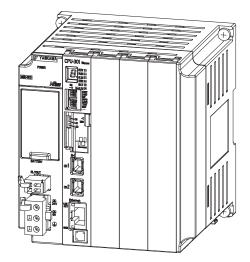
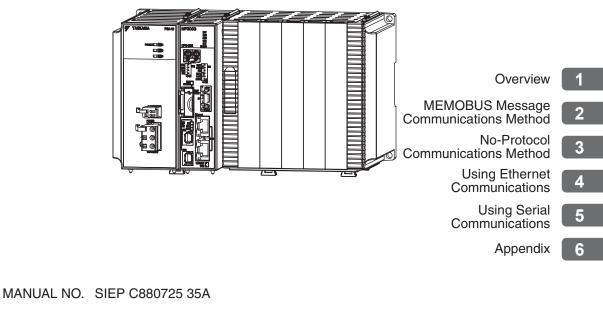
YASKAWA

Machine Controller MP3000 Series Message Communications USER'S MANUAL





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About this Manual

This manual describes the outline and communications connection methods for the message communications that are used with an MP3000-series Machine Controller.

Read this manual carefully to ensure the correct usage of the Machine Controller and apply the Machine Controller to control your manufacturing system.

Keep this manual in a safe place so that it can be referred to whenever necessary.

Using this Manual

Basic Terms

Unless otherwise specified, the following definitions are used:

- MP3000: A MP3200 or MP3300 Machine Controller
- MPE720: The Engineering Tool or a personal computer running the Engineering Tool
- PLC: A Programmable Logic Controller
- SND function: MSG-SND or MSG-SNDE function
- RCV function: MSG-RCV or MSG-RCVE function

Notation Rules for This Manual

- In this manual, the operation of MPE720 is described using screen captures of MPE720 version 7.
- This manual was written under the assumption that message communications is performed using the MP3200 and MP3300.
- The illustrations and screen captures used in this manual show either the MP3200 or MP3300. Substitute the appropriate content for your controller as you read this manual.

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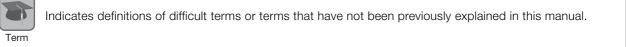
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♦ Visual Aids

The following aids are used to indicate certain types of information for easier reference.



Indicates precautions or restrictions that must be observed. Indicates alarm displays and other precautions that will not result in machine damage.



Example Indicates operating or setting examples.

Information Indicates supplemental information to deepen understanding or useful information.

Related Manuals

The following table lists the related manuals. Refer to these manuals as required. Be aware of all product specifications and restrictions to product application before you attempt to use any product.

Category	Manual Name	Manual Number	Contents
	Machine Controller MP3000 Series Machine Controller System Setup Manual	SIEP C880725 00	Describes the functions of the MP3000-series Machine Controllers and the procedures that are required to use the Machine Controller, from installation and connections to settings, pro- gramming, trial operation, and debugging.
Basic functionality	Machine Controller MP3000 Series MP3200/MP3300 Troubleshooting Manual	SIEP C880725 01	Describes troubleshooting an MP3000-series Machine Controller.
languonanty	Machine Controller MP3000 Series MP3200 Product Manual	SIEP C880725 10	Describes the specifications and system config- uration of the Basic Units in an MP3000-series Machine Controller and the functions of the CPU Unit.
	Machine Controller MP3000 Series MP3300 Product Manual	SIEP C880725 21	Describes the specifications and system config- uration of an MP3000-series MP3300 Machine Controller and the functions of the CPU Module.
Communications	Machine Controller MP2000 Series Communication Module User's Manual	SIEP C880700 04	Provides information on the Communications Modules that can be connected to an MP2000- series Machine Controller and describes the communications methods.
functionality	Machine Controller MP3000 Series Communications User's Manual	SIEP C880725 12	Describes the specifications, system configura- tion, and communications connection methods for the Ethernet communications that are used with an MP3000-series Machine Controller.
Programming	Machine Controller MP3000 Series Ladder Programming Manual	SIEP C880725 13	Describes the ladder programming specifica- tions and instructions of MP3000-series Machine Controller.
Engineering Tool	MPE720 Version 7 System Integrated Engineering Tool for MP2000/MP3000 Series Machine Controller User's Manual	SIEP C880761 03	Describes how to operate MPE720 version 7.

Safety Precautions

Safety Information

To prevent personal injury and equipment damage in advance, the following signal words are used to indicate safety precautions in this document. The signal words are used to classify the hazards and the degree of damage or injury that may occur if a product is used incorrectly. Information marked as shown below is important for safety. Always read this information and heed the precautions that are provided.

🛕 DANGER

• Indicates precautions that, if not heeded, are likely to result in loss of life, serious injury, or fire.

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

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

NOTICE

• Indicates precautions that, if not heeded, could result in property damage.

General Precautions

- The installation must be suitable and it must be performed only by an experienced technician. There is a risk of electrical shock or injury.
- Before connecting the machine and starting operation, make sure that an emergency stop procedure has been provided and is working correctly.
 There is a risk of injury.
- Do not approach the machine after a momentary interruption to the power supply. When power is restored, the product and the device connected to it may start operation suddenly. Provide safety measures in advance to ensure human safety when operation restarts. There is a risk of injury.
- Do not touch anything inside the product. There is a risk of electrical shock.
- Do not remove the front cover, cables, connector, or options while power is being supplied. There is a risk of electrical shock, malfunction, or damage.
- Do not damage, pull on, apply excessive force to, place heavy objects on, or pinch the 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.

Storage and Transportation

CAUTION • Do not store the product in any of the following locations. · Locations that are subject to direct sunlight · Locations that are subject to ambient temperatures that exceed the storage conditions · Locations that are subject to ambient humidity that exceeds the storage conditions · Locations that are subject to rapid temperature changes and condensation · Locations that are subject to corrosive or inflammable gas · Locations that are subject to excessive dust, dirt, salt, or metallic powder • Locations that are subject to water, oil, or chemicals · Locations that are subject to vibration or shock There is a risk of fire, electrical shock, or device damage. • Hold onto the main body of the product when transporting it. Holding the cables or connectors may damage them or result in injury. • Do not overload the product during transportation. (Follow all instructions.) 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. There is a risk of malfunction or damage. • 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

- Do not install the product in any of the following locations.
 - · Locations that are subject to direct sunlight
 - · Locations that are subject to ambient temperatures that exceed the operating conditions
 - Locations that are subject to ambient humidity that exceeds the operating conditions
 - Locations that are subject to rapid temperature changes and condensation
 - Locations that are subject to corrosive or inflammable gas
 - · Locations that are subject to excessive dust, dirt, salt, or metallic powder
 - · Locations that are subject to water, oil, or chemicals
 - Locations that are subject to vibration or shock
 - There is a risk of fire, electrical shock, or device damage.
- Never install the product in an atmosphere containing halogen (fluorine, chlorine, bromine, or iodine).
 - There is a risk of malfunction or damage.
- Do not step on the product or place heavy objects on the product. There is a risk of injury or an accident.
- Do not block the air exhaust ports on the product. Do not allow foreign objects to enter the product.
 - There is a risk of internal element deterioration, malfunction, or fire.
- Always mount the product in the specified orientation. There is a risk of malfunction.
- Leave the specified amount of space between the product, and the interior surface of the control panel and other devices. There is a risk of fire or malfunction.
- Do not subject the product to strong shock. There is a risk of malfunction.
- Suitable battery installation must be performed and it must be performed only by an experienced technician.
 - There is a risk of electrical shock, injury, or device damage.
- Do not touch the electrodes when installing the Battery. Static electricity may damage the electrodes.

Wiring

1 • Check the wiring to be sure it has been performed correctly. There is a risk of motor run-away, injury, or accidents. • Always use a power supply of the specified voltage. There is a risk of fire or accident. In places with poor power supply conditions, 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 wirina. There is a risk of fire. • Provide sufficient shielding when using the product in the following locations. · Locations that are subject to noise, such as from static electricity · Locations that are subject to strong electromagnetic or magnetic fields · Locations that are subject to radiation Locations that are near power lines There is a risk of device damage. • Configure the circuits to turn ON the power supply to the CPU Unit/CPU Module before the 24-V I/O power supply. Refer to the following manuals for details on circuits. MP3000 Series MP3200 CPU Unit Instructions (Manual No.: TOBP C880725 16) MP3000 Series MP3300 CPU Module Instructions (Manual No.: TOBP C880725 23) If the power supply to the CPU Unit/CPU Module is turned ON after the external power supply, e.g., the 24-V I/O power supply, the outputs from the CPU Unit/CPU Module may momentarily turn ON when the power supply to the CPU Unit/CPU Module turns ON. This can result in unexpected operation that may cause injury or device damage. • Provide emergency stop circuits, interlock circuits, limit circuits, and any other required safety measures in control circuits outside of the product. There is a risk of injury or device damage. If you use MECHATROLINK I/O Modules, use the establishment of MECHATROLINK communications as an interlock output condition. There is a risk of device damage. Connect the Battery with the correct polarity. There is a risk of battery damage or explosion. • Select the I/O signal wires for external wiring to connect the product to external devices based on the following criteria: · Mechanical strength Noise interference • Wiring distance Signal voltage • Separate the I/O signal cables for control circuits from the power cables both inside and outside the control panel to reduce the influence of noise from the power cables. If the I/O signal lines and power lines are not separated properly, malfunction may occur. Example of Separated Cables Steel separator I/O signal cables in Power control cable

circuits

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Operation

• Follow the procedures and instructions in the user's manuals for the relevant products to perform normal operation and trial operation. Operating mistakes while the Servomotor and machine are connected may damage the machine or

Operating mistakes while the Servomotor and machine are connected may damage the machine or even cause accidents resulting in injury or death.

- Implement interlock signals and other safety circuits external to the product to ensure safety in the overall system even if the following conditions occur.
 - Product failure or errors caused by external factors
 - Shutdown of operation due to product detection of an error in self-diagnosis and the subsequent turning OFF or holding of output signals
 - Holding of the ON or OFF status of outputs from the product due to fusing or burning of output relays
 or damage to output transistors
 - Voltage drops from overloads or short-circuits in the 24-V output from the product and the subsequent inability to output signals
 - Unexpected outputs due to errors in the power supply, I/O, or memory that cannot be detected by the product through self-diagnosis.

There is a risk of injury, device damage, or burning.

Maintenance and Inspection

CAUTION • Do not attempt to disassemble or repair the product. There is a risk of electrical shock, injury, or device damage. • Do not change any wiring while power is being supplied. There is a risk of electrical shock, injury, or device damage. • Suitable battery replacement must be performed and it must be performed only by an experienced technician. There is a risk of electrical shock, injury, or device damage. • Do not forget to perform the following tasks when you replace the CPU Unit/CPU Module: • Back up all programs and parameters from the CPU Unit/CPU Module that is being replaced. • Transfer all saved programs and parameters to the new CPU Unit/CPU Module. If you operate the CPU Unit/CPU Module without transferring this data, unexpected operation may occur. There is a risk of injury or device damage. • Do not touch the heat sink on the CPU Unit/CPU Module while the power supply is turned ON or for a sufficient period of time after the power supply is turned OFF. The heat sink may be very hot, and there is a risk of burn injury. Disposal

- Dispose of the product as general industrial waste.
- Observe all local laws and ordinances when you dispose of used Batteries.

Other General Precautions

- The products shown in the illustrations in this manual are sometimes shown without covers or protective guards. Always replace the cover or protective guard as specified first, and then operate the products in accordance with the manual.
- The illustrations that are presented in this manual are typical examples and may not match the product you received.
- If the manual must be ordered due to loss or damage, inform your nearest Yaskawa representative or one of the offices listed on the back of this manual.

Warranty

Details of Warranty

Warranty Period

The warranty period for a product that was purchased (hereinafter called "delivered product") is one year from the time of delivery to the location specified by the customer or 18 months from the time of shipment from the Yaskawa factory, whichever is sooner.

Warranty Scope

Yaskawa shall replace or repair a defective product free of charge if a defect attributable to Yaskawa occurs during the warranty period above. This warranty does not cover defects caused by the delivered product reaching the end of its service life and replacement of parts that require replacement or that have a limited service life.

This warranty does not cover failures that result from any of the following causes.

- Improper handling, abuse, or use in unsuitable conditions or in environments not described in product catalogs or manuals, or in any separately agreed-upon specifications
- · Causes not attributable to the delivered product itself
- Modifications or repairs not performed by Yaskawa
- Abuse of the delivered product in a manner in which it was not originally intended
- Causes that were not foreseeable with the scientific and technological understanding at the time of shipment from Yaskawa
- Events for which Yaskawa is not responsible, such as natural or human-made disasters

Limitations of Liability

- Yaskawa shall in no event be responsible for any damage or loss of opportunity to the customer that arises due to failure of the delivered product.
- Yaskawa shall not be responsible for any programs (including parameter settings) or the results of program execution of the programs provided by the user or by a third party for use with programmable Yaskawa products.
- The information described in product catalogs or manuals is provided for the purpose of the customer purchasing the appropriate product for the intended application. The use thereof does not guarantee that there are no infringements of intellectual property rights or other proprietary rights of Yaskawa or third parties, nor does it construe a license.
- Yaskawa shall not be responsible for any damage arising from infringements of intellectual property rights or other proprietary rights of third parties as a result of using the information described in catalogs or manuals.

♦ Suitability for Use

- It is the customer's responsibility to confirm conformity with any standards, codes, or regulations that apply if the Yaskawa product is used in combination with any other products.
- The customer must confirm that the Yaskawa product is suitable for the systems, machines, and equipment used by the customer.
- Consult with Yaskawa to determine whether use in the following applications is acceptable. If use in the application is acceptable, use the product with extra allowance in ratings and specifications, and provide safety measures to minimize hazards in the event of failure.
 - Outdoor use, use involving potential chemical contamination or electrical interference, or use in conditions
 or environments not described in product catalogs or manuals
 - Nuclear energy control systems, combustion systems, railroad systems, aviation systems, vehicle systems, medical equipment, amusement machines, and installations subject to separate industry or government regulations
 - Systems, machines, and equipment that may present a risk to life or property
 - Systems that require a high degree of reliability, such as systems that supply gas, water, or electricity, or systems that operate continuously 24 hours a day
 - · Other systems that require a similar high degree of safety
- Never use the product for an application involving serious risk to life or property without first ensuring that the system is designed to secure the required level of safety with risk warnings and redundancy, and that the Yaskawa product is properly rated and installed.
- The circuit examples and other application examples described in product catalogs and manuals are for reference. Check the functionality and safety of the actual devices and equipment to be used before using the product.
- Read and understand all use prohibitions and precautions, and operate the Yaskawa product correctly to prevent accidental harm to third parties.

♦ Specifications Change

The names, specifications, appearance, and accessories of products in product catalogs and manuals may be changed at any time based on improvements and other reasons. The next editions of the revised catalogs or manuals will be published with updated code numbers. Consult with your Yaskawa representative to confirm the actual specifications before purchasing a product.

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Revision History

Overview

This chapter provides an overview of message communications.

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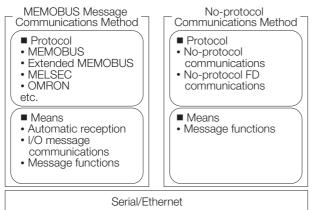
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1.1 Message Communications Overview

A controller can perform communications and exchange data with other controllers and peripheral devices by using message communications. Ethernet and serial communications are available as the communications paths.

There are two types of message communications: the MEMOBUS message communications method and no-protocol communications method.

An overview of each of these communications methods is shown below.



Description		References for MEMOBUS Message Communications	References for No-Protocol Communications	
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	Automatic Reception	3.1 Automatic Reception on page 2-2	-	
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1.2.1 Protocols Implemented in MP-series Controllers

1.2 MEMOBUS Message Communications Method

The MEMOBUS message communications method refers to the method that performs communications using the protocols that are implemented in MP-series Controllers.

A program for performing communications may also not be required with this method. Even if a program is required, communications is performed according to the implemented protocols, so the user does not need to build communications rules into the program.

1.2.1 Protocols Implemented in MP-series Controllers

The following protocols are implemented in MP-series Controllers.

- MEMOBUS
- Extended MEMOBUS
- MELSEC A-compatible 1E frame
- MELSEC A-compatible 1C frame
- MELSEC QnA-compatible 3E frame
- OMRON FINS
- OMRON host link C mode
- TOYOPUC
- MODBUS/TCP

MEMOBUS Protocol

Use the MEMOBUS protocol to perform message communications with a remote device that implements this protocol.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program. However, the remote device requires a communications program.

If I/O message communications is used when the MP3000 is the master, the MP3000 does not require a communications program. However, this method allows the use of only M registers in the remote device and communications with only one slave.

Message communications can be performed with the remote device without these restrictions if you create a communications program on the MP3000.

Extended MEMOBUS protocol

Use the Extended MEMOBUS protocol to perform message communications with a remote device that implements this protocol.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program. However, the remote device requires a communications program.

If I/O message communications is used when the MP3000 is the master, the MP3000 does not require a communications program. However, this method allows the use of only M and G registers in the remote device and communications with only one slave.

Message communications can be performed with the remote device without these restrictions if you create a communications program on the MP3000.

1.2.1 Protocols Implemented in MP-series Controllers

MELSEC A-Compatible 1E Frame (MC Protocol)

Use the MELSEC A-compatible 1E frame protocol when performing Ethernet communications between the MP3000 and a Mitsubishi Q/A-series PLC.

If I/O message communications is used when the MP3000 is the master, the a communications program is not required on the MELSEC Q-series, but a communications program is required on the MELSEC A-series.

Message communications can also be performed with the MELSEC (Q/A) if you create a communications program on the MP3000.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program.

MELSEC A-Compatible 1C Frame (MC Protocol)

Use the MELSEC A-compatible 1C frame protocol when performing serial communications between the MP3000 and a Mitsubishi Q/A-series PLC.

When the MP3000 is the master, the MP3000 requires a communications program. The MELSEC (Q/A) does not require a communications program. However, the A-series also requires a communications setup program.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program.

MELSEC QnA-Compatible 3E Frame (MC Protocol)

Use the MELSEC QnA-compatible 3E frame protocol when performing Ethernet communications (MC protocol communications) between the MP3000 and a Mitsubishi Q/QnA-series PLC.

If I/O message communications is used when the MP3000 is the master, the MP3000 and MELSEC (Q/QnA) do not require a communications program.

Message communications can also be performed with the MELSEC (Q/QnA) if you create a communications program on the MP3000. In this case, the MELSEC (Q/QnA) does not require a communications program.

Select MELSEC A-compatible 1E frame when performing random access buffer communications or fixed buffer communications with the Q/QnA-series.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program.

OMRON FINS Protocol

Use the OMRON FINS protocol when performing Ethernet communications between the MP3000 and an OMRON PLC.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program. However, the OMRON PLC requires a communications program.

If I/O message communications is used when the MP3000 is the master, the MP3000 and OMRON PLC do not require a communications program.

Message communications can also be performed with the OMRON PLC if you create a communications program on the MP3000. In this case, the OMRON PLC does not require a communications program.

OMRON Host Link C Mode

Use the OMRON host link C mode protocol when performing serial communications between the MP3000 and an OMRON PLC.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program. However, the OMRON PLC requires a communications program.

When the MP3000 is the master, the MP3000 and OMRON PLC require a communications program.

1.2.2 Communications Methods

TOYOPUC Protocol

Use the TOYOPUC protocol when performing Ethernet communications between the MP3000 and a JTEK TOYOPUC PLC.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program. However, the JTEKT TOYOPUC PLC requires a communications program.

I/O message communications cannot be used due to restrictions on registers.

When the MP3000 is the master, the MP3000 and JTEKT TOYOPUC PLC require a communications program.

MODBUS/TCP Protocol

The MODBUS/TCP protocol performs communications with MODBUS/RTU messages over an Ethernet TCP/IP network.

Use the MODBUS/TCP protocol to perform Ethernet communications with a remote device that implements this protocol.

If automatic reception is used when the MP3000 is the slave, the MP3000 does not require a communications program.

If I/O message communications is used when the MP3000 is the master, the MP3000 does not require a program for communications. However, this method allows the use of only M registers in the remote device and communications with only one slave. Message communications can be performed with the remote device without these restrictions if you create a communications program on the MP3000.

1.2.2 Communications Methods

The MP3000 performs communications (exchanges messages) according to protocols described in the previous section. The following three methods are available as methods for performing communications with a remote device.

- Automatic Reception Use this method when performing communications with a remote device and the MP3000 functions as the slave.
- I/O Message Communications Use this method when performing communications with a remote device and the MP3000 functions as the master.
- Message Functions

Use the message functions when the MP3000 requires a communications program. The SND functions (MSG-SND and MSG-SNDE) are message functions used to send messages, and the RCV functions (MSG-RCV and MSG-RCVE) are message functions used to receive messages.

Use the SND functions when performing communications and the MP3000 functions as the master.

Use the RCV functions when performing communications and the MP3000 functions as the slave.

1.3.1 Protocols in No-Protocol Communications

1.3 No-Protocol Communications Method

The no-protocol communications method refers to the method that performs communications using a protocol that is not implemented in MP-series Controllers.

With this communications method, the user must build the communications protocol for the remote device in the ladder program.

1.3.1 Protocols in No-Protocol Communications

The protocol used in no-protocol communications is the protocol of the remote device.

There are two types of no-protocol communications, no-protocol (half duplex) and no-protocol FD (full duplex). These types serve to control the physical layer.

No-Protocol

No-protocol communications is half-duplex communications. Sending and receiving cannot be processed simultaneously.

No-Protocol FD

No-protocol FD communications is full-duplex communications. Sending and receiving can be executed simultaneously.

1.3.2 Communications Methods

In no-protocol communications, the message functions are used to communicate with the remote device.

The SND functions (MSG-SND and MSG-SNDE) are message functions used to send messages, and the RCV functions (MSG-RCV and MSG-RCVE) are message functions used to receive messages.

Use the SND functions when sending data from the MP3000.

Use the RCV functions when receiving data on the MP3000.

1.4.1 For Ethernet Communications

1.4 Selecting a Communications Method for the Remote Device

1.4.1 For Ethernet Communications

MP3000 Usage	Communications Method	Remote Device	Protocol	Method
Used as master	MEMOBUS	MP2000 / MP3000	Extended MEMOBUS	 I/O message communica- tions MSG-SND
	message	Other man- ufacturer's PLC	MELSEC (A-compatible 1E) MELSEC (QnA-compatible 3E) OMRON (FINS) MODBUS/TCP • I/O message communica- tions • MSG-SND□	
	No-protocol	Device with unique protocol	Unique protocol	 MSG-SND□ (no-protocol) Combine with MSG-RCV□ if there is a response from the remote device.
		MP2000 / MP3000	Extended MEMOBUS	Automatic receptionMSG-RCV□
Used as slave	MEMOBUS message	Other man- ufacturer's PLC Touch panel	MELSEC (A-compatible 1E) MELSEC (QnA-compatible 3E) OMRON (FINS) MODBUS/TCP	 Automatic reception MSG-RCV□
	No-protocol	Device with unique protocol	Unique protocol	 MSG-RCVI (no-protocol) Combine with MSG-SNDI if a response for the remote device is required.

1.4.2 For Serial Communications

MP3000 Usage	Communications Method	Remote Device	Protocol	Method
	MEMOBUS	MP2000 / MP3000	MEMOBUS	• MSG-SND□
Used as master	message	Other man- ufacturer's PLC	MELSEC (special protocol format 1) OMRON (host link mode)	• MSG-SND□
master	No-protocol	Device with unique pro- tocol	Unique protocol	 MSG-SND□ (no-protocol) Combine with MSG-RCV□ if there is a response from the remote device.
		MP2000 / MP3000	MEMOBUS	• MSG-RCV□
Used as slave	MEMOBUS message	Other man- ufacturer's PLC Touch panel	MELSEC (special protocol format 1) OMRON (host link mode)	• MSG-RCV□
	No-protocol	Device with unique protocol	Unique protocol	 MSG-RCV^I (no-protocol) Combine with MSG-SND^I if a response for the remote device is required.

1.5 Relationship between Communications Devices and Communications Modules

The following table shows the relationship between communications devices and communications modules.

The abbreviation for the communications device indicates the name of the Function Module that supports Ethernet or serial communications.

Commu- nications Standard	Communications Device (Code)	Communications Module	Product Model	Connector Name	
		CPU-301 (16 axes)	JAPMC-CP3301-1-E		
		CPU-301 (32 axes)	JAPMC-CP3301-2-E		
	Ethernet (218IFD)	CPU-302 (16 axes)	JAPMC-CP3302-1-E	Ethernet	
Ethernet		CPU-302 (32 axes)	JAPMC-CP3302-2-E	Lulemet	
Elhernel		CPU-201	JEPMC-CP3201-E		
		CPU-202	JEPMC-CP3202-E		
	Ethernet (218IF)	218IF-01	JAPMC-CM2300-E	10Base-T	
	Ethernet (218IFB)	218IF-02	JAPMC-CM2302-E	Ethernet	
		215AIF-01 MPLINK	JAPMC-CM2360-E	CN2	
		215AIF-01 CP-215	JAPMC-CM2361	GNZ	
		217IF-01	JAPMC-CM2310-E	PORT, RS422/485	
Serial	RS232-C/422/485 (217IF)	218IF-01	JAPMC-CM2300-E		
		218IF-02	JAPMC-CM2302-E	PORT	
		260IF-01	JAPMC-CM2320-E		
		261IF-01	JAPMC-CM2330-E	1	

MEMOBUS Message Communications Method

2

The MP3000 implements a number of well known protocols as standard.

Use these implemented protocols and the MP3000 can communicate with a remote device without a communications program by using automatic reception and I/O message communications. If a communications program is required, the MP3000 can exchange data with a remote device simply by using the message functions in the appropriate sequence.

2.1	Automatic Reception2-2							
	2.1.1	Execution Timing of Automatic Reception 2-2						
2.2	I/O N	lessage Communications						
2.3	Message Functions2-4							
		-g- · · · · · · · · · · · · · · ·						

2.1.1 Execution Timing of Automatic Reception

2.1 Automatic Reception

Automatic reception allows message communications without using message receive functions (RCV functions) in the ladder program when the MP3000 functions as the slave station. This function cannot be used with the no-protocol communications method (no-protocol or no-protocol FD).

To use automatic reception, it must be configured in the detail definition settings of the Module Configuration Definition Tab Page.

The following table shows the Communication Modules that can use automatic reception.

Module Name	Communications Port	Automatic Reception	Number of Connections
218IF-01	PORT (RS-232C)	Supported	1
21011-01	10Base-T (218IF)	Not supported	-
218IF-02	PORT (RS-232C)	Supported	1
21017-02	Ethernet (218IFB)	Not supported	-
217IF-01	PORT (RS-232C)	Supported	1
21716-01	RS422 / 485	Supported	1
260IF-01	PORT (RS-232C)	Supported	1
20011-01	DeviceNet	Not supported	-
261IF-01	PORT (RS-232C)	Supported	1
2011-01	PROFIBUS	Not supported	-
215AIF-01	CN1 (CP-215)	Not supported	_
213AII -01	CN2 (RS-232C)	Supported	1
CPU-301 (16 axes) CPU-301 (32 axes) CPU-302 (16 axes) CPU-302 (32 axes) CPU-201 CPU-202	Ethernet (218IFD)	Supported	10

Automatic reception is enabled by default on ports that can use automatic reception.

Refer to the "Communications Settings" section in each chapter for how to enable and disable automatic reception.

Information In addition to automatic reception, RCV functions are also available as a communications method when using the MP3000 as a slave.

The following lists the merits and demerits of RCV functions:

- Merits
- Offsets and writing ranges can be changed within the ladder program range.
- The communications processing results and communications status can be monitored during debugging.
- Messages can be received faster than in the low-speed scan.
- Demerits
- You must create a ladder program.
- Scan execution time increases.

2.1.1 Execution Timing of Automatic Reception

The priority for processing of automatic reception is higher than the low-speed scan and lower than the high-speed scan. For this reason, if there is no free time in the high-speed scan processing time, response processing for automatic reception may be delayed. Additionally, if there is no free time in the low-speed scan processing time, the execution time for low-speed scan processing may increase.

2.2 I/O Message Communications

With I/O message communications, the MP3000 functions as the master device and communicates with PLCs and devices from other manufacturers.

Configure the I/O message settings in the detail definition settings of the Module Configuration Definition Tab Page only and messages can be sent without using send message functions (SND functions) in the ladder program.

Data is exchanged with the remote device using O and I registers.

A maximum of two channels (two connections) are allowed.

The following table shows the Communication Modules that can use I/O message communications.

Module Name	Communications Port	I/O Message Communications	Number of Connections
218IF-01	PORT (RS-232C)	Not supported	-
21017-01	10Base-T (218IF)	Not supported	-
218IF-02	PORT (RS-232C)	Not supported	-
21017-02	Ethernet (218IFB)	Not supported	-
217IF-01	PORT (RS-232C)	Not supported	-
21715-01	RS422 / 485	Not supported	-
260IF-01	PORT (RS-232C)	Not supported	-
20017-01	DeviceNet	Not supported	-
261IF-01	PORT (RS-232C)	Not supported	-
2011-01	PROFIBUS	Not supported	-
	CN1 (CP-215)	Not supported	-
215AIF-01	CN2 (RS-232C)	Not supported	-
CPU-301 (16 axes) CPU-301 (32 axes) CPU-302 (16 axes) CPU-302 (32 axes) CPU-201 CPU-202 Ethernet (218IFD)		Supported	2

1. I/O message communications is one-to-one communications.

()

Important

When using Communications protocol type: Extended MEMOBUS to communicate with an MP-series Controller, you can only read and write hold registers.

- When communicating with multiple remote devices or when you need to perform any operations other than reading and writing to hold registers, such as reading the states of coils and input relays, and changing the states of coils, use the send message functions (SND functions).
- 2. In I/O message communications, a message is transmitted from separate ports if registers are both read and written. Therefore, the connected remote device must have two connections to receive both messages. (Excluding the OMRON FINS protocol.) Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.
- 3. The read data and write data in I/O message communications is updated by the I/O service of the high-speed scan or low-speed scan. Updates are performed asynchronously with Ethernet communications. Due to differences between the scan cycle and the cycle of message communications on the communications path, all of the output data may not be sent to the Ethernet communications path or all of the received data may not be reflected in the input data.

2.3 Message Functions

Use the message functions when the MP3000 requires a communications program.

The MSG-SNDE and MSG-RCVE functions have been newly added to the MP3000 in addition to the MSG-SND and MSG-RCV functions.

The MSG-SND and MSG-RCV functions are available for backward compatibility so that MP2000-series communications programs can be used without modifications.

The MSG-SNDE and MSG-RCVE functions support the extended registers in the MP3000 and access (R/W) to those extended registers.

Register Name	MSG-SNDE and MSG-RCVE	nstructions	MSG-SND and MSG-RCV Instructions			
negister Name	Register Range	Access	Register Range	Access		
System Registers	SW00000 to SW65534	RW	-	-		
Data Registers	GW000000 to GW2097151	RW	-	-		
Output Registers	OW00000 to OW27FFF	RW	-	-		
Hold Registers	MW0000000 to MW1048575	RW	MW000000 to MW0065534	RW		
Input Registers	IW00000 to IW27FFF	R	IW00000 to IW0FFFF	R		

The following table shows the message functions and applicable registers.

Note: R: Read-only, RW: Readable/Writable

This function is the same as the MSG-SND function, but it supports the extended registers in the MP3000 and access (R/W) to those extended registers.

Inputs and Outputs for the MSG-SNDE Function

Function Name	MSG-SNDE								
Function	Sends a message to a remote station on the specified circuit of the communications device type. This function can be used with various protocols.								
Function Definition				MSG-SNDE B] Execute [B] Busy ? ? B] Abort [B] Complete ? ? W] Dev-Typ [B] Error ? ? W] Dro-Typ ? W] Cir-No ? W] Ch-No ? A] Param ?					
I/O Definitions	No.	Meaning							
	1	Execute	B-VAL	Executes the transmission.					
	2	Abort	B-VAL	Forces the transmission to end.					
	3	Dev-Typ	I-REG	Communications device type RS232C/422/485 (217IF) = 5, Ethernet (218IF) = 6, Ethernet (218IFB, 218IFD) = 16					
Input Items	4	Pro-Typ	I-REG	Communications protocol MEMOBUS = 1, No-protocol communications 1 = 2, No-protocol communications 2 = 3					
	5	Cir-No	I-REG	Circuit number RS232C/422/485 (217IF) = 1 to 16, Ethernet (218IF) = 1 to 8, Ethernet (218IFB, 218IFD) = 1 to 8					
	6	Ch-No	I-REG	Communications buffer channel number RS232C/422/485 (217IF) = 1, Ethernet (218IF) = 1 to 10, Ethernet (218IFB, 218IFD) = 1 to 10					
	7	Param	Address Input	First address of parameter list (MA, DA)					
	1	Busy	B-VAL	Processing.					
Output Items	2	Complete	B-VAL	Process completed.					
	3	Error	B-VAL	Error occurred.					

♦ Execute

Specify the bit to use to execute the message transmission.

When the Execute Bit turns ON, the message will be sent.

Information Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.

2

2-5

Abort

Specify the bit to use to abort the message transmission.

When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Execute Bit.

Dev-Typ (Communications Device Type)

Specify the type code of the communications device.

Communications Device	Type Code
RS232C/422/485 (217IF)	5
Ethernet (218IF)	6
Ethernet (218IFB, 218IFD)	16

Pro-Typ (Communications Protocol)

Specify the type code of the communications protocol.

Type Code	Communications Protocols	Remarks				
1	MEMOBUS	Select this type code when using the MEMOBUS message commu- nications method. MEMOBUS is automatically converted to the vari- ous communications protocols inside the 218IFD.				
2	No-protocol communi- cations 1 (unit: words)	This type code is not used with the MEMOBUS message communi- cations method.				
3	No-protocol communi- cations 2 (unit: bytes)	This type code is not used with the MEMOBUS message communi- cations method.				

Cir-No (Circuit Number)

Specify the circuit number for the communications device.

Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page.

02 218IFD	 **	Circuit No1	1		Input	0000 - 07FF[H]	2048
03 ⊞ SVC32 🖏	 	Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024
04 🛨 SVR32	 (Circuit No3	1	9000 - 97FF[H]			

The following table gives the valid circuit numbers.

Communications Device	Valid Circuit Numbers
RS232C/422/485 (217IF)	1 to 16
Ethernet (218IF)	1 to 8
Ethernet (218IFB, 218IFD)	1 to 8

Ch-No (Communications Buffer Channel Number)

Specify the channel number of the communications buffer.

You can specify any channel number provided it is within the valid range.

Information When executing more than one function at the same time, do not use the same channel number for the same connection. You can use the same channel number as long as multiple functions are not executed at the same time.

The following table gives the valid channel numbers.

Communications Device	Valid Channel Numbers
RS232C/422/485 (217IF)	1
Ethernet (218IF)	1 to 10
Ethernet (218IFB, 218IFD)	1 to 10

If the communications device is the 218IFD, there are 10 channels of communications buffers available for both transmission and reception. Therefore, 10 connections may be used for sending and receiving at the same time by using channels 1 to 10.

Information There must be as many MSG-SNDE or MSG-RCVE functions as the number of connections used at the same time.

Param (First Address of Parameter List)

Specify the first address of the parameter list.

A total of 29 words starting from the specified first word are automatically used for the parameter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.



A parameter	list with	the	first	address	set to	DA00000	is shown	below.

(purumotor	not with the mot datalood
Registers	Parameter List F ··· ··· ··· ··· 0
DW00000	PARAMOO
DW00001	PARAM01
DW00002	PARAM02
DW00003	PARAM03
DW00004	PARAM04
DW00005	PARAM05
DW00006	PARAM06
DW00007	PARAM07
• • • •	
DW00023	PARAM23
DW00024	PARAM24
DW00025	PARAM25
DW00026	PARAM26
DW00027	PARAM27
DW00028	PARAM28

Busy

Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmission or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.

Complete

Specify the bit that shows when the message transmission has been completed.

The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.

2

Error

Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan.

The following diagrams show timing charts for the bit I/O items in the MSG-SNDE function.

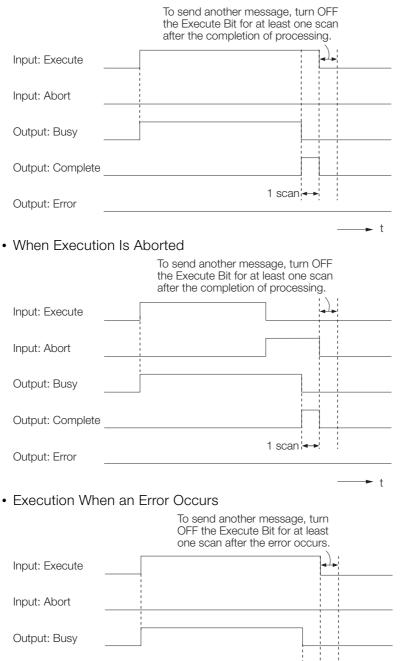
1 scan

► †

• Normal Execution

Output: Complete

Output: Error



MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description	
00		Processing Result	Gives the processing status.	
01		Status	Gives the status of the current function.	
02		Detail Error Code, Lower Word*		
03	Out-	Detail Error Code, Upper Word*		
04	puts	Status 1*	The content that is given depends on the communications	
05		Status 2*	medium.	
06		Status 3*		
07		Status 4*		
08		Status 5*		
09		Status 6		
10		Connection Number	Specifies the remote station.	
11		Option	Optional function. The content depends on the communica- tions medium or protocol.	
12		Function Code	Sets the function code for the function associated with read- ing or writing.	
13		Reserved for system.	_	
14		Remote Station Data Address, Lower Word	Sets the data address to read/write at the remote station. (Use	
15		Remote Station Data Address, Upper Word	word addresses for registers, bit addresses for relays or coils.)	
16	Innuto	Remote Station Register Type	Sets the register type to read/write at the remote station.	
17	Inputs	Data Size	Sets the size of the data to read/write. (Use word sizes for reg- isters, bit sizes for relays or coils.)	
18		Remote CPU Module Number	Sets the CPU number at the remote station.	
19		Reserved for system.	_	
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local sta-	
21		Local Station Data Address, Upper Word	tion. (Use word addresses for registers, bit addresses for relays or coils.)	
22		Local Station Register Type	Sets the register type of the read/write data to store in the local station.	
23		Reserved for system.	_	
24		For system use	_	
25		Reserved for system.	_	
26	l –	Reserved for system.	_	
27		Reserved for system.	_	
28		Reserved for system.	_	

* The content for Status No. 2 to No. 8 functions on the 218IFD only.

Processing Result (PARAM00)

This parameter gives the processing result.

Processing Result Value	Meaning
0000 hex	Busy
1000 hex	Complete
8y □□ hex	Error

Note: The lower byte is used for system analysis.

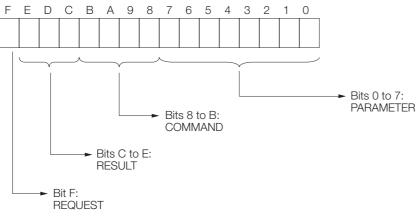
Refer to the following section for details on errors.

2

Status (PARAM01)

This parameter gives the status of the communications device.

The following figure shows the bit assignments and it is followed by a detailed description of each assignment.



REQUEST

This bit gives the status of the processing request for the MSG-SNDE function.

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

RESULT

These bits give the execution result of the MSG-SNDE function.

Code	Abbreviation	Meaning
0	CONN_NG	The message send failed or connection ended with an error in Ethernet com- munications.
1	SEND_OK	The message was sent normally.
2	REC_OK	The message was received normally.
3	ABORT_OK	The request to abort execution was completed.
4	FMT_NG	A parameter formatting error occurred.
5	SEQ_NG	A command sequence error occurred.
6	RESET_NG	A reset occurred.
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.

COMMAND

These bits indicate the processing command of the MSG-SNDE function.

Code	Abbreviation	Meaning
1	U_SEND	General-purpose message transmission (for no-protocol communications)
2	U_REC	General-purpose message reception (for no-protocol communications)
3	ABORT	Forced abort
8	M_SEND	MEMOBUS command transmission: Completed when response is received.
9	M_REC*	MEMOBUS command reception
С	MR_SEND*	MEMOBUS response transmission

* MR_SEND is executed after M_REC is executed.

PARAMETER

When RESULT = 4 (FMT_NG: parameter formatting error), these bits will indicate an error code from the following table. For any other value, the bits will contain the connection number.

RESULT	Code (Hex)	Meaning
	00	No error
	01	Connection number out of range
	02	Watchdog error for MEMOBUS response
When RESULT = 4	03	Error in number of retries setting
(FMT_NG: Parameter	04	Error in cyclic area setting
Formatting Error)	05	CPU number error
	06	Data address error
	07	Data size error
	08	Function code error
Others		Connection number

Detail Error Code (PARAM02 and PARAM03)

These parameters give the detail error code.

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
8100 hex	1	Function code error	An unused function code was sent or received. Check PARAM12 (Function Code).
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Remote Station Data Address) PARAM20 and PARAM21 (Local Station Data Address)
8300 hex	3	Data size error	The data size for sending or receiving is out of range. Check PARAM17 (Data Size).
8400 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-SNDE function.
85 00 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-SNDE function.
86 □□ hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
	7	Data reception error	An error response was received from the communications device.
8800 nex			Check the connections to the device. Also check to see if the
	10 hex	Connection error	remote device is ready to communicate.
89 00 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-SNDE function.
8ADD hex	0 to FF	Remote node error	A node error response was returned from the remote station. Check the error code and remove the cause.
C000 hex	40 hex	Register type error	The register type for the remote station is out of range. Check PARAM16 (Remote Station Register Type).
C100 hex	41 hex	Data type error	The data type is out of range. Check the address table at the remote station. (This error occurs when using function code 434D hex or 434E hex.)
C2DD hex	42 hex	Local station regis- ter type error	The register type for the local station is out of range. Check PARAM22 (Local Station Register Type).

2

Status 1 (PARAM04)

This parameter gives status information.

The status content depends on the communications medium of each Communications Module. If 218IFD is specified for the communications device, this parameter represents the communications status. The values in the following table are obtained from the parameter. This parameter can be used only if the communications device is 218IFD.

Status 1 Value	Meaning	Description
1	IDLE	The connection is idle.
2	WAIT	The connection is waiting to be made.
3	CONNECT	The connection is established.
_	_	-

Note: The status is updated when the function is executed in each scan.

Status 2 (PARAM05)

This parameter gives information on the most recent error.

This parameter can be used only if the communications device is 218IFD.

Status 2 Value	Meaning	Description
0	No error	Normal
1	Socket creation error	A socket could not be created.
2	Local port number error	Setting error in local station port number
3	Changing socket attribute error	A system error occurred while setting the socket attribute.
4	Connection error	M-SND: The remote station rejected an attempt to open a TCP connection.
5	Connection error	M-RCV: An error occurred while passively opening a TCP connection.
6	System error	A socket polling error occurred while receiving data.
7	TCP data send error	The remote station does not exist.
8	UDP data send error	The data send request command was sent to a socket that does not exist.
9	TCP data receive error	A disconnection request was received from the remote station.
10	UDP data receive error	A data receive request was executed for a socket that does not exist.
11	Changing socket option error	A system error occurred while changing the socket options.
12	Data conversion error	Error in protocol conversion

Note: The status is updated when the function is executed in each scan.

Status 3 (PARAM06)

This parameter gives the value of the send pass counter.

This parameter can be used only if the communications device is 218IFD.

Status 3 Value	Meaning	Description
0 to 65535	Send count	Counts the number of times a message was sent.

Note: The status is updated when the function is executed in each scan.

Status 4 (PARAM07)

This parameter gives the value of the receive pass counter.

This parameter can be used only if the communications device is 218IFD.

Status 4 Value	Meaning	Description
0 to 65535	Receive count	Counts the number of times a message was received.

Note: The status is updated when the function is executed in each scan.

♦ Status 5 (PARAM08)

This parameter gives the value of the error counter.

This parameter can be used only if the communications device is 218IFD.

Status 5 Value	Meaning	Description
0 to 65535	Error count	Counts the number of errors that occurred during message processing.

Note: The status is updated when the function is executed in each scan.

♦ Status 6 (PARAM09)

This parameter gives status information about the Communications Module.

The status information depends on the communications medium.

The status information is updated when the function is executed in each scan.

Connection Number (PARAM10)

Specify the remote station.

If the communications device is Ethernet, enter the connection number.

If the communications device is a serial device, enter the remote station number.

The setting range is given in the following table.

Communications Device	Connection Number	Description
	0	Sends the message to all stations (broadcast).
Serial (217IF)	1 to 254	Sends the message to the remote station set by the specified station number.
Ethernet (218IF, 218IFB, 218IFD)	1 to 20	Sends the message to the remote station set by the specified connection number.

Note: Enter the same connection number as displayed in the Detail Definition Dialog Box for communications device in the MPE720.

#: 1 CPU#: 1 ransmission Paramet		. 1						JCIR#01	J00000-007FF	
-Transmission Paramet		tus								
	neters					Name Definit	ion			
IP Address		: 192 🕂	168 🕂 1	<u>∃</u> . [1	🕂 (0-255) Equipme	nt name :	CONTROLLER	NAME		
Subnet Mask		: 255 🛨	255 🚊 2	55 🛨 🛛 🛛	÷ (0-255)					
Gateway IP Add	iress	0			: (0-255) Detai	l Definition				
-Connection Parame Message Commun	nication -				an and he are the set					
	Local Port	ections(C NO) 01-1 Node IP Addre	0 can be set f ss Node Port	o receive data Connect Type	Protocol Type	Coo	de Detail		Node 1	Name 🔺
Message Commun Easy setting C NO 01	Local Port	ections(C NO) 01-1 Node IP Addre 192.168.001.002	0 can be set 1 ss Node Port 10001	Connect Type TCP	automatically. Protocol Type Extended MEMOBUS	- BIN	▼ Setting*		Node 1	Name _
Message Commun Easy setting C NO 01 02	Local Port	ections(C NO) 01-1 Node IP Addre	0 can be set 1 ss Node Port 10001	Connect Type TCP	automatically. Protocol Type	- BIN	 ✓ Setting* ✓ Setting* 		Node 1	Name
Message Commun Easy setting C NO 01 02 03	Local Port 10001 10002	ections(C NO) 01-1 Node IP Addre 192.168.001.002	0 can be set 1 ss Node Port 10001	Connect Type TCP	automatically. Protocol Type Extended MEMOBUS	- BIN	 ✓ Setting* ✓ Setting* ✓ Setting* 		Node 1	Name
Message Commun Easy setting C NO 01 02 03 04	Local Port 10001 10002	ections(C NO) 01-1 Node IP Addre 192.168.001.002	0 can be set 1 ss Node Port 10001	Connect Type TCP	automatically. Protocol Type Extended MEMOBUS	- BIN	 ✓ Setting* ✓ Setting* ✓ Setting* ✓ Setting* 		Node 1	Name
Message Commun Easy setting 01 02 03 04 05	Local Port 10001 10002	ections(C NO) 01-1 Node IP Addre 192.168.001.002	0 can be set t ss Node Port 10001	Connect Type TCP TCP	automatically. Protocol Type Extended MEMOBUS	- BIN	 Setting* Setting* Setting* Setting* Setting* Setting* 		Node 1	Name
Message Commun Easy setting C NO 01 02 03 04	Local Port 10001 	ections(C NO) 01-1 Node IP Addre 192.168.001.002	0 can be set t ss Node Port 10001	Connect Type TCP	automatically. Protocol Type Extended MEMOBUS	- BIN	 ✓ Setting* ✓ Setting* ✓ Setting* ✓ Setting* 		Node 1	Name 🔺

Options (PARAM11)

Set the communications medium or protocol-specific function.

Function Code (PARAM12)

Set the function code to send.

You can use the functions that are registered to the function codes.

Function codes that can be used depend on the communications medium or protocol.

Function Target		Function	Registers When Acting as the Master		
Code Type		Send Registers	Receive Registers		
00 hex	-	Not used			
01 hex	В	Reads the states of coils.			
02 hex	В	Reads the states of input relays.			
03 hex	W	Reads the contents of hold registers.			
04 hex	W	Reads the contents of input registers.			
05 hex	В	Changes the state of a single coil.			
06 hex	W	Writes to a single hold register.	M		
07 hex	-	Not used			
08 hex	-	Performs a loopback test.			
09 hex	W	Reads the contents of hold registers (extended).		Μ	
0A hex	W	Reads the contents of input registers (extended).			
0B hex	W	Writes to hold registers (extended).			
0C hex	-	Not used			
0D hex	W	Reads the contents of non-consecutive hold registers (extended).			
0E hex	W	Writes the contents of non-consecutive hold registers (extended).			
0F hex	В	Changes the states of multiple coils.	-		
10 hex	W	Writes to multiple hold registers.			
4341 hex	В	Reads the states of bits.		Mario	
4345 hex	В	Changes the state of a single bit.			
4346 hex	W	Writes to a single register.			
4349 hex	W	Reads the contents of registers.			
434B hex	W	Writes to multiple registers.	S, M, G, I, or O	M or G	
434D hex	W	Reads the contents of non-consecutive registers.			
434E hex	W	Writes the contents of non-consecutive registers.			
434F hex	В	Changes the states of multiple bits.]		

Note: B: Bit data, W: Integer data

Reserved for System (PARAM13)

This parameter is used by the system.

Information Do not change the value of PARAM13 from a user program or by any other means.

Remote Station Data Address (PARAM14 and PARAM15)

Set the first address for data in the remote station.

Enter the first address as a decimal or hexadecimal number.

Example If the first address is MW01000, enter "1000" (decimal) or "3E8" (hexadecimal).

Function Code	Target Data Type	Function	Data Address Setting Range
00 hex	_	Not used	Disabled.
01 hex	В	Reads the states of coils. *1	0 to 65535 (0 to FFFF hex)
02 hex	В	Reads the states of input relays. *1	0 to 65535 (0 to FFFF hex)
03 hex	W	Reads the contents of hold registers. *2	0 to 65534 (0 to FFFE hex)
04 hex	W	Reads the contents of input registers. *2	0 to 65535 (0 to FFFF hex)
05 hex	В	Changes the state of a single coil. *1	0 to 65535 (0 to FFFF hex)
06 hex	W	Writes to a single hold register. *2	0 to 65534 (0 to FFFE hex)
07 hex	-	Not used	Disabled.
08 hex	-	Performs a loopback test.	Disabled.
09 hex	W	Reads the contents of hold registers (extended). *2	0 to 65534 (0 to FFFE hex)
0A hex	W	Reads the contents of input registers (extended). *2	0 to 65535 (0 to FFFF hex)
0B hex	W	Writes to hold registers (extended). *2	0 to 65534 (0 to FFFE hex)
0C hex	_	Not used	Disabled.
0D hex	W	Reads the contents of non-consecutive hold registers (extended). *3	0 to 65534 (0 to FFFE hex)
0E hex	W	Writes the contents of non-consecutive hold registers (extended). *3 0 to 65534 (0 to FFF	
0F hex	В	Changes the states of multiple coils. *1	0 to 65535 (0 to FFFF hex)
10 hex	W	Writes to multiple hold registers. *2	0 to 65534 (0 to FFFE hex)
4341 hex	В	Reads the states of bits. *1	
4345 hex	В	Changes the state of a single bit. *1	
4346 hex	W	Writes to a single register. *2	0 to 4294967295
4349 hex	W	Reads the contents of registers. *2	(0 to FFFFFFF hex)
434B hex	W	Writes to multiple registers. *2 Adjust the address to remote device's add	
434D hex	W	Reads the contents of non-consecutive registers. *3 range.	
434E hex	W	Writes the contents of non-consecutive registers. *3	
434F hex	В	Changes the states of multiple bits. *1	

*1. Coil or input relay read/write requests: Enter the address of the first bit of the data.

*2. Continuous register read/write requests: Enter the address of the first word of the data.

*3. Non-consecutive register read/write requests: Enter the address of the first M register of the address table.

Remote Station Register Type (PARAM16)

Set the register type in the remote station. This parameter is valid when using function codes $43\square\square$ hex.

Register Type Value	Туре	Remarks
0	М	Sets the target data type to MB for bits and MW for words.
1	G	Sets the target data type to GB for bits and GW for words.
2	I	Sets the target data type to IB for bits and IW for words.
3	0	Sets the target data type to OB for bits and OW for words.
4	S	Sets the target data type to SB for bits and SW for words.
5 or higher	-	Not used

The register types that can be used depend on whether you are reading or writing. The following table lists the combinations of register types.

Function Code	Applicable Register Types
01, 02, 03, 04, 05, 06, 09, 0A, 0B, 0D, 0E, 0F, 10, 31, 32, or 33 hex	The data type is not valid. The remote station register is determined by the function code.
4341 or 4349 hex	The contents of the M, G, I, O, and S registers in the remote station can be read.
4345, 4346, 434B, or 434F hex	The contents of the M, G, O, and S registers in the remote station can be written.
434D hex*	The address table at the remote station can be stored in M and G registers in the local station.
434E hex*	The address table at the remote station can be stored in M and G registers in the local station.
No-protocol communications (No function code)	The data type is not valid. The remote station writes to the M registers.

* The address table at the remote station is stored in registers in the local station. The contents of the M, G, I, O, and S registers in the remote station can be read by specifying the register type in the address table at the remote station.

◆ Data Size (PARAM17)

Set the data size for the read/write request as the number of bits or words.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and data area.

Function Code	Target Data Type	Function	Data Size Setting Range
00 hex	_	Not used	Disabled.
01 hex	В	Reads the states of coils.	1 to 2000
02 hex	В	Reads the states of input relays.	1 to 2000
03 hex	W	Reads the contents of hold registers.	1 to 125
04 hex	W	Reads the contents of input registers	1 to 125
05 hex	В	Changes the state of a single coil.	Disabled.
06 hex	W	Writes to a single hold register.	Disabled.
07 hex	-	Not used	Disabled.
08 hex	-	Performs a loopback test.	Disabled.
09 hex	W	Reads the contents of hold registers (extended).	1 to 2044 (BIN) 1 to 1020 (ASCII)
0A hex	W	Reads the contents of input registers (extended).	1 to 2044 (BIN) 1 to 1020 (ASCII)
0B hex	W	Writes to hold registers (extended).	1 to 2043 (BIN) 1 to 1019 (ASCII)
-		·	Continued on payt page

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Continued from previous page.

Function Code	Target Data Type	Function	Data Size Setting Range	
0C hex	-	Not used	Disabled.	
0D hex	W	Reads the contents of non-consecutive hold registers (extended).	1 to 2044 (BIN) 1 to 1020 (ASCII)	
0E hex	W	Writes the contents of non-consecutive hold registers (extended).	1 to 1022 (BIN) 1 to 510 (ASCII)	
0F hex	В	Changes the states of multiple coils.	1 to 800	
10 hex	W	Writes to multiple hold registers. 1 to 100		
4341 hex	В	Reads the states of bits. 1 to 32704		
4345 hex	В	Changes the state of a single bit. Disabled.		
4346 hex	W	Writes to a single register.	Disabled.	
4349 hex	W	Reads the contents of registers. 1 to 2044		
434B hex	W	Writes to multiple registers. 1 to 2041		
434D hex	W	Reads the contents of non-consecutive registers. 1 to 681		
434E hex	W	Writes the contents of non-consecutive registers. 1 to 511		
434F hex	В	Changes the states of multiple bits. 1 to 32640		

Note: 1. The data sizes in the table are in decimal notation.

2. B: Bit data, W: Integer data

Remote CPU Module Number (PARAM18)

Set the CPU Module number at the remote station.

Specify 1 if the remote device is an MP2000/MP3000-series Controller.

If the remote device is a Yaskawa Controller that is not part of the MP2000/MP3000-series and it is comprised of multiple CPU Modules, specify the destination CPU Module number. For all other devices, specify 0.

Reserved for System (PARAM19)

This parameter is used by the system.

Information Do not change the value of PARAM19 from a user program or by any other means.

Local Station Data Address (PARAM20 and PARAM21)

Set the address of the read data destination or write data source in the MP3000. The address is set as the word offset from address 0.

Function Code	Target Data Type	Function	Data Address Setting Range		
00 hex	-	Not used			
01 hex	В	Reads the states of coils.*1			
02 hex	В	Reads the states of input relays.*1			
03 hex	W	Reads the contents of hold registers.*2			
04 hex	W	Reads the contents of input registers.*2			
05 hex	В	Changes the state of a single coil.*1			
06 hex	W	Writes to a single hold register.*2			
07 hex	-	Not used			
08 hex	_	Performs a loopback test.			
09 hex	W	Reads the contents of hold registers (extended).*2			
0A hex	W	Reads the contents of input registers (extended).*2			
0B hex	W	Writes to hold registers (extended).*2			
0C hex	-	Not used	0 to 4294967295		
0D hex	W	Reads the contents of non-consecutive hold registers (extended). ^{*3}	(0 to FFFFFFF hex)		
0E hex	W	Writes the contents of non-consecutive hold registers (extended). ^{*3}	Specify the address within the address range of the registers specified in Local Station		
0F hex	В	Changes the states of multiple coils.*1	Register Type (PARAM22).		
10 hex	W	Writes to multiple hold registers.*2			
31 hex	W	Fixed buffer communications ^{*2}			
32 hex	W	Random access buffer communications (read)*2			
33 hex	W	Random access buffer communications (write) ^{*2}			
4341 hex	В	Reads the states of bits.*1			
4345 hex	В	Changes the state of a single bit.*1			
4346 hex	W	Writes to a single register. ^{*2}			
4349 hex	W	Reads the contents of registers. ^{*2}			
434B hex	W	Writes to multiple registers.*2			
434D hex	W	Reads the contents of non-consecutive registers.*4			
434E hex	W	Writes the contents of non-consecutive registers.*5			
434F hex	В	Changes the states of multiple bits.*1			

*1. Coil or input relay read/write requests: Enter the address of the first bit of the data.

*2. Continuous register read/write requests: Enter the address of the first word of the data.

*3. Non-consecutive register read/write requests: Enter the offset address of the local station storage destination.

*4. Non-consecutive register read: Enter the address of the first word of the local station storage destination.

*5. Non-consecutive register write: Enter the first address of the local station address table that contains the storage destination of the write data.

Local Station Register Type (PARAM22)

Set the register type of the read data destination or write data source in the MP3000.

Register Type Value	Туре	Remarks	
0	М	Sets the target data type to MB for bits and MW for words.	
1	G	Sets the target data type to GB for bits and GW for words.	
2	I	Sets the target data type to IB for bits and IW for words.	
3	0	Sets the target data type to OB for bits and OW for words.	
4	S	Sets the target data type to SB for bits and SW for words.	
5 or higher	-	Not used for the Extended MEMOBUS protocol.	

The register types that can be used depend on whether you are reading or writing. The following table lists the combinations of register types.

Function Code	Applicable Register Types
01, 02, 03, 04, 09, or 0A hex	The data that was read can be stored in M, G, and O registers in the local station.
05, 06, 0B, 0F, or 10 hex	The data stored in M, G, I, O, and S registers in the local station can be read and written to the remote station.
0D hex	The local station data type is not valid. The read data is stored in M registers.
0E hex	The local station data type is not valid. The data stored in M registers can be read and written to the remote station.
4341 or 4349 hex	The data that was read can be stored in M, G, and O registers in the local station.
4345, 4346, 434B, or 434F hex	The data stored in M, G, I, O, and S registers in the local station can be read and written to the remote station.
434D hex	The data that was read can be stored in M and G registers in the local sta- tion.
434E hex*	The data address table to write can be stored in M and G registers in the local station.
No-protocol communications (No function code)	The data stored in M, G, I, O, and S registers in the local station can be read and written to the remote station.

* You can store the write data address table in registers in the local station. The data stored in the M, G, I, O, and S registers in the local station can be read from or written to the remote station by specifying the register type in the write data address table.

Reserved for System (PARAM23)

This parameter is used by the system.

Information Do not change the value of PARAM23 from a user program or by any other means.

Reserved for System (PARAM24)

This parameter is used by the system. It contains the channel number of the communications buffer that is currently in use.

Information A user program must set PARAM24 to 0 on the first scan after startup. Thereafter, do not change the value of PARAM24 from a user program or by any other means. PARAM24 will be used by the system.

Reserved for System (PARAM25 to PARAM28)

These parameters are used by the system.

Information Do not change the value of PARAM25 to PARAM28 from a user program or by any other means.

2.3.2 MSG-RCVE Function

This function is the same as the MSG-RCV function, but it supports the extended registers in the MP3000 and access (R/W) to those extended registers.

Inputs and Outputs for the MSG-RCVE Function

Function Name	MSG-RCVE			
Function	Receives a message from a remote station on the specified circuit of the communications device type. This function can be used with various protocols.			
Function Definition				MSG-RCVE Execute [B] Busy ? ? Abort [B] Complete ? ? PourTyp [B] Error ? ? Pro-Typ ? Cir-No ? Param ?
I/O Definitions	No.	Name	I/O Designation	Meaning
	1	Execute	B-VAL	Executes the reception.
	2	Abort	B-VAL	Forces the reception to end.
	3	Dev-Typ	I-REG	Communications device type RS232C/422/485 (217IF) = 5, Ethernet (218IF) = 6, Ethernet (218IFB, 218IFD) = 16
Input Items	4	Pro-Typ	I-REG	Communications protocol MEMOBUS = 1, No-protocol communications 1 = 2, No-protocol communications 2 = 3
	5	Cir-No	I-REG	Circuit number RS232C/422/485 (217IF) = 1 to 16, Ethernet (218IF) = 1 to 8, Ethernet (218IFB, 218IFD) = 1 to 8
	6	Ch-No	I-REG	Communications buffer channel number RS232C/422/485 (217IF) = 1, Ethernet (218IF) = 1 to 10, Ethernet (218IFB, 218IFD) = 1 to 10
	7	Param	Address input	First address of parameter list (MA, DA)
	1	Busy	B-VAL	Processing.
Output Items	2	Complete	B-VAL	Process completed.
	3	Error	B-VAL	Error occurred.

♦ Execute

Specify the bit to use to execute the message reception.

When the Execute Bit turns ON, the message will be received.

Abort

Specify the bit to use to abort the message reception.

When the Abort Bit turns ON, the message reception will be stopped unconditionally. The Abort Bit takes precedence over the Execute Bit.

Dev-Typ (Communications Device Type)

Specify the type code of the communications device.

Device	Type Code
RS232C/422/485 (217IF)	5
Ethernet (218IF)	6
Ethernet (218IFB, 218IFD)	16

Pro-Typ (Communications Protocol)

Specify the type code of the communications protocol.

Type Code	Communications Protocols	Remarks
1	MEMOBUS	Select this type code when using the MEMOBUS message commu- nications method. MEMOBUS is automatically converted to the var- ious communications protocols inside the 218IFD.
2	No-protocol communica- tions 1 (unit: words)	This type code is not used with the MEMOBUS message communi- cations method.
3	No-protocol communica- tions 2 (unit: bytes)	This type code is not used with the MEMOBUS message communi- cations method.

◆ Cir-No (Circuit Number)

Specify the circuit number for the communications device.

Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page.

02 218IFD	Ľ	 **	Circuit No1	1		Input	0000 - 07FF[H]	2048
03 🕀 SVC32	Ľ	 -	Circuit No1	1	8000 - 87FF[H]	Input OutPut	0800 - 0BFF[H]	1024
04		 -	Circuit No3	1	9000 - 97FF[H]			

The following table gives the valid circuit numbers.

Communications Device	Valid Circuit Numbers
RS232C/422/485 (217IF)	1 to 16
Ethernet (218IF)	1 to 8
Ethernet (218IFB, 218IFD)	1 to 8

Ch-No (Communications Buffer Channel Number)

Specify the channel number of the communications buffer.

You can specify any channel number provided it is within the valid range.

When executing more than one function at the same time, do not use the same channel Information number for the same connection. You can use the same channel number as long as multiple functions are not executed at the same time.

The following table gives the valid channel numbers.

Communications Device	Valid Channel Numbers
RS232C/422/485 (217IF)	1
Ethernet (218IF)	1 to 10
Ethernet (218IFB, 218IFD)	1 to 10

If the communications device is the 218IFD, there are 10 channels of communications buffers available for both transmission and reception. Therefore, 10 connections may be used for sending and receiving at the same time by using channels 1 to 10.

Information

There must be as many MSG-RCVE or MSG-SNDE functions as the number of connections used at the same time.

Param (First Address of Parameter List)

Specify the first address of the parameter list.

A total of 52 words starting from the specified first word are automatically used for the parameter list. The parameter list is used by inputting the connection number and relevant parameter data. It is also where the process results and status are output.

Example A parameter list with the first address set to DA00000 is shown below.

DW00000 PARAM00 DW00001 PARAM01 DW00002 PARAM02 DW00003 PARAM03	
DW00002 PARAM02	
DW00003 PARAM03	
DW00004 PARAM04	
DW00005 PARAM05	
DW00006 PARAM06	
DW00007 PARAM07	
DW00046 PARAM46	
DW00047 PARAM47	
DW00048 PARAM48	
DW00049 PARAM49	
DW00050 PARAM50	
DW00051 PARAM51	

Busy

Specify the bit that shows that the message reception is in progress. The Busy Bit is ON while a message reception or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.

♦ Complete

Specify the bit that shows when the message reception has been completed.

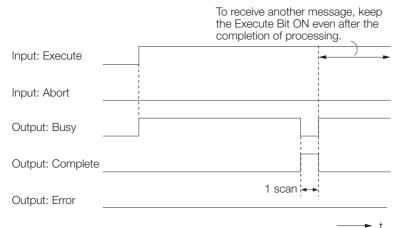
The Complete Bit turns ON only for one scan when message reception or forced abort processing has been completed normally.

Error

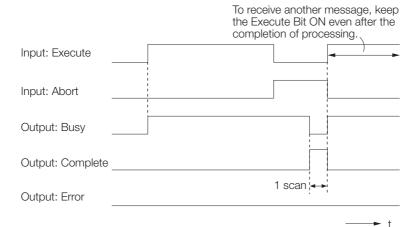
Specify the bit that shows if an error occurred when receiving the message. When an error occurs, the Error Bit will turn ON only for one scan.

The following diagrams show timing charts for the bit I/O items in the MSG-RCVE function.

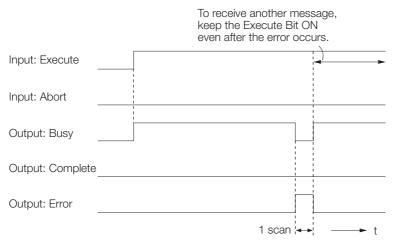
Normal Execution



• When Execution Is Aborted



• Execution When an Error Occurs



MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description		
00		Processing Result	Gives the processing status.		
01		Status	Gives the status of the current function.		
02		Detail Error Code, Lower Word			
03		Detail Error Code, Upper Word			
04	Out-	Status 1			
05	puts	Status 2	The content that is given depends on the communica- tions medium.		
06		Status 3			
07		Status 4			
08		Status 5	-		
09		Status 6			
10	_	Connection Number	Specifies the remote station.		
11	I/O	Option	Optional function. The content depends on the com- munications medium or protocol.		
12	Out- puts	Function Code	Gives the function associated with reading or writing that was received from the remote station as the func- tion code.		
13	I/O	Reserved for system.	_		
14	_	Data Address, Lower Word	Gives the first address of the data that was requested		
15	_	Data Address, Upper Word	by the remote station.		
16	Out- puts	Register Type	Gives the register type that was requested by the remote station.		
17		Data Size	Gives the data size that was requested by the remote station.		
18		Remote CPU Module Number	Not used		
19	I/O	Reserved for system.	-		
20		Coil Offset, Lower Word	- Sets the offset word address for a coil (MB).		
21	_	Coil Offset, Upper Word			
22	_	Input Relay Offset, Lower Word	- Sets the offset word address for an input relay (IB).		
23	_	Input Relay Offset, Upper Word			
24	_	Input Register Offset, Lower Word	Sets the offset word address for an input register (IW).		
25	_	Input Register Offset, Upper Word			
26		Hold Register Offset, Lower Word	- Sets the offset word address for a hold register (MW).		
27	_	Hold Register Offset, Upper Word			
28	-	Data Relay Offset, Lower Word	- Sets the offset word address for a data relay (GB).		
29	-	Data Relay Offset, Upper Word			
30	Innuta	Data Register Offset, Lower Word	Sets the offset word address for a data register (GW).		
31	Inputs	Data Register Offset, Upper Word			
32	-	Output Coil Offset, Lower Word	Sets the offset word address for an output coil (OB).		
33 34	-	Output Coil Offset, Upper Word			
34	-	Output Register Offset, Lower Word Output Register Offset, Upper Word	- Sets the offset address for an output register (OW).		
35 36	_	M Register Writing Range LO, Lower Word			
37	_	M Register Writing Range LO, Upper Word	Sets the first address of the writing range for hold reg- ister coils.		
38	_	M Register Writing Range HI, Lower Word	Cate the last address of the uniting reason for hold or		
39	-	M Register Writing Range HI, Upper Word	Sets the last address of the writing range for hold reg- ister coils.		
	1	11.7 7 7	Continued on payt page		

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I/O	Meaning	Description		
	G Register Writing Range LO, Lower Word	Sets the first address of the writing range for data reg-		
	G Register Writing Range LO, Upper Word	ister data relays.		
	G Register Writing Range HI, Lower Word	Sets the last address of the writing range for data reg-		
Inpute	G Register Writing Range HI, Upper Word	ister data relays.		
inputs	O Register Writing Range LO, Lower Word	Sets the first address of the writing range for output		
·	O Register Writing Range LO, Upper Word	registers.		
	O Register Writing Range HI, Lower Word	Sets the last address of the writing range for output		
·	O Register Writing Range HI, Upper Word	registers.		
	For system use	_		
	Reserved for system.	_		
-	Reserved for system.	-		
	Reserved for system.	_		
	Inputs	G Register Writing Range LO, Lower Word G Register Writing Range LO, Upper Word G Register Writing Range HI, Lower Word G Register Writing Range HI, Upper Word O Register Writing Range LO, Lower Word O Register Writing Range LO, Upper Word O Register Writing Range HI, Lower Word O Register Writing Range HI, Lower Word O Register Writing Range HI, Lower Word For system use Reserved for system. Reserved for system.		

Processing Result (PARAM00)

This parameter gives the processing result.

Processing Result Value	Meaning
0000 hex	Busy
1000 hex	Complete
8y □□ hex	Error

Note: The lower byte is used for system analysis.

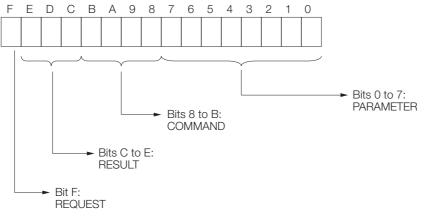
Refer to the following section for details on errors.

■ Detail Error Code (PARAM02 and PARAM03) on page 2-27

♦ Status (PARAM01)

This parameter gives the status of the communications device.

The following figure shows the bit assignments and it is followed by a detailed description of each assignment.



REQUEST

This bit gives the status of the processing request for the MSG-RCVE function.

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

RESULT

These bits give the execution result of the MSG-RCVE function.

Code	Abbreviation	Meaning
0	CONN_NG	The message send failed or connection ended with an error in Ethernet communications.
1	SEND_OK	The message was sent normally.
2	REC_OK	The message was received normally.
3	ABORT_OK	The request to abort execution was completed.
4	FMT_NG	A parameter formatting error occurred.
5	SEQ_NG	A command sequence error occurred.
6	RESET_NG	A reset occurred.
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.

COMMAND

These bits indicate the processing command of the MSG-RCVE function.

Code (Hex)	Abbreviation	Meaning	
1	U_SEND	General-purpose message transmission (for no-protocol commu- nications)	
2	U_REC	General-purpose message reception (for no-protocol communications)	
3	ABORT	Forced abort	
8	M_SEND	MEMOBUS command transmission: Completed when response is received.	
9	M_REC*	MEMOBUS command reception	
С	MR_SEND*	MEMOBUS response transmission	

* MR_SEND is executed after M_REC is executed.

PARAMETER

When RESULT = 4 (FMT_NG: parameter formatting error), these bits will indicate an error code from the following table. For any other value, the bits will contain the connection number.

RESULT	Code (Hex)	Meaning
	00	No error
	01	Connection number out of range
	02	Watchdog error for MEMOBUS response
When $RESULT = 4$	03	Error in number of retries setting
(FMT_NG: Parameter	04	Error in cyclic area setting
Formatting Error)	05	CPU number error
	06	Data address error
	07	Data size error
	08	Function code error
Others		Connection number

◆ Detail Error Code (PARAM02 and PARAM03)

These parameters give the detail error code.

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
8100 hex	1	Function code error	An unused function code was received. Check the function code of the remote station
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Data Address) PARAM20 and PARAM21 (Coil Offset) PARAM26 and PARAM27 (Hold Register Offset)
8300 hex	3	Data size error	The data size for receiving is out of range. Check the data size at the remote station.
8400 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-RCVE function.
85 00 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch- No) in the MSG-RCVE function.
8600 hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
	7	Data reception error	An error response was received from the communica-
88 00 hex	8	Data sending error	tions device. Check the connections to the device. Also check to see
	10 hex	Connection error	if the remote device is ready to communicate.
89 00 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-RCVE function.
C000 hex	40 hex	Register type error	The register type specified by the sending node is out of range. Check the remote station register type setting at the sending node.
C100 hex	41 hex	Data type error	The data type is out of range. Check the remote station address table at the sending node. (This error occurs when using function code 434D hex or 434E hex.)

Status 1 (PARAM04)

This parameter gives status information.

This parameter can be used only if the communications device is 218IFD.

Status 1 Value	Meaning	Description
1	IDLE	The connection is idle.
2	WAIT	The connection is waiting to be made.
3	CONNECT	The connection is established.
_	-	-

Status 2 (PARAM05)

This parameter gives information on the most recent error.

This parameter can be used only if the communications device is 218IFD.

Status 2 Value	Meaning	Description
0	No error	Normal
1	Socket creation error	A socket could not be created.
2	Local port number error	Setting error in local station port number
3	Changing socket attribute error	A system error occurred while setting the socket attribute.
4	Connection error	M-SND: The remote station rejected an attempt to open a TCP connection.
5	Connection error	M-RCV: An error occurred while passively opening a TCP connection.
6	System error	A socket polling error occurred while receiving data.
7	TCP data send error	The remote station does not exist.
8	UDP data send error	The data send request command was sent to a socket that does not exist.
9	TCP data receive error	A disconnection request was received from the remote station.
10	UDP data receive error	A data receive request was executed for a socket that does not exist.
11	Changing socket option error	A system error occurred while changing the socket options.
12	Data conversion error	Error in protocol conversion

Status 3 (PARAM06)

This parameter gives the value of the send pass counter.

This parameter can be used only if the communications device is 218IFD.

Status 3 Value	Meaning	Description
0 to 65535	Send count	Counts the number of times a message was sent.

Status 4 (PARAM07)

This parameter gives the value of the receive pass counter.

This parameter can be used only if the communications device is 218IFD.

Status 4 Value	Meaning	Description
0 to 65535	Receive count	Counts the number of times a message was received.

Status 5 (PARAM08)

This parameter gives the value of the error counter.

This parameter can be used only if the communications device is 218IFD.

Status 5 Value	Meaning	Description
0 to 65535	Error count	Counts the number of errors that occurred during message processing.

Status 6 (PARAM09)

This parameter gives status information about the Communications Module.

The status content depends on the communications medium. This parameter cannot be used with the 218IFD communications device.

Connection Number (PARAM10)

Specify the remote station.

If the communications device is the Ethernet, enter the connection number.

If the communications device is a serial device, the station number is output.

The valid setting range is given in the following table.

Communications Device	Connection Number	Remarks
Serial (217IF)	0 to 63	Gives the remote station number specified by the source.
Ethernet (218IF, 218IFB, 218IFD)	1 to 20	Receives the message from the remote station set by the speci- fied connection number.

Note: Enter the same connection number as displayed in the Detail Definition Dialog Box for communications device in the MPE720.

4: 1 CPU#: 1													JCIR#01	100000-	-007FF	
ansmission Parar	neters Stat	us														
Transmission Pa	rameters —															
IP Address		: 192	÷.	168	÷.	1 🔆	1	÷ (0-255)	Module Name Equipment na		_	NTROLLER NA	ME	_		
Subnet Masł	<	: 255	÷.	255		255 🚊	0	(0-255)			,					
Gateway IP A	Address	: 0	Ξ.	0		0 🗄	0	÷ (0-255)	Detail Defi	nition						
Connection Para Message Comr Easy settin	nunication -	llowing pa	rameter 10) 01-	rs for i 10 car	messag ibe set	e commur to receiv	icatio e data	ns can be easily se automatically.	ət.							
Message Comr	nunication -	llowing pa ctions(C M Node II			messaø be set Node Port	Conr	nect	ns can be easily se a automatically. Prote Typ	ocol	Code	,	Detail			Node N	ame 🔺
Message Comr Easy settin	nunication Ihe fo Conne		P Addre	ess	Node		nect De	Prote	ocol De	Code	•	Detail Setting*			Node N	ame
Message Comr Easy settin CNO	nunication Ihe fo Conne Local Port	Node I	P Addre	ess 2	Node Port	Conr Ty TCP	nect De	Proto	ocol oe IBUS _	BIN					Node N	ame
Message Comr Easy settin CNO 01	nunication Ihe fo © Conne Local Port 10001	Node II 192.168.0	P Addre	ess 2	Node Port 10001	Conr Ty TCP	nect De	Proto Typ Extended MEMC	ocol oe IBUS _	BIN	•	Setting*			Node N	ame
Message Comr Easy settin C NO 01 02 03 04	nunication Ihe fo Conne Local Port 10001 10002	Node II 192.168.0	P Addre	ess 2	Node Port 10001	Conr Ty TCP	nect De	Proto Typ Extended MEMC	ocol oe IBUS _	BIN	* * * *	Setting* Setting* Setting* Setting*			Node N	ame
Message Comr Easy settin C NO 01 02 03 04 05	nunication Ihe fo Conne Port 10001 10002	Node II 192.168.0	P Addre	ess 2	Node Port 10001	Conr Ty TCP	ect ve	Proto Tyl Extended MEMC MELSEC (QnA C	ocol oe IBUS _	BIN	* * * *	Setting* Setting* Setting* Setting* Setting*			Node N	ame
Message Comr Easy settin C NO 01 02 03 04	nunication Ihe fo Conne Local Port 10001 	Node II 192.168.0	P Addre	ess 2	Node Port 10001	Conr Ty TCP	nect De •	Prot Tyr Extended MEMC MELSEC (QnA C	ocol oe IBUS _	BIN	* * * *	Setting* Setting* Setting* Setting*			Node N	ame

Options (PARAM11)

Set the communications medium or protocol-specific function.

