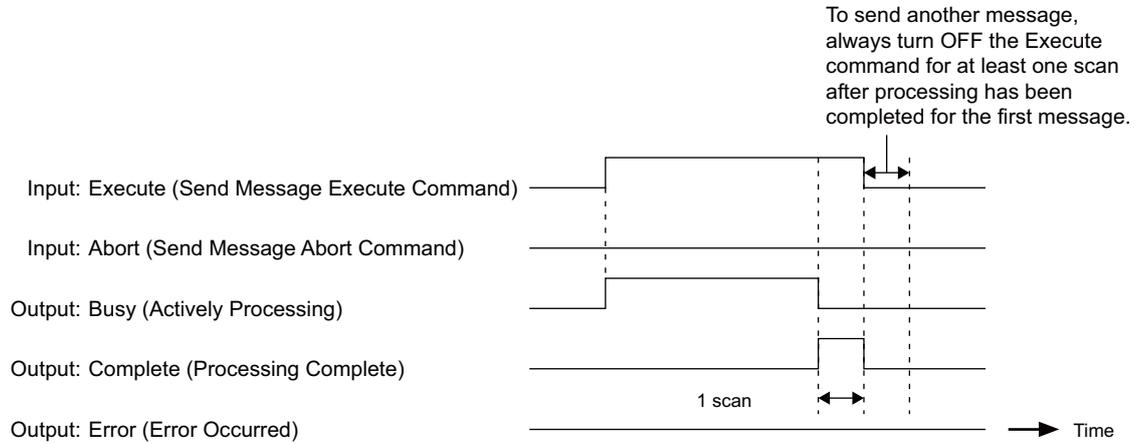
Specify the bit that will report when an error has occurred while sending the message.

The Error output will turn ON for only one scan when an error occurs.

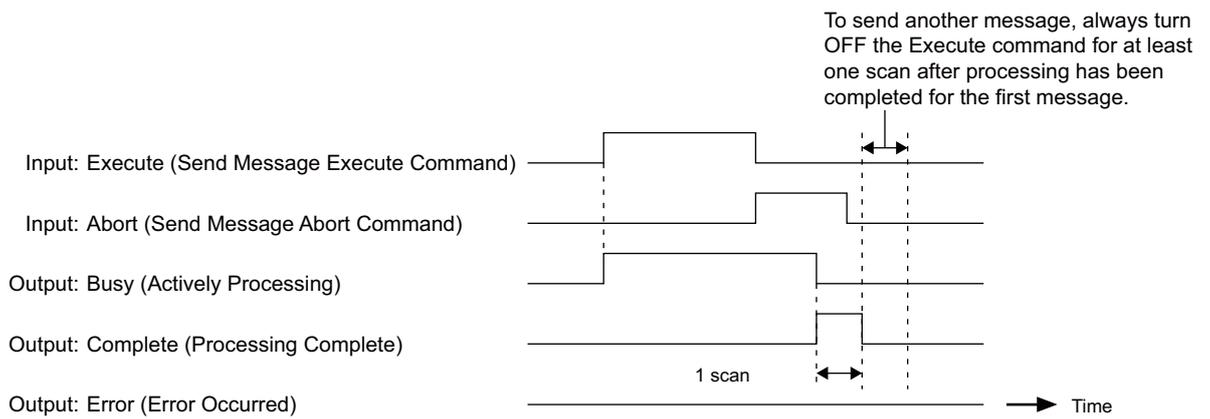
( 11 ) I/O Timing Chart

The following timing charts show the bit inputs and outputs used with the MSG-SND function.

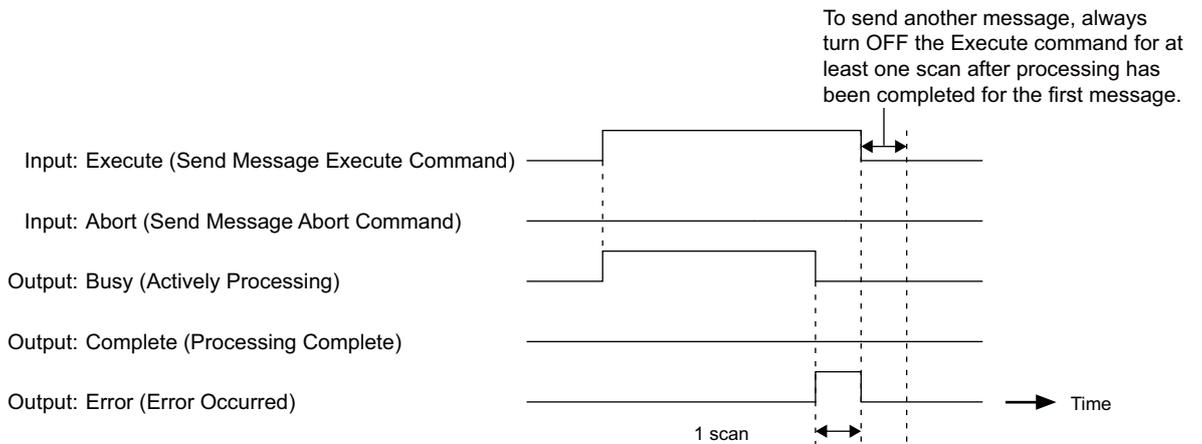
<Normal Processing>



<Abort Processing>



<Error Processing>



## 5.2.4 Parameter List for MSG-SND Function

The Param input to the MSG-SND function is a parameter list structure consisting of 17 words. The value of the Param input is the leading address (MA or DA) of the parameter list.

Use the parameter list to input the connection number, function code, and other related parameters. The processing results and status are also output to the parameter list.

The following table shows the parameters to be used when MEMOBUS is used as the transmission protocol for Ether-Net/IP.

Param No.	IN/OUT	Contents	Description
00	OUT	Processing result	The processing results are output here.
01	OUT	Status	The status of the current MSG-SND function is output here.
02	IN	Remote connection number	The connection number of the remote station is set.
03	IN	Option	Not used
04	IN	Function code	For explicit message communication, set 03H. <ul style="list-style-type: none"> <li>Usually, function code 03H is used to read the contents of holding registers. With explicit messages, however, it does not have that function.</li> </ul>
05	IN	Data address	PARAM05 sets the leading address of the M registers used in explicit message communication within the range of 0 to 65535.
06	IN	Data size	Data size is set within the range of 1 to 504 bytes.
07	IN	Remote CPU number	Not used
08	IN	Coil offset	Not used
09	IN	Input relay offset	Not used
10	IN	Input register offset	Not used
11	IN	Holding register offset	Not used
12 to 16	SYS	Reserved by the system	

- IN: Input, OUT: Output, SYS: Used by the system.
- Refer to 5.2.5 *Details of Parameters Used in Explicit Message* on page 5-11 for details on the parameters.

## 5.2.5 Details of Parameters Used in Explicit Message

This section explains the parameters used as explicit message in EtherNet/IP transmission.

### ( 1 ) PARAM00: Processing Result

The processing result is output to the upper-place byte of PARAM00. The lower-place byte is for system analysis.