◆ Function Code (PARAM12)

This parameter gives the function code that was received.

Function	Target Data	Function	Registers Wh the M	-
Code	Туре	Function	Send Registers	Receive Registers
00 hex	-	Not used		
01 hex	В	Reads the states of coils.		
02 hex	В	Reads the states of input relays.		
03 hex	W	Reads the contents of hold registers.		
04 hex	W	Reads the contents of input registers.		
05 hex	В	Changes the state of a single coil.		
06 hex	W	Writes to a single hold register.		
07 hex	-	Not used		
08 hex	-	Performs a loopback test.		
09 hex	W	Reads the contents of hold registers (extended).	M	М
0A hex	W	Reads the contents of input registers (extended).		
0B hex	W	Writes to hold registers (extended).		
0C hex	-	Not used		
0D hex	W	Reads the contents of non-consecutive hold registers (extended).		
0E hex	W	Writes the contents of non-consecutive hold registers (extended).		
0F hex	В	Changes the states of multiple coils.		
10 hex	W	Writes to multiple hold registers.		

Continued on next page.

			onunued from p	revious page.
Function	Target Data	Function	Registers Wh the M	-
Code	Type	Function	Send	Receive
	Type		Registers	Registers
4341 hex	В	Reads the states of bits.		
4345 hex	В	Changes the state of a single bit.		
4346 hex	W	Writes to a single register.		
4349 hex	W	Reads the contents of registers.	S, M, G, I, or	M or G
434B hex	W	Writes to multiple registers.	0	IVI OF G
434D hex	W	Reads the contents of non-consecutive registers.		
434E hex	W	Writes the contents of non-consecutive registers.		
434F hex	В	Changes the states of multiple bits.		

Continued from previous page.

Note: B: Bit data, W: Integer data

Reserved for System (PARAM13)

This parameter is used by the system.

Information Do not change the value of PARAM13 from a user program or by any other means.

Data Address (PARAM14 and PARAM15)

These parameters give the data address that was requested by the remote station.

For function codes 01 to 10 hex, the requested address is the word size address indicated only by PARAM14. If the function code is 43 hex, the requested address is the long-word size address given by PARAM14 and PARAM15.

Function Code	Target Data Type	Function	Data Address Request Range
00 hex	_	Not used	Disabled.
01 hex	В	Reads the states of coils. *1	0 to 65535 (0 to FFFF hex)
02 hex	В	Reads the states of input relays. *1	0 to 65535 (0 to FFFF hex)
03 hex	W	Reads the contents of hold registers. *2	0 to 65534 (0 to FFFE hex)
04 hex	W	Reads the contents of input registers. *2	0 to 65535 (0 to FFFF hex)
05 hex	В	Changes the state of a single coil. *1	0 to 65535 (0 to FFFF hex)
06 hex	W	Writes to a single hold register. *2	0 to 65534 (0 to FFFE hex)
07 hex	_	Not used	Disabled.
08 hex	-	Performs a loopback test.	Disabled.
09 hex	W	Reads the contents of hold registers (extended). *2	0 to 65534 (0 to FFFE hex)
0A hex	W	Reads the contents of input registers (extended). *2	0 to 65535 (0 to FFFF hex)
0B hex	W	Writes to hold registers (extended). *2	0 to 65534 (0 to FFFE hex)
0C hex	-	Not used	Disabled.
0D hex	W	Reads the contents of non-consecutive hold registers (extended). *3	0 to 65534 (0 to FFFE hex)
0E hex	W	Writes the contents of non-consecutive hold registers (extended). *3	0 to 65534 (0 to FFFE hex)
0F hex	В	Changes the states of multiple coils. *1	0 to 65535 (0 to FFFF hex)
10 hex	W	Writes to multiple hold registers. *2	0 to 65534 (0 to FFFE hex)
			Continued on next name

Continued on next page.

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Function Code	Target Data Type	Function	Data Address Request Range		
4341 hex	В	Reads the states of bits. *1			
4345 hex	В	Changes the state of a single bit. *1			
4346 hex	W	Writes to a single register. *2	0 to 4294967295		
4349 hex	W	Reads the contents of registers. *2	(0 to FFFFFFF hex)		
434B hex	W	Writes to multiple registers. *2	Adjust the address to the remote device's address		
434D hex	W	Reads the contents of non-consecutive registers. *3	range.		
434E hex	W	Writes the contents of non-consecutive registers. *3			
434F hex	В	Changes the states of multiple bits. *1			

*1. Coil or input relay read/write requests: Enter the address of the first bit of the data.

*2. Continuous register read/write requests: Enter the address of the first word of the data.

*3. Non-consecutive register read/write requests: Enter the address of the first M register of the address table.

Register Type (PARAM16)

This parameter gives the register type that was requested by the remote station.

This parameter is valid when using function codes 43 hex only. The target register type is defined for each function code from 01 to 10 hex.

Register Type Value	Туре	Remarks
0	М	Sets the target data type to MB for bits and MW for words.
1	G	Sets the target data type to GB for bits and GW for words.
2	I	Sets the target data type to IB for bits and IW for words.
3	0	Sets the target data type to OB for bits and OW for words.
4	S	Sets the target data type to SB for bits and SW for words.
5 or higher	-	Not used for the Extended MEMOBUS protocol.

Data Size (PARAM17)

This parameter gives the data size as the number of bits or words for read/write requests from the remote station.

Remote CPU Module Number (PARAM18)

This parameter gives 1 if the remote device is an MP2000/MP3000-series device.

This parameter indicates the remote CPU Module number if the remote device is a Yaskawa Controller that is not a part of the MP2000/MP3000-series and it is comprised of multiple CPU Modules.

A 0 will be given for all other devices.

Reserved for System (PARAM19)

This parameter is used by the system.

Information Do not change the value of PARAM19 from a user program or by any other means.

Coil Offset (PARAM20 and PARAM21)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address back by the number of words specified by the offset. The data address cannot be offset in the forward direction.

The Coil Offset parameter is used when the function code is 01, 05, 0F, 4341, 4345, or 434F hex. The address is offset by the long-word offset in PARAM20 and PARAM21.

Input Relay Offset (PARAM22 and PARAM23)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address back by the number of words specified by the offset. The data address cannot be offset in the forward direction.

The Input Relay Offset parameter is used when the function code is 02 or 4341 hex. The address is offset by the long-word offset in PARAM22 and PARAM23.

Input Register Offset (PARAM24 and PARAM25)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address back by the number of words specified by the offset. The data address cannot be offset in the forward direction.

The Input Register Offset parameter is used when the function code is 04, 0A, 4346, 4349, 434D, or 434E hex. The address is offset by the long-word offset in PARAM24 and PARAM25.

◆ Hold Register Offset (PARAM26 and PARAM27)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address back by the number of words specified by the offset. The data address cannot be offset in the forward direction.

The Hold Register Offset parameter is used when the function code is 03, 06, 09, 0B, 0D, 0E, 10, 4346, 4349, 434B, 434D, or 434E hex. The address is offset by the long-word offset in PARAM26 and PARAM27.

Data Relay Offset (PARAM28 and PARAM29)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address back by the number of words specified by the offset. The data address cannot be offset in the forward direction.

The Data Relay Offset parameter is used when the function code is 4341, 4345, or 434F hex. The address is offset by the long-word offset in PARAM28 and PARAM29.

Data Register Offset (PARAM30 and PARAM31)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address back by the number of words specified by the offset. The data address cannot be offset in the forward direction.

The Data Register Offset parameter is used when the function code is 4346, 4349, 434B, 434D, or 434E hex. The address is offset by the long-word offset in PARAM30 and PARAM31.

Output Coil Offset (PARAM32 and PARAM33)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address back by the number of words specified by the offset. The data address cannot be offset in the forward direction.

The Output Coil Offset parameter is used when the function code is 4341, 4345, or 434F hex. The address is offset by the long-word offset in PARAM32 and PARAM33.

Output Register Offset (PARAM34 and PARAM35)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address back by the number of words specified by the offset. The data address cannot be offset in the forward direction.

The Output Register Offset parameter is used when the function code is 4346, 4349, 434B, 434D, or 434E hex. The address is offset by the long-word offset in PARAM34 and PARAM35.

◆ M Register Writing Range LO (PARAM36 and PARAM37)

Set the lower limit of the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the writing range with word addresses.

M Register Writing Range HI (PARAM38 and PARAM39)

Set the upper limit of the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the writing range with word addresses.

Set the writing range so that it satisfies the following condition:

0 ≤ M register writing range LO ≤ M register writing range HI ≤ Maximum M register address

Example Use the following settings to set the allowable writing range of M register addresses to MW0001000 to MW0001999:

PARAM36 = 03E8 hex (1000) PARAM37 = 0000 hex (0000) PARAM38 = 07CF hex (1999) PARAM39 = 0000 hex (0000)

The MP3000 will return an error if a write request is received for addresses outside the range from MW01000 to MW01999, and will not perform the writing operation.

◆ G Register Writing Range LO (PARAM40 and PARAM41)

Set the lower limit of the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the writing range with word addresses.

• G Register Writing Range HI (PARAM42 and PARAM43)

Set the upper limit of the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the writing range with word addresses.

Set the writing range so that it satisfies the following condition:

0 ≤ G register writing range LO ≤ G register writing range HI ≤ Maximum G register address

Example Use the following settings to set the allowable writing range of G register addresses to GW120000 to GW136000:

PARAM40 = D4C0 hex (lower word for 120000) PARAM42 = 0001 hex (upper word for 120000) PARAM41 = 1340 hex (lower word for 136000) PARAM43 = 0002 hex (upper word for 136000)

The MP3000 will return an error if a write request is received for addresses outside the range from GW0120000 to GW0136000, and will not perform the writing operation.

• O Register Writing Range LO (PARAM44 and PARAM45)

Set the lower limit of the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the writing range with word addresses.

O Register Writing Range HI (PARAM46 and PARAM47)

Set the upper limit of the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the writing range with word addresses.

Set the writing range so that it satisfies the following condition:

 $0 \le 0$ register writing range LO ≤ 0 register writing range HI \le Maximum O register address

Example Use the following settings to set the allowable writing range of O register addresses to OW00100 to OW27FFF:

PARAM44 = 0100 hex (lower word for 00100) PARAM46 = 0000 hex (upper word for 00100) PARAM45 = 7FFF hex (lower word for 17FFF) PARAM47 = 0001 hex (upper word for 17FFF)

The MP3000 will return an error if a write request is received for addresses outside the range from OW00100 to OW17FFF, and will not perform the writing operation.

For System Use (PARAM48)

This parameter is used by the system. It contains the channel number of the communications buffer that is currently in use.

Information A user program must set PARAM48 to 0 on the first scan after startup. Thereafter, do not change the value of PARAM48 from a user program or by any other means. PARAM24 will be used by the system.

Reserved for System (PARAM49 to PARAM51)

These parameters are used by the system.

Information Do not change the value of PARAM49 to PARAM51 from a user program or by any other means.

2.3.3 MSG-SND Function

Inputs and Outputs for the MSG-SND Function

The inputs and outputs for the MSG-SND function are the same as the inputs and outputs for the MSG-SNDE function.

Refer to the following section for more information. *Inputs and Outputs for the MSG-SNDE Function* on page 2-5

MSG-SND Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SND function.

No.	I/O	Meaning	Description
00	Outouto	Processing Result	Gives the processing status.
01	Outputs	Status	Gives the status of the current function.
02		Remote Station Number	Specifies the remote station.
03		Option	Sets to a unique value for each communications device.
04		Function Code	Sets the function code to send.
05		Data Address	Sets the first address of the data.
06	loouto	Data Size	Sets the data size for the read/write request.
07	Inputs	Remote CPU Module Number	Sets the CPU Module number at the remote station.
08		Coil Offset	Sets the offset word address for a coil.
09		Input Relay Offset	Sets the offset word address for an input relay.
10		Input Register Offset	Sets the offset word address for an input register.
11		Hold Register Offset	Sets the offset word address for a hold register.
12		Reserved for system 1	-
13 to 16	_	Reserved for system 2	_

Processing Result (PARAM00)

This parameter gives the processing result.

Processing Result Value	Meaning
00 DD hex	Busy
10 00 hex	Complete
8y □□ hex	Error

Note: The lower byte is used for system analysis.

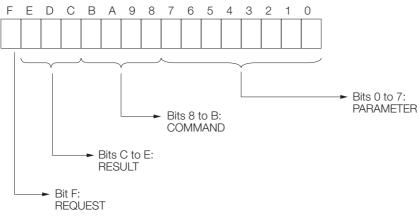
When an error occurs, refer to the following details on errors and perform troubleshooting.

Error	Meaning	Description
80 00 hex	_	Reserved for system.
81 00 hex	Function code error	An unused function code was sent or received. Check PARAM04 (Function Code).
8200 hex	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM05 (Data Address) PARAM08 (Coil Offset) PARAM09 (Input Relay Offset) PARAM10 (Input Register Offset) PARAM11 (Hold Register Offset)
83 00 hex	Data size error	The data size for sending or receiving is out of range. Check PARAM06 (Data Size).
84 00 hex	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-SND function.
85 00 hex	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-SND function.
86 00 hex	Connection number error	The connection number is out of range. Check PARAM02 (Connection Number).
87 00 hex	-	-
88 00 hex	Communications device error	An error response was returned from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-SND function.

◆ Status (PARAM01)

This parameter gives the status of the communications device.

The following figure shows the bit assignments and it is followed by a detailed description of each assignment.



REQUEST

This bit gives the status of the processing request for the MSG-SND function.

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

RESULT

These bits give the execution result of the MSG-SND function.

Code	Abbreviation	Meaning
0	CONN_NG	The message send failed or connection ended with an error in Ethernet com- munications.
1	SEND_OK	The message was sent normally.
2	REC_OK	The message was received normally.
3	ABORT_OK	The request to abort execution was completed.
4	FMT_NG	A parameter formatting error occurred.
5	SEQ_NG or INIT_NG	A command sequence error occurred.
6	RESET_NG or O_RING_NG	A reset occurred.
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.

COMMAND

These bits indicate the processing command of the MSG-SND function.

Code (Hex)	Abbreviation	Meaning
1	U_SEND	General-purpose message transmission (for no-protocol communications)
2	U_REC	General-purpose message reception (for no-protocol communications)
3	ABORT	Forced abort
8	M_SEND	MEMOBUS command transmission: Completed when response is received.
9	M_REC	MEMOBUS command reception: Completed when response is sent.
С	MR_SEND	MEMOBUS response transmission

PARAMETER

When RESULT = 4 (FMT_NG: parameter formatting error), these bits will indicate an error code from the following table. For any other value, the bits will contain the connection number.

RESULT	Code	Meaning
	00	No error
	01	Connection number out of range
	02	Watchdog error for MEMOBUS response
When RESULT = 4	03	Error in number of retries setting
(FMT_NG: Parameter	04	Error in cyclic area setting
Formatting Error)	05	CPU number error
	06	Data address error
	07	Data size error
	08	Function code error
Others		Connection number

Connection Number (PARAM02)

Specify the remote station.

If the communications device is Ethernet, enter the connection number.

If the communications device is a serial device, enter the remote station number.

35HH IU	50		following table.	

Communications Device	Connection Number	Description
	0	Sends the message to all stations (broadcast).
Serial (217IF)	1 to 254	Sends the message to the remote station set by the specified station number.
Ethernet (218IF, 218IFB, 218IFD)	1 to 20	Sends the message to the remote station set by the specified connection number.

Note: Enter the same connection number as displayed in the Detail Definition Dialog Box for communications device in the MPE720.

: 1 CPU#: 1									JCIR#01	00000-007FF	
insmission Paramet	ters Sta	tus									
Transmission Parar	neters —					Module Name	Definition				
IP Address		: 192 - 16	3 🕂 - 1		÷ (0-255)	Equipment na		CONTROLLER	NAME		
Subnet Mask		: 255	5 - 2	55 🛨 0		Equipment no					
Gateway IP Add	tracc				÷ (0-255)	Detail Defin	ition [
Cateway IF Mut	1033	· 0 _ 10	, J0								
Connection Parame Message Commun Easy setting	nication -	ollowing parameters fo	r message	communicatio	ns can be easily se	ət.					
	nication -	ollowing parameters fo ections(C NO) 01–10 c Node IP Address	r message an be set t Node Port	communicatio o receive data Connect Type	ns can be easily se a automatically. Proto Typ	ocol	Code	Detail		Node	Name 📥
Message Commun Easy setting	Local	1	Node	Connect Type	Proto	ocol De	Code BIN ·			Node	Name
Message Commun Easy setting CNO	Local Port	Node IP Address	Node Port	Connect Type TCP	Proto	ocol be IBUS •	BIN	 Setting* 		Node	Name
Message Commun Easy setting CNO 01	Local 10001	Node IP Address 192.168.001.002	Node Port 10001	Connect Type TCP	Proto Typ Extended MEMO	ocol be IBUS •	BIN	 Setting* 		Node	Name
- Message Commun Easy setting C NO 01 02 03 04	Local 10001	Node IP Address 192.168.001.002	Node Port 10001	Connect Type TCP	Proto Typ Extended MEMO	ocol be IBUS •	BIN	 Setting* Setting* Setting* Setting* Setting* 		Node	Name
- Message Commun Easy setting 01 02 03 04 05	Local Port 10001 10002	Node IP Address 192.168.001.002	Node Port 10001	Connect Type TCP	Proto Typ Extended MEMO MELSEC (QnA C	ocol be IBUS •	BIN	 Setting* Setting* Setting* Setting* Setting* Setting* 		Node	Name
- Message Commun Easy setting C NO 01 02 03 04	Local Port 10001 10002	Node IP Address 192.168.001.002	Node Port 10001	Connect Type TCP TCP	Proto Typ Extended MEMO MELSEC (QnA C	ocol be IBUS •	BIN	 Setting* Setting* Setting* Setting* Setting* 		Node	Name

♦ Options (PARAM03)

Set to a unique value for each communications device.

Function Code (PARAM04)

Set the function code to send.

You can use the functions (e.g., read state of coils and input relays and write to hold registers) that are registered to the function codes by specifying that code.

Function Code	Target Data Type	Function
00 hex	_	Not used
01 hex	В	Reads the states of coils.
02 hex	В	Reads the states of input relays.
03 hex	W	Reads the contents of hold registers.
04 hex	W	Reads the contents of input registers.
05 hex	В	Changes the state of a single coil.
06 hex	W	Writes to a single hold register.
07 hex	-	Not used
08 hex	-	Performs a loopback test.
09 hex	W	Reads the contents of hold registers (extended).
0A hex	W	Reads the contents of input registers (extended).
0B hex	W	Writes to hold registers (extended).
0C hex	_	Not used
0D hex	W	Reads the contents of non-consecutive hold registers (extended).
0E hex	W	Writes the contents of non-consecutive hold registers (extended).
0F hex	В	Changes the states of multiple coils.
10 hex	W	Writes to multiple hold registers.

Note: 1. B: Bit data, W: Word data

2. Send and receive registers when acting as the master are MW (MB) only.

3. Coils, hold registers, input relays, and input registers are the respective targets when acting as the slave.

Data Address (PARAM05)

Set the first address of the data.

Enter the first address as a decimal or hexadecimal number.

If the first address is MW01000, enter "1000" (decimal) or "3E8" (hexadecimal).

The range that is allowed for the data address depends on the function code.

The following table lists the setting ranges of data addresses when using MEMOBUS or Extended MEMOBUS as the protocol type.

Eurotion	Target Data		Data Address	Setting Range
Function Code	Type	Function	Ethernet (218IF)	Ethernet (218IFB)
00 hex	—	Not used	Disal	oled.
01 hex	В	Reads the states of coils.*1	0 to 65535 (0	to FFFF hex)
02 hex	В	Reads the states of input relays.*1	0 to 65535 (0	to FFFF hex)
03 hex	W	Reads the contents of hold registers.*2	0 to 65534 (0	to FFFE hex)
04 hex	W	Reads the contents of input registers.*2	0 to 32767 (0 to 7FFF hex)	0 to 65535 (0 to FFFF hex)
05 hex	В	Changes the state of a single coil.*1	0 to 65535 (0	to FFFF hex)
06 hex	W	Writes to a single hold register.*2	0 to 65534 (0	to FFFE hex)
07 hex	-	Not used	Disabled	
08 hex	_	Performs a loopback test.	Disal	oled.
09 hex	W	Reads the contents of hold registers (extended).	0 to 65534 (0	to FFFE hex)
0A hex	W	Reads the contents of input registers (extended).	0 to 32767 (0 to 7FFF hex)	0 to 65535 (0 to FFFF hex)
0B hex	W	Writes to hold registers (extended).	0 to 65534 (0	to FFFE hex)
			Cantinus	d an navt naga

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		-		i protiodo pagoi
Function Target Data Code Type	Target Data		Data Address Setting Range	
	Function	Ethernet (218IF)	Ethernet (218IFB)	
0C hex	-	Not used	Not used Disabled.	
0D hex	W	Reads the contents of non-consecutive hold registers (extended).*3	0 to 65534 (0 to FFFE hex)	
0E hex	W	Writes the contents of non-consecutive hold registers (extended).*3 0 to 65534 (0 to FFFE		to FFFE hex)
0F hex	В	Changes the states of multiple coils. *1 0 to 65535 (0 to FFFF		to FFFF hex)
10 hex	W	Writes to multiple hold registers. *2	0 to 65534 (0	to FFFE hex)

*1. Coil or relay read/write requests: Enter the address of the first bit of the data.

*2. Continuous register read/write requests: Enter the address of the first word of the data.

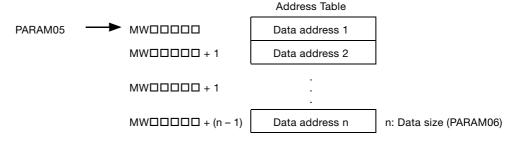
*3. Read/write request for discontinuous registers: Set the leading M register number of the address table.

Information Address Table

An address table specifies indirect addressing for discontinuous data. The M register specified by PARAM05 (data address) specifies the start of the address table and PARAM06 (data size) specifies the size of the address table.

When reading data, set data addresses 1 to n to the address to be read at the remote station. The read data will be stored in the local station according to data addresses 1 to n. When writing data, the data stored in data addresses 1 to n at the local station will be read and then written to data addresses 1 to n at the remote station.

The contents of an address table used to read/write discontinuous registers is illustrated below.



Data Size (PARAM06)

Set the data size for the read/write request as the number of bits or words.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and communications device.

The following table lists the setting ranges of data sizes when using MEMOBUS or Extended MEMOBUS as the protocol type.

Function Code	Target Data Type	Function	Data Size Setting Range Ethernet (218IFB)
00 hex	-	Not used	Disabled.
01 hex	В	Reads the states of coils. ^{*1}	1 to 2000
02 hex	В	Reads the states of input relays.*1	1 to 2000
03 hex	W	Reads the contents of hold registers.*2	1 to 125
04 hex	W	Reads the contents of input registers.*2	1 to 125
05 hex	В	Changes the state of a single coil.*1	Disabled.
06 hex	W	Writes to a single hold register.*2	Disabled.
07 hex	-	Not used	Disabled.
08 hex	-	Performs a loopback test.	Disabled.
09 hex	W	Reads the contents of hold registers (extended).*2	1 to 2044 (BIN) 1 to 1020 (ASCII)
0A hex	W	Reads the contents of input registers (extended).*2	1 to 2044 (BIN) 1 to 1020 (ASCII)
0B hex	W	Writes to hold registers (extended).*2	1 to 2043 (BIN) 1 to 1019 (ASCII)
0C hex	-	Not used	Disabled.
0D hex	W	Reads the contents of non-consecutive hold registers (extended). ^{*2}	1 to 2044 (BIN) 1 to 1020 (ASCII)
0E hex	W	Writes the contents of non-consecutive hold registers (extended). ^{*2}	1 to 1022 (BIN) 1 to 510 (ASCII)
0F hex	В	Changes the states of multiple coils. *1	1 to 800
10 hex	W	Writes to multiple hold registers. *2	1 to 100

*1. Set the number of bits.

*2. Set the number of words.

Note: The data sizes in the table are in decimal notation.

Remote CPU Module Number (PARAM07)

Set the CPU Module number at the remote station.

Specify 1 if the remote device is an MP2000/MP3000-series Controller.

If the remote device is a Yaskawa Controller that is not part of the MP2000/MP3000-series and it is comprised of multiple CPU Modules, specify the destination CPU Module number. For all other devices, specify 0.

• Offsets (PARAM08 to PARAM11)

Set the offsets of the addresses of the read data destination or write data source on the sending node.

The sending node will offset the address back by the number of words specified by the offset.

Information A negative value cannot be set as the offset value.

Offset parameters are provided for each of the target data types.

The following table lists the offset parameters.

Offset Parameters

Parameters	Meaning	Description
PARAM08	Coil Offset	Sets the offset word address for a coil.
PARAM09	Input Relay Offset	Sets the offset word address for an input relay.
PARAM10	Input Register Offset	Sets the offset word address for an input register.
PARAM11	Hold Register Offset	Sets the offset word address for a hold register.

The offset parameters that can be used depend on the function code.

The following table lists the valid parameters for each function code.

Applicable Offset Parameters by Function Code

Function		Applicable Offset	Protocol Type	
Code	Function	Parameter	Extended MEMOBUS	MEMOBUS
01 hex	Reads the states of coils.	PARAM08	0	0
02 hex	Reads the states of input relays.	PARAM09	0	0
03 hex	Reads the contents of hold registers.	PARAM11	0	0
04 hex	Reads the contents of input registers	PARAM10	0	0
05 hex	Changes the state of a single coil.	PARAM08	0	0
06 hex	Writes to a single hold register.	PARAM11	0	0
09 hex	Reads the contents of hold registers (extended).	PARAM11	0	×
0A hex	Reads the contents of input registers (extended).	PARAM10	0	×
0B hex	Writes to hold registers (extended).	PARAM11	0	×
0D hex	Reads the contents of non-consecutive hold registers (extended).	PARAM11	0	×
0E hex	Writes the contents of non-consecutive hold registers (extended).	PARAM11	0	×
0F hex	Changes the states of multiple coils.	PARAM08	0	0
10 hex	Writes to multiple hold registers.	PARAM11	0	0

Note: O: Settable, X: Not settable

Reserved for System 1 (PARAM12)

This parameter is used by the system. It contains the channel number of the communications buffer that is currently in use.

A user program must set PARAM12 to 0 on the first scan after startup. Thereafter, do not change the value of PARAM12 from a user program or by any other means. PARAM12 will be used by the system.

Reserved for System 2 (PARAM13 to PARAM16)

These parameters are used by the system. Do not change the values of PARAM13 to PARAM16 from a user program or by any other means.

2.3.4 MSG-RCV Function

Inputs and Outputs for the MSG-RCV Function

The inputs and outputs for the MSG-RCV function are the same as the inputs and outputs for the MSG-RCVE function.

Refer to the following section for more information. *Iputs and Outputs for the MSG-RCVE Function* on page 2-20

MSG-RCV Function Parameters

Parameter List for Serial Communications (217IF)

"Param" for the MSG-RCV function is a parameter list structure consisting of 17 words. The value of "Param" itself is the first address of the parameter list (MA or DA).

The parameter list is used by inputting connection numbers, function codes, and relevant parameter data. It is also where the process results and status are output.

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCV function.

No.	I/O	Meaning	Description
00	Outputs	Processing Result	Gives the processing status.
01	Outputs	Status	Gives the status of the communications device.
02	I/O	Connection Number	Gives the connection number of the destination.
03		Option	Gives a unique value for each communications device.
04		Function Code	Gives the function code that was requested from the sending node.
05	Outputs	Data Address	Gives the first address of the data that was requested from the sending node.
06		Data Size	Gets the read/write data size that was requested from the sending node.
07		Remote CPU Module Number	Gets the remote CPU Module number.
08		Coil Offset	Sets the offset word address for a coil.
09		Input Relay Offset	Sets the offset word address for an input relay.
10	Inpute	Input Register Offset	Sets the offset word address for an input register.
11	Inputs	Hold Register Offset	Sets the offset word address for a hold register.
12		Writing Range LO	Sets the first address of the writing range.
13		Writing Range HI	Sets the last address of the writing range.
14		Reserved for system 1	-
15, 16	_	Reserved for system 2	-

Processing Result (PARAM00)

This parameter gives the processing result.

Processing Result Value	Meaning
0000 hex	Busy
1000 hex	Complete
8y □□ hex	Error

Note: The lower byte is used for system analysis.

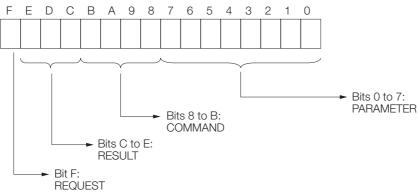
When an error occurs, refer to the following details on errors and perform troubleshooting.

Error	Meaning	Description
80 00 hex	-	Reserved for system.
81 00 hex	Function code error	An unused function code was received. Check the function code of the source.
8200 hex	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. Data Address (Request from Sending Node) PARAM08 (Coil Offset) PARAM09 (Input Relay Offset) PARAM10 (Input Register Offset) PARAM11 (Hold Register Offset)
83 00 hex	Data size error	The data size for sending or receiving is out of range. Check PARAM06 (Data Size).
84 00 hex	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-RCV function.
8500 hex	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-RCV function.
86 00 hex	Connection number error	The connection number is out of range. Check PARAM02 (Connection Number).
87 00 hex	-	Reserved for system.
88 00 hex	Communications device error	An error response was returned from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-RCV function.

Status (PARAM01)

This parameter gives the status of the communications device.

The following figure shows the bit assignments and it is followed by a detailed description of each assignment.



REQUEST

This bit gives the status of the processing request for the MSG-RCV function.

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

RESULT

These bits give the execution result of the MSG-RCV function.

Code	Abbreviation	Meaning
0	CONN_NG	The message send failed or connection ended with an error in Ethernet communications.
1	SEND_OK	The message was sent normally.
2	REC_OK	The message was received normally.
3	ABORT_OK The request to abort execution was completed.	
4	FMT_NG	A parameter formatting error occurred.
5	SEQ_NG	A command sequence error occurred.
6	RESET_NG	A reset occurred.
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.

COMMAND

These bits indicate the processing command of the MSG-RCV function.

Code (Hex)	Abbreviation	Meaning	
1	U_SEND	General-purpose message transmission (for no-protocol communications)	
2	U_REC	General-purpose message reception (for no-protocol communications)	
3	ABORT	Forced abort	
8	M_SEND	MEMOBUS command transmission: Completed when response is received.	
9	M_REC*	REC* MEMOBUS command reception	
С	MR_SEND*	MEMOBUS response transmission	

* MR_SEND is executed after M_REC is executed.

PARAMETER

When RESULT = 4 (FMT_NG: parameter formatting error), these bits will indicate an error code from the following table. For any other value, the bits will contain the connection number.

RESULT	Code	Meaning
	00	No error
	01	Connection number out of range
	02	Watchdog error for MEMOBUS response
When RESULT = 4	03	Error in number of retries setting
(FMT_NG: Parameter	04	Error in cyclic area setting
Formatting Error)	05	CPU number error
	06	Data address error
	07	Data size error
	08	Function code error
Others		Connection number

Connection Number (PARAM02)

Specify the remote station.

If the communications device is the Ethernet, enter the connection number.

If the communications device is a serial device, the station number is output.

The valid setting range is given in the following table.

Communications Device	Connection Number	Remarks
Serial (217IF)	0 to 63	Gives the remote station number specified by the source.
Ethernet (218IF, 218IFB, 218IFD)	1 to 20	Receives the message from the remote station set by the speci- fied connection number.

Note: Enter the same connection number as displayed in the Detail Definition Dialog Box for communications device in the MPE720.

: 1 CPU#: 1													JCIR#01	00000	-00766	
nsmission Param	neters Star	tus														
Transmission Par	ameters —									D <i>C</i> 10						
IP Address		: 192		168	<u>∃</u> 1	- -	1	(0-255)	Module Name Equipment na			NTROLLER N	AME			
Subnet Mask		: 255		255	÷ 2	55 🛨	0		Equipment in		1					
Gateway IP A	ddress	: 0	3	0	e l		0		Detail Defi	nition						
Connection Paran Message Comm Easy settin	unication -	bllowing par ections(C N	rameter: 10) 01-1	s for m 10 can	nessage be set t	communio o receive	catior data	ns can be easily se automatically.	et.							
Message Comm	iunication Ihe fo Conne		rameter: IO) 01-1 P Addre		Node	Conne	ect	Proto	col	Code	•	Detail			Node N	ame 🔺
Message Comm Easy settin CNO	Local Port	Node If	P Addre	ss	Node Port	Conne Type	ect e	Proto Typ	icol ie						Node N	ame 🔺
-Message Comm Easy settin CNO 01	iunication Ihe fo Conne Local Port 10001	Node If 192.168.0	P Addre	ss 2	Node Port 10001	Conne Type TCP	ect e	Proto Typ Extended MEMO	icol ie BUS _	BIN	-	Setting*			Node N	ame
-Message Comm Easy settin CNO	Local Port	Node If	P Addre	ss 2	Node Port	Conne Type	ect e	Proto Typ	icol ie BUS _	BIN		Setting* Setting*			Node N	ame
-Message Comm Easy settin CNO 01 02	Local Port 10001	Node If 192.168.0	P Addre	ss 2	Node Port 10001	Conne Type TCP	ect e	Proto Typ Extended MEMO	icol ie BUS _	BIN	* * *	Setting*			Node N.	ame
Message Comm Easy settin C NO 01 02 03	Local Port 10002	Node If 192.168.0	P Addre	ss 2	Node Port 10001	Conne Type TCP	ect e v	Proto Typ Extended MEMO	icol ie BUS _	BIN	* * * *	Setting* Setting* Setting*			Node N.	ame
Message Comm Easy settin C NO 01 02 03 04	Local Conne Local Port 10001 	Node If 192.168.0	P Addre	ss 2	Node Port 10001	Conne Type TCP	ect e v	Proto Typ Extended MEMO	icol ie BUS _	BIN	* * * *	Setting* Setting* Setting* Setting*			Node N.	ame

♦ Options (PARAM03)

Gives a unique value for each communications device.

◆ Function Code (PARAM04)

This parameter gives the function code that was received.

Function Code	Target Data Type	Function			
00 hex	-	Not used			
01 hex	В	Reads the states of coils.			
02 hex	В	Reads the states of input relays.			
03 hex	W	Reads the contents of hold registers.			
04 hex	W	Reads the contents of input registers.			
05 hex	В	Changes the state of a single coil.			
06 hex	W	Writes to a single hold register.			
07 hex	-	Not used			
08 hex	-	Performs a loopback test.			
09 hex	W	Reads the contents of hold registers (extended).			
0A hex	W	Reads the contents of input registers (extended).			
0B hex	W	Writes to hold registers (extended).			
0C hex	-	Not used			
0D hex	W	Reads the contents of non-consecutive hold registers (extended).			
0E hex	W	Writes the contents of non-consecutive hold registers (extended).			
0F hex	В	Changes the states of multiple coils.			
10 hex	W	Writes to multiple hold registers.			

Note: 1. B: Bit data, W: Word data

2. Send and receive registers when acting as the master are MW (MB) only.

3. Coils, hold registers, input relays, and input registers are the respective targets when acting as the slave.

Data Address (PARAM05)

This parameter gives the address of the data that was requested from the sending node.

Data Size (PARAM06)

This parameter gives the read or write data size (number of bits or words) that was requested from the sending node.

Remote CPU Module Number (PARAM07)

This parameter gives 1 if the remote device is an MP2000/MP3000-series Controller.

This parameter indicates the remote CPU Module number if the remote device is a Yaskawa Controller that is not a part of the MP2000/MP3000-series and it is comprised of multiple CPU Modules.

A 0 will be given for all other devices.

Offsets (PARAM08 to PARAM11)

Set the offsets for the data addresses in the receiving node.

The receiving node will offset the address back by the number of words specified by the offset. A negative value cannot be set as the offset value.

Offset parameters are provided for each of the target data types.

The following table lists the offset parameters.

Offset Parameters

Parameters	Meaning	Description
PARAM08	Coil Offset	Sets the offset word address for a coil.
PARAM09	Input Relay Offset	Sets the offset word address for an input relay.
PARAM10	Input Register Offset	Sets the offset word address for an input register.
PARAM11	Hold Register Offset	Sets the offset word address for a hold register.

The offset parameters that can be used depend on the function code.

The following table lists the valid parameters for each function code.

Applicable Offset Parameters by Function Code

Function Code	Function	Applicable Offset Parameter
01 hex	Reads the states of coils.	PARAM08
02 hex	Reads the states of input relays.	PARAM09
03 hex	Reads the contents of hold registers.	PARAM11
04 hex	Reads the contents of input registers.	PARAM10
05 hex	Changes the state of a single coil.	PARAM08
06 hex	Writes to a single hold register.	PARAM11
09 hex	Reads the contents of hold registers (extended).	PARAM11
0A hex	Reads the contents of input registers (extended).	PARAM10
0B hex	Writes to hold registers (extended).	PARAM11
0D hex	Reads the contents of non-consecutive hold registers (extended).	PARAM11
0E hex	Writes the contents of non-consecutive hold registers (extended).	PARAM11
0F hex	Changes the states of multiple coils.	PARAM08
10 hex	Writes to multiple hold registers.	PARAM11

Writing Range (PARAM12, PARAM13)

Set the allowable writing address range for write requests from the sending node. An error will occur if the write request is outside this allowable range.

Specify the writing range (PARAM12, PARAM13) with word addresses.

The data storage destination for writing requests from the sending node with the MSG-RCV function is entirely M registers.

The writing range parameters allow you to specify the range of M registers that messages are allowed to write to. The following table lists the writing range parameters.

Parameters	Meaning	Description
PARAM12	Writing Range LO	First address of the writing range
PARAM13	Writing Range HI	Last address of the writing range

Set the writing range so that it satisfies the following condition:

 $0 \le$ Writing range LO \le Writing range HI \le Maximum M register address

The writing range applies when using the following function codes.

- 05 hex (Changes the state of a single coil.)
- 06 hex (Writes to a single hold register.
- OB hex (Writes to hold registers (extended).)
- OE hex (Writes the contents of non-consecutive hold registers (extended).)
- OF hex (Changes the states of multiple coils.)
- 10 hex (Writes to multiple hold registers.)

Example Use the following settings to set the allowable writing range of M register addresses to1000 to 1999: PARAM12 = 1000

```
PARAM12 = 1000
PARAM13 = 1999
```

The receiving node will output an error if a write request is received for addresses outside the range from MW01000 to MW01999, and it will not perform the writing operation.

Reserved for System 1 (PARAM14)

This parameter is used by the system. It contains the channel number of the communications buffer that is currently in use.

A user program must set PARAM14 to 0 on the first scan after startup. Thereafter, do not change the value of PARAM14 from a user program or by any other means. PARAM14 will be used by the system.

Reserved for System 2 (PARAM15, PARAM16)

These parameters are used by the system. Do not change the values of PARAM15 and PARAM16 from a user program or by any other means.

No-Protocol Communications Method

The no-protocol communications method refers to the method that performs communications using a protocol that is not implemented in MP-series Controllers. With this communications method, the user must build the communications protocol for the remote device in the ladder program.

3

There are two types of no-protocol communications, noprotocol (half duplex) and no-protocol FD (full duplex). These types serve to control the physical layer. This chapter describes details on no-protocol and no-protocol FD communications.

3.1	No-Pr	rotocol Communications
	3.1.1 3.1.2	For Ethernet Communications3-2For Serial Communications3-5
3.2	Message	e Functions Related to No-Protocol Communications 3-6
	3.2.1 3.2.2 3.2.3 3.2.4	MSG-SNDE Function3-6MSG-RCVE Function3-8MSG-SND Function3-11MSG-RCV Function3-15
3.3	No-Pr	rotocol FD Communications 3-19
	3.3.1 3.3.2 3.3.3 3.3.4	Specification3-19Protocol Operation3-20Processing of a Received Data Error3-20Precautions When Using No-Protocol FDCommunicationsCommunications3-21
3.4	Message	Functions Related to No-Protocol FD Communications 3-22
	3.4.1 3.4.2 3.4.3 3.4.4	MSG-SNDE Function3-22MSG-RCVE Function3-23MSG-SND Function3-26MSG-RCV Function3-29

3.1.1 For Ethernet Communications

3.1 No-Protocol Communications

No-protocol communications is half-duplex communications. Sending and receiving cannot be processed simultaneously.

3.1.1 For Ethernet Communications

Specification

The following table lists the specifications for no-protocol communications.

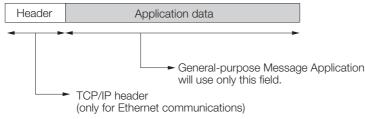
Item	Meaning
Message Channels	10 (for both the SND and RCV functions)
Maximum Send Size	218IF = 510 words 218IF □ = 2046 words
Maximum Receive Size	218IF = 510 words 218IF □ = 2046 words
Receive Buffers	218IF: Single buffer only 218IF □ : Single buffer/multiple buffers
Processing When a Data Error Occurs	The entire message is discarded.
Data Error Detection and Reporting	None

Protocol Operation

When No-Protocol is used for the 218IF□, you can select a single buffer or multiple buffers (20 buffers).

Message Structure

When no-protocol communications is set as the communications protocol, application data is handled as a general-purpose message. When sending and receiving data, each message consists of two fields: a header and the application data field.



The header is for TCP/IP and UDP/IP connections and is used only for Ethernet communications. User programs do not need to be aware of this header because it is automatically appended and removed in the 218IF or 218F^I.

The application data field can be formatted as required by the application. The application data field has the following message structure.

Communications Protocol	Code	Supported Communications Method	Reference
No-protocol	BIN	217IF, 218IF, 218IF	General-purpose Binary Mode on page 3-3
No-protocol	ASCII	218IF, 218IF	General-purpose ASCII Mode on page 3-3

Note: 1. Ethernet communications will use either binary or ASCII data based on the code setting in the connection parameters.

2. For 217IF communications, the communications mode is None (equivalent to BIN).

The difference compared to using the general-purpose messaging mode with the Extended MEMOBUS protocol is that the 218 header is not appended before the application data.

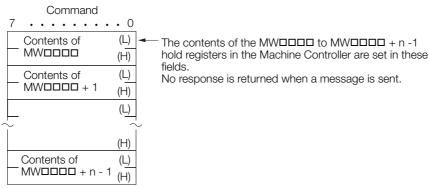
3.1.1 For Ethernet Communications

General-purpose Message Commands

General-purpose message commands can be set as required by the application.

General-purpose Binary Mode

In no-protocol communications, the values of the MW hold registers in the Machine Controller are sent and received in the application data field.



◆ General-purpose ASCII Mode

In ASCII Mode, binary data is converted to ASCII before being sent or received.

The following diagram illustrates the conversion from binary to ASCII. As shown in the example, 8-bit data is converted into two 7-bit ASCII characters.

Command		Command
12 hex		31 hex
34 hex		32 hex
56 hex		33 hex
78 hex		34 hex
9A hex		35 hex
BD hex	_ \	36 hex
DE hex		37 hex
F0 hex		38 hex
		39 hex
	\ `	41 hex
		42 hex
		43 hex
		44 hex
	*	45 hex
		46 hex
		30 hex

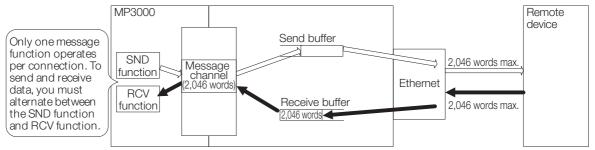
3.1.1 For Ethernet Communications

Operation of the Single Buffer

With single buffer, the latest data is always obtained with the RCV function when data is received from the remote device in no-protocol communications.

For UDP communications, the latest data is obtained in units of packets. For TCP communications, there is no concept of packets. For this reason, what portion of the data is obtained from the data that was continuously sent depends on the timing.

The data in the receive buffer is discarded if the data is not obtained with the RCV function within five to 10 seconds.



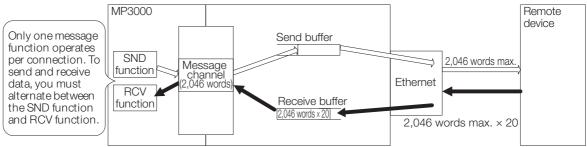
Note: For the 218IF Module, locations indicated as 2046 words are actually 510 words.

Operation of Multiple Buffers

For multiple buffers, data can be held in up 20 receive buffers when data is received from the remote device in no-protocol communications. The received data that is held is obtained with the RCV function in order of oldest data first. When the receive buffer area is full, the data received after that point in time is discarded. Data can be received again when buffers in the receive buffers area are emptied.

The data in the receive buffers is discarded in order of oldest data first if the data is not obtained with the RCV function within five to 10 seconds.

For UDP communications, 20 items of data can be held in units of packets. For TCP communications, 20 items of data can be held in units of data that are obtained from the TCP protocol stack in the 218IF^I. In TCP communications, there is no concept of packets. For this reason, data that was continuously sent may be split or multiple items of data may be received as a group (depending on factors such as the interval of received data and the timing of processing in the 218IF^I. Therefore, the data may need to be split or assembled in the user application after it is obtained with the RCV function.



3.1.2 For Serial Communications

3.1.2 For Serial Communications

Specification

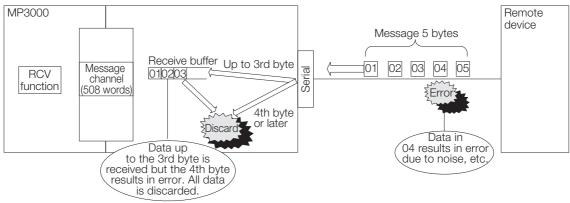
The following table lists the specifications for no-protocol communications.

Item	Meaning
Serial Communications	Half-duplex communications
Message Channels	1 (for both the SND and RCV functions)
Maximum Send Size	508 bytes
Maximum Receive Size	508 bytes
Receive Buffers	One only
Processing When a Data Error Occurs	The entire message is discarded.
Data Error Detection and Reporting	None

Processing of a Received Data Error

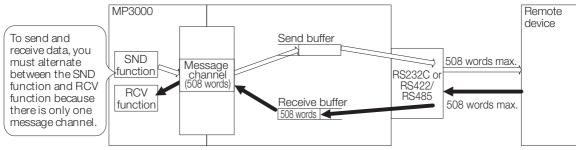
The following diagram shows the processing of a received data error for no-protocol communications in serial communications.

In no-protocol communications, if there is an error in even one byte in one message (the group of data up to when the watchdog timer times out), all of the data in the message is discarded (this is also the same for communications using a protocol such as MEMOBUS).



Protocol Operation

The following diagram shows the operation of no-protocol communications in serial communications.



3.2 Message Functions Related to No-Protocol Communications

For the no-protocol communications method, a communications program is required to exchange data with a remote device. In addition to the communications program, a ladder program must also be created to assemble messages to send and to interpret received messages based on the protocol.

3.2.1 MSG-SNDE Function

Inputs and Outputs for the MSG-SNDE Function

Refer to the following section for more information on inputs and outputs.

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

00 01		Processing Result	
01		Frocessing nesult	Gives the processing status.
		Status*	Gives the status of the current function.
02		Detail Error Code, Lower Word*	Gives the details of an error.
03	Out-	Detail Error Code, Upper Word*	
	puts	Status 1*	Gives the communications status.
05		Status 2*	Gives status information on the most recent error.
06		Status 3*	Gives the information of the send pass counter.
07		Status 4*	Gives the information of the receive pass counter.
08		Status 5*	Gives the information of the error counter.
09		Status 6	Reserved for system.
10		Connection Number	Sets the connection number used to determine the remote station. (For Ethernet only)
11		Option	Not used in no-protocol communications.
12		Function Code	Not used in no-protocol communications.
13		Reserved for system.	-
14		Remote Station Data Address, Lower Word	Not used in no-protocol communications.
15		Remote Station Data Address, Upper Word	not used in no-protocol communications.
16		Remote Station Register Type	Not used in no-protocol communications.
17	Inputs	Data Size	Sets the size of the send data. No-protocol communications 1: Number of words No-protocol communications 2: Number of bytes
18		Remote CPU Module Number	Not used in no-protocol communications.
19		Reserved for system.	-
20		Local Station Data Address, Lower Word	Sets the data address to store the send data in the local
21		Local Station Data Address, Upper Word	station.
22		Local Station Register Type	Sets the register type of the send data to store in the local station.
23		Reserved for system.	-

Continued from previous page.

No.	I/O	Meaning	Description
24		For system use	-
25		Reserved for system.	-
26	—	Reserved for system.	-
27		Reserved for system.	-
28		Reserved for system.	-

* The content for Status No. 2 to No. 8 functions on the 218IFD only.

Processing Result (PARAM00) to Status 6 (PARAM09)

Refer to the following section.

G MSG-SNDE Function Parameters on page 3-6

Connection Number (PARAM10)

Specify the remote station.

If the communications device is the Ethernet, enter the connection number.

If the communications device is a serial device, this parameter is not used.

The setting range is given in the following table.

Communications Device	Connection Number	Description
Ethernet (218IF, 218IFB, 218IFD)	1 to 20	Specifies the remote station to which to send the message.

Note: Enter the same connection number as displayed in the 218IF, 218IFB, or 218IFD Detail Definition Dialog Box in the MPE720.

PT#	- CPU#:																00000-007FF
-	nission Paramet		uel													1011001	00000 00111
			us														
Tran	nsmission Paran	neters —									Modu	ile Name	Definiti	ion			
1	IP Address		: 19	92 🗄	· 168	-	1 🗄	· 1		(0-255)		oment n			ONTROLLER	NAME	
	Subnet Mask		: 2	55 🚊	255	-	255 🗄	0	<u>.</u>	(0-255)				,			
	Gateway IP Add	ress	: 0		0	-	0 :	0	÷	(0-255)	De	etail Defi	nition				
- Con	nection Parame	ter															
	essage Commun																
	Easy setting	The fo Conne	llowing ctions(C	paramet > NO) 0	ters for 1-10 ca	messa∉ n be se	e communit to receiv	nicatior ve data	ns can l automa	be easily atically.	set.						
	010	Local	N 1	TD 0 11		Node	e Con	nect		Pro	tocol				D. I. II		
	CNO	Port	Node	P Add	iress	Port	: Ту	/pe		Т	уре		Cod	e	Detail		Node
	01	05000	192.16	8.001.0	002	05001	UDP	•	None				BIN	-	Setting*		
	02		[-				-		•	Setting*		
	03							-				-		•	Setting*		
	04							-						•	Setting*		
	05							-				-		•	Setting*		
	06							-				-		•	Setting*		
	07							-				-		•	Setting*		

Data Size (PARAM17)

Set the size of the data to send as the number of words or bytes.

Local Station Data Address (PARAM20 and PARAM21)

Set the address of where the send data is stored in the MP3000.

The address is set as the word offset from address 0.

Local Station Register Type (PARAM22)

Set the register type of where the send data is stored in the MP3000.

Register Type Value	Туре	Remarks
0	М	Sets MW for both no-protocol communications 1 and 2.
1	G	Sets GW for both no-protocol communications 1 and 2.
2	-	Sets IW for both no-protocol communications 1 and 2.
3	0	Sets OW for both no-protocol communications 1 and 2.
4	S	Sets SW for both no-protocol communications 1 and 2.
5 or higher	_	Not used in no-protocol communications.

3.2.2 MSG-RCVE Function

Inputs and Outputs for the MSG-RCVE Function

Refer to the following section for more information on inputs and outputs. 2.3.2 MSG-RCVE Function on page 2-20

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description		
00		Processing Result	Gives the processing status.		
01		Status	Gives the status of the current function.		
02	-	Detail Error Code, Lower Word*	Gives the details of an error.		
03	-	Detail Error Code, Upper Word*			
04	Outputo	Status 1*	Gives the communications status.		
05	Outputs	Status 2*	Gives status information on the most recent error.		
06		Status 3*	Gives the information of the send pass counter.		
07		Status 4*	Gives the information of the receive pass counter.		
08		Status 5*	Gives the information of the error counter.		
09		Status 6	Reserved for system.		
10	I/O	Connection Number	Sets the connection number used to determine the remote station. (For Ethernet only)		
11	-	Option	Not used in no-protocol communications.		
12	Output	Function Code	Not used in no-protocol communications.		
13	I/O	Reserved for system.	-		
14		Data Address, Lower Word	Not used in no-protocol communications.		
15		Data Address, Upper Word	Not used in no-protocol communications.		
16	-	Register Type	Not used in no-protocol communications.		
17	Outputs	Data Size	Gives the data size that was received from the remote station. No-protocol communications 1: Number of words No-protocol communications 2: Number of bytes		
18	1	Remote CPU Module Number	Not used in no-protocol communications.		
19	I/O	Reserved for system.	-		

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No.	I/O	Meaning	Description
20		Coil Offset, Lower Word	Not used in no protocol communications
21		Coil Offset, Upper Word	Not used in no-protocol communications.
22		Input Relay Offset, Lower Word	Not used in no-protocol communications.
23		Input Relay Offset, Upper Word	Not used in no-protocol communications.
24		Input Register Offset, Lower Word	Not used in no-protocol communications.
25		Input Register Offset, Upper Word	
26		Hold Register Offset, Lower Word	Not used in no-protocol communications.
27		Hold Register Offset, Upper Word	Not used in no-protocol communications.
28		Data Relay Offset, Lower Word	Not used in no-protocol communications.
29		Data Relay Offset, Upper Word	Not used in no-protocol communications.
30		Data Register Offset, Lower Word	Not used in no-protocol communications.
31		Data Register Offset, Upper Word	Not used in no-protocol communications.
32		Output Coil Offset, Lower Word	Not used in no-protocol communications.
33		Output Coil Offset, Upper Word	Not used in no-protocol communications.
34		Output Register Offset, Lower Word	Not used in no-protocol communications.
35		Output Register Offset, Upper Word	Not used in no-protocol communications.
36		M Register Writing Range LO, Lower Word	Sets the first address of the M registers in which to save the data that was received from the remote sta-
37	Inputs	M Register Writing Range LO, Upper Word	tion.
38		M Register Writing Range HI, Lower Word	Sets the last address of the M registers in which to save the data that was received from the remote sta-
39		M Register Writing Range HI, Upper Word	tion.
40		G Register Writing Range LO, Lower Word	Not used in no-protocol communications.
41		G Register Writing Range LO, Upper Word	not used in no-protocol communications.
42		G Register Writing Range HI, Lower Word	Net used in no protocol communications
43		G Register Writing Range HI, Upper Word	Not used in no-protocol communications.
44		O Register Writing Range LO, Lower Word	
45		O Register Writing Range LO, Upper Word	Not used in no-protocol communications.
46		O Register Writing Range HI, Lower Word	
47		O Register Writing Range HI, Upper Word	Not used in no-protocol communications.
48		For system use	-
49		Reserved for system.	-
50	-	Reserved for system.	-
51		Reserved for system.	-

* The content for Status No. 2 to No. 8 functions on the 218IFD only.

Processing Result (PARAM00) to Status 6 (PARAM09)

Refer to the following section.

MSG-RCVE Function Parameters on page 3-8

Connection Number (PARAM10)

Specify the remote station.

If the communications device is the Ethernet, enter the connection number.

If the communications device is a serial device, this parameter is not used.

The setting range is given in the following table.

Communications Device	Connection Number	Description
Ethernet (218IF, 218IFB, 218IFD)		Receives the message from the remote station set by the specified connection number.

Note: Enter the same connection number as displayed in the 218IF, 218IFB, or 218IFD Detail Definition Dialog Box in the MPE720.

PT#:	- CPU#:									CIR#01	00000-007FF
Transm	nission Paramet	ers Stat	us								
	nsmission Paran IP Address		: 192 🕂 · 168	<u></u> . 1	<u></u> . 1	: (0-255)	Module Name Equipment na	r	CONTROLLER	NAME	
	Subnet Mask Gateway IP Add		· · ·			· (0-255)	Detail Defir				
	nection Parame essage Commur Easy setting	ication I The fo	Ilowing parameters for ctions(C NO) 01-10 car	message n be set ti	communicatior o receive data	ns can be easily set automatically.					
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Proto Type		Code	Detail		Node
	01	05000	192.168.001.002	05001	UDP 👻	None	-	BIN	 Setting* 		
	02				-		-		 Setting* 		
	03				-		-		 Setting* 		
	04				-		-		 Setting* 		
	05				-		-		 Setting* 		
	06				•		•		 Setting* 		
	07				-		-		 Setting* 		

Data Size (PARAM17)

This parameter gives the size of the data that was received as the number of words or bytes.

M Register Writing Range LO (PARAM36 and PARAM37)

Set the first address in which to save the data to be received from the remote station.

◆ M Register Writing Range HI (PARAM38 and PARAM39)

Set the last address in which to save the data to be received from the remote station.

Received data that exceeds the last address is discarded.

Set the writing range so that it satisfies the following condition:

 $0 \le M$ register writing range LO $\le M$ register writing range HI $\le M$ aximum M register address

Inputs and Outputs for the MSG-SND Function

The inputs and outputs for the MSG-SND function are the same as the inputs and outputs for the MSG-SNDE function.

Refer to the following section for more information. *Inputs and Outputs for the MSG-SNDE Function* on page 2-5

MSG-SND Function Parameters

No.	I/O	Meaning	Description		
00	Outouto	Processing Result	Gives the processing status.		
01	Outputs	Status	Gives the status of the communications device.		
02		Connection Number	Sets the connection number used to determine the remote station. (For Ethernet only)		
03		Option	Not used in no-protocol communications.		
04		Function Code	Not used in no-protocol communications.		
05		Data Address	Sets the first address of the data.		
06	Inputs	Data Size	Sets the size of the send data.		
07		Remote CPU Module Number	Not used in no-protocol communications.		
08		Coil Offset	Not used in no-protocol communications.		
09		Input Relay Offset	Not used in no-protocol communications.		
10		Input Register Offset	Not used in no-protocol communications.		
11		Hold Register Offset	Sets the offset word address for a hold register.		
12	System	Reserved for system 1	Not used in no-protocol communications.		
13 to 16	System	Reserved for system 2	Not used in no-protocol communications.		

Processing Result (PARAM00)

The upper byte gives the processing result. The lower byte is used for system analysis.

Processing Result Value	Meaning
0000 hex	Busy
1000 hex	Complete
8y □□ hex	Error

When an error occurs, refer to the following details on errors and perform troubleshooting.

Error	Meaning	Description
80 00 hex	-	Reserved for system.
81 00 hex	-	-
8200 hex	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM05 (Data Address) PARAM11 (Hold Register Offset)
83 00 hex	Data size error	The data size for sending or receiving is out of range. Check PARAM06 (Data Size).
8400 hex	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-SND function.
85 00 hex	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-SND function.
86 00 hex	-	-
87 □□ hex	_	Reserved for system.

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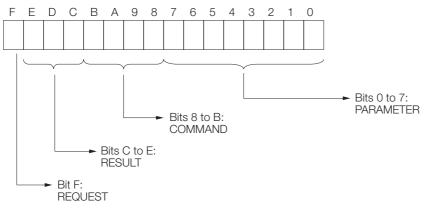
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Error	Meaning	Description
88 00 hex	Communications device error	An error response was returned from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-SND function.

◆ Status (PARAM01)

This parameter gives the status of the communications device.

The following figure shows the bit assignments and it is followed by a detailed description of each assignment.



REQUEST

This bit gives the status of the processing request for the MSG-SND function.

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

RESULT

These bits give the execution result of the MSG-SND function.

Code	Abbreviation	Meaning
1	SEND_OK	The message was sent normally.
2	REC_OK	The message was received normally.
3	ABORT_OK	The request to abort execution was completed.
4	FMT_NG	A parameter formatting error occurred.
5	SEQ_NG	A command sequence error occurred.
6	RESET_NG	A reset occurred.
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.

COMMAND

These bits indicate the processing command of the MSG-SND function.

Code (Hex)	Abbreviation	Meaning
1	U_SEND	General-purpose message transmission
2	U_REC	General-purpose message reception
3	ABORT	Forced abort
8	M_SEND	MEMOBUS command transmission: Completed when response is received. (for the MEMOBUS protocol)
9	M_REC	MEMOBUS command transmission: Completed when response is sent. (for the MEMOBUS protocol)
С	MR_SEND	MEMOBUS response transmission (for the MEMOBUS protocol)

PARAMETER

When RESULT = 4 (FMT_NG: parameter formatting error), these bits will indicate an error code from the following table.

RESULT	Code	Meaning
	00	No error
	01	Station address out of range
	02	Watchdog error for MEMOBUS response (for the MEMOBUS protocol)
When RESULT = 4	03	Error in number of retries setting
(FMT_NG: Parameter	04	Error in cyclic area setting
Formatting Error)	05	CPU number error
	06	Data address error
	07	Data size error
	08	Function code error (for the MEMOBUS protocol)

Connection Number (PARAM02)

Specify the remote station.

If the communications device is the Ethernet, enter the connection number.

If the communications device is a serial device, this parameter is not used.

The setting range is given in the following table.

Communications Device	Connection Number	Description
Ethernet (218IF, 218IFB, 218IFD)	1 to 20	Specifies the remote station to which to send the message.

Note: Enter the same connection number as displayed in the 218IF, 218IFB, or 218IFD Detail Definition Dialog Box in the MPE720.

#: CPU#:-		1							,	· · · · · · · · · · · · · · · · · · ·
ansmission Param	eters Stat	us								
Transmission Par	ameters —					Module Name	Definition			
IP Address		: 192 : 1	68 🚊 🔤	÷ 1	÷ (0-255)	Equipment na		ONTROLLER	NAME	
Subnet Mask		: 255 🔆 2	55 🚊 🛛 2	55 🛨 🛛 🛛	÷ (0-255)		,			
Gateway IP A	ddress	: 0 🗄 0	0	÷ 0	÷ (0-255)	Detail Defin	nition			
Connection Paran Message Comm Easy setting	unication I The fo	llowing parameters f ctions(C NO) 01-10	for message can be set t	communication o receive data	ns can be easily set a automatically.					
Message Comm	unication I The fo	Ilowing parameters f ctions(C NO) 01-10 Node IP Address	can be set t	communication o receive data Connect Type	ns can be easily set automatically. Protoc Type	col	Code	Detail		
Message Comm Easy setting	unication Ihe fo Conne	ctions(ĊNO) 01-10 I	can be set t	o receive data Connect Type	automatically. Protoc	col e		Detail Setting*		
Message Comm Easy setting CNO	unication Ihe fo Conne Local Port	ctions(Ć NO) 01-10 Node IP Address	can be set t Node Port	o receive data Connect Type	automatically. Protoc Type	col e				
Message Comm Easy setting CNO 01	unication Ihe fo Conne Local Port 05000	ctions(Ć NO) 01-10 Node IP Address	can be set t Node Port	o receive data Connect Type	automatically. Protoc Type	col e		Setting*		
Message Comm Easy setting ONO 01 02 03 04	unication Ihe fo Conne Local Port 05000	ctions(Ć NO) 01-10 Node IP Address	can be set t Node Port	o receive data Connect Type	automatically. Protoc Type	col e		Setting* Setting* Setting* Setting*		
Message Comm Easy setting CNO 01 02 03 04 05	unication I he fo Conne Local Port 05000	ctions(Ć NO) 01-10 Node IP Address	can be set t Node Port	o receive data Connect Type	automatically. Protoc Type	col e		Setting* Setting* Setting* Setting* Setting*		
Easy setting CNO 01 02 03 04	unication Ihe fo Conne Local Port 05000	ctions(Ć NO) 01-10 Node IP Address	can be set t Node Port	o receive data Connect Type	a automatically. Protoc Type	col e		Setting* Setting* Setting* Setting*		

Data Address (PARAM05)

Set the first address of the data.

Enter the first address as a decimal or hexadecimal number.

Information If the first address is MW01000, enter "1000" (decimal) or "3E8" (hexadecimal).

The following table lists the setting ranges of data addresses.

Data Address Setting Range (No-Protocol Communications)

No-Protocol Communications Type	Target Data Type	Function	Data Address Setting Range
No-protocol communications 1	W	Sends data in units of words.	0 to 65534 (0 to FFFE hex)
No-protocol communications 2	В	Sends data in units of bytes.*	0 to 65534 (0 to FFFE hex)

* The unit for setting addresses is words.

Data Size (PARAM06)

Set the size of the data for the write request as the number of words or bytes.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and communications device.

Data Size Setting Range (No-Protocol Communications)

No-Protocol	Target Data		Data Address Setti	ng Range
Communications Type	Туре	Function	Ethernet	Serial Communications
No-protocol	W	Sends data in units of	218IF: 1 to 510	1 to 254
communications 1	vv	words.	218IFB, 218IFD: 1 to 2046	1 10 204
No-protocol	В	Sends data in units of	218IF: 1 to 1020	1 to 508
communications 2	D	bytes.	218IFB, 218IFD: 1 to 4092	1 10 508

Note: The data sizes in the table are in decimal notation.

Register Offset (PARAM11)

Set the offset for the address of the write data source on the sending node.

The sending node will offset the address back by the number of words specified by the offset.

Note: A negative value cannot be set as the offset value.

To offset the register address by 1000 words: Example PARAM11 = 1000

Reserved for System 1 (PARAM12)

This parameter is used by the system. It contains the channel number of the communications buffer that is currently in use.



Information A user program must set PARAM12 to 0 on the first scan after startup. Thereafter, do not change the value of PARAM12 from a user program or by any other means. PARAM12 will be used by the system.

Reserved for System 2 (PARAM13 to PARAM16)

These parameters are used by the system. Do not change the values of PARAM13 to PARAM16 from a user program or by any other means.

Inputs and Outputs for the MSG-RCV Function

The inputs and outputs for the MSG-RCV function are the same as the inputs and outputs for the MSG-RCVE function.

Refer to the following section for more information.

 \overrightarrow{a} Inputs and Outputs for the MSG-RCVE Function on page 2-20

MSG-RCV Function Parameters

No-protocol communications stores the received data in M registers as is without performing protocol conversion. This allows data to be received using any protocol matched to the other device.

No.	I/O	Meaning	Description
00	Outouto	Processing Result	Gives the processing status.
01	Outputs	Status	Gives the status of the communications device.
02	I/O	Connection Number	Gives the connection number of the destination. (Only for Ethernet)
03		Option	Not used in no-protocol communications.
04		Function Code	Not used in no-protocol communications.
05		Data Address	Not used in no-protocol communications.
06	Outputs	Data Size	Gives the data size that was received from the remote sta- tion.
07		Remote CPU Module Number	Not used in no-protocol communications.
08		Coil Offset	Not used in no-protocol communications.
09		Input Relay Offset	Not used in no-protocol communications.
10	Inputo	Input Register Offset	Not used in no-protocol communications.
11	Inputs	Hold Register Offset	Not used in no-protocol communications.
12		Writing Range LO	Sets the first address of the writing range.
13		Writing Range HI	Sets the last address of the writing range.
14	System	Reserved for system 1	Not used in no-protocol communications.
15, 16	System	Reserved for system 2	Not used in no-protocol communications.

Processing Result (PARAM00)

This parameter gives the processing result.

Processing Result Value	Meaning
00 🗖 🗖 hex	Busy
10 00 hex	Complete
8y □□ hex	Error

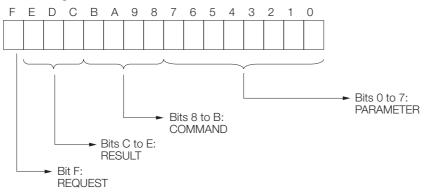
When an error occurs, refer to the following details on errors and perform troubleshooting.

Error	Meaning	Description
80 00 hex	_	Reserved for system.
81 00 hex	-	-
8200 hex	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM12 (Register Offset)
83 DD hex	Data size error	The data size for receiving is out of range. Check the data size of the sending node.
84 00 hex	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-RCV function.
8500 hex	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-RCV function.
86 00 hex	-	-
87 00 hex	-	Reserved for system.
8800 hex	Communications device error	An error response was returned from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-RCV function.

Status (PARAM01)

This parameter gives the status of the communications device.

The following figure shows the bit assignments and it is followed by a detailed description of each assignment.



REQUEST

This bit gives the status of the processing request for the MSG-RCV function.

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

RESULT

These bits give the execution result of the MSG-RCV function.

Code	Abbreviation	Meaning		
1	SEND_OK	The message was sent normally.		
2	REC_OK	The message was received normally.		
3	ABORT_OK	The request to abort execution was completed.		
4	FMT_NG	A parameter formatting error occurred.		
5	SEQ_NG	A command sequence error occurred.		
6	RESET_NG	A reset occurred.		
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.		

COMMAND

These bits indicate the processing command of the MSG-RCV function.

Code (Hex)	Abbreviation	Meaning		
1	U_SEND	General-purpose message transmission (for no-protocol communications)		
2	U_REC	eneral-purpose message reception (for no-protocol communications)		
3	ABORT	Forced abort		
8	M_SEND	MEMOBUS command transmission: Completed when response is received.		
9	M_REC*	MEMOBUS command reception		
С	MR_SEND*	MEMOBUS response transmission		

* MR_SEND is executed after M_REC is executed.

PARAMETER

When RESULT = 4 (FMT_NG: parameter formatting error), these bits will indicate an error code from the following table.

RESULT	Code	Meaning	
	00	No error	
	01	Connection number out of range	
	02	Watchdog error for MEMOBUS response	
When RESULT = 4	03	Error in number of retries setting	
(FMT_NG: Parameter	04	Error in cyclic area setting	
Formatting Error)	05	CPU number error	
	06	Data address error	
	07	Data size error	
	08	Function code error	
Others		Connection number	

Connection Number (PARAM02)

Specify the remote station.

If the communications device is Ethernet, enter the connection number.

If the communications device is a serial device, this parameter is not used.

The setting range is given in the following table.

Communications Device	Connection Number	Description
Ethernet (218IF, 218IFB, 218IFD)	1 to 20	Receives the message from the remote station set by the specified connection number.

Note: Enter the same connection number as displayed in the 218IF, 218IFB, or 218IFD Detail Definition Dialog Box in the MPE720.

PT#:-	- CPU#:										CIR#01	00000-007FF
Transr	nission Paramet	ers Stat	us									
Trar	nsmission Paran	neters —					Module Name	Definition				
	IP Address		: 192 🔆 · 168	<u> </u>	÷ 1	÷ (0-255)	Equipment r		_	ONTROLLER	NAME	
	Subnet Mask		: 255	÷ 2	55 🔆 0	÷ (0-255)	Equipment 1		1			
	Gateway IP Add	lress	· · ·			: (0-255)	Detail Def	nition				
	nection Parame essage Commur Easy setting CNO	ication Ihe fo Conne Local Port	llowing parameters for ctions(C NO) 01-10 car Node IP Address	Node Port	Connect Type	Protoc	col	Cod	_	Detail		Node
		05000	192.168.001.002	05001	UDP 💌	None		BIN	•	Setting*	_	
	02				•			-	•	Setting*	-	
	03				-			-	-	Setting*	-	
	04				-				-	Setting*		
	06				•			-	-	Setting*		
	08				• •			-	÷	Setting* Setting*	1	
	07				-	4		-	-	Setting*		

Data Size (PARAM06)

This parameter gives the size of the data that was requested from the sending node.

The number of words is given for no-protocol communications 1.

The number of bytes is given for no-protocol communications 2.

Writing Range (PARAM12 and PARAM13)

For no-protocol communications, the received consecutive data is stored in M registers.

An error will occur if a request was made to write a value that does not correspond to PARAM12 (Write Range LO) to PARAM13 (Write Range HI).

Set the writing range so that it satisfies the following condition:

0 ≤ Writing range ≤ Maximum M register address



Use the following settings to set the allowable writing range of M register addresses to MW01000 to MW01999: PARAM12 = 1000 PARAM13 = 1999

Reserved for System 1 (PARAM14)

This parameter is used by the system. It contains the channel number of the communications buffer that is currently in use.

Information A

A user program must set PARAM14 to 0 on the first scan after startup. Thereafter, do not change the value of PARAM14 from a user program or by any other means. PARAM14 will be used by the system.

Reserved for System 2 (PARAM15 and PARAM16)

These parameters are used by the system. Do not change the values of PARAM15 and PARAM16 from a user program or by any other means.

3.3.1 Specification

3.3 No-Protocol FD Communications

No-protocol FD communications is full-duplex communications. Sending and receiving is performed independently.

Only serial communications can be used for no-protocol FD communications. When using RS-422/485, use a four-wire cable.

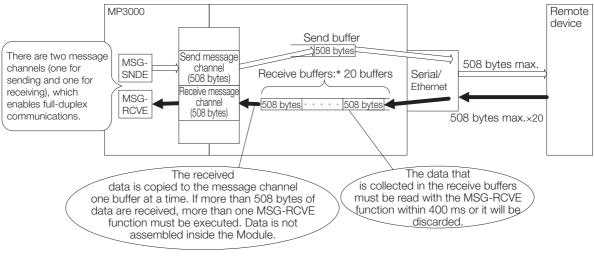
3.3.1 Specification

Item	Meaning
Serial Communications Method	Full-duplex communications
Message Channels	2 (1 for the SND function and 1 for the RCV function)
Maximum Send Size	508 bytes
Maximum Receive Size	10160 bytes
Receive Buffers	508 bytes x 20 buffers
Processing When a Data Error Occurs	Only the byte data with the error is discarded.
Data Error Detection and Reporting	Errors reported to the RCV function.

Software Versions That Support No-Protocol FD Communications The software versions that support no-protocol FD communications are listed below. Check the software version before using no-protocol FD communications. • 217IF-01 Module: Ver. 02.00 and higher • 218IF-01 Module: Not supported • 218IF-02 Module: Not supported • 260IF-01 Module: Not supported • 261IF-01 Module: Not supported • 261IF-01 Module: Not supported • MPE720: Ver. 6.37 and higher or Ver. 7.24 and higher You can check the system software version of the Communications Module by looking for the "V.**.**" sticker attached to the board in the Communications Module. 3.3.2 Protocol Operation

3.3.2 Protocol Operation

With no-protocol FD communications, you can use full-duplex communications by executing the SND function and RCV function at the same time. A maximum of 10,160 bytes of continuous data can also be received.

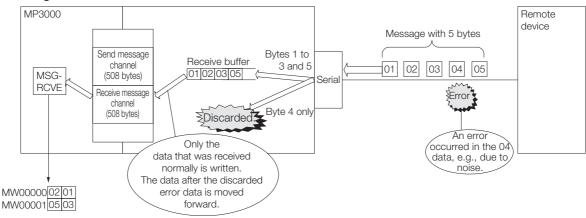


- * Receive buffer storage rules for received data
 - The segmentation of received data is monitored by time. When the time interval set for the watchdog timer (a communications parameter for the 217IF) runs out, the data received up to that point is stored in the receive buffers as one message.
 - If the received data is 508 bytes or less, the received data is stored using one receive buffer. For example, even if the received data is determined to be a one byte message, that one byte is stored using one entire receive buffer.
 - If the received data is 509 bytes or more, the continuous data is received and stored in receive buffers in 508byte chunks as long as there are free receive buffers (up to 20 buffers).

3.3.3 Processing of a Received Data Error

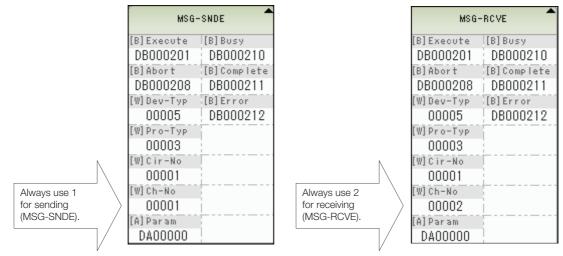
The following diagram shows the processing of a received data error for no-protocol FD communications in serial communications.

The concept of one message in no-protocol FD communications is the same as in no-protocol communications. However, when an error occurs, only the byte that caused the error is discarded, and the normal data is held in the receive buffers as is. Information is passed to a parameter in the RCV function to provide notification of data with errors inside the received message.



3.3.4 Precautions When Using No-Protocol FD Communications

The channel numbers in the functions must always be set correctly. Set Ch-No (channel number) in the SND function to 1, and set Ch-No (channel number) in the RCV function to 2.



3.4.1 MSG-SNDE Function

3.4 Message Functions Related to No-Protocol FD Communications

3.4.1 MSG-SNDE Function

Inputs and Outputs for the MSG-SNDE Function

Refer to the following section for more information on inputs and outputs. 2.3.1 MSG-SNDE Function on page 2-5

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description		
00		Processing Result	Gives the processing status.		
01		Status*	Gives the status of the current function.		
02		Detail Error Code, Lower Word	- Not used		
03		Detail Error Code, Upper Word	Not used		
04	Outputs	Status 1	Not used		
05	Outputs	Status 2	Not used		
06		Status 3	Not used		
07		Status 4	Not used		
08		Status 5	Not used		
09		Status 6	Reserved for system.		
10		Remote Station Number	Not used in no-protocol FD communications.		
11		Option	Not used in no-protocol FD communications.		
12		Function Code	Not used in no-protocol FD communications.		
13		Reserved for system.	-		
14		Remote Station Data Address, Lower Word	- Not used in no-protocol FD communications.		
15		Remote Station Data Address, Upper Word	- Not used in no-protocorr D communications.		
16		Remote Station Register Type	Not used in no-protocol FD communications.		
17	Inputs	Data Size	Sets the size of the send data.		
18		Remote CPU Module Number	Not used in no-protocol FD communications.		
19		Reserved for system.	-		
20		Local Station Data Address, Lower Word	Sets the data address to store the send data in the		
21		Local Station Data Address, Upper Word	local station.		
22		Local Station Register Type	Sets the register type of the send data to store in the local station.		
23		Reserved for system.	-		
24		For system use	-		
25		Reserved for system.	-		
26	_	Reserved for system.	-		
27]	Reserved for system.	-		
28		Reserved for system.	-		

Data Size (PARAM17)

Set the size of the data to send as the number of words or bytes.