Value of Processing Result	Meaning
00xxH	Processing in progress (Busy)
10xxH	Processing completed (Complete)
8yxxH	Error occurred (Error)

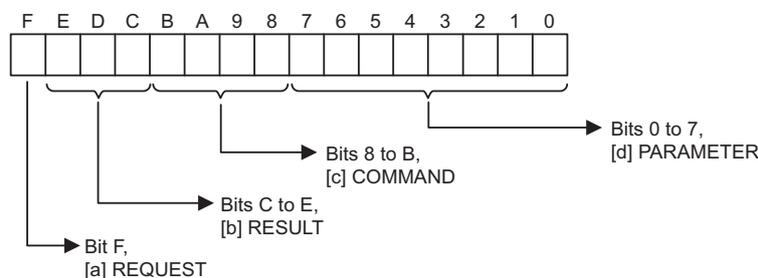
If an error occurs, troubleshoot the problem according to the value of the processing result as listed below.

Error	Error Contents	Description
80xxH	–	Reserved by the system.
81xxH	Function code error	An undefined function code was sent or received. Check PARAM04 (function code).
82xxH	Address setting error	One of the following settings is not within the valid range. Check the settings. PARAM05 (data address) PARAM11 (holding register offset)
83xxH	Data size error	The size of the sent or received data is not within the allowable range. Check PARAM06 (data size).
84xxH	Circuit number setting error	The circuit number is not within the allowable range. Check the circuit number in the MSG-SND function.
85xxH	Channel number setting error	The transmission buffer channel number is not within the allowable range. Check the transmission buffer channel number in the MSG-SND function.
86xxH	Remote connection error	The remote connection number is not within the allowable range. Check PARAM02 (remote connection number).
87xxH	–	Reserved by the system.
88xxH	Transmission device error	An error response was returned from the transmission device. Check the connection to the equipment. Also, be sure that the remote device is ready for communication.
89xxH	Device selection error	An unavailable device was set. Check the transmission device type in the MSG-SND function.

### ( 2 ) PARAM01: Status

The status of the transmission device is output to PARAM01.

The following diagram illustrates bit allocation.



Items [a] to [d] below describe the details of bit allocation.

**[ a ] REQUEST**

The status of the processing request for the MSG-SND function is output to this bit.

Bit Status	Meaning
1	Processing is being requested.
0	Processing request has been accepted.

**[ b ] RESULT**

The result of executing MSG-SND function is output to these bits.

Code	Abbreviation	Meaning
1	SEND_OK	Sending has been completed normally.
2	REC_OK	Receiving has been completed normally.
3	ABORT_OK	Abort completed.
4	FMT_NG	Parameter format error
5	SEQ_NG	Command sequence error
6	RESET_NG	Reset status
7	REC_NG	Data receive error (Error detected by a lower-layer program.)

**[ c ] COMMAND**

The processing command for the MSG-SND function is output to these bits. The executed process is indicated by the COMMAND bits.

Code (Hex)	Abbreviation	Meaning
3	ABORT	Abort
8	M_SEND	Send MEMOBUS command; execution of the command is completed upon reception of a response.
9	M_REC	Receive MEMOBUS command; execution of the command is followed by the sending of a response.
C	MR_SEND	Send MEMOBUS response

**[ d ] PARAMETER**

The following error code is output if RESULT (Processing result) is set to 4 (FMT\_NG: parameter format error). In other cases, the remote connection number is output.

RESULT	Code	Meaning
RESULT = 4 (FMT_NG: parameter format error)	00	No errors
	01	Remote connection number out of range
	02	MEMOBUS response receive monitor time error
	03	Retry count setting error
	04	Cyclic area setting error
	05	Not used
	06	Data address error
	07	Data size error
	08	Function code error
	10H	Function code error or format conversion error
Other values of RESULT	XX	Remote connection number

**( 3 ) PARAM02: Remote Connection Number**

PARAM02 specifies the remote connection number.  
The following table provides the valid setting range.

Transmission Device	Remote connection number	Remarks
EtherNet/IP (263IF)	1 to 64	The message is sent to the remote station set in the designated connection number

**( 4 ) PARAM03: Option**

PARAM03 sets options specific to each transmission device.  
PARAM03 is not used for explicit messages. Setting is not necessary.

**( 5 ) PARAM04: Function Code**

PARAM04 sets the function code to be sent.  
Explicit messages use only function code 03H.

- Usually, function code 03H is used to read the contents of holding registers. With explicit messages, however, it does not have that function.

**( 6 ) PARAM05: Data Address**

PARAM05 sets the leading address of the M registers storing the explicit request message. The received explicit response message is also stored in the same area.

The address is input as a decimal or hexadecimal value.

- Example: To set a leading address of MW01000, set 1000 (decimal) or 3E8H (hexadecimal).

The following table provides the data address setting ranges used for explicit messages.

<Data Address Setting Ranges for Explicit Messages>

Function Code	Applicable Data Type	Function	Data Address Setting Range
03H	–	Explicit Messages	0 to 65534 (0 to FFFEh)

**( 7 ) PARAM06: Data Size**

PARAM06 sets the data size (number of bytes) for explicit request messages. When an explicit response message is received, the data size (number of bytes) of the response message is displayed.

Do not allow the final address of the data, which is determined by the data address and data size, to exceed the valid range of addresses.

The data size varies according to the request service code, class ID, instance ID, and attribute ID of the explicit message. They are specific to EtherNet/IP devices. For details, contact the manufacturer of the EtherNet/IP device to be used. The following table provides the data size setting ranges used for explicit messages.

<Data Size Setting Ranges for Explicit Messages>

Function Code	Applicable Data Type	Function	Data Size Setting Range
03H	–	Explicit Messages	1 to 504 bytes

**( 8 ) PARAM07 to PARAM16**

Not used for explicit messages. Setting is not necessary.

## 5.3 Displaying a Register List and Notes at Register Input

When a message send function is used in a ladder program, access and input to the DW or MW register are required. The following describes how to display the register list and notes during register input.

### 5.3.1 Displaying a Register List

#### ( 1 ) MPE720 Ver 6.xx

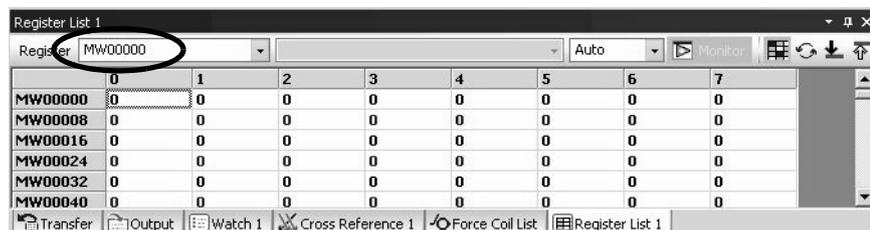
Use the following procedure to display the MPE720 Ver 6.xx register list.

1. Open the **Register List** Sub-window from the **MPE720 Ver 6.xx** Main Window.

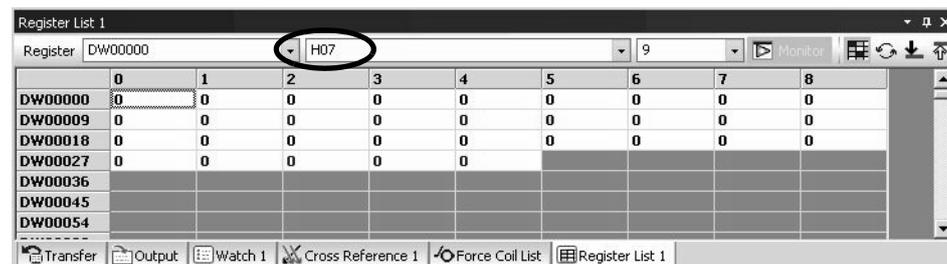
The **Register List 1** tab is provided by default in the sub-window displayed on the bottom of the screen.



2. Enter the leading register number of the system register “MWxxxxx” (or “DWxxxxx”) to be accessed in the **Register** input field and press the **ENTER** key. The contents of the system register will be displayed starting from the leading register number.



- Enter the drawing number for the D register as follows.

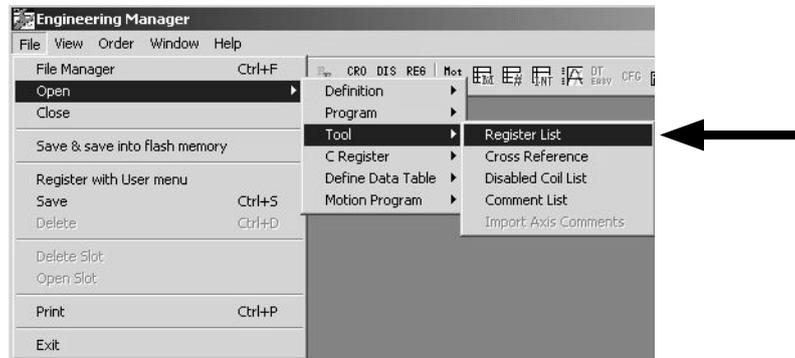


- The data type is set by default to decimal. Place the cursor anywhere in the list, and then right-click. Select **Hex** (hexadecimal) from the pop-up menu that appears. The data will then be displayed in hexadecimal.

## ( 2 ) MPE720 Ver 5.xx

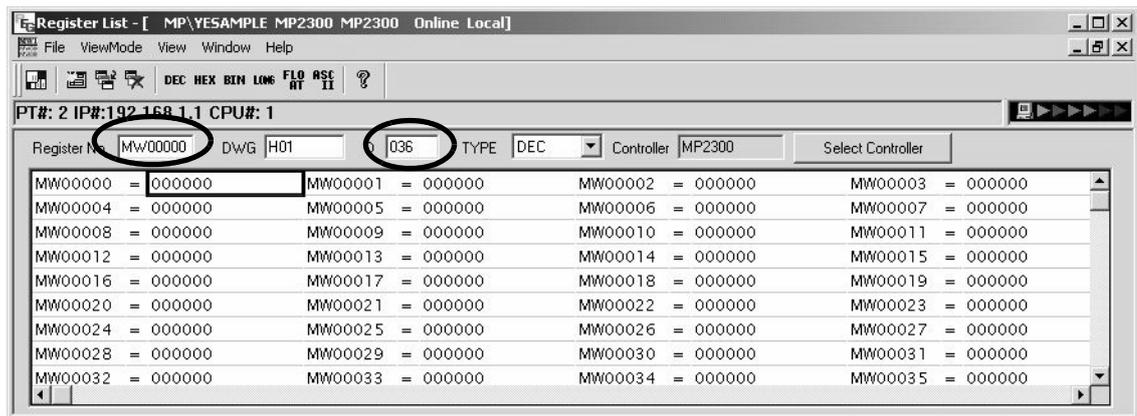
Use the following procedure to display the MPE720 Ver 5.xx register list.

1. Select **File – Open – Tool – Register List** from the MPE720 Ver 5.xx Main Menu of **Engineering Manager** window to open the **Register List** window.



- Refer to 4.1.1 *Displaying the Module Configuration Window* on page 4-2 for details on how to display the **Engineering Manager** window.

2. Enter the leading register number “MWxxxxx” (or “DWxxxxx”) to be accessed in the **Register No.** input field, enter the final register number to be accessed in the **D** input field, and click anywhere in the list. The contents of the specified range of register numbers will be displayed.

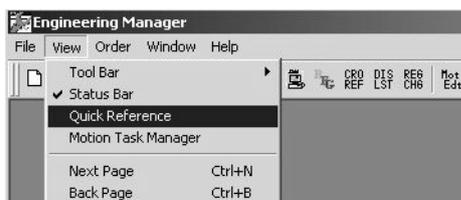


- Clicking the **DEC** button will display the list in decimal values. Clicking the **HEX** button will display the list in hexadecimal values.

## ( 3 ) Displaying a Register List with the Quick Reference (MPE720 Ver 5.xx)

Register lists can also be accessed with the Quick Reference.

1. Select **View – Quick Reference** from the Main Menu of MPE720 **Engineering Manager** window.

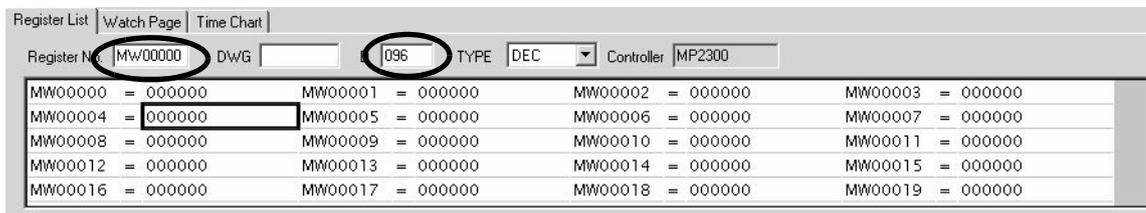


The Quick Reference will be displayed at the bottom of the **Engineering Manager** window.

- Refer to 4.1.1 *Displaying the Module Configuration Window* on page 4-2 for details on how to display the **Engineering Manager** window.

2. Click the **Register List** tab to switch to the register list.

- Enter the leading register number “MWxxxxx” to be accessed in the **Register No.** input field, enter the final register number to be accessed in the **D** input field, and click anywhere in the list. The contents of the specified range of register numbers will be displayed.



### 5.3.2 Notes at Register Input

#### (1) Decimal/Hexadecimal Number

DW and MW registers are signed integer registers, and their input ranges in decimal notation are from -32768 to +32767. (Hexadecimal: 0 to FFFFH)

Because integers greater than or equal to +32768 cannot be input to these registers as decimal numbers, set the display mode to “HEX” (hexadecimal) and input them in hexadecimal notation for entry of a remote address or transaction code.