Local Station Data Address (PARAM20 and PARAM21)

Set the address of where the send data is stored in the MP3000. The address is set as the word offset from address 0.

Local Station Register Type (PARAM22)

Set the register type of where the send data is stored in the MP3000.

Register Type Value	Туре	Remarks
0	М	Sets MW.
1	G	Sets GW.
2	I	Sets IW.
3	0	Sets OW.
4	S	Sets SW.
5 or higher	_	Not used in no-protocol communications.

3.4.2 MSG-RCVE Function

Inputs and Outputs for the MSG-RCVE Function

Refer to the following section for more information on inputs and outputs. 2.3.2 MSG-RCVE Function on page 2-20

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description
00		Processing Result	Gives the processing status.
01		Status	Gives the status of the current function.
02		Detail Error Code, Lower Word	- Not used
03		Detail Error Code, Upper Word	- Not used
04	Outouto	Status 1	Not used
05	Outputs	Status 2	Not used
06		Status 3	Not used
07		Status 4	Not used
08		Status 5	Not used
09		Status 6	Reserved for system.
10	Output	Remote Station Number	Not used in no-protocol FD communications.
11	I/O	Option	Gives the receive status when there is an error.
12	Output	Function Code	Not used in no-protocol FD communications.
13	I/O	Reserved for system.	-
14		Data Address, Lower Word	Not used in no-protocol FD communications.
15		Data Address, Upper Word	Not used in no-protocol FD communications.
16		Register Type	Not used in no-protocol FD communications.
17	Outputs	Data Size	Gives the data size that was received from the remote station. No-protocol communications 1: Number of words No-protocol communications 2: Number of bytes
18		Remote CPU Module Number	Not used in no-protocol FD communications.
19	I/O	Reserved for system.	-

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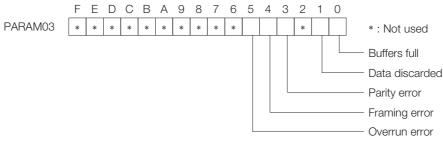
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No.	I/O	Meaning	Description	
20		Coil Offset, Lower Word		
21		Coil Offset, Upper Word	Not used in no-protocol FD communications.	
22		Input Relay Offset, Lower Word		
23		Input Relay Offset, Upper Word	- Not used in no-protocol FD communications.	
24		Input Register Offset, Lower Word		
25		Input Register Offset, Upper Word	- Not used in no-protocol FD communications.	
26		Hold Register Offset, Lower Word		
27		Hold Register Offset, Upper Word	- Not used in no-protocol FD communications.	
28		Data Relay Offset, Lower Word	Net used in no protocol ED communications	
29		Data Relay Offset, Upper Word	- Not used in no-protocol FD communications.	
30		Data Register Offset, Lower Word	Not used in no protocol ED communications	
31		Data Register Offset, Upper Word	- Not used in no-protocol FD communications.	
32		Output Coil Offset, Lower Word	Not used in no protocol ED communications	
33		Output Coil Offset, Upper Word	- Not used in no-protocol FD communications.	
34		Output Register Offset, Lower Word	- Not used in no-protocol FD communications.	
35		Output Register Offset, Upper Word	Not used in no-protocor i D communications.	
36		M Register Writing Range LO, Lower Word	Sets the first address of the M registers in which to save the data that was received from the remote	
37	Inputs	M Register Writing Range LO, Upper Word	station.	
38		M Register Writing Range HI, Lower Word	Sets the last address of the M registers in which to save the data that was received from the remote	
39		M Register Writing Range HI, Upper Word	station.	
40		G Register Writing Range LO, Lower Word	- Not used in no-protocol FD communications.	
41		G Register Writing Range LO, Upper Word		
42		G Register Writing Range HI, Lower Word	Net used in pollprotocol ED communications	
43		G Register Writing Range HI, Upper Word	 Not used in no-protocol FD communications. 	
44		O Register Writing Range LO, Lower Word		
45		O Register Writing Range LO, Upper Word	 Not used in no-protocol FD communications. 	
46		O Register Writing Range HI, Lower Word	Net used in pollprotocol ED communications	
47		O Register Writing Range HI, Upper Word	 Not used in no-protocol FD communications. 	
48		For system use	-	
49		Reserved for system.	-	
50	_	Reserved for system.	-	
51		Reserved for system.	-	

Option (PARAM11)

This parameter gives the receive status when there is an error.

This parameter is used only if No-Protocol FD is selected in the communications protocol in the 217IF Detail Definition Dialog Box. This parameter cannot be used if No-Protocol is selected.



Bit	Name	Meaning	Description
Bit 0	Buffers full	This bit is turned ON when 20 receive buffers were fully used and data could not received. 0: No buffer overflow 1: Buffer overflow occurred	There was data that could not be received because the buffers were filled before the data that was currently read.
Bit 1	Data discarded	This bit is turned ON when data was discarded by the system because data could not be obtained with the MSG- RCV function in a 400-ms period from when the data was received. 0: No discarded data due to timeout 1: Data was discarded due to timeout	There was data that was discarded due to a timeout before the data that was currently read.
Bit 3	Parity error	This bit is turned ON when a parity error occurs. 0: No parity error 1: Parity error occurred	There was data that could not be received due to a parity error in the data that was currently read.
Bit 4	Framing error	This bit is turned ON when a framing error occurs. 0: No framing error 1: Framing error occurred	There was data that could not be received due to a framing error in the data that was currently read.
Bit 5	Overrun error	This bit is turned ON when an overrun error occurs. 0: No overrun error 1: Overrun error occurred	There was data that could not be received due to an overrun error in the data that was currently read.

◆ Data Size (PARAM17)

This parameter gives the size of the data that was received as the number of words or bytes.

◆ M Register Writing Range LO (PARAM36 and PARAM37)

Set the first address in which to save the data to be received from the remote station.

◆ M Register Writing Range HI (PARAM38 and PARAM39)

Set the last address in which to save the data to be received from the remote station.

Received data that exceeds the last address is discarded.

Set the writing range so that it satisfies the following condition:

 $0 \le M$ register writing range LO $\le M$ register writing range HI $\le M$ aximum M register address

3.4.3 MSG-SND Function

Inputs and Outputs for the MSG-SND Function

The inputs and outputs for the MSG-SND function are the same as the inputs and outputs for the MSG-SNDE function.

Refer to the following section for more information.

Inputs and Outputs for the MSG-SNDE Function on page 2-5

MSG-SND Function Parameters

No.	I/O	Meaning	Description	
00	Outputo	Processing Result	Gives the processing status.	
01	Outputs	Status	Gives the status of the communications device.	
02		Remote Station Number	Not used in no-protocol FD communications.	
03		Option	Not used in no-protocol FD communications.	
04		Function Code	Not used in no-protocol FD communications.	
05		Data Address	Sets the first address of the data.	
06	Inputs	Data Size	Sets the data size for the write request.	
07	inputs	Remote CPU Module Number	Not used in no-protocol FD communications.	
08		Coil Offset	Not used in no-protocol FD communications.	
09		Input Relay Offset	Not used in no-protocol FD communications.	
10		Input Register Offset	Not used in no-protocol FD communications.	
11		Hold Register Offset	Sets the offset word address for a hold register.	
12	System	Reserved for system 1	Not used in no-protocol FD communications.	
13 to 16	System	Reserved for system 2	Not used in no-protocol FD communications.	

Processing Result (PARAM00)

The upper byte gives the processing result. The lower byte is used for system analysis.

Processing Result Value	Meaning
0000 hex	Busy
1000 hex	Complete
8y □□ hex	Error

When an error occurs, refer to the following details on errors and perform troubleshooting.

Error	Meaning	Description
8000 hex	-	Reserved for system.
81 00 hex	-	-
8200 hex	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM05 (Data Address) PARAM11 (Hold Register Offset)
83 DD hex	Data size error	The data size for sending or receiving is out of range. Check PARAM06 (Data Size).
84 00 hex	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-SND function.
8500 hex	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-SND function.
86 00 hex	-	-
87 00 hex	-	Reserved for system.

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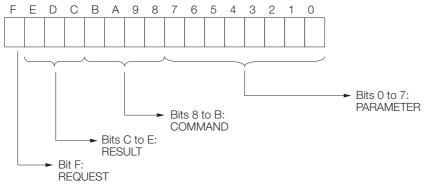
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Error Meaning		Description	
8800 hex	Communications device error	An error response was returned from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.	
8900 hex Device select error		A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-SND function.	

Status (PARAM01)

This parameter gives the status of the communications device.

The following figure shows the bit assignments and it is followed by a detailed description of each assignment.



REQUEST

This bit gives the status of the processing request for the MSG-SND function.

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

RESULT

These bits give the execution result of the MSG-SND function.

Code	Abbreviation	Meaning
1	SEND_OK	The message was sent normally.
2	REC_OK	The message was received normally.
3	ABORT_OK	The request to abort execution was completed.
4	FMT_NG	A parameter formatting error occurred.
5	SEQ_NG	A command sequence error occurred.
6	RESET_NG	A reset occurred.
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.

COMMAND

These bits indicate the processing command of the MSG-SND function. The processing that was executed depends on the command.

Code (Hex)	Abbreviation	Meaning		
1	U_SEND	General-purpose message transmission		
2	U_REC	General-purpose message reception		
3	ABORT	Forced abort		
8 M_SEND MEMOBUS command transmission: Completed when response is i (for the MEMOBUS protocol)		MEMOBUS command transmission: Completed when response is received. (for the MEMOBUS protocol)		
9 M_REC MEMOBUS command transmission: Completed when response is so (for the MEMOBUS protocol)		MEMOBUS command transmission: Completed when response is sent. (for the MEMOBUS protocol)		
С	MR_SEND	MEMOBUS response transmission (for the MEMOBUS protocol)		

■ PARAMETER

When RESULT = 4 (FMT_NG: parameter formatting error), these bits will indicate an error code from the following table.

RESULT	Code	Meaning
	00	No error
	01	Station address out of range
	02	Watchdog error for MEMOBUS response (for the MEMOBUS protocol)
When RESULT = 4	03	Error in number of retries setting
(FMT_NG: Parameter	04	Error in cyclic area setting
Formatting Error)	05	CPU number error
	06	Data address error
	07	Data size error
	08	Function code error (for the MEMOBUS protocol)

Data Address (PARAM05)

Set the first address of the data.

Enter the first address as a decimal or hexadecimal number.

Information If the first address is MW01000, enter "1000" (decimal) or "3E8" (hexadecimal).

The following table lists the setting ranges of data addresses.

No-Protocol Communications Type	Target Data Type	Function	Data Address Setting Range
No-protocol communications 1	W	Sends data in units of words.	0 to 65534 (0 to FFFE hex)
No-protocol communications 2	В	Sends data in units of bytes.*	0 to 65534 (0 to FFFE hex)

* The unit for setting addresses is words.

Data Size (PARAM06)

Set the size of the data for the write request as the number of words or bytes.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and communications device.

No-Protocol Communications Type	Target Data Type	Function	Data Address Setting Range
No-protocol communications 1	W	Sends data in units of words.	1 to 254
No-protocol communications 2	В	Sends data in units of bytes.	1 to 508

Note: The data sizes in the table are in decimal notation.

Register Offset (PARAM11)

Set the offset for the address of the write data source on the sending node.

The sending node will offset the address back by the number of words specified by the offset.

Note: A negative value cannot be set as the offset value.

Example To offset the register address by 1000 words: PARAM11 = 1000

Reserved for System 1 (PARAM12)

This parameter is used by the system. It contains the channel number of the communications buffer that is currently in use.

Information A user program must set PARAM12 to 0 on the first scan after startup. Thereafter, do not change the value of PARAM12 from a user program or by any other means. PARAM12 will be used by the system.

Reserved for System 2 (PARAM13 to PARAM16)

These parameters are used by the system. Do not change the values of PARAM13 to PARAM16 from a user program or by any other means.

3.4.4 MSG-RCV Function

Inputs and Outputs for the MSG-RCV Function

The inputs and outputs for the MSG-RCV function are the same as the inputs and outputs for the MSG-RCVE function.

Refer to the following section for more information.

MSG-RCV Function Parameters

No-protocol communications stores the received data in M registers as is without performing protocol conversion.

No.	I/O	Meaning	Description				
00		Processing Result	Gives the processing status.				
01		Status	Gives the status of the communications device.				
02		Remote Station Number	Not used in no-protocol FD communications.				
03		Option	Gives the receive status when there is an error.				
04	Outputs	Function Code	Not used in no-protocol FD communications.				
05		Data Address	Not used in no-protocol FD communications.				
06		Data Size	Gives the data size that was received from the remote station.				
07		Remote CPU Module Number	Not used in no-protocol FD communications.				
08		Coil Offset	Not used in no-protocol FD communications.				
09		Input Relay Offset	Not used in no-protocol FD communications.				
10	Inputs	Input Register Offset	Not used in no-protocol FD communications.				
11	inputs	Hold Register Offset	Not used in no-protocol FD communications.				
12		Writing Range LO	Sets the first address of the writing range.				
13		Writing Range HI	Sets the last address of the writing range.				
14	System	Reserved for system 1	Not used in no-protocol FD communications.				
15, 16	System	Reserved for system 2	Not used in no-protocol FD communications.				

This allows data to be received using any protocol matched to the other device.

Processing Result (PARAM00)

This parameter gives the processing result.

Processing Result Value	Meaning
0000 hex	Busy
1000 hex	Complete
8y □□ hex	Error

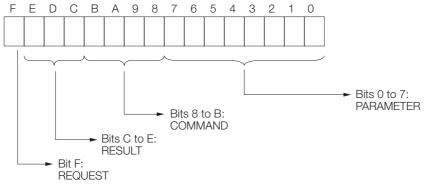
When an error occurs, refer to the following details on errors and perform troubleshooting.

Error	Meaning	Description
8000 hex	_	Reserved for system.
81 00 hex	_	-
82 00 hex	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM12 (Register Offset)
83 00 hex	Data size error	The data size for receiving is out of range. Check the data size of the sending node.
84 00 hex	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-RCV function.
85 00 hex	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-RCV function.
86 00 hex	-	-
87 00 hex	-	Reserved for system.
8800 hex	Communications device error	An error response was returned from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-RCV function.

♦ Status (PARAM01)

This parameter gives the status of the communications device.

The following figure shows the bit assignments and it is followed by a detailed description of each assignment.



REQUEST

This bit gives the status of the processing request for the MSG-RCV function.

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

RESULT

These bits give the execution result of the MSG-RCV function.

Code	Abbreviation	Meaning
1	SEND_OK	The message was sent normally.
2	REC_OK	The message was received normally.
3	ABORT_OK	The request to abort execution was completed.
4	FMT_NG	A parameter formatting error occurred.
5	SEQ_NG	A command sequence error occurred.
6	RESET_NG	A reset occurred.
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.

COMMAND

These bits indicate the processing command of the MSG-RCV function.

Code (Hex)	Abbreviation	Meaning
1	U_SEND	General-purpose message transmission
2	U_REC	General-purpose message reception
3	ABORT	Forced abort
8	M_SEND	MEMOBUS command transmission: Completed when response is received. (for the MEMOBUS protocol)
9	M_REC	MEMOBUS command transmission: Completed when response is sent. (for the MEMOBUS protocol)
С	MR_SEND	MEMOBUS response transmission (for the MEMOBUS protocol)

PARAMETER

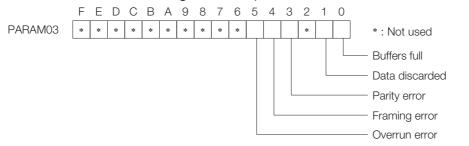
When RESULT = 4 (FMT_NG: parameter formatting error), these bits will indicate an error code from the following table.

RESULT	Code	Meaning				
	00	No error				
	01	Connection number out of range				
	02	Watchdog error for MEMOBUS response (for the MEMOBUS protocol)				
When RESULT = 4	03	Error in number of retries setting				
(FMT_NG: Parameter	04	Error in cyclic area setting				
Formatting Error)	05	CPU number error				
	06	Data address error				
	07	Data size error				
	08	Function code error (for the MEMOBUS protocol)				

Options (PARAM03)

This parameter gives the receive status when there is an error.

This parameter is used only if No-Protocol FD is selected in the communications protocol in the 217IF Detail Definition Dialog Box. This parameter cannot be used if No-Protocol is selected.



Bit	Name	Meaning	Description
Bit 0	Buffers full	This bit is turned ON when 20 receive buffers were fully used and data could not received. 0: No buffer overflow 1: Buffer overflow occurred	There was data that could not be received because the buffers were filled before the data that was currently read.
Bit 1	Data discarded	This bit is turned ON when data was discarded by the system because data could not be obtained with the MSG- RCV function in a 400-ms period from when the data was received. 0: No discarded data due to timeout 1: Data was discarded due to timeout	There was data that was discarded due to a timeout before the data that was currently read.

Continued on next page.

Continued from previous page.

Bit	Name	Meaning	Description
Bit 3	Parity error	This bit is turned ON when a parity error occurs. 0: No parity error 1: Parity error occurred	There was data that could not be received due to a parity error in the data that was currently read.
Bit 4	Framing error	This bit is turned ON when a framing error occurs. 0: No framing error 1: Framing error occurred	There was data that could not be received due to a framing error in the data that was currently read.
Bit 5	Overrun error	This bit is turned ON when an overrun error occurs. 0: No overrun error 1: Overrun error occurred	There was data that could not be received due to an overrun error in the data that was currently read.

Data Size (PARAM06)

This parameter gives the size of the received data.

The number of words is given for no-protocol communications 1.

The number of bytes is given for no-protocol communications 2.

Writing Range (PARAM12 and PARAM13)

For no-protocol communications, the received consecutive data is stored in M registers. An error will occur if a request was made to write a value that does not correspond to PARAM12 (Write Range LO) to PARAM13 (Write Range HI).

Specify the writing range (PARAM12 and PARAM13) with word addresses.

Set the writing range so that it satisfies the following condition:

0 ≤ Writing range ≤ Maximum M register address

Example

Use the following settings to set the allowable writing range of M register addresses to MW01000 to MW01999: PARAM12 = 1000

PARAM13 = 1999

Reserved for System 1 (PARAM14)

This parameter is used by the system. It contains the channel number of the communications buffer that is currently in use.

Information A user program must set PARAM14 to 0 on the first scan after startup. Thereafter, do not change the value of PARAM14 from a user program or by any other means. PARAM14 will be used by the system.

Reserved for System 2 (PARAM15 and PARAM16)

These parameters are used by the system. Do not change the values of PARAM15 and PARAM16 from a user program or by any other means.

Using Ethernet Communications

This chapter describes the operating methods for performing Ethernet communications with controllers from various manufacturers using the MEMOBUS message communications method or the no-protocol communications method.

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4.1 Communications with MP-series Controllers

When using Ethernet communications between the MP3000 and other MP-series Controllers, use the Extended MEMOBUS protocol as the communications protocol. The Extended MEMO-BUS protocol allows the master to read and write the slave registers.

This section describes communications when the MP3000 acts as a slave and as the master. When the MP3000 acts as a slave, communications can take place using automatic reception or using the MSG-RCVE function.

When the MP3000 acts as the master, communications can take place using I/O message communications or the MSG-SNDE function.

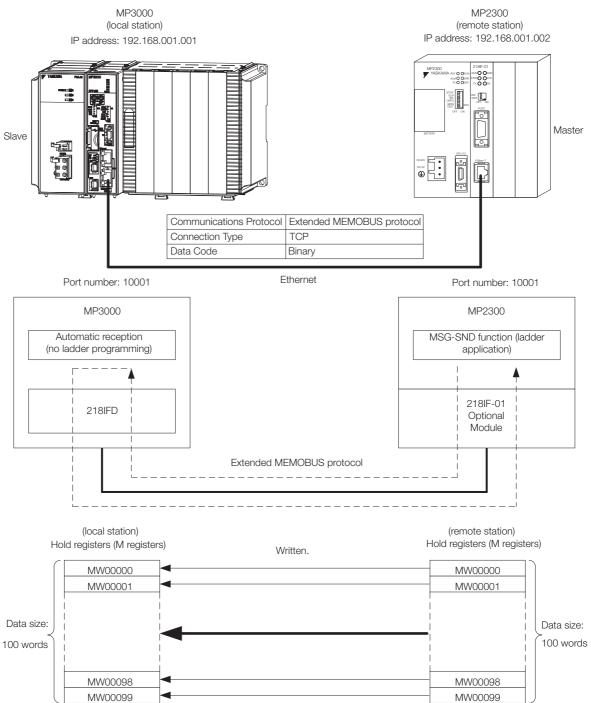
4.1.1 Using Automatic Reception with the MP3000 as a Slave

This section describes how to communicate with the MP2300 by using automatic reception.

4.1.1 Using Automatic Reception with the MP3000 as a Slave

Setting Example

The following figure illustrates how the contents of the MW00000 to MW00099 hold registers in the MP2300 master are written to the MW00000 to MW00099 hold registers in the MP3000 slave.



4.1.1 Using Automatic Reception with the MP3000 as a Slave

MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Madula	Module Function Module/Slave		Circuit No/Axis	Circuit No/AxisAddress		Register(Input/Output)		
Module	Function Module/Slave	Status	Start	supied circu	Motion Register	Disabled	Start - End	Size
1 [CPU-302(32axes)] :								
	01 CPU							
	02 218IFD	·	몲 Circuit No1	1		DutPut	0000 - 07FF[H]	20
= 00 (■) CPU302(32)[]	03 ⊞ SVC32 2		💷 Circuit No1	1	8000 - 87FF[H]	Input 📄 OutPut	0800 - 0BFF[H]	1
	04 표 SVR32		💷 Circuit No3	1	9000 - 97FF[H]			
MBU-2008	05 M-EXECUTOR						0C00 - 0C3F[H]	
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[-]							
02 UNDEFINED[]								
08 UNDEFINED								
2 UNDEFINED								
2 UNDEFINED								
UNDEFINED								
UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

023								
Transmission Parameters S	tatus							
- Transmission Farameters -								
IP Address	;	192 🕂	168	1	. 1	÷ (0-255)	Module Name Definiti	
IF Mudress			100 -				Equipment name :	CONTROLLER NAME
Subnet Mask	:	255 📩	255 🛨	255 🛨	0	(0-255)		
Gateway IP Address	:	0 🔆	0 🗄	0 ÷	0	÷ (0-255)	Detail Definition	

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask Boxes], enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	Connection Parameter Message Communication Le following parameters for message communications can be easily set. Easy setting Connections (C NO) 01-10 can be set to receive data automatically.										
		CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>	
		01				+	•	-	Setting*		
	[02				-	•	-	Setting*		
		03				+	•	-	Setting*		
		04				+	•	-	Setting*		
		05				•	•	•	Setting*		
		06				•	•	•	Setting*		
		07				+	•	-	Setting*	-	
•								1			

The Message Communication Easy Setting Dialog Box will be displayed.

4.1.1 Using Automatic Reception with the MP3000 as a Slave

- 4. Set the connection parameters. 6 \bigcirc 3 4 Message Communication Easy Settirg Connect No.: 1 Specify the connection number. **MP** Series Other Device Node Port IP Address : (0-255) Local Port IP Address : 192.168.001.001 192 ÷ 168 ÷ 001 ÷ 002 ÷ Communication protocol Type Extended MEMOBUS 💌 Default Port No Port No. (256-65535) (256-65535) 10001 10001 Connect Type TCP -Code BIN Ŧ ÖΚ Cancel 5 7
 - ① Select [1] in the [Connect No.] Box.
 - @ Enter "10001" in the [Port No.] Box for the MP-series Controller.
 - ^③ Select [Extended MEMOBUS] in the [Communications Protocol Type] Box, and then click the [Default] Button.
 - ④ Select [TCP] in the [Connect Type] Box.
 - (5) Select [BIN] in the [Code] Box.
 - © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
 - ⑦ Enter "10001" in the [Port No.] Box for the other device.
- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box. Note: If parameters have already been set for the same connection number and you click the [Yes] Button in
 - the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

Connection Parameter Message Communication Le following parameters for message communications can be easily set. Casy setting Connections (C NO) 01-10 can be set to receive data automatically.													
	CNO	Local Port	Node IP Address	Node Port			Protocol Type		Code	Detail		^	
	01	10001	192.168.001.002	10001	TOP	-	Extended MEMOBUS 🖉	·	BIN 🔣	Setting*			
	02					-	•	•	-	Setting*			
	03					-	-	•	-	Setting*			
	04					-	-	•	-	Setting*		_	
	05					-	-	·	-	Setting*			
	06					-		·	-	Setting*			
	07					-		•	-	Setting*		-	-
d 🗖		·	,					1					
or Help,	press F1											NUM	

8. Select the [Enable] Option in the Automatically Reception Tab Page and then click the [OK] Button.

Detail Setting	
Automatically Reception	
© Disable © Enable Unable to automated rec protocol type is no contro	
Transmission Buffer Channel 🛛 💌	
Slave I/F Register Settings	Head REG
Readout of Input Relay	IW00000
Readout of Input Register	IW00000
Readout / Write-in of Coil	MW00000
Readout / Write-in of Hold Register	MW00000
Readout / Write-in of Data Relay	GW00000
Readout / Write-in of Data Register	GW00000
Readout / Write-in of Output Coil	OW00000
Readout / Write-in of Output Register	OW00000
Write - in width of Coil/Hold Register LC): MW00000
н	: MW1048575
Write - in width of Data Relay/Register LC	D: GW00000
н	: GW2097151
Write - in width of Output Coil/Register LC); OW00000
HI	OW17FFF
Automatic input processing delay time 0	ms (0-100)
The influence on a low-speed scanning can b according to this parameter. [Attention] It is not in the setting of the cor period of an automatic reception.	
[OK Cancel

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.

9. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as a slave.

Setting Up the Remote Device (MP2300)

Use the following procedure to set up the MP2300.

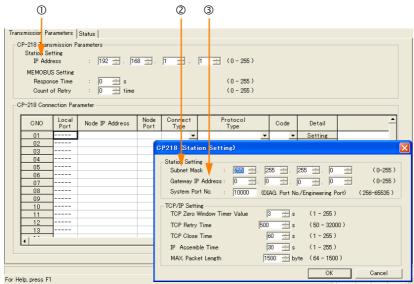
Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for [218IF] in the [Function Module/Slave] Area of the Module Configuration Definition Tab Page.

Online						ETH	IERNET[1]I	P192.168.1.1 CPU-I	RUN —	\rightarrow
~	le Configuration : [MP230	01×								
e Save to pro	Edit Online	Self Configuration	specified module							
it	Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register		Register(Input/C)utput)	
Edit		Tunction Module/Shave	Jialus	Start	supied circu	Motion Negister	Disabled	Start – End	Size	Sca
Edit 01 MP2300 :		01 CPU	Driving							-
	00 (a) MP2300[Driving]	02 10	Driving		1	10000	Input	0000 - 0001[H]	2	
	CO (= / MP2300[Driwing]	03 ⊞ SVB	Driving	⊏⊞ Circuit No1	1	8000 - 87FF[H]	Input	0010 - 040F[H]	1024	
		04 ⊞ SVR	Driving	Circuit No2	1	8800 - 8FFF[H]		<u></u>	<u>0.0.00</u> -1	1
	01 🕑 218IF-01 [Driving]	01 217IF	Driving	10101 Circuit No1	1					
		02 218IF	Driving	品 Circuit No1	1	2000-005		8	2002	-22
	02 UNDEFINED[03 UNDEFINED[_

The 218IF Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.



① In the [IP Address] Boxes, enter the following address: 192.168.001.002.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Set the connection parameters.

001	110 00	/////00	non p	ununio	.010.											
		1	C	2)	3	e	Ð	C	5		6					
		- E			- I						1					
	P-218 Conn	ection <mark>P</mark> ar	ameter —								_					
	CNO	Local Por	Node I	Address	No de Port	Co	nnect /pe	Pr	otocol Vype		-Coc	de	Detail		<u> </u>	
	01	00001	192.168.0	01.001	10001	TCP	-	Extended	MEMOBUS	-	BİN	-	Setting			
	UZ	10002	192.168.0	01.001	10002	TCP	-	Extended I	MEMOBUS	-	BIN	-	Setting			
	03	10003	192.168.0	01.001	10003	TCP	-	Extended I	MEMOBUS	-	BIN	-	Setting			
	04						-			-		-	Setting			
	05	10005	192.168.0	01.001	10005	TCP	-	Extended I	MEMOBUS	_	BIN	-	Setting			
	06	10006	192.168.0	01.001	10006	TOP	-	Extended I	MEMOBUS	-	BIN	-	Setting			
	07						-			-		-	Setting			
	08						-			-		-	Setting			
	09					_	- -			-		-	Setting			
	10	I			1		-	1		Ţ		- I	Satting	1	•	
L	• I					_										
For He	lp, press F1												Γ		NUM	

① Enter "10001" in the [Local Port] Box.

© Enter the following address in the [Node IP Address] Boxes: 192.168.001.001.

③ Enter "10001" in the [Node Port] Box.

④ Select [TCP] in the [Connect Type] Box.

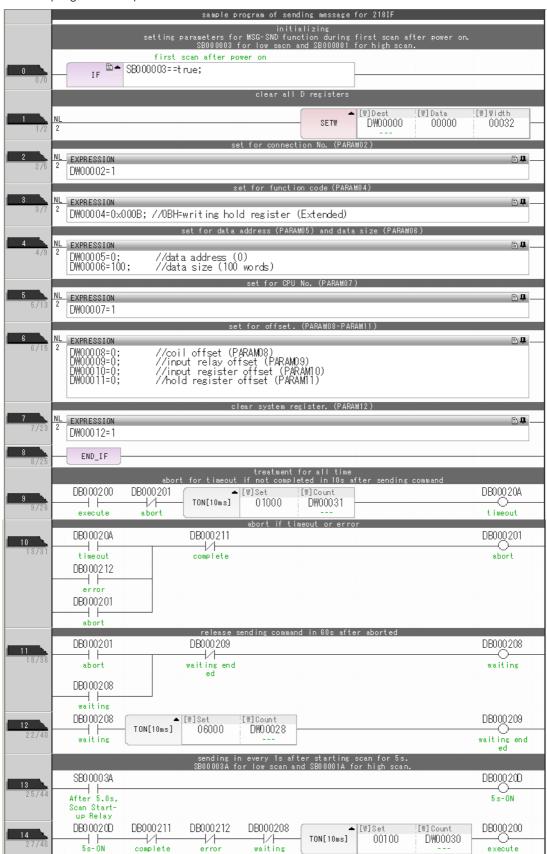
© Select [Extended MEMOBUS] in the [Protocol Type] Box.

© Select [BIN] in the [Code] Box.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

4. Create a ladder program for the MSG-SND function.

A ladder program example is shown below.



15 33/53							- MSC	G- SND
00700							[B]Execute DB000200 execute	[8] Busy DB000210
							[B]Abort DB000201 abort	[B]Complete DB000211 complete
							[W]Dev-Typ 00006	[B]Error DB000212 error
							[W]Pro-Typ 00001 [W]Cir-No	
							00001 [W]Ch-No	
							00001 [A]Param DA00000	
				finist	ned normally			
16	IF D.	DB000211==tr	ue					
34/69	DB000201						INC	[WL]Dest DW00024
35/71	END_IF						L	count norma Ily
37/75		J						
				finishe	ed abnormally			
19	IF B-	DB000212==tr	ue	finishe	ed abnormally			
38/76	NI	DB000212==tr	ue	finishe	ed abnormally		INC	[WL]Dest DW00025
38/76	NI	DB000212==tr	ue					[WL]Dest DW00025 count abnor mally
38/76	NL 2 NL EXPRESSION 2 DW00026=DW	DB000212==tr	ılt		ed abnormally			DW00025 count abnor
38/76 20 39/78 21	NL 2 NL EXPRESSION 2 DW00026=DW	W00000; //resu	ılt	saving the	result and st	atus		DW00025 count abnor mally
38/78 20 39/78 21 40/79 22 41/83	NL 2 NL EXPRESSION 2 DW00026=DV DW00027=DV END_IF DB00020A	100000; //resu 100001; //stat]	ılt	saving the		atus		DW00025 count abnor mally
38/76 20 39/78 21 40/79 22	NL 2 DW00026=DW DW00027=DW END_IF	100000; //resu 100001; //stat	ılt	saving the	result and st	atus		DW00025 count abnor mally
38/78 20 39/78 21 40/79 22 41/83 23	NL 2 NL EXPRESSION 2 DW00026=DV DW00027=DV END_IF DB00020A 1 time out	100000; //resu 100001; //stat 	ult :us	saving the	result and st	atus		DW00025 count abnor mally DB00020C timeout occ
38/76 20 39/78 21 40/79 22 41/88 23 42/84 24 45/87	NL 2 NL EXPRESSION 2 DW00026=DV DW00027=DV END_IF DB00020A time out IF	00000; //resu 100001; //stat 	ult :us	saving the	result and st	atus		DB00020C timeout occ ured UWL]Dest DW0023
38/76 20 39/78 21 40/79 22 41/83 23 42/84 24 45/87 25 46/89 26	NL 2 NL EXPRESSION 2 DW00026=DV DW00027=DV END_IF BB00020A ↓ time out IF ■ NL 2	00000; //resu 100001; //stat 	ult :us	saving the	result and st	atus		DW00025 count abnor mally DB00020C timeout occ ured
38/76 20 39/78 21 40/79 22 41/83 23 42/84 24 45/87 25 46/89	NL 2 NL EXPRESSION 2 DW00026=DV DW00027=DV END_IF DB00020A time out IF	00000; //resu 100001; //stat 	ult :us	saving the	result and st	atus		DW00025 count abnor maliy DB00020C time out occ ured .[WL]Dest DW00023 count timeo

5. Save the data to flash memory.

This concludes the setup.

♦ Starting Communications

1. Turn ON the power to the MP3000 to start receiving messages. The system will automatically start the message reception operation. No further operation is required.

2. Turn ON the Execute Bit (e.g., DB000200) for the MSG-SND function in the MP2300 to start sending messages.

The ladder program example is designed to send a message every second after five seconds have elapsed from when the low-speed scan (or high-speed scan) starts.

To change the message transmission interval, change the timer value $\ensuremath{\mathbb{O}}.$

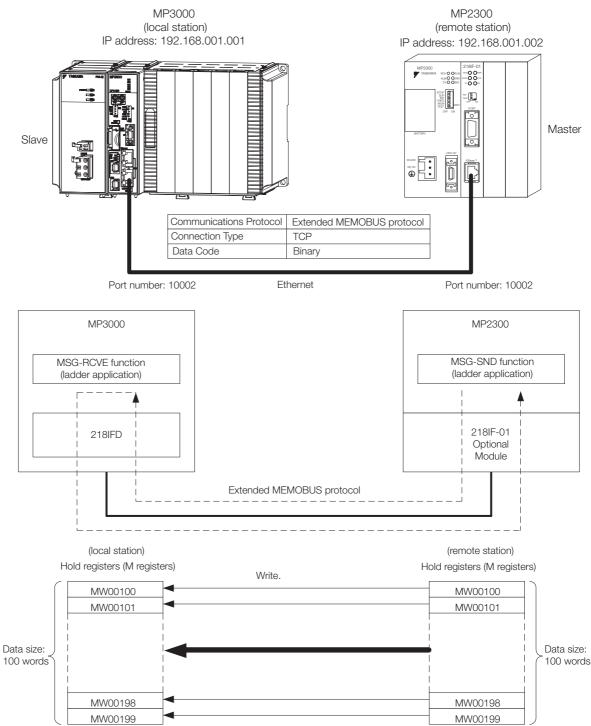


You can use the MSG-RCVE function together with automatic reception by maintaining a separate connection.

This section describes how to communicate with the MP2300 by using the MSG-RCVE function.

Setting Example

The following figure illustrates how the contents of the MW00100 to MW00199 hold registers in the MP2300 master are written to the MW00100 to MW00199 hold registers in the MP3000 slave.



4

MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	isAddress	Mating Desister		Register(Input/	Output)
Module	Function Module/Slave	Status	Start	supied circu	Motion Register	Disabled	Start – End	Size
01 [CPU-302(32axes)] :								
	01 CPU							
E 00 🝙 CPU302(32)[]	02 218IFD ्र		몲 Circuit No1	1		DutPut	0000 - 07FF[H]	204
	०३ ⊞ SVC32 ्	5	💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	10
의 00 (● CPU302(32)[] 품 문 응	04 🗄 SVR32		💷 Circuit No3	1	9000 - 97FF[H]			
- 808	05 M-EXECUTOR ्ट्	5					0C00 - 0C3F[H]	
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[]							
02 UNDEFINED[]							
08 UNDEFINED								
02 UNDEFINED								
2 UNDEFINED								
3 UNDEFINED								
4 UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

123	
Transmission Parameters S	8
- Transmision Farameters -	
IP Address	192 🔆 . 168 👾 . 1 🛨 . 1 👾 (0-255) Module Name Definition Equipment name : CONTROLLER NAME
Subnet Mask	265 🛨 255 🛨 0 🛨 (0-255)
Gateway IP Address	0

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.
② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	nection Parame essage Commur Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message (i be set to	communication receive data	s can be easily set. automatically.			
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>
	01				-	•	•	Setting*	
	02				•	-	•	Setting*	
	03				+	-	-	Setting*	
	04				-	-	-	Setting*	
	05				•	-	•	Setting*	
	06				•	-	-	Setting*	
	07				+	-	-	Setting*	-
•							1		

The Message Communication Easy Setting Dialog Box will be displayed.

- 4. Set the connection parameters. \bigcirc 3 4 6 Message Communication Easy Setting Connect No.: 2 Specily the connection number. **MP** Series Other Device Local Port IP Address Node Port IP Address : (0-255) 192.168.001.001 192 : 168 : 001 : 002 : Communication protocol Type Extended MEMOBUS ▼ Default Port No. (256-5535) Port No. (256-65535) 10002 10002 Connect Type TCP • BIN Code • ΟK Cancel
 - ① Select [2] in the [Connect No.] Box.
 - @ Enter "10002" in the [Port No.] Box for the MP-series Controller.
 - ③ Select [Extended MEMOBUS] in the [Communications Protocol Type] Box, and then click the [Default] Button.

(5)

 \bigcirc

- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- ⑦ Enter "10002" in the [Port No.] Box for the other device.
- Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.
- 5. Click the [OK] Button.

6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

CNO Local Port Node IP Address Node Port Connect Type Protocol Type Code Detail 01 • <	
02 10002 192.168.001.002 10002 TCP 🗸 Extended MEMOBUS 🗸 BIN 🔍 Setting* 🖓	
03 • • Setting*	
04 🗸 🗸 Setting*	
05 🗸 🗸 Setting*	
06 🗸 🗸 Setting*	
07 • • • • Setting*	

8. Select the [Disable] Option in the Automatically Reception Tab Page and then click the [OK] Button.

Detail Setting	\mathbf{X}
Automatically Reception	
© Disable O Enable Unable to automated re protocol type is no con	
Transmission Buffer Channel 🛛 💌	
Slave I/F Register Settings	Head REG
Readout of Input Relay	1W00000
Readout of Input Register	1W00000
Readout / Write-in of Coil	MW00000
Readout / Write-in of Hold Register	MW00000
Readout / Write-in of Data Relay	GW00000
Readout / Write-in of Data Register	GW00000
Readout / Write-in of Output Coil	OW00000
Readout / Write-in of Output Register	OW00000
Write - in width of Coil/Hold Register	LO: MW00000
	HE MW1048575
Write - in width of Data Relay/Register	LO: GW00000
	HE GW2097151
Write - in width of Output Coil/Register	LO: 0W00000
	HE OW17FFF
Automatic input processing delay time	ms (0-100)
The influence on a low-speed scanning can according to this parameter. [Attention] It is not in the setting of the c period of an automatic reception.	· ·
	OK Cancel

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

- initializing setting parameters for MSG-RCVE function during first scan after power on \$B000003 for low scan and \$B000001 for high scan. IF ▲ 'After Low Scan Start, Only 1 Scan ON' == LowScan.FirstScan == TRUE; 'TRUE 0 clear all D register [W]Dat 1 00000 SETW DW00000 00200 set for ection No. (PARAM10) 2 EXPRESSION D. 'DW00110'=2 DW00110=2; //using connection 2 set for offset (PARAM20 to PARAM35) 3 EXPRESSION **₽₽** 'DW00120'=0 DW00120=0; //coil offset MB low (0) 'DW00121'=0 DW00121-0; //coil offset MB high (0) 'DW0012210; DW00122=0; //input relay offset IB low (0) 'DW00123'=0 DW00122=0; //input relay offset IB low (0) 'DW00123=0; //input relay offset IB high (0) 'DW00124=0; //input register offset IW low (0) 'DW00124=0; //input register offset IW high (0) 'DW00125=0; //input register offset IW high (0) 'DW00126=0; //hold register offset MW low (0) DW00127=0 DW00127=0 DW00127=0; //hold register offset MW high (0) 'DW00128=0; //hold register offset B low (0) 'DW00128=0; //data relay offset GB low (0) 'DW00129=0; //data register offset GW low (0) 'DW00129=0; //data register offset GW low (0) DW00130=0; //data register offset GW low (0) 'DW00131'=0 DW00131'=0 DW00131=0; //data register offset GW high (0) 'DW00132'=0 DW00132=0 DW00132=0; //output coil offset OB low (0) 'DW00133'=0 |DW00133'=0 DW00133=0; //output coil offset OB high (0) DW00134'=0 DW00134=c; //output register offset OW low (0) DW00135=0 DW00135=0; //output register offset OW high (0) M writing range (PARAM36 to PARAM39) 4 EXPRESSION D.P. ⁷DW00138⁺20x000 DW00138⁼0x000; //M writing range LO low ⁷DW00137⁺20x000; //M writing range LO high ⁷DW00137⁺20x000; //M writing range LO high ⁷DW00138⁺20xFFFF DW00138=0xFFFF DW00138=0xFFFF; //M writing range HI low 'DW00139'=0x000F DW00139=0x000F; //W writing range HI high G writing range (PARAM40 to PARAM43) 5 EXPRESSION B**P** EXPERSION 'DW00140'=0x000 DW00140=0x000; //G writing range LO low 'DW00141'=0x000 PW00141'=0x000; //G writing range LO high 'DW00142'=0xFFFF DW00142'=0xFFFF; //G writing range HI low DW00143'=0x001F; //G writing range HI high) writing range (PARAM44 to PARAM47) 6 EXPRESSION **₽** 'DW00144'=0x000 'DW00144'=0x000 PW00144-0x000; //0 writing range LO low 'DW00145'=0x000 DW00145=0x000; //0 writing range LO high 'DW00146'=0x7FFF; //0 writing range HI low 'DW00147'=0x0001; //0 writing range HI high 7 END_IF ■ treatment for all time receiving command created. SB000004 DB000201 DB000200 8 Always ON -|∕|-abort execute MSG-BOVE [B]Execute [B]Bus DB000210 DB000200 bus [B] Abor 1 [B]Complete DB000201 DB000211 abor complete [B] Error DB000212 [W] Dev-Typ 00016 erro [W] Pro-Typ 00001 [W]Cir-No 00001 [W]Ch-No 00001 [A] Para DA00100
- **9.** Create a ladder program for the MSG-RCVE function. A ladder program example is shown below.

4.1 Communications with MP-series Controllers

4.1.2 Using the MSG-RCVE Function with the MP3000 as a Slave

		♦ finished normally			
IF DB000211=	THE TRUE				
127 -					
DB000201					▶ [WLQ] Dest D₩00024
13/- 2 abort				INC	count nor ally
				1	arry
157- END_IF		♦finished abnormally			
■ 'error'==	'TRUE'	◆finished abnormally		-	
167- IF DB000212=	=TRUE;				
NL				1	► [WLQ] Dest D₩00025
17/- 2				INC	count abn
				[WLFQD]Src	rmally [WLFQD]Des
NL			STORE	DW00000	DW00026
18/- 2			510112		result (P RAMOO)
				[WLFQD]Src	[WLFQD]Des
197- 2			STORE	DW00001	DWOOO27 status (P
107 -					RAM01)
END_IF	1 I I I I I I I I I I I I I I I I I I I				
207-					
		END			

10. Save the data to flash memory.

This concludes the settings for using the MP3000 as a slave.

Setting Up the Remote Device (MP2300)

Use the following procedure to set up the MP2300.

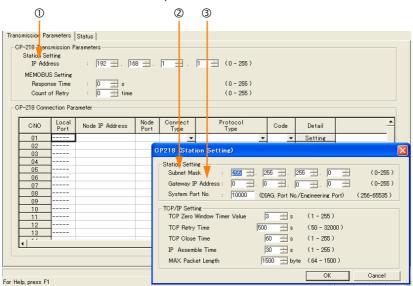
1. Double-click the cell for [218IF] in the [Function Module/Slave] Area of the Module Configuration Definition Tab Page.

								P192.168.1.1 CPU-I		\rightarrow
M Module I	Configuration : [MP2300	11x								
Save to projec	Edit Online	Self Configuration	specified module							
Γ	Module	Function Module/Slave	Status	Circuit No/Axi		Motion Register		Register (Input/C		
	I MP2300 :			Start	supied circu		Disabled	Start - End	Size	Sca
itatus		01 CPU	Driving							
	00 (🝙 MP2300[Driving]	02 IO	Driving		1		Input OutPut	0000 - 0001[H]	2	1000
	an (a) wirzaud[Driving]	03 ⊞ SVB	Driving	💷 Circuit No1	1	8000 - 87FF[H]	Input OutPut	0010 - 040F[H]	1024	
		04 🛨 SVR	Driving	💷 Circuit No2	1	8800 - 8FFF[H]		<u></u>	<u>00000</u>	200
	01 🕒 218IF-01 [Driving]	01 217IF	Driving	10101 Circuit No1	1					
		02 218IF	Driving	금 Circuit No1	1	12222		22222	22222	122
	12 UNDEFINED[

The 218IF Detail Definition Dialog Box will be displayed.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

2. Set the communications parameters.



① In the [IP Address] Boxes, enter the following address: 192.168.001.002.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Set the connection parameters.

	1	2	3	4	5	6		
218 Conr	nectio <mark>n</mark> Pa	rameter -						
CNO	Lccal Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	
01	10001	192.16.001.001	10,001	ТСР	Extended NEMOBUS	👻 BIN 🔍	Setting	
02	0002	192.168.001.001	10002	ТСР 🔻	Extended MEMOBUS	🔻 BIN 👻	Setting	
03	10003	192.168.001.001	10003	ТСР 🔻	Extended MEMOBUS	👻 BIN 🔍	Setting	
04				-		- -	Setting	
05	10005	192.168.001.001	10005	ТСР 🔻	Extended MEMOBUS	🕶 BIN 📼	Setting	
06	10006	192.168.001.001	10006	ТСР 👻	Extended MEMOBUS	👻 BIN 👻	Setting	
07				-			Setting	
08				-		• •	Setting	
09				-			Setting	
10							Satting	1

① Enter "10002" in the [Local Port] Box.

@ Enter the following address in the [Node IP Address] Boxes: 192.168.001.001.

③ Enter "10002" in the [Node Port] Box.

④ Select [TCP] in the [Connect Type] Box.

© Select [Extended MEMOBUS] in the [Protocol Type] Box.

© Select [BIN] in the [Code] Box.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

4. Create a ladder program for the MSG-SND function. A ladder program example is shown below.

program for message sending (218IF) initializi setting parameters for MSG-SND function SB000003 for low sach and SE first scan after power on. for high scan. first scan after power on IF SB000003==t rue; clear all D registers [W] Data 00000 [W]Width ▲ [₩]Dest NL DW00000 00032 SETW 2 set for connection No. (PARAM02) NL EXPRESSION P.D. DW00002=2 set for function code (PARAM04) NL EXPRESSION B **A** DW00004=0x0009; //09H=reading hold rigister (Extended) set for data address (PARAM05) and data size (PARAM06) NL 2 EXPRESSION **PP** //data address (100) //data size (100 words) DW00005=100; DW00006=100; set for CPU No. (PARAM07) <u>NL</u> 2 EXPRESSION B**P** DW00007=1 set for offset. (PARAM08-PARAM11) NL EXPRESSION ₽₽ 2 DW00008=0; DW00009=0; DW00010=0; DW00011=0; //coil offset (PARAM08) //input relay offset (PARAM09) //input register offset (PARAM10) //hold register offset (PARAM11) clear system register. (PARAM12) [WLF]Src [WLF]Dest NL STORE 00000 DW00012 END_IF treatment for all time abort for timeout if not completed in 10s after sending comman DB000200 DB000201 DB00020A [W]Count ▲ [₩]Set -1/-abort TON[10ms] 01000 DW00031 execute -0 timeout abort if timeout or erro DB0 002 0A DB000211 DB000201 10 timeout complete \bigcirc abort DB000212 ⊢ ⊢ error DB000201 ⊣ ⊨ abort release sending command in 60s after aborted DB0.002.01 DB000209 DB000208 ⊣⊣ abort -1/-1 waiting end waiting ed DB0 002 08 waiting DB0 002 08 [W]Count DW00028 DB000209 WlSet 12 TON[10ms] 06000 ---| |---waiting waiting end ed sending in every 1s after starting scan for SB00003A for low scan and SB00001A for high s SB0 000 3A DB00020D 13 After 5.0s, Scan Start-up Relay 5 s-0N DB00020D DB000211 DB000212 DB000208 DB000200 🔺 [W]Set [W]Coun 14 00100 complete -|/-error --|∕|--waiting TON[10ms] --| |--5s-0N DW00030 execute

15							- MSC	G- SND
00/00							[B]Execute DB000200 execute	[B]Busy DB000210
							[B] Abort DB000201 abort	[B]Complete DB000211 complete
							[W]Dev-Typ 00006	[B]Error DB000212 error
							[W]Pro-Typ 00001	
							[W]Cir-No 00001 [W]Ch-No	
							00002 [A]Param DA00000	
				finishe	ed normally			
16	IF 🗎 🕇	DB000211==tn	Je	1 111 3110		7		
34/69	DB000201						INC	• [WL]Dest DW00024 count norma
18	abort						L	lly
37/75	END_IF							
01710				finisher	i abnormally			
19	IF 🖹 📥	DB000212==t n	Je	finished	d abnormally			
	IF E	DB0 002 12==t n	Je	finisheo	d abnormally		INC	· [WL]Dest DW00025 count abnor
19 38/76 20 39/78	NL2	DB0 002 12==t n	9L		d abnormally esult and sta	itus		DW00025 count abnor mally
19 38/76 20	NL 2 NL EXPRESSION 2 DW00026=DW0	DB000212==tn 00000; //resu 00001; //stato	lt			.t us		DW00025
19 88/76 20 88/78 21	NL 2 NL EXPRESSION 2 DW00026=DW0)0000; //resu	lt			,tus		DW00025 count abnor mally
19 38/78 20 39/78 21 40/79 22 41/83	NL 2 NL EXPRESSION 2 DW00026=DWC DW00027=DWC END_IF DB00020A	00000; //resu 00001; //statu DB00 <u>0</u> 208	lt	saving the r				DW00025 count abnor mally P 4 DB00020C
18 88/76 20 39/78 21 40/78 22	NL 2 2 2 2 2 0W00026=DW0 0W00027=DW0 0W00027=DW0 0W00027=DW0	0000; //resu 0001; //statu	lt	saving the r	esult and sta			DW00025 count abnor mally
13 38/76 20 39/78 21 40/79 22 41/83 28	NL 2 DW00026=DW0 DW00027=DW0 END_IF DB00020A timeout	00000; //resu 00001; //stato DB000208	lt us	saving the r	esult and sta			DH00025 count abnor mally BB00020C C timeout occ
13 38/76 20 39/78 21 40/78 22 41/83 23 42/84 24 45/87 25 25	NL 2 DW00026=DW0 DW00027=DW0 END_IF DB00020A timeout	00000; //resu 10001; //stati DB000208 	lt us	saving the r	esult and sta			DH00025 count abnor mally BB00020C C timeout occ
13 38/76 20 39/78 21 40/78 22 41/83 23 42/84 24 45/87 25 25	NL 2 NL 2 DW00026=DWC DW00027=DWC END_IF DB00020A timeout IF	00000; //resu 10001; //stati DB000208 	lt us	saving the r	esult and sta			DH00025 count abnor mally DB00020C timeout occ ured

5. Save the data to flash memory.

This concludes the setup.

Starting Communications

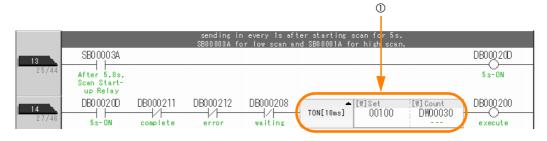
1. Turn ON the power to the MP3000 to start receiving messages.

In the ladder program example, message reception starts immediately after the system starts. No further operation is required.

2. Turn ON the Execute Bit (e.g., DB000200) for the MSG-SND function in the MP2300 to start sending messages.

The ladder program example is designed to send a message every second after five seconds have elapsed from when the low-speed scan (or high-speed scan) starts.

To change the message transmission interval, change the timer value $\ensuremath{\mathbb{O}}.$

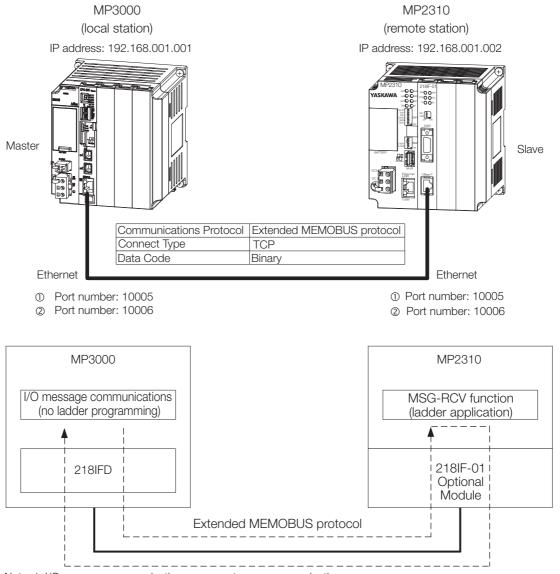


4.1.3 Using I/O Message Communications with the MP3000 as the Master

This section describes how to communicate with the MP2310 by using I/O message communications.

Setting Example

The following figure illustrates how the contents of the MW00200 to MW00299 hold registers in the MP2310 slave are read to the IW0000 to IW0063 input registers in the MP3000 master and how the contents of the OW0064 to OW00C7 output registers in the MP3000 master are written to the MW00300 to MW00399 hold registers in the MP2310 slave.



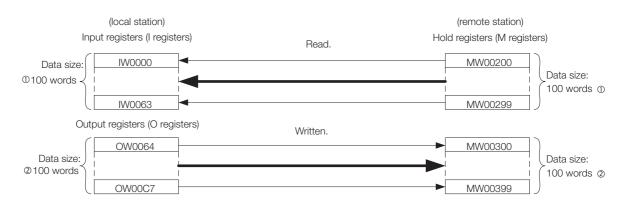
Note: 1. I/O message communications use one-to-one communications.

2. When using the Extended MEMOBUS protocol to communicate with an MP-series Controller, you can only read and write hold registers.

3. When communicating with multiple remote devices or when you need to perform any operations other than reading or writing to hold registers, use the Send Message function (MSG-SNDE).

4.1 Communications with MP-series Controllers

4.1.3 Using I/O Message Communications with the MP3000 as the Master



MP3000 Setup

Use the following procedure to set up the MP3000.

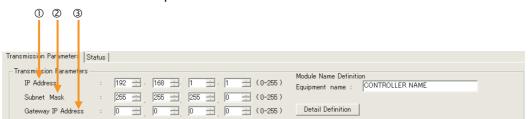
Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Gircuit No/Axi	sAddress	Motion Register		Register(Input/	Output)
Module	Function Module/Slave	Status	Start	supied circu	Motion Register	Disabled	Start - End	Size
01 [CPU-302(32axes)] :								
	01 CPU							
	02 218IFD		묾 Circuit No1	1		Input	0000 - 07FF[H]	2048
	03 ⊞ SVC32		🛥 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024
요 00	04 🗄 SVR32		🛥 Circuit No3	1	9000 - 97FF[H]			
	05 M-EXECUTOR						0C00 - 0C3F[H]	64
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[]							
02 UNDEFINED[]							
03 UNDEFINED								
02 UNDEFINED								
02 UNDEFINED								
03 UNDEFINED								
04 UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.



① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

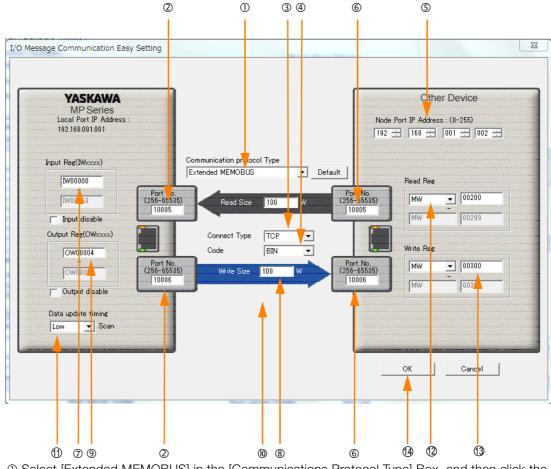
3. Select the [Enable] Option in the [I/O Message Communication] Area of the [Connection Parameter] Area.

I/O Messi C Direbl		on							
Easy s	-	ssible to set easily tha w _ Scan	at communi	cate the I/O i	nessage.				
Rea Wri		Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail		
Re- Wri				•	•	• •	Setting Setting		
4									►
	Hea	d register number			Head register number	data size			
	🔲 🔲 input disabl	e IW00000 4		<- Hold reg	ister (MW) 🚽 00000	4	W	Node	

4. Click the [Easy setting] Button.

The Message Communication Easy Setting Dialog Box will be displayed.

5. Set the connection parameters.



① Select [Extended MEMOBUS] in the [Communications Protocol Type] Box, and then click the [Default] Button.

Note: If you select the Extended MEMOBUS communications protocol, you will be able to read and write only hold registers (MW). © Enter "10005" and "10006" in the [Port No.] Box for the MP-series Controller.

- ③ Select [TCP] in the [Connect Type] Box.
- ④ Select [BIN] in the [Code] Box.
- ⑤ Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- © Enter "10005" and "10006" in the [Port No.] Boxes for the other devices.
 - Note: In I/O message communications, a message is transmitted from each port for which a register read/ write is initiated. Therefore, for this example, the connected remote device must support a message reception function to receive two messages.
- ⑦ Enter "IW0000" in the [Input Reg] Box as the read data destination.
- ® Enter "100" in the [Read Size] Box as the size of data to read.

4

4.1.3 Using I/O Message Communications with the MP3000 as the Master

- ⁽⁹⁾ Enter "OW0064" in the [Output Reg] Box as the write data destination.
- Enter "100" in the [Write Size] Box as the size of data to write.
- Isolate timing Box as the timing to update input and output data between the CPU Function Module and 218IFD.
 - Note: The data update timing is the timing at which the CPU Function Module and 218IFD exchange data. Communications with the remote device are performed asynchronously. The data update timing therefore does not necessarily mean that the messages are sent to the remote device.
- Inter "MW00200" in the [Read Reg] Box as the register type and first address to read from on the remote device.
- ⁽¹⁾ Enter "MW00300" in the [Write Reg] Box as the register type and first address to write to on the remote device.

6. Click the [OK] Button.

7. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communication Easy Setting Dialog Box.

8. Check the settings.

(/O Messa O Disable I Enable		mmunicati	on									
	Easy se Data upda			ossible to set easily tha	it commur	nicate th	ne I/O r	nessage.					
	Read Writ		Local Port	Node IP Address	Node Port	Conr Typ		Protocol Type	Cod	е	Detail		
	Rea	d	10005	192.168.001.002	10005	TOP	-	Extended MEMOBUS	BIN	-	Setting		
	Writ	е	10006	192.168.001.002	10006	TOP	-	Extended MEMOBUS	BIN	-	Setting		
	•												•
			Hea	ad register number				Head register number	data	size			
СР	U-201		nput disab utput disa					ister (MW)	100		W	Node equipment	

9. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as the master.

Setting Up the Remote Device (MP2310)

Use the following procedure to set up the MP2310.

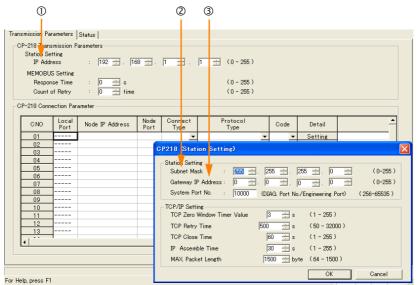
Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for [218IF] in the [Function Module/Slave] Area of the Module Configuration Definition Tab Page.

Online						ETH	IERNET[1]IF	P192.168.1.1 CPU-F	RUN —	-
	■ le Configuration : [MP2300)]×								
le Save to pro	Edit Online	Self Configuration	specified module							
it	Module	Function Module/Slave	Status	Circuit No/Axis Start	Address	Motion Register	Disabled	Register(Input/O Start - End	output) Size	9
Edit	01 MP2300 :						C ICGDIOG	Chart Eng	i i i i i i i i i i i i i i i i i i i	
Status		01 CPU	Driving							
	00 MP2300[Driving]	02 10	Driving	1 <u></u>	1		Input OutPut	0000 - 0001 [H]	2	3
	00 (MP2300[Driving]	03 🗉 SVB	Driving	⊂ ⊞ Circuit No1	1	8000 - 87FF[H]	Innut	0010 - 040F[H]	1024	
		04 ⊞ SVR	Driving	⊏⊒ Circuit No2	1	8800 - 8FFF[H]		<u></u>	<u>0.000</u>	
	01 (218IF-01 [Driving]	01 217IF	Driving	10101 Circuit No1	1					1
		02 218IF	Driving	뀸 Circuit No1	1	120.221		1000000	0000	
	02 UNDEFINED[
	03 UNDEFINED[]							_	

The 218IF Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.



① In the [IP Address] Boxes, enter the following address: 192.168.001.002.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

4.1.3 Using I/O Message Communications with the MP3000 as the Master

3. Set the connection parameters.

	1		(2)	3	D	(Ð		(5)		6)			
–218 Conne	ection	Para	ameter —										_				
CNO	Loca Por		Node IP A	ldress		ode ort	(;onnec Type	t	Pr	otocol Type		Γ	Code	,	Detail	
01	1000	1	192.168.001	001	10(01	ΤC	Р	•	Extended N	1EMO BUS	-	BI	N	-	Setting	
02	1000	2	192.168.001	001	100	02	ΤC	P	•	Extended N	IEMO BUS	-	BI	N	-	Setting	
03	100	3	192.168.001	001	10(03	T	P	•	Extended 🛔	EMOBUS	•	B	N	-	Setting	
D4		-							•			•			•	Setting	
05	1000!	5	92.168.001	.001	100	105 Y	TC	>P	1	Extended N	MEMOBUS	~	BI	N	-	Setting	
06	1000	6	92.168.001	.001	100	106	ΤC)P	1	Extended N	MEMOBUS	$\overline{\mathbf{x}}$	BI	N	-	Setting	
07		-							•			-			-	Setting	
08		-							•			•			-	Setting	
09		-							•			•			•	Setting	
, 10 I		-				_			-	I		-	I		-	Satting	1

① Enter "10005" and "10006" in the [Local Port] Boxes.

© Enter the following address in the [Node IP Address] Boxes: 192.168.001.001.

③ Enter "10005" and "10006" in the [Node Port] Boxes.

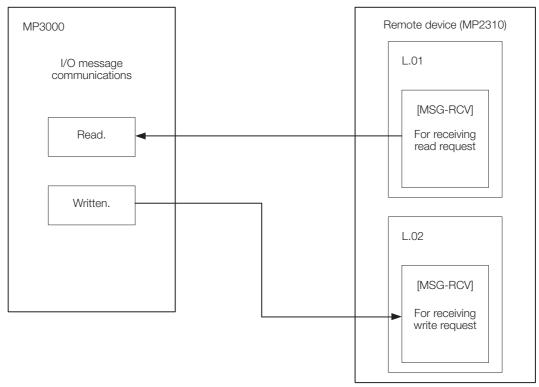
- ④ Select [TCP] in the [Connect Type] Box.
- © Select [Extended MEMOBUS] in the [Protocol Type] Box.
- © Select [BIN] in the [Code] Box.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

4. Create a ladder program for the MSG-RCV function.

A ladder program example is shown below.

This ladder program example is for receiving the read request. Ladder programming for receiving the write request is required separately.



4.1.3 Using I/O Message Communications with the MP3000 as the Master

				ram for receiv				
		sett ir	ng parameters .	init for MSG-RCV fun 3 for low sacn	ializing ction during f	irst scan aftei	rpoweron.	
			SB00000: first	3 for low sacn : scan after po	and SB000001 fo wer on	or high scan.	_	
		- IF 🗎	SB000003==	true;				
070				clear all	D registers			
					[W]Dest	[W]Data	[W]Width	
1/2	2			- SETW	DW00000	00000	00032 -	
				set for connect	ion No. (PARAM	02)		
2/5	2	- EXPRESSION DW00002=5					₽ -	
			s	set for offset.	(PARAMO8-PARAM	/11)		
3	<u>N</u> _2	EXPRESSION	(/ 1)				₽ ₽	_
		DW00008=0; DW00009=0;	//input	offset (PAR, : relay_offse	et (PARAMO9)			
		DW00010=0; DW00011=0;	//input //hold	: register o register of	ffset (PARAM fset (PARAM1	10) 1)		
4	Ň	EXPRESSION	set f	or writing rang	se (PAKAMIZ, PA	KAMI3)	₿₽ .	
4/15	2	DW00012=0; DW00013=655	534.	//writing ra	ange LO (PAR ange HI (PAR	AM12)		
				// mincing in				
				clear system re	vaieter (PARAM	14)		
	KI.			crear system re		[WLF]Src	[WLF]Dest	
5 5/19	NL 2			crear system re			[WLF]Dest DWO0014	
5/19	NL 2	END_IF		creal system to	^	[WLF]Src		
5/19	NL 2			treatment	STORE	[WLF]Src		
5/19	N_ 2	SB000004	DB000201	treatment	STORE	[WLF]Src		
5/19	N_ 2			treatment	STORE	[WLF]Src	DW00014 	
5/19 6 6/21	NL 2	SB000004	DB000201	treatment	STORE	[WLF]Src 00000	DW00014	
5/19 6 6/21 7 7/22	N_ 2	SB000004	DB000201	treatment	STORE	[WLF]Src 00000 MS0 [B]Execute	DB000200 DB000200 execute B-RCV [B]Busy	
5/19 6 6/21 7 7/22	N_2	SB000004	DB000201	treatment	STORE	[WLF]Src 00000 B]Execute DB000200 execute	DB000200 DB000200 execute B-RCV [B]Busy DB000210 busy	
5/19 6 6/21 7 7/22	N_2	SB000004	DB000201	treatment	STORE	[WLF]Src 00000 B]Execute DB000200 execute [B]Abort DB000201	DB000200 DB000200 execute BBUSY DB000210 busy [B]Complete DB000211	
5/19 6 6/21 7 7/22		SB000004	DB000201	treatment	STORE	[WLF]Src 00000 B]Execute DB000200 execute [B]Abort	DB000200 DB000200 execute BBUSY DB000210 busy [B]Complete	
5/19 6 6/21 7 7/22		SB000004	DB000201	treatment	STORE	[WLF]Src 00000 B]Execute DB000200 execute [B]Abort DB000201 abort	DB000200 DB000200 execute BBUSY DB000210 busy [B]Complete DB000211 complete	
5/19 6 6/21 7 7/22		SB000004	DB000201	treatment	STORE	[WLF]Src 00000 B]Execute DB000200 execute [B]Abort DB000201 abort [W]Dev-Typ 00006 [W]Pro-Typ	DB000200 execute BBUSY DB000210 busy [B]Complete DB000211 complete [B]Error DB000212	
5/19 6 6/21 7 7/22	N <u>2</u>	SB000004	DB000201	treatment	STORE	[WLF]Src 00000 B]Execute DB000200 execute [B]Abort DB000201 abort [W]Dev-Typ 00006 [W]Pro-Typ 00001 [W]Ci r-No	DB000200 execute BBUSY DB000210 busy [B]Complete DB000211 complete [B]Error DB000212	
5/19 6 6/21 7 7/22	N 2	SB000004	DB000201	treatment	STORE	EWLFJSrc 00000 BIExecute DB00200 execute BJAbort DB00201 abort UBDev-Typ 00006 EWJPro-Typ 00001 EWJCir-No 00001 EWJCh-No	DB000200 execute BBUSY DB000210 busy [B]Complete DB000211 complete [B]Error DB000212	
5/19 6 6/21 7 7/22		SB000004	DB000201	treatment	STORE	EWLFJSrc 00000 BJExecute DB000200 execute BJAbort DB000201 abort UBDev-Typ 00006 EWJPro-Typ 00006 EWJPro-Typ 00001 EWJCir-No 00001 EWJCh-No 00005	DB000200 execute BBUSY DB000210 busy [B]Complete DB000211 complete [B]Error DB000212	
5/19 6 6/21 7 7/22	N_2	SB000004	DB000201	treatment	STORE	EWLFJSrc 00000 BIExecute DB00200 execute BJAbort DB00201 abort UBDev-Typ 00006 EWJPro-Typ 00001 EWJCir-No 00001 EWJCh-No	DB000200 execute BBUSY DB000210 busy [B]Complete DB000211 complete [B]Error DB000212	

4

4.1 Communications with MP-series Controllers

4.1.3 Using I/O Message Communications with the MP3000 as the Master

	finished normally	
9	IF ■ ▲ DB000211==t rue	
1.0		[WL]Dest DW00024
12/43	2 abort	count normal ly
11	END_IF	
	finished abnormally	
12 15/48	IF	
13	N	[WL]Dest DW00025
16750		count abnorm ally
	saving the result and status	
14	N_EXPRESSION	⊇ ₽
17751	² DW00026=DW00000; //result DW00027=DW00001; //status	
15		
16		
19756		

5. Save the data to flash memory.

This concludes the setup.

Starting Communications

1. Turn ON the power to the MP2310 to start receiving messages. In the ladder program example, message reception starts immediately after the system starts. No further operation is required.

2. Turn ON the power to the MP3000 to send the messages. The system will automatically start the message transmission operation. No further operation is required.

4.1.4 Using the MSG-SNDE Function with the MP3000 as the Master

In I/O message communications, operations can be performed only on hold registers (M registers). No other register types are supported. Additionally, this protocol supports communications with only one slave.

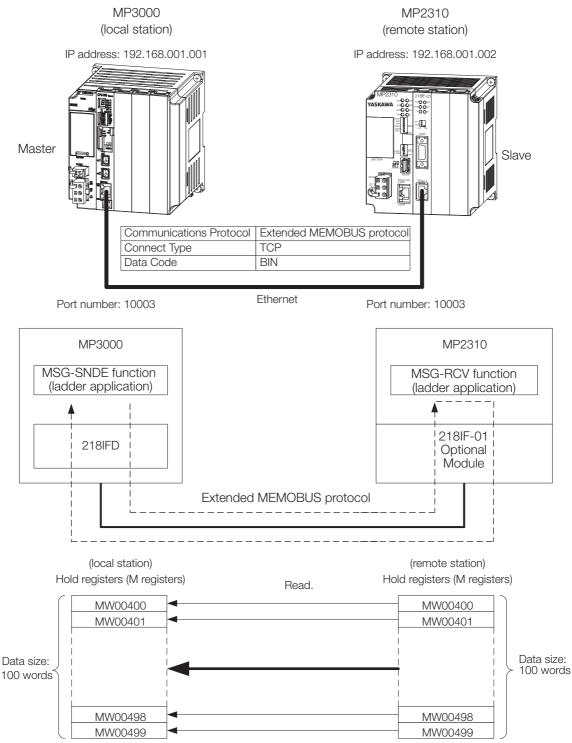
To communicate with two or more slaves, you must use the MSG-SNDE function. You can use the MSG-SNDE function together with I/O message communications by maintaining a separate connection.

This section describes how to communicate with the MP2310 by using the MSG-SNDE function.

4.1.4 Using the MSG-SNDE Function with the MP3000 as the Master

Setting Example

The following figure illustrates how the contents of the MW00400 to MW00499 hold registers in the MP2310 slave are read into the MW00400 to MW00499 hold registers in the MP3000 master.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Gircuit No/Axi	sAddress	Motion Register		Register(Input/	Output)
	Function Module/Slave	Status	Start	supied circu	Motion Register	Disabled	Start - End	Size
01 [CPU-302(32axes)] :								
	01 CPU							
	02 218IFD		묾 Circuit No1	1		Input OutPut	0000 - 07FF[H]	2048
≘ 00	03 ⊞ SVC32		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024
9 00 (CPU302(32)[]	04 \pm SVR32		🛥 Circuit No3	1	9000 - 97FF[H]			
*03	05 M-EXECUTOR						0C00 - 0C3F[H]	64
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[·]							
02 UNDEFINED[·]							
03 UNDEFINED								
02 UNDEFINED								
02 UNDEFINED								
03 UNDEFINED								
04 UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

0 2 3	
Transmission Parameters Status	
Transmission Farameters	Module Name Definition
IP Address :	192 168 1 1 (0-255) Equipment name : CONTROLLER NAME
Subnet Mask :	255 - 255 - 255 - 0 - (0-255)
Gateway IP Address :	0 - 0 - 0 - 0 - (0-255) Detail Definition

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

nnection Parame lessage Commur Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message o be set to	communication receive data	s can be easily set. automatically.			
CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>
01				-	-	•	Setting*	
02				•	-	•	Setting*	
03				+	-	•	Setting*	
04				+	-	•	Setting*	
05				•	-	-	Setting*	
06				-	-	-	Setting*	
07				-	-	-	Setting*	-

The Message Communication Easy Setting Dialog Box will be displayed.

- 4.1.4 Using the MSG-SNDE Function with the MP3000 as the Master
 - 4. Set the connection parameters. 1 3 4 6 Message Communicatio<mark>n Easy Setting</mark> X Connect No. : 3 Specify the connection rumber **MP** Series Other Device Local Port IP Address : Node Port IP Addess : (0-255) 192.168.001.001 192 168 001 002 : Communication protocol Type Extended MEMOBUS 💌 Default Port No. (256-65535) Port No. (256-65535) 10003 10003 Connect Type TCP • BIN Code -ÖK Cancel (5) 1
 - ① Select [3] in the [Connect No.] Box.
 - © Enter "10003" in the [Port No.] Box for the MP-series Controller.
 - ③ Select [Extended MEMOBUS] in the [Communications Protocol Type] Box, and then click the [Default] Button.
 - ④ Select [TCP] in the [Connect Type] Box.
 - Select [BIN] in the [Code] Box.
 - © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.

@Enter "10003" in the [Port No.] Box for the other device.

- Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.
- 5. Click the [OK] Button.

6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

4.1.4 Using the MSG-SNDE Function with the MP3000 as the Master

7. Check the settings.

asy setting	_ The fi	ollowing parameters for actions(C NO) 01-10 ca	message n be set t	communicat o receive da	tion ata	: can be easily set. iutomatically.					
CNO	Local Port	Node IP Address	Node Port	Connec [.] Type	t	Protocol Type		Cod	e	Detail	
01					-		-		•	Setting*	
02					-		-		•	Setting*	
03	10003	192.168.001.002	10003	TOP	-	Extended MEMOBUS	-	BIN	+	Setting*	
04					-		-		•	Setting*	
05					-		-		•	Setting*	
06					-		-		٠	Setting*	
07					٠		-		٠	Setting*	

Cannot the overlap to local station port number used by the communicate the I/O message.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

8. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

setting parameter for SB000003 during first scan after power (8000001 for high scan 'After Low Scan Start, SB000003 == TRUE; ₿▲ 'TRUE Scan ON Only 1 0 LE clear all D registers ▲ [W] Dest [W]Data [W]Width SETV DW00000 00000 00130 nection No. (PARAM10) 2 EXPRESSION ЪŢ 'DWOO110'=3 DWOO110=3; //using connection No.3 function code (PARAM12) 3 EXPRESSION ₽₽ 'DW00112'=0x0009 DW00112=0x0009; //reading register RAM14) and High (PARAM15) of remote station for data address Low (P 4 EXPRESSION **₽**₽ 'DW00114'=400 DW00114=400; //remote data address Low (400) 'DW00115'=0 DW00115=0; //remote data address High (0) pe of remote station (PARAM16) set for data t 5 EXPRESSION **₽₽** 'DW00116 DW00116=0; //remote data type (M register) r data size (PARAM17) 6 EXPRESSION **₽₽** 'DW00117'=100 DW00117=100; //data size (100 words) ARAM20) and High (PARAM21) of local station et for data address Low (F 7 EXPRESSION **₽₽** 'DW00120'=400 DW00120=400; //local data address Low (400) 'DW00121=0 DW00121=0; //local data address High (0) '=400 pe of local station (PARAM22) et for data 8 EXPRESSION **₽₽** 'DW00122'=0 DW00122=0; //local data type (M register) 9 END_IF ∎treatment for all time. bort for timeout if not completed in 10s aft DB000200 DB000201 DB00020A ▲ [W] Set [W] Count 10 TON [10ms] execute 01000 DW00031 -|/|-abort timeout DB00020A DB000201 DB000211 11 complete timeout -O-abort DB000212 error DB000201 ⊣ ⊢ abort release sending command in 60s after aborted DB000201 DB000209 DB000208 12 ⊣ ⊢ abort -1/1waiting ed end wait DB000208 ⊣ ⊢ wait DB000208 DB000209 [W]Set WICou 13 TON [10ms] 06000 DW00028 waiting end ed ⊣ ⊨ wait

4.1.4 Using the MSG-SNDE Function with the MP3000 as the Master

0.0	0000004		SB000	ing in every D3A for low so	an and SBOOC	01A for high	n scan.		DROCOCO
	300003A 								DB00020D
Sca UP	er 5.0s, in Start- p Relay								5s-ON
DB	300020D 	DB000211	DB000212	DB000208	TON [10ms]	[W]Set 00100	[W]Count DW00030	<u> </u>	DB000200
	5s-0N	complete	error	wait		00100		<u></u>	execute
			1			1 1 1		MSG	SNDE
								[B]Execute DB000200 execute	[B] Busy DB000210 busy
								[B] Abort DB000201 abort	[B]Complete DB000211 complete
								[W] Dev-Typ 00016	[B] Error DB000212 error
								[W]Pro-Typ 00001 [W]Cir-No	
								00001 [W]Ch-No	
								00001 (A) Param DA00100	
	₽ ▲	'complete'	=='TRUE'	♦ f	inished norma	lly			
	IF	DB000211==	TRUE;						
	3000201 							INC	[WLQ]Dest DW00024 count norm
	abort							<u> </u>	ally
	END_IF			♦fir	ished abnorn	ally			
	IF	'error'==' DB000212=='							
	11	DD000212	INUE,						
NL 2								INC	(WLQ)Dest DW00025 count abno rmally
NL 2							STORE	[WLFQD]Src DW00000	[WLFQD]Dest DW00026 result (PA
							. <u></u>	[WLFQD]Src	RAM00) [WLFQD]Dest
						1	STORE	DW00001	DW00027 status (PR
NL 2									AM01)
2	END_IF			◆trea	itment for ti	meout			AM01)
2	300020A	DB00020B		◆ trea	itment for ti	meout			DB00020C
2 DB	300020A 	on pulse			itment for ti	meout			
2 DB	300020A 	<u>f</u>	ccured'=='T TRUE;		itment for ti	meout			DB00020C
2 DB	300020A 	on pulse 'timeout ou	ccured'=='T TRUE;		tment for ti	meout		INC	DB00020C timeout occ ured (WLQ)Dest DW00023 timeout oc
2 DB t	300020A 	on pulse 'timeout ou	ccured'=='T TRUE;		itment for ti	meout			DB00020C timeout occ ured

9. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

Setting Up the Remote Device (MP2310)

Use the following procedure to set up the MP2310.