#### (2) Negative Value Representation in Decimal Numbers

When a register input with a hexadecimal value is displayed as a decimal number, its value may be represented as a negative value as shown below.

Hexadecimal

Register	1	2	3	4	5	6	7	8	9	10	11	12
MW00000	FDED	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00013	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00026	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00039	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00052	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00065	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
MW00078	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

Decimal

Register	1	2	3	4	5	6	7	8	9
MW00000	-531	0	0	0	0	0	0	0	0
MW00013	0	0	0	0	0	0	0	0	0
MW00026	0	0	0	0	0	0	0	0	0
MW00039	0	0	0	0	0	0	0	0	0
MW00052	0	0	0	0	0	0	0	0	0
MW00065	0	0	0	0	0	0	0	0	0

This is because a hexadecimal input value is greater than +32768 (decimal number) and it is represented as a negative value through bit inversion. In spite of negative value representation, processing is performed as a positive value.

To convert a negative decimal number into a positive decimal number, the following expression is used.

$$|-32768| + 32767 + 1 + (\text{displayed negative value})$$

In the above screen example (-531), the following is used.

$$|-32768| + 32767 + 1 + (-531) = 65005$$

## 5.4 Programming Example

This section shows examples of programs used for sending explicit messages.

### 5.4.1 Procedure to Start Communication

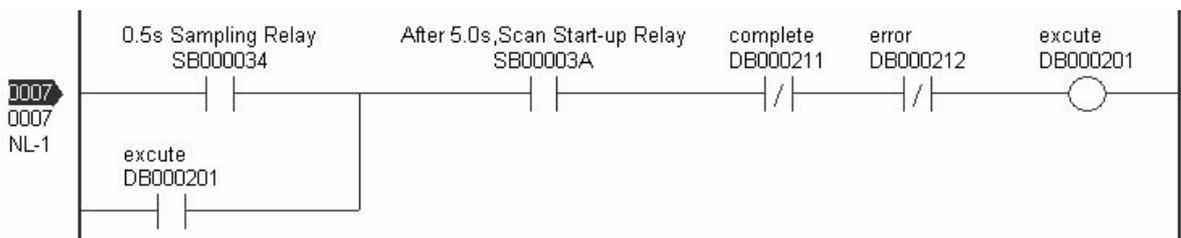
Use the following procedure to start communication.

1. Start the EtherNet/IP client device.
2. Turn ON the Execute command in the MSG-SND function in the 263IF Module on the EtherNet/IP server to send a message.

An example of ladder programming using the MSG-SND function is shown in *5.4.2 Programming Example* on page 5-18. In *5.4.2 Programming Example* on page 5-18, a message will be sent as soon as DB000201 (the register set for Execute in the MSG-SND function) is turned ON, thus starting communication with the client side device.

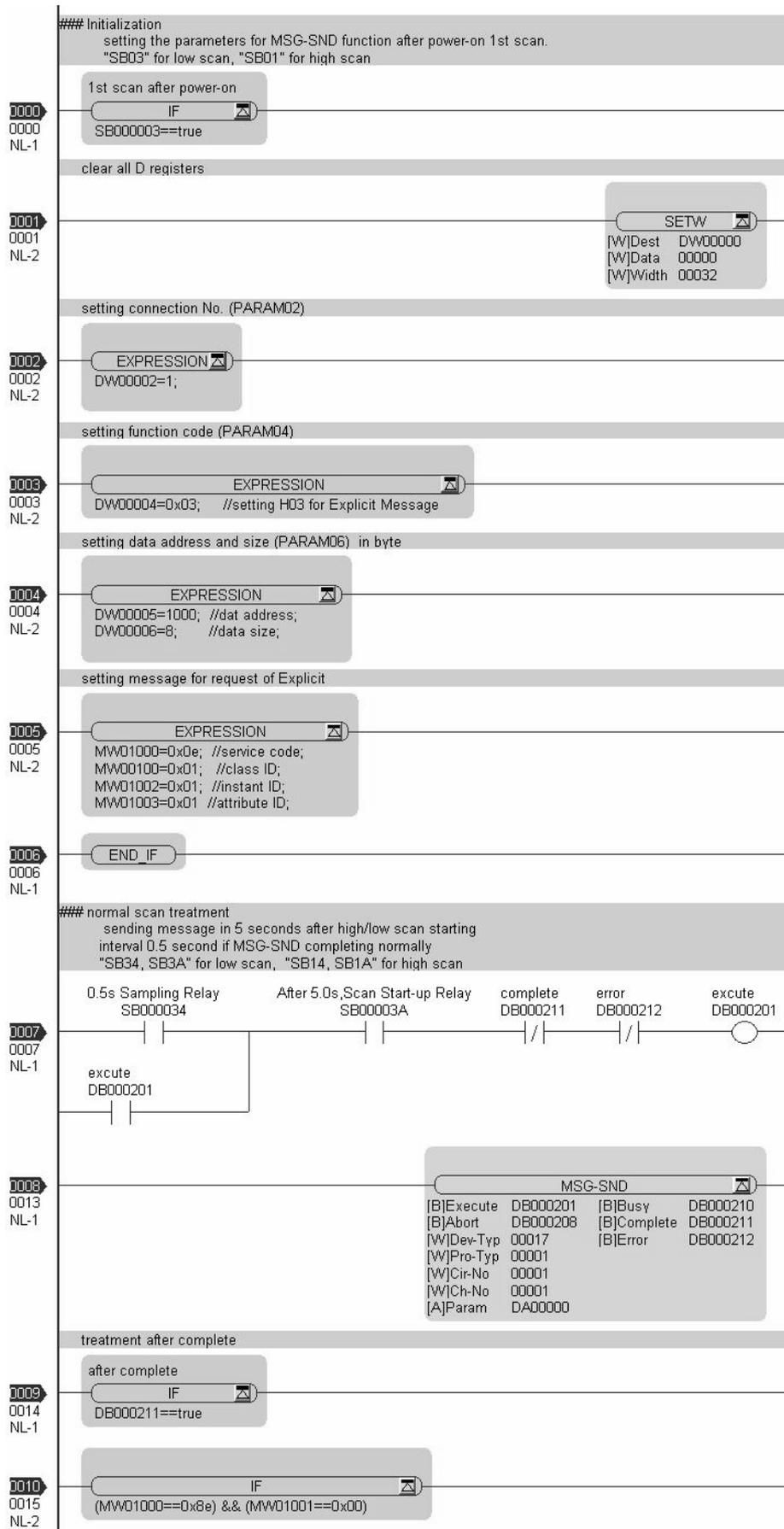
I/O Definition	No.	Name	Setting Example	Description
Input	1	Execute	DB000201	Message send processing is started when the send command (Execute) is turned ON.