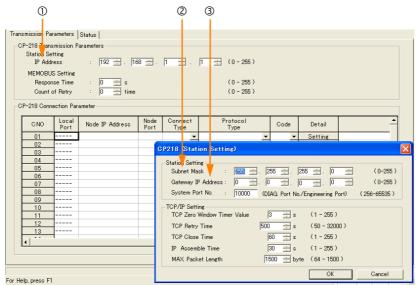
Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for [218IF] in the [Function Module/Slave] Area of the Module Configuration Definition Tab Page.

Online						ETH	IERNET[1]II	P192.168.1.1 CPU-F	RUN —	2
	■ le Configuration : [MP2300	0]×								
le Save to pro	Edit Online	Self Configuration	specified module							
it	Module	Function Module/Slave	Status	Circuit No/Axi Start	sAddress supied circu	Motion Register	Disabled	Register(Input/O Start - End	output) Size	s
Edit	01 MP2300 :						C IOGDIOG	Chart Eng	U.L.U	
Status		01 CPU	Driving							
		02 10	Driving	1 <u></u>	1	- <u></u> -	Input OutPut	0000 - 0001 [H]	2	
	00 (MP2300[Driving]	03	Driving	⊂ ⊞ Circuit No1	1	8000 - 87FF[H]	Innut	0010 - 040F[H]	1024	
		04 ⊞ SVR	Driving	⊏⊒ Circuit No2	1	8800 - 8FFF[H]		<u></u>	<u>0.000</u>	
	01 (218IF-01 [Driving]	01 217IF	Driving	10101 Circuit No1	1					3
		02 218IF	Driving	뀸 Circuit No1	1	100.00		1000000	20000	
	02 UNDEFINED[
	03 UNDEFINED[1								

The 218IF Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.



① In the [IP Address] Boxes, enter the following address: 192.168.001.002.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

4.1.4 Using the MSG-SNDE Function with the MP3000 as the Master

3. Set the connection parameters.

		1	2	3	4	5		6		
;P·	-218 Conn	ection Par	rameter							
	CNO	Local Port	Node IP Address	Node Fort	Connect Type	Frotoc Type	ol	Gode	Detail	
Г	01	10001	192.168.001.001	10001	TOP	Extended MEM	DBUS 🖵 E	II 🗸 🗸	Setting	
	02	10002	192.16 .001.001	10,002	ТСР	Extended MEM	DBUS 🖵 E	il, 👻	Setting	
	03	1003	192.168.001.001	10003	ТСР 💽	Extended MEM	DBUS 🖵 E	IN 👻	Setting	
	04					•	-	-	Setting	
	05	10005	192.168.001.001	10005	ТСР	Extended MEM	DBUS 🖵 E	IN 👻	Setting	
	06	10006	192.168.001.001	10006	TCP	Extended MEM	DBUS 🖵 E	IN 👻	Setting	
	07					-	-	-	Setting	
	08					•	-	-	Setting	
	09					-	-	-	Setting	
	, 10					,	Ţ		Satting	
1										1

- ① Enter "10003" in the [Local Port] Box.
- © Enter the following address in the [Node IP Address] Boxes: 192.168.001.001.
- ③ Enter "10003" in the [Node Port] Box.
- ④ Select [TCP] in the [Connect Type] Box.
- © Select [Extended MEMOBUS] in the [Protocol Type] Box.
- 6 Select [BIN] in the [Code] Box.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

4. Create a ladder program for the MSG-RCV function.

Refer to the following section for a ladder program example.

- The sample uses a different communications buffer channel and connection number.
- *G* ♦ Setting Up the Remote Device (MP2310) on page 4-27

5. Save the data to flash memory.

This concludes the setup.

Starting Communications

1. Turn ON the power to the MP2310 to start receiving messages.

In the ladder program example, message reception starts immediately after the system starts. No further operation is required.

2. Turn ON the Execute Bit (e.g., DB000200) for the MSG-SNDE function in the MP3000 to start sending messages.

The ladder program example is designed to send a message every second after five seconds have elapsed from when the low-speed scan (or high-speed scan) starts.

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To change the message transmission interval, change the timer value \mathbb{O} .

						0		
				n every 1s aft				
			SB00003A f	or low scan an	d SB00001A fo	ır high scan.		
13	SB0 000 3A							DB00020D
25/44	After 5.0s, Scan Start- up Relay							5s-0N
14 27/46	DB00020D	DB000211	DB000212 error	DB000208	TON[10ms]	[W]Set 00100	[W] Count DW00030 	DB000200 execute

The message functions are used in user communications applications for the Extended MEMO-BUS protocol. You can send and receive message data by setting the necessary input items and parameters for the message functions.

Inputs and Outputs for the MSG-SNDE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16
Input Items	4 Pro-Typ I-REG Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the Extended MEMOBUS protocol. MEMOBUS is automatically converted to Extended MEMOBUS inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the Extended MEMOBUS protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the Extended MEMOBUS protocol. 			
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Defini- tion Tab Page. 218IFB, 218IFD = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communi- cations buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same connection. You can use the same channel number as long as multiple functions are not executed at the same time. 218IFB, 218IFD = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the parameter list. The parameter list is used by inputting function codes and relevant parame- ter data. It is also where the process results and status are output. Continued on next page.

Continued on next page.

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Continued from previous page.

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
Output Items	2	Com- plete	B-VAL	Process com- pleted.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs.

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.	(F	 Processing Result (PARAM00) on page 2- 9
01		Status	Gives the status of the current function.	F	◆ Status (PARAM01) on page 2-10
02		Detail Error Code, Lower Word	Gives the details of an error.	(F	◆ Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word			<i>PARAM03)</i> on page 2- 11
04	Out-	Status 1	Gives the communications status.	(F	◆ Status 1 (PARAM04) on page 2-12
05	puts	Status 2	Gives status information on the most recent error.	(F)	♦ Status 2 (PARAM05) on page 2-12
06		Status 3	Gives the information of the send pass counter.	(F	◆ Status 3 (PARAM06) on page 2-12
07		Status 4	Gives the information of the receive pass counter.	(F	◆ Status 4 (PARAM07) on page 2-12
08		Status 5	Gives the information of the error counter.	(F	◆ Status 5 (PARAM08) on page 2-13
09		Status 6	Not used for the Extended MEMOBUS proto- col.		_
				0	ntinued on next nega

Continued on next page.

Continued from	previous	page.
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	Continued from previous pag						
No.	I/O	Meaning	Description		Reference Page		
10		Connection Number	Sets the connection number used to deter- mine the remote station.	F	◆ Connection Number (PARAM10) on page 2- 13		
11		Option	Not used for the Extended MEMOBUS proto- col.		_		
12		Function Code	Sets the code of the function in the Extended MEMOBUS protocol.	(F	◆ Function Code (PARAM12) on page 4- 42		
13		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(F	◆ Reserved for System (PARAM13) on page 2-14		
14		Remote Station Data Address, Lower Word	Sets the data address to read/write at the remote station. (Use word addresses for reg-	(Tag	♦ Remote Station Data Address (PARAM14		
15		Remote Station Data Address, Upper Word	isters, bit addresses for relays or coils.)		<i>and PARÀM15)</i> on page 2-15		
16		Remote Station Register Type	Sets the register type to read/write at the remote station.	Ŧ	◆ Remote Station Reg- ister Type (PARAM16) on page 4-43		
17	Inputs	Data size	Sets the size of the data to read/write. (Use word sizes for registers, bit sizes for relays or coils.)	Ŧ	◆ Data Size (PARAM17) on page 2- 16		
18		Remote CPU Module Number	Sets the CPU number at the remote station.	Ŧ	◆ Remote CPU Module Number (PARAM18) on page 2-17		
19		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	Ŧ	◆ Reserved for Sys- tem (PARAM19) on page 2-17		
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word	(◆ Local Station Data Address (PARAM20		
21		Local Station Data Address, Upper Word	addresses for registers, bit addresses for relays or coils.)		<i>and PARAM21)</i> on page 2-18		
22		Local Station Register Type	Sets the register type of the read/write data to store in the local station.	F	◆ Local Station Regis- ter Type (PARAM22) on page 2-19		
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	Ŧ	◆ Reserved for Sys- tem (PARAM23) on page 2-19		
24		For system use	This parameter is used by the system. It con- tains the channel number of the communica- tions buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	F.	◆ Reserved for System (PARAM24) on page 2-19		
25	_	Reserved for system.					
26		Reserved for system.	These parameters are used by the system. Do not change the value of these parameters	(F	♦ Reserved for System (PARAM25 to)		
27		Reserved for system.	from a user program or by any other means.		<i>PARAM28)</i> on page 2- 19		
28		Reserved for system.					

◆ Function Code (PARAM12)

Set the function code to send.

You can use the functions that are registered to the function codes.

Function	Target Data	Function	Registers When Mas	-				
Code	Туре		Send Registers	Receive Registers				
00 hex	_	Not used for the Extended MEMOBUS protocol.						
01 hex	В	Reads the states of coils.						
02 hex	В	Reads the states of input relays.						
03 hex	W	Reads the contents of hold registers.						
04 hex	W	Reads the contents of input registers.						
05 hex	В	Changes the state of a single coil.						
06 hex	W	Writes to a single hold register.						
07 hex	_	Not used for the Extended MEMOBUS protocol.						
08 hex	_	Performs a loopback test.						
09 hex	W	Reads the contents of hold registers (extended).	M	М				
0A hex	W	Reads the contents of input registers (extended).						
0B hex	W	Writes to hold registers (extended).						
0C hex	_	Not used for the Extended MEMOBUS protocol.						
0D hex	W	Reads the contents of non-consecutive hold regis- ters (extended).						
0E hex	W	Writes the contents of non-consecutive hold registers (extended).						
0F hex	В	Changes the states of multiple coils.						
10 hex	W	Writes to multiple hold registers.						
4341 hex	В	Reads the states of bits.						
4345 hex	В	Changes the state of a single bit.						
4346 hex	W	Writes to a single register.						
4349 hex	W	Reads the contents of registers.	S, M, G, I, or O	M or G				
434B hex	W	Writes to multiple registers.	3, IVI, G, I, OF U					
434D hex	W	Reads the contents of non-consecutive registers.]					
434E hex	W	Writes the contents of non-consecutive registers.						
434F hex	В	Changes the states of multiple bits.	1					

Note: B: Bit data, W: Integer data

Remote Station Register Type (PARAM16)

Set the register type in the remote station. This parameter is valid when using function codes $43\square\Box$ hex.

Register Type Value	Туре	Remarks
0	М	Sets the target data type to MB for bits and MW for words.
1	G	Sets the target data type to GB for bits and GW for words.
2 1		Sets the target data type to IB for bits and IW for words.
3	0	Sets the target data type to OB for bits and OW for words.
4	S	Sets the target data type to SB for bits and SW for words.
5 or higher	-	Not used for the Extended MEMOBUS protocol.

Enter the register type as a decimal or hexadecimal number.

The register types that can be used depend on whether you are reading or writing. The following table lists the combinations of register types.

Function Code	Applicable Register Types
4341 or 4349 hex	M, G, I, O, or S
4345, 4346, 434B, or 434F hex	M, G, O, or S
434D hex*	M or G
434E hex*	M or G

* The address table at the remote station is stored in registers in the local station. The contents of the M, G, I, O, and S registers in the remote station can be read by specifying the register type in the address table at the remote station.

For more information on remote station address tables, refer to the following sections.

Function Code: 434D Hex on page 6-17

Function Code: 434E Hex on page 6-19

Inputs and Outputs for the MSG-RCVE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the Extended MEMOBUS protocol. MEMOBUS is automatically converted to Extended MEMOBUS inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the Extended MEMOBUS protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the Extended MEMOBUS protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communi- cations buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same connection. You can use the same channel number as long as multiple func- tions are not executed at the same time. 218IFB, 218IFD = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 52 words starting from the specified first word are automatically used for the param- eter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

Continued on next page.

Continued from previous page.

I/O Definitions	No.	Name	I/O Designation	Meaning	Description		
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.		
Output Items	B-VAI		Process completed.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.			
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{e} \leftarrow Error$ on page 2-23		

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.	(F	◆ Processing Result (PARAM00) on page 2- 25
01		Status	Gives the status of the current function.	æ	◆ Status (PARAM01) on page 2-25
02	-	Detail Error Code, Lower Word	Gives the details of an error.	æ	◆ Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word	Gives the details of an enor.		<i>PARAM03)</i> on page 2- 27
04	Out-	Status 1	Gives the communications status.	Æ	♦ Status 1 (PARAM04) on page 2-27
05	puts	Status 2	Gives status information on the most recent error.	(F	♦ Status 2 (PARAM05) on page 2-28
06	-	Status 3	Gives the information of the send pass counter.	(F	◆ Status 3 (PARAM06) on page 2-28
07	-	Status 4	Gives the information of the receive pass counter.	æ	◆ Status 4 (PARAM07) on page 2-28
08		Status 5	Gives the information of the error counter.	Æ	◆ Status 5 (PARAM08) on page 2-28
09		Status 6	Not used for the Extended MEMOBUS pro- tocol.		_
10	Input	Connection Number	Sets the connection number used to deter- mine the remote station.	(F	◆ Connection Number (PARAM10) on page 2- 29
11	I/O	Option	Not used for the Extended MEMOBUS pro- tocol.		_
12	Output	Function Code	Gives the function associated with reading or writing that was received from the remote station as the function code.	(F	◆ Function Code (PARAM12) on page 2- 29
13	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(Ja	 ◆ Reserved for System (PARAM13) on page 2- 30

Continued on next page.

4

No.	I/O	Meaning	Description		Reference Page
NO.	1/0	Data Address,	Description		-
14		Lower Word	Gives the first address of the data that was requested by the remote station.	(F	◆ Data Address (PARAM14 and PARAM15) on page 2-
15		Data Address, Upper Word			30
16	Out- puts	Register Types	Gives the register type that was requested by the remote station.	(F	 Register Type (PARAM16) on page 2- 31
17		Data Size	Gives the data size that was requested by the remote station.	(F	◆ Data Size (PARAM17) on page 2-31
18		Remote CPU Module Number	Not used for the Extended MEMOBUS pro- tocol.	۶.	◆ Remote CPU Module Number (PARAM18) on page 2-31
19	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	۲.	 ◆ Reserved for System (PARAM19) on page 2- 31
20		Coil Offset Lower Word	Sets the offset word address for a coil	(F	♦ Coil Offset (PARAM20 and PARAM21) on page
21		Coil Offset Upper Word	(MB).		2-31
22		Input Relay Offset, Lower Word	Sets the offset word address for an input	(F	◆ Input Relay Offset (PARAM22 and
23		Input Relay Offset, Upper Word	relay (IB).		PARAM23) on page 2- 32
24		Input Register Offset, Lower Word	Sets the offset word address for an input	(F	◆ Input Register Offset (PARAM24 and
25		Input Register Offset, Upper Word	register (IW).		PARAM25) on page 2- 32
26		Hold Register Offset, Lower Word	Sets the offset word address for a hold reg-		♦ Hold Register Offset (PARAM26 and DAMAGE AND CONTRACT OF CONTRACTON OF CONTRACT OF CONTRACT OF CONTRACTON OF CONTRACT
27		Hold Register Offset, Upper Word	ister (MW).		PARAM27) on page 2- 32
28		Data Relay Offset, Lower Word	Sets the offset word address for a data	F	◆ Data Relay Offset (PARAM28 and
29	Inputs	Data Relay Offset, Upper Word	relay (GB).		PARAM29) on page 2- 32
30		Data Register Offset, Lower Word	Sets the offset word address for a data reg-	(F	◆ Data Register Offset (PARAM30 and
31		Data Register Offset, Upper Word	ister (GW).		PARAM31) on page 2- 32
32		Output Coil Offset, Lower Word	Sets the offset word address for an output	(F	♦ Output Coil Offset (PARAM32 and
33		Output Coil Offset, Upper Word	coil (OB).		PARAM33) on page 2- 32
34		Output Register Offset, Lower Word	Sets the offset address for an output regis-	(Jacoba)	♦ Output Register Off- set (PARAM34 and
35		Output Register Offset, Upper Word	ter (OW).		PARAM35) on page 2- 32
36		M Register Writing Range LO, Lower Word	Sets the first address of the writing range	(F	♦ M Register Writing Range LO (PARAM36
37		M Register Writing Range LO, Upper Word	for hold register coils.		and PARAM37) on page 2-33

Continued from previous page.

Continued on next page.

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No.	I/O	Meaning	Description	Reference Page
110.	1/0	•	Description	Nelelence Fage
38		M register Writing Range HI, Lower Word	Sets the last address of the writing range	I
39		M Register Writing Range HI, Upper Word	for hold register coils.	and PARAM39) on page 2-33
40		G register Writing Range LO, Lower Word	Sets the first address of the writing range	G Register Writing Range LO (PARAM40
41		G Register Writing Range LO, Upper Word	for data register data relays.	<i>and PARAM41)</i> on page 2-33
42	Inputs	G Register Writing Range HI, Lower Word	Sets the last address of the writing range	G Register Writing Range HI (PARAM42
43	inputs	G Register Writing Range HI, Upper Word	for data register data relays.	and PARAM43) on page 2-33
44		O Register Writing Range LO, Lower Word	Sets the first address of the writing range	I
45		O Register Writing Range LO, Upper Word	for output registers.	and PARAM45) on page 2-33
46		O Register Writing Range HI, Lower Word	Sets the last address of the writing range	
47		O Register Writing Range HI, Upper Word	for output registers.	<i>and PARAM47)</i> on page 2-34
48		For system use	This parameter is used by the system. It contains the channel number of the com- munications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	For System Use (PARAM48) on page 2- 34
49		Reserved for system.	These parameters are used by the system.	G ◆ Reserved for System
50		Reserved for system.	Do not change the value of these parame- ters from a user program or by any other means.	(PARAM49 to PARAM51) on page 2- 34
51		Reserved for system.	11100110.	

4.2 Communications with a Touch Panel

When using Ethernet communications between the MP3000 and a Touch Panel from Schneider Electric, use the Extended MEMOBUS protocol as the communications protocol. The Extended MEMOBUS protocol allows the master to read and write the slave registers.

This section describes communications when the MP3000 acts as a slave.

4.2.1 Using Automatic Reception with the MP3000 as a Slave

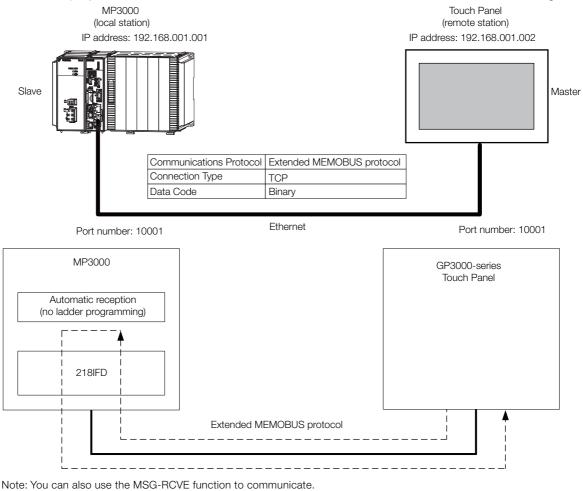
This section describes how to communicate with a Touch Panel from Schneider Electric by using automatic reception.

Note: You can also use the MSG-RCVE function to communicate. For information on the communications settings for using the MSG-RCVE function, refer to the following section.

I MP3000 Setup on page 4-5

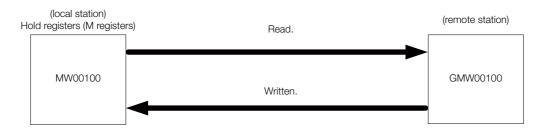
Setting Example

The following figure illustrates how the contents of the MW00100 hold register in the MP3000 slave is displayed on the Touch Panel, and written from the Touch Panel to the same register.



For information on the communications settings for using the MSG-RCVE function, refer to the following section.

IF MP3000 Setup on page 4-5



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register	Register(Input/Output)			
Module	Function Module/ Stave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size	
01 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD		ය. Circuit No1	1		Input	0000 - 07FF[H]	2048	
= 00 (■) CPU302(32)[03 ⊞ SVC32		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024	
日 00 ● CPU302(32)[● ● ● ●	04 ⊞ SVR32		etta Circuit No3	1	9000 - 97FF[H]				
-303	05 M-EXECUTOR						0C00 - 0C3F[H]	64	
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED -	-[]								
02 UNDEFINED -	-[]								
03 UNDEFINED -	-								
02 UNDEFINED									
02 UNDEFINED									
03 UNDEFINED									
04 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

0 2 3				
Transmission Parameters Sta	atus			
-Transmision Farameters -				
IP Address	: 192 🗄	. 168 🔆 1	÷ 1 ÷ (0-255)	Module Name Definition Equipment name : CONTROLLER NAME
Subnet Mask	: 255 🚊	255 . 255	. 0 . (0-255)	
Gateway IP Address	: 0 🗄		. 0 . (0-255)	Detail Definition

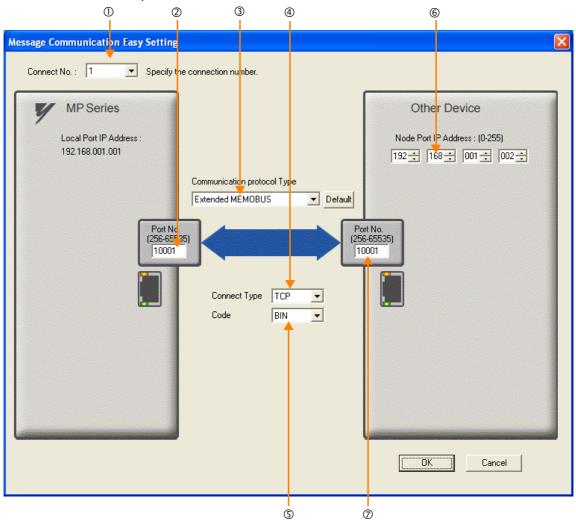
① In the [IP Address] Boxes, enter the following address: 192.168.001.001.
② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.
③ In the [Cotourny ID Address] Boxes, enter the following address: 000.000.000.000.000

- 3 In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.
- **3.** Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	nection Parame essage Commu Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message (n be set to	communication receive data	s can be easily set. automatically.			
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u>^</u>
	01				•	•	•	Setting*	
[02				-	-	-	Setting*	
	03				•	•	•	Setting*	
	04				+	•	-	Setting*	
	05				-	-	-	Setting*	
	06				-	-	-	Setting*	
	07				+	•	-	Setting*	-
1									

The Message Communications Easy Setting Dialog Box will be displayed.

4. Set the connection parameters.



- ① Select [1] in the [Connect No.] Box.
- @ Enter "10001" in the [Port No.] Box for the MP-series Controller.
- ③ Select [Extended MEMOBUS] in the [Communications Protocol Type] Box, and then click the [Default] Button.
- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- \oslash Enter "10001" in the [Port No.] Box for the other device.
- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.
 - Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.
- 7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

C NO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type		Cod	le	Detail	
01	10001	192.168.001.002	10001	ТСР 💌	Extended MEMOBUS	-	BIN	<	Setting*	
02				-		•		-	Setting*	
03				-		•		•	Setting*	
04				-		•		-	Setting*	
05				-		•		-	Setting*	
06				-		-		-	Setting*	
07				-		-		-	Setting*	

4-50

8. Select the [Enable] Option in the Automatically Reception Tab Page and then click the [OK] Button.

Detail Setting								
Automatically Reception								
C Disable C Disable C Disable Unable to automated recep protocol type is no control								
Transmission Buffer Channel 1								
Slave I/F Register Settings	Head REG							
Readout of Input Relay	IW00000							
Readout of Input Register	IW00000							
Readout / Write-in of Coil	MW00000							
Readout / Write-in of Hold Register	MW00000							
Readout / Write-in of Data Relay	GW00000							
Readout / Write-in of Data Register	GW00000							
Readout / Write-in of Output Coil	OW00000							
Readout / Write-in of Output Register	OW00000							
Write - in width of Coil/Hold Register LO:	MW00000							
HI	MW1048575							
Write - in width of Data Relay/Register LO:	GW00000							
HI:	GW2097151							
Write - in width of Output Coil/Register IO:	OW00000							
HĿ	OW17FFF							
Automatic input processing delay time	ms (0-100)							
The influence on a low-speed scanning can be adjusted according to this parameter. [Attention] It is not in the setting of the communication period of an automatic reception.								
Ć	OK Cancel							

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.

9. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as a slave.

Setting Up the Touch Panel

This section describes the procedures to perform in GP-Pro EX to connect the MP3000 to a GP3000-series Touch Panel from Schneider Electric, and it provides a screen creation example.

Information

on The GP3000-series and GP-Pro EX are manufactured by Schneider Electric. Contact Schneider Electric for further information.

- GP-Pro EX Setup
- **1.** Start GP-Pro EX.
- 2. Create a project.
- **3.** Specify the Display Unit. Set the actual model that will be used for the Display Unit. This procedure is described for the AGP-3600T.

Series	GP3000 Series
Selles	AGP33** Series
Model	AGP-3600T
Orientation	Landscape

4. Specify the device or PLC connected.

Manufacturer	YASKAWA Electric Corporation
Series	MEMOBUS Ethernet

5. Specify the connection method.

- 6. Select [Device/PLC] under [Peripheral Settings] on the System Settings Sidebar to display the Connected Equipment Setting Tab Page.
- 7. Specify the communications settings.

Port Number	10001
Timeout	3 (sec)
Retry	0
Wait to Send	00 (ms)

- Port Numbers
- If you disable the automatic assignment option by clearing the selection of the Auto Check Box next to the Port No. Box on the Communication Setting Dialog Box, the port number for the GP3000-series Touch Panel will be set to the user-specified setting.
- If you enable the automatic assignment option by selecting the Auto Check Box next to the Port No. Box on the Communication Setting Dialog Box, the port number for the GP3000-series Touch Panel will be assigned each time the connection is made.

If the automatic assignment option is selected, set the connection to the Unpassive Open Mode in the 218IFD Detail Definition Dialog Box in the MPE720.

The following table shows the relationship of the settings in GP-Pro EX and MPE720.

MPE720 setting GP-Pro EX Setup	Unpassive Open Mode	Fixed Value Setting
Automatic assignment enabled.	Yes	No
Automatic assignment disabled.	Yes	Yes

Note: Yes: Connection allowed, No: Connection not allowed

Setting the MP3000 to Unpassive Open Mode

If the remote station's address is set to 000.000.000.000 and the remote station's port number is set to 0, the connection is set to the Unpassive Open Mode.

Transm	nission Paramet	ers Stat	us														
Tran	nsmission Paran	neters									Module Na		Definitio				
1	IP Address		:	192 🛨	168	3 1	- <u>-</u> -	1		0-255)	Equipment				ONTROLLER	NAME	
8	Subnet Mask		:	255 🕂	255	3 2	255 🛨	0		0-255)	Edulption			-			
0	Gateway IP Add	ress		0 🗄	0		·			0-255)	Detail	Defin	ition				
	nection Parame essage Commun Easy setting	ication -	llowin	g paramet (C NO) 01	ers for	message	communi	ation	ns can t	e easily s	et.						
l r		_	Ctions		-TU Car				automa					_			
	CNO	Local	No	de IP Add	Iress	Node	Conne Typ				ocol		Cod	э	Detail		_
		Port					- iypi				pe						
	01			0.000.000	00	00000	TOP	-	Exten	ied MEM		•	BIN	-	Setting*		
	01 02				00		-	_	Exten			* *	BIN	* *	Setting* Setting*		
	02 03	10001			00		-	_	Exten			* * *	BIN	*	Setting* Setting*		
	02 03 04	10001 (00		-	_	Exten			* * *	BIN	* * *	Setting* Setting* Setting*		
	02 03 04 05	10001 (00		-	_	Exten			* * * *	BIN	* * *	Setting* Setting* Setting* Setting*		
	02 03 04 05 06	10001 (00		-	* * *	Exten			* * * *	BIN	* * * * *	Setting* Setting* Setting* Setting* Setting*		
	02 03 04 05 06 07	10001 (00		-	_	Exten			* * * *	BIN	* * * * * * *	Setting* Setting* Setting* Setting*		
	02 03 04 05 06	10001 (00		-	* * *	Exten			+ + + +	BIN	* * * * *	Setting* Setting* Setting* Setting* Setting*		

8. Click the [Settings] Button for PLC1 in the [Device-Specific Settings] Area to display the Individual Device Settings Dialog Box.

9. Specify the device or PLC connected.

The Individual Device Settings Dialog Box is used to specify the MP3000 to connect to. Set the IP address, port number, and data code to the same values set in the 218IFD Detail Definition Dialog Box for the MP3000.

IP address	192.168.001.001
Port Number	10001
Data Code	BINARY

• 218IFD Detail Definition Dialog Box

nsmission Param	eters							_		Module Name	Definit	ion				
IP Address	•	<1	92 🗄	1	68	÷. 1	÷.	1		Equipment r			ONTROLLER	NAME	 	
Subnet Mask		: 2	55 🛨	2	255 -	: 25	5 🗄	0	÷ (0-255)	Equipment	amo .	1				
Gateway IP Addr	ess	: 0			_	. 0		_	(0-255)	Detail Def	inition					
nection Paramet	or															
essage Communi																
	ication —															
-	 The formation 	llowine	parame	eters	for m	essage	communic	ation	ns can be easily se	et.						
Easy setting	 The formation 	llowine ctions(parame CNO)(eters 1 01–10	for m can t	essage i be set to	communic receive	atior data	ns can be easily se automatically.	et.						
-	 The formation 	ctions(parame CNO)(le IPAc	01-10	can b	essage be set to Node Port	communic receive Conne Type	data ct	ns can be easily se automatically. Proto Typ	col	Co	le	Detail			
Easy setting CNO	Ihe fo Conne Local	ctions(Noc	(C NO)	01–10 Idres:	s	be set to Node	o receive Conne	data ct	automatically. Proto	ocol De	Co	de •	Detail Setting*			
Easy setting CNO	Ihe fo Conne Local Port	ctions(Noc	IC NO) (le IP Ac	01–10 Idres:	s	be set to Node Port	creceive Conne Type	data ct	automatically. Proto Typ	ocol De		-				
Easy setting CNO 01	Ihe fo Conne Local Port	ctions(Noc	IC NO) (le IP Ac	01–10 Idres:	s	be set to Node Port	creceive Conne Type	data ct	automatically. Proto Typ	ocol De			Setting*			
CNO 01 02 03	Ihe fo Conne Local Port	ctions(Noc	IC NO) (le IP Ac	01–10 Idres:	s	be set to Node Port	creceive Conne Type	data ct	automatically. Proto Typ	ocol De			Setting* Setting*			
Easy setting CNO 01 02 03	Local Rort	ctions(Noc	IC NO) (le IP Ac	01–10 Idres:	s	be set to Node Port	creceive Conne Type	data ct	automatically. Proto Typ	ocol De			Setting* Setting* Setting*			
Easy setting CNO 01 02 03 04 05	Local Rort	ctions(Noc	IC NO) (le IP Ac	01–10 Idres:	s	be set to Node Port	creceive Conne Type	data ct	automatically. Proto Typ	ocol De			Setting* Setting* Setting* Setting*			

Cannot the overlap to local station port number used by the communicate the I/O message.

Note: 1. Specify an IP address that is not in use by any other device on the same network.

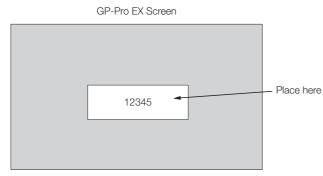
2. The IP address for the MP3000 will be automatically set to 192.168.1.1. Check with your network administrator for unused IP addresses.

 Place the GP3000-series Touch Panel in offline mode when setting the IP address. Contact Schneider Electric for further information.

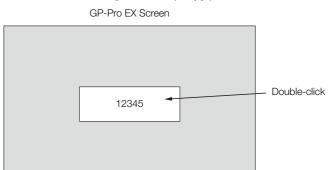
This concludes the setup for the touch panel.

Create a screen and transfer the project to the touch panel as necessary.

- Screen Creation Example
- 1. Create a base screen.
- 2. From the tool bar, select [Data Display] and place the object on the screen.



3. Double-click the [Data Display] placed on the screen.



4. Enter the following settings in the Data Display Dialog Box and click the [OK] Button.

Display Data	Numeric Display
Monitor Word Address	GMW00100

• The following table shows the relationship between the address display in GP-Pro EX and registers in the MP3000.

Device	Address Display in GP-Pro EX	Registers in MP3000
Coils as bits	GMB DDDDD	MBOOOOO
Coils as words	GMWDDDDD	MWDDDDD
Input relays as bits	GIBOOOO	IBOOOO
Input relays as words	GIWDDDD	

Starting Communications

- 1. Turn ON the power to the MP3000 to start receiving messages. The system will automatically start the message reception operation. No further operation is required.
- **2.** Start the GP3000-series Touch Panel to display the main screen. Communications with the MP3000 will start after the touch panel operating system starts. Note: Contact Schneider Electric for further information.

4.3 Communications with a Mitsubishi PLC (A-compatible 1E Frame Protocol)

When using Ethernet communications between the MP3000 and a Mitsubishi Q/A-series PLC, use the A-compatible 1E Frame protocol as the communications protocol. The A-compatible 1E Frame protocol allows the master to read and write the contents of slave registers.

This section describes communications when the MP3000 acts as a slave and as the master.

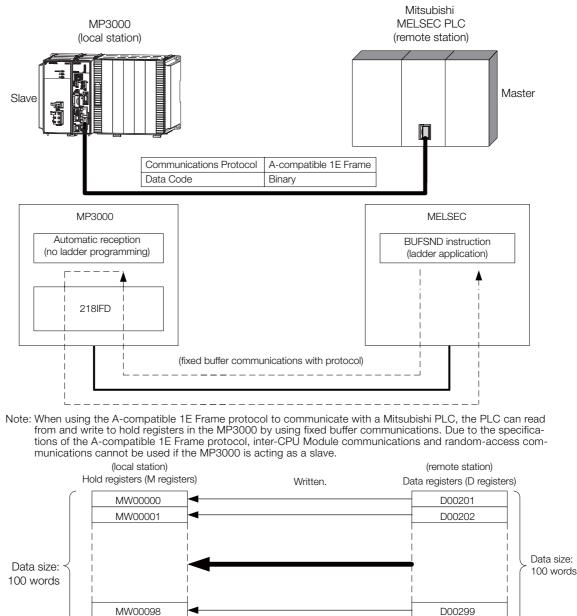
4.3.1 Using Automatic Reception with the MP3000 as a Slave

This section describes how to perform serial communications with a Mitsubishi PLC by using automatic reception.

Setting Example

MW00099

The following figure illustrates how the contents of the D00201 to D00300 data registers in the Mitsubishi PLC master are written to the MW00000 to MW00099 hold registers in the MP3000 slave.



Using Ethernet Communications

D00300

MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register	Register(Input/Output)			
Module	Function Module/Slave	soule/Slave Status Start supied circt Motion Register Disabled S		Start - End	Size				
)1 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD	S)	器 Circuit No1	1		Input	0000 - 07FF[H]	204	
C 10 C CDU000/00)[1	08	3	💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	10	
묘 00	04 🛨 SVR32		💷 Circuit No8	1	9000 - 97FF[H]				
T 303	05 M-EXECUTOR 원	3					0C00 - 0C3F[H]		
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED[]								
02 UNDEFINED[]								
03 UNDEFINED									
02 UNDEFINED									
2 UNDEFINED									
3 UNDEFINED									
4 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

(D 2 3)								
_										
Transmissi	on Parameters	Status								
– Transmi	sion Faramet	ers						MARKED BOOK		
IP A	ddress	:	192 🚊	. 168 🚊	1 -	<u>.</u> . 1	÷ (0-255)	Module Name Definition Equipment name :	ON CONTROLLER NAME	
Subr	net Mask	:	255 🚊	255 -	255	: D	: (0-255)			
Gate	way IP Addres	is :	0	0 🗄	. <u>0 -</u>	: D	: (0-255)	Detail Definition		

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

		nection Paramet essage Commun Easy setting	ication —	llowing parameters for ctions(C NO) 01-10 car	message o be set to	communication receive data	s can be easily set. automatically.			
		CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u>^</u>
	- [01				•	-	•	Setting*	
	- [02				-	-	-	Setting*	
	- [03				•	-	•	Setting*	
	- [04				+	-	•	Setting*	
	- [05				-	-	-	Setting*	
	- [06				-	-	-	Setting*	
	- [07				-	-	-	Setting*	-
•								1		

The Message Communication Easy Setting Dialog Box will be displayed.

- (T) 3 4 6 23 Message Communication Easy Setting Connect No.: 1 Specify the second secon e connection numb Other Device YASKAWA MP Series Local Port IP Address 192.168.001.001 Node Port IP Addres : (0-255) 192 : 168 : 001 : 002 : Communication rotocol Type MELSEC(A Compatible 1E) ▼ Default Port No (256-651,5) Port No. (256-65535) Connect Type UDP • BIN Code • OK Cancel (5) 1
- 4. Set the connection parameters.

- ① Select [1] in the [Connect No.] Box.
- © Enter "5010" in the [Port No.] Box for the MP-series Controller.
- ③ Select [MELSEC (A-compatible 1E)] in the [Communication Protocol Type] Box.
- ④ Select [UDP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- Ø Enter "5011" in the [Port No.] Box for the other device.

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.

5. Click the [OK] Button.

6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

CNO	Local Port	Node IP Address	Node Port	Connect Type		Protocol Type	Co	de	Detail	
01	10001	192.168.001.002	10001	TOP	+ 1	MELSEC (Qn A Compatible 3 E 💌	BIN	-	Setting*	
02					•	-		+	Octting*	
03					•	-		-	Setting*	
04					•	-		-	Setting*	
05					•	-		-	Setting*	
06					-	-		-	Setting*	
07				•	-	•		-	Setting*	

Cannot the overlap to local station port number used by the communicate the 1/0 message.

8. Select the [Enable] Option on the Automatically Reception Tab Page.

Detail Setting	
Automatically Reception	
C Disable C Disable C Disable Unable to automated reception protocol type is no control	
Transmission Buffer Channel 1	
Slave I/F Register Settings	Head REG
Readout of Input Relay	IW00000
Readout of Input Register	IW00000
Readout ∕ Write−in of Coil	MW00000
Readout / Write-in of Hold Register	MW00000
Readout ∕ Write−in of Data Relay	GW00000
Readout / Write-in of Data Register	GW00000
Readout / Write-in of Output Coil	OW00000
Readout / Write-in of Output Register	OW00000
Write - in width of Coil/Hold Register LO:	MW00000
HI:	MW1048575
Write - in width of Data Relay/Register LO:	GW00000
HI:	GW2097151
Write - in width of Output Coil/Register LO:	OW00000
HI	OW17FFF
Automatic input processing delay time	ms (0-100)
The influence on a low-speed scanning can be according to this parameter. [Attention] It is not in the setting of the com period of an automatic reception.	·
C	OK Cancel

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

Setting Up the Remote Device (Mitsubishi PLC)

MELSEC devices are manufactured by Mitsubishi Electric Corporation. Contact Mitsubishi Electric Corporation for further information on configuring MELSEC devices.

Starting Communications

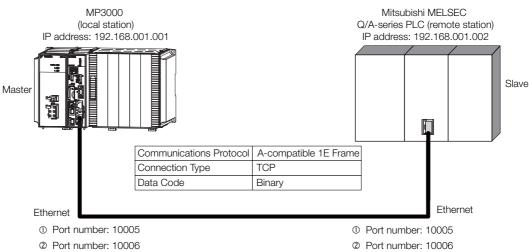
- 1. Turn ON the power to the MP3000 to start receiving messages. The system will automatically start the message reception operation. No further operation is required.
- 2. Use an OPEN instruction in the MELSEC PLC to establish a connection with the MP3000, then use a BUFSND instruction to send messages. When the Mitsubishi PLC starts sending messages, communications with the MP3000 will start.

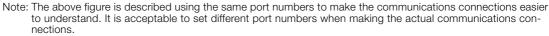
4.3.2 Using I/O Message Communications with the MP3000 as the Master

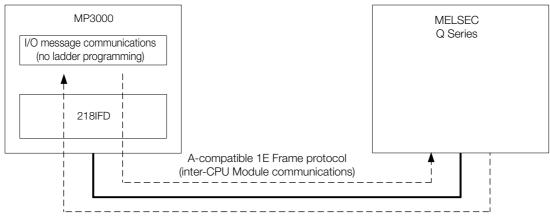
This section describes how to perform inter-CPU Module communications with a Mitsubishi Q/ A-series PLC by using I/O message communications.

Setting Example

The following figure illustrates how the contents of the D00000 to D00099 data registers in the Mitsubishi Q/A-series PLC slave can be read into the IW0000 to IW0063 input registers in the MP3000 master and how the contents of the OW0064 to OW00C7 output registers in the MP3000 master are written to the D00100 to D00199 data registers in the Mitsubishi Q/A-series PLC slave.





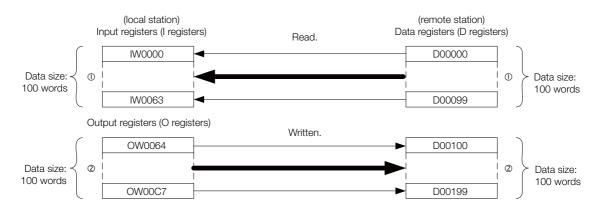


Note: 1. I/O message communications use one-to-one communications.

2. When using the A-compatible 1E Frame protocol to communicate with a Mitsubishi Q/A-series PLC, the PLC can read from and write to the following registers by using inter-CPU Module communications.

- Bit device registers: X, Y (read-only), M, B
 - Word device registers: D, W, R
 - A bit device register is read or written in units of 16-bit words.

3. Use the MSG-SNDE function if you need to read from or write to registers other than those listed above, to use fixed or random access buffer communications, or to communicate with multiple remote devices.



MP3000 Setup

Use the following procedure to set up the MP3000.

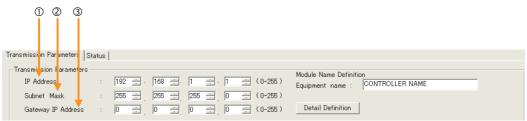
Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axis	sAddress	Motion Register		Register(Input/	Output)
Module	Function Module/Slave	otatus	Start	supied circu	Motion Register	Disabled	Start – End	Size
01 [CPU-302(32axes)] :								
	01 CPU							
	02 218IFD)	器 Circuit No1	1		Input	0000 - 07FF[H]	2048
= 00 (■) CPU302(32)[]	03 ⊞ SVC32		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024
⊆ 00	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]			
-303	05 M-EXECUTOR						0C00 - 0C3F[H]	64
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[·]							
02 UNDEFINED[-]							
08 UNDEFINED								
02 UNDEFINED								
02 UNDEFINED								
03 UNDEFINED								
04 UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.



① In the [IP Address] Boxes, enter the following address: 192.168.001.001.
② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

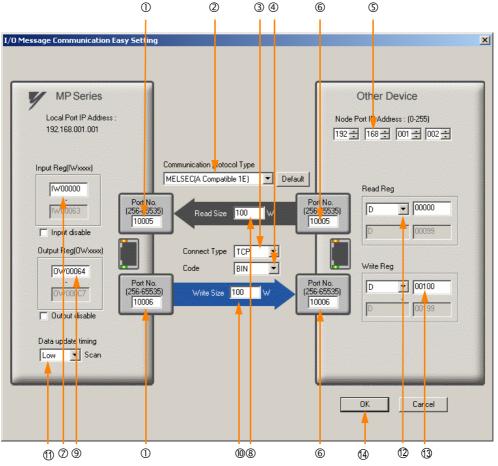
③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Select the [Enable] Option in the [I/O Message Communication] Area of the [Connection Parameter] Area.

I/O Messa C Dischl C Enable		ion							
Easy s Data upo		ossible to set easily tha ow 💌 Scan	it communio	cate the I/O r	nessage.				
Rea Wri		Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail		
Rea Wri				* *			Setting Setting		
4									Þ
	He	ad register number			Head register number	data size			
CPU-201	input disab				ister (MW) 00000 ister (MW) 00004	4	W	Node equipment	

The Message Communication Easy Setting Dialog Box will be displayed.

- 4. Click the [Easy setting] Button.
- 5. Set the connection parameters.



- ① Enter "10005" and "10006" in the [Port No.] Box for the MP-series Controller.
- ② Select [MELSEC (A-compatible 1E)] in the [Communication Protocol Type] Box, and then click the [Default] Button.

Note: If you are using the MELSEC (A-compatible 1E) communications protocol, the read and write register type will be set to D (word device) registers by default.

- 3 Select [TCP] in the [Connect Type] Box.
- ④ Select [BIN] in the [Code] Box.
- ⑤ Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- © Enter "10005" and "10006" in the [Port No.] Boxes for the other devices.
 - Note: In I/O message communications, a message is transmitted from each port for which a register read/ write is initiated. Therefore, for this example, the connected remote device must support a message reception function to receive two messages.
- ⑦ Enter "IW0000" in the [Input Reg] Box as the read data destination.
- Inter "100" in the [Read Size] Box as the size of data to read.

4

- Enter "100" in the [Write Size] Box as the size of data to write.
- ① Select [Low] in the [Data update timing] Box as the timing to update I/O data between the CPU Function Module and 218IFD.

Note: The data update timing is the timing at which the CPU Function Module and 218IFD exchange data. Communications with the remote device are performed asynchronously. The data update timing therefore does not necessarily mean that the messages are sent to the remote device.

- ¹DEnter "D00000" in the [Read Reg] Box as the register type and first address to read from on the remote device.
- ⁽¹⁾ Enter "D00100" in the [Write Reg] Box as the register type and first address to write to on the remote device.

6. Click the [OK] Button.

7. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communication Easy Setting Dialog Box.

8. Check the settings.

0	∕OMessage ℃Disable ●Enable	e Con	nmunicati	on									
[Easy sett Data update		. –	ossible to set easily tha	it commun	nicate the L/	6	message.					
	Read∕ Write		Local Port	Node IP Address	Node Port	Connec [.] Type	t	Protocol Type		Code	Detail		
	Read		10005	192.168.001.002	10005	TCP	•	MELSEC (A Compatible 1 E) 🔻	r E	BIN 👻	Setting		
	Write		10006	192.168.001.002	10006	TOP	-	MELSEC (A Compatible 1 E) 💌	E	BIN 🖵	Setting		
	4												►
			Hea	ad register number				Head register number		data siz	e		
СР	U-201		put disab utput disa		**			gister(D) gister(D) 00100	_	100 100	W	Node equipment	_

9. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as the master.

Setting Up the Remote Device (Mitsubishi Q/A-series PLC)

MELSEC devices are manufactured by Mitsubishi Electric Corporation.

Contact Mitsubishi Electric Corporation for further information on configuring MELSEC devices.

When using a MELSEC A-series Ethernet module (AJ71E71), you must create an initialization ladder program that sets the IP address and port number. Refer to "Communicating With Other Nodes" in the MELSEC manual and create a ladder program for initialization processing.

When using a MELSEC Q-series Ethernet module (QJ71E71-100), set the IP address and port number on the Ethernet Settings Window.

The following table lists the parameters for the MELSEC PLC.

Parameter	Setting (Connection Number 1)	Setting (Connection Number 2)
Protocol	TCP	TCP
Open system	Full passive	Full passive
Local station port No.	2715 hex (10005)	2716 hex (10006)
Destination IP address	192.168.1.1	192.168.1.1
Destination port No.	2715 hex (10005)	2716 hex (10006)

This concludes the setup.

♦ Starting Communications

1. Start receiving messages on the Mitsubishi Q/A-series PLC. The system will automatically start the message reception operation. No further operation is required.

2. Turn ON the power to the MP3000 to start transmitting messages. The system will automatically start the message transmission operation. No further operation is required.

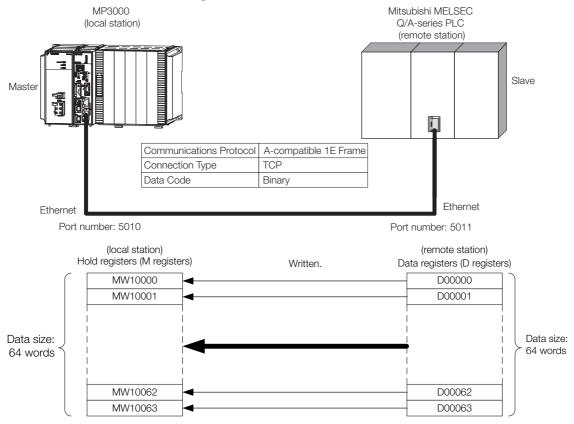
4

4.3.3 Using the MSG-SNDE Function with the MP3000 as the Master

This section describes how to communicate with a Mitsubishi Q/A-series PLC by using the MSG-SNDE function.

Setting Example

The following figure illustrates how the contents of 64 words of data (D) registers (D00000 to D00063) in the CPU Unit of Mitsubishi Q/A-series PLC slave are read and then written to the MW10000 to MW10063 hold registers in the MP3000 master.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register		Register(Input/	Output)
	Function Module/Slave	Status	Start	supied circu	Motion Register	Disabled	Start - End	Size
01 [CPU-302(32axes)] :								
	01 CPU							
	02 218IFD		뀸 Circuit No1	1		Input	0000 - 07FF[H]	2048
⊆ 00 (■) CPU302(32)[]	03 ⊞ SVC32		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024
☐ 00	04 🛨 SVR32		🛥 Circuit No3	1	9000 - 97FF[H]			
303	05 M-EXECUTOR						0C00 - 0C3F[H]	64
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[-]							
02 UNDEFINED[-]							
08 UNDEFINED								
02 UNDEFINED								
02 UNDEFINED								
03 UNDEFINED								
04 UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

023							
Transmission Parameters S	Status						
-Transmission Farameters							
IP Address	:	192 🕂 - 168	÷. 1 ÷.	1 🗄	(0-255)	Module Name Definiti Equipment name :	CONTROLLER NAME
Subnet Mask	:	255 📃 255	255 :	0 🚊	(0-255)	aquipment fiame :	,
Gateway IP Address	:			0 :	(0-255)	Detail Definition	

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

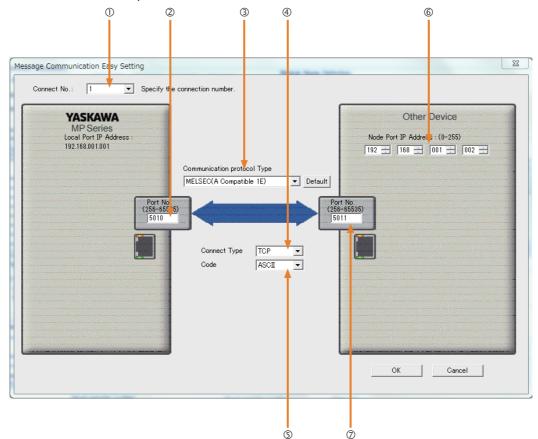
③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	onnection Parame Message Commu Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message o i be set to	communication receive data	s can be easily set. automatically.			
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>
	01				-	•	-	Setting*	
	02				-	-	-	Setting*	
	03				+	-	-	Setting*	
	04				-	-	-	Setting*	
	05				•	-	-	Setting*	
	06				•	-	-	Setting*	
	07				+	-	-	Setting*	•
•		1					1		

The Message Communication Easy Setting Dialog Box will be displayed.

4. Set the connection parameters.



- ① Select [1] in the [Connect No.] Box.
- @ Enter "5010" in the [Port No.] Box for the MP-series Controller.
- ③ Select [MELSEC (A-compatible 1E)] in the [Communication Protocol Type] Box.
- ④ Select [UDP] in the [Connect Type] Box.
- Select [ASCII] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- @Enter "5011" in the [Port No.] Box for the other device.
 - Note: Disable automatic reception for any connection for which message functions (MSG-SNDE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.
- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.
 - Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.
- 7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	
01	10001	192.168.001.002	10001	ТСР 👻	MELSEC (Qn A Compatible 3E 👻	BIN 🧲	Setting*	
02				-	•	-	Oetting*	
03				-	▼	-	Setting*	
04				-	-	•	Setting*	
05				-	-	-	Setting*	
06				-	•	-	Setting*	
07				-	· ·	-	Setting*	

8. Click the [Disable] Option on the Automatically Reception Tab Page.

Detail Setting	X
Automatically Reception	
© Disable C Enable Unable to automated recept protocol type is no control	
Transmission Buffer Channel 2	
Slave I/F Register Settings	Head REG
Readout of Input Relay	IW00000
Readout of Input Register	IW00000
Readout / Write-in of Coil	MW00000
Readout / Write-in of Hold Register	MW00000
Readout / Write-in of Data Relay	GW00000
Readout / Write-in of Data Register	GW00000
Readout / Write-in of Output Coil	OW00000
Readout / Write-in of Output Register	OW00000
Write - in width of Coil/Hold Register LO:	MW00000
HE	MW1048575
Write - in width of Data Relay/Register LO:	GW00000
HE	GW2097151
Write - in width of Output Coil/Register LO:	OW00000
HE	OW17FFF
Automatic input processing delay time	ms (0-100)
The influence on a low-speed scanning can be a according to this parameter. [Attention] It is not in the setting of the comm period of an automatic reception.	·
	OK Cancel

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

9. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

Í	∎▲ IF	'After Low SB000003 =	Scan Start	, Only 1 Sc	an ON' ==	ializing tion during f nd SB000001 f 'TRUE'	or high scan.			
	IT	0000000 -	- 1802,		clear all	D registers	1			
NL 2							SETW	[W]Dest DW00000	[W] Data 00000	[W]Width 00130
_	END_IF	 		 	 	 	1			
						EXPRESSION 'remote st	ation'= 1			[
						DW00110 = 'function DW00112 = 'remote da DW00114 = 'remote da DW00115 = 'data siza DW00117 = 'remote GF DW00118 = 'local dat DW00120 = 'local dat DW00121 =	1; code' = 3 3; 4, 4, 4, 4, 5, 4, 5, 5, 1, 5, 6, 1, 1, 1, 10000; 1, 10000; 1, 10000; 1, 10000; 1, 10000; 1, 1000;	high' = 0 0 low' = 1000 high' = 0	0	
	DB000210		[W]Set	[W]Count		DB000211	DB000212			DB00020
	execute	TON [10ms]	06000	DW00030		complete	error			abort
	DB000202									
	abort SB000039		DB000202	DB000211	DB000212	DB000208				DB00021
	After 2.0s, Scan Start- UP Relay DB000201		abort	complete	error	waiting				comman
	command								MSG	SNDE
									[B]Execute DB000201	DB0002
									command [B]Abort	execut [B]Comple
									DB000202 abort [W]Dev-Typ	DB0002 complet [B]Error
									00016	DB0002 error
									[W] Pro-Typ 00001	[
									[W]Cir-No 00001 [W]Ch-No	
									(#) CN-NO 00001 (A) Param	
									DAOO1OO message se	
					♦finishe	d normally			nd (extend ed) param-	1
_	I F	'complete' DB000211==	=='TRUE' TRUE;							
NL L	DB000801		1		r					[WLQ]Des
2									INC	count n ally
-[END_IF				♦finished	abnormally				
_	I F	'error'==' DB000212==	TRUE' TRUE;							
NL 2									INC	[WLQ]Dest DW0002 count ab rmally
1L 2								STORE	WLFQD]Src DW00100 processing result	[WLFQD]De DW0002 result
									[WLFQD]Src	[WLFQD]De
NL 2								STORE	DW00101 function st	DW0002 status

15	DB000202	DB000209			DB000208
27/-	abort	stop			waiting
	DB000208				
16	waiting DB000208	▲ [₩] Set DN [10ms] 06000	[W]Count DW00031		 DB000209
31/-	waiting	DN[IOMS] U6UUU	DWUUU31		stop
17				END	

10. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

Setting Up the Remote Device (Mitsubishi Q/A-series PLC)

When using a MELSEC A-series Ethernet module (AJ71E71), you must create an initialization ladder program that sets the IP address and port number. Refer to "Communicating With Other Nodes" in the MELSEC manual and create a ladder program for initialization processing.

When using a MELSEC Q-series Ethernet module (QJ71E71-100), set the IP address and port number on the Ethernet Settings Window.

To perform communications in ASCII mode, set the communications data code setting in the Ethernet operation settings to [ASCII Code Communications].

Information MELSEC devices are manufactured by Mitsubishi Electric Corporation. Contact Mitsubishi Electric Corporation for further information on configuring MELSEC devices.

Parameter	Description
Protocol	UDP
Open system	Full passive
Local station port No.	1393 hex (5011)
Destination IP address	192.168.1.1
Destination port No.	1392 hex (5010)

Table 4.1 Open Settings Example

Starting Communications

Use the following procedure to read the data in the data registers in the CPU Unit of the Mitsubishi Q/A-series PLC from the hold registers in the MP3000.

1. Start receiving messages on the Mitsubishi Q/A-series PLC. The system will automatically start the message reception operation. No further operation is required.

2. Turn ON the power to the MP3000 to start transmitting messages.

The ladder program example is designed to turn ON the Execute Bit (DB000200) in the message send function after six seconds has elapsed from when the low-speed scan (or high-speed scan) starts. Thereafter, the message send function is executed every second by alternating the Execute Bit (DB000200) between OFF and ON each time the message send function completes execution normally or with an error.

Note: The MP3000 will establish the TCP connection when it starts execution of the MSG-SNDE function.

SB00003A: Turns ON 5 seconds a	after start.				
LowScan [~] . OnAfter2s SB000039 After 2.0s, Scan Start- UP neray DB000201	DB000202 / abort	DB000211	DB000212	DB000208	DB000201 command
command					

The message functions are used in user communications applications for the A-compatible 1E Frame protocol. You can send and receive message data by setting the necessary input items and parameters for the message functions. Message communications using the A-compatible 1E Frame protocol can be carried out with the same settings used for MEMOBUS messages.

Inputs and Outputs for the MSG-SNDE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message trans- mission. When the Abort Bit turns ON, the message trans- mission will be stopped unconditionally. The Abort Bit takes precedence over the Execute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16, 218IF = 6
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the A-compatible 1E Frame protocol. MEMOBUS is automatically converted to the A-compatible 1E Frame protocol inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the A-compatible 1E frame protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the A-compatible 1E frame protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD = 1 to 8, 218IF = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel number for the same connection. You can use the same channel number as long as multiple functions are not executed at the same time. 218IFB, 218IFD = 1 to 10, 218IF = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the parameter list. The parameter list is used by inputting func- tion codes and relevant parameter data. It is also where the process results and status are output. Continued on next page.

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I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmission or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
Output Items	2 Com- plete		B-VAL	Process com- pleted.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\bigcirc \blacklozenge$ Error on page 2-8

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description	Reference Page
00		Processing Result	Gives the processing status.	♥ Processing Result (PARAM00) on page 2-9
01		Status	Gives the status of the current function.	Status (PARAM01) on page 2-10
02		Detail Error Code, Lower Word	- Gives the details of an error.	■
03		Detail Error Code, Upper Word		<i>PARAM03)</i> on page 4- 73
04	Out-	Status 1	Gives the communications status.	Status 1 (PARAM04) on page 2-12
05	puts	Status 2	Gives status information on the most recent error.	● Status 2 (PARAM05) on page 2-12
06		Status 3	Gives the information of the send pass counter.	Status 3 (PARAM06) on page 2-12
07		Status 4	Gives the information of the receive pass counter.	Status 4 (PARAM07) on page 2-12
08		Status 5	Gives the information of the error counter.	
09		Status 6	Not used for the A-compatible 1E Frame pro- tocol.	_

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No.	I/O	Meaning	Description	_	Reference Page
10		Connection Number	Sets the connection number used to deter- mine the remote station.	(Ja	 Connection Number (PARAM10) on page 2- 13
11		Option	Not used for the A-compatible 1E Frame pro- tocol.		-
12		Function Code	Sets the code of the function in the A-compatible 1E Frame protocol.	(F)	◆ Function Code (PARAM12) on page 4- 73
13		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(F	◆ Reserved for System (PARAM13) on page 2- 14
14		Remote Station Data Address, Lower Word	Sets the data address to read/write at the remote station. (Use word addresses for reg-	Æ	◆ Remote Station Data Address (PARAM14 and
15		Remote Station Data Address, Upper Word	isters, bit addresses for relays or coils.)		<i>PARAM15)</i> on page 4- 74
16		Remote Station Register Type	Not used for the A-compatible 1E Frame pro- tocol.	E.	◆ Remote Station Reg- ister Type (PARAM16) on page 4-43
17	Inputs	Data Size	Sets the size of the data to read/write. (Use word sizes for registers, bit sizes for relays or coils.)	۶.	◆ Data Size (PARAM17) on page 4-75
18		Remote CPU Module Number	Not used for the A-compatible 1E Frame pro- tocol.	۶.	◆ Remote CPU Module Number (PARAM18) on page 2-17
19		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(FF	◆ Reserved for System (PARAM19) on page 2- 17
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word addresses	Ē	◆ Local Station Data Address (PARAM20 and
21		Local Station Data Address, Upper Word	for registers, bit addresses for relays or coils.)		<i>PARAM21)</i> on page 2- 18
22		Local Station Register Type	Sets the register type of the read/write data to store in the local station.	La B	◆ Local Station Regis- ter Type (PARAM22) on page 4-76
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	E.	◆ Reserved for System (PARAM23) on page 2- 19
24		For system use	This parameter is used by the system. It con- tains the channel number of the communica- tions buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	(J	 ◆ Reserved for System (PARAM24) on page 2- 19
25	_	Reserved for system.			
26		Reserved for system.	These parameters are used by the system. Do not change the value of these parameters	F	◆ Reserved for System (PARAM25 to
27		Reserved for system.	from a user program or by any other means.		<i>PARAM28</i>) on page 2- 19
28		Reserved for system.			

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Detail Error Code (PARAM02 and PARAM03)

Processing Result Value (PARAM00)	Detail Error Code	Meaning	Description
8100 hex	1	Function code error	An unused function code was sent or received. Check PARAM12 (Function Code).
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Remote Station Data Address) PARAM20 and PARAM21 (Local Station Data Address)
8300 hex	3	Data size error	The data size for sending or receiving is out of range. Check PARAM17 (Data Size).
8400 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-SNDE function.
85 00 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-SNDE function.
8600 hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
88 00 hex	8	Communica- tions device error	An error response was received from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG- SNDE function.
C245 hex	_	Local station register type error	The register type for the local station is out of range. Check PARAM22 (Local Station Register Type).
8072 hex to FF72 hex		Remote device error*	An error response was received from the remote station. Check the error code and remove the cause.

These parameters give the detail error code.

* An error response received from the remote device will be formatted in PARAM00 (Processing Result) as follows. Processing Result (PARAM00): DD72 hex (where DD is the error code) DD contains the sum of the completion code sent from the Mitsubishi PLC and 80 hex.

Refer to the following manual for details on completion codes.

Ethernet Unit Manual from Mitsubishi Electric Corporation

Function Code (PARAM12)

Set the function code to send.

You can use the functions that are registered to the function codes.

Function Code	MELSEC Common Instructions for ACPUs	Target Data Type	Function
01 or 02 hex	00 hex	В	Reads bit devices in units of one point.
03, 04, 09, or 0A hex	01 hex	W	Reads word devices in units of one point.
05 or 0F hex	02 hex	В	Writes bit devices in units of one point.
06, 0B, or 10 hex	03 hex	W	Writes word devices in units of one point.
08 hex	16 hex	-	Performs a loopback test.
0E hex	05 hex	В	Sets/resets word devices in units of one point by specifying a device number.
31 hex	60 hex	W	Writes to a fixed buffer in units of one word.
32 hex	61 hex	W	Reads from the random access buffer in units of one word.
33 hex	62 hex	W	Writes to the random access buffer in units of one word.

Note: 1. B: Bit data, W: Integer data

2. AnCPU special instructions cannot be used. Use the ACPU common instructions to access the AnCPU. The extended file registers in the AnCPU cannot be accessed either.

4

Remote Station Data Address (PARAM14 and PARAM15)

Set the first address for data in the remote station.

Enter the first address as a decimal or hexadecimal number.

Example If the first address is MW01000, enter "1000" (decimal) or "3E8" (hexadecimal).

The applicable function codes and valid range of data addresses depend on the device type and device range of the Mitsubishi Q/A-series PLC.

Device	Common Instructions for ACPUs Device Range	Notation	Function Code	Data Address Setting Range	Corresponding Register Addresses
Х	X0000 to X07FF	Hexadeci- mal	02 hex: Input relays	0 to 2047	MB000000 to MB00127F
Y	Y0000 to Y07FF	Hexadeci- mal	01 and 0F hex: Coils	0 to 2047	MB000000 to MB00127F
М	M0000 to M2047	Decimal	01, 05, and 0F hex: Coils	2048 to 4095	MB001280 to MB00255F
М	M9000 to M9255	Decimal	01, 05, and 0F hex: Coils	4096 to 4351	MB002560 to MB00271F
В	B0000 to B03FF	Hexadeci- mal	01, 05, and 0F hex: Coils	4352 to 5375	MB002720 to MB00335F
F	F0000 to F0255	Decimal	01, 05, and 0F hex: Coils	5376 to 5631	MB003360 to MB00351F
TS	TS000 to TS255	Decimal	02 hex: Input relays	2048 to 2303	MB001280 to MB00143F
TC	TC000 to TC255	Decimal	02 hex: Input relays	2304 to 2559	MB001440 to MB00159F
CS	CS000 to CS255	Decimal	02 hex: Input relays	2560 to 2815	MB001660 to MB00175F
CC	CC000 to CC255	Decimal	02 hex: Input relays	2816 to 3071	MB001760 to MB00191F
М	M2048 to M8191	Decimal	01, 05, and 0F hex: Coils	8192 to 14335	MB005120 to MB00895F

Table 4.2 Bit Device Conversion Table

Table 4.3 Word Device Conversion Table

Device	Common Instructions for ACPUs Device Range	Notation	Function Code	Data Address Setting Range	Corresponding Register Addresses
TN	TN000 to TN255	Decimal	04 and 0A hex: Input registers	0 to 255	MW00000 to MW00255
CN	CN000 to CN255	Decimal	04 and 0A hex: Input registers	256 to 511	MW00256 to MW00511
D	D0000 to D1023	Decimal	03, 06, 09, 0B, 0E, and 10 hex: Hold registers	0 to 1023	MW00000 to MW01023
D (Special)	D9000 to D9255	Decimal	03, 06, 09, 0B, 0E, and 10 hex: Hold registers	1024 to 1279	MW01024 to MW01279
W	W0000 to W03FF	Hexadeci- mal	03, 06, 09, 0B, 0E, and 10 hex: Hold registers	1280 to 2303	MW01280 to MW02303
R	R0000 to R8191	Decimal	03, 06, 09, 0B, 0E, and 10 hex: Hold registers	2304 to 10495	MW02304 to MW10495
D	D1024 to D6143	Decimal	03, 06, 09, 0B, 0E, and 10 hex: Hold registers	10496 to 15615	MW10496 to MW15615

Note: 1. Even if addresses are within the given device range, they may exceed the range of the device area depend-ing on the model of the Mitsubishi Q/A-series PLC. Refer to the following manual for details.

Reprogrammable Controller Manual from Mitsubishi Electric Corporation

2. The corresponding register address in the MP3000 can be adjusted by using the offset setting of the MSG-SNDE function.

◆ Data Size (PARAM17)

Set the data size for the read/write request as the number of bits or words.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and data area.

Function Code	MELSEC Common Instructions for ACPUs	Function	Data size Setting Range	
01 or 02 hex	00 hex	Reads bit devices in units of one point.	1 to 256 points	
03, 04, 09, or 0A hex	01 hex	Reads word devices in units of one point.	1 to 256 points	
05 or 0F hex	02 hex	Writes bit devices in units of one point.	1 to 256 points	
06, 0B, or 10 hex	03 hex	Writes word devices in units of one point.	1 to 256 points	
08 hex	16 hex	Performs a loopback test.	_	
0E hex	05 hex	05 hex Sets/resets word devices in units of one point by specifying a device number.		
31 hex	60 hex	Writes to a fixed buffer in units of one word.		
32 hex	61 hex	Reads from the random access buffer in units of one word.	See the fol- lowing table.	
33 hex	62 hex	Writes to the random access buffer in units of one word.		

■ For the 218IFB and 218IFD

Function	Connect Type	Code	Data Size Setting Range	
	TCP	BIN	1 to 727 words	
Writes to a fixed buffer in units of one word.		ASCII	1 to 362 words	
whites to a fixed buller in drifts of one word.	UDP	Code Range BIN 1 to 727 words ASCII 1 to 362 words ASCII 1 to 1017 words ASCII 1 to 508 words ASCII 1 to 508 words ASCII 1 to 728 words ASCII 1 to 728 words ASCII 1 to 363 words ASCII 1 to 363 words ASCII 1 to 1017 words ASCII 1 to 508 words ASCII 1 to 361 words ASCII 1 to 361 words ASCII 1 to 1017 words		
	UDP	ASCII	1 to 508 words	
	TCP	BIN	1 to 728 words	
Reads from the random access buffer in units of	IOF	ASCII 1 to 363 words		
one word.	UDP	BIN	1 to 727 words 1 to 362 words 1 to 1017 words 1 to 508 words 1 to 728 words 1 to 363 words 1 to 1017 words 1 to 508 words 1 to 508 words 1 to 728 words 1 to 508 words 1 to 7017 words 1 to 508 words 1 to 726 words 1 to 361 words	
	UDF	ASCII	1 to 508 words	
	TOD	BIN	1 to 726 words	
Writes to the random access buffer in units of one	Iffer in units of one TCP ASCII 1 to 3		1 to 361 words	
word.	UDP	BIN	1 to 1017 words	
	ODF	ASCII	1 to 508 words	

Note: When communicating with TCP, the data size limit is the maximum size of data that can be sent in a single segment.

A segment is the unit for data transfer in TCP and is determined by the MTU (maximum transfer unit). The data size setting ranges given above are for an MTU of 1,500 bytes.

■ For the 218IF

Function	Connection Type	Code	Data Size Setting Range
	ТСР	BIN	1 to 507 words
Fixed	IOF	ASCII	1 to 362 words
Tixeu	UDP	BIN	1 to 507 words
	UDF	ASCII	1 to 507 words
	ТСР	BIN	1 to 508 words
Random read	IOF	ASCII	1 to 363 words
handom lead	UDP	BIN	1 to 508 words
	UDI	ASCII	1 to 508 words
	ТСР	BIN	1 to 507 words
Random write	101	ASCII	1 to 361 words
nandom write	UDP	BIN	1 to 507 words
		ASCII	1 to 507 words

Local Station Register Type (PARAM22)

Set the register type of the read data destination or write data source in the MP3000.

Register Type Value Type Remarks		Remarks
0	М	Sets the target data type to MB for bits and MW for words.
1 G Sets the target data type to GB for bits and GW for words.		Sets the target data type to GB for bits and GW for words.
2 I Sets the target data type to IB for bits and IW for w		Sets the target data type to IB for bits and IW for words.
3 O Sets the target data type to OB for bits and OW for words.		Sets the target data type to OB for bits and OW for words.
4 S Sets the target d		Sets the target data type to SB for bits and SW for words.
5 or higher – Not used for the A-compatible 1E Frame protocol.		Not used for the A-compatible 1E Frame protocol.

The register types that can be used depend on whether you are reading or writing. The following table lists the combinations of register types.

Function Code	Applicable Register Types
01, 02, 03, 04, 09, 0A, or 32 hex	M, G, or O
05, 06, 0B, 0F, 10, 31, or 33 hex	M, G, I, O, or S
0E hex	M

Inputs and Outputs for the MSG-RCVE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16, 218IF = 6
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the A-compatible 1E Frame protocol. MEMOBUS is automatically converted to the A-compatible 1E Frame protocol inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the A-compatible 1E frame protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the A-compatible 1E frame protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD, 218IF = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communi- cations buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same connection. You can use the same channel number as long as multiple functions are not executed at the same time. 218IFB, 218IFD, 218IF = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 52 words starting from the specified first word are automatically used for the parameter list. The parameter list is used by inputting function codes and relevant parame- ter data. It is also where the process results and status are output. Continued on next page.

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I/O Definitions	No.	Name	I/O Designation	Meaning	Description	
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.	
Output Items	2	Com- plete	B-VAL	Process completed.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one sca when message transmission or forced abor processing has been completed normally.	
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{ee} \leftarrow Error$ on page 2-23	

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.	E	◆ Processing Result (PARAM00) on page 2- 25
01		Status	Gives the status of the current function.	(F	◆ Status (PARAM01) on page 2-25
02	-	Detail Error Code, Lower Word	Gives the details of an error.	(F	◆ Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word	Gives the details of an error.		<i>PARAM03)</i> on page 4- 81
04	Out-	Status 1	Gives the communications status.	(F	♦ Status 1 (PARAM04) on page 2-27
05	puts	Status 2	Gives status information on the most recent error.	E	♦ Status 2 (PARAM05) on page 2-28
06	-	Status 3	Gives the information of the send pass counter.	(F	◆ Status 3 (PARAM06) on page 2-28
07	-	Status 4	Gives the information of the receive pass counter.	(F	◆ Status 4 (PARAM07) on page 2-28
08		Status 5	Gives the information of the error counter.	(F	♦ Status 5 (PARAM08) on page 2-28
09		Status 6	Not used for the A-compatible 1E Frame protocol.		_
10	Input	Connection Number	Sets the connection number used to deter- mine the remote station.	(F	◆ Connection Number (PARAM10) on page 2- 29
11	I/O	Option	Not used for the A-compatible 1E Frame protocol.		_
12	Output	Function Code	Gives the function code requested by the remote station.	(F	◆ Function Code (PARAM12) on page 4- 81
13	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	۲.	◆ Reserved for System (PARAM13) on page 2- 30

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No.	I/O	Meaning	Description		Reference Page
	1/0	Data Address,	Description		
14 		Lower Word Data Address,	Gives the first address of the data that was requested by the remote station.	F	◆ Data Address (PARAM14 and PARAM15) on page 2- 30
	0+	Upper Word	Not used for the Alexandrible of Element		
16	Out- puts	Register Types	Not used for the A-compatible 1E Frame protocol.		_
17		Data Size	Gives the data size that was requested by the remote station.		◆ Data Size (PARAM17) on page 2-31
18		Remote CPU Module Number	Not used for the A-compatible 1E Frame protocol.		_
19	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(Jacoba)	◆ Reserved for System (PARAM19) on page 2- 31
20		Coil Offset, Lower Word	Sets the offset word address for a coil	(F	◆ Offsets (PARAM20 to
21	-	Coil Offset, Upper Word	(MB).		<i>PARAM27)</i> on page 4- 82
22		Input Relay Offset, Lower Word	Sets the offset word address for an input	(F	◆ Offsets (PARAM20 to
23		Input Relay Offset, Upper Word	relay (IB).		PARAM27) on page 4- 82
24		Input Register Offset, Lower Word	Sets the offset word address for an input register (IW).		♦ Offsets (PARAM20 to PARAM27) on page 4-
25		Input Register Offset, Upper Word			82
26		Hold Register Offset, Lower Word	Sets the offset word address for a hold reg- ister (MW). Not used for the A-compatible 1E Frame protocol.		♦ Offsets (PARAM20 to PARAM27) on page 4-
27		Hold Register Offset, Upper Word			82
28		Data Relay Offset, Lower Word			_
29		Data Relay Offset, Upper Word			
30	Inputs	Data Register Offset, Lower Word	Not used for the A-compatible 1E Frame		_
31		Data Register Offset, Upper Word	protocol.		
32		Output Coil Offset, Lower Word	Not used for the A-compatible 1E Frame		_
33		Output Coil Offset, Upper Word	protocol.		
34		Output Register Offset, Lower Word	Not used for the A-compatible 1E Frame		_
35		Output Register Offset, Upper Word	protocol.		
36		M Register Writing Range LO, Lower Word	Sets the first address of the writing range for hold register coils.		
37		M Register Writing Range LO, Upper Word			<i>PARĂM</i> 39) on page 4- 83
38		M register Writing Range HI, Lower Word	Sets the last address of the writing range for hold register coils.		♦ M Register Writing Range (PARAM36 to
39		M Register Writing Range HI, Upper Word			<i>PARAM39)</i> on page 4- 83

Using Ethernet Communications

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Continued on next page.

No.	I/O	Meaning	Description	Reference Page	
40	-	G register Writing Range LO, Lower Word	Not used for the A-compatible 1E Frame		
41		G Register Writing Range LO, Upper Word		protocol.	_
42		G Register Writing Range HI, Lower Word	Not used for the A-compatible 1E Frame		
43	Inputs	G Register Writing Range HI, Upper Word	protocol.	_	
44	inputs	O Register Writing Range LO, Lower Word	Not used for the A-compatible 1E Frame		
45		O Register Writing Range LO, Upper Word	protocol.		
46	O Register Writing Range HI, Lower Word	Not used for the A-compatible 1E Frame			
47		O Register Writing Range HI, Upper Word	protocol.		
48	_	For system use	This parameter contains the channel num- ber of the communications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	For System Use (PARAM48) on page 2- 34	
49		Reserved for system.	These parameters are used by the system.	ুন্থি ♦ Reserved for System	
50		Reserved for system.	Do not change the value of these parame- ters from a user program or by any other	(PARAM49 to PARAM51) on page 2-	
51		Reserved for system.	means.	34	

Continued from previous page.

Detail Error Code (PARAM02 and PARAM03)

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
8100 hex	1	Function code error	An unused function code was received. Check the function code of the remote station.
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Data Address) PARAM20 and PARAM21 (Coil Offset) PARAM26 and PARAM27 (Hold Register Offset)
83 00 hex	3	Data size error	The data size for receiving is out of range. Check the data size at the remote station.
84 00 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-RCVE function.
85 00 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-RCVE function.
86 00 hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
8800 hex	8	Communications device error	An error response was received from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-RCVE function.

◆ Function Code (PARAM12)

This parameter gives the function code that was received.

Function Code	MELSEC Common Instructions for ACPUs	Target Data Type	Function
01 or 02 hex	00 hex	В	Reads bit devices in units of one point.
03, 04, 09, or 0A hex	01 hex	W	Reads word devices in units of one point.
05 or 0F hex	02 hex	В	Writes bit devices in units of one point.
06, 0B, or 10 hex	03 hex	W	Writes word devices in units of one point.
08 hex	16 hex	-	Performs a loopback test.
0E hex	05 hex	В	Sets/resets word devices in units of one point by specify- ing a device number.
31 hex	60 hex	W	Writes to a fixed buffer in units of one word.
32 hex	61 hex	W	Reads from the random access buffer in units of one word.
33 hex	62 hex	W	Writes to the random access buffer in units of one word.

Note: 1. B: Bit data, W: Integer data

 AnCPU special instructions cannot be used. Use the ACPU common instructions to access the AnCPU. The extended file registers in the AnCPU cannot be accessed either.

♦ Offsets (PARAM20 to PARAM27)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address by the number of words specified by the offset.

Note: An offset cannot be a negative value.

Offset parameters are provided for each of the target register types.

The following table lists the offset parameters.

Parameters	Meaning	Description
PARAM20 and 21	Coil Offset	Sets the offset to the word address for a coil.
PARAM22 and 23	Input Relay Offset	Sets the offset to the word address for an input relay.
PARAM24 and 25	Input Register Offset	Sets the offset to the word address for an input register.
PARAM26 and 27	Hold Register Offset	Sets the offset to the word address for a hold register.

The offset parameters that can be used depend on the function code.

The following table lists the valid parameters for each function code.

Function Code	Function	Applicable Offset Parameters
01 hex	Reads the states of coils.	PARAM20 and 21
02 hex	Reads the states of input relays.	PARAM22 and 23
03 hex	Reads the contents of hold registers.	PARAM26 and 27
04 hex	Reads the contents of input registers.	PARAM24 and 25
05 hex	Changes the state of a single coil.	PARAM20 and 21
06 hex	Writes to a single hold register.	PARAM26 and 27
09 hex	Reads the contents of hold registers (extended).	PARAM26 and 27
0A hex	Reads the contents of input registers (extended).	PARAM24 and 25
0B hex	Writes to hold registers (extended).	PARAM26 and 27
0D hex	Reads the contents of non-consecutive hold registers (extended).	PARAM26 and 27
0E hex	Writes the contents of non-consecutive hold registers (extended).	PARAM26 and 27
0F hex	Changes the states of multiple coils.	PARAM20 and 21
10 hex	Writes to multiple hold registers.	PARAM26 and 27
31 hex	Writes to the fixed buffer.	PARAM26 and 27
32 hex	Reads from the random access buffer.	Cannot be received.
33 hex	Writes to the random access buffer.	PARAM26 and 27

M Register Writing Range (PARAM36 to PARAM39)

Set the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the M Register Writing Range (PARAM36 to PARAM39) with word addresses.

Note: 1. M registers are always used as the destination in the MP3000 for data write requests from the remote station.

2. The writing range parameters allow you to specify the range of M registers that messages are allowed to write to.

The following table lists the writing range parameters.

Parameters	Meaning	Description
PARAM36 and 37	M Register Writing Range LO	First address of the writing range
PARAM38 and 39	M Register Writing Range HI	Last address of the writing range

Set the writing range so that it satisfies the following condition:

 $0 \le M$ register writing range LO $\le M$ register writing range HI \le Maximum M register address The writing range applies when using the following function codes.

05 hex: Changes the state of a single coil.

06 hex: Writes to a single hold register.

0B hex: Writes to hold registers (extended).

OE hex: Writes to non-consecutive hold registers (extended).

OF hex: Changes the states of multiple coils.

10 hex: Writes to multiple hold registers.

31 hex: Writes to the fixed buffer.

33 hex: Writes to the random access buffer.



Use the following settings to set the allowable writing range of M register addresses to MW0001000 to MW0001999:

PARAM36 = 03E8 hex (1000) PARAM37 = 0000 hex (0000) PARAM38 = 07CF hex (1999) PARAM39 = 0000 hex (0000)

The MP3000 will return an error if a write request is received for addresses outside the range from MW01000 to MW01999, and will not perform the writing operation.

4.4 Communications with a Mitsubishi PLC (QnA-compatible 3E Frame Protocol)

When using Ethernet communications between the MP3000 and a Mitsubishi Q/QnA-series PLC, use the MC protocol (QnA-compatible 3E Frame protocol) as the communications protocol. The QnA-compatible 3E Frame protocol allows the master to read and write the contents of slave registers.

This section describes communications when the MP3000 acts as the master. When the MP3000 acts as the master, communications can take place using I/O message communications or the MSG-SNDE function.

The communications modules which can perform communications with a Mitsubishi Q/QnAseries PLC are 218IFD and 218IFB.

4.4.1 Using I/O Message Communications with the MP3000 as the Master

This section describes how to perform communications with a Mitsubishi Q/QnA-series PLC by using I/O message communications.

QnA-compatible 3E Frame Commands

The commands that are used with I/O message communications on the MP3000 are given below.

Function		ible 3E Frame ex)	Meaning	
	Command	Subcommand		
Batch read from the	0401	0000	Reads bit devices in units of 16 points.	
device memory			Reads word devices in units of one point.	
Batch write to the device	1401	0000	Writes bit devices in units of 16 points.	
memory	1401	0000	Writes word devices in units of one point.	

Device Memory and Corresponding Registers in the MP3000

The following tables show the relationship between registers in the MP3000 and device memory in the Mitsubishi Q/QnA-series PLC. Use device addresses within the ranges listed in the tables below according to the conditions of the Mitsubishi Q/QnA-series PLC slave.

When reading data from or writing data to the I/O memory in the Mitsubishi Q/QnA-series PLC, the read or write commands are automatically generated by assigning I/O registers to the MP3000.

Reading

- Set the input registers in the MP3000 as follows:
 - Set the first address of the IW registers and the size of the read data that is to be stored in the MP3000.
 - Set the address of the first register of the device memory to read from in the remote device.

• Writing

Set the output register in the MP3000 as follows:

- Set the first address of the OW registers and the size of the data in the MP3000 to be written to the I/O memory in the Mitsubishi Q/QnA-series PLC.
- Set the first register address in the remote device of the device memory to be written to.

Device Name	Data Range				
Device Name	Notation	Mitsubishi PLC	MP3000		
Input Relays	Hexadecimal	X000000 to X001FFF			
Output Relays	Hexadecimal	Y000000 to Y001FFF	Dood		
Internal Relays	Decimal	M000000 to M008191	Read: IW0000 to IW7FFF hex		
Latch Relays	Decimal	L000000 to L008191			
Step Relays	Decimal	S000000 to S008191	Write: OW0000 to OW7FFF hex		
Link Relays	Hexadecimal	B000000 to B001FFF			
Link Special Relays	Decimal	SM000000 to SM002047	_		

Table 4.5	Word	Device	Conversion	Table
-----------	------	--------	------------	-------

Device Name	Data Range					
Device Maine	Notation	Mitsubishi PLC	MP3000			
Data Registers	Decimal	D000000 to D012287	Read:			
Link Registers	Hexadecimal	W000000 to W001FFF	IW0000 to IW7FFF hex			
Link Special Registers	Decimal	SD000000 to SD002047	Write:			
File Registers	Hexadecimal	ZR000000 to ZR007FFF*	OW0000 to OW7FFF hex			

* Access file registers by using the notation for accessing continuous file registers: ZR for ASCII data and B0 hex for binary data. The normal access notation (R* for ASCII data and AF hex for binary data) cannot be used.

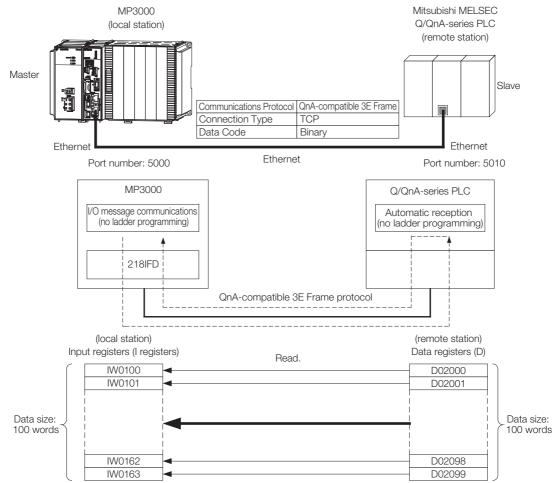
Transfer Size

The following table lists the size of data that can be transferred using I/O message communications. Use the data size within the ranges listed in the following table according to the conditions of the Mitsubishi Q/QnA-series PLC slave.

•	atible 3E Frame (Hex)	Meaning	Data Size	
Command	Subcommand			
0401	0401 0000	Reads bit devices in units of 16 points.	16 to 4096 points (256 words)	
0401		Reads word devices in units of one point.	1 to 256 points	
1401	0000	Writes bit devices in units of 16 points.	16 to 4096 points (256 words)	
	0000	Writes word devices in units of one point.	1 to 256 points	

Setting Example

The following figure illustrates how the contents of the D02000 to D02099 data (D) registers in the CPU Unit of Mitsubishi Q/QnA-series PLC slave are read into the IW0100 to IW0163 input registers in the MP3000 master.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axis	Address	Motion Register	Register(Input/Output)			
Module	Tunction module/ slave	oratus	Start	supied circu	MOTION NEEDSTEE	Disabled	Start - End	Size	
01 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD		뀸 Circuit No1	1		Input	0000 - 07FF[H]	2048	
≘ 00	08 ⊞ SVC82 🖓		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024	
	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]				
-303	05 M-EXECUTOR						0C00 - 0C3F[H]	64	
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED[-]								
02 UNDEFINED[-]								
03 UNDEFINED									
02 UNDEFINED									
02 UNDEFINED									
03 UNDEFINED									
04 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

C	D 2 (3											
nsmissi	on Paramete	Sta	tus										
Fransmi	sion Farame	ers —											
IP Ad	Idress		:	192	÷	168	÷	1	÷.	1	÷.	(0-255)	Module Name Definition Equipment name : CONTROLLER NAME
Subn	et Mask	L	:	255	∃.	255	<u> </u>	255	Ξ.	0	<u></u>	(0-255)	
Gate	way IP Addre	ess	:	0	<u>.</u>	0	÷	0	∃.	0	<u>·</u>	(0-255)	Detail Definition
	nsmissi Fransmi IP Ac Subn	nsmissinn Parımeter Fransmision Farame IP Address Subnet Mask	nsmissivn Parumeters Sta Fransmision Farameters — IP Address	nsmissin, Parameter: Status Transmission, farameters IP Address : Subnet Mask :	nsmission Parameters Status Fransmission Farameters IP Address : 192 Subnet Mask : 255	nsmissin Parameter: Status Fransmision Farameters IP Address : 192 <u>-</u> . Subnet Mask : <u>255 -</u> .	nsmissin Parameter: Status Fransmission farameters IP Address : <u>192 = 1</u> . 168 Subnet Mask : <u>255 = 255</u>	nsmission Parameters Status Fransmission Farameters Fransmission Farameters IP Address : 192 🖽 - 168 🚎 - Subnet Mask : 255 🚔 255 🚔	nsmissin Parameter: Status Fransmision Farameters IP Address : 192 <u>-</u> 168 <u>-</u> 1 Subnet Mask : <u>255 -</u> <u>255 -</u> 255	nsmissin Parameter: Status Fransmission farameters IP Address : 192 + 168 + 1 + 1 Subnet Mask : 255 + 255 + 255 + 255 + 255 + 255 +	nsmissin Parameters Status Fransmission Farameters IP Address : 192 = 168 = 1 = 1 Subnet Mask : 255 = 255 = 255 = 0	nsmission Parameters Status Transmission Farameters IP Address : 192 - 168 - 1 - 1 - 1 Subnet Mask : 255 - 255 - 255 - 0	nsmissin Parameter: Status Fransmission farameters IP Address: : 192 - 168 - 1 - 1 - (0-265) Subnet Mask : 255 - 255 - 255 - 0 - (0-255)

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

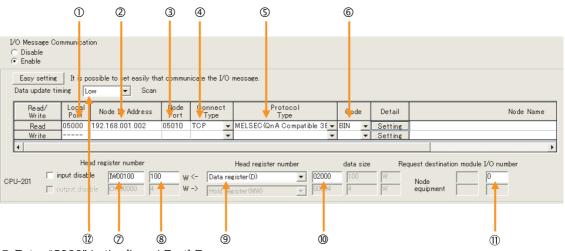
② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Select the [Enable] Option in the [I/O Message Communication] Area of the [Connection Parameter] Area.

C	U/O Message Communication											
	Easy setting It is possible to set easily that communicate the I/O message. Data update timing Low 💽 Scan											
	Read/ Write		Local Port	Node IP Address	Node Port	Connect Type	Protocol Type		Code	Detail		
	Read Write					•		4	• •	Setting Setting		
	▲ [ootting	I	Þ
	Head register number Head register number data size											
CPI	U-201		ıt disablı out disab					00000	4	W	Node equipment	

4. Set the connection parameters.



① Enter "5000" in the [Local Port] Box.

② Enter the following address for the remote device in the [Node IP Address] Box: 192.168.001.002.
③ Enter "5010" in the [remote device Node Port] Box.

Select [TCP] in the [Connect Type] Box.

- Select [MELSEC (QnA-compatible 3E)] in the [Protocol Type] Box.
- © Select [BIN] in the [Code] Box.
- The Enter "IW0100" in the [Head register number] Box as the read data destination.
- Inter "100" in the next box as the size of data to read.
- Select [Data register (D)] as the device type in the [Head register number] box.

① Enter "0" in the [Request destination module I/O number] Box for the remote device. The values and meanings of the request destination Module I/O number setting are listed below.

Request Destination Module I/O Number in I/O Message	Request Destination Module I/O Number for Transmission to a Mitsubishi PLC				
Communications	Module I/O Number	Meaning			
0	03FF hex	Local station CPU, control CPU, and own system CPU			
1	03D0 hex	Control system CPU			
2	03D1 hex	Standby system CPU			
3	03D2 hex	System A CPU			
4	03D3 hex	System B CPU			
5	03E0 hex	Multi-CPU No. 1			
6	03E1 hex	Multi-CPU No. 2			
7	03E2 hex	Multi-CPU No. 3			
8	03E3 hex	Multi-CPU No. 4			

② Select [Low] in the [Data update timing] Box as the timing to update I/O data between the CPU Function Module and 218IFD.

Note: The data update timing is the timing at which the CPU Function Module and 218IFD exchange data. Communications with the remote device are performed asynchronously. The data update timing therefore does not necessarily mean that the messages are sent to the remote device.

Note: In I/O message communications, a message is transmitted from separate ports if registers are both read and written. Therefore, the connected remote device must have two connections to receive both messages.

5. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as the master.

Setting Up the Remote Device (Mitsubishi Q/QnA-series PLC)

Use the following procedure to set up the Mitsubishi Q/QnA-series PLC (MELSEC device).

Information MELSEC devices are manufactured by Mitsubishi Electric Corporation. Contact Mitsubishi Electric Corporation for further information on MELSEC devices.

1. Start GX Developer.

2. Create a project.

3. Set the MELSECNET/Ethernet network parameters.

Parameter	Description
Network type	Ethernet
Starting I/O No.	As required.
Network No.	As required.
Group No.	As required.
Station No.	As required.
Mode	Online

4. Set the Ethernet operation settings.

Parameter	Description
Communications data code	Binary code
Initial timing	Always wait for OPEN
IP address	192.168.001.002
Send frame setting	Ethernet (V2.0)
TCP existence confirmation setting	As required.
Enable Write at RUN time	Enable

5. Specify the open settings.

	-		
Table 4.6	Onen	Settings	Frample
	opon	ocungs	слатріс

Parameter	Description
Protocol	TCP
Open system	Full passive
Fixed buffer	As required.
Fixed buffer communication	As required.
Pairing open	As required.
Existence confirmation	As required.
Local station port No.	1392 hex (5010)
Destination IP address	192.168.1.1
Destination port No.	1388 hex (5000)

Table 4.7 Setting Example to Open the Built-in Ethernet Port in a MELSEC Device

Parameter	Description
Protocol	TCP
Open system	MC protocol
TCP connection	_
Local station port No.	1392 hex (5010)
Destination IP address	_
Destination port No.	_

Note: Specify an IP address that is not in use by any other device on the same network. Check with your network administrator for unused IP addresses.

This concludes the setup. Set any other parameters as necessary, then transfer the data to the PLC.

Information Set the initial settings and router relay parameters as necessary.

- Initial Settings
 - These settings apply to the timers when TCP is the selected protocol. In most cases, accept the default. Set these settings only when necessary, for example, to shorten the time set for the TCP resend timer.
 - Router Relay Parameters
 - Set these parameters if you are using a subnet mask pattern or default gateway.

Starting Communications

Use the following procedure to write the data in the data registers in the Mitsubishi Q/QnAseries PLC to the input registers in the MP3000.

1. Start receiving messages on the Mitsubishi Q/QnA-series PLC. The system will automatically start the message reception operation. No further operation is required.

2. Turn ON the power to the MP3000 to start transmitting messages.

The system will automatically start the message transmission operation. No further operation is required.

Note: The MP3000 will establish the TCP connection when it starts execution of I/O message communications.

4.4.2 Using the MSG-SNDE Function with the MP3000 as the Master

This section describes how to communicate with a Mitsubishi Q/QnA-series PLC by using the MSG-SNDE function in the MP3000.

QnA-compatible 3E Frame Commands

The commands that are used with the MSG-SNDE function are listed below.

Function	-	atible 3E Frame (Hex)	Meaning	
	Command	Subcommand		
Batch read from the device	0401	0001	Reads bit devices in units of one point.	
memory	0401	0000	Reads word devices in units of one point.	
Batch write to the device	1401	0001	Writes bit devices in units of one point.	
memory	1401	0000	Writes word devices in units of one point.	
Random read from the device memory	0403	0000	Reads word devices in units of one point.	
Random write to the device memory	1402	0000	Writes word devices in units of one point.	

Device Memory and Corresponding Registers in the MP3000

The following tables show the relationship between registers in the MP3000 and device memory in the Mitsubishi Q/QnA-series PLC. Use device addresses within the ranges listed in the tables below according to the conditions of the Mitsubishi Q/QnA-series PLC slave.

A read or write command is automatically generated by specifying the address in the MP3000 that corresponds to the device to be read from or written to in the Mitsubishi Q/QnA-series PLC.

To read data from or write data to the address specified in PARAM14 and PARAM15 of the MSG-SNDE function, specify the register address in the MP3000 that corresponds to the device address in the Mitsubishi Q/QnA-series PLC. Select whether to read or write by setting the function code in parameter PARAM12 for the MSG-SNDE function.

Example Writing Data into D10000

Set PARAM14 and PARAM15 to the MW10000 register in the MP3000 that corresponds to D10000, and set PARAM12 to 0B or 10 hex.

Example

Reading Data from M001000

Set PARAM14 and PARAM15 to the MB005748 register in the MP3000 that corresponds to M001000, and set PARAM12 to 01 hex.

Note: To access a relay, specify a bit address in PARAM14 and PARAM15. For MB005748, this would be 9192 decimal.

Device Name		Data Range		
Device Name	Notation	Mitsubishi PLC	MP3000	
Input Relays	Hexadecimal	X000000 to X001FFF	MB000000 to MB00511F	
Output Relays	Hexadecimal	Y000000 to Y001FFF	MB000000 to MB00511F	
Internal Relays	Decimal	M000000 to M008191	MB005120 to MB01023F	
Latch Relays	Decimal	L000000 to L008191	MB010240 to MB01535F	
Step Relays	Decimal	S000000 to S008191	MB015360 to MB02047F	
Link Relays	Hexadecimal	B000000 to B001FFF	MB020480 to MB02559F	
Annunciators	Decimal	F000000 to F002047	MB025600 to MB02687F	
Link Special Relays	Decimal	SM000000 to SM002047	MB026880 to MB02815F	
Timer Contacts	Decimal	TS000000 to TS002047	MB005120 to MB00639F	
Timer Coils	Decimal	TC000000 to TC002047	MB006400 to MB00767F	
Counter Contacts	Decimal	CS000000 to CS001023	MB007680 to MB00831F	
Counter Coils	Decimal	CC000000 to CC001023	MB008320 to MB00895F	

	Table 4.8	Bit Device Conversion Table
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Table 4.9	Word Device Conversion	on Table
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Device Name	Data Range							
Device Maine	Notation	Mitsubishi PLC	MP3000					
Data Registers	Decimal	D000000 to D012287	MW00000 to MW12287					
Link Registers	Hexadecimal	W000000 to W001FFF	MW12288 to MW20479					
Link Special Registers	Decimal	SD000000 to SD002047	MW20480 to MW22527					
File Registers	Hexadecimal	ZR000000 to ZR007FFF*	MW22528 to MW55295					
Timer Registers	Decimal	TN000000 to TN002047	MW00000 to MW02047					
Counter Registers	Decimal	CN000000 to CN001023	MW02048 to MW03071					

* Access file registers by using the ZR notation for accessing continuous file registers. The R* notation cannot be used.

The following map, based on bit and word device conversion tables, shows how M registers in the MP3000 correspond to devices in the Mitsubishi Q/QnA-series PLCs. All devices in a Mitsubishi Q/QnA-series PLC are assigned to hold registers, input registers, input relays, and coils so that the MP3000 can read and write to them by using MEMOBUS commands as an interface. Data read from a device in the Mitsubishi Q/QnA-series PLC is stored in the corresponding M register in the map. The data that is written to the device in the Mitsubishi Q/QnA-series PLC is sent by forming a message that contains the contents of the corresponding M register in the map.

M Register Data Address	-	Input Registers	Input Relays	Coils F · · · · · · 0
00000				
			Input relays: X	Output relays: Y
00511 00512			Timer contacts: TS	
00639 00640			Timer coils: TC	
00767 00768			Counter contacts: CS	Internal relays: M
00767 00768 00831 00832 00895			Counter coils: CC	
00895 00896				
		Timer registers: TN		
01023 01024				
01535 01536				Latch relays: L
01330				
	Data registers: D			Step relays: S
02047 02048				
		Counter registers:		Link relays: B
00550		CN		
025560				Annunciators: F
02688 02815				Link special relays: SM
02816				
02071				
02071 03072				
2				
Î		S 		
12287 12288				
12288				
~	Link registers: W	-		
00470				
20479 20480				
22527	Special registers: SD			
22527 22528				
~		- -		
2	File registers: R			
55295 55296				
00280				
~		-		
05504				
65534			1	

Transfer Size

The following table lists the size of data that can be transferred using the MSG-SNDE function. Use the data size within the ranges listed in the following table according to the conditions of the Mitsubishi Q/QnA-series PLC slave.

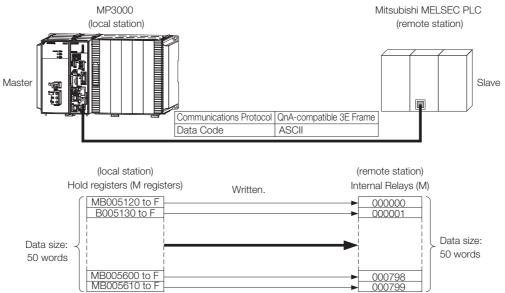
The upper limit on the data size will also depend on the MEMOBUS function code that is specified in the MSG-SNDE function.

Refer to the following section for details on the data size parameter in the MSG-SNDE function. *G* ◆ *Data Size (PARAM17)* on page 4-107

QnA-compatible 3E Frame (Hex)		Meaning	Data size		
Command	Subcommand		218IFD		
0401	0001	Reads bit devices in units of one point.	1 to 2000 points		
0401	0000	Reads word devices in units of one point.	1 to 960 points		
1401	0001	Writes bit devices in units of one point.	1 to 800 points		
1401	0000	Writes word devices in units of one point.	1 to 960 points		
0403	0000	Reads word devices in units of one point.	1 to 192 points		
1402	0000	Writes word devices in units of one point.	1 to 160 points		

Setting Example

The following figure illustrates how the contents of 800 bits (50 words) from the MB005120 to MB00561F hold registers in the MP3000 master are written to the 000000 to 000799 internal M relays in the CPU Unit of the Mitsubishi PLC slave.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	isAddress	Motion Register		Register(Input/	Output)
Module	Function Module/Slave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size
01 [CPU-302(32axes)] :								
	01 CPU							
	02 218IFD		뮮 Circuit No1	1		Input	0000 - 07FF[H]	2048
□ □ □ CPU302(32)[]	03 ⊞ SVC32 27		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024
☐ 00	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]			
	05 M-EXECUTOR						0C00 - 0C3F[H]	6
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[]							
02 UNDEFINED[]							
03 UNDEFINED								
02 UNDEFINED								
02 UNDEFINED								
03 UNDEFINED								
04 UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

123						
Transmissin Parameters	Status					
Transmission Parameters IP Address	;	192 <u>-</u> 168 -	. 1 🗄 . 1	1 🔆 (0-255)	Module Name Definiti Equipment name :	ion CONTROLLER NAME
Subnet Mask Gateway IP Address	:	255			Detail Definition	

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	onnection Parama Message Commu Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message o n be set to	communication receive data	s can be easily set. automatically.			
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>
	01				-	•	-	Setting*	
	02				-	-	-	Setting*	
	03				-	-	-	Setting*	
	04				-	-	-	Setting*	
	05				-	-	-	Setting*	
	06				-	-	-	Setting*	
	07				-	-	-	Setting*	-
•	· · · ·						I		

The Message Communication Easy Setting Dialog Box will be displayed.

- \bigcirc 3 4 6 23 Message Communication Easy Setting Connect No.: 1 Specify the connection number Other Device YASKAWA MP Series Local Port IP Address Node Port IP Address : (0-255) 192 168 001 001 192 - 168 - 001 - 002 -Communication proto I Type MELSEC(A Compatible 1E) ▼ Default Port No. (256-65535) Port No. (256-655 5011 Connect Type UDP • BIN Code • OK Cancel 5 7
- 4. Set the connection parameters.

- ① Select [1] in the [Connect No.] Box.
- © Enter "5010" in the [Port No.] Box for the MP-series Controller.
- ③ Select [MELSEC (QnA-compatible 3E)] in the [Communication protocol Type] Box.
- Select [UDP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- Ø Enter "5011" in the [Port No.] Box for the other device.

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.

- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the Yes Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	
01	05010	192.168.001.002	05011	UDP 👻	MELSEC (Qn A Compatible 3E 👻	ASCII 🧲	Setting*	
02				-	•	-	Setting*	
03				-	-	-	Setting*	
04				-	-	-	Setting*	
05				-	-	-	Setting*	
06				-	-	-	Setting*	
07				-	· · ·	-	Setting*	

Cannot the overlap to local station port number used by the communicate the I/O message.

4

8. Select the [Disable] Option on the Automatically Reception Tab Page.

Detail Setting	
Automatically Reception	
C Enable Unable to automated protocol type is no co	ed reception, when the control sequence.
Transmission Buffer Channel 1	
Slave I/F Register Settings	Head REG
Readout of Input Relay	IW00000
Readout of Input Register	IW00000
Readout / Write-in of Coil	MW00000
Readout / Write-in of Hold Register	MW00000
Readout / Write-in of Data Relay	GW00000
Readout / Write-in of Data Register	GW00000
Readout / Write-in of Output Coil	OW00000
Readout / Write-in of Output Register	OW00000
Write - in width of Coil/Hold Register	LO: MW00000
	HI: MW1048575
Write - in width of Data Relay/Register	LO: GW00000
	HI: GW2097151
Write - in width of Output Coil/Register	LO: 0W00000
	HE OW17FFF
Automatic input processing delay time	0 ms (0-100)
The influence on a low-speed scanning ca according to this parameter. [Attention] It is not in the setting of the period of an automatic reception.	
	OK Cancel

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

9. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

	seti	ing paramete SBOO	r for MSG-SNI 0003 for low	■ initializin; DE function du scan and SBOO	g vring first : 10001 for hig	scan after pov gh scan.	ver on.
IF	▲ 'After Low SB000003 =	Scan Start					
			cl	ear all D regi	sters		
NL 2						▲ [W]Dest DW00000	[W]Data [W]Width 00000 00130
			set for	connection No	. (PARAM10)		
7- 2				EXPRESSION 'DWOO110'=	:1		
			set	DWOO110=1; for option (Pi		connection	No.1
/- 2				EXPRESSION			-,
				'DW00111'= DW00111=0×	(O3FF; //)	[/O unit No.	(3FFH for local CP
NL 2			set tor	function code EXPRESSION		1	
					(000F; //)	reading hold	register (extended
HL			set f	or data size (EXPRESSION	(PARAM17)		
/				'DW00117'= DW00117=80		a size (800	bits)
	set	: for data ad	dress Low (Pi	ARAM14) and Hi	gh (PARAM15) of remote st	
7- 2				EXPRESSION 'DWOO114'=			(0100)
				'DW00115'=	:0	data addres	ress Low(8192) s High(O)
	set for (lata address	Low (PARAM20)) and data add	lress High (1	PARAM21) of Ic	
7- 2				EXPRESSION 'DW00120'= DW00120-91		al data add	ress Low (8192)
				'DW00121'=	:0	data addres	
- <mark>HL</mark>		se	≥t for data t	ype of local : EXPRESSION	station (PAR	AM22)	
7- 2				'DW00122'=		data type (
END_IF							
		abort for t	■tre: imeout if no	atment for all t completed in	time. 10s after :	sending commar	nd
DB000200	DB000201	TON [10ms]	[W]Set 01000	[W]Count DW00091	1		DB0002
execute DB00020A	abort	DB000211	1				timeou DB0002
timeout		complete					abort
DB000212							
error DB000201							
abort							
DB000201		DB000209	lease sending	command in 6	Us after abo	rted	DB0002
abort		waiting end ed					waitin
DB000208							
waiting		[W]Set	[W]Count				DB0002
DB000508	TON [10ms]	06000	DW00028	1			waiting
DB000208	row [rows]						ed
	Tow [Tows]	send	ing in every	1s after star	ting scan f	or 5s.	
waiting SB00003A		send SB000	ing in every O3A for low :	ls after star scan and SBOOO	ting scan f 101A for hig	or 5s. h scan.	DB0002
SB00003A After 5.0s, Scan Start		send SB000	ing in every O3A for low :	1s after star scan and SB000	ting scan f 101A for hig	or 5s. h scan.	DBOOO2
SB00003A		send SB000 DB000212	ing in every 03A for low DB000208		ting scan fi 01A for hig [W]Set	or 5s. h scan. [W]Count	$\rightarrow \rightarrow $

4/-		MSG	SNDE
		[B]Execute DB000200 execute	(B)Busy DB000210 busy
		[B] Abort	[B]Complete
		DB000201 abort	DB000211
		[W]Dev-Typ 00016	[B]Error DB000212
		[W]Pro-Typ	error
· · · · · · · · · · · · · · · · · · ·		00001 [W]Cir-No	
		00001	<u>.</u>
		[W]Ch-No 00001	
		[A] Param	
		DA00100	
<pre></pre>	normally		1
5/- IF DB000211==TRUE;			
DB000201		1	(WLQ]Dest DW00024
8/- 2 abort		INC	count norm
END_IF		 	arry
€finished a	bnormally	1	:
Procession == 'TRUE'			
s/- IF error'=='TRUE' DB000212==TRUE;			
77- IF DB000212==TRUE;			[WLQ]Dest
DB000212==TRUE:		INC	DW00025 count abno
97- IF DB000212==TRUE;		INC	DW00025 count abno rmally
97- IF DB000212==TRUE; NL 22			DW00025 count abno rmally [WLFQD]Dest DW00026
NL DB000212==TRUE;	STORE	INC [WLFQD] Src DW00000	DW00025 count abno rmally [WLFQD]Dest DW00026 result (PF RAM00)
NL NL 1/- NL 2	STORE	INC [WLFQD]Src DW00000 	DW00025 count abno rmally [WLFQD]Dest DW00026 result (PF RAM00) [WLFQD]Dest
97- IF DB000212==TRUE; NL 22	STORE	INC [WLFQD] Src DW00000	DW00025 count abno rmally [WLF0D]Dest DW00026 result (Pf RAM00) [WLF0D]Dest DW00027 status (Pf
NL DB000212==TRUE; NL 2 T/- NL Z/- NL Z/- NL Z/- NL Z/- NL	STORE	INC [WLFQD]Src DW00000 	DW00025 count abno rmaily [WLFQD]Des DW00026 result (PK RAM00) [WLFQD]Des DW00027
NL DB000212==TRUE; NL 2 NL 2 NL 2 S7= END_1F B000220A DB000220B	STORE	INC [WLFQD]Src DW00000 	DW00025 count abno rmally [WLF0D]Dest DW00026 result (PA RAM00) [WLF0D]Dest DW00027 status (PA RAM01)
NL DB000212==TRUE; NL 2 17- NL 2	STORE	INC [WLFQD]Src DW00000 	DW00025 count abno rmally [WLF40]Dest DW00026 result (PF RAM00) [WLF90]Dest DW00027 Status (PF RAM01) DB0002000 timeout oc
NL DB000212==TRUE; NL	STORE	INC [WLFQD]Src DW00000 	DW00025 count abno rmaily [WLF0D]Dest DW00026 result (PF RAM00) [WLF0D]Dest DW00027 status (PF RAM01) DB0002000
NL DB000212==TRUE; NL	STORE	INC [WLFQD]Src DW00000 	DW00025 count abno rmally [WLF40]Dest DW00028 result (PA RAM00) [WLF40]Dest DW00027 Status (PA RAM01) DB0002000 timeout oc
NL DB000212==TRUE; NL 2 NL 2 NL 2 NL 2 DB00020A DB00020B V= Imeout OB00020A DB00020B V= Imeout IF Omeout Occurred'=='TRUE' IF DB00020C==TRUE;	STORE	INC [WLF00]Src DW00000 [WLF00]Src DW00001	DW00025 count abno rmaily [WLF0D]Dest DW00026 result (PF RAM00) [WLF0D]Dest DW00027 status (PF RAM01) DB000200 timeout oc urred
NL DB000212==TRUE; NL 2 NL 2 NL 2 NL 2 NL 2 DB00020A DB00020B V= 1 DB00020A DB00020B V= 1	STORE	INC [WLF00]Src DW00000 [WLF00]Src DW00001	DW00025 count abno rmaily [WLF0D]Dest DW00026 result (PF RAM00) [WLF0D]Dest DW00027 status (PF RAM01) DB0002000 timeout oc urred
NL DB000212==TRUE; NL 2 DB00020A DB00020B Image: timeout 0	STORE	INC [WLF00]Src DW00000 [WLF00]Src DW00001	DW00025 count abno rmaily [WLF0D]Dest DW00026 result (PF RAM00) [WLF0D]Dest DW00027 status (PF RAM01) DB000200 timeout oc urred
NL DB000212==TRUE; NL 2 NL 2 ZZ NL ZZ END_IF DB00020A DB00020B Image: State of the strengt of the stren	STORE	INC [WLF00]Src DW00000 [WLF00]Src DW00001	DW00025 count abno rmaily [WLF0D]Des DW00026 result (P/ RAM00) [WLF0D]Des DW00027 status (P/ RAM01) DB0002000 timeot oc urred

10. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

Setting Up the Remote Device (Mitsubishi PLC)

Use the following procedure to set up the Mitsubishi PLC (MELSEC device).

Information MELSEC devices are manufactured by Mitsubishi Electric Corporation. Contact Mitsubishi Electric Corporation for further information on MELSEC devices.

- 1. Start GX Developer.
- 2. Create a project.
- 3. Set the MELSECNET/Ethernet network parameters.

Parameter	Description
Network type	Ethernet
Starting I/O No.	As required.
Network No.	As required.
Group No.	As required.
Station No.	As required.
Mode	Online

4. Set the Ethernet operation settings.

Parameter	Description
Communications data code	ASCII code
Initial timing	Always wait for OPEN
IP address	192.168.001.002
Send frame setting	Ethernet (V2.0)
TCP existence confirmation setting	As required.
Enable Write at RUN time	Enable

5. Specify the open settings.

Table 4.10 Open Settings Example

Parameter	Description
Protocol	UDP
Open system	Full passive
Fixed buffer	As required.
Fixed buffer communication	As required.
Pairing open	As required.
Existence confirmation	As required.
Local station port No.	1393 hex (5011)
Destination IP address	192.168.1.1
Destination port No.	1392 hex (5010)

Table 4.11 Setting Example to Open the Built-in Ethernet Port in a MELSEC Devi	Table 4.11
--	------------

Parameter	Description
Protocol	UDP
Open system	MC protocol
TCP connection	_
Local station port No.	1393 hex (5011)
Destination IP address	_
Destination port No.	_

Note: Specify an IP address that is not in use by any other device on the same network. Check with your network administrator for unused IP addresses.

This concludes the setup. Set any other parameters as necessary, then transfer the data to the PLC.

Information Set the initial settings and router relay parameters as necessary.

Initial Settings

These settings apply to the timers when TCP is the selected protocol. In most cases, accept the default. Set these settings only when necessary, for example, to shorten the time set for the TCP resend timer.

Router Relay Parameters
 Set these parameters if you a

Set these parameters if you are using a subnet mask pattern or default gateway.

Starting Communications

Use the following procedure to write the data in the hold registers in the MP3000 to the internal relays in the CPU Unit of the Mitsubishi PLC.

1. Start receiving messages on the Mitsubishi PLC.

The system will automatically start the message reception operation. No further operation is required.

2. Turn ON the power to the MP3000 to start transmitting messages.

The ladder program example is designed to turn ON the Execute Bit (DB000200) in the message send function after six seconds has elapsed from when the low-speed scan (or high-speed scan) starts. Thereafter, the message send function is executed every second by alternating the Execute Bit (DB000200) between OFF and ON each time the message send function completes execution normally or with an error.

Note: The MP3000 will establish the TCP connection when it starts execution of the MSG-SNDE function.

SB00003A: Turns ON 5 seconds after start. owScar SB000039 DB000202 DB000211 DB000212 DB000208 DB000201 -1/-╢╱┝ -1/---|∕|--waiting | | _____ r 2.0s. ς... lete After command an Start nera) DB000201 + +0.0 iand

The message functions are used in user communications applications for the QnA-compatible 3E Frame protocol. You can send and receive message data by setting the necessary input items and parameters for the message functions. Message communications using the QnA-compatible 3E Frame protocol can be carried out with the same settings used for MEMOBUS messages.

Inputs and Outputs for the MSG-SNDE Function

I/O			I/O		
Definitions	No.	Name	Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message trans- mission. When the Abort Bit turns ON, the message trans- mission will be stopped unconditionally. The Abort Bit takes precedence over the Execute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the QnA-compatible 3E Frame protocol. MEMOBUS is automatically converted to QnA-compatible 3E Frame protocol inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the QnA-compatible 3E Frame protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the QnA-compatible 3E Frame protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communications device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel number for the same connection. You can use the same channel number as long as multiple functions are not executed at the same time. 218IFB, 218IFD = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the parameter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

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Continued on next page.

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Continued from previous page.

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message trans- mission is in progress. The Busy Bit is ON while a message transmission or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
Output Items	2	Com- plete	B-VAL	Process completed.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{e} \blacklozenge \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description	Reference Page
00		Processing Result	Gives the processing status.	I → Processing Result (PARAM00) on page 2-9
01		Status	Gives the status of the current function.	Status (PARAM01) on page 2-10
02		Detail Error Code, Lower Word	Gives the details of an error.	I → Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word		<i>PARAM03</i>) on page 4- 104
04	Out-	Status 1	Gives the communications status.	
05	puts	Status 2	Gives status information on the most recent error.	● Status 2 (PARAM05) on page 2-12
06		Status 3	Gives the information of the send pass counter.	● Status 3 (PARAM06) on page 2-12
07		Status 4	Gives the information of the receive pass counter.	● Status 4 (PARAM07) on page 2-12
08		Status 5	Gives the information of the error counter.	● Status 5 (PARAM08) on page 2-13
09		Status 6	Not used for the QnA-compatible 3E Frame protocol.	_

Continued on next page.

Continued from previous page.

		Continued from previous page.				
No.	I/O	Meaning	Description		Reference Page	
10		Connection Number	Sets the connection number used to deter- mine the remote station.	(F	◆ Connection Number (PARAM10) on page 4- 105	
11		Option	Sets the I/O unit number for the remote station.	(F)	◆ Options (PARAM11) on page 4-105	
12		Function Code	Sets the code of the function in the QnA- compatible 3E Frame protocol.	(F	◆ Function Code (PARAM12) on page 4- 105	
13	-	Reserved for system.	Not used for the QnA-compatible 3E Frame protocol.		-	
14		Remote Station Data Address, Lower Word	Sets the data address to read/write at the remote station. (Use word addresses for	ŧ	◆ Remote Station Data Address (PARAM14 and	
15		Remote Station Data Address, Upper Word	registers, bit addresses for relays or coils.)		<i>PARAM15)</i> on page 4- 106	
16		Remote Station Register Type	Not used for the QnA-compatible 3E Frame protocol.		-	
17	Inputs	Data Size	Sets the size of the data to read/write. (Use word sizes for registers, bit sizes for relays or coils.)	(F	◆ Data Size (PARAM17) on page 4-107	
18		Remote CPU Module Number	Not used for the QnA-compatible 3E Frame protocol.		-	
19		Reserved for system.	Not used for the QnA-compatible 3E Frame protocol.		_	
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word	L.	♦ Local Station Data Address (PARAM20 and	
21		Local Station Data Address, Upper Word	addresses for registers, bit addresses for relays or coils.)		PARAM21) on page 2-18	
22		Local Station Register Type	Sets the register type of the read/write data to store in the local station.	E	◆ Local Station Register Type (PARAM22) on page 4-108	
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	Ē	◆ Reserved for System (PARAM23) on page 2- 19	
24		For system use	This parameter contains the channel num- ber of the communications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	₽ ₽	◆ Reserved for System (PARAM24) on page 2- 19	
25	_	Reserved for system.				
26		Reserved for system.	These parameters are used by the system. Do not change the value of these parame-	(F	◆ Reserved for System (PARAM25 to PARAM28)	
27		Reserved for system.	ters from a user program or by any other means.		on page 2-19	
28		Reserved for system.				

Detail Error Code (PARAM02 and PARAM03)

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
8100 hex	1	Function code error	An unused function code was sent or received. Check PARAM12 (Function Code).
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Remote Station Data Address) PARAM20 and PARAM21 (Local Station Data Address)
83 00 hex	3	Data size error	The data size for sending or receiving is out of range. Check PARAM17 (Data Size).
8400 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-SNDE function.
8500 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-SNDE function.
8600 hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
8800 hex	8	Communications device error	An error response was received from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
8900 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG- SNDE function.
C245 hex	_	Local station register type error	The register type for the local station is out of range. Check PARAM22 (Local Station Register Type).
8072 hex to FF72 hex		Remote device error*	An error response was received from the remote station. Check the error code and remove the cause.

These parameters give the detail error code.

* An error response received from the remote device will be formatted in PARAM00 (Processing Result) as follows. Processing Result (PARAM00): DT2 hex (where DT is the error code)

Contains the sum of the completion code sent from the Mitsubishi PLC and 80 hex. Refer to the following manual for details on completion codes.

Ethernet Unit Manual from Mitsubishi Electric Corporation

Connection Number (PARAM10)

Specify the connection number.

The valid setting range is given in the following table.

Communications Device	Connection Number	Description
Ethernet (218IFD, 218IFB)	1 to 20	Specifies the connection number of the remote station to send the message to.

Note: Enter the same connection number as displayed in the 218IFB or 218IFD Detail Definition Dialog Box in the MPE720.

Det	ail - [218IFD]															×
Eile	e <u>E</u> dit <u>V</u> iew															
PT#	: 1 CPU#: 1											CIR#01	00000-007F	F		
-	ansmission Parame	ters Sta	hue)					_				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,			
	Transmission Para IP Address						Module Name									
	Subnet Mask		: 255 . 255		55 - 0		Equipment n			100	NTROLLER N	IAME				
	Gateway IP Add	dress		<u> </u>	<u> </u>)	(0-255) Detail Def	finit	ion							
	Connection Parame Message Commu Easy setting	nication The fo Conne	ollowing parameters for ections(C NO) 01-10 ca					_							_	
	CNO	Local Port	Node IP Address	Node Port	Connect Type	t	Protocol Type		Code	в	Detail		No	de Name	-	
	01	10001	192.168.001.002	10001	TCP	-	Extended MEMOBUS	- E	BIN	+	Setting*					
	02	10002	192.168.001.003	10002	TOP	-	MELSEC (Qn A Compatible 3E	- E	BIN	+	Setting*				-	
	03					-		-		-	Setting*					
	04					-		•		•	Setting*					
	05					-		-		-	Setting*					
	06					-		-		-	Setting*					
	07					-		•		•	Setting*				-	
	41					_										-
For	Help, press F1														NUM	- /

Options (PARAM11)

Set the I/O unit number for the Mitsubishi PLC.

The value you set will be sent as the unit number as is, even if it is not listed below.

Unit Number	Name
03FF hex	Local station CPU, control CPU, and own system CPU
03D0 hex	Control system CPU
03D1 hex	Standby system CPU
03D2 hex	System A CPU
03D3 hex	System B CPU
03E0 hex	Multi-CPU No. 1
03E1 hex	Multi-CPU No. 2
03E2 hex	Multi-CPU No. 3
03E3 hex	Multi-CPU No. 4

Function Code (PARAM12)

Set the function code to send.

You can use the functions that are registered to the function codes.

QnA-compatible 3E Frame Commands		MEMOBUS Function Code	Target Data	Function		
Command	Subcommand		Туре			
0401 hex	0001 hex	01 or 02 hex	В	Reads bit devices in units of one point.		
0401 116X	0000 hex	03, 04, 09, or 0A hex	W	Reads word devices in units of one point.		
1401 hex	0001 hex	05 or 0F hex	В	Writes bit devices in units of one point.		
1401 Hex	0000 hex	06, 0B, or 10 hex	W	Writes word devices in units of one point.		
1402 hex	0000 hex	0E hex	W	Writes word devices in units of one point.		
0403 hex	0000 hex	0D hex	W	Reads word devices in units of one point.		
0619 hex	0000 hex	08 hex	W	Performs a loopback test.		

Note: B: Bit data, W: Word (channel) data

4

Remote Station Data Address (PARAM14 and PARAM15)

Set the first address for data in the remote station.

Enter the first address as a decimal or hexadecimal number.

Example If the first address is MW01000, enter "1000" (decimal) or "3E8" (hexadecimal).

The applicable function codes and valid range of data addresses depend on the device type and device range of the Mitsubishi Q/QnA-series PLC.

Device	QnA-compatible 3E Device Range	Notation	MEMOBUS Command	First Address	Register Address
Input Relays	X000000 to X001FFF	Hexadecimal	02 hex: Relays	00000 to 08191	MB000000 to MB00511F
Output Relays	Y000000 to Y001FFF	Hexadecimal	01, 05, and 0F hex: Coils	00000 to 08191	MB000000 to MB00511F
Internal Relays	M000000 to M008191	Decimal	01, 05, and 0F hex: Coils	08192 to 16383	MB005120 to MB01023F
Latch Relays	L000000 to L008191	Decimal	01, 05, and 0F hex: Coils	16384 to 24575	MB010240 to MB01535F
Step Relays	S000000 to S008191	Decimal	01, 05, and 0F hex: Coils	24576 to 32767	MB015360 to MB02047F
Link Relays	B000000 to B001FFF	Hexadecimal	01, 05, and 0F hex: Coils	32768 to 40959	MB020480 to MB02559F
Annunciators	F000000 to F002047	Decimal	01, 05, and 0F hex: Coils	40960 to 43007	MB025600 to MB02687F
Link Special Relays	SM000000 to SM002047	Decimal	01, 05, and 0F hex: Coils	43008 to 45055	MB026880 to MB02815F
Timer Contacts	TS000000 to TS002047	Decimal	02 hex: Relays	08192 to 10239	MB005120 to MB00639F
Timer Coils	TC000000 to TC002047	Decimal	02 hex: Relays	10240 to 12287	MB006400 to MB00767F
Counter Contacts	CS000000 to CS001023	Decimal	02 hex: Relays	12288 to 13311	MB007680 to MB00831F
Counter Coils	CC000000 to CC001023	Decimal	02 hex: Relays	13312 to 14335	MB008320 to MB00895F

Table 4.12 Bit Device Conversion Table

Table 4.13	Word Device	Conversion	Table
10010 1.10		00110010101011	iubio

Device	QnA-compatible 3E Device Range	Notation	MEMOBUS Command	First Address	Register Address		
Data Registers	D000000 to D012287	Decimal	03, 06, 09, 0B, 0D, 0E, and 10 hex: Hold registers	00000 to 12287	MW00000 to MW12287		
Link Registers	W000000 to W001FFF	Hexadecimal	03, 06, 09, 0B, 0D, 0E, and 10 hex: Hold registers		MW12288 to MW20479		
Link Special Registers	SD000000 to SD002047	Decimal	03, 06, 09, 0B, 0D, 0E, and 10 hex: Hold registers	20480 to 22527	MW20480 to MW22527		
File Registers	ZR000000 to ZR007FFF	Hexadecimal	03, 06, 09, 0B, 0D, 0E, and 10 hex: Hold registers	22528 to 55295	MW22528 to MW55295		
Timer Registers	TN000000 to TN002047	Decimal	04 and 0A hex: Input registers	00000 to 02047	MW00000 to MW02047		
Counter Registers	CN000000 to CN001023	Decimal	04 and 0A hex: Input registers	02048 to 03071	MW02048 to MW03071		

Note: 1. Even if addresses are within the given device range, they may exceed the range of the device area depending on the model of the Mitsubishi PLC.

Refer to the following manual for details.

Programmable Controller Manual from Mitsubishi Electric Corporation

2. Access file registers by using the notation for accessing continuous file registers: ZR for ASCII data and B0 hex for binary data. The normal access notation (R* for ASCII data and AF hex for binary data) cannot be used.

3. The corresponding register address in the MP3000 can be adjusted by using the offset setting of the MSG-SNDE function.

Data Size (PARAM17)

Set the data size for the read/write request as the number of bits or words.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and data area.

QnA-compatible 3E Frame Commands		MEMOBUS Command	Function	Points	
Command	Subcommand	Command			
	0001 hex	01 or 02 hex	Reads bit devices in units of one point.	1 to 2000 points	
0401 hex	0000 hex	03 or 04 hex	Deede word devices in units of one point	1 to 125 points	
	0000 nex	09 or 0A hex	Reads word devices in units of one point.	1 to 960 points ^{*2}	
	0001 hex	05 hex	Writes bit devices in units of one point.	1 point	
	0001 fiex	0F hex	writes bit devices in drifts of one point.	1 to 800 points	
1401 hex		06 hex		1 point	
	0000 hex	0B hex	Writes word devices in units of one point.	1 to 960 points ^{*2}	
		10 hex		1 to 100 points	
1402 hex	0000 hex	0E hex	Writes word devices in units of one point.	1 to 160 points	
0403 hex	0000 hex	0D hex	Reads word devices in units of one point.	1 to 192 points	
0619 hex	0000 hex	08 hex	Performs a loopback test ^{*1} (word data loop)	2 points	

*1. In the loopback test, the message sends two words (4 bytes) of data that must be returned.

*2. When using TCP communications, the upper limit is restricted by the MTU size. When communicating with TCP, the maximum size is the size of data that can be sent in a single segment.

Local Station Register Type (PARAM22)

Set the register type of the read data destination or write data source in the MP3000.

Register Type Value	Туре	Remarks			
0	М	Sets the target data type to MB for bits and MW for words.			
1	G	Sets the target data type to GB for bits and GW for words.			
2	I	Sets the target data type to IB for bits and IW for words.			
3	0	Sets the target data type to OB for bits and OW for words.			
4	S	Sets the target data type to SB for bits and SW for words.			
5 and higher	-	Not used for the QnA-compatible 3E Frame protocol.			

The register types that can be used depend on whether you are reading or writing. The following table lists the combinations of register types.

Function Code	Applicable Register Types
01, 02, 03, 04, 09, or 0A hex	M, G, or O
05, 06, 0B, 0F, or 10 hex	M, G, I, O, or S
0D hex	Μ
0E hex	Μ

Inputs and Outputs for the MSG-RCVE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the QnA-compatible 3E Frame protocol. MEMOBUS is automatically converted to QnA-compatible 3E Frame protocol inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the QnA-compatible 3E Frame protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the QnA-compatible 3E Frame protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same connection. You can use the same channel number as long as multiple func- tions are not executed at the same time. 218IFB, 218IFD = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 52 words starting from the specified first word are automatically used for the param- eter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

Continued on next page.

4

I/O I/O No. Name Meaning Description Definitions Designation Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis-1 Busy **B-VAL** Processing. sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON. Specify the bit that shows when the message transmission has been completed. Com-Process The Complete Bit turns ON only for one scan Output 2 **B-VAL** completed. plete Items when message transmission or forced abort processing has been completed normally. Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON 3 Error **B-VAL** Error occurred. only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. *Error* on page 2-23 €

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.	(has	◆ Processing Result (PARAM00) on page 2- 25
01		Status	Gives the status of the current function.	(File)	◆ Status (PARAM01) on page 2-25
02		Detail Error Code, Lower Word	Gives the details of an error.	(Page	◆ Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word	Gives the details of an enor.		<i>PARAM03)</i> on page 4- 113
04	Out-	Status 1	Gives the communications status.	(Leg	◆ Status 1 (PARAM04) on page 2-27
05	puts	Status 2	Gives status information on the most recent error.	(Page	◆ Status 2 (PARAM05) on page 2-28
06		Status 3	Gives the information of the send pass counter.	(Page	◆ Status 3 (PARAM06) on page 2-28
07		Status 4	Gives the information of the receive pass counter.	(heg	◆ Status 4 (PARAM07) on page 2-28
08		Status 5	Gives the information of the error counter.	(A	◆ Status 5 (PARAM08) on page 2-28
09		Status 6	Not used for the QnA-compatible 3E Frame protocol.		_
10	Input	Connection Number	Sets the connection number used to deter- mine the remote station.	(hand)	◆ Connection Number (PARAM10) on page 4- 113
11	I/O	Option	Not used for the QnA-compatible 3E Frame protocol.		_
12	Output	Function Code	Gives the function code requested by the remote station.	(hang)	◆ Function Code (PARAM12) on page 4- 114
13	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	3	◆ Reserved for System (PARAM13) on page 2- 30

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				ntinu	ed from previous page.
No.	I/O	Meaning	Description		Reference Page
14	-	Data Address, Lower Word	Gives the first address of the data that was	(F	◆ Data Address (PARAM14 and PARAM15) on page 4-
15	-	Data Address, Upper Word	requested by the remote station.		114
16	Out- puts	Register Types	Gives the register type that was requested by the remote station.	F	◆ Register Type (PARAM16) on page 2- 31
17		Data Size	Gives the data size that was requested by the remote station.	Æ	◆ Data Address (PARAM14 and PARAM15) on page 2- 30
18		Remote CPU Module Number	Not used for the QnA-compatible 3E Frame protocol.		-
19	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	E.	◆ Reserved for System (PARAM19) on page 2- 31
20	_	Coil Offset, Lower Word	Sets the offset word address for a coil	(F	♦ Offsets (PARAM20 to PARAM27) on page 4-
21	_	Coil Offset, Upper Word	(MB).		115
22	_	Input Relay Offset, Lower Word	Sets the offset word address for an input	(F	♦ Offsets (PARAM20 to PARAM27) on page 4-
23	_	Input Relay Offset, Upper Word	relay (IB).		115
24	_	Input Register Offset, Lower Word	Sets the offset word address for an input	(F	♦ Offsets (PARAM20 to PARAM27) on page 4-
25		Input Register Offset, Upper Word	register (IW).		115
26	_	Hold Register Offset, Lower Word	Sets the offset word address for a hold reg-	(F	♦ Offsets (PARAM20 to PARAM27) on page 4-
27	_	Hold Register Offset, Upper Word	ister (MW).		115
28	_	Data Relay Offset, Lower Word	Sets the offset word address for a data	(F	◆ Data Relay Offset (PARAM28 and
29	Inputs	Data Relay Offset, Upper Word	relay (GB).		PARAM29) on page 2- 32
30	_	Data Register Offset, Lower Word	Sets the offset word address for a data	(F	◆ Data Register Offset (PARAM30 and
31	4	Data Register Offset, Upper Word	register (GW).		PARAM31) on page 2- 32
32	_	Output Coil Offset, Lower Word	Sets the offset word address for an output	F	◆ Output Coil Offset (PARAM32 and
33		Output Coil Offset, Upper Word	coil (OB).		PARAM33) on page 2- 32
34		Output Register Offset, Lower Word	Sets the offset address for an output regis-	(Jacoba)	♦ Output Register Off- set (PARAM34 and
35		Output Register Offset, Upper Word	ter (OW).		PARAM35) on page 2- 32
36		M Register Writing Range LO, Lower Word	Sets the first address of the writing range	æ	♦ M Register Writing Range (PARAM36 to
37		M Register Writing Range LO, Upper Word	for hold register coils.		<i>PARAM39)</i> on page 4- 116
				0	ontinued on next nade

Continued on next page.

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No.	I/O	Meaning	Description	Reference Page
38		M register Writing Range HI, Lower Word	Sets the last address of the writing range	I ← M Register Writing Range (PARAM36 to
39		M Register Writing Range HI, Upper Word	for hold register coils.	<i>PARAM39)</i> on page 4- 116
40		G register Writing Range LO, Lower Word	Sets the first address of the writing range	G Register Writing Range LO (PARAM40
41		G Register Writing Range LO, Upper Word	for data register data relays.	and PARAM41) on page 2-33
42	Inputs	G Register Writing Range HI, Lower Word	Sets the last address of the writing range	G Register Writing Range HI (PARAM42)
43	mputs	G Register Writing Range HI, Upper Word	for data register data relays.	<i>and PARAM43)</i> on page 2-33
44		O Register Writing Range LO, Lower Word	Sets the first address of the writing range	G
45		O Register Writing Range LO, Upper Word	for output registers.	<i>and PARAM45)</i> on page 2-33
46		O Register Writing Range HI, Lower Word	Sets the last address of the writing range	G
47		O Register Writing Range HI, Upper Word	for output registers.	<i>and PARAM47)</i> on page 2-34
48	_	For system use	This parameter contains the channel num- ber of the communications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	For System Use (PARAM48) on page 2- 34
49		Reserved for system.	These parameters are used by the system.	
50		Reserved for system.	Do not change the value of these parame- ters from a user program or by any other	(PARAM49 to PARAM51) on page 2- 34
51		Reserved for system.	means.	

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Detail Error Code (PARAM02 and PARAM03)

These parameters give the detail error code.

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
81 🗖 🗖 hex	1	Function code error	An unused function code was received. Check the function code of the remote station.
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Data Address) PARAM20 and PARAM21 (Coil Offset) PARAM26 and PARAM27 (Hold Register Offset)
8300 hex	3	Data size error	The data size for receiving is out of range. Check the data size at the remote station.
84 00 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-RCVE function.
85 00 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch- No) in the MSG-RCVE function.
86 □□ hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
8800 hex	8	Communications device error	An error response was received from the communica- tions device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-RCVE function.

Connection Number (PARAM10)

Specify the connection number.

The valid setting range is given in the following table.

Communications Device	Connection Number	Remarks			
Ethernet (218IFD, 218IFB)	1 to 20	Specifies the connection number of the remote station to receive the message from.			

Note: Enter the same connection number as displayed in the 218IFB or 218IFD Detail Definition Dialog Box in the MPE720.

	[218IFD]												
<u>File</u>	dit <u>V</u> iew												
PT#: 1	CPU#: 1									CIR#01	00000-007FF		
Transmi	ission Paramet	ters Sta	tus)										
	smission Paran						le Name I	Definition	ı				
IP	P Address		: 192 🛨 - 168	3 🗄 1	÷ 1	(0-255) Equip	ment na	ne:	CONTROLL	ER NAME			
Si	iubnet Mask		: 255 🛨 255	5 🛨 2	55 🛨 🛛	(0-255)							
0	ateway IP Add						tail Defin	ition					
G	ateway IP Add	aress		U , 🖂	- I - I	= (0-200)							
	-	I lhe fo	ollowing parameters fo	r message	communication	ns can be easily set.							
Ē	Easy setting CNO	Local Port	ollowing parameters fo ections(CNO)01-10 c Node IP Address	r message an be set t Node Port	Connect	ns can be easily set. automatically. Protocol Type		Code	Detai	1	Node	e Name 🔺	
Ē	CNO	Local	Node IP Address	Node	Connect Type	Protocol	•				Node	e Name	
Ē		Local Port		Node Port	Connect Type TCP	Protocol Type		BIN	Detai ▼ Setting ▼ Setting	(*	Node	e Name	
	CNO 01	Local Port 10001	Node IP Address	Node Port 10001	Connect Type TCP	Protocol Type Extended MEMOBUS		BIN	▼ Setting	(* ;*	Node	e Name	
	CNO 01 02	Local Port 10001 10002	Node IP Address	Node Port 10001	Connect Type TCP	Protocol Type Extended MEMOBUS		BIN	 Setting Setting 	(*) (*)	Node	e Name	
	CNO 01 02 03	Local Port 10001 10002	Node IP Address	Node Port 10001	Connect Type TCP TCP TCP	Protocol Type Extended MEMOBUS		BIN	 Setting Setting Setting 	(* (* (*	Node	e Name	
	C NO 01 02 03 04 05 06	Local Port 10001 10002 	Node IP Address	Node Port 10001	Connect Type TCP TCP TCP	Protocol Type Extended MEMOBUS	ole 3E - - -	BIN	 Setting Setting Setting Setting Setting Setting Setting 	** ** ** ** ** ** ** ** ** ** ** ** **	Node	e Name 🔺	
	C NO 01 02 03 04 05 06 07	Local Port 10001 10002 	Node IP Address	Node Port 10001	Connect Type TCP TCP TCP	Protocol Type Extended MEMOBUS		BIN	 Setting Setting Setting Setting Setting Setting 	** ** ** ** ** ** ** ** ** ** ** ** **	Node	e Name	
	C NO 01 02 03 04 05 06	Local Port 10001 10002 	Node IP Address	Node Port 10001	Connect Type TCP TCP TCP	Protocol Type Extended MEMOBUS	ole 3E - - -	BIN	 Setting Setting Setting Setting Setting Setting Setting 	** ** ** ** ** ** ** ** ** ** ** ** **	Node	a Name	•
For Help,	CNO 01 02 03 04 05 06 07 07	Local Port 10001 10002 	Node IP Address	Node Port 10001	Connect Type TCP TCP TCP	Protocol Type Extended MEMOBUS	ole 3E - - -	BIN	 Setting Setting Setting Setting Setting Setting Setting 	** ** ** ** ** ** ** ** ** ** ** ** **	Node		*

Function Code (PARAM12)

This parameter gives the function code that was received.

QnA-compatible 3E Frame Commands Command Subcommand		MEMOBUS Function Code	Target Data Type	Function	
		Code	туре		
0401 hex	0001 hex	01 or 02 hex	В	Reads bit devices in units of one point.	
0401 116X	0000 hex	03, 04, 09, or 0A hex	W	Reads word devices in units of one point.	
1401 hex	0001 hex	05 or 0F hex	В	Writes bit devices in units of one point.	
1401 Hex	0000 hex	06, 0B, or 10 hex	W	Writes word devices in units of one point.	
1402 hex	0000 hex	0E hex	W	Writes word devices in units of one point.	
0403 hex	0000 hex	0D hex	W	Reads word devices in units of one point.	
0619 hex	0000 hex	08 hex	W	Performs a loopback test.	

Note: B: Bit data, W: Word (channel) data

Data Address (PARAM14 and PARAM15)

These parameters give the data address that was requested by the remote station.

The type of device and device range determine the data area.

Device	QnA-compatible 3E Frame Device Range	Notation	MEMOBUS Command	First Address	Register Address
Input Relays	X000000 to X001FFF	Hexadecimal	02 hex: Relays	00000 to 08191	MB000000 to MB00511F
Output Relays	Y000000 to Y001FFF	Hexadecimal	01, 05, and 0F hex: Coils	00000 to 08191	MB000000 to MB00511F
Internal Relays	M000000 to M008191	Decimal	01, 05, and 0F hex: Coils	08192 to 16383	MB005120 to MB01023F
Latch Relays	L000000 to L008191	Decimal	01, 05, and 0F hex: Coils	16384 to 24575	MB010240 to MB01535F
Step Relays	S000000 to S008191	Decimal	01, 05, and 0F hex: Coils	24576 to 32767	MB015360 to MB02047F
Link Relays	B000000 to B001FFF	Hexadecimal	01, 05, and 0F hex: Coils	32768 to 40959	MB020480 to MB02559F
Annunciators	F000000 to F002047	Decimal	01, 05, and 0F hex: Coils	40960 to 43007	MB025600 to MB02687F
Link Special Relays	SM000000 to SM002047	Decimal	01, 05, and 0F hex: Coils	43008 to 45055	MB026880 to MB02815F
Timer Contacts	TS000000 to TS002047	Decimal	02 hex: Relays	08192 to 10239	MB005120 to MB00639F
Timer Coils	TC000000 to TC002047	Decimal	02 hex: Relays	10240 to 12287	MB006400 to MB00767F
Counter Contacts	CS000000 to CS001023	Decimal	02 hex: Relays	12288 to 13311	MB007680 to MB00831F
Counter Coils	CC000000 to CC001023	Decimal	02 hex: Relays	13312 to 14335	MB008320 to MB00895F

Table 4.14 Bit Device Conversion Table

4.4.3 Message Functions

Device	QnA-compatible 3E Frame Device Range	Notation	MEMOBUS Command	First Address	Register Address
Data Registers	D000000 to D012287	Decimal	03, 06, 09, 0B, 0D, 0E, and 10 hex: Hold registers	00000 to 12287	MW00000 to MW12287
Link Registers	W000000 to W001FFF	Hexadecimal	03, 06, 09, 0B, 0D, 0E, and 10 hex: Hold registers	12288 to 20479	MW12288 to MW20479
Link Special Registers	SD000000 to SD002047	Decimal	03, 06, 09, 0B, 0D, 0E, and 10 hex: Hold registers	20480 to 22527	MW20480 to MW22527
File Registers	ZR000000 to ZR007FFF	Hexadecimal	03, 06, 09, 0B, 0D, 0E, and 10 hex: Hold registers	22528 to 55295	MW22528 to MW55295
Timer Registers	TN000000 to TN002047	Decimal	04 and 0A hex: Input registers	00000 to 02047	MW00000 to MW02047
Counter Registers	CN000000 to CN001023	Decimal	04 and 0A hex: Input registers	02048 to 03071	MW02048 to MW03071

Table 4.15 Word Device Conversion Table

Note: 1. Even if addresses are within the given device range, they may exceed the range of the device area depending on the model of the Mitsubishi Q/QnA-series PLC.

Refer to the following manual for details.

C Programmable Controller Manual from Mitsubishi Electric Corporation

 Access file registers by using the notation for accessing continuous file registers: ZR for ASCII data and B0 hex for binary data. The normal access notation (R* for ASCII data and AF hex for binary data) cannot be used.

3. The corresponding register address in the MP3000 can be adjusted by using the offset setting of the MSG-RCVE function.

Offsets (PARAM20 to PARAM27)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address by the number of words specified by the offset.

Note: An offset cannot be a negative value.

Offset parameters are provided for each of the target register types.

The following table lists the offset parameters.

Parameters	Meaning	Description				
PARAM20 and 21	Coil Offset	Sets the offset to the word address for a coil.				
PARAM22 and 23	Input Relay Offset	Sets the offset to the word address for an input relay.				
PARAM24 and 25	Input Register Offset	Sets the offset to the word address for an input register.				
PARAM26 and 27	Hold Register Offset	Sets the offset to the word address for a hold register.				

4.4.3 Message Functions

The offset parameters that can be used depend on the function code. The following table lists the valid parameters for each function code.

Function Code	Function	Applicable Offset Parameters
01 hex	Reads the states of coils.	PARAM20 and 21
02 hex	Reads the states of input relays.	PARAM22 and 23
03 hex	Reads the contents of hold registers.	PARAM26 and 27
04 hex	Reads the contents of input registers.	PARAM24 and 25
05 hex	Changes the state of a single coil.	PARAM20 and 21
06 hex	Writes to a single hold register.	PARAM26 and 27
09 hex	Reads the contents of hold registers (extended).	PARAM26 and 27
0A hex	Reads the contents of input registers (extended).	PARAM24 and 25
0B hex	Writes to hold registers (extended).	PARAM26 and 27
0D hex	Reads the contents of non-consecutive hold registers (extended).	PARAM26 and 27
0E hex	Writes the contents of non-consecutive hold registers (extended).	PARAM26 and 27
0F hex	Changes the states of multiple coils.	PARAM20 and 21
10 hex	Writes to multiple hold registers.	PARAM26 and 27

M Register Writing Range (PARAM36 to PARAM39)

Set the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the M Register Writing Range (PARAM36 to PARAM39) with word addresses.

- Note: 1. M registers are always used as the destination in the MP3000 for data write requests from the remote station.
 - 2. The writing range parameters allow you to specify the range of M registers that messages are allowed to write to.

The following table lists the writing range parameters.

Parameters Meaning		Description				
PARAM36 and 37	M Register Writing Range LO	First address of the writing range				
PARAM38 and 39	M Register Writing Range HI	Last address of the writing range				

Set the writing range so that it satisfies the following condition:

 $0 \le M$ register writing range LO $\le M$ register writing range HI \le Maximum M register address The writing range applies when using the following function codes.

OB hex: Writes to hold registers (extended).

OF hex: Changes the states of multiple coils.

10 hex: Writes to multiple hold registers.

Example Use the following settings to set the allowable writing range of M register addresses to MW0001000 to MW0001999:

PARAM36 = 03E8 hex (1000)
PARAM37 = 0000 hex (0000)
PARAM38 = 07CF hex (1999)
PARAM39 = 0000 hex (0000)

The MP3000 will return an error if a write request is received for addresses outside the range from MW01000 to MW01999, and will not perform the writing operation.

4.5 Communications with an OMRON PLC (FINS Communications Service)

When using Ethernet communications between the MP3000 and an OMRON PLC, use the FINS protocol as the communications protocol. The FINS protocol allows the master to read and write the slave registers.

This section describes communications when the MP3000 acts as a slave and as the master.

When the MP3000 acts as a slave, communications can take place using automatic reception or using the MSG-RCVE function.

When the MP3000 acts as the master, communications can take place using I/O message communications or the MSG-SNDE function.

The communications modules which can perform communications with an OMRON PLC are 218IFD and 218IFB.

4.5.1 Using Automatic Reception with the MP3000 as a Slave

This section describes how to communicate with an OMRON PLC by using automatic reception.

FINS Commands

The FINS commands that can be used with automatic reception in the MP3000 are listed below. When executing FINS commands on an OMRON PLC that is acting as the master, use the command codes and I/O memory types that are given in the following table.

Name	Command Code (Hex)		I/O Memory Type (Hex)	Meaning	Remarks		
	MR	SR	. ,				
			BO	Reads CIO Area words.			
Reading data			B1	Reads Work Area words.			
from an I/O	01	01	B2	Reads Holding Area words.	Use the RECV instruction.		
memory area			B3	Reads Auxiliary Area words.			
			82	Reads DM Area words.			
			BO	Writes to CIO Area words.			
Writing data			B1	Writes to Work Area words.			
to an I/O	01	02	B2	Writes to Holding Area words.	Use the SEND instruction.		
memory area			B3	Writes to Auxiliary Area words.			
			82	Writes to DM Area words.			
Reading non- consecutive data from the I/O memory area	01	04	04 82 Reads non-consecutive words from the DM Area.		Create a FINS com- mand and use the CMND instruction to send it. This command can only read from the DM Area.		

I/O Memory Data Areas and Corresponding Registers in the MP3000

The following table shows the relationship between registers in the MP3000 and the I/O memory data areas.

In an OMRON PLC, commands are used to specify the address and I/O memory area that correspond to the registers to read or write to in the MP3000.

Writing

In the [First Destination Word] operand of the SEND instruction, specify the address in the OMRON CPU Unit that corresponds to the register address to write to in the MP3000.



Example Writing Data into MW10000

Enter "D10000" in the [First Destination Word] operand as the corresponding address in the OMRON CPU Unit.

Reading

In the [First Source Word] operand of the RECV instruction, specify the address in the OMRON CPU Unit that corresponds to the register address to read from in the MP3000.

Example

Reading Data from MW02048 Enter "D02048" or "W000" in the [First Source Word] operand as the corresponding address in the OMRON CPU Unit.

		Data Range						
Data Area	Data	OMRON	CPU Unit					
Name	Туре	Addresses I/O Memory Addresses		MP3000				
CIO Area	Word	0000 to 2047	000000 to 07FF00	Word notation: MW00000 to MW02047 Bit notation: MB000000 to MB02047F				
Work Area	Word	W000 to W511	00000 to 01FF00	Word notation: MW02048 to MW02559 Bit notation: MB020480 to MB02559F				
Holding Area	Word	H000 to H511	00000 to 01FF00	Word notation: MW02560 to MW03071 Bit notation: MB025600 to MB03071F				
Auxiliary Area	Word	A000 to A959	00000 to 03BF00	Word notation: MW03072 to MW04031 Bit notation: MB030720 to MB04031F				
DM Area	Word	D00000 to D32767	00000 to 7FFF00	MW00000 to MW32767				

Note: Word: Specify word addresses.

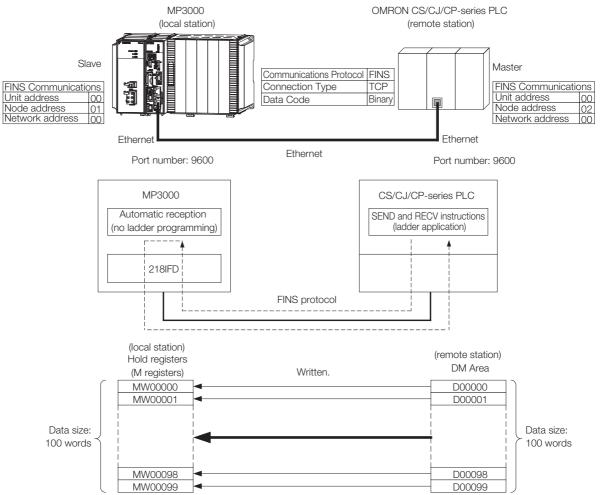
Transfer Size

The following table lists the data sizes that can be received in a single command by using automatic reception in the MP3000. When executing SEND, RECV, and CMND instructions on an OMRON PLC that is acting as the master, keep the data size within the ranges that are given in the following table.