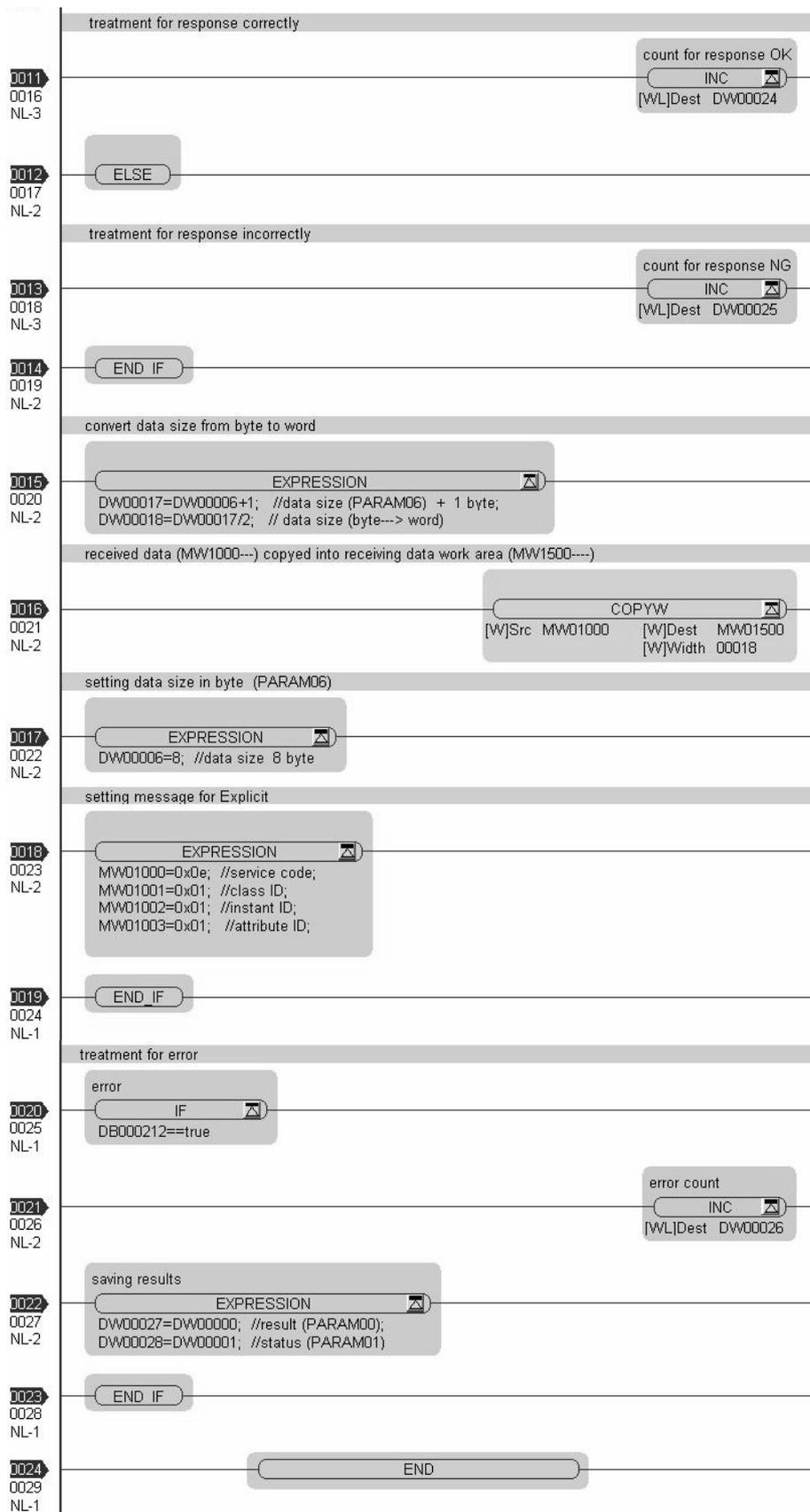
- In *5.4.2 Programming Example* on page 5-18, the programming is written so that a message will be sent after the elapse of five seconds from the start of the low-speed scan. When the MSG-SND function has been completed normally, execution of the MSG-SND function will be started again by the SB000034 0.5-s sampling relay, repeatedly sending a message 0.5 s after sending of the previous message has been completed normally.



### 5.4.2 Programming Example

■ Example of L01 diagram





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## Troubleshooting

This chapter describes how to troubleshoot problems and take countermeasures against them.

6.1 Status Indication by LED Indicators	-----6-2
6.2 System I/O Error Status	-----6-3
6.2.1 System I/O Error Status by Controllers	----- 6-3
6.2.2 Details on I/O Error Status	----- 6-7

## 6.1 Status Indication by LED Indicators

The following table provides a description of the 263IF-01 Module status indicated by each LED indicator.

Classification	LED Indication					Meaning	Description
	MS	NS	LNK	TX	RX		
Power ON	○	○	–	–	–	The power is turned ON	The status immediately after the power is turned ON. Module initialization processing is in progress. After the completion of processing, the Module is placed in the initial status.
LED Test	–	–	–	–	–	LED test	When Module initialization is completed, the LED test is performed.
Self-diagnosis	★ Red Green	★ Red Green	–	–	–	Self diagnosis in progress	After the completion of the LED test, self-diagnosis is performed.
Initial status	★ Green	★ Green	–	–	–	Waiting for initial settings	The status in which the Module, started normally, is waiting for initialization by the CPU. The 100M, TX and RX indicators light according to the connection status.
Normal	● Green	● Green	–	–	–	Operating normally	The status in which the Module is performing Ethernet communication normally. The TX and RX indicators flash during Ethernet communication. The 100M indicator is lit during 100M communication.
Other	● Green	★ Green	–	–	–	No connection	The status in which the device has obtained the IP address but the connection has not been established.
Error	● Green	★ Red	–	–	–	Connection timeout	Timeout is detected on at least one connection where a device is the target of connection.
	● Green	● Red	–	–	–	IP address duplication	The IP address is already being used in another device.
	★ Red	–	–	–	–	Minor fault status	The status in which a device has detected a recoverable minor fault. A setting error will be the cause of the problem.
	● Red	–	–	–	–	Major fault status	The status in which a device has detected an unrecoverable major fault. If the error status does not clear even if the power is shut off and turned on again, the Module must be replaced.

◆ ●: Lit, ○: Not lit, ★: Flashing, –: Indefinite

## 6.2 System I/O Error Status

### 6.2.1 System I/O Error Status by Controllers

The following shows the system I/O error status of the MP2000 Series Machine Controller.

Refer to 5.3.1 *Displaying a Register List* on page 5-14 and specify a system register number “SWxxxxx” to access.

#### ( 1 ) MP2100M Machine Controller

Name	Register No.	Remarks
I/O Error Count	SW00200	Number of I/O error occurrences
Number of Input Errors	SW00201	Number of input error occurrences
Input Error Address	SW00202	Address of the latest input error (IWxxxx register number)
Number of Output Errors	SW00203	Number of output error occurrences
Output Error Address	SW00204	Address of the latest output error (OWxxxx register number)
Reserved by System	SW00205	(Not used)
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	MP2100M Machine Controller error status
	SW00216 to SW00223	Reserved by the system
	SW00224 to SW00228	SVB-01 Module error status
	SW00229 to SW00239	Reserved by the system
	SW00240 to SW00247	Error status of slot 1 of rack 2* (Depends on the mounted module and error code.)
	SW00248 to SW00255	Error status of slot 2 of rack 2* (Depends on the mounted module and error code.)
	SW00256 to SW00263	Error status of slot 3 of rack 2* (Depends on the mounted module and error code.)
	SW00264 to SW00271	Error status of slot 4 of rack 2* (Depends on the mounted module and error code.)
	...	...
SW00448 to SW00455	Error status of slot 9 of rack 4* (Depends on the mounted module and error code.)	