Command Code (Hex)		I/O Memory Type	Data Size		
MR	SR	(Hex)			
		B0	Reads CIO Area words.		
		B1	Reads Work Area words.	1 to 125 words	
01	01	B2	(16 to 2,000 bits)		
		B3 Reads Auxiliary Area words.			
		82	Reads DM Area words.	1 to 999 words	
		B0	Writes to CIO Area words.		
		B1	Writes to Work Area words.	1 to 50 words	
01	02	B2	Writes to Holding Area words.	(16 to 800 bits)	
		B3 Writes to Auxiliary Area words.			
		82	Writes to DM Area words.	1 to 996 words	
01	04	82	Reads non-consecutive words from the DM Area.	1 to 167 words	

Setting Example

The following figure illustrates how the contents of the D00000 to D00099 in the DM Area in the CPU Unit of the OMRON master are written to the MW00000 to MW00099 hold registers in the MP3000 slave.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register	Register(Input/Output)			
Module	Function Module/ Slave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size	
01 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD		몲 Circuit No1	1		Input OutPut	0000 - 07FF[H]	2048	
= 00 (a) CPU302(32)[]	03 ⊞ SVC32 2		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024	
☐ ☐ 00 (●) CPU302(32)[]	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]				
	05 M-EXECUTOR						0C00 - 0C3F[H]	64	
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED[]								
02 UNDEFINED[]								
08 UNDEFINED									
02 UNDEFINED									
02 UNDEFINED									
03 UNDEFINED									
04 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

123		
Transmission Parameters S		
-Transmision Farameters -		
IP Address	192 🖶 · 168 🚍 · 1 🚔 · 1 🚔 (0-255) Module Name Definition Equipment name : CONTROLLER NAME	-
Subnet Mask	255	
Gateway IP Address	0	

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

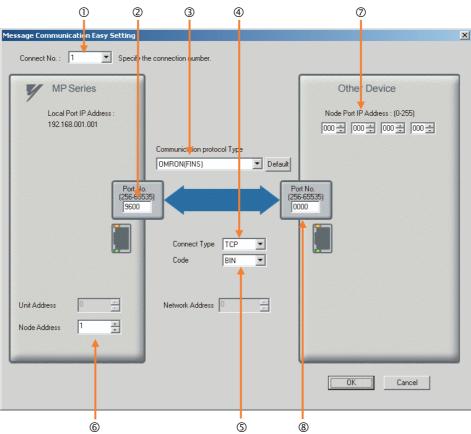
② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	nection Parame essage Commu Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message o i be set to	communication receive data	s can be easily set. automatically.			
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>
	01				-	•	-	Setting*	
	02				-	-	-	Setting*	
	03				-	-	•	Setting*	
	04				-	-	-	Setting*	
	05				-	-	-	Setting*	
	06				-	-	-	Setting*	
	07				-	-	-	Setting*	-
•		1			_			-	

The Message Communications Easy Setting Dialog Box will be displayed.



4. Set the connection parameters.

- ① Select [1] in the [Connect No.] Box.
- ② Enter "9600" in the [Port No.] Box for the MP-series Controller.
- ③ Select [OMRON (FINS)] in the [Communication Protocol Type] Box.
- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- 6 Enter "001" in the [Node Address] Box for the MP-series Machine Controller.
- ⑦ Enter the following address in the [Node Port IP Address] Boxes for the other device: 000.000.000.000.
- 8 Enter "0000" in the [Port No.] Box for the other device.
- Note: The unit address and network address of the MP-series Machine Controller are always 00 hex. If communicating with FINS/UDP, select [UDP] in the [Connect Type] Box.
- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.
 - Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.
- 7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

Easy	setting	Conne	llowing parameters for ctions(CNO)01-10 car	n be set to	o receive d	ata	automatically.	_			
C	NO	Local Port	Node IP Address	Node Port	Connec Type	t	Protocol Type		Code	Detail	
0)1	09600	000.000.000.000	00000	TOP	•	OMRON(FINS)	•	BIN 🧲	Setting*	
0)2					•		-	-	Setting*	
)3					•		•	-	Setting*	
)4					•	•	•	-	Setting*	
)5					-	-	-	-	Setting*	
)6					-	•	•	-	Setting*	
)7					-	-	-	-	Setting*	
1	1							1			Þ

8. Select the [Enable] Option in the Automatically Reception Tab Page and then click the [OK] Button.

Ľ	leta	il Setting			×							
	Automatically Reception Other											
		C Disable Enable Unable to automatec protocol type is no c										
		Transmission Buffer Channel 1	[
		Slave I/F Register Settings		Head REG								
		Readout of Input Relay		IW00000								
		Readout of Input Register		IW00000								
		Readout / Write-in of Coil		MW00000								
		Readout / Write-in of Hold Register		MW00000								
		Readout / Write-in of Data Relay		GW00000								
		Readout / Write-in of Data Register		GW00000								
		Readout / Write-in of Output Coil		OW00000								
		Readout / Write-in of Output Register		OW00000								
		Write - in width of Coil/Hold Register	LO:	MW00000								
			HĿ	MW1048575								
		Write - in width of Data Relay/Register	LO:	GW00000								
			HĿ	GW2097151								
		Write – in width of Output Coil/Register	LO:	OW00000								
			HĿ	OW17FFF								
		Automatic input processing delay time The influence on a low-speed scanning or according to this parameter.	an be	ms (0-100) adjusted								
		[Attention] It is not in the setting of the period of an automatic reception.	e com r	nunication								
				OK Cancel								

The setting in the [Node Address] Box on the Other Tab Page will contain the value that is set in the Message Communication Easy Setting Dialog Box.

Detail Setting
Automatically Receptin Other
Find Be fixed at 0 Node Address 0 8 Fixed at 0 Node Address 0 8 Fixed at 0 Network Address 0 8 Fixed at 0
OK Cancel

Note: Specify a node address that is not in use by any other device on the same network.

9. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as a slave.

Setting the Remote Device (OMRON PLC)

Use the following procedure to set up the OMRON CJ-series PLC.

Information The CJ Series is manufactured by OMRON Corporation. Contact OMRON Corporation for further information.

- 1. Set the node address of the Ethernet Unit. In this example, the node address is set to 02 hex.
- 2. Start the CX-Programmer.
- 3. Create a project.
- 4. Set the network parameters.

Parameter	Description
Broadcasting	As required.
FINS/UDP Port	As required.
FINS/TCP Port	Default (9,600)
TCP/IP keep-alive	As required.
IP Address	192.168.1.2
Subnet Mask	255.255.255.000
IP Address Conversion	Combined method
Baud Rate	Automatic detection
Dynamic Change the Target IP Addresses	As required.

Note: When using an OMRON PLC, set the node address of the Ethernet Unit so that it matches the last digit of the IP address (2 in the case of 192.168.001.002). If the node address does not match the last digit, an error may occur in the Ethernet Unit of the OMRON PLC.

When communicating with FINS/UDP, set the FINS/UDP port setting to the same number as the remote station port number of the MP3000.

5. Set the FINS/TCP connection parameters. Use the following settings for FINS/TCP connection number 1.

Note: The FINS/TCP connection settings are not required when communicating with FINS/UDP.

Parameter	Description
FINS/TCP Server/Client	Client
Target IP Address	192.168.1.1
Automatically Allocated FINS Node Address for Server	Do not set.
Keep-alive	As required.

6. Create routing tables if required.

Note: Specify an IP address that is not in use by any other device on the same network. Check with your network administrator for unused IP addresses.

7. Create ladder programming for network transmissions.

To write data to a node on the network, use the SEND instruction. The following is an example of the settings for a SEND instruction.

 SEND	
D00000	 Set the first word in the OMRON PLC local node. Example: Sending 100 words from D00000.
D00000	 Set the first destination word in the MP3000. Example: D00000 causes the MP3000 to start receiving from MW00000.
D10000	• Set the first word of the control data. Example: The settings in the following table are set as the control data from D10000.

Word	Meaning	Meaning
D10000	0064 hex	Number of words to send = 100 words
D10001	0000 hex	Destination network address = 00 (local)
D10002	0100 hex	Destination node address = 1 Destination unit address = 00
D10003	0701 hex	Response = Required. Communications port number used = 7, Number of retries = 1
D10004	0014 hex	Response monitor time = 20 (2 seconds)

When using the SEND instruction, create any logic necessary to interlock with other processes and to adjust the timing of the execution.

Note: Refer to the following manuals for details on ladder programming with the SEND, RECV, and CMND instructions for network communications.

SYSMAC CS/CJ-series Ethernet Units Operation Manual from OMRON Corporation SYSMAC CS/CJ/NSJ-series Programmable Controllers Instructions Reference Manual from OMRON Corporation

This concludes the setup.

Starting Communications

Use the following procedure to write the data in the DM Area in the OMRON PLC to the hold registers in the MP3000.

1. Turn ON the power to the MP3000 to start receiving messages.

The system will automatically start the message reception operation. No further operation is required.

2. Start the message send operation on the OMRON PLC.

Note: The MP3000 will wait for the TCP connection after it starts the automatic reception operation. Therefore, the power supply to the MP3000 must be turned ON before the power supply to the OMRON PLC.

4.5.2 Using the MSG-RCVE Function with the MP3000 as a Slave

This section describes how to communicate with an OMRON PLC by using the MSG-RCVE function.

When an OMRON PLC is used as the master to execute FINS commands, it will need a ladder application that uses the SEND and RECV instructions.

FINS Commands

Refer to the following section for details on the FINS commands that are used with the MSG-RCVE function.

FINS Commands on page 4-125

I/O Memory Data Areas and Corresponding Registers in the MP3000

The following table shows the relationship between registers in the MP3000 and the I/O memory data areas.

In an OMRON PLC, FINS commands are used to specify the address and I/O memory area that correspond to the registers to read or write to in the MP3000.

• Writing

In the [First Destination Word] operand of the SEND instruction, specify the address in the OMRON CPU Unit that corresponds to the register address to write to in the MP3000.

Example Writing Data into MW10000

Enter "D10000" in the [First Destination Word] operand as the corresponding address in the OMRON CPU Unit.

Reading

In the [First Source Word] operand of the RECV instruction, specify the address in the OMRON CPU Unit that corresponds to the register address to read from in the MP3000.

Example Reading Data from MW02048

Enter "D02048" or "W000" in the [First Source Word] operand as the corresponding address in the OMRON CPU Unit.

			Data	Data Range		
Data Area	Data	OMRON	CPU Unit			
Name	Туре	Addresses	I/O Memory Addresses	MP3000		
CIO Area	Word	0000 to 2047	000000 to 07FF00	Word notation: MW00000 to MW02047 Bit notation: MB000000 to MB02047F		
Work Area	Word	W000 to W511	00000 to 01FF00	Word notation: MW02048 to MW02559 Bit notation: MB020480 to MB02559F		
Holding Area	Word	H000 to H511	00000 to 01FF00	Word notation: MW02560 to MW03071 Bit notation: MB025600 to MB03071F		
Auxiliary Area	Word	A000 to A959	00000 to 03BF00	Word notation: MW03072 to MW04031 Bit notation: MB030720 to MB04031F		
DM Area	Word	D00000 to D32767	00000 to 7FFF00	MW00000 to MW32767		

Note: Word: Specify word addresses.

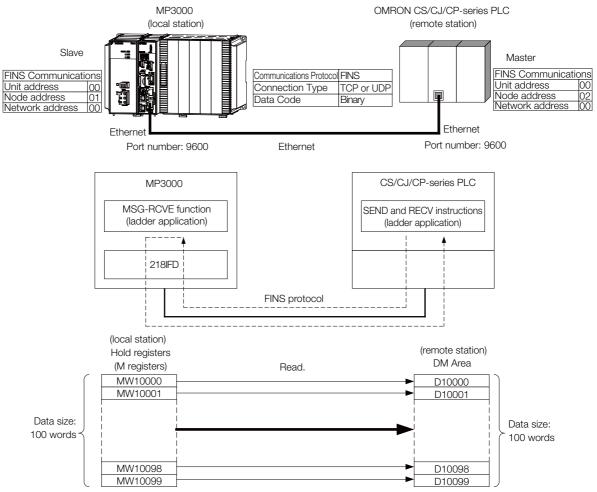
Transfer Size

The following table lists the data sizes that can be received in a single FINS command when using the MSG-RCVE function. When executing SEND, RECV, and CMND instructions on an OMRON PLC that is acting as the master, keep the data size within the ranges that are given in the following table.

Command Code (Hex)		I/O Memory Type	Meaning	Data Size	
MR	SR	(Hex)			
		BO	Reads CIO Area words.		
		B1	Reads Work Area words.	1 to 125 words	
01	01	B2	Reads Holding Area words.	(16 to 2,000 bits)	
		B3	Reads Auxiliary Area words.		
		82	Reads DM Area words.	1 to 999 words	
		BO	Writes to CIO Area words.		
		B1Writes to Work Area words.02B2Writes to Holding Area words.B3Writes to Auxiliary Area words.		1 to 50 words	
01	02			(16 to 800 bits)	
		82	Writes to DM Area words.	1 to 996 words	
01	04	82	Reads non-consecutive words from the DM Area.	1 to 167 words	

Setting Example

The following figure illustrates how the contents of the MW10000 to MW10099 hold registers in the MP3000 slave are read into D10000 to D10099 in the DM Area in the CPU Unit of the OMRON PLC master.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register	Register(Input/Output)		
Module	Function Module/ Slave	Status Status Start pupied circu		Motion Register	Disabled	Start - End	Size	
01 [CPU-302(32axes)] :								
	01 CPU							
	02 218IFD		몲 Circuit No1	1		Input OutPut	0000 - 07FF[H]	2048
= 00 (a) CPU302(32)[]	03 ⊞ SVC32		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024
☐ ☐ 00 (●) CPU302(32)[]	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]			
303	05 M-EXECUTOR						0C00 - 0C3F[H]	64
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[]							
02 UNDEFINED[]							
03 UNDEFINED								
02 UNDEFINED								
02 UNDEFINED								
03 UNDEFINED								
04 UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

123		
Transmission Parameters S		
-Transmision Farameters -		
IP Address	192 🖶 · 168 🚍 · 1 🚔 · 1 🚔 (0-255) Module Name Definition Equipment name : CONTROLLER NAME	-
Subnet Mask	255	
Gateway IP Address	0	

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

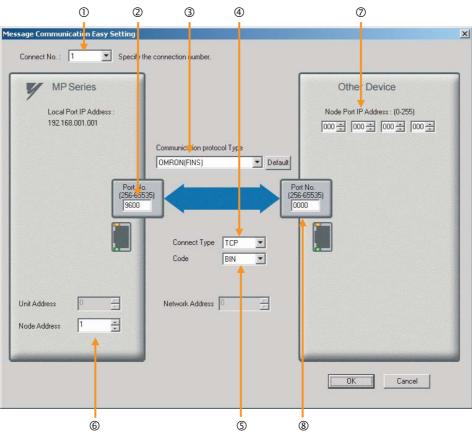
② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	Connection Parameter Message Communication Le following parameters for message communications can be easily set. Connections (C NO) 01-10 can be set to receive data automatically.											
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u>^</u>			
	01				-	-	-	Setting*				
	02				-	-	-	Setting*				
	03				-	-	-	Setting*				
	04				-	-	-	Setting*				
	05				-	-	-	Setting*				
	06				-	-	-	Setting*				
	07				-	-	-	Setting*	-			
•	· · · ·	1			_			-				

The Message Communications Easy Setting Dialog Box will be displayed.



4. Set the connection parameters.

- ① Select [1] in the [Connect No.] Box.
- ② Enter "9600" in the [Port No.] Box for the MP-series Controller.
- ③ Select [OMRON (FINS)] in the [Communication Protocol Type] Box.
- Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter 001 in the [Node Address] Box for the MP-series Machine Controller.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 000.000.000.000.
- Inter 0000 in the [Port No.] Box for the other device.

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.

The unit address and network address of the MP-series Machine Controller are always 00 hex. If communicating with FINS/UDP, select [UDP] in the [Connect Type] Box.

- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.
 - Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.
- 7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

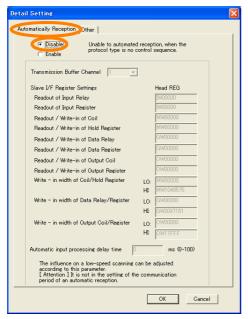
_	Message Communication The following parameters for message communications can be easily set. Connections(C NO) 01-10 can be set to receive data automatically.											
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type		Code	Detail	<u> </u>		
	01	09600	000.000.000.000	00000	ТСР	OMRON(FINS)	-	BIN 🥑	Setting*			
- [02					•	-	-	Setting*			
- E	03					•	-	-	Setting*			
- E	04					•	-	-	Setting*			
	05					•	-	-	Setting*			
	06					•	-	-	Setting*			
	07					•	-	-	Setting*			
Ŀ	•								1			

Cannot the overlap to local station port number used by the communicate the I/O message.

Δ

4-129

8. Select the [Disable] Option on the Automatically Reception Tab Page.



9. Click the Other Tab and enter "1" in the [Node Address] Box.

Detail Setting	
Automatically Receptic Other	
FINS Source Address Setting Unit Address Node Address	Be fixed at 0 (1 - 254)
Network Address	Be fixed at 0
	OK Cancel

- Note: 1. Specify a node address that is not in use by any other device on the same network. 2. Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

10. Create a ladder program for the MSG-RCVE function. A ladder program example is shown below.

Att For concestion No. (GAND) Image:		setting parameters for SB000003			st scan aft high scan.	er power on.		
Str [1] Stett 2 Extended to statut Extended to statut Extended to statut Extended to statut 3 Extended to statut Extended to statut Extended to statut 4 Extended to statut Extended to statut 4 Extended to statut Extended to statut 4 Extended to statut Extended to statut 5 Control of the statut Extended to statut 4 Extended to statut Extended to statut 5 Control of the statut Extended to statut 5 Control of the statut Extended to statut 6 Extended to statut Extended to statut 6 Control of the statut Extended to statut 7 Control of the statut Control of the statut 8 Control of the statut Control of the statut 9 Control of the statut Control of the statut 10 Control of the statut Control of the statut 10 Control of the statut Control of the statut 10 Control of the statut Control of the statut 10 Control of the statut Control of the statut <tr< th=""><th></th><th></th><th>Scan ON' ==</th><th>'TRUE'</th><th></th><th></th><th></th><th></th></tr<>			Scan ON' ==	'TRUE'				
No. Str. PP00000 00000 002000 Str. PP00000 00000 00200 00200 00200 Str. PP00010-11: //sing connection 1 Str. PP00010-11: //sing connection 1 Str. PP00120-20: //coll offset WB high (0) PP00122-20: //neut relay offset IB high (0) PP00122-20: //neut relay offset IB high (0)			clear all	D registers		[W] Dect	[W] Data	[m] m; d+b
Image: Constraint of the second sec	NL 2							00200
2 Image: construction constructing constructin construction construction construction con			set for connec	tion No.(PARAM1	0)			
Image: Section 1 Set 6 or offeld (3 May for SelfAlbo) Image: Section 2012	NL 2				1			E
1 Example 1 2 0 P001020-0 0 P001020-0 0 P001020-0 0 P0010220-7 0 P0010220-7 0 P0010220-7 0 P0010220-7 0 P0010220-7 0 P0010220-7 0 P0010220-7 0 P0010220-7 0 P0010220-7 0 P001020-0 0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P001020-0 P000000-0 P001020-0 P000000-0 P001020-0 P000000-0 P000000-0 P000000-0 P000000-0 P000000-0 P000000-0 P000000-0 P00000-0 P000000-0 P00000-						connect i on	1	
2 Protocol 201-20 Protocol 201-201-201-201-201-201-201-201-201-201-		se	t for offset (M35)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Image: Second	2			'DW00120'=0				Ē
Image: Second				'DW00121'=0) []			
1 DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00128-0; DW00138-0; DW00142-0; DW						ffset MB hi	gh (O)	
1 10000124-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000125-0; 0000130-0; 0000130-0; 0000131-0; 0000131-0; 0000131-0; 0000131-0; 0000135-0; 00000; 0000135-0; 00000; 0000135-0; 00000; 000000; 0000135-0; 00000; 0000135-0; 00000; 000000; 000000; 000000; 0000141-0; 000000; 000000; 000000; 000000; 000000						relay offse	t IB low (0)
Image: constraint of the image of the i						relay offse	t IB high	(0)
Image: Construction of the second s				DW00124=0;	//input	register of	fset IW lo	w (O)
UNION 28-0; //hold register offset MW low (0) UNION 27:0; //hold register offset MW high (0) UNION 27:0; //hold register offset GB low (0) UNION 28:0; //data relay offset GB high (0) UNION 28:0; //data register offset GB high (0) UNION 28:0; //output coil offset OB high (0) UNION 28:0; //output coil offset OB high (0) UNION 28:0; //output register offset OW how (0) UNION 28:0; //output register offset OW high (0) UNION 28:0; //writing range L0 low UNION 28:0; //writing range L0 low UNION 28:0; //W writing ra				DW00125=0;	//input	register of	fset IW hi.	gh (0)
Image: starting s				DW00126=0;	//hold_r	egister off	set MW low	(0)
Image: constraint of the second se				DW00127=0;	//hold_r	egister off	set MW hig	h (O)
Image: Control of the second secon				DW00128=0;	-//data ri	elay offset	GB low (O)
Image: Contract of the second seco				DW00129=0;	//data ri	elay offset	GB high (D)
Image: Constraint of the second state of the second sta				DW00130=0;	//data ri	egister off	set GW low	(0)
L CVPRESSION CVPRESSIO				DW00131=0;	//data ri	egister off	set GW hig	h (O)
L PU00133-0; //output coil offset 08 high (0) DW00134-0 DW001354-0 DW001355-0 DW001355-0; //output register offset 0W high (0) L EXPRESSION C W00138-0x0000; //M writing range L0 low DW00138-0x0000; //M writing range L0 high DW00138-0x0000; //M writing range H1 low DW00138-0x0007 DW00142-0x0007 DW00142-0x0007 DW00142-0x0007 DW00142-0x0007 DW00142-0x0007 DW00142-0x0007 DW00142-0x007 DW00143-0x0007 DW00144-0x0007 DW00145-0x0007 DW00147-0x0007 DW00147-0x00				DW00132=0;	//output	coil offse	t OB low (D)
DW00135-0 DW00135-0 DW00135-0; //output register offset OW high (0) M writing range (P0RAM35 to PARAM35) L EXPRESSION 0 VD00138-0; //0 writing range L0 low 'DW00137-0x000; //M writing range L0 low 'DW00137-0x000; //M writing range L0 high DW00138-0xFFFF; //M writing range HI low 'DW00138-0xFFFF; //M writing range HI low 'DW00138-0x000F; //M writing range HI low 'DW00138-0x000F; //M writing range L0 low 'DW00140-0x000F; //G writing range L0 low 'DW00141-0x000; //G writing range L0 low 'DW00141-0x000; //G writing range L0 low 'DW00143-0x000F; //G writing range HI low 'DW00145-0x000F; //G writing range L0 low 'DW00145-0x000F; //G writing range L0 low 'DW00145-0x000F; //G writing range HI low 'DW00145-0x000F; //O writing range L0 low 'DW00145-0x000F; //O writing range L0 low 'DW00145-0x000F; //O writing range HI low 'DW00145-0x000F; //O writing range HI low 'DW00147-0x0000; //O writing range HI low				DW00133=0;	//output	coil offse	t OB high	(0)
DW00135=0; //output register offset OW high (0) M writing range (PARAMS6 to PARAMS9) 2 2 2 2 2 3 2 4 5 4 5 4 5 4 4 5 4 4 4 4 4				DW00134=0;	//output	register o	ffset OW L	ow (0)
L EXPRESSION EXPRESSION EXPRESSION PW00138'-0x000 PW00137'-0x000; //M writing range LO low DW00137'-0x000; //M writing range LO high 'DW00137'-0x000; //M writing range HI low 'DW00138=0x000F; //M writing range HI low 'DW00139=0x000F; //M writing range HI high G writing range (PARAMA0 to PARAMA3) EXPRESSION EXPRES						register o	ffset OW h	igh (0)
² ² ³ ³ ³ ⁴ ⁴ ⁴ ² ⁴ ² ⁴ ² ⁴ ² ⁴ ⁴ ⁴ ⁴ ⁴ ⁴ ⁴ ⁴ ⁴ ⁴		M	writing range (1M39)		1	1
'DW00137'=0x000 DW00137'=0x000 DW00138'=0x000; DW00138=0xFFF; DW00138=0x000F; DW00138=0x000F; DW00138=0x000F; DW00138=0x000F; DW00138=0x000F; DW00138=0x000F; DW00138=0x000F; DW00138=0x000F; ML EXPRESSION 'DW00140=0x000; DW00140=0x000; DW00141=0x000; DW00141=0x000; DW00142=0xFFFF; DW00142=0xFFFF; DW00143=0x001F; DW00143=0x001F; DW00143=0x001F; DW00143=0x001F; DW00143=0x000F; VOW00144=0x000; VOW00145=0x000F; PW00145=0x000F; PW00145=0x000F; VOW0145=0x000F; VOW0145=0x000F; VOW0145=0x000F; VOW0146=0x7FFF; PW00146=0x7FFF; PW00146=0x7FFF; PW00146=0x000; VOW0146=0x000; VOW0147=0x0001; PW00147=0x0001; VOW0147=0x0001; VOW0147=0x0001;	2)×000			E
Image: Constraint of the second se				DW00136=0x0 'DW00137'=0)00; //M v)x000	vriting ran	ge LO low	
1 0 writing range (PARAM43) 2 0 writing range LO low 'DW00140*Dx000; //G writing range LO low 'DW00141*Dx000; //G writing range LO high 'DW00142*Dx000; //G writing range HI low 'DW00142*Dx000; //G writing range HI low 'DW00143*Dx000F; //G writing range HI high 0 writing range (PARAM44 to PARAM47) 2 2 4 0 writing range (PARAM44 to PARAM47) 2 4 0 writing range (PARAM44 to PARAM47) 4 4 4 5 4 4 6 6 6 7 7 10 11 11 12 13 14 14 14 14 15 16 17 17				DW00137=0x0 'DW00138'=0	000; //M v 0xFFFF	vriting ran	ge LO high	
B DW00139=0x000F; //M writing range HI high G Writing range (PARAMA0 to PARAMA3) L EXPRESSION 2 'DW00140'=0x000; //G writing range LO low 'DW00141'=0x000; //G writing range LO high 'DW00141'=0x000; //G writing range HI low 'DW00142'=0xFFFF, DW00142'=0xFFFF, DW00143'=0x001F; //G writing range HI low 'DW00143'=0x001F; //G writing range HI high 0 writing range (PARAMA4 to PARAMA7) L EXPRESSION 2 'DW00144=0x000; //O writing range LO low 'DW00145'=0x000 2 'DW00144=0x000; //O writing range LO low 'DW00145=0x000; //O writing range LO low 'DW00145=0x000; //O writing range LO low 'DW00146'=0x7FFF; 2 'DW00146'=0x7FFF 2 'DW00146'=0x7FFF; 2 'DW00146'=0x000; //O writing range HI low 'DW00146'=0x7FFF; 2 'DW00146'=0x000; //O writing range HI low 'DW00146'=0x7FFF; 2 DW00146'=0x000; //O writing range HI low 'DW00146'=0x7FFF;				10100100-0XI		vriting ran	ge HI low	
4L EXPRESSION Image: Constraint of the second				DW00139=0x0)00F; //M ∖	vriting ran	ge HI high	
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	IL	Gv	writing range (1M43)			
<pre>'DW00141'=0x000 DW00141'=0x000; DW00142'=0xFFFF DW00142=0xFFFF DW00142=0xFFFF DW00143=0x001F; //G writing range HI low 'DW0143=0x001F; //G writing range HI high 0 writing range (PARAM44 to PARAM47) NL 2 2 2 3 4 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5</pre>	2			'DW00140'=0				
'DW00142'=0xFFFF /G writing range HI low 'DW00142'=0xFFFF; //G writing range HI low 'DW00143'=0x001F 0 writing range (PARAM44 to PARAM47) III 2 ExpREssion 2 'DW00144=0x000 2 'DW00144*=0x000 0 writing range (PARAM44 to PARAM47) III 2 'DW00144*=0x000 2 'DW00144*=0x000; //0 writing range LO low 0 bW00145=0x000; //0 writing range LO low 'DW00146*=0x7FFF 0 bW00146*=0x7FFF; DW00146*=0x7FFF 0 bW00146*=0x7FFF; DW00146*=0x7FFF; 0 bW00146*=0x000; //0 writing range HI low 'DW00146*=0x000; //0 writing range HI low 'DW00147*=0x0001; DW00147*=0x0001;				'DW00141'=0)x000			
'DW001/43'=0x001F' DW001/43'=0x001F' DW001/43=0x001F' O writing range (PARAM44 to PARAM47) ************************************				'DW00142'=0)xFFFF			
0 writing range (PARAM44 to PARAM47) 4L EXPRESSION 2 'DW00144'=0x000 DW00144=0x000; //0 writing range L0 low 'DW00145=0x000 DW00145=0x000; //0 writing range L0 high 'DW00145=0x7FFF DW00146=0x7FFF; //0 writing range HI low 'DW00147=0x0001 DW00147=0x0001; //0 writing range HI high				'DW00143'=0	0x001F		<u> </u>	
NL EXPRESSION [2 'DW00144"=0x000; DW00144=0x000; //0 writing range L0 low 'DW00145=0x000 DW00145=0x000; //0 writing range L0 high 'DW00146=0x7FFF; //0 writing range HI low 'DW00147"=0x0001 DW00147"=0x0001; //0 writing range HI high			uriting <u>range (</u>			vriting ran	ge HI high	
'DW00144-'=Ux000 DW00144-'=Ux000 'DW00145'=0x000; //O writing range LO low 'DW00145=0x000; //O writing range LO high 'DW00146=0x7FFF DW00146=0x7FFF; //O writing range HI low 'DW00147'=0x0001 DW00147'=0x0001; //O writing range HI high	NL 2		n ring range (11041)			Ē
'DW00145'=Ux000 DW00145'=Ux000; //O writing range LO high 'DW00146'=0x7FFF DW00146=0x7FFF; //O writing range HI low 'DW00147'=0x0001 DW00147'=0x0001; //O writing range HI high	2			'DW00144'=0 DW00144=0×0)x000)00: //o 4	vriting ran	ge LO Inw	
DW00146=Dx7FFF; //O writing range HI low 'DW00147'=Ox0001 DW00147=Ox0001; //O writing range HI high				1 1D₩001451=0	Jx000			
'DW00147'=0x0001 DW00147=0x0001; //O writing range HI high				2000146'=0 000146'=0)x7FFF 7FFF: //0 ·	uniting rop	es HT Low	
				∷ 'DW00147'=0	0x0001			
END_IF	· · · · · · · · · · · · · · · · · · ·			DW00147-0XU	JUUT, 770 (n rung ran	se ni nign	

9							 	MSG	-RCVE
								[B] Execute DB000200 execute	[B]Busy DB000210 busy
								[B] Abort DB000201 abort	[B]Complete DB000211 complete
								[W]Dev-Typ 00016	[B] Error DB000212 error
								[W] Pro-Typ 00001	
								[W]Cir-No 00001 [W]Ch-No	
								00001 [A] Param DA00100	
					 ♦finished n	ormally	 		
0 127-		I F	'complete'=='1 DB000211==TRUE	TRUE' E;			 		
1 137-	NL 2	DB000201					 	INC	■ [WLQ]Dest DW00024 count norm ally
2 15/-		END_IF			 		 		
3		IF ■	'error'=='TRUE DB000212==TRUE	E' E;	finished ab	normally			
16/-					 				
4 17/-	NL 2						 	INC	[WLQ]Dest DW00025 count abno rmally
5 187-	NL 2				 		 STORE	[WLFQD]Src DW00000	[WLFQD]Dest DW00026 result (PA RAM00)
							STORE	[WLFQD]Src DW00001	[WLFQD]Dest DW00027 status (PA
6 197-	NL 2								RAM01)
16 197- 7 207-	<u>NL</u> 2	END_IF			 				RAMO1)

11. Save the data to flash memory.

This concludes the settings for using the MP3000 as a slave.

Setting the Remote Device (OMRON PLC)

Use the following procedure to set up the OMRON CJ-series PLC.

Information The CJ Series is manufactured by OMRON Corporation. Contact OMRON Corporation for further information.

- 1. Set the node address of the Ethernet Unit. In this example, the node address is set to 02 hex.
- 2. Start the CX-Programmer.
- 3. Create a project.

4. Set the network parameters.

Parameter	Description
Broadcasting	As required.
FINS/UDP Port	As required.
FINS/TCP Port	Default (9,600)
TCP/IP Keep-alive	As required.
IP address	192.168.1.2
Subnet Mask	255.255.255.000
IP Address Conversion	Combined method
Baud Rate	Automatic detection
Dynamic Change the Target IP Addresses	As required.

Note: When using an OMRON PLC, set the node address of the Ethernet Unit so that it matches the last digit of the IP address (2 in the case of 192.168.001.002). If the node address does not match the last digit, an error may occur in the Ethernet Unit of the OMRON PLC.

When communicating with FINS/UDP, set the FINS/UDP port setting to the same number as the remote station port number of the MP3000.

5. Set the FINS/TCP connection parameters. Use the following settings for FINS/TCP connection number 1.

Note: The FINS/TCP connection settings are not required when communicating with FINS/UDP.

Parameter	Description
FINS/TCP Server/Client	Client
Target IP Address	192.168.1.1
Automatically Allocated FINS Node Address for Server	Do not set.
Keep-alive	As required.

6. Create routing tables if required.

Note: Specify an IP address that is not in use by any other device on the same network. Check with your network administrator for unused IP addresses.

7. Create ladder programming for network transmissions.

To read data from a node on the network, use the RECV instruction. The following is an example of the settings for a RECV instruction.

 RECV	
D10000	 Set the first word in the MP3000 remote node. Example: D10000 causes the MP3000 to start sending from MW10000.
D10000	 Set the first destination word in the OMRON PLC. Example: Reception starts from D10000.
D10100	Set the first word of the control data. Example: The settings in the following table are set as the control data from D10100.

Word	Meaning	Meaning
D10100	0064 hex	Number of words to send = 100 words
D10101	0000 hex	Destination network address = 00 (local)
D10102	0100 hex	Destination node address = 1 Destination unit address = 00
D10103	0701 hex	Response = Required. Communications port number used = 7, Number of retries = 1
D10104	0014 hex	Response monitor time = 20 (2 seconds)

When using the RECV instruction, create any logic necessary to interlock with other processes and to adjust the timing of the execution.

Note: Refer to the following manual for information on ladder programming using the network communications instructions (SEND, RECV, and CMND).

SYSMAC CS/CJ-series Ethernet Units Operation Manual from OMRON Corporation

SYSMAC CS/CJ/NSJ-series Programmable Controllers Instructions Reference Manual from OMRON Corporation

This concludes the setup.

4

Starting Communications

Use the following procedure to write the data in the hold registers in the MP3000 to the DM Area in the CPU Unit of the OMRON PLC.

1. Turn ON the power to the MP3000 to start receiving messages.

In the ladder programming example, the message receive function starts immediately after the scan starts in the MP3000. While the Machine Controller is operating, a normally ON coil is used to keep the message receive function executing.

Always ON Coil	
Ļ	
SB000004 DB000202	DB000201
Always ON abort	execute

2. Start the message send operation on the OMRON PLC.

Note: The MP3000 will wait for the TCP connection after it starts execution of the MSG-RCVE function. Therefore, the power supply to the MP3000 must be turned ON before the power supply to the OMRON PLC.

4.5.3 Using I/O Message Communications with the MP3000 as the Master

This section describes how to communicate with an OMRON PLC by using I/O message communications.

FINS Commands

The FINS commands that are used with I/O message communications on the MP3000 are given below. Check that the command codes and I/O memory types that are listed in the following table are usable with the OMRON PLC slave.

Name	FINS Command Code (Hex)		I/O Memory Type (Hex)	Meaning
	MR	SR	(nex)	
			BO	Reads CIO Area words.
De e dia se dete fuere			B1	Reads Work Area words.
Reading data from an I/O memory area	01	01	B2	Reads Holding Area words.
			B3	Reads Auxiliary Area words.
			82	Reads DM Area words.
		02	BO	Writes to CIO Area words.
			B1	Writes to Work Area words.
Writing data to an I/O memory area	01		B2	Writes to Holding Area words.
			B3	Writes to Auxiliary Area words.
			82	Writes to DM Area words.

I/O Memory Data Areas and Corresponding Registers in the MP3000

The following table shows the relationship between registers in the MP3000 and the I/O memory data areas.

When reading from or writing to the I/O memory in the OMRON PLC, the FINS commands for reading or writing are automatically generated by assigning I/O registers in the MP3000.

- Writing
 - Set the output register in the MP3000 as follows:
 - Set the first address of the OW registers and the size of the data stored in the MP3000 that is to be written to the OMRON PLC.
 - Set the first word to the first register address to write to in the OMRON PLC.

Reading

Set the input registers in the MP3000 as follows:

- Set the first address of the IW registers and the size of the read data that is to be stored in the MP3000.
- Set the first word to the first register address to read from in the OMRON PLC.

	Data	Data Range					
Data Area Name	Data Type	OMRON	OMRON CPU Unit				
	Type	Addresses	I/O Memory Addresses	MP3000			
CIO Area	Word	0000 to 6143	000000 to 17FF00	Read:			
Work Area	Word	W000 to W511	00000 to 01FF00	IW0000 to IW7FFF			
Holding Area	Word	H000 to H511	00000 to 01FF00				
Auxiliary Area	Word	A000 to A959	00000 to 03BF00	Write: OW0000 to OW7FFF			
DM Area	Word	D00000 to D32767	00000 to 7FFF00				

Note: Word: Specify word addresses.

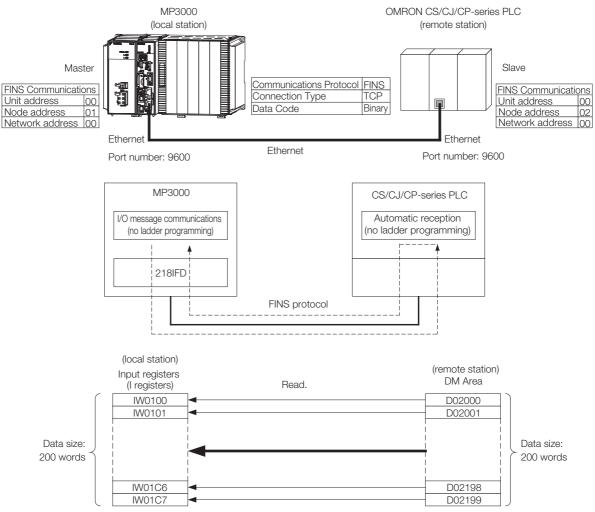
Transfer Size

The following table lists the size of data that can be transferred using I/O message communications. Use the data size within the ranges that are listed in the following table according to the conditions of the OMRON PLC slave.

FINS Command Code (Hex)		I/O Memory Type	Meaning	Data size	
MR	SR	(Hex)			
		BO	Reads CIO Area words.	1 to 999 words	
		B1	Reads Work Area words.	1 to 512 words	
01	01	B2	Reads Holding Area words.	1 to 512 words	
		B3	Reads Auxiliary Area words.	1 to 960 words	
		82	Reads DM Area words.	1 to 999 words	
		BO	Writes to CIO Area words.	1 to 996 words	
		B1	Writes to Work Area words.	1 to 512 words	
01	02	B2	Writes to Holding Area words.	1 to 512 words	
		B3	Writes to Auxiliary Area words.	1 to 960 words	
		82	Writes to DM Area words.	1 to 996 words	

Setting Example

The following figure illustrates how the contents of the D02000 to D02199 in the DM Area in the CPU Unit of the OMRON PLC slave are read into the IW0100 to IW01C7 input registers in the MP3000 master.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axis	sAddress	Motion Register	Register(Input/Output)			
Module	Function Module/ Slave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size	
01 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD	·	器 Circuit No1	1		Input	0000 - 07FF[H]	2048	
□ 00	03 ⊞ SVC32		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024	
☐ ☐ 00 (●) CPU302(32)[] ₩ ₩ ₩ ₩	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]				
-803	05 M-EXECUTOR						0C00 - 0C3F[H]	64	
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED[]								
02 UNDEFINED[]								
03 UNDEFINED									
02 UNDEFINED									
02 UNDEFINED									
03 UNDEFINED									
04 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

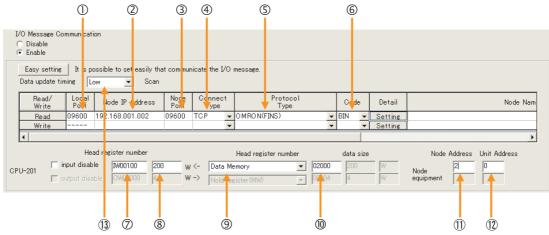
123	Ð					
Transmission Parameter:	Status					
-Transmission Paramet	ers					
IP Address	:	192 🔆	168 🛨	1 🗄 🗍	1 🔆 (0-255)	Module Name Definition Equipment name : CONTROLLER NAME
Subnet Mask	:	255 🚊	255 🛨	255 🛨	0 🔆 (0-255)	
Gateway IP Addres	ss :	0 🔆	0 😐		0 🔆 (0-255)	Detail Definition

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

- ② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.
- ③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.
- **3.** Select the [Enable] Option in the [I/O Message Communication] Area of the [Connection Parameter] Area.

	I/O Message Communication											
	Easy setting It is possible to set easily that communicate the I/O message.											
	Data up	date tir	nine Lo	w 💌 Scan								
	Rea Wr		Local Port	Node IP Address	Node Port	Connect Type	Protocol Type		Code	Detail		
	Re					-		-	-	Setting		
	Wr	ite				-		-	-	Setting		
	•											•
	Head register number Head register number data size											
C	>PU-201		nput disabl nutput disab		W		rister (MW) 💌	00000	4	W	Node equipment	

4. Set the connection parameters.



- ① Enter "9600" in the [Local Port] Box.
- © Enter the following address for the remote device in the [Node IP Address] Box: 192.168.001.002. ③ Enter "9600" in the [Node Port] Box.
- ④ Select [TCP] in the [Connect Type] Box.
- ⑤ Select [OMRON (FINS)] in the [Protocol Type] Box.
- 6 Select [BIN] in the [Code] Box.
- ⑦ Enter "IW0100" in the [Head register number] Box as the read data destination.
- Inter "200" in the next box as the size of data to read.
- Select [Data Memory] as the I/O memory type in the [Head register number] box.
- Enter "02000" as the first address in the remote device.
- 1 Enter "2" in the [Node Address] Box for the other device.
- 1 Enter "00" in the [Unit Address] Box for the other device.
- ⁽¹⁾ Select [Low] in the [Data update timing] Box as the timing to update I/O data between the CPU Function Module and 218IFD.
- Note: 1. In I/O message communications, a message is transmitted from separate ports if registers are both read and written. Therefore, the connected remote device must have two connections to receive both messages

 - If communicating with FINS/UDP, select [UDP] in the [Connect Type] Box. 2. The network address cannot be set from the MP3000. The network address is always 00 hex. This means that messages cannot be sent to nodes on another network. To reference registers in the CPU Unit of the OMRON PLC, enter "00" in the ① [Unit Address] Box.
 - "00" indicates the CPU Unit of the PLC at the specified node address.
 - 3. The data update timing is the timing at which the CPU Function Module and 218IFD exchange data. Communications with the remote device are performed asynchronously. The data update timing therefore does not necessarily mean that the messages are sent to the remote device.

5. Double-click the [Setting] Button in the [Detail] Box.

	I/O Message Communication C Disable • Enable											
	Easy setting It is possible to set easily that communicate the I/O message. Data update timing Low Scan											
		Read/ Write	Local Port	Node IP Address	Node Port	Connect Protocol Type Type			Code	Detail		Node Nam
	E	Read Write	09600			TCP OMRON(FINS)		-	BIN Setting			
	•										Þ	
				ad register number			Head register number		data size		Node Address	Unit Address
(OPU-:	01 input disable [M00100] 200 output disable [OW00000] 4			W <-			02000 200 00004 4		Node 2 equipment	0	

6. Enter "01" in the [Node Address] Box, and then click the [OK] Button.

Detail Setting			
Other FINS Source Address Se Unit Address Node Address Network Address	etting	Be fixed at 0 (1 - 254) Be fixed at 0	
		OK Cancel	

Note: 1. The unit address and network address of the MP3000 are always 00 hex. 2. The node address must be set for each connection. Specify a node address that is not in use by any other device on the same network.

7. Click the [OK] Button.

8. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as the master.

Setting the Remote Device (OMRON PLC)

Use the following procedure to set up the OMRON CJ-series PLC.

Information The CJ Series is manufactured by OMRON Corporation. Contact OMRON Corporation for further information.

- 1. Set the node address of the Ethernet Unit. In this example, the node address is set to 02 hex.
- 2. Start the CX-Programmer.
- 3. Create a project.
- 4. Set the network parameters.

Parameter	Description
Broadcasting	As required.
FINS/UDP Port	As required.
FINS/TCP Port	Default (9,600)
TCP/IP Keep-alive	As required.
IP Address	192.168.1.2
Subnet Mask	255.255.255.000
IP Address Conversion	Combined method
Baud Rate	Automatic detection
Dynamic Change the Target IP Addresses	As required.

Note: When using an OMRON PLC, set the node address of the Ethernet Unit so that it matches the last digit of the IP address (2 in the case of 192.168.001.002). If the node address does not match the last digit, an error may occur in the Ethernet Unit of the OMRON PLC.

When communicating with FINS/UDP, set the FINS/UDP port setting to the same number as the remote station port number of the MP3000.

4

5. Set the FINS/TCP connection parameters. Use the following settings for FINS/TCP connection number 1.

Note: The FINS/TCP connection settings are not required when communicating with FINS/UDP.

Parameter	Description
FINS/TCP Server/Client	Client
Target IP Address	192.168.1.1
Automatically Allocated FINS Node Address for Server	Do not set.
Keep-alive	As required.

6. Create routing tables if required.

Note: Specify an IP address that is not in use by any other device on the same network. Check with your network administrator for unused IP addresses.

This concludes the setup.

Starting Communications

Use the following procedure to write the data in the DM Area in the CPU Unit of the OMRON PLC to the input registers in the MP3000.

- 1. Start the message receive operation on the OMRON PLC. The system will automatically start the message reception operation. No further operation is required.
- **2.** Turn ON the power to the MP3000 to start transmitting messages. The system will automatically start the message transmission operation. No further operation is required.

Note: The MP3000 will establish the TCP connection when it starts execution of I/O message communications.

4.5.4 Using the MSG-SNDE Function with the MP3000 as the Master

This section describes how to communicate with an OMRON PLC by using the MSG-SNDE function.

I/O Memory Data Areas and Corresponding Registers in the MP3000

The following table shows the relationship between registers in the MP3000 and the I/O memory data areas.

A read or write command is automatically generated by specifying the address in the MP3000 that corresponds to the I/O memory to be read from or written to in the OMRON PLC.

Set PARAM14 and PARAM15 of the MSG-SNDE function to the register address in the MP3000 that corresponds to the address to read from or write to in the OMRON CPU Unit. Select whether to read or write by setting the function code in parameter PARAM12 for the MSG-SNDE function.

Example Writing Data into D10000

Set PARAM14 and PARAM15 to the MW10000 register in the MP3000 that corresponds to D10000, and set PARAM12 to 0B or 10 hex.

Example Reading Data from W511

Set PARAM14 and PARAM15 to the MB025590 register in the MP3000 that corresponds to W511, and set PARAM12 to 01 hex.

Information To access a relay, specify a bit address in PARAM14 and PARAM15.

		Data Range							
Data Area	Data	OMRON	CPU Unit						
Name	Туре	Addresses	I/O Memory Addresses	MP3000					
CIO Area	Word	000000 to 2047	000000 to 07FF00	Word notation: MW00000 to MW02047 Bit notation: MB000000 to MB02047F					
Work Area	Word	W00000 to W511	00000 to 01FF00	Word notation: MW02048 to MW02559 Bit notation: MB020480 to MB02559F					
Holding Area	Word	H00000 to H511	00000 to 01FF00	Word notation: MW02560 to MW03071 Bit notation: MB025600 to MB03071F					
Auxiliary Area Word		A00000 to A959	00000 to 03BF00	Word notation: MW03072 to MW04031 Bit notation: MB030720 to MB04031F					
DM Area	Word	D00000 to D32767	00000 to 7FFF00	MW00000 to MW32767					

Note: Word: Specify word addresses.

Transfer Size

The following table lists the size of data that can be transferred using the MSG-SNDE function. Use the data size within the ranges that are listed in the following table according to the conditions of the OMRON PLC slave.

The upper limit to the data size will also depend on the MEMOBUS function code that is specified in the MSG-SNDE function.

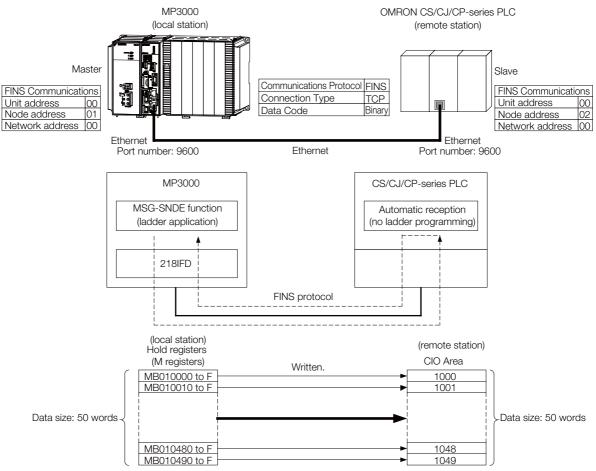
Refer to the following section for details on the data size parameter in the MSG-SNDE function.

FINS Command Code (Hex)		I/O Memory Type	Meaning	Data size	
MR	SR	(Hex)			
		BO	Reads CIO Area words.		
		B1	Reads Work Area words.	1 to 125 words	
01	01	B2	(16 to 2,000 bits)		
		B3	Reads Auxiliary Area words.		
		82	Reads DM Area words.	1 to 999 words	
		BO	Writes to CIO Area words.		
		B1	Writes to Work Area words.	1 to 50 words	
01	02	B2	Writes to Holding Area words.	(16 to 800 bits)	
		B3	Writes to Auxiliary Area words.	Ť	
		82	Writes to DM Area words.	1 to 996 words	
01	01 04 82 Reads non-consecutive words from the DM Area.			1 to 167 words	

Setting Example

The following figure illustrates how the contents of 800 bits (50 words) from the MB010000 to MB01049F hold registers in the MP3000 master are written to the I/O bits in CIO 1000 to CIO 1049 in the CPU Unit of the OMRON PLC slave.

On the MP3000, bits are written and read in word units. It is not possible to write or read less than whole words.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register	Register(Input/Output)				
Module	Function Module/Slave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size		
01 [CPU-302(32axes)] :										
	01 CPU									
	02 218IFD		ය. Circuit No1	1		Input OutPut	0000 - 07FF[H]	2048		
≘ 00	08 ⊞ SVC82		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024		
☐ 00	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]					
	05 M-EXECUTOR						0C00 - 0C3F[H]	64		
	06 UNDEFINED									
	07 UNDEFINED									
01 UNDEFINED[-]									
02 UNDEFINED[-]									
08 UNDEFINED										
02 UNDEFINED										
02 UNDEFINED										
03 UNDEFINED										
04 UNDEFINED										

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

023							
Transmission Parameters St	tatus						
-Transmision Farameters-					N.I. N. B.C.W.		
IP Address	:	192 🕂 - 168 🗄	1 3	1 🔆 (0-255)	Module Name Definitio Equipment name :	n CONTROLLER NAME	
Subnet Mask	:	255	255	0 🔆 (0-255)	Equipment name :]	
Gateway IP Address	:			0 🔆 (0-255)	Detail Definition		

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

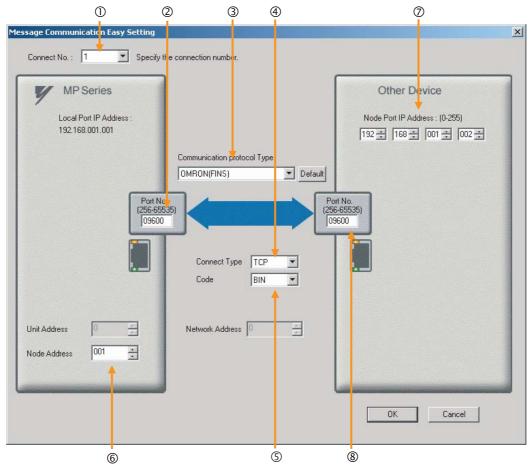
③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	-Connection Parameter Message Communication Line following parameters for message communications can be easily set. Connections/C NO/ 01-10 can be set to receive data automatically.												
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>				
	01				-	•	-	Setting*					
	02				-	-	-	Setting*					
	03				-	-	-	Setting*					
	04				-	-	-	Setting*					
	05				-	-	-	Setting*					
	06				-	-	-	Setting*					
	07				-	-	-	Setting*	-				
•	· · · ·												

The Message Communications Easy Setting Dialog Box will be displayed.

4. Set the connection parameters.



- ① Select [1] in the [Connect No.] Box.
- © Enter "9600" in the [Port No.] Box for the MP-series Controller.
- ③ Select [OMRON (FINS)] in the [Communication Protocol Type] Box.
- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter "001" in the [Node Address] Box for the MP-series Machine Controller.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- \circledast Enter "9600" in the [Port No.] Box for the other device.

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.

The unit address and network address of the MP-series Machine Controller are always 00 hex. If communicating with FINS/UDP, select [UDP] in the [Connect Type] Box.

5. Click the [OK] Button.

6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

 Connection Parameter Message Communication Line following parameters for message communications can be easily set. Connections(C NO) 01-10 can be set to receive data automatically.												
CNO	Local Port	Node IP Address	Node Port	Connect Type		Protocol Type		Code		Detail	<u>^</u>	
01	09600	192.168.001.002	10001	TOP	•	OMRON(FINS)	-	BIN		Setting*		
02					•	-	-		-	Setting*		
03					Ŧ		-		-	Setting*		
04					•	-	•		-	Setting*		
05					•		-		-	Setting*		
06					•	-	-		-	Setting*		
07					Ŧ		-		-	Setting*	-	
•												

Cannot the overlap to local station port number used by the communicate the I/O message.

8. Click the [Disable] Option on the Automatically Reception Tab Page.

protocol type is no c	freception, when the control sequence.
C Enable	
Transmission Buffer Channel 👔 💌	I
Slave I/F Register Settings	Head REG
Readout of Input Relay	IW00000
Readout of Input Register	IW00000
Readout / Write-in of Coil	MW00000
Readout / Write-in of Hold Register	MW00000
Readout / Write-in of Data Relay	GW00000
Readout / Write-in of Data Register	GW00000
Readout / Write-in of Output Coil	OW00000
Readout / Write-in of Output Register	0000000
Write - in width of Coil/Hold Register	LO: MW00000
	HE MW1048575
Write - in width of Data Relay/Register	LO: GW00000
	HE GW2097151
Write - in width of Output Coil/Register	LO: OW00000
	HE OW17FFF
Automatic input processing delay time	ms (0-100)
The influence on a low-speed scanning c according to this parameter. [Attention] It is not in the setting of the period of an automatic reception.	·

9. Click the Other Tab and enter "1" in the Node Address Box.

Detail Setting	N 100 100 100 100 100 100 100 100 100 10
Automatically Receptic Other	
Unit Address Node Address Network Address	Be fixed at 0 (1 – 254.) Be fixed at 0
	OK Cancel

Note: 1. Specify a node address that is not in use by any other device on the same network.2. Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

10. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

1		setting par	ameter for SB000003 f	MSG-SNDE func or low scan a	ializing tion during f nd SB000001 f	irst scan aft or high scan.	er power on.		
IF	After Log SB000003	w Scan Start							
	0000000	1.02,							
				clear all	D registers	· (🔺	[W]Dest [V	//]Data	[W]Width
2 2						SETW	DW00000	00000	00130
			se	t for connec	tion No. (PAR	AM10)	1		
2 2					EXPRESSION 'DWOO110'	-1		_	
					DW00110=1	; //using o	onnection No	.1	
			∎ set	the unit add	ion (PARAM11) ress and node	address.			
NL		UP	per byte is	unit address	and lower by	te is node ad	iress.		[
2					'DW00111'		t address=00	nodo o	
		set for d	ata address	low (PARAM14)	DWUUIII=U: and High (Pf		t address=00 ote station	, node a	aaress=z
NL 2					EXPRESSION				
2					'DW00114'		te address L	ow(16000)
					'DW00115'	=0	ddress High(<i>′</i>
		-		set fo <u>r func</u> t	ion code (PAF		waress night	•/	
NL 2					EXPRESSION	1	0		
					'DW00112' DW00112=0:		ading hold r	egister	(extended
				set for data	size (PARAM1				
NL 2					EXPRESSION				
					'DW00117' DW00117=8		size (800 bi	ts)	
		set for d	ata address	Low (PARAM20) and High (P	ARAM21) of lo	al station		
NL 2					EXPRESSION 'DWOO120'	-16000		_	[
					DW00120=1 DW00121	3000; //loc	al data addr	ess Low	(16000)
							lata address	High (O)	
NL.		;	set for	data type of	local statio	n (PARAM22)	· · · · · · · · · · · · · · · · · · ·		[
2					'DW00122'				
					DW00122=0	; //local o	lata type (M	register) - 1
END_I		short	for timeout	if not compl	for all time. leted in 10s a	fter sending	command		
	00 DB000201		[W]Set 01000	[W]Count DW00031	 				
DB0002	e abort	TON [10ms]	[W]Set 01000	[W]Count DW00031					timeout
DB0002 	e abort DA	TON [10ms]		DW00031					timeout DB00020
DB0002	e abort DA t	TON [10ms]		DW00031					timeout DB00020
DB0002 	e abort DA t	TON [10ms]		DW00031					timeout DB00020
DB0002 	e abort DA t 12	TON [10ms]		DW00031					timeout DB00020
DB0002 execut DB0002 timeou DB0002 DB0002 CB002 CB02	e abort DA t 12	TON [10ms]	01000	DW00031					timeout DB00020
DB0002 execut DB0002 timeou DB0002 DB0002 DB0002 Labort abort	e abort DA t 12 D1	DB000211 complete	01000	DW00031	nd in 605 aft	er aborted			timeou DB0002(ort
DB0002 BB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002	e abort DA t 12 D1	DB000209	01000	DW00031	nd in 80s aft	er aborted			t imeout DB00020 abort
DB0002 DB0002 L execut DB0002 DB002	0A t 12 01 01	DB000203	01000	DW00031	nd in 60s att	er aborted			t imeout DB00020 abort
DB0002 	e abort DA t 12 D1 D1	TON [10ms] DB000211 complete DB000209 waiting end	01000	DW00031	nd in 605 aft	er aborted			timeout DB00020 abort
DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002		DB000209 waiting end	01000	DW00031	nd in EOS aft	er aborted			timeout DB00020 sbort
DB0002 DB002 DB	e abort DA t 12 D1 D1 D1 D8 s D8 TON [10ms]	DB000209 wwiting end ed	01000 relesse s [W]Count DW00028	DW00031	nd in EOs att	er aborted			timeout DB00020 abort DB00020 waiting DB00020
DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002 DB0002	e abort DA t 12 D1 D1 D1 D8 s D8 TON [10ms]	DB000203 waiting end ed	01000 release s [W]Count DW00028 	ending comma					timeou DB0002/ sbort DB0002/ waitin; DB0002/
DB0002 	e abort DA t 12 01 01 01 08 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	DB000203 waiting end ed	01000 release s [W]Count DW00028 	ending comma	nd in 60s aft er starting s				timeout DB0002C abort DB0002C waiting waiting e
DB0002 	с зьогт DA t 12 01 01 01 01 01 01 01 01 01 01	DB000203 waiting end ed	01000 release s [W]Count DW00028 	ending comma					timeou DB0002(sbort DB0002(waitin waitin dB0002(DB0002(
DB0002 	CALL CALL CALL CALL CALL CALL CALL CALL	DB000203 waiting end ed	01000 release s [W]Count DW00028 	ending comma					timeou DB0002(sbort DB0002(waiting ed DB0002(
DB0002 DB0002	e abort DA t 12 01 01 01 01 01 01 01 01 08 5 5 5 5 5 5 5 5 5 5 5 5 5	DB000203 waiting end ed	01000 release s [W]Count DW00028 	ending comma					timeout DB00020 abort DB00020 waiting ed DB00020

£		MSG-SNDE	
		ecute [B] Bu:	
			00210 usy
	[B] AL	ort [B]Co	mplet
		00201 DBOC bort comp	UU211 plete
		ov-Typ [B]Ern 2016 DBOC	r or 00212
		er	r or
		о-Тур 3001	
	[W] C	ir-No	
	[W] C1	0001 1-No	
	0 [A] P3	0001	
		00100	
♦ finished norm	ally		
□ Complete'=='TRUE' DB000211==TRUE;			
		▲ [₩LQ]	
		INC DWO	10024 t nor
- abort			1 ly
♦ finished abnor	mally		
IF DB000212==TRUE;			
		▲ [WLQ]	Nest
NL2		LNC DWO	0025
2			ally
NL			D]Des
2	STORE UW	resu	
	(WLFQ		D]Des
			0027
NL 2	STORE DWG	00001 DW0 statu	us (P
2	STORE DWG	statu	us (P M01)
NL 2 END_IF ◆treatment for t	STORE DW	statu	us (P
2 END_IF DB00020A DB00020B	STORE DW	statu RAN DBOO	us (P M01) 0 <u>0</u> 20
2 END_IF ◆treatment for t	STORE DW	statu RAN DBO(timeo	US (P M01) 0020 001 o
2 END_IF DB00020A DB00020B timeout on pluse ■▲ 'timeout occurred'=='TRUE'	STORE DW	statu RAN DBO(timeo	us (P M01) 0020
2 END_IF DB00020A DB00020B timeout on pluse	STORE DW	statu RAN DBO(timeo	US (P M01) 0020 001 o
2 END_IF DB00020A DB00020B timeout on pluse	STORE DW	stat RAN DBO(timeo ur	US (F M01) 0020 001 o red
2 END_IF DB00020A DB00020B timeout on pluse DB00020A 'timeout occurred'=='TRUE'	imeout	Stat RAY DBOC timeo ur (WLQ)1	0020 0020 001 o red Dest
2 END_IF DB00020A DB00020B timeout on pluse IF DB00020C==TRUE; NL 2	imeout	stat RAH DBO(timeo vr	00200 00200 000200 000 0000 0000 00000 00000 00000 00000
2 END_IF DB00020A DB00020B timeout on pluse iF DB00020C==TRUE; NL	imeout	stat RAH DBO(timeo vr	Dest

11. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

Setting the Remote Device (OMRON PLC)

Use the following procedure to set up the OMRON CJ-series PLC.

Information The CJ Series is manufactured by OMRON Corporation. Contact OMRON Corporation for further information.

- 1. Set the node address of the Ethernet Unit. In this example, the node address is set to 02 hex.
- 2. Start the CX-Programmer.
- 3. Create a project.

4. Set the network parameters.

Parameter	Description
Broadcasting	As required.
FINS/UDP Port	As required.
FINS/TCP Port	Default (9,600)
TCP/IP Keep-alive	As required.
IP address	192.168.1.2
Subnet Mask	255.255.255.000
IP Address Conversion	Combined method
Baud Rate	Automatic detection
Dynamic Change the Target IP Addresses	As required.

Note: When using an OMRON PLC, set the node address of the Ethernet Unit so that it matches the last digit of the IP address (2 in the case of 192.168.001.002). If the node address does not match the last digit, an error may occur in the Ethernet Unit of the OMRON PLC.

When communicating with FINS/UDP, set the FINS/UDP port setting to the same number as the remote station port number of the MP3000.

Set the FINS/TCP connection parameters. Use the following settings for FINS/TCP connection number 1.

Note: The FINS/TCP connection settings are not required when communicating with FINS/UDP.

Parameter	Description
FINS/TCP Server/Client	Client
Target IP Address	192.168.1.1
Automatically Allocated FINS Node Address for Server	Do not set.
Keep-alive	As required.

6. Create routing tables if required.

Note: 1. Specify an IP address that is not in use by any other device on the same network.

- Check with your network administrator for unused IP addresses.
 - 2. If the MP3000 performs message communications using multiple connections, set up the same num-
 - ber of FINS/TCP connections in the OMRON PLC.
- 3. The FINS/TCP connection settings are not required when communicating with FINS/UDP.

This concludes the setup.

4.5.5 Routing

Starting Communications

Use the following procedure to write the data in the hold registers in the MP3000 to the I/O bits in the CPU Unit of the OMRON PLC.

1. Start the message receive operation on the OMRON PLC.

The system will automatically start the message reception operation. No further operation is required.

2. Turn ON the power to the MP3000 to start transmitting messages.

The ladder program example is designed to turn ON the Execute Bit (DB000200) in the message send function after six seconds has elapsed from when the low-speed scan (or high-speed scan) starts. Thereafter, the message send function is executed every second by alternating the Execute Bit (DB000200) between OFF and ON each time the message send function completes execution normally or with an error.

Note: The MP3000 will establish the TCP connection when it starts execution of the MSG-SNDE function.

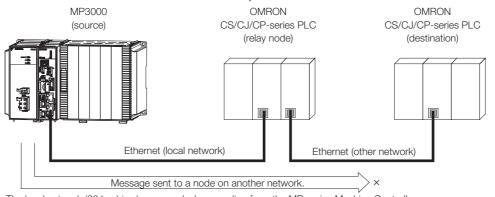


4.5.5 Routing

This section describes the restrictions that apply when sending and receiving I/O messages, and when using the MSG-SNDE and MSG-RCVE functions between the MP3000 and OMRON PLCs connected across different networks.

Using the MP3000 as the Master

When the MP3000 master sends messages using I/O message communications or the MSG-SNDE function, the destination node must be connected to the local network. A node connected to another network cannot be specified as the destination.

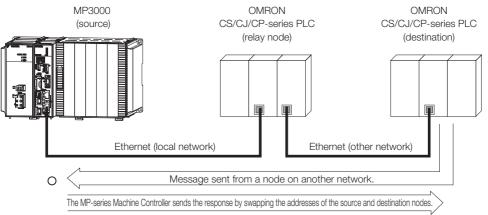


The local network (00 hex) is always used when sending from the MP-series Machine Controller.

4.5.5 Routing

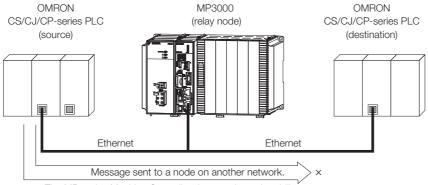
Using the MP3000 as a Slave

When the MP3000 acts as a slave and uses automatic reception or the MSG-RCVE function to receive messages that are routed, it can also receive messages from a node on another network. The MP3000 slave can also return responses to the source.



Using the MP3000 as a Router

The MP3000 cannot route messages between different networks.



The MP-series Machine Controller does not have the ability to route messages.

The message functions are used in user communications applications for the FINS protocol. You can send and receive message data by setting the necessary input items and parameters for the message functions. Message communications using the FINS protocol can be performed with the same settings as those used for MEMOBUS messages.

Inputs and Outputs for the MSG-SNDE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the FINS protocol. MEMOBUS is automatically converted to the FINS protocol inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the FINS protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the FINS protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same connection. You can use the same channel number as long as multiple func- tions are not executed at the same time. 218IFB, 218IFD = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the param- eter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output. Continued on next page.

4

Continued on next page.

I/O

Definitions

Output

Items

No.

1

2

3

Busy

Com-

plete

Error

I/O Name Meaning Description Designation Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis-**B-VAL** Processing. sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON. Specify the bit that shows when the message transmission has been completed. Process The Complete Bit turns ON only for one scan

Continued from previous page.

when message transmission or forced abort processing has been completed normally. Specify the bit that shows if an error occurred

When an error occurs, the Error Bit will turn ON

Refer to the following section for an example of a timing chart for when an error occurs.

when sending the message.

only for one scan.

Error on page 2-8

MSG-SNDE Function Parameters

B-VAL

B-VAL

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

completed.

Error occurred.

No.	I/O	Meaning	Description	Reference Page
00		Processing Result	Gives the processing status.	I → Processing Result (PARAM00) on page 2-9
01		Status	Gives the status of the current function.	Status (PARAM01) on page 2-10
02		Detail Error Code, Lower Word	Gives the details of an error.	■ Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word		<i>PARAM03)</i> on page 4- 154
04	Out-	Status 1	Gives the communications status.	Status 1 (PARAM04) on page 2-12
05	puts	Status 2	Gives status information on the most recent error.	
06		Status 3	Gives the information of the send pass counter.	● Status 3 (PARAM06) on page 2-12
07		Status 4	Gives the information of the receive pass counter.	■ ♦ Status 4 (PARAM07) on page 2-12
08		Status 5	Gives the information of the error counter.	Status 5 (PARAM08) on page 2-13
09]	Status 6	Not used for the FINS protocol.	_

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			Со	ntinu	ed from previous page.
No.	I/O	Meaning	Description		Reference Page
10		Connection Number	Sets the connection number used to deter- mine the remote station.	۶.	◆ Connection Number (PARAM10) on page 2- 13
11		Option	Sets the remote node address.	F	◆ Options (PARAM11) on page 4-154
12		Function Code	Sets the code of the function in the FINS pro- tocol.	F	◆ Function Code (PARAM12) on page 4- 155
13		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	۶.	◆ Reserved for System (PARAM13) on page 2- 14
14	_	Remote Station Data Address, Lower Word	Sets the data address to read/write at the remote station. (Use word addresses for reg-	(F	♦ Remote Station Data Address (PARAM14 and
15		Remote Station Data Address, Upper Word	isters, bit addresses for relays or coils.)		<i>PARAM15)</i> on page 4- 155
16		Remote Station Register Type	Not used for the FINS protocol.		-
17	Inputs	Data Size	Sets the size of the data to read/write. (Use word sizes for registers, bit sizes for relays or coils.)	Ē	◆ Data Size (PARAM17) on page 4-156
18		Remote CPU Module Number	Not used for the FINS protocol.		-
19		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(F	◆ Reserved for System (PARAM19) on page 2- 17
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word	Ē	♦ Local Station Data Address (PARAM20 and
21	_	Local Station Data Address, Upper Word	addresses for registers, bit addresses for relays or coils.)		PARAM21) on page 2- 18
22	_	Local Station Register Type	Sets the register type of the read/write data to store in the local station.	(F	◆ Local Station Regis- ter Type (PARAM22) on page 4-156
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	۶.	◆ Reserved for System (PARAM23) on page 2- 19
24		For system use	This parameter contains the channel number of the communications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	¢۲	◆ Reserved for System (PARAM24) on page 2- 19
25	_	Reserved for system.			
26		Reserved for system.	These parameters are used by the system. Do not change the value of these parameters	Ē	♦ Reserved for System (PARAM25 to
27		Reserved for system.	from a user program or by any other means.		<i>PARAM28)</i> on page 2- 19
28		Reserved for system.			

Detail Error Code (PARAM02 and PARAM03)

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
8100 hex	1	Function code error	An unused function code was sent or received. Check PARAM12 (Function Code).
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Remote Station Data Address) PARAM20 and PARAM21 (Local Station Data Address)
8300 hex	3	Data size error	The data size for sending or receiving is out of range. Check PARAM17 (Data Size).
8400 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-SNDE function.
85 00 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-SNDE function.
8600 hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
8800 hex	8	Communications device error	An error response was received from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG- SNDE function.
C245 hex	-	Local station register type error	The register type for the local station is out of range. Check PARAM22 (Local Station Register Type).
8072 hex to C072 hex		Remote device error*	An error response was received from the remote station. Check the error code and remove the cause.

These parameters give the detail error code.

* An error response received from the remote device will be formatted in PARAM00 (Processing Result) as follows. Processing Result (PARAM00): 2017 hex (where 2011) is the error code)

Contains the sum of the completion code sent from the OMRON PLC and 80 hex.

Refer to the following manual for details on completion codes.

CS/CJ/CP/NS Series Communications Commands Reference Manual from OMRON Corporation

Options (PARAM11)

The upper byte of this parameter sets the unit address, and the lower byte sets the remote node address.

The valid setting range is given in the following table.

Option	Address Number	Description
	XX: Unit address	Sets the remote unit address.
XXYY hex	YY: Node address	Sets the remote node address. Sets the remote node address from 1 to FE hex (1 to 254).

Note: 1. The node address for the MP3000 is set with the Connection Parameter setting in the Module Detail Definition Dialog Box.

2. The MP3000 unit address is always 00 hex.

Function Code (PARAM12)

Set the function code to send.

You can use the functions that are registered to the function codes.

MEMOBUS	FINS Command Code			Target	
Function Code	MR	SR	I/O Memory Type	Data Type	Function
			B0 hex	W	Reads CIO Area words.
01 hex	01 hex	01 hex	B1 hex	W	Reads Work Area words.
UTTIEX	UTTIEX		B2 hex	W	Reads Holding Area words.
			B3 hex	W	Reads Auxiliary Area words.
03 or 09 hex	01 hex	01 hex	82 hex	W	Reads DM Area words.
	01 hex	02 hex	B0 hex	W	Writes to CIO Area words.
0F hex			B1 hex	W	Writes to Work Area words.
UT HEX			B2 hex	W	Writes to Holding Area words.
			B3 hex	W	Writes to Auxiliary Area words.
0B or 10 hex	01 hex	02 hex	82 hex	W	Writes to DM Area words.
0D hex	01 hex	04 hex	82 hex	W	Reads non-consecutive words from the DM Area.

Note: W: Word (channel) data

Remote Station Data Address (PARAM14 and PARAM15)

Set the first address for data in the remote station.

Enter the first address as a decimal or hexadecimal number.

Example If the first address is MW01000, enter "1000" (decimal) or "3E8" (hexadecimal).

The applicable function codes and valid range of data addresses depend on the device type and device range of the OMRON PLC.

Table 4.16	Bit Conversion	Table

Data Area	Address Range	Notation	Function Code	Data Address Setting Range	Corresponding Register Addresses
CIO Area	0000 to 2047	Decimal	01 and 0F hex: Coils	0 to 32767	MB000000 to MB02047F
Work Area	W000 to W511	Decimal	01 and 0F hex: Coils	32768 to 40959	MB020480 to MB02559F
Holding Area	H00000 to H51115	Decimal	01 and 0F hex: Coils	40960 to 49151	MB025600 to MB03071F
Auxiliary Area	A000 to A447 (read only) A448 to A959 (read/write)	Decimal	01 and 0F hex: Coils	49152 to 56319 56320 to 64511	MB030720 to MB03519F MB035200 to MB04031F

Table 4.17 DM Area Conversion Table

Data Area	Address Range	Notation	Function Code	Data Address Setting Range	Corresponding Register Addresses
DM Area	D00000 to D32767	Decimal	03, 09, 0B, 0D, and 10 hex: Hold registers	0 to 32767	MW00000 to MW32767

Note: 1. Even if addresses are within the given address range, they may exceed the range of the device area depending on the model of the OMRON PLC.

Refer to the following manual for details.

OMRON PLC manuals

2. The corresponding register address in the MP3000 can be adjusted by using the offset setting of the MSG-SNDE function.

Data Size (PARAM17)

Set the data size for the read/write request as the number of bits or words.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and data area.

MEMOBUS	FIN	S Comma	and Code		Data Size
Function Code	MR	SR	I/O Memory Type	Function	Setting Range
			B0 hex	Reads CIO Area words.	16 to 2,000 bits
01 hex	01 hex	01 hex	B1 hex	Reads Work Area words.	16 to 2,000 bits
			B2 hex	Reads Holding Area words.	16 to 2,000 bits
01 hex	01 hex	01 hex	B3 hex	Reads Auxiliary Area words.	16 to 2,000 bits
03 hex	01 hex	01 hex	82 hex	Reads DM Area words.	1 to 125 words
09 hex	01 hex	01 hex	82 hex	Reads DM Area words.	1 to 999 words
	01 hex	1 hex 02 hex	B0 hex	Writes to CIO Area words.	16 to 800 bits
0F hex			B1 hex	Writes to Work Area words.	16 to 800 bits
OF HEX			B2 hex	Writes to Holding Area words.	16 to 800 bits
			B3 hex	Writes to Auxiliary Area words.	16 to 800 bits
0B hex	01 hex	02 hex	82 hex	Writes to DM Area words.	1 to 996 words
10 hex	01 hex	02 hex	82 hex	Writes to DM Area words.	1 to 100 words
0D hex	01 hex	04 hex	82 hex	Reads non-consecutive words from the DM Area.	1 to 167 words

Note: Bits are read and written in words. The data size is specified in units of 16 bits (16, 32, 48, ...).

Local Station Register Type (PARAM22)

Set the register type of the read data destination or write data source in the MP3000.

Register Type Value	Туре	Remarks
0	М	Sets the target data type to MB for bits and MW for words.
1	G	Sets the target data type to GB for bits and GW for words.
2		Sets the target data type to IB for bits and IW for words.
3	0	Sets the target data type to OB for bits and OW for words.
4	S	Sets the target data type to SB for bits and SW for words.
5 or higher	_	Not used for the FINS protocol.

The register types that can be used depend on whether you are reading or writing.

The following table lists the combinations of register types.