\* Racks 2 to 4 can be used only when using MP2100MEX.

## ( 2 ) MP2200 Machine Controller

Name	Register No.	Remarks
I/O Error Count	SW00200	Number of I/O error occurrences
Number of Input Errors	SW00201	Number of input error occurrences
Input Error Address	SW00202	Address of the latest input error (IWxxxx register number)
Number of Output Errors	SW00203	Number of output error occurrences
Output Error Address	SW00204	Address of the latest output error (OWxxxx register number)
Reserved by System	SW00205	(Not used)
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	(Not used)
	SW00216 to SW00223	Reserved by the system
	SW00224 to SW00228	Error status of slot 1 of rack 1 (Depends on the mounted module and error code.)
	SW00229 to SW00239	Error status of slot 2 of rack 1 (Depends on the mounted module and error code.)
	SW00240 to SW00247	Error status of slot 3 of rack 1 (Depends on the mounted module and error code.)
	SW00248 to SW00255	Error status of slot 4 of rack 1 (Depends on the mounted module and error code.)
	...	...
SW00496 to SW00503	Error status of slot 9 of rack 4* (Depends on the mounted module and error code.)	

\* Racks 2 to 4 can be used only when using EXIOIF.

## ( 3 ) MP2300 Machine Controller

Name	Register No.	Remarks
I/O Error Count	SW00200	Number of I/O error occurrences
Number of Input Errors	SW00201	Number of input error occurrences
Input Error Address	SW00202	Address of the latest input error (IWxxxx register number)
Number of Output Errors	SW00203	Number of output error occurrences
Output Error Address	SW00204	Address of the latest output error (OWxxxx register number)
Reserved by System	SW00205	(Not used)
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	Slot 0 error status (Depends on the mounted module and error code.)
	SW00216 to SW00223	Reserved by the system
	SW00224 to SW00231	Slot 1 error status (Depends on the mounted module and error code.)
	SW00232 to SW00239	Slot 2 error status (Depends on the mounted module and error code.)
	SW00240 to SW00247	Slot 3 error status (Depends on the mounted module and error code.)

## ( 4 ) MP2310 Machine Controller

Name	Register No.	Remarks
I/O Error Count	SW00200	Number of I/O error occurrences
Number of Input Errors	SW00201	Number of input error occurrences
Input Error Address	SW00202	Address of the latest input error (IWxxxx register number)
Number of Output Errors	SW00203	Number of output error occurrences
Output Error Address	SW00204	Address of the latest output error (OWxxxx register number)
Reserved by System	SW00205	(Not used)
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	Slot 0 error status
	SW00216 to SW00223	Reserved by the system
	SW00224 to SW00231	Slot 1 error status
	SW00232 to SW00239	Slot 2 error status
	SW00240 to SW00247	Slot 3 error status
	SW00248 to SW00255	Reserved by the system (Slot 4 error status)
	...	
	SW00456 to SW00463	Reserved by the system (Slot 30 error status)

## ( 5 ) MP2300S Machine Controller

Name	Register No.	Remarks
I/O Error Count	SW00200	Number of I/O error occurrences
Number of Input Errors	SW00201	Number of input error occurrences
Input Error Address	SW00202	Address of the latest input error (IWxxxx register number)
Number of Output Errors	SW00203	Number of Output Errors
Output Error Address	SW00204	Address of the latest output error (OWxxxx register number)
Reserved by System	SW00205	(Not used)
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	Slot 0 error status
	SW00216 to SW00223	Reserved by the system
	SW00224 to SW00231	Slot 1 error status
	SW00232 to SW00239	Reserved by the system (Slot 2 error status)
	SW00240 to SW00247	Reserved by the system (Slot 3 error status)
	SW00248 to SW00255	Reserved by the system (Slot 4 error status)
	...	
	SW00456 to SW00463	Reserved by the system (Slot 30 error status)

## ( 6 ) MP2500MD Machine Controller

Name	Register No.	Remarks
I/O Error Count	SW00200	Number of I/O error occurrences
Number of Input Errors	SW00201	Number of input error occurrences
Input Error Address	SW00202	Address of the latest input error (IWxxxx register number)
Number of Output Errors	SW00203	Number of output error occurrences
Output Error Address	SW00204	Address of the latest output error (OWxxxx register number)
Reserved by System	SW00205	(Not used)
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00215	MP2500MD Machine Controller error status
	SW00216 to SW00223	Reserved by the system
	SW00224 to SW00228	SVB-01 Module error status
	SW00229 to SW00239	Reserved by the system
	SW00240 to SW00247	Error status of slot 1 of rack 2* (Depends on the mounted module and error code.)
	SW00248 to SW00255	Error status of slot 2 of rack 2* (Depends on the mounted module and error code.)
	SW00256 to SW00263	Error status of slot 3 of rack 2* (Depends on the mounted module and error code.)
	SW00264 to SW00271	Error status of slot 4 of rack 2* (Depends on the mounted module and error code.)
	...	...
SW00448 to SW00455	Error status of slot 9 of rack 4* (Depends on the mounted module and error code.)	

\* Racks 2 to 4 can be used only when using MP2100MEX.

## 6.2.2 Details on I/O Error Status

When a system I/O error occurs, the error status will be written in the system register.

The following shows the register allocation of the error status when the I/O Module (LIO-01/02), the EtherNet/IP Communication Module (263IF-01), and the DeviceNet Communication Module (260IF-01) are set at slots 1, 2 and 3 of the MP2300 Machine Controller, respectively.

### ( 1 ) MP2300 Machine Controller Basic Module Error Status

Name	Register No.	Remarks
Slot 0 error status	SW00208 to SW00215	(Depends on the mounted module and error code.)
Reserved by System	SW00216 to SW00223	(Depends on the mounted module and error code.)
Slot 1 error status	SW00224 to SW00231	(Depends on the mounted module and error code.)
Slot 2 error status	SW00232 to SW00239	(Depends on the mounted module and error code.)
Slot 3 error status	SW00240 to SW00247	(Depends on the mounted module and error code.)

#### ■ Register Allocation: Slot 0 (Reserved for Basic Module)

(Bit No.)	F	8	7	0
SW00208	Error code (I/O error = 2)		Subslot No. (= 2)	
SW00209	Error code (Station error = 1)		Subslot No. (= 3)	
SW00210	ST#15	.....	ST#2	ST#1 Not used
SW00211	Not used	ST#30	.....	ST#17 ST#16
SW00212	Not used	.....		Not used
SW00213	Not used	.....		Not used
SW00214	Not used	.....		Not used
SW00215	Not used	.....		Not used

### ( 2 ) LIO-01/LIO-02 Module Error Status (Slot 1)

(Bit No.)	F	8	7	0
SW00224	Error code (I/O error = 2)		Subslot No. (= 1)	
SW00225	Error code (I/O error = 2)		Subslot No. (= 2)	
SW00226	ST#15	.....	ST#2	ST#1 Not used
SW00227	Not used	.....		Not used
SW00228	Not used	.....		Not used
SW00229	Not used	.....		Not used
SW00230	Not used	.....		Not used
SW00231	Not used	.....		Not used

( 3 ) 263IF-01 Module Error Status (Slot 2)

(Bit No.)	F .....	8	7 .....	0
SW00232	Error code (Station error = 1)		Subslot No. (= 2)	
SW00233	CNO#16	.....	CNO#1	
SW00234	CNO#32	.....	CNO#17	
SW00235	CNO#48	.....	CNO#33	
SW00236	CNO#64	.....	CNO#49	

<Error Status Details>

Item	Code	Description
CNO#n	0	Normal communication
	1	Communication error at the station n

- ♦ CNO corresponds to the number in the Connection No. field on the **Connection List** tab page of the 263IF-01 Module configuration definition.

( 4 ) 260IF-01 Module Error Status (Slot 3)

(Bit No.)	F .....	8	7 .....	0
SW00240	Error code (Station error = 1)		Subslot No. (= 2)	
SW00241	ST#15	.....	ST#0	
SW00242	ST#31	.....	ST#16	
SW00243	ST#47	.....	ST#32	
SW00244	ST#63	.....	ST#48	

<Error Status Details>

Item	Code	Description
ST#n	0	Normal communication
	1	Communication error at the station n (n = local station number in slave mode)

# Appendices

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Appendix A Details of Status Codes .....	A-2
A.1 General Status Code Table .....	A-2
A.2 Extended Status Code Table .....	A-3

## Appendix A Details of Status Codes

In the **Status Detail** window (refer to 4.2.7 *Status Detail Window* on page 4-14), General Status code and Extended Status code are displayed if the status code is “4003H.” The following table explains these codes in detail.

### A.1 General Status Code Table

Status Code (Hex)	Text	Details/Description
0000	–	Service has been completed successfully.
0001	ROUTER_ERROR_FAILURE	Details are given by Extended Status code. • Refer to A.2 <i>Extended Status Code Table</i> on page A-3.
0002	ROUTER_ERROR_NO_RESOURCE	The Connection Manager resource necessary for processing the service request cannot be used.
0003	ROUTER_ERROR_INVALID_PARAMETER_VALUE	The connection number specified by Get_Connection_Data service is invalid. If the specified connection is not found, the Search_Connection_Data service will also return this code.
0004	ROUTER_ERROR_INVALID_SEG_TYPE	The segment type in the path is invalid. The word offset (0 base) to the error position in the path is taken as the Extended Status. The offset starts from the word immediately after the path size field. This error code is not returned if the error occurs during syntax analysis of the connection path.
0005	ROUTER_ERROR_INVALID_DESTINATION	The path destination is invalid. The word offset (0 base) to the error position in the path is taken as the Extended Status. The offset starts from the word immediately after the path size field. This error code is not returned if the error occurs during syntax analysis of the connection path.
0007	ROUTER_ERROR_CONN_LOST	Connection was lost. When the Get/Set service is created through the connection, the Get/Set service uses this code.
0008	ROUTER_ERROR_BAD_SERVICE	The Connection Manager does not support the requested service.
0009	ROUTER_ERROR_BAD_ATTR_DATA	Data segment error The Extended Status gives an index that indicates the position where the error occurred in the data segment. The index is “1” when the configuration revision number is present in the data segment. If the error occurs in the Get/Set service, the Extended Status will indicate the failed attribute number.
000C	ROUTER_ERROR_OBJECT_STATE_CONFLICT	With the current state of the object, the requested service cannot be performed. As an option, the first word of the Extended Status can include the current object state.
0010	ROUTER_ERROR_DEV_IN_WRONG_STATE	With the current state of the device, the requested service cannot be performed. As an option, the first word of the Extended Status can include the current device state.
0011	ROUTER_ERROR_REPLY_DATA_TOO_LARGE	The response data volume is too large. The Get service uses this code to indicate that the amount of the request data is too great to be set in the response buffer.
0013	ROUTER_ERROR_NOT_ENOUGH_DATA	Not enough data has been received.
0014	ROUTER_ERROR_ATTR_NOT_SUPPORTED	The Connection Manager does not support the attribute specified in the FIND service.
0015	ROUTER_ERROR_TOO_MUCH_DATA	Too much data has been received.
0025	ROUTER_ERROR_BAD_KEY_IN_PATH	At least one of the following in the key segment does not agree with the device: Vendor ID, product code, product type, and major or minor revision information. This code is used if a key segment is included in the path.
0026	ROUTER_ERROR_BAD_PATH_SIZE	The path size is invalid.

## A.2 Extended Status Code Table

Extended Status Code (Hex)	Text	Details
0100	ROUTER_EXT_ERR_DUPLICATE_FWD_OPEN	The connection is currently being used, or Forward_Open is duplicated.
0103	ROUTER_EXT_ERR_CLASS_TRIGGER_INVALID	The combination of the specified transport class and trigger is not supported.
0106	ROUTER_EXT_ERR_OWNERSHIP_CONFLICT	Conflict in ownership
0107	ROUTER_EXT_ERR_CONNECTION_NOT_FOUND	The connection is not found in the target application.
0108	ROUTER_EXT_ERR_INVALID_CONN_TYPE	The connection type is invalid. The connection type or connection priority is incorrect.
0109	ROUTER_EXT_ERR_INVALID_CONN_SIZE	The connection size is invalid.
0110	ROUTER_EXT_ERR_DEVICE_NOT_CONFIGURED	The device is not set.
0111	ROUTER_EXT_ERR_RPI_NOT_SUPPORTED	RPI is not supported. The connection timeout multiplier or production inhibit time value may also be incorrect.
0113	ROUTER_EXT_ERR_CONNECTION_LIMIT_REACHED	The Connection Manager cannot support any further connections.
0114	ROUTER_EXT_ERR_VENDOR_PRODUCT_CODE_MISMATCH	The vendor ID or product code in the key segment does not agree with the device.
0115	ROUTER_EXT_ERR_PRODUCT_TYPE_MISMATCH	The product type in the key segment does not agree with the device.
0116	ROUTER_EXT_ERR_REVISION_MISMATCH	The major or minor revision information in the key segment does not agree with the device.
0117	ROUTER_EXT_ERR_INVALID_CONN_POINT	The connection point is invalid.
0118	ROUTER_EXT_ERR_INVALID_CONFIG_FORMAT	The configured format is invalid.
0119	ROUTER_EXT_ERR_NO_CONTROLLING_CONNECTION	The connection request failed because no control connection is currently open.
011A	ROUTER_EXT_ERR_TARGET_CONN_LIMIT_REACHED	The target application cannot support any further connections.
011B	ROUTER_EXT_ERR_RPI_SMALLER_THAN_INHIBIT	The RPI value is smaller than the production inhibit time value.
0203	ROUTER_EXT_ERR_CONNECTION_TIMED_OUT	The connection cannot be terminated due to timeout.
0204	ROUTER_EXT_ERR_UNCONNECTED_SEND_TIMED_OUT	Timeout of the Unconnected_Send service was detected while waiting for the response.
0205	ROUTER_EXT_ERR_PARAMETER_ERROR	Parameter error in the Unconnected_Send service
0206	ROUTER_EXT_ERR_MESSAGE_TOO_LARGE	The message for the unconnected message service is too large.
0207	ROUTER_EXT_ERR_UNCONN_ACK_WITHOUT_REPLY	Unconnected type ACK for which a response is not given
0301	ROUTER_EXT_ERR_NO_BUFFER_MEMORY_AVAILABLE	No available buffer memory.
0302	ROUTER_EXT_ERR_BANDWIDTH_NOT_AVAILABLE	No available network bandwidth for data transmission.
0303	ROUTER_EXT_ERR_TAG_FILTERS_NOT_AVAILABLE	No usable tag filter is available.
0304	ROUTER_EXT_ERR_REAL_TIME_DATA_NOT_CONFIG	The system is not configured to send data in real time.