Function Code	Applicable Register Types
01, 03, or 09 hex	M, G, or O
0B, 0F, or 10 hex	M, G, I, O, or S
0D hex	Μ

Inputs and Outputs for the MSG-RCVE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the trans- mission.	Specify the bit to use to execute the message trans- mission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmis- sion to end.	Specify the bit to use to abort the message trans- mission. When the Abort Bit turns ON, the message trans- mission will be stopped unconditionally. The Abort Bit takes precedence over the Execute Bit.
	3	Dev-Typ	I-REG	Communi- cations device type	Specify the type code of the communications device. 218IFB, 218IFD = 16
Input Items	4	Pro-Typ	I-REG	Communi- cations protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the FINS protocol. MEMOBUS is automatically converted to the FINS protocol inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the FINS protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the FINS protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communications device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD = 1 to 8
	6	Ch-No	I-REG	Communi- cations buffer channel number	Specify the channel number of the communications buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel number for the same connection. You can use the same channel number as long as multiple functions are not exe- cuted at the same time. 218IFB, 218IFD = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 52 words starting from the specified first word are automatically used for the parameter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

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I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Busy	B-VAL	Process- ing.	Specify the bit that shows that the message trans- mission is in progress. The Busy Bit is ON while a message transmission or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
Output Items	2	Com- plete	B-VAL	Process completed.	Specify the bit that shows when the message trans- mission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{error} \bullet Error$ on page 2-23

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No. I/O	/(Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.	F	◆ Processing Result (PARAM00) on page 2- 25
01		Status	Gives the status of the current function.	(F	◆ Status (PARAM01) on page 2-25
02		Detail Error Code, Lower Word	Gives the details of an error.	(F	◆ Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word	Gives the details of an error.		<i>PARAM03)</i> on page 4- 161
04 Out- puts		Status 1	Gives the communications status.	(F	♦ Status 1 (PARAM04) on page 2-27
05	put	Status 2	Gives status information on the most recent error.	(Fr	♦ Status 2 (PARAM05) on page 2-28
06		Status 3	Gives the information of the send pass counter.	(F	♦ Status 3 (PARAM06) on page 2-28
07		Status 4	Gives the information of the receive pass counter.	F	◆ Status 4 (PARAM07) on page 2-28
08		Status 5	Gives the information of the error counter.	(F	♦ Status 5 (PARAM08) on page 2-28
09		Status 6	Not used for the FINS protocol.		-
10 Input	Inp	Connection Number	Sets the connection number used to deter- mine the remote station.	Æ	◆ Connection Number (PARAM10) on page 2- 29
11 I/O	I/O	Option	Not used for the FINS protocol.		_
12 Out- put		Function Code	Gives the function code requested by the remote station.	F	◆ Detail Error Code (PARAM02 and PARAM03) on page 4- 161
13 I/O	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	F	 ◆ Reserved for System (PARAM13) on page 2- 30
12 Out- put	Out	Function Code Reserved for	Gives the function code requested by the remote station. This parameter is used by the system. Do not change the value of this parameter	ي ال	(PARA PARA 161 ◆ Res (PARA

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No.	I/O	Meaning	Description		Reference Page
14		Data Address,		17	◆ Data Address
14	-	Lower Word Data Address, Upper Word	Gives the first address of the data that was requested by the remote station.		(PARAM14 and PARAM15) on page 4- 162
16	Out- puts	Register Types	Gives the register type that was requested by the remote station.	(F	◆ Register Type (PARAM16) on page 2- 31
17	-	Data Size	Gives the data size that was requested by the remote station.	(F	◆ Data Size (PARAM17) on page 2-31
18		Remote CPU Module Number	Not used for the FINS protocol.		_
19	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	æ	◆ Reserved for System (PARAM19) on page 2- 31
20		Coil Offset, Lower Word		बि	♦ Offsets (PARAM20 to
21	-	Coil Offset, Upper Word	Sets the offset word address for a coil (MB).		<i>PARAM27</i>) on page 4- 162
22		Input Relay Offset, Lower Word	Sets the offset word address for an input	(F	♦ Offsets (PARAM20 to PARAM27) on page 4-
23		Input Relay Offset, Upper Word	relay (IB).		162
24		Input Register Offset, Lower Word	Sets the offset word address for an input	(F	♦ Offsets (PARAM20 to PARAM27) on page 4-
25		Input Register Offset, Upper Word	register (IW).		162
26		Hold Register Offset, Lower Word	Sets the offset word address for a hold reg-	æ]	♦ Offsets (PARAM20 to PARAM27) on page 4-
27		Hold Register Offset, Upper Word	ister (MW).		162
28	_	Data Relay Offset, Lower Word	Sets the offset word address for a data relay	(F	◆ Data Relay Offset (PARAM28 and
29	_	Data Relay Offset, Upper Word	(GB).		PARAM29) on page 2- 32
30	Inputs	Data Register Offset, Lower Word	Sets the offset word address for a data reg-	(F	◆ Data Register Offset (PARAM30 and
31	_	Data Register Offset, Upper Word	ister (GW).		PARAM31) on page 2- 32
32	_	Output Coil Offset, Lower Word	Sets the offset word address for an output	(F	♦ Output Coil Offset (PARAM32 and
33	_	Output Coil Offset, Upper Word	coil (OB).		PARAM33) on page 2- 32
34	_	Output Register Offset, Lower Word	Sets the offset address for an output register	(F	♦ Output Register Off- set (PARAM34 and
35		Output Register Offset, Upper Word	(OW).		PARAM35) on page 2- 32
36		M Register Writing Range LO, Lower Word	Sets the first address of the writing range for	Æ	
37		M Register Writing Range LO, Upper Word	hold register coils.		<i>PARAM39)</i> on page 4- 163
38		M register Writing Range HI, Lower Word	Sets the last address of the writing range for	æ	
39		M Register Writing Range HI, Upper Word	hold register coils.		PARAM39) on page 4- 163

Continued on next page.

No.	I/O	Meaning	Description		Reference Page
40		G register Writing Range LO, Lower Word	Sets the first address of the writing range for	Ē	♦ G Register Writing Range LO (PARAM40
41		G Register Writing Range LO, Upper Word	data register data relays.		and PARAM41) on page 2-33
42		G Register Writing Range HI, Lower Word	Sets the last address of the writing range for	(F	◆ G Register Writing Range HI (PARAM42
43	Innuto	G Register Writing Range HI, Upper Word	data register data relays.		and PARAM43) on page 2-33
44	Inputs	O Register Writing Range LO, Lower Word	Sets the first address of the writing range for	Ē	◆ O Register Writing Range LO (PARAM44
45		O Register Writing Range LO, Upper Word	output registers.		and PARAM45) on page 2-33
46		O Register Writing Range HI, Lower Word	Sets the last address of the writing range for	B	◆ O Register Writing Range HI (PARAM46
47		O Register Writing Range HI, Upper Word	output registers.		<i>and PARAM47</i>) on page 2-34
48	_	For system use	This parameter contains the channel number of the communications buffer that is cur- rently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	en J	 ◆ For System Use (PARAM48) on page 2- 34
49		Reserved for system.	These parameters are used by the system.	ित	Reserved for System
50		Reserved for system.	Do not change the value of these parame- ters from a user program or by any other	■.25	(PARAM49 to PARAM51) on page 2-
51		Reserved for system.	means.		34

Detail Error Code (PARAM02 and PARAM03)

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
8100 hex	1	Function code error	An unused function code was received. Check the function code of the remote station.
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Data Address) PARAM20 and PARAM21 (Coil Offset) PARAM26 and PARAM27 (Hold Register Offset)
8300 hex	3	Data size error	The data size for receiving is out of range. Check the data size at the remote station.
8400 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-RCVE function.
85 00 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-RCVE function.
8600 hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
88 00 hex	8	Communications device error	An error response was received from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
8900 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-RCVE function.

These parameters give the detail error code.

◆ Function Code (PARAM12)

This parameter gives the function code that was received.

MEMOBUS	FINS Command Code			Target		
Function Code	MR	SR	I/O Memory Type	Data Type	Function	
			B0 hex	W	Reads CIO Area words.	
01 hex	01 hex	01 hex	B1 hex	W	Reads Work Area words.	
UTTIEX	UTTIEX	UT nex	B2 hex	W	Reads Holding Area words.	
			B3 hex	W	Reads Auxiliary Area words.	
03 or 09 hex	01 hex	01 hex	82 hex	W	Reads DM Area words.	
			B0 hex	W	Writes to CIO Area words.	
0F hex	01 hex	02 hex	B1 hex	W	Writes to Work Area words.	
UF HEX	UTTIEX		B2 hex	W	Writes to Holding Area words.	
			B3 hex	W	Writes to Auxiliary Area words.	
0B or 10 hex	01 hex	02 hex	82 hex	W	Writes to DM Area words.	
0D hex	01 hex	04 hex	82 hex	W	Reads non-consecutive words from the DM Area.	

Note: W: Word (channel) data

Data Address (PARAM14 and PARAM15)

These parameters give the data address that was requested by the remote station.

The type of device and device range determine the data area.

Table 4.18 Bit Conversion Table

Data Area	Address Range	Notation	Function Code	Data Address Setting Range	Corresponding Register Addresses
CIO Area	0000 to 2047	Decimal	01 and 0F hex: Coils	0 to 32767	MB000000 to MB02047F
Work Area	W000 to W511	Decimal	01 and 0F hex: Coils	32768 to 40959	MB020480 to MB02559F
Holding Area	H00000 to H51115	Decimal	01 and 0F hex: Coils	40960 to 49151	MB025600 to MB03071F
Auxiliary AreaA000 to A447 (read only) A448 to A959 (read/write)Decimal01 and 0F hex: Coils49152 to 56319 56320 to 64511MB030720 to MB03519F MB035200 to MB04031F					
Table 4.19 DM Area Conversion Table					

Data Area	Address Range	Notation	Function Code	Data Address Setting Range	Corresponding Register Addresses
DM Area	D00000 to D32767	Decimal	03, 09, 0B, 0D, and 10 hex: Hold regis- ters	0 to 32767	MW00000 to MW32767

Offsets (PARAM20 to PARAM27)

Set the data address in the MP3000.

The MP3000 will offset the address by the number of words specified by the offset.

Note: An offset cannot be a negative value.

Offset parameters are provided for each of the target register types.

The following table lists the offset parameters.

Parameters	Meaning	Description
PARAM20 and 21	Coil Offset	Sets the offset to the word address for a coil.
PARAM22 and 23	Input Relay Offset	Not used for the FINS protocol.
PARAM24 and 25	Input Register Offset	Not used for the FINS protocol.
PARAM26 and 27	Hold Register Offset	Sets the offset to the word address for a hold register.

The offset parameters that can be used depend on the function code.

The following table lists the valid parameters for each function code.

Function Code	Function	Applicable Offset Parameters
01 hex	Reads the states of coils.	PARAM20 and 21
03 hex	Reads the contents of hold registers.	PARAM26 and 27
09 hex	Reads the contents of hold registers (extended).	PARAM26 and 27
0B hex	Writes to hold registers (extended).	PARAM26 and 27
0D hex	Reads the contents of non-consecutive hold registers (extended).	PARAM26 and 27
0F hex	Changes the states of multiple coils.	PARAM20 and 21
10 hex	Writes to multiple hold registers.	PARAM26 and 27

M Register Writing Range (PARAM36 to PARAM39)

Set the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the M Register Writing Range (PARAM36 to PARAM39) with word addresses.

Note: 1. M registers are always used as the destination in the MP3000 for data write requests from the remote station.

2. The writing range parameters allow you to specify the range of M registers that messages are allowed to write to.

The following table lists the writing range parameters.

Parameters	Meaning	Description
PARAM36 and 37	M Register Writing Range LO	First address of the writing range
PARAM38 and 39	M Register Writing Range HI	Last address of the writing range

Set the writing range so that it satisfies the following condition:

 $0 \le M$ register writing range LO $\le M$ register writing range HI $\le M$ aximum M register address

The writing range applies when using the following function codes.

0B hex: Writes to hold registers (extended).

OF hex: Changes the states of multiple coils.

10 hex: Writes to multiple hold registers.

Example Use the following settings to set the allowable writing range of M register addresses to MW0001000 to MW0001999:

PARAM36 = 03E8 hex (1000) PARAM37 = 0000 hex (0000) PARAM38 = 07CF hex (1999) PARAM39 = 0000 hex (0000)

The MP3000 will return an error if a write request is received for addresses outside the range from MW01000 to MW01999, and will not perform the writing operation.

4.6 Communications with a KOYO PLC (MODBUS/TCP Protocol)

When using Ethernet communications between the MP3000 and a KOYO PLC, use the MOD-BUS/TCP protocol as the communications protocol. The MODBUS/TCP protocol allows the master to read and write to the slave registers.

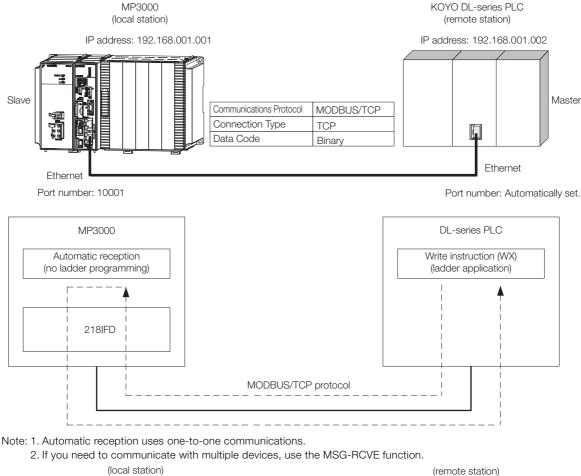
This section describes communications when the MP3000 acts as a slave and as the master.

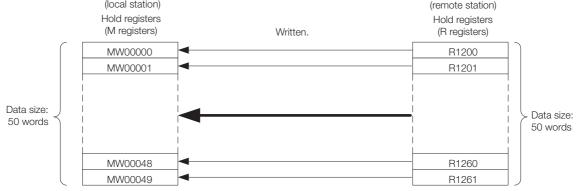
4.6.1 Using Automatic Reception with the MP3000 as a Slave

This section describes how to communicate with a KOYO PLC by using automatic reception.

Setting Example

The following figure illustrates how the contents of the R1200 to R1261 hold registers in the KOYO PLC master are written to the MW00000 to MW00049 hold registers in the MP3000 slave.





MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register	Register(Input/Output)			
Module	Tunction module/ stave	otatus	Start	supied circu	MOTION NEEDSTEE	Disabled	Start – End	Size	
01 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD		몲 Circuit No1	1		Input	0000 - 07FF[H]	2048	
	08 ⊞ SVC32		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024	
9 00 (CPU302(32)[]	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]				
	05 M-EXECUTOR						0C00 - 0C3F[H]	64	
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED[-]								
02 UNDEFINED[-]								
03 UNDEFINED									
02 UNDEFINED									
02 UNDEFINED									
03 UNDEFINED									
04 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

0 2 3	
Transmission Parameters Status	1
-Transmission Farameters	Module Name Definition
IP Address :	192
Subnet Mask :	255 🔆 255 🔆 0 🔆 (0-255)
Gateway IP Address :	0 0 0 0 0 (0-255) Detail Definition

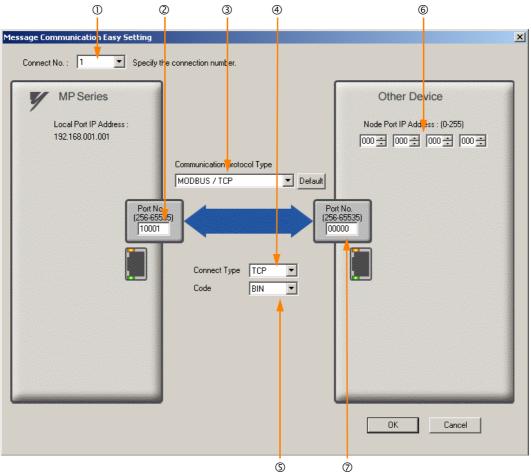
① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

- ② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.
- ③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.
- **3.** Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	nnection Parame Message Commu Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message o be set to	communication) receive data	s can be easily set. automatically.			
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u>^</u>
	01				•	-	-	Setting*	
	02				-	•	-	Setting*	
	03				•	-	•	Setting*	
	04				+	-	•	Setting*	
	05				-	-	-	Setting*	
	06				-	•	-	Setting*	
	07				+	-	•	Setting*	-
•	· · · ·								

The Message Communications Easy Setting Dialog Box will be displayed.

4. Set the connection parameters.



- ① Select [1] in the [Connect No.] Box.
- @ Enter "10001" in the [Port No.] Box for the MP-series Controller.
- ③ Select [MODBUS/TCP] protocol in the [Communications Protocol Type] Box, and then click the [Default] Button.
- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 000.000.000.000.

@Enter "00000" in the [Port No.] Box for the other device.

- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

Mes	ection Parameter ssage Communication The following parameters for message communications can be easily set. Easy setting Connections(C NO) 01-10 can be set to receive data automatically.										
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type		Cod	е	Detail	·
	01	10001	000.000.000.000	00000	тср 👻	MODBUS / TCP	-	BIN	<	Setting*	
	02				-		-		-	Setting*	
	03				-	•	•		-	Setting*	
	04				-		•		-	Setting*	
	05				-	•	•		-	Setting*	
	06				-		•		-	Setting*	
	07				-		•		-	Setting*	

Cannot the overlap to local station port number used by the communicate the I/O message.

8. Select the [Enable] Option in the Automatically Reception Tab Page and then click the [OK] Button.

Detail Setting	
Automatically Reception	
C Disable C Disable C Enable Unable to automated reception protocol type is no control	
Transmission Buffer Channel 1	
Slave I/F Register Settings	Head REG
Readout of Input Relay	IW00000
Readout of Input Register	IW00000
Readout / Write-in of Coil	MW00000
Readout / Write-in of Hold Register	MW00000
Readout / Write-in of Data Relay	GW00000
Readout / Write-in of Data Register	GW00000
Readout / Write-in of Output Coil	OW00000
Readout / Write-in of Output Register	OW00000
Write - in width of Coil/Hold Register LO:	MW00000
HĿ	MW1048575
Write - in width of Data Relay/Register LO:	GW00000
HI	GW2097151
Write - in width of Output Coil/Register LO:	OW00000
HE	OW17FFF
Automatic input processing delay time	ms (0-100)
The influence on a low-speed scanning can be according to this parameter. [Attention] It is not in the setting of the com- period of an automatic reception.	í III
	OK Cancel

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.

9. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as a slave.

Setting the Remote Device (KOYO PLC)

Use the following procedure to set the KOYO DL-series PLC.

Information The DL-series PLCs are manufactured by KOYO Electronics Industries. Contact KOYO Electronics Industries for further information.

- 1. Start DirectSoft32.
- 2. Create a project.
- 3. Start NetEdit3.
- 4. Click the [ECOM Settings] Tab followed by the [General] Button in the [Configuration] Area to set the network parameters.

Parameter	Description				
Select the [Use the following IP settings]	Option before setting the following items.				
IP Address	192.168.1.2				
Subnet mask	255.255.255.0				
Others	As required.				

5. Click the [ECOM Settings] Tab followed by the [Peer to Peer] Button in the [Configuration] Area to set the MODBUS/TCP parameters.

Parameter	Description
RX/WX Device Number	1
Select the [Modbus-TCP] Option	before setting the following items.
IP Address	192.168.1.1
Port	10001
Unit ID	0

Note: Specify an IP address that is not in use by any other device on the same network. Check with your network administrator for unused IP addresses.

6. Create a ladder program for communications.

① Use the Load (LDS) instruction to specify the base number, ECOM slot number, and server node number.

Example LDS K301

Base number: 0 (CPU base), ECOM slot number: 1, Server node number: 01

② Use the Load instruction to specify the number of bytes to send.

```
Example LDS K100
```

Number of bytes: 100 (50 words)

③ Use the LDR instruction to specify the master memory area.

Example LDS 01200

Master memory area: 01200 Specify the first address to store the data to send in the DL-series PLC.

④ Use the Write (WX) instruction to specify the memory area in the slave and send the message.

Example WX TA0

Slave memory area: R0 (TA0)

Set the first address offset of the registers to write to in the MP3000. If the MP3000 has not been set to use offset addressing, specifying R0 (TA0) will write the specified size of data in the MP3000 starting at address MW00000.

Note: Contact KOYO Electronics Industries for further information on ladder programming.

This concludes the setup. Set any other parameters as necessary, then transfer the data to the PLC.

Starting Communications

Use the following procedure to write the data in the holding registers in the KOYO PLC to the hold registers in the MP3000.

- 1. Turn ON the power to the MP3000 to start receiving messages. The system will automatically start the message reception operation. No further operation is required.
- **2.** Send the message by executing the WX instruction on the KOYO PLC. The MP3000 will receive the message when the KOYO PLC sends it.

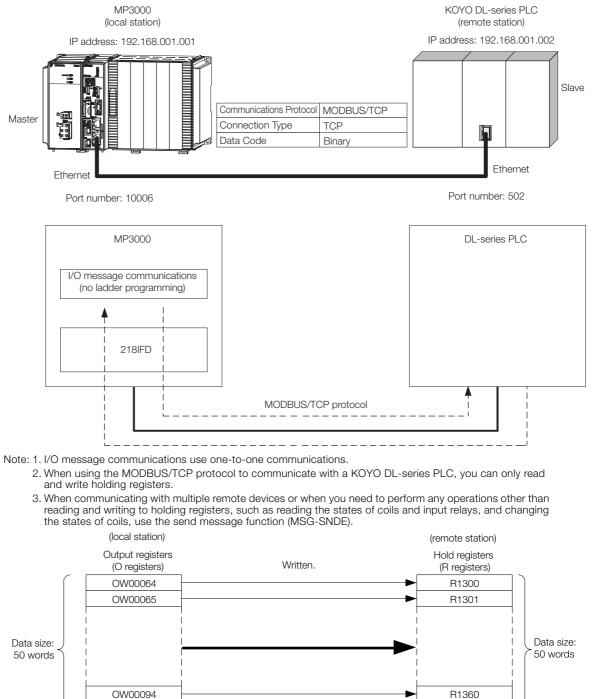
4.6.2 Using I/O Message Communications with the MP3000 as the Master

This section describes how to communicate with a KOYO PLC by using I/O message communications.

Setting Example

OW00095

The following figure illustrates how the contents of the OW00064 to OW00095 output registers in the MP3000 master are written to the R1300 to R1361 holding registers in the KOYO PLC slave.



R1361

MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	isAddress	Motion Register	Register(Input/Output)			
Module	Function Module/ Slave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size	
01 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD		뮮 Circuit No1	1		Input	0000 - 07FF[H]	2048	
□ □ □ CPU302(32)[]	03 ⊞ SVC32 2		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024	
☐ 00	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]				
	05 M-EXECUTOR						0C00 - 0C3F[H]	64	
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED[]								
02 UNDEFINED[]								
03 UNDEFINED									
02 UNDEFINED									
02 UNDEFINED									
03 UNDEFINED									
04 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

0 3		
Transmission Parameters Sta		
_Transmision Farameters —	Module Name Definition	
IP Address	92 . 168 . 1 . 1 . 1 . (0-255) Equipment name : CONTROLLER NAME	
Subnet Mask	55 🛨 255 🛨 0 🛨 (0-255)	
Gateway IP Address	Detail Definition	

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Select the [Enable] Option in the [I/O Message Communication] Area of the [Connection Parameter] Area.

6	VO Mess C Diesh • Enable	- a	Communication										
	Easy s Data up	-	_ <u>`</u>	ssible to set easily tha w _ ▼ Scan	t commun	icate the I/O i	nessage.						
	Rea Wr		Local Port	Node IP Address	Node Port	Connect Type	Protocol Type		Code	Detail			
	Re Wr					•		• •	*	Setting Setting			
	•											Þ	
			Hea	d register number			Head register number		data size				
CP	PU-201		iput disabl utput disal		W			00000	4	W	Node equipment		

4. Set the connection parameters.

et the connecti	on param						
0	2	3	4	5) (6		
I/O Message Communication C Disable • Enable							
Easy setting It is possil Data update timing Low	ble to set eas <mark>i</mark> ly tha Can	communicate	the I/O message.				
Read/ Loca Write Port	vode IP Address		nnect Type	Protocol Type	Code	Detail	
Read			•	•	-	Setting	
Write 10006 192	2.168.001.002	00502 TCP	MODBUS	/ TCP 🔽	BIN 👻	Setting	
•							Þ
Head re	egister number		Head regi	ster number	data size		
CPU-201	IW00000 4	w	Hold register (MW)		4	W	Node
🗌 output disable	OW00064 50	₩ ->	Hold register(4)	▼ 00001	50	W	equipment
			,				
	Î Î						
(97 8			10			
Entor "10006" in				-			

- ① Enter "10006" in the MP3000 [Local Port] Box.
- © Enter the following address for the remote device in the [Node IP Address] Box: 192.168.001.002.
- ③ Enter "502" in the [Node Port] Box.
- Select [TCP] in the [Connect Type] Box.
- Select [MODBUS/TCP] in the [Protocol Type] Box.
- © Select [BIN] in the [Code] Box.
- ⑦ Enter "OW0064" in the [Head register number] Box as the write data destination.
- Inter "50" in the [Data Size] Box as the size of data to write.
- Select [Low] in the [Data update timing] Box as the timing to update I/O data between the CPU
 Function Module and 218IFD.
- Inter "4X" as the register type and "00001" as the first address to write to on the remote device.
- Note: 1. In I/O message communications, a message is transmitted from separate ports if registers are both read and written. Therefore, the connected remote device must have two connections to receive both messages.
 - 2. The data update timing is the timing at which the CPU Function Module and 218IFD exchange data. Communications with the remote device are performed asynchronously. The data update timing therefore does not necessarily mean that the messages are sent to the remote device.

5. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as the master.

Setting the Remote Device (KOYO PLC)

Use the following procedure to set the KOYO DL-series PLC.

Information The DL-series PLCs are manufactured by KOYO Electronics Industries. Contact KOYO Electronics Industries for further information.

- 1. Start DirectSoft32.
- 2. Create a project.
- 3. Start NetEdit3.
- 4. Click the [ECOM Settings] Tab followed by the [General] Button in the [Configuration] Area to set the network parameters.

Parameter	Description				
Select the [Use the following IP settings]	Option before setting the following items.				
IP Address	192.168.1.2				
Subnet Mask	255.255.255.0				
Others	As required.				

5. Click the [ECOM Settings] Tab followed by the [Peer to Peer] Button in the [Configuration] Area to set the MODBUS/TCP parameters.

Parameter	Description				
RX/WX Device Number	1				
Select the [Modbus-TCP] Option before setting the following items.					
IP Address	192.168.1.1				
Port	10006				
Unit ID	0				

Note: Specify an IP address that is not in use by any other device on the same network. Check with your network administrator for unused IP addresses.

This concludes the setup. Set any other parameters as necessary, then transfer the data to the PLC.

Starting Communications

Use the following procedure to write the data in the output registers in the MP3000 to the holding registers in KOYO PLC.

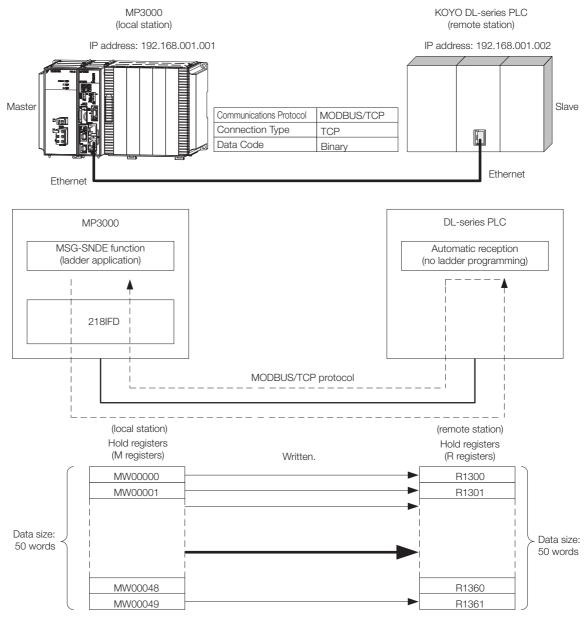
- **1.** Start receiving messages on the KOYO PLC. The system will automatically start the message reception operation. No further operation is required.
- **2.** Turn ON the power to the MP3000 to start transmitting messages. The system will automatically start the message transmission operation. No further operation is required.

4.6.3 Using the MSG-SNDE Function with the MP3000 as the Master

This section describes how to communicate with a KOYO DL-series PLC by using the MSG-SNDE function in the MP3000.

Setting Example

The following figure illustrates how the contents of the OW00000 to OW00049 output registers in the MP3000 master are written to the R1300 to R1361 holding registers in the KOYO PLC slave.



MP3000 Setup

Use the following procedure to set up the MP3000.

- Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.
- 1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Gircuit No/Axi	sAddress	Motion Register	Register(Input/Output)			
Module	Function Module/ Slave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size	
01 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD	·	묾 Circuit No1	1		Input OutPut	0000 - 07FF[H]	2048	
	03 ⊞ SVC32		🛥 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024	
☐ ☐ 00	04 표 SVR32		🛥 Circuit No3	1	9000 - 97FF[H]				
⊤ 803	05 M-EXECUTOR						0C00 - 0C3F[H]	64	
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED[-]								
02 UNDEFINED[-]								
03 UNDEFINED									
02 UNDEFINED									
02 UNDEFINED									
03 UNDEFINED									
04 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

003		
Transmissi <mark>on Parameters</mark> St.		
- Transmision Farameters -	Module Name Definition	_
IP Address	192 . 168 . 1 . 1 . (0-255) Equipment name : CONTROLLER NAME	
Subnet Mask	255 255 255 0 (0-255)	
Gateway IP Address	0	

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

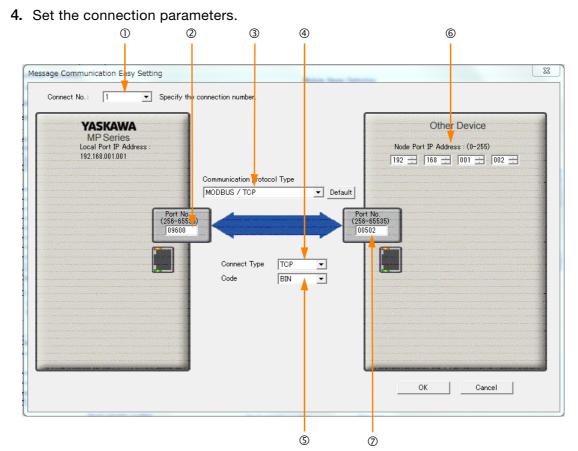
In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	Connection Parameter Message Communication Easy setting Easy setting Connections (C NO) 01-10 can be set to receive data automatically.										
		CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	_	
	- [01				-	•	•	Setting*		
	- [02				-	•	-	Setting*		
	- [03				-	-	-	Setting*		
	- [04				-	-	-	Setting*		
	- [05				-	-	-	Setting*		
	- [06				-	•	-	Setting*		
		07				-	-	-	Setting*	-	
•										· · · · · · · · · · · · · · · · · · ·	

The Message Communications Easy Setting Dialog Box will be displayed.



- ① Select [1] in the [Connect No.] Box.
- @ Enter "9600" in the [Port No.] Box for the MP-series Controller.
- ③ Select [MODBUS/TCP] in the [Communication Protocol Type] Box.
- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- ⑦ Enter "502" in the [Port No.] Box for the other device.

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly. The unit address and network address of the MP-series Machine Controller are always 00 hex.

The unit address and network address of the MP-series Machine Controller are always 00 hex. If communicating with FINS/UDP, select [UDP] in the [Connect Type] Box.

- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

Easy setting	_ Conne	llowing parameters for ctions(CNO)01-10 ca	n be set t	o receive data	automatically.					
CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type		Code	,	Detail	Noc
01	09600	192.168.001.002	00502	TCP 👻	MODBUS / TCP	-	BIN	9	Setting*	
02				-		-		-	Setting*	
03				-		-		4	Setting*	
04				-		-		•	Setting*	
05				-		-		•	Setting*	
06				-		-		٠	Setting*	
07				-	1	-		-	Setting*	

Using Ethernet Communications

8. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

			setting pa	rameter for SB000003 f	∎init MSG-SNDE fun or low scan :	tion during f and SB000001 f	irst scan a or high sca	fter power o n.		
	I F	'After Low SB000003 =	Scan Start	, Only 1 S	can ON' ==	'TRUE'				
					clear all	D registers				
NL 2							SETW	▲ [W] Dest DW00000	(W) Data 00000	[W] Width 00130
NL 2				se	t for connect	EXPRESSION				E 4
						'remote st DWOO110=1;	ation'=1 //using	connect i o	n No.1	
NL 2				se	t for functio	on code (PARAM EXPRESSION	12)			E 4
							0003; //	reading ho	ld register	
NL 2		set	for remote o	data address	low (PARAM14) and remote o	lata address	high (PARAM	(15)	e 4
- 2						🔢 'remote da	: //remoti ita addres	e data addı s high'=0	ress low (O) ress high (O)	
				set	for remote d	ata type (PARF	iM16)			
2						expression remote da	ita type'=	0 a data typ	e (M register	-)
					set for data	size (PARAM17			, in register	-
2 2					L (DADAW)		l; //data	size (50)		E 1
NL 2		S	et tor local	data address	S TOW (PHKHM2	0) and local c			A21)	E I
						'local dat DWOO121=0;	a address //local //local	data addro high'=0	ess low (O) ess high (O)	
NL 2				set	for local d	ata type (PARA EXPRESSION				E 4
						'local dat DWOO122=0;		data type	(M register)	
	END_IF					for all time				
1000			abort	1	if not comple					
	08000200	DB000201		[W]Set	[W]Count	eted in lus at	ter sending	command		DB00020A
	BOOO200	DB000201		[W]Set 01000	[W] Count DW00031	eted in lus ar	ter sending	command		DB00020A
se	end comman d)B00020A	— <u> </u> / —	TON [10ms]			red in lus af	ter sending	command		timeout DB000201
Se C	end comman d DBODO20A 	— <u> </u> / —	TON [10ms]			ered in lus ar	ter sending	command		timeout
- C	end comman d 0B00020A H H timeout	— <u> </u> / —	TON [10ms]				ter sending	command		timeout
Se C C	BO0020A d bB00020A timeout bB000212 error bB000201 d bB000201 d bB000201 d bbort	— <u> </u> / —	DB000211	01000	DW00031	nd in 80s afts		command		timeout DB000201 abort
	DB00020A d DB000212 DB000212 error DB000201 abort DB000201	— <u> </u> / —	DB000209	01000	DW00031			command		timeout DB000201 abort
	and comman d DB00020A timeout DB000212 error DB000201 d DB000201 DB000201 abort DB000201	— <u> </u> / —	DB000211	01000	DW00031			command		timeout DB000201 abort
	A comman and comman d bB00020A J comman bB000212 A comman error bB000201 J comman abort bB000201 J comman abort bB000201 bB000200 bB000200 bB000200 bB0000000 bB0000000 bB0000000000	abort	DB000203 waiting end	01000	DW00031			c onmand		timeout DB000201 abort DB000208 waiting
	And comman d comman d bB00020A d timeout bB000212 d bort bB000201 d bort bB000201 d bort bB000201 d bort bB000208 d brt bB000208 d brt bB000208	abort	DB000211 oomplete	01000 relesse : [W] Count DW00028	DW00031			e onmand		timeout DB000201 abort DB000208 waiting DB000209
	and comman d 0000020A i imeout i imeout 00000212 i imeout 0000201 i imeout 00000201 i imeout 0000201 i imeout 00000201 i imeout i i imeout i i imeout i i imeout i i imeout i i imeout i i i imeout i i i i i i i i i i i i i i i i i i i	abort	TON [10ms] DB000211 complete DB000209 waiting end ed	01000 release : [W]Count DW00028	DW00031	nd in 80s afte	r aborted			timeout DB000201 abort DB000208 waiting DB000209
	A comman d comman d bB00020A d timeout bB000212 d bort bB000201 d bort bB000201 d bort bB000201 d bort bB000208 d b bB000208 d b bB000000 d b bB0000000 d b bB0000000 d b bB0000000 d b bB00000000 d b bB0000000000000 d b bB00000000000000000000000000000000000	abort	TON [10ms] DB000211 complete DB000209 waiting end ed	01000 release : [W]Count DW00028	DW00031		r aborted			timeout DB000201 abort DB000208 waiting DB000209 waiting en- ed
	and comman d comman d bB00020A timeout bB000212 bB000201 bB000201 bB000201 bB000201 bB000201 bB000201 bB000208 bB0000208 bB0000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000208 bB000028 bB00028 bB00028 bB00028 bB00028 bB00028 bB0002	abort	TON [10ms] DB000211 complete DB000209 waiting end ed	01000 release : [W]Count DW00028	DW00031	nd in 80s afte	r aborted			timeout DB000201 abort DB000208 waiting DB000209 waiting en-
	and comman d comman d bB00020A 	abort	TON [10ms] DB000211 complete DB000209 waiting end ed	01000 release : [W]Count DW00028	DWD0031	nd in 80s afte	r aborted			timeout DB000201 abort DB000208 waiting DB000209 waiting en- ed

34/-		MSG-	SNDE
		B]Execute DB000200 send comma nd	[B]Busy DB000210 busy
		B]Abort DB000201 abort	[B]Complete DB000211 complete
		W]Dev-Typ 00016	[B] Error DB000212 error
		W]Pro-Typ 00001 W]Cir-No 00001	
	Γ	W]Ch-No OOOO1 A]Param DAOO100 message se	
	1	nd (extend ed) param-	
♦ finished normally	y		
7 35/- IF DB000211==TRUE;			
B DB000201		INC	[WLQ]Dest DW00024 count norm
			ally
³ BN7- END_IF ◆finished abnormal	l v		
<pre> 'error'=='TRUE' DB000212==TRUE; </pre>			
33/- IF DD000212IR0L,			
			[WLQ]Dest DW00025
$\frac{1}{2}$		INC	count abn
407- 2	STORE	INC WLFQD]Src DW00000	count abno rmally [WLFQD]Des DW00026 result (P)
40/- 2 2 HL 2 1/- 2	STORE	WLFQD]Src DW00000	count abno rmaily [WLFQD]Des DW00026 result (PA RAM00) [WLFQD]Dest DW00027 status (PF
407- 2 417- NL 2 NL 2 NL 2 NL 4 2	STORE	WLFQD]Src DWOOOOO VLFQD]Src	count abno rmaily [WLFQD]Des DW00026 result (PK RAM00) [WLFQD]Dest DW00027
407- 2 417- 417- NL 2 N	STORE IV	WLFQD]Src DWOOOOO VLFQD]Src	count abno rmaily [WLFQD]Dest DW00026 result (PF RAM00) [WLFQD]Dest DW00027 status (PF AM01)
40/- 2 HL 2 3 41/- HL 2 4 4 4 4 3 - END_IF - DB00020A DB00020B - treatment for times	STORE IV	WLFQD]Src DWOOOOO VLFQD]Src	cont abn rmally [WLF0D]Des DW00026 result (P) RAM00) [WLF0D]Des DW00027 status (PF AM01) DB000200
407- 2 2 Image: state stat	STORE IV	WLFQD]Src DWOOOOO VLFQD]Src	cont abn rmally [WLF0D]Des DW00026 result (P) RAM00) [WLF0D]Des DW00027 status (PF AM01) DB000200
407- 2 2 HL 2 HL 3 417- 4 2 4 2 4 2 5 447- END_IF • treatment for timeo 0 DB00020A 0 DB00020B • treatment for timeo • timeout on pulse	STORE IV	WLFQD]Src DWOOOOO VLFQD]Src	cont abn rmally [WLF0D]Des DW00026 result (Pr AMMOD] [WLF0D]Dest DW00027 status (PF AMO1) DB000220C timeout oc
40/- 2 41/- 41/- 2 4 4 4 4 4 4 4 4 4 4 4 4 4	STORE IV	WLFQD]Src DW00000 WLFQD]Src DW00001	count abn. rmally [WLF00]Dest DW00026 result (PI RAM00) [WLF00]Dest DW00027 status (PI AM01) DW00027 timeout oc urred [WL0]Dest DW00023
2 NL 2 2 3 NL 42/- 2 4 2 5 A2/- 5 A2/- 6 A2/- 7/- IF 1 IF 1 IF 1 IF	STORE IV	WLFOD]Sro DW00000 WLFOD]Sro DW00001	count abnc rmally [WLFQD]Dest DW00028 result (PF RAM00) [WLFQD]Dest DW00027 status (PF AM01) DB000200C timeout oc urred [WLQ]Dest DW00028 timeout oc

9. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

Setting the Remote Device (KOYO PLC)

Refer to the following section for details on KOYO DL-series PLC settings.

Starting Communications

Use the following procedure to write the data in the hold registers in the MP3000 to the I/O bits in the CPU Unit of the KOYO PLC.

1. Start receiving messages on the KOYO PLC.

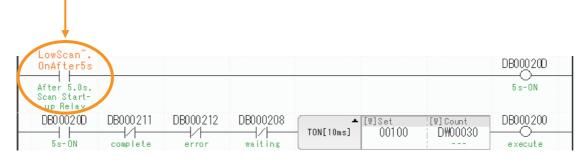
The system will automatically start the message reception operation. No further operation is required.

2. Turn ON the power to the MP3000 to start transmitting messages.

The ladder program example is designed to turn ON the Execute Bit (DB000200) in the message send function after six seconds has elapsed from when the low-speed scan (or high-speed scan) starts. Thereafter, the message send function is executed every second by alternating the Execute Bit (DB000200) between OFF and ON each time the message send function completes execution normally or with an error.

Note: The MP3000 will establish the TCP connection when it starts execution of the MSG-SNDE function.

SB00003A: Turns ON 5 seconds after start.



The message functions are used in user communications applications for the MODBUS/TCP protocol. You can send and receive message data by setting the necessary input items and parameters for the message functions.

Inputs and Outputs for the MSG-SNDE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2 Abort		B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Execute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16, 218IF = 6
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the MODBUS/ TCP protocol. MEMOBUS is automatically converted to MODBUS/TCP inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the MODBUS/TCP protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the MODBUS/TCP protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD, 218IF = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel number for the same connection. You can use the same channel number as long as multiple functions are not executed at the same time. 218IFB, 218IFD, 218IF = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the parame- ter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

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I/O Definitions	No.	Name	I/O Designation	Meaning	Description			
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.			
Output Items	2	Com- plete B-VAL Process completed.			Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.			
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{e} \blacklozenge Error \text{ on page 2-8}$			

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.	F	 Processing Result (PARAM00) on page 2- 9
01		Status	Gives the status of the current function.	æ	 Status (PARAM01) on page 2-10
02		Detail Error Code, Lower Word	Gives the details of an error.	(F	◆ Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word			<i>PARAM03)</i> on page 2- 11
04	Out- puts	Status 1	Gives the communications status.	Ē	Status 1 (PARAM04) on page 2-12
05	puto	Status 2	Gives status information on the most recent error.	(F	◆ Status 2 (PARAM05) on page 2-12
06		Status 3	Gives the information of the send pass counter.	(F	◆ Status 3 (PARAM06) on page 2-12
07		Status 4	Gives the information of the receive pass counter.	(F	◆ Status 4 (PARAM07) on page 2-12
08		Status 5	Gives the information of the error counter.	(F	◆ Status 5 (PARAM08) on page 2-13
09		Status 6	Not used for the MODBUS/TCP protocol.		_

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No.	I/O	Meaning	Description		Reference Page
10		Connection Number	Sets the connection number used to deter- mine the remote station.	(F	◆ Connection Num- ber (PARAM10) on page 2-13
11	-	Option	Not used for the MODBUS/TCP protocol.		-
12		Function Code	Sets the code of the function in the MODBUS/ TCP protocol.	(F	◆ Function Code (PARAM12) on page 4- 182
13		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	E	◆ Reserved for System (PARAM13) on page 2-14
14		Remote Station Data Address, Lower Word	Sets the data address to read/write at the remote station. (Use word addresses for reg-	Ŧ	◆ Remote Station Data Address (PARAM14 and
15		Remote Station Data Address, Upper Word	isters, bit addresses for relays or coils.)		<i>PARAM15</i>) on page 2- 15
16		Remote Station Register Type	Sets the register type to read/write at the remote station.	Ŧ	◆ Remote Station Register Type (PARAM16) on page 4- 183
17	Inputs	Data Size	Sets the size of the data to read/write. (Use word sizes for registers, bit sizes for relays or coils.)	(Jacobian States) Alternational Alternational Alternational Alternational Alternational Alternational Alternational Alternational Al	◆ Data Size (PARAM17) on page 4- 156
18		Remote CPU Module Number	Sets the CPU number at the remote station.	æ	♦ Remote CPU Mod- ule Number (PARAM18) on page 2- 17
19		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	स्त्रि	◆ Reserved for System (PARAM19) on page 2-17
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word addresses for	मि	◆ Local Station Data Address (PARAM20
21		Local Station Data Address, Upper Word	registers, bit addresses for relays or coils.)		<i>and PARAM21)</i> on page 2-18
22		Local Station Register Type	Sets the register type of the read/write data to store in the local station.	मि	◆ Local Station Register Type (PARAM22) on page 4-156
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	F	◆ Reserved for System (PARAM23) on page 2-19
24		For system use	This parameter is used by the system. It con- tains the channel number of the communica- tions buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	الله الله	◆ Reserved for System (PARAM24) on page 2-19
25	_	Reserved for system.			
26		Reserved for system.	These parameters are used by the system.	(F	♦ Reserved for Sys- tem (PARAM25 to
27		Reserved for system.	Do not change the value of these parameters from a user program or by any other means.		PARAM28) on page 2- 19
28		Reserved for system.			

Function Code (PARAM12)

Set the function code to send.

You can use the functions that are registered to the function codes.

Function Code	Target Data	Function	Registers When Acting as the Master			
Code	Туре	Function	Send Registers	Receive Registers		
00 hex	-	Not used for the MODBUS/TCP protocol.				
01 hex	В	Reads the states of coils.				
02 hex	В	Reads the states of input relays.	-			
03 hex	W	Reads the contents of hold registers.				
04 hex	W	Reads the contents of input registers.	-			
05 hex	В	Changes the state of a single coil.				
06 hex	W	Writes to a single hold register.	-			
07 hex	1	Not used for the MODBUS/TCP protocol.	-			
08 hex	1	Performs a loopback test.	-			
09 hex	W	Reads the contents of hold registers (extended).	М	М		
0A hex	W	Reads the contents of input registers (extended).	-			
0B hex	W	Writes to hold registers (extended).	-			
0C hex	1	Not used for the MODBUS/TCP protocol.	-			
0D hex	W	Reads the contents of non-consecutive hold reg- isters (extended).	_			
0E hex	W	Writes the contents of non-consecutive hold reg- isters (extended).				
0F hex	В	Changes the states of multiple coils.				
10 hex	W	Writes to multiple hold registers.				
4341 hex	В	Reads the states of bits.				
4345 hex	В	Changes the state of a single bit.				
4346 hex	W	Writes to a single register.				
4349 hex	W	Reads the contents of registers.	S, M, G, I, or O	More		
434B hex	W	Writes to multiple registers.	3, M, G, I, O O	M or G		
434D hex	W	Reads the contents of non-consecutive registers.				
434E hex	W	Writes the contents of non-consecutive registers.				
434F hex	В	Changes the states of multiple bits.				

Note: B: Bit data, W: Integer data

Remote Station Register Type (PARAM16)

Set the register type in the remote station. This parameter is valid when using function codes $43\Box\Box$ hex.

Register Type Value Type		Remarks			
0 M		Sets the target data type to MB for bits and MW for words.			
1 G		ets the target data type to GB for bits and GW for words.			
2 I		Sets the target data type to IB for bits and IW for words.			
3 O		Sets the target data type to OB for bits and OW for words.			
4 S		Sets the target data type to SB for bits and SW for words.			
5 or higher –		Not used for the MODBUS/TCP protocol.			

Enter the register type as a decimal or hexadecimal number.

The register types that can be used depend on whether you are reading or writing. The following table lists the combinations of register types.

Function Code	Applicable Register Types
4341 or 4349 hex	M, G, I, O, or S
4345, 4346, 434B, or 434F hex	M, G, O, or S
434D hex*	M or G
434E hex*	M or G

* The address table at the remote station is stored in registers in the local station. The contents of the M, G, I, O, and S registers in the remote station can be read by specifying the register type in the address table at the remote station.

For more information on remote station address tables, refer to the following sections.

Function Code: 434D Hex on page 6-17

Function Code: 434E Hex on page 6-19

Inputs and Outputs for the MSG-RCVE Function

I/O Definitions	No.	Name	I/O Decignation	Meaning	Description
Deminions	1	Execute	Designation B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD, 218IF = 6
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the Extended MEMOBUS protocol. MEMOBUS is automatically converted to Extended MEMOBUS inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the Extended MEMOBUS protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the Extended MEMOBUS protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD, 218IF = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same connection. You can use the same channel number as long as multiple func- tions are not executed at the same time. 218IFB, 218IFD, 218IF = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 52 words starting from the specified first word are automatically used for the param- eter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

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I/O Definitions	No.	Name	I/O Designation	Meaning	Description
Output Items	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
	2	Com- plete	B-VAL	Process completed.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{e} \notin Error \text{ on page 2-23}$

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.	۲.	◆ Processing Result (PARAM00) on page 2- 25
01		Status	Gives the status of the current function.	(F	◆ Status (PARAM01) on page 2-25
02		Detail Error Code, Lower Word	Gives the details of an error.	(F	(PARAM02 and
03		Detail Error Code, Upper Word			<i>PARAM03)</i> on page 2- 27
04	Out- puts	Status 1	Gives the communications status.	(F	◆ Status 1 (PARAM04) on page 2-27
05	puto	Status 2	Gives status information on the most recent error.	(F	◆ Status 2 (PARAM05) on page 2-28
06		Status 3	Gives the information of the send pass counter.	(F	◆ Status 3 (PARAM06) on page 2-28
07		Status 4	Gives the information of the receive pass counter.	F	◆ Status 4 (PARAM07) on page 2-28
08		Status 5	Gives the information of the error counter.	(F	◆ Status 5 (PARAM08) on page 2-28
09		Status 6	Not used for the MODBUS/TCP protocol.		_
10	Input	Connection Number	Sets the connection number used to deter- mine the remote station.	٦.	◆ Connection Number (PARAM10) on page 2- 29
11	I/O	Option	Not used for the MODBUS/TCP protocol.		_
12	Output	Function Code	Gives the function associated with reading or writing that was received from the remote station as the function code.	(F	◆ Function Code (PARAM12) on page 2- 29
13	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	۲.	◆ Reserved for System (PARAM13) on page 2- 30

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No.	I/O	Meaning	Description		Reference Page
14		Data Address, Lower Word	Gives the first address of the data that was	(F	♦ Data Address
15		Data Address, Upper Word	requested by the remote station.		(PARAM14 and PARAM15) on page 2- 30
16	Out- puts	Register Types	Gives the register type that was requested by the remote station.	R	◆ Register Type (PARAM16) on page 2- 31
17		Data Size	Gives the data size that was requested by the remote station.	(F	◆ Data Size (PARAM17) on page 2-31
18		Remote CPU Module Number	Not used for the MODBUS/TCP protocol.	R	◆ Remote CPU Module Number (PARAM18) on page 2-31
19	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	F	◆ Reserved for System (PARAM19) on page 2- 31
20		Coil Offset, Lower Word	Sets the offset word address for a coil	(F	♦ Coil Offset (PARAM20 and PARAM21) on page
21		Coil Offset, Upper Word	(MB).		2-31
22		Input Relay Offset, Lower Word	Sets the offset word address for an input	(F	◆ Input Relay Offset (PARAM22 and
23		Input Relay Offset, Upper Word	relay (IB).		<i>PARAM23</i>) on page 2- 32
24		Input Register Offset, Lower Word	Sets the offset word address for an input	(Page	Input Register Offset (PARAM24 and
25		Input Register Offset, Upper Word	register (IW).		<i>PARAM25)</i> on page 2- 32
26		Hold Register Offset, Lower Word	Sets the offset word address for a hold	F	♦ Hold Register Offset (PARAM26 and
27		Hold Register Offset, Upper Word	register (MW).		<i>PARAM27)</i> on page 2- 32
28		Data Relay Offset, Lower Word	Sets the offset word address for a data	F	◆ Data Relay Offset (PARAM28 and
29	Inputs	Data Relay Offset, Upper Word	relay (GB).		<i>PARAM29)</i> on page 2- 32
30		Data Register Offset, Lower Word	Sets the offset word address for a data	(F	◆ Data Register Offset (PARAM30 and
31		Data Register Offset, Upper Word	register (GW).		<i>PARAM31)</i> on page 2- 32
32	-	Output Coil Offset, Lower Word	Sets the offset word address for an output	(F	
33		Output Coil Offset, Upper Word	coil (OB).		
34		Output Register Offset, Lower Word	Sets the offset address for an output register (OW).		◆ Output Register Off- set (PARAM34 and PARAM35) on page 2- 32
35		Output Register Offset, Upper Word			
36		M Register Writing Range LO, Lower Word	Sets the first address of the writing range for hold register coils.		♦ M Register Writing Range LO (PARAM36
37		M Register Writing Range LO, Upper Word			and PARAM37) on page 2-33

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No.	I/O	Meaning	Description		Reference Page
38	-	M register Writing Range HI, Lower Word	Sets the last address of the writing range	(F	♦ M Register Writing Range HI (PARAM38
39	-	M Register Writing Range HI, Upper Word	for hold register coils.		and PARAM39) on page 2-33
40		G register Writing Range LO, Lower Word	Sets the first address of the writing range	Ē	
41		G Register Writing Range LO, Upper Word	for data register data relays.		and PARAM41) on page 2-33
42	Inputs	G Register Writing Range HI, Lower Word	Sets the last address of the writing range	Ē	
43	inputs	G Register Writing Range HI, Upper Word	for data register data relays.		and PARAM43) on page 2-33
44		O Register Writing Range LO, Lower Word	Sets the first address of the writing range	(F	♦ O Register Writing Range LO (PARAM44
45		O Register Writing Range LO, Upper Word	for output registers.		and PARAM45) on page 2-33
46		O Register Writing Range HI, Lower Word	Sets the last address of the writing range for output registers.		◆ O Register Writing Range HI (PARAM46
47		O Register Writing Range HI, Upper Word			and PARAM47) on page 2-34
48	_	For system use	This parameter is used by the system. It contains the channel number of the com- munications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the sys- tem.	æ]	 ◆ For System Use (PARAM48) on page 2- 34
49		Reserved for system.	These parameters are used by the system.	F.	Reserved for System
50		Reserved for system.	Do not change the value of these parame- ters from a user program or by any other		(PARAM49 to PARAM51) on page 2- 34
51		Reserved for system.	means.		

4.7 Communications with a JTEKT PLC (TOYOPUC Protocol)

When using Ethernet communications between the MP3000 and a JTEKT PLC, use the TOYO-PUC protocol as the communications protocol. The TOYOPUC protocol allows the master to read and write to the slave registers.

This section describes communications when the MP3000 acts as a slave and as the master.

When the MP3000 acts as a slave, communications can take place using automatic reception or using the MSG-RCVE function.

When the MP3000 acts as the master, communications can take place using the MSG-SNDE function.

The communications modules which can perform communications with a JTEKT PLC are 218IFD and 218IFB.

4.7.1 Using Automatic Reception with the MP3000 as a Slave

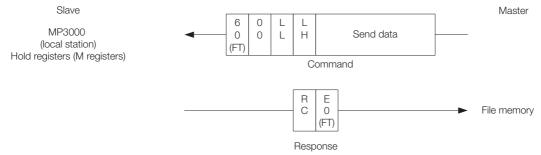
This section describes how to communicate with a JTEKT PLC by using automatic reception.

When a JTEKT PLC is used as the master to write data to the file memory in the 2PORT-EFR, you will need to create a ladder application that uses the SPW instruction.

Information The SPW instruction is used to write data to the file memory in the 2PORT-EFR. Refer to the following manual for details.

Communications Format

The MP3000 acts as a slave and receives data and returns a response to the master by using the communications formats for file memory commands that are shown below. Execution of the MSG-RCVE function in the MP3000 ends when a response is returned.



Note: In the figure shown above, the Ethernet header, TCP/UDP header, FCS and other items have been omitted. Only the data portion of the communications format is shown.

File Memory and Corresponding Registers in the MP3000

The following table shows the relationship between registers in the MP3000 and the send data area of file memory in the 2PORT-EFR.

Regardless of the connection number of the 2PORT-EFR, the MP3000 stores data from the first address (MW00000) of the hold registers by default. To store the data in a specific hold register, use the automatic reception offset setting.

Data Range							
	2PORT-EFR Module	MP3000					
File memory Data Area	File Memory Send/Receive Data Area Addresses	Hold Register Data Area Addresses					
Connection 1	1000: Data size, 1002 to 17FD: Send data						
Connection 2	2000: Data size, 2002 to 27FD: Send data						
Connection 3	3000: Data size, 3002 to 37FD: Send data						
Connection 4	4000: Data size, 4002 to 47FD: Send data	Storage area*: MW00000 to MW02043					
Connection 5	5000: Data size, 5002 to 57FD: Send data						
Connection 6	6000: Data size, 6002 to 67FD: Send data						
Connection 7	7000: Data size, 7002 to 77FD: Send data						
Connection 8	8000: Data size, 8002 to 87FD: Send data						

* The automatic reception offset allows you to make any address between MW00000 and MW65534 the first address.

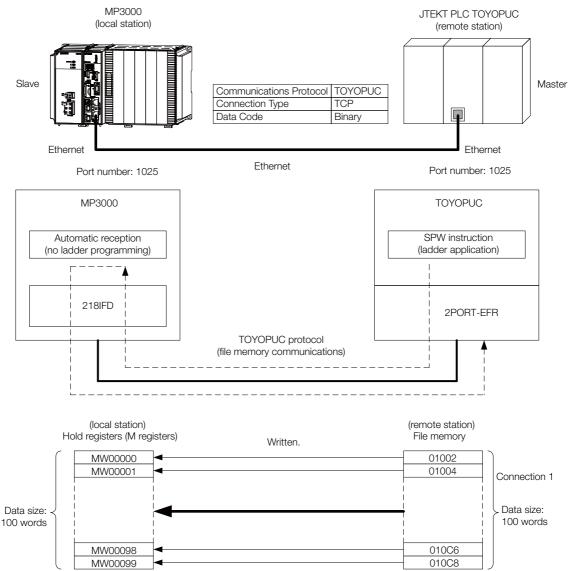
Transfer Size

The following table lists the data sizes that can be received in a single file memory command when using automatic reception.

Applicable Model	Data size
MP3000	1 to 1,022 words Specify the number of whole words.

Setting Example

The following figure illustrates how the contents of the 1002 to 10C9 file memory addresses in the JTEKT PLC master are written to the MW00000 to MW00099 hold registers in the MP3000 slave.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register	Register(Input/Output)				
Module	Function Module/ Slave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size		
01 [CPU-302(32axes)] :										
	01 CPU									
	02 218IFD		뮮 Circuit No1	1		Input	0000 - 07FF[H]	2048		
⊆ 00 ⓐ CPU302(32)[]	08 ⊞ SVC32 🕄		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024		
	04 🛨 SVR32		- ∰ Circuit No3	1	9000 - 97FF[H]					
	05 M-EXECUTOR						0C00 - 0C3F[H]	64		
	06 UNDEFINED									
	07 UNDEFINED									
01 UNDEFINED[-]									
02 UNDEFINED[-]									
03 UNDEFINED										
02 UNDEFINED										
02 UNDEFINED										
03 UNDEFINED										
04 UNDEFINED										

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

123)					
Transmission Parameters	Status					
-Transmision Paramete	rs					
IP Address	:	192 <u> </u>	168 🔆	1 🗄 - 1	: (0-255)	Module Name Definition Equipment name : CONTROLLER NAME
Subnet Mask	:	255 🕂	255 🚊	255 🕂 0	(0-255)	
Gateway IP Address	s :	0 🗄 .	0		(0-255)	Detail Definition

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

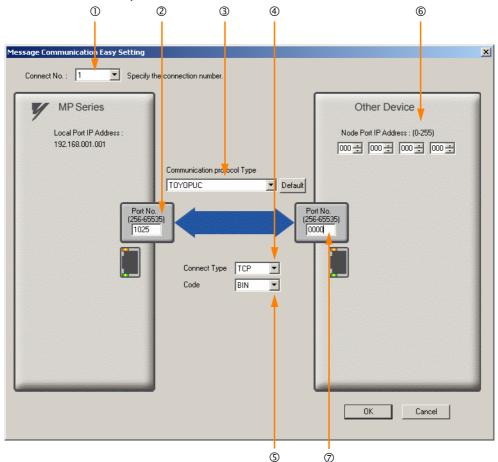
③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	Connection Parameter Message Communication Ihe following parameters for message communications can be easily set. Easy setting Connections(C NO) 01-10 can be set to receive data automatically.									
	GNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>	
	01				-	•	-	Setting*		
	02				-	-	-	Setting*		
	03				-	-	-	Setting*		
	04				-	-	•	Setting*		
	05				-	-	-	Setting*		
	06				-	-	-	Setting*		
	07				-	-	-	Setting*	-	
•	· · · ·						1			

The Message Communications Easy Setting Dialog Box will be displayed.

4. Set the connection parameters.



- ① Select [1] in the [Connect No.] Box.
- @ Enter "1025" in the [Port No.] Box for the MP-series Controller.
- ③ Select [TOYOPUC] in the [Communication Protocol Type] Box.
- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 000.000.000.000.
- \oslash Enter "0000" in the [Port No.] Box for the other device.

Note: 1. When using automatic reception, do not use the MSG-SNDE and MSG-RCVE functions on connection 01. Automatic reception for connection 01 is set to [Enable] by default.

- The settings in the above screen capture will open an unpassive connection because the remote station port and IP address are set to 0. To open a full passive connection, enter a port number and IP address for the remote device in steps (6) and (7).
- 3. If communicating by UDP, select [UDP] in the [Connect Type] Box.
- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.
 - Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

ection Parame sage Commu Easy setting	nication — a The fo	bllowing parameters for actions(CNO)01-10 car	message n be set to	communicat preceive da	ion ata	s can be easily set. automatically.					
CNO	Local Port	Node IP Address	Node Port	Connect Type	t	Protocol Type		Code		Detail	
01	01025	000.000.000.000	00000	TOP	•	ТОҮОРИС 🗖	-	BIN 🕒		Setting*	
02					•		•	•	-	Setting*	
03					Ŧ		•	•	•	Setting*	
04					•		•	•	•	Setting*	
05					Ŧ		•	•	•	Setting*	
06					•		•	•	•	Setting*	
07					Ŧ		•	•	-	Setting*	

- 8. Select the [Enable] Option in the Automatically Reception Tab Page and then click the [OK] Button.

Detail Setting	
Automatically Reception	
C Disable Unable to automated protocol type is no o	ed reception, when the control sequence.
Transmission Buffer Channel	
Slave I/F Register Settings	Head REG
Readout of Input Relay	IW00000
Readout of Input Register	IW00000
Readout / Write-in of Coil	MW00000
Readout / Write-in of Hold Register	MW00000
Readout / Write-in of Data Relay	GW00000
Readout / Write-in of Data Register	GW00000
Readout / Write-in of Output Coil	OW00000
Readout / Write-in of Output Register	OW00000
Write - in width of Coil/Hold Register	LO: MW00000
	HJ: MW1048575
Write - in width of Data Relay/Register	LO: GW00000
	HE GW2097151
Write - in width of Output Coil/Register	LO: 0W00000
	HI OW17FFF
Automatic input processing delay time 0	0 ms (0-100)
The influence on a low-speed scanning or according to this parameter. [Attention] It is not in the setting of the period of an automatic reception.	í I
	OK Cancel

Note: Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.

9. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as a slave.

Setting the Remote Device (JTEKT PLC)

Use the following procedure to set up the JTEKT TOYOPUC PLC.

Information TOYOPUC PLCs are manufactured by JTEKT Corporation. Refer to the following manual for details.

- 1. Set the Ethernet settings and baud rate using the DIP switch on the 2PORT-EFR Module.
- 2. Start the PCWIN.
- **3.** Set up the I/O Module. The identification code for a 2PORT-EFR module that has been set up to use Ethernet communications is "B3".
- 4. Set the Link Module name. In the Link Parameter Dialog Box, select the rack number and slot number to assign to the 2PORT-EFR Module, and set the Link Module name to [Ethernet].
- 5. Set the communications parameters.

Table 4.20	Ethernet Settings Example
------------	---------------------------

Parameter	Description
Own Node IP Address	192.168.1.2
Connection 1	Use
Open Protocol	TCP Active Open
Own Node Port No.	1025
Other Node Table No.	1

Table 4.21 Other Node Table Settings Example

Parameter	Description
Table 1	Use
Other Node IP Address	192.168.1.1
Other Node Port No.	1025

Table 4.22 Timers Settings Example

Parameter	Description
Reset Wait Resending Times	As required.
Non-Reception Timer	As required.
Response Timer	As required.
Resending Timer (Data)	As required.
Resending Timer (SYN/FIN)	As required.
Close Timer	As required.
Packet Alive Time	As required.
IP Assembly Timer	As required.

Table 4.23 Sub-Net Mask and Gateway IP Address Settings Example

Parameter	Description
Subnet Mask	255.255.255.0
Gateway IP Address	As required.

Note: When using automatic reception on a TCP connection, set the open protocol setting on the 2PORT-EFR module to [TCP Active Open]. The MP3000 is capable of opening a TCP connection as a specified passive node or a non-specified passive node.

6. Create a ladder program to send data to the send data area in the file memory on network connection 1.

Note: Refer to the following manual for information on ladder programming using the SPW instruction.

This concludes the setup.

Starting Communications

Use the following procedure to write the data in the file memory in the JTEKT PLC to the hold registers in the MP3000.

- 1. Turn ON the power to the MP3000 to start receiving messages. The system will automatically start the message reception operation. No further operation is required.
- 2. Start the processing to open connection 1 from the JTEKT PLC to start data transmissions.

Note: The MP3000 will wait for the TCP connection after it starts the automatic reception operation. Therefore, the power supply to the MP3000 must be turned ON before the power supply to the JTEKT PLC.

4.7.2 Using the MSG-RCVE Function with the MP3000 as a Slave

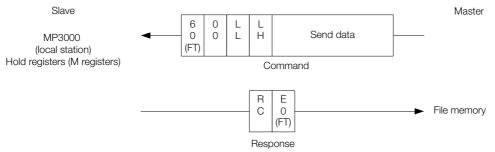
This section describes how to communicate with a JTEKT PLC by using the MSG-RCVE function.

When a JTEKT PLC is used as the master to write data to the file memory in the 2PORT-EFR, you will need to create a ladder application that uses the SPW instruction.

Information The SPW instruction is used to write data to the file memory in the 2PORT-EFR. Refer to the following manual for details.

Communications Format

The MP3000 acts as a slave and receives data and returns a response to the master by using the communications formats for file memory commands that are shown below. Execution of the MSG-RCVE function in the MP3000 ends when a response is returned.



Note: In the figure shown above, the Ethernet header, TCP/UDP header, FCS and other items have been omitted. Only the data portion of the communications format is shown.

File Memory and Corresponding Registers in the MP3000

The following table shows the relationship between registers in the MP3000 and the send data area of file memory in the 2PORT-EFR.

Regardless of the connection number of the 2PORT-EFR, the MP3000 stores data from the first address (MW00000) of the hold registers by default. To store the data in a specific hold register, use the hold register offset parameters (PARAM26 and PARAM27) in the MSG-RCVE function. Thus, if PARAM26 and PARAM27 are set to 10,000, the data sent from the 2PORT-EFR will be stored in the registers starting from MW10000.

	Data Range	
	2PORT-EFR Module	MP3000
File memory	File Memory	Hold Register Data Area Addresses
Data Area	Send/Receive Data Area Addresses	-
Connection 1	1000: Data size, 1002 to 17FD: Send data	
Connection 2	2000: Data size, 2002 to 27FD: Send data	
Connection 3	3000: Data size, 3002 to 37FD: Send data	
Connection 4	4000: Data size, 4002 to 47FD: Send data	Storage area*: MW00000 to MW01021
Connection 5	5000: Data size, 5002 to 57FD: Send data	Storage area . WW00000 to WW01021
Connection 6	6000: Data size, 6002 to 67FD: Send data	
Connection 7	7000: Data size, 7002 to 77FD: Send data	
Connection 8	8000: Data size, 8002 to 87FD: Send data	

* The hold register offset parameter in the MSG-RCVE function allows you to make any address between MW00000 and MW65534 the first address.

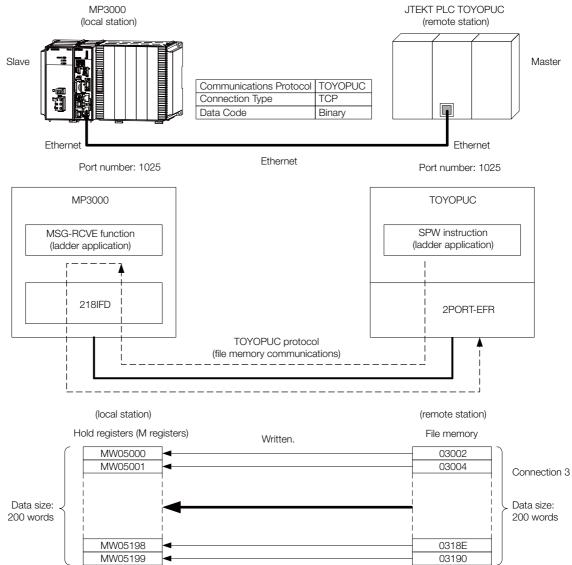
Transfer Size

The following table lists the data sizes that can be received in a single file memory command when using the MSG-RCVE function.

Applicable Model	Data size
MP3000	1 to 1,022 words Specify the number of whole words.

Setting Example

The following figure illustrates how the contents of 200 words from the 3002 to 3191 file memory addresses in the JTEKT PLC master are written to the MW05000 to MW05199 hold registers in the MP3000 slave.



Using Ethernet Communications

MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	isAddress	Motion Register	Register(Input/Output)				
Module	Function Module/ Slave	otatus	Start	supied circu	Motion Register	Disabled	Start – End	Size		
01 [CPU-302(32axes)] :										
	01 CPU									
	02 218IFD	·	몲 Circuit No1	1		Input	0000 - 07FF[H]	2048		
≘ 00	08 ⊞ SVC82 2		💷 Circuit No1	1	8000 - 87FF[H]	Input 📄 OutPut	0800 - 0BFF[H]	1024		
은 00 () CPU302(32)[] 통 문 응	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]					
-303	05 M-EXECUTOR	S					0C00 - 0C3F[H]	6		
	06 UNDEFINED									
	07 UNDEFINED									
01 UNDEFINED[]									
02 UNDEFINED[]									
08 UNDEFINED										
02 UNDEFINED										
02 UNDEFINED										
03 UNDEFINED										
04 UNDEFINED										

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

123		
Transmission Parameters S		
- Transmision Farameters -		
IP Address	192 🖶 · 168 🚍 · 1 🚔 · 1 🚔 (0-255) Module Name Definition Equipment name : CONTROLLER NAME	-
Subnet Mask	255	
Gateway IP Address	0	

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	onnection Parame Message Commu Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message o be set to	communication receive data	s can be easily set. automatically.			
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u>^</u>
	01				-	•	-	Setting*	
	02				-	-	-	Setting*	
	03				-	-	-	Setting*	
	04				-	-	-	Setting*	
	05				-	-	-	Setting*	
	06				-	-	-	Setting*	
	07				-	-	-	Setting*	-
•	· · · ·						I		

The Message Communications Easy Setting Dialog Box will be displayed.

- 4. Set the connection parameters. 6 3 4 n × Connect No. : 1 Specify the connection number **MP** Series Other Device Local Port IP Address Node Port IP Address : (0-255) 192.168.001.001 000 ÷ 000 ÷ 000 ÷ 000 ÷ Communication protocol Type TOYOPUC 💌 Default Port No. (256-65535) Port No (256-65535) 1025 0000 Connect Type TCP • BIN • Code ΟK Cancel 5 Ø
 - ① Select [1] in the [Connect No.] Box.
 - @ Enter "1025" in the [Port No.] Box for the MP-series Controller.
 - ③ Select [TOYOPUC] in the [Communication Protocol Type] Box.
 - ④ Select [TCP] in the [Connect Type] Box.
 - Select [BIN] in the [Code] Box.
 - © Enter the following address in the [Node Port IP Address] Boxes for the other device: 000.000.000.000.
 - ⑦ Enter "0000" in the [Port No.] Box for the other device.
 - Note: 1. Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.
 - 2. The settings in the above screen capture will open an unpassive connection because the remote station port and IP address are set to 0. To open a full passive connection, enter a port number and IP address for the remote device in steps (6) and (7).
 - 3. If communicating by UDP, select [UDP] in the [Connect Type] Box.
- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.
 - Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

CNO	Local Port	Node IP Address	Node Port	Connec Type	t	Protocol Type		Code	,	Detail	
01	01025	000.000.000.000	00000	TCP	-	TOYOPUC	٠	BIN	-	Setting*	
02					-		•		•	Setting*	
03					•		4		•	Setting*	
04					•		٠		•	Setting*	
05					•		٠		•	Setting*	
06					•		٠		•	Setting*	
07					•		٠		•	Setting*	

8. Select the [Disable] Option in the Automatically Reception Tab Page and then click the [OK] Button.

Detail Setting	ĺ 🗵						
Automatically Reception							
Disable D							
Transmission Buffer Channel 1							
Slave L/F Register Settings	Head REG						
Readout of Input Relay	IW00000						
Readout of Input Register	IW00000						
Readout / Write-in of Coil	MW00000						
Readout / Write-in of Hold Register	MW00000						
Readout / Write-in of Data Relay	GW00000						
Readout / Write-in of Data Register	GW00000						
Readout / Write-in of Output Coil	OW00000						
Readout / Write-in of Output Register	OW00000						
Write - in width of Coil/Hold Register	D: MW00000						
н	E MW1048575						
Write - in width of Data Relay/Register LC	D: GW00000						
н	E GW2097151						
Write - in width of Output Coil/Register	D: 0W00000						
H	B OW17FFF						
Automatic input processing delay time	ms (0-100)						
The influence on a low-speed scanning can be adjusted according to this parameter. [Attention] It is not in the setting of the communication period of an automatic reception.							
	OK Cancel						

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

9. Create a ladder program for the MSG-RCVE function. A ladder program example is shown below.

	■ initializing setting parameter for MSG-FEVE function during first scan after power on. SB000003 for low scan and SB000001 for high scan. After Low Scan Start, Only 1 Scan ON' == 'TRUE'
0/-	SB000003 == TRUE; clear all D registers
1 NL	Image: Set w Image: Set w<
1/- 2	set for connection No. (PARAMID)
2 2/- 2	
27-2	'DW00110'=1 DW00110=1; //using connection No.1
	set for offset (PARAM20 to PARAM35)
3 3/- 2	EXPRESSION P
	'DW00120'=0 DW00120=0; //coil offset MB low (0)
	'DW00121'=0 DW00121=0; //coil offset MB high (0)
	'DW00122'=0 DW00122=0; //input relay offset IB low (0)
	'DW00123'=0 DW00123=0; //input relay offset IB high (O)
	'DW00124'=0 DW00124=0; //input register offset IW low (0)
	'D₩00125'=0 D₩00125=0; //input register offset IW high (O)
	'DW00126'=0 DW00128=0; //hold register offset MW low (0)
	'DW00127'=0 DW00127=0; //hold register offset MW high (0)
	'DW00128'=0 D <u>W001</u> 28 <u>=</u> 0; //data relay offset GB low (0)
	'D₩00129'=0 D₩00129=0; //data relay offset GB high (0)
	'DW00130'=0 DW00130=0; //data register offset GW low (0)
	'DW00131'=0 DW00131=0; //data register offset GW high (0)
	'DW00132'=0 DW00132=0; //output coil offset OB low (0)
	'DW00133'=0 DW00133=0; //output coil offset OB high (0)
	'D₩00134'=0 D₩00134=0; //output register offset OW low (O)
	'D₩00135'=0 D₩00135=0; //output register offset OW high (0)
	M writing range (PARAM36 to PARAM38)
4 4/- 2	EXPRESSION
	DWD0136=0x000; //M writing range LO low 'DW00137'=0x000
	DW00137=0x000; //M writing range LO high 'DW00138'=0xFFFF
	DW00138=0xFFF; //M writing range HI low 'DW00139'=0x000F
	DW00139=0x000F; //M writing range HI high
5 NL	G writing range (PARAM40 to PARAM43)
57- 2	EXPRESSION
	DW00140=0x000; //G writing range LO low 'DW00141=0x000
	DW00141=0x000; //G writing range LO high 'DW00142'-DXFFFF Waald ac SFFFF
	DW00142=0xFFFF; //G writing range HI low 'DW00143'=0x001F
	DW00143=0x001F; //G writing range HI high 0 writing range (PARAM44 to PARAM47)
6 6/- 2	U WFITING Fange (PHRHM44 TO PHRHM47) EXPRESSION
67-2	'DW00144'=0x000 DW00144'=0x000; //0 writing range LO low
	'DW00145'=0×000
	D₩00145=0x000; //O writing range LO high 'D₩00146'=0x7FFF D₩00146=0x7FFF; //O writing range HI low
	'DW00147'=0x0001
	DW00147=0x0001; //O writing range HI high

	SB000004	DB000201	receiving com				DB000200
87-	Always ON	abort					execute
117-						MSG	-RCVE
						[B]Execute DB000200 execute	[B] Busy DB000210 busy
						[B] Abort DB000201 abort	[B]Complet DB000211 complete
						[W]Dev-Typ 00016	[B] Error DB000212 error
						[W] Pro-Typ 00001	
						[W]Cir-No 00001 [W]Ch-No	
						00001 [A] Param DA00100	
			♦finishe	d normally			
12/-	IF	'complete'=='TRUE' DB000211==TRUE;					
127-							
137- NL 2	DB000201					INC	[WLQ]Dest DW00024 count nor ally
	END_IF	 				- r	4117
157-			♦finished	abnormally		1	:
167-	IF	'error'=='TRUE' DB000212==TRUE;					
						-	[WLQ]Dest
177- NL 2						INC	DW00025 count abn rmally
187- <mark>NL</mark>					STORE	[WLFQD]Src DW00000	[WLFQD]Des DW00026 result (P RAM00)
					STORE	[WLFQD]Src DW00001 	[WLFQD]Des DW00027 status (Pi RAM01)
197- <mark>NL</mark> 2							
19/- NL 20/-	END_IF						

10. Save the data to flash memory.

This concludes the settings for using the MP3000 as a slave.

Setting the Remote Device (JTEKT PLC)

Use the following procedure to set up the JTEKT TOYOPUC PLC.

Information TOYOPUC PLCs are manufactured by JTEKT Corporation. Refer to the following manual for details.

- 1. Set the Ethernet settings and baud rate using the DIP switch on the 2PORT-EFR Module.
- 2. Start the PCWIN.
- **3.** Set up the I/O Module. The identification code for a 2PORT-EFR module that has been set up to use Ethernet communications is "B3".
- 4. Set the link module name. In the Link Parameter Dialog Box, select the rack number and slot number to assign to the 2PORT-EFR Module, and set the Link Module name to [Ethernet].

5. Set the communications parameters.

 Table 4.24
 Ethernet Settings Example

Parameter	Description
Own Node IP Address	192.168.1.2
Connection 3	Use
Open Protocol	TCP Active Open
Own Node Port No.	1025
Other Node Table No.	1

Table 4.25 Other Node Table Settings Example

Parameter	Description
Table 1	Use
Other Node IP Address	192.168.1.1
Other Node Port No.	1025

Table 4.26 Timers Settings Example

Parameter	Description
Reset Wait Resending Times	As required.
Non-Reception Timer	As required.
Response Timer	As required.
Resending Timer (Data)	As required.
Resending Timer (SYN/FIN)	As required.
Close Timer	As required.
Packet Alive Time	As required.
IP Assembly Timer	As required.