## A.2 Extended Status Code Table

Extended Status Code (Hex)	Text	Details
0311	ROUTER_EXT_ERR_PORT_NOT_AVAILABLE	The port specified in the port segment is not available.
0312	ROUTER_EXT_ERR_LINK_ADDR_NOT_AVAILABLE	The link address specified in the port segment is not available.
0315	ROUTER_EXT_ERR_INVALID_SEGMENT_TYPE_VALUE	The segment type or segment value specified in the path is invalid.
0316	ROUTER_EXT_ERR_PATH_CONNECTION_MISMATCH	When the connection is closed, the path and the connection do not agree with each other.
0317	ROUTER_EXT_ERR_INVALID_NETWORK_SEGMENT	The segment does not exist, or the encode value of the network segment is invalid.
0318	ROUTER_EXT_ERR_INVALID_LINK_ADDRESS	The link address to the local station is invalid.
0319	ROUTER_EXT_ERR_SECOND_RESOURCES_NOT_AVAILABLE	The secondary resource is not available.
031A	ROUTER_EXT_ERR_CONNECTION_ALREADY_ESTABLISHED	The connection has already been established.
031B	ROUTER_EXT_ERR_DIRECT_CONN_ALREADY_ESTABLISHED	The direct connection has already been established.
031C	ROUTER_EXT_ERR_MISC	Other
031D	ROUTER_EXT_ERR_REDUNDANT_CONNECTION_MISMATCH	Mismatch in redundant connection
031E	ROUTER_EXT_ERR_NO_MORE_CONSUMER_RESOURCES	No remaining receive resources that can be used by the transmission module exist.
031F	ROUTER_EXT_ERR_NO_TARGET_PATH_RESOURCES	The connection resource for the target path does not exist.
320 to 7FF	ROUTER_EXT_ERR_VENDOR_SPECIFIC	Vendor specific error

# Index

## Numerics

263IF-01 module	2-2
mounting	3-3
removing	3-6

## A

appearance	2-10
ARP	2-8
Assembly	2-7

## B

battery cover	3-3
---------------	-----

## C

cable	2-12
cautions on setting instance No.	4-8
CIP	1-2
CIP router	1-2
Communication Manager	3-8
communication method	3-8
starting the Communication Manager	3-10
communication status indicators (LEDs)	2-11
conceptual diagram of transmission buffer channels	5-7
configuration information	4-4
configuration instance No.	4-10
connection list tab page	4-6
Connection Manager	2-7
connection timeout multiplier	4-10
connection type	4-10
connector	
pin arrangement	2-12
specifications	2-12
CPU versions	3-2
CPU-01	3-2
CPU-02	3-2

## D

deleting the assigned devices	4-8
details of parameters	5-11
details on I/O error status	6-7
DeviceNet	1-2
displaying a register list	5-14

## E

EM communication setting	4-8
engineering communication	2-4
engineering port	4-5
Ethernet Link	2-7
EtherNet/IP	1-2
EtherNet/IP Transmission Configuration window	4-3
EtherNet/IP transmission definition	4-4
EXIOIF	3-2
Expansion Interface Board	3-2
explicit message	1-4
details of parameters	5-11
explicit message communication	2-3
explicit request message	5-2
explicit response message	5-3
Extended Status	4-14
external dimension of the connector	2-10

## G

gateway IP address	4-5
General Status	4-14

## H

hardware specifications	2-5
-------------------------	-----

## I

I/O communication	1-4, 2-2
I/O status tab page	4-13
I/O timing chart	5-9
ICMP	2-8
Identity object	2-7
IGMP	2-8
instance No.	4-7, 4-13
Inter-Rack Connection Module	3-2
IO communication detail setting window	4-10
IP	2-8
IP address	4-4, 4-6, 4-13, 4-16
setting IP address	3-8

## L

LED	2-11
status indication	6-2

## M

Message Router	2-7
message send function	5-4
Module Configuration window	4-3
displaying	4-2
Module Information tab page	4-16
module status	4-16
MP2100M	3-2, 6-3
MP2100MEX	3-2
MP2200	3-2, 6-4
MP2300	3-2, 6-4
MP2300S	3-2, 6-5
MP2310	3-2, 6-5
MP2500MD	3-2, 6-6
MPE720 versions	3-2
MSG-SND	5-4
MSG-SND function setting example	5-5

## N

negative value representation	5-16
NetWork Configuration Search window	4-11
Network Configuration button	4-6
network parameter tab page	4-4
network status	4-16

## O

object	2-7
offline self-diagnostic test	2-11
operating environment specifications	2-9
Option Cover	3-3, 3-7
option panel	3-6

## P

parameter list	5-10
Port	2-7
programming example	5-17, 5-18
protocol	2-8

## R

request packet interval	4-10
RPI	4-10

**S**

self-configuration----- 3-14  
setting communication parameters(MPE720 Ver.6) ----- 3-15  
setting network parameters (MPE720 Ver.5)----- 3-16  
setting the Ethernet (LP) Communication Port ----- 3-12  
setting the Ethernet Communication Port ----- 3-11  
software configuration -----2-8  
status code table----- 4-15  
Status Detail window ----- 4-12, 4-14  
status indicators (LEDs) ----- 2-10  
subnet mask -----4-4  
switch settings ----- 2-11  
system configuration example ----- 1-3  
system I/O error status -----6-3

**T**

TCP-----2-8  
TCP/IP Interface -----2-7  
transmission specifications -----2-6

**U**

UDP-----2-8

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# Machine Controller MP2000 Series

## 263IF-01

### EtherNet/IP Communication Module

## USER'S MANUAL

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