Table 4.27 Sub-Net Mask and Gateway IP Address Settings Example

Parameter	Description			
Subnet Mask	255.255.255.0			
Gateway IP Address	As required.			

Note: When communicating with TCP and the open protocol setting on the 2PORT-EFR is set to [TCP Active Open], execute the MSG-RCVE function on the MP3000 to receive messages. If the open protocol setting on the 2PORT-EFR is set to [TCP Destination] - [Specified Passive], or [TCP Non-Specified Passive], execute the MSG-SNDE function in the MP3000. The MP3000 is capable of operating as a TCP active node when using the MSG-SNDE function, and as a TCP specified passive node or TCP non-specified passive node when using the MSG-RCVE function.

6. Create a ladder program to send data to the send data area in the file memory on network connection 1.

Note: Refer to the following manual for information on ladder programming using the SPW instruction.

This concludes the setup.

Starting Communications

Use the following procedure to write the data in the file memory in the JTEKT PLC to the hold registers in the MP3000.

1. Turn ON the power to the MP3000 to start receiving messages.

In the ladder programming example, the message receive function is executed immediately after the scan starts in the MP3000. While the Machine Controller is operating, a normally ON coil is used to keep the message receive function executing.

2. Start the processing to open connection 3 from the JTEKT PLC to start data transmissions.

Note: The MP3000 will wait for the TCP connection after it starts execution of the MSG-RCVE function. Therefore, the power supply to the MP3000 must be turned ON before the power supply to the JTEKT PLC.



4.7.3 Using the MSG-SNDE Function with the MP3000 as the Master

This section describes how to communicate with a JTEKT PLC by using the MSG-SNDE function.

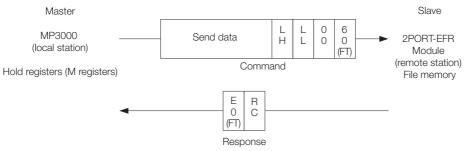
When a JTEKT PLC is used as the slave to read data from the file memory in the 2PORT-EFR, you will need to create a ladder application that uses the SPR instruction.

Information The SPR instruction is used to read data from the file memory in the 2PORT-EFR. Refer to the following manual for details.

 \prod Manual for the 2PORT-EFR Module from JTEKT Corporation

Communications Format

The MP3000 acts as a master and sends data and receives responses using the communications formats for file memory commands that are shown below. Execution of the MSG-SNDE function ends when the response is received.



Note: In the figure shown above, the Ethernet header, TCP/UDP header, FCS and other items have been omitted. Only the data portion of the communications format is shown.

File Memory and Corresponding Registers in the MP3000

The following table shows the relationship between registers in the MP3000 and the receive data area of file memory in the 2PORT-EFR.

Regardless of the connection number of the 2PORT-EFR, the MP3000 can store the data from any hold registers into the receive data area in the file memory.

To specify the data to send, use the data address parameter (PARAM14 and PARAM15) and the hold register offset parameter (PARAM20, PARAM21 and PARAM22) of the MSG-SNDE function. Thus, if PARAM14 and PARAM15 are set to 10,000 and PARAM20 and PARAM21 are set to 20,000, and PARAM22 is set to 0, the data sent to the 2PORT-EFR will be read out of the registers from MW30000, which is the sum of MW10000 and MW20000.

	Data Range							
	2PORT-EFR Module	MP3000						
File memory Data Area	File Memory Send/Receive Data Area Addresses	Hold Register Data Area Addresses						
Connection 1	1800: Data size, 1802 to 1FFD: Receive data							
Connection 2	2800: Data size, 2802 to 2FFD: Receive data							
Connection 3	3800: Data size, 3802 to 3FFD: Receive data							
Connection 4	4800: Data size, 4802 to 4FFD: Receive data	MW00000 to MW65534						
Connection 5	5800: Data size, 5802 to 5FFD: Receive data	10100000 10 101003334						
Connection 6	6800: Data size, 6802 to 6FFD: Receive data							
Connection 7	7800: Data size, 7802 to 7FFD: Receive data							
Connection 8	8800: Data size, 8802 to 8FFD: Receive data							

Note: The data address setting and hold register offset setting in the MSG-SNDE function allow you to make any address between MW00000 and MW65534 the first address of the send data.

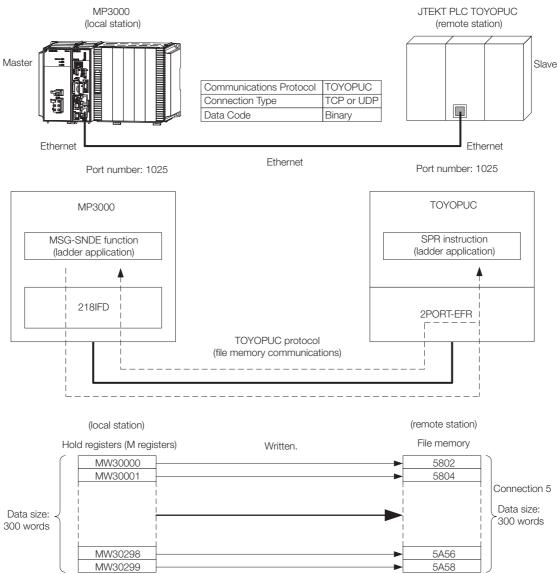
Transfer Size

The following table lists the size of data that can be transferred using the MSG-SNDE function.

Applicable Model	Data size
	1 to 1,022 words Specify the number of whole words.

Setting Example

The following figure illustrates how the contents of the 300 words from the MW30000 to MW30299 hold registers in the MP3000 master are written to the 5802 to 5A59 file memory addresses in the JTEKT PLC slave.



MP3000 Setup

Use the following procedure to set up the MP3000.

If the communications parameters (IP address and subnet mask) have already been set, skip Information to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	Circuit No/AxisAddress		Register(Input/Output)			
Module	Function Module/Slave	otatus	Start	supied circu	Motion Register	Disabled	Start - End	Size	
01 [CPU-302(32axes)] :									
	01 CPU								
	02 218IFD		뮮 Circuit No1	1		Input	0000 - 07FF[H]	2048	
= 00	08		💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	1024	
의 00 (● CPU302(32)[] 쩐 문	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]				
	05 M-EXECUTOR						0C00 - 0C3F[H]	64	
	06 UNDEFINED								
	07 UNDEFINED								
01 UNDEFINED[-]								
02 UNDEFINED[-]								
03 UNDEFINED									
02 UNDEFINED									
02 UNDEFINED									
03 UNDEFINED									
04 UNDEFINED									

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

023				
Transmission Parameters Sta	tus Ì			
- Transmission Farameters				
				Module Name Definition
IP Address	: 192 🕂 ·	168 🕂 · 1 🕂 ·	1 🔆 (0-255)	Equipment name : CONTROLLER NAME
Subnet Mask	: 255 🔆	255	0 🔆 (0-255)	
Gateway IP Address	: 0 🗄		0 🔆 (0-255)	Detail Definition

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

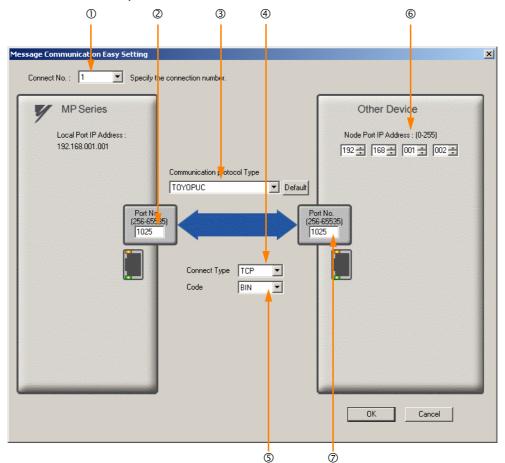
③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy Setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

	nection Parame essage Commu Easy setting	nication —	llowing parameters for ctions(C NO) 01-10 car	message o n be set to	communication receive data	s can be easily set. automatically.			
	CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u>^</u>
	01				-	•	-	Setting*	
	02				-	-	-	Setting*	
	03				-	-	-	Setting*	
	04				-	-	-	Setting*	
	05				-	-	-	Setting*	
	06				-	-	-	Setting*	
	07				-	-	-	Setting*	_
•		1			_				

The Message Communications Easy Setting Dialog Box will be displayed.

4. Set the connection parameters.



- ① Select [1] in the [Connect No.] Box.
- @ Enter "1025" in the [Port No.] Box for the MP-series Controller.
- ③ Select [TOYOPUC] in the [Communication Protocol Type] Box.
- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- ⑦ Enter "1025" in the [Port No.] Box for the other device.
- Note: 1. Disable automatic reception for any connection for which message functions (MSG-SNDE and MSG-RCVE) are used. If message functions are used while automatic reception is enabled, the communications will not function properly.
 - 2. If the MP3000 is the master, or the client in the connection, specify a full passive connection by setting the IP address and port number for the remote device to non-zero values.
 - 3. If communicating by UDP, select [UDP] in the [Connect Type] Box.
- 5. Click the [OK] Button.
- 6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.
 - Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.
- 7. Check the settings and double-click the [Setting] Button in the [Detail] Column.

 Message Communication Tasy setting Connections(C NO) 01-10 can be set to receive data automatically.									
CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type		Code	Detail	<u> </u>
01	01025	192.168.001.002	01025	TOP	TOYOPUC	-	BIN 🤇	Setting*	
02					-	-		 Setting* 	
03					-	-		 Setting* 	
04					-	-		 Setting* 	
05					-	-		∙ Setting*	
06					-	-		 Setting* 	
07					-	-		∙ Setting*	
<u>ا ا</u>	1							1	►

Cannot the overlap to local station port number used by the communicate the I/O message.

8. Select the [Disable] Option and then click the [OK] Button.

De	tail S	etting				×				
ſ	Automa	tically Reception								
	(Disable Unable to automated reception, when the protocol type is no control sequence.								
	Tr	ransmission Buffer Cł	nannel 1	V						
	si	lave I/F Register Sett	ings		Head REG					
		Readout of Input Rela	у		IW00000					
	1	Readout of Input Regi	ster		IW00000					
		Readout / Write-in of	Coil		MW00000					
	1	Readout / Write-in of	Hold Register		MW00000					
	1	Readout / Write-in of	Data Relay		GW00000					
	1	Readout / Write-in of	Data Register		GW00000					
	1	Readout / Write-in of	Output Coil		OW00000					
	1	Readout / Write-in of	Output Register		OW00000					
	1	Write – in width of Co	il/Hold Register	LO:	MW00000					
				HĿ	MW1048575					
	1	Write - in width of Da	ta Relay/Register	LO:	GW00000					
				HĿ	GW2097151					
	1	Write – in width of Ou	tput Coil/Register	LO:	OW00000					
				HĿ	OW17FFF					
	Au	atomatic input process	sing delay time	0	ms (0-100)					
		The influence on a according to this pa [Attention] It is no period of an automa	rameter. It in the setting of							
					OK Cance	1				

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

9. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

IF	After Low LowScap Fi	sett Scan Start rstScan ==	, Only 1 Sc			ing during first sc 000001 for high	an after powe scan.	r on.		
-	Lowocantin	Tatucan	TROE,		ar all D re;	listors				
7- NL				cre	ar all D re	Isters	SETW	(W)Dest DW00000	[W]Data 00000	[W]Width 00130
NL				set for	connection H	IO. (PARAM10) Expression	`		-	B
7- 2						'DW00110'=	1 //using c	onnection	No.1	8
				set for	function co	le (PARAM12)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		,	-
7- 2						EXPRESSION 'DWOO112'= DWOO112=0x				Đ
				set fo	r data size		0031, //se	nurng tu	file memory	
7- 2			1			EXPRESSION 'DWOO117'=	300			B
		set for	local data a	address low ((PARAM20) an	DWOO117=30 d local data add	D; //data iress high (Pi		words)	
7- <mark>81L</mark> 2						EXPRESSION 'DWOO120'=	30000			B
						DW00120=30 'DW00121'=	000; //loc: D	al data a	ddress low ((30000)
				set for I	ocal data t	DWUU121=U; /pe (PARAM22)	//local d	ala addre:	ss nigh (U)	
2 NL						EXPRESSION 'DWOO122'=				E -
								ata type	(M register)	
END_11				∎tre	atment for	all time in 10s after sen				
DB0002	00 DB000201		abort for fi [W]Set 01000	[W]Count DW00031	completed	n IUs after sen	ding command			DB000204
execut DB0002	e abort	DB000211	01000							timeout DB000201
timeou		complete								abort
DB0002	12									
DB0002	01									
abort			re	lease sending	; command in	60s after abort	ed			
DB0002		DB000209								DB000208
abort DB0002		waiting end ed								waiting
waitin										
DB0002	TON [10ms]	[W]Set 06000	[W]Count DW00028							DB000209
waitin	8		 send	ing in every	1s after si	arting scan for 0001A for high s	5s.			waiting er ed
LowScar	ĩ.		\$B000()3A for low s	scan and SBO	0001A for high s	can.			
SB0000	BS BA									DB000200
After 5. Scan Sta up Rela	rt-									5s-0N
DB0002	OD DB000211	DB000212	DB000208	TON [10ms]	▲ [W]Set 00100	[W]Count DW00030 -				DB000200
5s-0N	complete	error	waiting						Luco	execute -SNDE
7-									[B]Execute	[B]Busy
									DB000200 execute	DB000210 busy
									[B]Abort DB000201 abort	[B]Complet DB000211 complete
									[W]Dev-Typ 00016	[B]Error DB000212
									[W] Pro-Typ	error
									00001 [W]Cir-No	
									00001 [W]Ch-No	
									00001 [A] Param DA00100	
									DA00100	

	₽▲	♦ finished normally		
337-	IF	'complete'=='TRUE' DB000211==TRUE;		
007				
NL	DB000201		INC	[WLQ]Dest DW0002
34/- 2	abor t		INC	count no ally
				arry
367-	END_IF	♦finished abnormally		
	₽ ▲			
377-	I F	DB000212==TRUE;		
NL			INC	[WLQ]Dest DWOOO2
387- 2			INC	count ab
			▲ [WLFQD] Src	[WLFQD]De
397- NL			STORE DW00000	DW0002 result (
337- 2				result (RAMOO)
			▲ [WLFQD] Src	[WLFQD]De
407- 2			STORE DW00001	DWOOO2 status (
				RAM01)
417-	END_IF			
	DB00020A	◆treatment for timeou DB00020B		DB0002
427-	— I I—			
427	timeout	on pluse		timeout urred
	₿ ▲			
457-	I F	DB00020C==TRUE;		
				[WLQ]Dest
NL			INC	DW0002
467- 2			110	timeout unt
	END_IF			
47/-				
48/-		END		

10. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

Setting the Remote Device (JTEKT PLC)

Use the following procedure to set up the JTEKT TOYOPUC PLC.

Information TOYOPUC PLCs are manufactured by JTEKT Corporation. Refer to the following manual for details.

- 1. Set the Ethernet settings and baud rate using the DIP switch on the 2PORT-EFR Module.
- 2. Start the PCWIN.
- **3.** Set up the I/O Module. The identification code for a 2PORT-EFR module that has been set up to use Ethernet communications is "B3".
- 4. Set the link module name. In the Link Parameter Dialog Box, select the rack number and slot number to assign to the 2PORT-EFR Module, and set the Link Module name to [Ethernet].

5. Set the communications parameters.

Table 4.28 Ethernet Settings Example

Parameter	Description
Own Node IP Address	192.168.1.2
Connection 5	Use
Open Protocol	TCP Destination Specified Passive
Own Node Port No.	1025
Other Node Table No.	1

Table 4.29 Other Node Table Settings Example

Parameter	Description
Table 1	Use
Other Node IP Address	192.168.1.1
Other Node Port No.	1025

Table 4.30 Timers Settings Example

Parameter	Description
Reset Wait Resending Times	As required.
Non-Reception Timer	As required.
Response Timer	As required.
Resending Timer (Data)	As required.
Resending Timer (SYN/FIN)	As required.
Close Timer	As required.
Packet Alive Time	As required.
IP Assembly Timer	As required.

Table 4.31 Sub-Net Mask and Gateway IP Address Settings Example

Parameter	Description
Subnet Mask	255.255.255.0
Gateway IP Address	As required.

Note: When communicating with TCP and the open protocol setting on the 2PORT-EFR is set to [TCP Active Open], execute the MSG-RCVE function on the MP3000 to receive messages. If the open protocol setting on the 2PORT-EFR is set to [TCP Destination] - [Specified Passive], or [TCP Non-Specified Passive], execute the MSG-SNDE function in the MP3000. The MP3000 is capable of operating as a TCP active node when using the MSG-SNDE function, and as a TCP specified passive node or TCP non-specified passive node when using the MSG-RCVE function.

6. Create a ladder program for receive data from the receive data area in the file memory on network connection 5.

Note: Refer to the following manual for information on ladder programming using the SPR instruction.

This concludes the setup.

Starting Communications

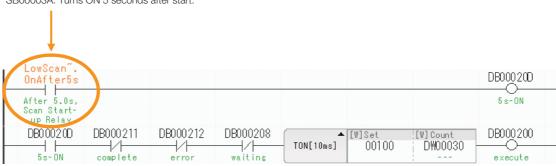
Use the following procedure to write the data in the hold registers in the MP3000 to the file memory of the JTEKT PLC.

1. Start the JTEKT PLC in TCP Destination - Specified Passive mode.

2. Turn ON the power to the MP3000 to start transmitting messages.

The ladder program example is designed to turn ON the Execute Bit (DB000200) in the message send function after six seconds has elapsed from when the low-speed scan (or high-speed scan) starts. Thereafter, the message send function is executed every second by alternating the Execute Bit (DB000200) between OFF and ON each time the message send function completes execution normally or with an error.

Note: The MP3000 will establish the TCP connection when it starts execution of the MSG-SNDE function.



SB00003A: Turns ON 5 seconds after start.

4

The message functions are used in user communications applications for the TOYOPUC protocol. You can send and receive message data by setting the necessary input items and parameters for the message functions. Message communications using the TOYOPUC protocol can be carried out with the same settings used for MEMOBUS messages.

Inputs and Outputs for the MSG-SNDE Function

I/O			I/O		
Definitions	No.	Name	Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the TOYO-PUC protocol. MEMOBUS is automatically converted to the TOYOPUC protocol inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the TOYOPUC protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the TOYOPUC protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same connection. You can use the same channel number as long as multiple func- tions are not executed at the same time. 218IFB, 218IFD = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the parame- ter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output. Continued on next page.

Continued on next page.

Continued from previous page.

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
Output Items	2	Com- plete	B-VAL	Process completed.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{e} \blacklozenge \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description	Reference Page
00		Processing Result	Gives the processing status.	I → Processing Result (PARAM00) on page 2-9
01		Status	Gives the status of the current function.	
02		Detail Error Code, Lower Word	Gives the details of an error.	I → Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word	Gives the details of an error.	<i>PARAM03)</i> on page 4- 217
04	Out-	Status 1	Gives the communications status.	I Status 1 (PARAM04) on page 2-12
05	puts	Status 2	Gives status information on the most recent error.	
06		Status 3	Gives the information of the send pass counter.	
07		Status 4	Gives the information of the receive pass counter.	■ Status 4 (PARAM07) on page 2-12
08		Status 5	Gives the information of the error counter.	
09		Status 6	Not used for the TOYOPUC protocol.	_

Continued on next page.

No.	I/O	Meaning	Description		Reference Page
10		Connection Number	Sets the connection number used to deter- mine the remote station.	(F	◆ Connection Number (PARAM10) on page 2- 13
11	-	Option	Not used for the TOYOPUC protocol.		_
12		Function Code	Sets the code of the function in the TOYO- PUC protocol.	(F	◆ Function Code (PARAM12) on page 4- 217
13		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	E	◆ Reserved for System (PARAM13) on page 2- 14
14		Remote Station Data Address, Lower Word	Not used for the TOYOPUC protocol.		_
15		Remote Station Data Address, Upper Word			
16		Remote Station Register Type	Not used for the TOYOPUC protocol.		
17	Inputs	Data Size	Specify the size of the data to write. (Specify the size in words.)	(F	◆ Data Size (PARAM17) on page 4-217
18		Remote CPU Module Number	Not used for the TOYOPUC protocol.		-
19		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	Ē	◆ Reserved for System (PARAM19) on page 2- 17
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word	Ē	♦ Local Station Data Address (PARAM20 and
21		Local station data Address, Upper Word	addresses for registers, bit addresses for relays or coils.)		PARAM21) on page 2- 18
22		Local Station Register Type	Sets the register type of the read/write data to store in the local station.	E	◆ Local Station Register Type (PARAM22) on page 4-218
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(F	◆ Reserved for System (PARAM23) on page 2- 19
24		For system use	This parameter contains the channel number of the communications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	₽	◆ Reserved for System (PARAM24) on page 2- 19
25	_	Reserved for system.			
26		Reserved for system.	These parameters are used by the system.	(F	◆ Reserved for System (PARAM25 to
27		Reserved for system.	Do not change the value of these parameters from a user program or by any other means.		<i>PARAM28)</i> on page 2- 19
28		Reserved for system.			

Continued from previous page.

Detail Error Code (PARAM02 and PARAM03)

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
8100 hex	1	Function code error	An unused function code was sent or received. Check PARAM12 (Function Code).
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Remote Station Data Address) PARAM20 and PARAM21 (Local Station Data Address)
8300 hex	3	Data size error	The data size for sending or receiving is out of range. Check PARAM17 (Data Size).
8400 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-SNDE function.
85 00 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-SNDE function.
86 00 hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
8800 hex	8	Communications device error	An error response was received from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
89 00 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-SNDE function.
C245 hex	_	Local station register type error	The register type for the local station is out of range. Check PARAM22 (Local Station Register Type).
8072 hex to FF72 hex		Remote device error*	An error response was received from the remote station. Check the error code and remove the cause.

These parameters give the detail error code.

* An error response received from the remote device will be formatted in PARAM00 (Processing Result) as follows. Processing Result (PARAM00): 072 hex (where 07 is the error code)

□□ contains the sum of the completion code sent from the JTEKT PLC and 80 hex.

Refer to the following manual for details on completion codes.

Manual for the 2PORT-EFR Module from JTEKT Corporation

◆ Function Code (PARAM12)

Set the function code to send.

You can use the functions that are registered to the function codes.

MEMOBU	S Function	File Memory Frame Type		
Code	Meaning	Code	Function	
31 hex	Writes to a fixed buffer in units of one word.	60 hex: Command E0 hex: Response	Sends file memory data.	

Data Size (PARAM17)

Set the data size for the write request in words.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

MEMOBUS Function Code	Function	Data Size Setting Range
31 hex	Sends data to the file memory.	1 to 1,022 words

Local Station Register Type (PARAM22)

Set the register type of the read data destination or write data source in the MP3000.

Register Type Value	Туре	Remarks
0	М	Sets the target data type to MB for bits and MW for words.
1	G	Sets the target data type to GB for bits and GW for words.
2	I	Sets the target data type to IB for bits and IW for words.
3	0	Sets the target data type to OB for bits and OW for words.
4	S	Sets the target data type to SB for bits and SW for words.
5 or higher	-	Not used for the TOYOPUC protocol.

The register types that can be used depend on whether you are reading or writing. The following table lists the combinations of register types.

Function Code	Applicable Register Types
31 hex	M, G, I, O, or S

Note: You can store the write data address table in registers in the local station. The data stored in the M, G, I, O, and S registers in the local station can be read from or written to the remote station by specifying the register type in the write data address table.

Inputs and Outputs for the MSG-RCVE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 218IFB, 218IFD = 16
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the TOYO-PUC protocol. MEMOBUS is automatically converted to the TOYOPUC protocol inside the 218IFD. 2: No-protocol communications 1 (unit: words) Not used for the TOYOPUC protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the TOYOPUC protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 218IFB, 218IFD = 1 to 8
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same connection. You can use the same channel number as long as multiple func- tions are not executed at the same time. 218IFB, 218IFD = 1 to 10
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 52 words starting from the specified first word are automatically used for the param- eter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

Continued on next page.

Continued from previous page.

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
Output Items	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
	2	Com- plete	B-VAL	Process completed.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{error} \bullet Error$ on page 2-23

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.		◆ Processing Result (PARAM00) on page 2- 25
01		Status	Gives the status of the current function.	(Jag	♦ Status (PARAM01) on page 2-25
02		Detail Error Code, Lower Word	Gives the details of an error.	(The second seco	◆ Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word			<i>PARAM03)</i> on page 4- 223
04	Out- puts	Status 1	Gives the communications status.	(Jag	◆ Status 1 (PARAM04) on page 2-27
05	puto	Status 2	Gives status information on the most recent error.	Ra J	◆ Status 2 (PARAM05) on page 2-28
06		Status 3	Gives the information of the send pass counter.	(heg	◆ Status 3 (PARAM06) on page 2-28
07		Status 4	Gives the information of the receive pass counter.	and a	◆ Status 4 (PARAM07) on page 2-28
08		Status 5	Gives the information of the error counter.	(Im	◆ Status 5 (PARAM08) on page 2-28
09		Status 6	Not used for the TOYOPUC protocol.		_
10	Input	Connection Number	Sets the connection number used to deter- mine the remote station.	(Page	◆ Connection Number (PARAM10) on page 2- 29
11	I/O	Option	Not used for the TOYOPUC protocol.		_
12	Out- put	Function Code	Gives the function code requested by the remote station.	l m	◆ Function Code (PARAM12) on page 4- 223
13	I/O	Reserved for sys- tem.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	l m	◆ Reserved for System (PARAM13) on page 2- 30

Continued on next page.

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		Continued from previous page.					
No.	I/O	Meaning	Description	Reference Page			
14		Data Address, Lower Word	Not used for the TOYOPUC protocol.	_			
15	0t	Data Address, Upper Word					
16	Out- puts	Register Types	Not used for the TOYOPUC protocol.	_			
17	puto	Data Size	Gives the data size that was requested by the remote station.				
18		Remote CPU Module Number	Not used for the TOYOPUC protocol.	-			
19	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.				
20		Coil Offset, Lower Word	Not used for the TOYOPUC protocol.	-			
21		Coil Offset, Upper Word					
22		Input Relay Offset, Lower Word	Not used for the TOYOPUC protocol.				
23		Input Relay Offset, Upper Word					
24		Input Register Offset, Lower Word	Not used for the TOYOPUC protocol.	_			
25		Input Register Offset, Upper Word					
26		Hold Register Offset, Lower Word	Sets the offset word address for a hold reg-	I			
27		Hold Register Offset, Upper Word	ister (MW).	223			
28		Data Relay Offset, Lower Word	Not used for the TOYOPUC protocol.				
29		Data Relay Offset, Upper Word					
30	Inputs	Data Register Offset, Lower Word	Not used for the TOYOPUC protocol.	_			
31	_	Data Register Offset, Upper Word					
32	_	Output Coil Offset, Lower Word	Not used for the TOYOPUC protocol.	_			
33	_	Output Coil Offset, Upper Word		_			
34	_	Output Register Offset, Lower Word	Not used for the TOYOPUC protocol.				
35		Output Register Offset, Upper Word					
36		M Register Writing Range LO, Lower Word	Sets the first address of the writing range for	I → M Register Writing Range (PARAM36 to			
37		M Register Writing Range LO, Upper Word	hold register coils.	<i>PARĂM</i> 39) on page 4- 224			
38		M register Writing Range HI, Lower Word	Sets the last address of the writing range for				
39		M Register Writing Range HI, Upper Word	hold register coils.	PARAM39) on page 4- 224			
				Continued on next page			

Continued on next page.

4

4-221

No.	I/O	Meaning	Description	Reference Page	
40		G register Writing Range LO, Lower Word	Not used for the TOYOPUC protocol.		
41		G Register Writing Range LO, Upper Word			
42		G Register Writing Range HI, Lower Word	Not used for the TOYOPUC protocol.		
43	Innuta	G Register Writing Range HI, Upper Word		_	
44	Inputs	O Register Writing Range LO, Lower Word			
45	-	O Register Writing Range LO, Upper Word	Not used for the TOYOPUC protocol.	_	
46		O Register Writing Range HI, Lower Word	Not used for the TOYOPUC protocol.		
47		O Register Writing Range HI, Upper Word		_	
48	_	For system use	This parameter contains the channel num- ber of the communications buffer that is cur- rently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	For System Use (PARAM48) on page 2- 34	
49		Reserved for system.	These parameters are used by the system.		
50		Reserved for system.	Do not change the value of these parame- ters from a user program or by any other	(PARAM49 to PARAM51) on page 2-	
51		Reserved for system.	means.	34	

Continued from previous page.

Detail Error Code (PARAM02 and PARAM03)

Processing Result Value (PARAM00)	Detail Error Code	Error Description	Description
81 🗖 🗖 hex	1	Function code error	An unused function code was received. Check the function code of the remote station.
8200 hex	2	Address setting error	The setting of one or more of the following parameters is out of range. Check the settings. PARAM14 and PARAM15 (Data Address) PARAM20 and PARAM21 (Coil Offset) PARAM26 and PARAM27 (Hold Register Offset)
8300 hex	3	Data size error	The data size for receiving is out of range. Check the data size at the remote station.
84 00 hex	4	Circuit number setting error	The circuit number is out of range. Check the circuit number (Cir-No) in the MSG-RCVE func- tion.
8500 hex	5	Channel number setting error	The channel number for the communications buffer is out of range. Check the communications buffer channel number (Ch-No) in the MSG-RCVE function.
86 00 hex	6	Connection number error	The connection number is out of range. Check PARAM10 (Connection Number).
8800 hex	8	Communications device error	An error response was received from the communications device. Check the connections to the device. Also check to see if the remote device is ready to communicate.
8900 hex	9	Device select error	A device that cannot be used was selected. Check the communications device type (Dev-Typ) in the MSG-RCVE function.

These parameters give the detail error code.

◆ Function Code (PARAM12)

This parameter gives the function code that was received.

When the MP3000 receives the file memory data sent from the 2PORT-EFR, the data is converted to the format specified in MEMOBUS command 31 hex and sent to the CPU Module.

File Memory	Frame Type	MEMOBUS Function				
Code	Function	Code	Meaning			
60 hex: Command E0 hex: Response	Sends file memory data.	31 hex	Writes to a fixed buffer in units of one word.			

♦ Offsets (PARAM20 to PARAM27)

Set the offset for the data address in the MP3000.

The MP3000 will offset the address by the number of words specified by the offset.

Note: An offset cannot be a negative value.

Offset parameters are provided for each of the target register types.

The following table lists the offset parameters.

Parameters	Meaning	Description
PARAM20 and 21	Coil Offset	Not used for the TOYOPUC protocol.
PARAM22 and 23	Input Relay Offset	Not used for the TOYOPUC protocol.
PARAM24 and 25	Input Register Offset	Not used for the TOYOPUC protocol.
PARAM26 and 27	Hold Register Offset	Sets the offset to the word address for a hold register.

◆ M Register Writing Range (PARAM36 to PARAM39)

Set the allowable address range for write requests from the remote station. An error will occur if the write request is outside this allowable range.

Specify the M Register Writing Range (PARAM36 to PARAM39) with word addresses.

Note: 1. M registers are always used as the destination in the MP3000 for data write requests from the remote station.

2. The writing range parameters allow you to specify the range of M registers that messages are allowed to write to.

The following table lists the writing range parameters.

Parameters	Meaning	Description
PARAM36 and 37	M Register Writing Range LO	First address of the writing range
PARAM38 and 39	M Register Writing Range HI	Last address of the writing range

Set the writing range so that it satisfies the following condition:

 $0 \le M$ register writing range LO $\le M$ register writing range HI $\le M$ aximum M register address

4.8 **No-Protocol Communications**

Use no-protocol communications to perform communications with a protocol that is not implemented in MP-series Controllers.

This section describes how to perform communications using no-protocol communications.

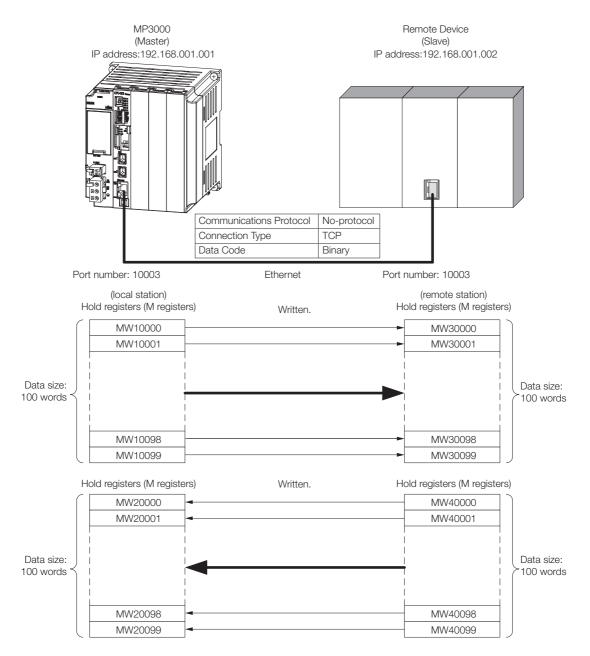
4.8.1 Using the MSG-SNDE and MSG-RCVE Functions with the MP3000 as the Master

This section describes how to send instructions to a remote device with the MSG-SNDE function and how to receive responses from the remote device with the MSG-RCVE function when the MP3000 is the master.

System Configuration Example

The following figure illustrates how the master MP3000 sends the contents of the MW10000 to MW10099 hold registers to the remote device. Then as the response to the instruction, the master MP3000 writes the content received from the remote device to the MW20000 to MW20099 hold registers.

This sample shows a command/response protocol that uses no-protocol communications. The device that sends the command is the master and the device that sends the response is the slave.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 218IFD in the Module Configuration Definition Tab Page.

Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Matian Desister		Register(Input/	Output)
Module	Function Module/Slave	Status	Start	supied circu	Motion Register	Disabled	Start - End	Size
1 [CPU-302(32axes)] :								
	01 CPU							
	02 218IFD 관	<u></u>	몲 Circuit No1	1		Input	0000 - 07FF[H]	204
00 (a) CPU302(32)[]	03 표 SVC32 원	5	💷 Circuit No1	1	8000 - 87FF[H]	Input	0800 - 0BFF[H]	10
E 00 (a) CPU302(32)[]	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]			
	05 M-EXECUTOR 온	5					0C00 - 0C3F[H]	
	06 UNDEFINED							
	07 UNDEFINED							
01 UNDEFINED[]							
02 UNDEFINED[]							
03 UNDEFINED								
2 UNDEFINED								
2 UNDEFINED								
UNDEFINED								
+ UNDEFINED								

The 218IFD Detail Definition Dialog Box will be displayed.

2. Set the communications parameters.

	023						
Tra	nsmission Parameters	Status					
F	Transmission Farameters	s					Module Name Definition
	IP Address	:	192 🚊	168 🚊	1 : 1	(0-255)	Equipment name : CONTROLLER NAME
	Subnet Mask	:	255 🔆	255 🔆	255 🔆 0	: (0-255)	
	Gateway IP Address	:		0 :		<u> (</u> 0-255)	Detail Definition

① In the [IP Address] Boxes, enter the following address: 192.168.001.001.

② In the [Subnet Mask] Boxes, enter the following mask: 255.255.255.000.

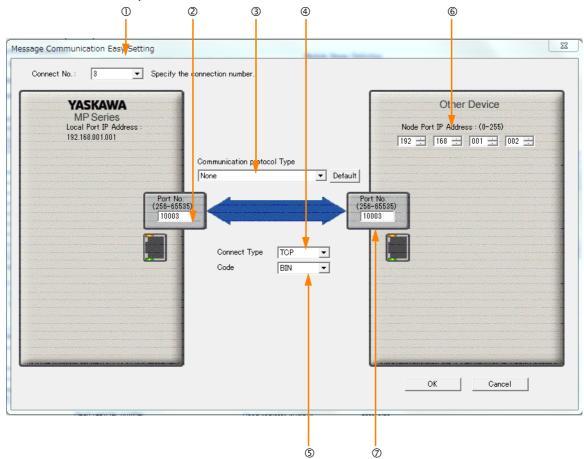
③ In the [Gateway IP Address] Boxes, enter the following address: 000.000.000.000.

3. Click the [Easy Setting] Button in the [Message Communication] Area in the [Connection Parameter] Area.

		ection Paramet ssage Commun Easy setting	ication —	llowing parameters for i ctions(C NO) 01-10 can	message o i be set to	communication receive data	s can be easily set. automatically.				
		CNO	Local Port	Node IP Address	Node Port	Connect Type	Protocol Type	Code	Detail	<u> </u>	
	- [01				-	•	-	Setting*		
		02				-		-	Setting*		
	- [03				-	•	-	Setting*		
		04				-	•	-	Setting*		
		05				-	•	•	Setting*		
		06				-	•	-	Setting*		
		07				-		•	Setting*	-	
¢[1			

The Message Communications Easy Setting Dialog Box will be displayed.

4. Set the connection parameters.



- ① Select [3] in the [Connect No.] Box.
- ⁽²⁾ Enter "010003" in the [Port No.] Box for the MP-series Controller.
- ③ Select [No-Protocol] in the [Communications Protocol Type] Box, and then click the [Default] Button.
- ④ Select [TCP] in the [Connect Type] Box.
- Select [BIN] in the [Code] Box.
- © Enter the following address in the [Node Port IP Address] Boxes for the other device: 192.168.001.002.
- Ø Enter "10003" in the [Port No.] Box for the other device.

5. Click the [OK] Button.

6. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box.

Note: If parameters have already been set for the same connection number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.

7. Check the settings.

asy setting	Conne	llowing parameters for ctions(C NO) 01-10 ca	n be set t	o receive dat	a automati	cally.					
CNO	Local Port	Node IP Address	Node Port	Connect Type		Protocol Type		Code		Detail	Node Nar
01					-		-		-	Setting*	
02					-		-		-	Setting*	
03	10003	192.168.001.002	10003	TCP	 None 		-	BIN	-	Setting*	
04					-		-		-	Setting*	
05					-		-		-	Setting*	
06					-		-		-	Setting*	
07					-		-		-	Setting*	

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

8. Create a ladder program for the MSG-SNDE and MSG-RCVE functions. A ladder program example is shown below.

	IF 🗎	'After Low			can ON' ==		W20000) from	Stave device			-
	IF	LowScan.Fi	rstScan ==	TRUE	an on	TROL					
				initializing	D register (initializing	function para			[W]Data	[W] Width
									VAR MSG S	00000	00160
2								SETW	NDE_PARAM		
								Į	DW00000 result		
4L 2		EXPRESSION			·						E
-		VAR_MSG_SN 'data size VAR_MSG_SN 'DLOOO2O' DLOOO2O = 'local dat	DE_PARAM_0(= 10000 10000;//loc a type' = (J	E = 100; // (sending s		No.: 3 word for no ss): 10000 al register			no-protoca	12
					set par	ameters for h	WSG-RCVE				
NL					EXPRESSION	or no-protoco				,	[
2					I remeter o	tation' = 3					
					VAR_MSG_R 'DLO0136'	CVE_PARAM_UU = 20000	U1.ST_NO = :	;;		nection No.	.: 3
					DL00136 = 'DL00138'	20000; = 22500	01.ST_NO = 3 //M reg	ister writi	ng range LO	: 20000	
					DL00138 =	22500;	//M reg	ster writi	ng range HI	: 22500	
_	END_IF										1
	DB000310		[W]Set	abort for ti [W]Count	imeout if not B	completed in DB000311	5s after sen DB000312	ding command	;	-	DD0002
		TON [10ms]	00500	DW00033 send 5s co							DB0003
	send busy			unt		send comple te	send error				send ab
	DB000302										
	send abort	ND000010									000000
	DB000302	DB000318									
	send abort □		' == 'TRUE'	 	 	1					send st
-	IF	DB000313 =:				1					
										1	[WLQ]Des
2										INC	DW000 send co
	END_IF										stop
						e MSG-SNDE fu	unction		1		-
	DB000901		DB000902	DB000311	DB000312	DB000302					
	receive com mand DB000301 send comman d		receive abo rt	send comple te	send error	send abort					send cor d
										MSG	-SNDE
										[B]Execute DB000301	[B] Busy DB0003
										send comma nd	send bu
										[B] Abort	[B] Comp I
										DB000302 send abort	send co
										[W]Dev-Typ	ete [B]Error
										00016	DB0003 send err
										[W] Pro-Typ	
										00002 [W]Cir-No	<u> </u>
										00001 [W]Ch-No	<u>]</u>
										00001	
										00001 [A] Param	
										00001 [A] Param	
										00001	

	IF	'send comp DB000311 =:	iete' == 'T = TRUE	RUE		1					
NL 2										INC	[WLQ]Dest DW0003/ send cour
	END_IF									. <u></u>	normall
	L	'send erro DB000312 ==	r' == 'TRUE - TRUE	,		1					
		00000312	- INUL		r					-	[WLQ]Dest DW00035
2										INC	send cour abnormal y
NL 2					EXPRESSION					<u>.</u>	6
					DW00036 = 'DW00037'	= 'result' VAR_MSG_SNU = 'function	DE_PARAM_00	1.RESULT;		ng MSG-SND	
	END_IF				DW00037 =	VAR_MOG_ONI	JE_PARAM_UU	1.8T8; //sa	aving Mag-a	NUE STATUS	
	DB000910	A	[W]Set	[W]Count	meout if not		ponse in 5s : DB000912	after waiting			DB00090
	receive bus	TON [10ms]	00500	DW00093 receive 5s count	1 1 1 1 1	receive com plete	receive err				receive a
	DB000902										
	receive abo rt DB000902	DB000918									DB00091
	receive abo	<u>₹</u>									receive s
		'receive st DB000913 ==	top'== 'TR = TRUE	UE'							
NL 2										INC	[WLQ]Dest DW00098
- 2	END_IF									,	receive o unt stop
	DB000311		DB000302	DB000911		e MSG-RCVE fu DB000902	Inction				DB00090
	send comple te		send abort		receive err						receive c
	DB000901			, iters							
	receive com mand									· · · · ·	
-										[B]Execute	
										DB000901 receive co mmand	receive t sy
										[B]Abort DB000902 receive ab	receive (
										ort [W]Dev-Typ 00016	mplete [B]Error DB00091
										[W] Pro-Typ	receive ror
										00002 [W]Cir-No	
										00001 [W] Ch-No	
										00001 [A]Param VAR MSG R	
										VAR_MSG_R CVE_PARAM 001 DAD0100	
										message re ceive (ext ended) pa-	
	IF BA	'receive c	omplete'==		check comple	tion of MSG-F	ICVE function				
		DB000911 =:	- IRUE		r					-	[WLQ]Dest DW0009/
2										INC	receive of unt norma ly
	END_IF			1 1 1 1 1						\	
	IF 🗎	'receive e DB000912 ==	rror' == 'T = TRUE	RUE'							
NL										INC	[WLQ]Dest DW00095 receive o
2											unt abnor ally
2 2							EXPRESSION 'DWOOO96' DWOOO96 =	= 'DW00040'	//oquin/	MSG-RCVE	e result
							DW00097 DW00097 DW00097 =	DW00040; = 'DW00041' DW00041;		MSG-ROVE	
	END_IF	1									

9. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

Starting Communications

Turn ON the power to the MP3000 to start transmitting messages.

Using Serial Communications

This chapter describes the operating methods for performing Ethernet communications with controllers from various manufacturers using the MEMOBUS message communications method or the no-protocol communications method.

5.1	MEMO	OBUS Protocol5-3
	5.1.1	Using Automatic Reception with the MP3000 as a Slave
	5.1.2	Using the MSG-RCVE Function with the MP3000 as a Slave
	5.1.3	Using the MSG-SNDE Function with
	5.1.4	the MP3000 as the Master
5.2	A-Cor	mpatible 1C Frame Protocol 5-30
	5.2.1	Using the MSG-SNDE Function with the MP3000 as the Master
	5.2.2	Message Functions 5-36
5.3	OMR	ON Protocol
	5.3.1	Using the MSG-SNDE Function with the MP3000 as the Master
	5.3.2	Message Functions
5.4	No-Pr	rotocol Communications
	5.4.1	Using the MSG-SNDE and MSG-RCVE Functions with the MP3000 as the Master 5-51



5.5 No-Protocol FD Communications5-57

Using the MSG-SNDE and MSG-RCVE 5.5.1 Functions with the MP3000 as the Master5-57

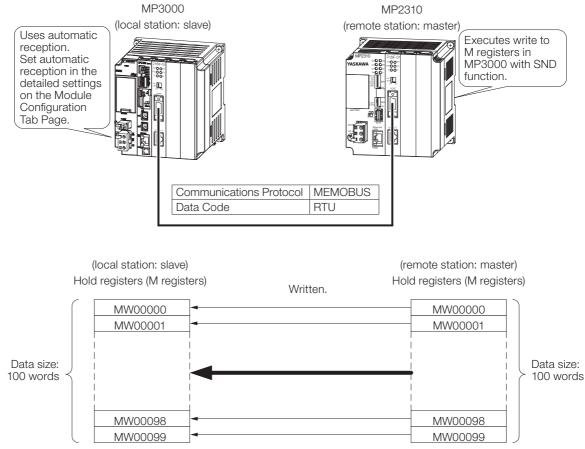
5.1 MEMOBUS Protocol

5.1.1 Using Automatic Reception with the MP3000 as a Slave

This section describes how to perform serial communications with a master MP3000 and slave MP2310 by using I/O message communications.

System Configuration Example

In this example, messages in the MEMOBUS protocol sent from the MP2310 (remote station: master) are automatically received by the MP3000 (local station: slave).



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

dit 🗌	Module	Function Module/Slave	Status	Circuit No/Ax	sAddress	Matin Desister	
	Module	Function Module/Slave	Status	Start	supied circu	Motion Register	
Edit 01	[CPU-302(32axes)] :						
Status /ersion		01 CPU					
ersion		02 218IFD		뮵 Circuit No1	1		
		03 ± SVC32 2		💷 Circuit No1	1	8000 - 87FF[H	
	00 (CPU302(32)[]	04		💷 Circuit No3	1	9000 - 97FF[H	
	2	05 M-EXECUTOR					
	Z B	06 UNDEFINED					
		07 UNDEFINED					
	01 UNDEFINED[-]					
		01 217IF		10101 Circuit No1	1		
	02 🕒 217IF-01[]	02 217IF		000 Circuit No2	1		

The 217IF Detail Definition Dialog Box will be displayed.

2. Set the detail definition for the 217IF.

Detail - [CP-217]
File View PT#: CPU#: CIR#01
Transmission Protocol MEMOBUS Master/Slave Slave Device Address 1 Transmission Mode RTU Data Length BBit Parity even Stop Bit 1Stop Baud Rate 19.2K Sending C Enable D (1 - 100ms)
Receive monitor time (Disable (10ms+3bytes transmission time) C Enable 0
Automatically C Disable 📀 Enable
Automatically Reception settings Slave I/F Register Settings Head REG WD Size
Readout of Input Relay IW00000 32768
Readout of Input Register IW00000 32768
Readout / Write-in of Coil MW00000 65535
Readout / Write-in of Hold Register MW00000 65535 Write - in width of Coil/Hold LO: MW00000 HE MW65534
For Help, press F1

- ① Select [MEMOBUS] in the [Transmission Protocol] Box.
- ^② Select [Slave] in the [Master/Slave] Box.
- ③ For [Device Address], enter the unit number found in the detailed settings of the logical port settings for the serial port.
- For [Data Length], [Parity], [Stop Bit], and [Baud Rate], enter the settings according to the detailed settings of the logical port settings for the serial port.
- Select [Enable] for [Automatically] and configure the settings in [Automatically Reception settings] as necessary.

3. Select [Save] from the File Menu.

Deta	il - [CP-217]]	
File	View		
	Save	Ctrl+S	L
	Delete	Ctrl+D	

4. Click the [Yes] Button.

CP-217:Transmission Parameters	×
Save OK?	
Yes No	

5. Save the data to flash memory.

Note: Changes made to the communications or connection parameters will become effective only after the changes have been saved to flash memory and the power supply has been cycled.

This concludes the settings for using the MP3000 as a slave.

Setting Up the Remote Device (MP2310)

Use the following procedure to set up the MP2310.

- Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.
- 1. Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

Module Config	uration					
File 🔛 Save	to project 🛛 Edit 🧱 Setting	🕴 Online 🐂 Read 🛯 🗎 Write	Self Configuration	All modules	specified	l module 🛛 Snap 🛛
ر Edit	Module	Function Module/Slave	Status	Circuit No/Axis Start	Address	Motion Register
Edit	01 [MP2310] :					
Status Version		01 CPU				
version		02 218IFA 🕄		뮵 Circuit No1	1	
	00 🖲 MP2310[]	08 🗄 SVB 🔍		💷 Circuit No1	1	8000 - 87FF[H]
		04		💷 Circuit No2	1	8800 - 8FFF[H]
		05 UNDEFINED				
	01 🕒 218IF-01[]	01 217IF)	10101 Circuit No1	1	
	0102101-01[]	02 218IF		뀸 Circuit No2	1	
	02 UNDEFINED[]				

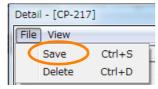
The 217IF Detail Definition Dialog Box will be displayed.

- 5.1.1 Using Automatic Reception with the MP3000 as a Slave
 - 2. Set the detail definition for the 217IF.

Detail - [CP-217]	83		
File View			
PT#: CPU#: CIR#01			
CIR#01			
Transmission Protocol MEMOBUS 💌			
Master/Slave Master 💌			
Device Address 0 (Master=0,Slave=1-63)			
Serial I/F RS-232 💌			
Transmission Mode RTU 💌			
Data Length 🛛 🛛 🕶			
Parity even 💌			
Stop Bit 1Stop			
Baud Rate 19.2K			
Sending (• Disable			
C Enable 0 📩 (1 - 100ms)			
Receive monitor time (
C Enable 0 (0-255ms)			
Automatically 💿 Disable 🔿 Enable			
Automatically Reception settings Slave I/F Register Settings Head REG WD Size			
Readout of Input Relay IW00000 32768			
Readout of Input Register IW00000 32768	Master ▼ 0		
h#U00000			
write in width of contribution			
For Help, press F1			

- ① Select [MEMOBUS] in the [Transmission Protocol] Box.
- ^② Select [Master in the [Master/Slave] Box.
- ③ For [Transmission Mode], [Data Length], [Parity], [Stop Bit], and [Baud Rate], enter the settings according to the settings on the slave.

3. Select [Save] from the File Menu.

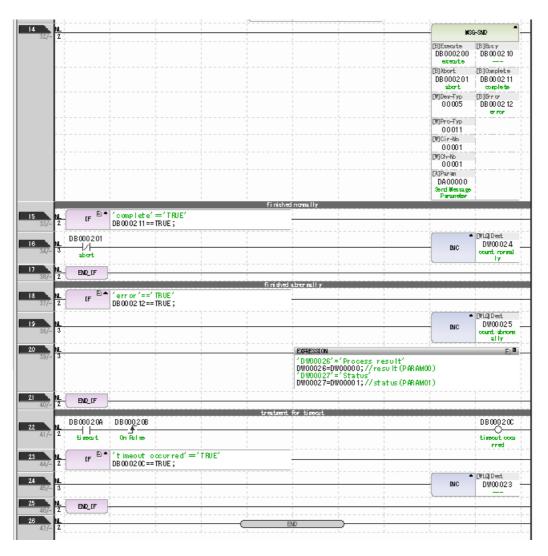


4. Click the [Yes] Button.

CP-217:Transmission Parameters	\times
Save OK?	
Yes No	

5. Create a ladder program for the MSG-SND function. A ladder program example is shown below.

	_					st soan after p high soan	over on		
- (F ^B	After Lo SB000003	w Scan Start == TRUE;	t, Only 1 S						
NL 2				olear al I	D registers	SETM	• DY]Desit D W000000 Process reau It	[#]Data 00000	[])% dth 00032
	-			set for comeo	tion No. (PARANO	2)		÷	
2					Called s DW00002=1	station #'=1 ;			E
NL			1	set for function	on code (PARAN) EXTRESSION	4)	,	,	F
2					¹ Function DW00004=0) code'=0x00 0x0010;//10	10 H = reading	hold regis	
NL.	1		æt for dat	aaddress (PARA	105) and data a	size (PARANOQ			F
2						lress'=0); //data add :e'=100 100; //data ::	dress (0) size (100 w	ords)	
				set for remote					
2					Called C	:PU#'=1			E
	1	:	:	set for offset	DW00007=1				
			'Coil offset'=0 DW00008=0;//coil offset (PARAM08) 'Input relay offset'=0 DW00009=0;//input relay offset (PAR 'Input register offset'=0 DW00010=0;//input register offset ('Holding register offset (P					(PARAMD9) set (PARAM	10)
					¹ Holding DW00011=0	register of);//hold.reg	fset'=0 «ister offs	et (PARAM1	0
NL 2			ol	er praeterf	¹ Holding DW00011=0	register of);//hold reg	fset′=0 «ister offs	et (PARAM1 • DMLRD]9ro 00000	1) DVLFGD]Des DW0001 System re
<u>).</u> 2					OF system PAB	register of);//hold reg	fset'=0 «ister offs – store	 [WLF0D]3*o 	1) [WLFGD]Des DW0001
DB000200	DB000201	•		treatment ut. if not compli- [04] Ocumb DW00 03 1	OF system PAB	register of);//hold reg	fset'=0 «ister offs – store	 [WLF0D]3*o 	1) DWLFGD]Des DW00001 System res Ye DB00022
	DB000201		abort for tinea DYJSet 01000	treatment ut if not compli- (M)Count DW00031 10s timeout count	Holding DW00011=0 for system PAR for all time sted in 10s aft	register of ; //hold re; wl2 er sending come	fset'=0 «ister offs – store	 [WLF0D]3*o 	DYLFED Dos DW0001 System res DB00021
DB000200		TON[] Ore]	abort for tinea DYJSet 01000	treatment ut if not compli- (M)Count DW00031 10s timeout count	Holding DW00011=0 for system PAR for all time sted in 10s aft	register of);//hold reg	fset'=0 «ister offs – store	 [WLF0D]3*o 	DB0002
L DB000200 2		TON[Ors]	abort for tinea DYJSet 01000	treatment ut if not compli- (M)Count DW00031 10s timeout count	Holding DW00011=0 for system PAR for all time sted in 10s aft	register of ; //hold re; wl2 er sending come	fset'=0 «ister offs – store	 [WLF0D]3*o 	1) DWCD01Des DWCD01 System res re DB0002/ ti result
L DB000200 2 secuto 1 DB000204 2 timent DB000212 9 ror DB000201		TON[] Ore]	abort for tinea DYJSet 01000	treatment ut if not compli- (M)Count DW00031 10s timeout count	Holding DW00011=0 for system PAR for all time sted in 10s aft	register of ; //hold re; wl2 er sending come	fset'=0 «ister offs – sroæ	 [WLF0D]3*o 	DB0002
DB000200 2 drawnew DB00020A 2 drawnew 1 resut DB000212 error		TON[] Ore]	abort for timea DYJ39t 01000 abort for ti	trestment t if not coupl (9/00unt 0000031 10c timesut count insut for send	"Holding DW00011=0 or system PAR for all time sted in IOs aft	register of ; //hold re; WI 2 er sending come	fset'=0 «ister offs – sroæ	 [WLF0D]3*o 	1) DW0001 System res DB00021 ti recut DB00022
DB000200 DB000204 tireat DB000212 error DB000201 error DB000201 abort		DB000211	abort for timea DYJ39t 01000 abort for ti	treatment ut if not compli- (M)Count DW00031 10s timeout count	"Holding DW00011=0 or system PAR for all time sted in IOs aft	register of ; //hold re; WI 2 er sending come	fset'=0 «ister offs – sroæ	 [WLF0D]3*o 	1) PVLFXD [Des DVW0001 System res ve DB0002: ti recut abort DB0002: DB0002: DB0002:
DB000200 2 d d d d d d d d d d d d d d d d d d d		DB000211	abort for timea DYJ39t 01000 abort for ti	trestment t if not coupl (9/00unt 0000031 10c timesut count insut for send	"Holding DW00011=0 or system PAR for all time sted in IOs aft	register of ; //hold re; WI 2 er sending come	fset'=0 «ister offs – sroæ	 [WLF0D]3*o 	1) PMURD [Des DW00 01 System rev rev DB000 21 DB000 21 abort DB000 22 DB000 22
DB000200 2 cccuts 2 tireat DB000212 bros DB000201 DB000201 cccuts cccuts direat DB000201 direat DB000201 direat		DB000211	abort for timea DYJ39t 01000 abort for ti	trestment t if not coupl (9/00unt 0000031 10c timesut count insut for send	"Holding DW00011=0 or system PAR for all time sted in IOs aft	register of ; //hold re; WI 2 er sending come	fset'=0 «ister offs – store	 [WLF0D]3*o 	1) PVLFXD [Des DVW0001 System res ve DB00024 ti recut abort DB00024 DB00024
DB000200 2 cccuts 2 bB000204 2 tireat DB000201 bror DB000201 bror DB000201 cccuts bort DB000200 cccuts bort DB000200 cccuts bort bort cccuts ccc		DB000211 DB000211 complete DB000209 witing ends d	abort for timea (M)Set 01000 abort for ti releas	trestment t if not coupl (9/00unt 0000031 10c timesut count insut for send	"Holding DW00011=0 or system PAR for all time sted in IOs aft	register of ; //hold re; WI 2 er sending come	fset'=0 «ister offs – store	 [WLF0D]3*o 	1) PMLPAD JOAN DW00011 System rev re DB00021 DB00021 abort DB00021 witing
DB000200 2 scate 2 timeat DB000201 2 timeat DB000201 3 sbort 4 DB000201 2 sbort 0 B000201 2 sbort 0 B000201		DB 0002 11 DB 0002 11 complete DB 0002 09 vaiting ende d	abort for timea DYJ39t 01000 abort for ti	trestment t if not coupl (9/00unt 0000031 10c timesut count insut for send	"Holding DW00011=0 or system PAR for all time sted in IOs aft	register of ; //hold re; WI 2 er sending come	fset'=0 «ister offs – store	 [WLF0D]3*o 	1) DVURD)Des DW0001 Sraten res res DB00021 DB00021 abort DB00021 DB00021 valiting et
DB000200 2 scoute 2 1 DB000201 2 scoute 2 1 DB000201 sbort 0 DB000201 2 sbort 0 0 0 0 0 0 0 0 0 0 0 0 0		DB 0002 11 DB 0002 11 complete DB 0002 09 vaiting ende d	abort for times DYJSet 01000 abort for ti releas (DYJOsumb DW00028	trestment ti finst compl DW00031 D3 timeout count insoit for send	-Holding DW00011=0 or system PAR for all time. extendin 10s after command or an	register of ; //hold re; #12 er sending come error cocurred	fset'=0 «ister offs – store	 [WLF0D]3*o 	I) PVLPDD Das PVW001 System res PVW001 System res DB0002 ti reca DB0002 vs.tim DB0002 DB0002
DB000200 2 scents 1 DB000201 2 brow DB000201 2 brow brow DB000201 2 brow bro		DB 0002 11 DB 0002 11 complete DB 0002 09 vaiting ende d	abort for times DYJSet 01000 abort for ti releas (DYJOsumb DW00028	trestment t if not coupl (9/00unt 0000031 10c timesut count insut for send	-Holding DW00011=0 or system PAR for all time. extendin 10s after command or an	register of ; //hold re; #12 er sending come error cocurred	fset'=0 «ister offs – store	 [WLF0D]3*o 	1) PMURD JDes DW0001 System rev re DB00021 ti result DB00022 abort DB00022 witing witing witing with the system of th
DB000200 2 scrute 2 timent DB00020A 2 timent DB000201 scrute bB000201 abort DB000201 2 abort DB000201 2 abort DB000201 2 abort DB000208 2 abort DB000208 1 DB000208 2 abort DB000208 2 abort 2 a	TONO Oral	DB 0002 11 DB 0002 11 complete DB 0002 09 vaiting ende d	abort for times DYJSet 01000 abort for ti releas (DYJOsumb DW00028	trestment ti finst compl DW00031 D3 timeout count insoit for send	-Holding DW00011=0 or system PAR for all time. extendin 10s after command or an	register of ; //hold re; #12 er sending come error cocurred	fset'=0 «ister offs – store	 [WLF0D]3*o 	1) DVURD)Des DW0001 Sraten res res DB00021 DB00021 abort DB00021 DB00021 valiting et
DB000200 2 scents 2 tireat DB000212 bro DB000201 abort DB000201 2 abort DB000201 2 abort DB000208 4 DB000208 2 sbort DB000208 4 DB000208 2 sbort DB000208 2 Sbort DB000208 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB00028 Sbort DB0008 Sbort DB008 Sbort	TONO Oral	DB 0002 11 DB 0002 11 complete DB 0002 09 vaiting ende d	abort for times DYJSet 01000 abort for ti releas (DYJOsumb DW00028	trestment t if not coupl [0900031 105 times incut for send e sending come in every is af for low scen a	-Holding DW00011=0 or system PAR for all time. extendin 10s after command or an	register of ; //hold re; #12 er sending come error cocurred	fset'=0 «ister offs – store	 [WLF0D]3*o 	I)



6. Save the data to flash memory.

This concludes the setup.

Starting Communications

- 1. Turn ON the power to the MP3000 to start receiving messages. The system will automatically start the message reception operation. No further operation is required.
- 2. Turn ON the Execute Bit (e.g., DB000200) for the MSG-SND function in the MP2310 to start sending messages.

The ladder program example is designed to send a message every second after five seconds have elapsed from when the low-speed scan (or high-speed scan) starts.

To change the message transmission interval, change the timer value ①.

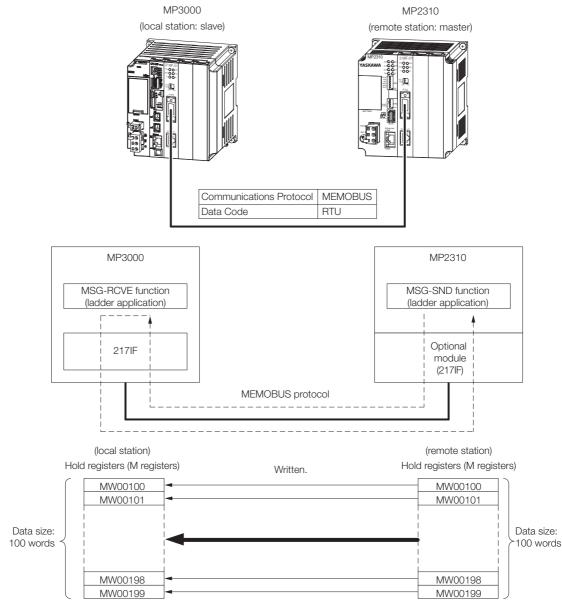


5.1.2 Using the MSG-RCVE Function with the MP3000 as a Slave

This section describes how to perform serial communications with a slave MP3000 and master MP2310 by using the MSG-RCVE function.

Setting Example

The following figure illustrates how the contents of the MW00100 to MW00199 hold registers in the MP2310 master are written to the MW00100 to MW00199 hold registers in the MP3000 slave.



Using Serial Communications

5.1.2 Using the MSG-RCVE Function with the MP3000 as a Slave

MP3000 Setup

Use the following procedure to set up the MP3000.

- Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.
- 1. Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

it 📗	Module	Function Module/Slave	re Status -	Circuit No/Axi	Circuit No/AxisAddress		
	Module	Function Module/Slave	Status	Start	supied circu	Motion Register	
Edit 01	[CPU-302(32axes)] :						
itatus ersion		01 CPU					
		02 218IFD		금 Circuit No1	1		
- 1	00 🝙 CPU302(32)[]	03 ⊞ SVC32 🕄		💷 Circuit No1	1	8000 - 87FF[H	
- 1	00 (=) 01 0002(02)[]	04 표 SVR32		💷 Circuit No3	1	9000 - 97FF[H	
		05 M-EXECUTOR					
		06 UNDEFINED					
		07 UNDEFINED					
	01 UNDEFINED[-]					
- 1		01 217IF)	IOIOI Circuit No1	1		
	02 🕒 217IF-01[]	02 217IF		10101 Circuit No2	4		

The 217IF Detail Definition Dialog Box will be displayed.

2. Set the detail definition for the 217IF.

Detail - [CP-217]	Ξ	
File View		
PT#: CPU#:	CIR#01	
CIR#01	View CIR#01 #01	
Transmission Protocol MEMOBU	s 💌	
	•	
· · · · · · · · · · · · · · · · · · ·	(Master=0,Slave=1-63)	
Serial I/F RS-232	•	
Transmission Mode RTU	•	
	<u>•</u>	
Parity even	•	
Stop Bit 1Stop	•	
Baud Rate 19.2K	•	
Sending 🕫 Disable		
C Enable	0 <u>- (1 - 100ms</u>)	
	<u> </u>	
C Enable	0 <u>-</u> (0-255ms)	
	C Enable	
Automatically Reception settings Slave I/F Register Settings	Head REG WD Size	
Readout of Input Relay	IW00000 32768	
Readout of Input Register	IW00000 32768	
Readout / Write-in of Coil		
	MU100000	
	.O: MW65534	
For Help, press F1	1	

- ① Select [MEMOBUS] in the [Transmission Protocol] Box.
- ² Select [Slave] in the [Master/Slave] Box.
- ③ Enter 1 in the [Device Address] Box.
- ④ For the [Serial I/F], [Transmission Mode], [Data Length], [Parity], [Stop Bit], and [Baud Rate] Boxes, enter the settings as necessary.

3. Select [Save] from the File Menu.

Deta	il - [CP-217]
File	View	
	Save	Ctrl+S
	Delete	Ctrl+D

The Message Communications Easy Setting Dialog Box will be displayed.

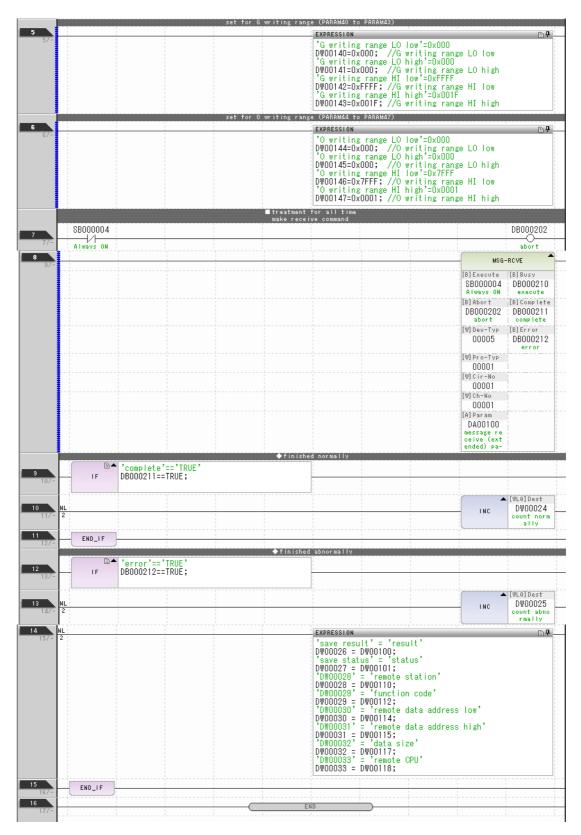
4. Click the [Yes] Button.

CP-217:Transmission Parameters	×
Save OK?	
Yes No	

- 5. Click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box. Note: If parameters have already been set for the same station number and you click the [Yes] Button in the Transmission Parameters Confirmation Dialog Box, the settings will be overwritten by the parameters that are set in the Message Communications Easy Setting Dialog Box.
- 6. Create a ladder program for the MSG-RCVE function. A ladder program example is shown below.

07- IF SB000003 == TRUE	tart, Only 1 Scan ON' == 'TRUE'				
	clear all D registers				
NL			W]Dest	[W]Data	[W]Width
17- 2		SETW	DW00000	00000	00160
27- END_IF			-		
	set for offset (PARAM20 to PAR	AM35)	·		
	EXPRESSION				E
37-		set low'=0			
			ffset MB lo	ow (O)	
		set high'=0 //coil_o	ffset MB hi	ish (0)	
		ay offset		80 107	
	DW00122=0	; //input	relay offse	et IB low (0)
		lay offset		et IB high	(0)
		s //input gister offs		se ib nigh	(0)
	DW00124=0	; //input	register of	fset IV lo	w (O)
			et high'=0	fset IW hi.	ab (0)
		, //input ister offse		rset IW MI.	gn (0)
	DW00126=0	; //hold r	egister off	iset MW low	(0)
		ster offse			L (0)
		; //noid r ay offset l		iset MW hig∣	n (U)
	DW00128=0	; //data r	elay offset	GB low (0)
		ay offset h			-
		; //data r ister offse		: GB high (I	0)
				set GW low	(0)
	'data regi	ister offse	t high'=O		
		; //data r bil offset		fset GW hig∣	h (U)
				et OB low ()	0)
	'output co	oil offset	high'=O		
			_coil_offse set_low'=0	et OB high	(0)
				offset OW L	ow (0)
	'output re	egister off	set high'=()	
	DW00135=0	; //output	register (offset OW h	igh (0)
	set for M writing range (PARAM36 to) PARAM39)			
4/-	EXPRESSION				
			low'=0x000		
			writing ran high'=0x000		
				, nge LO high	
	'M writing	g range HI	low'=0xFFFF		
	D,WOO138=0>	(FFFF; //M	writing ran	nge HI low	
	M Writin; DW00139=0	g range HI ∢NNNF: //W	high'=ŌxOO(writing ran	ur age HI hi⊘h	
	0100100-00		an remained	180 111 111811	

5.1.2 Using the MSG-RCVE Function with the MP3000 as a Slave



7. Save the data to flash memory.

This concludes the settings for using the MP3000 as a slave.

Setting Up the Remote Device (MP2310)

Use the following procedure to set up the MP2310.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 217IF in the Module Details Area of the Module Configuration Definition Tab Page.

File 🔛 Save	to project Edit Edit Settin	g 📔 Online 🐂 Read 🛯 🚡 Write	Self Configurati	on 👘 All modules	specified	module Snap
Edit	Module	Function Module/Slave	Status	Circuit No/Axi Start	sAddress supied circu	Motion Register
Edit	01 [MP2310] :					
Status Version		01 CPU				
Version		02 218IFA 🍳		占 Circuit No1	1	
	00 (MP2310[]	03 ⊞ SVB 🤾		💷 Circuit No1	1	8000 - 87FF[H]
		04 🛨 SVR		💷 Circuit No2	1	8800 - 8FFF[H]
		05 UNDEFINED				
		01 217IF 관		10101 Circuit No1	1	
	01 (🕒 218IF-01[]	02 218IF 관		몲 Circuit No2	1	

The 217IF Detail Definition Dialog Box will be displayed.

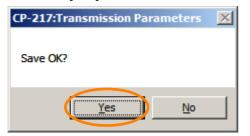
2. Set the detail definition for the 217IF.

Detail - [CP-217]		B
File View		
PT#: CPU#:-	- CIR#01	
CIR#01		
-		
Transmission	Protocol MEMOBUS 💌	
Master/Slave	Master	
Device Addres	s 0 (Master=0,Slave=1-63))
Serial I/F	RS-232 -	
Transmission	Mode RTU 💌	
Data Length	8Bit 💌	
Parity	even 💌	
Stop Bit	1Stop 💌	
Baud Rate	19.2K 💌	
Sending	Oisable	
	⊂ Enable 🛛 📑 (1 - 100ms)
Receive monitor	time 🕞 Disable (10ms+3bytes transmiss	ion time)
	⊂ Enable 0 <u>÷</u> (0-255ms)	
Automatically	€ Disable C Enable	
Automatically Re Slave I/F Regist	eception settings ————————————————————————————————————	ze
Readout of Input	Relay IW00000 32768	
Readout of Input	Register 100000 32768	
Readout / Write-		
	-in of Hold Register MW00000 65535	
Write - in width	HE MW65534	
	··]	
For Help, press F1		
r or neip, press P1		11.

① Select [MELSEC] in the [Transmission Protocol] Box.

- ^② Select [Master] in the [Master/Slave] Box.
- ③ Configure the other settings, from [Device Address] to [Baud Rate], as necessary.

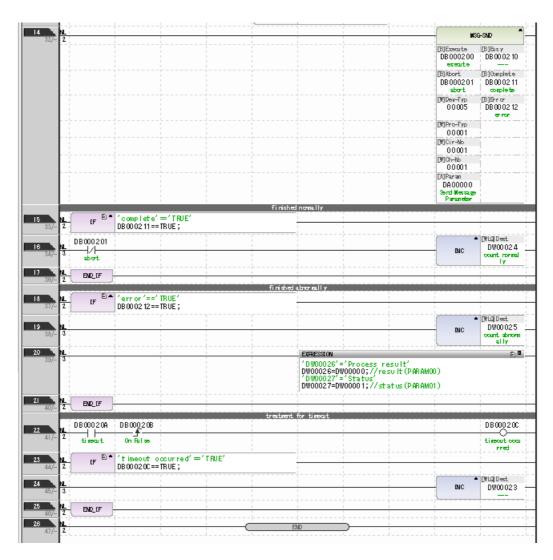
- 5.1.2 Using the MSG-RCVE Function with the MP3000 as a Slave
 - 3. Click the [Yes] Button.



4. Create a ladder program for the MSG-SND function. A ladder program example is shown below.

				settin	g parameters for SR00001	initus MSG-SNDE funct fer ine sman an	alizing tion during firs ri 35000001 firs	st soan after p high soan	aver on		
•		IF D.	'After Low SB000003 =	/ Scan Start				ngnaoan			
4.			SB000005 -	= Inuc,		olear al l	Diregisters				
							1	SETTY	DY]Dest DW00000	[W]Data 00000	[¥]%idth 00032
17-	2							OL IN	Process real It		
					1	set for correct	ion No. (PARADO) EXTRESSION	2)		-	Ð
2/-	2		1				1	tation #'=1			
						set for functio					
3	N _2		1	1			EGRESSION				Ð 0
							DW0000 4=0	code'=0x00 x0010;//10	10 I = reading	hold regis	ters
					æt for det	aadhess (PARA)	1	izə (PARANCO)			
4-	2		1				Data add	r ess' =0	. (0)		Ð 0
							Dwoooos=o	ress'=0 ;//data add e'=100 00;//data :	iress (V) ize (100 m	w de l	
						set for remote (1		SIZE (100 m		
5	<u>ы</u> 2		1	1			EGRESSION		1		Ð 0
							² Called C DW00007=1	PU# =1 ;			
6						set for offset	PARADOR-PARADI Extression	ņ			p 0
ę⁄-	2		1	1				set′=0 ;//∞il off		~~~	
							∃1Input re	;//coll off lay offset' ;//input re	=0		
							1 nput re	gister offs //input re	et'=0 evister off:	cet (PARAM)	10.)
							Holding DW00011=0	gister offs ;//input re register of ;//hold reg	fset'=0 «ister offs	st (PARAM1)	0
	L							,			
						in the second second	Distance in the second	11.02			
	. 1				la	ear parameter fo	orsystem PARM	MI 2)	1	[WLF00]9**	[WLRD]Dest
77-	<u>н</u> 2				0	ear parameter fo	orsystem PaRa	WI 2)	STORE	00000	DW00012 System reser
7/-	<u>N.</u> 2					treatment f	or all time.		STORE		DW00012
777-	NL 2	DB000200	DB000201	•	bort for timear	treatment f t if not comple [V]Ocumt	or all time.	NI 2) er sending come	STORE		DW00012 System reser Ye DB00020A
7 7/- 8 8/-	<u>N_</u> 2	DB000200	DB000201		bort for timea	treatment f t if not comple	or all time.		STORE		DW00012 System reser
7 77- 8 87-		execute		TON[] One]	bort for timear DYISet 01000	treatment f t if not comple DV/Ocant DW00031 10s timeat	ōralltime. stedin 10safte	er sending some	STORE		DW00012 System reser Ye DB00020A ti resu t
7 7)- 8 8/- 9 12/-		accoute		DB000211	bort for timear DYISet 01000	treatment f t if not comple [V]Count DW00031 IOs timeout count	ōralltime. stedin 10safte	er sending some	STORE		DW00012 System reser DB00020A ti reart DB000201
₹. 2	И <u></u> 2 И <u>2</u>	DB00020A		TON[] One]	bort for timear DYISet 01000	treatment f t if not comple [V]Count DW00031 IOs timeout count	ōralltime. stedin 10safte	er sending some	STORE		DW00012 System reser DB00020A ti result DB000201
₹. 2	И <u></u> 2 И <u>2</u>	DB00020A tireat DB000212		DB000211	bort for timear DYISet 01000	treatment f t if not comple [V]Count DW00031 IOs timeout count	ōralltime. stedin 10safte	er sending some	STORE		DW00012 System reser DB00020A ti reart DB000201
₹. 2	И <u></u> 2 И <u>2</u>	DB00020A 		DB000211	bort for timear DYISet 01000	treatment f t if not comple [V]Count DW00031 IOs timeout count	ōralltime. stedin 10safte	er sending some	STORE		DW00012 System reser DB00020A ti reart DB000201
₹. 2	NL 2 1	DB00020A tireat DB000212 DB000212 Prov DB000201 Abort		DB000211	lbort för tinson (M)Set 01000 abort för ti	treatment f t if not comple [V]Count DW00031 IOs timeout count	or all time. And in 10s afte commund or an e	er sending come	STORE		DB00020A UB00020A U resut U resut DB000201 abort
9 9 12/-	N_ 2 N_ 2	DB00020A Lireaut DB000212 DB000212 DB000201 Lireaut DB000201 DB000201		DB000211	lbort för tinson (M)Set 01000 abort för ti	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. And in 10s afte commund or an e	er sending come	STORE		DB00020A DB00020A ti resu t DB000201 abort DB000208
9 	NL 2 1	DB00020A ineat DB000212 DB000212 DB000201 Abort DB000201 DB000201		DB000209	lbort för timea (M)Set 01000 abort för ti	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. And in 10s afte commund or an e	er sending come	STORE		DW00012 System reser DB00020A ti result DB000201 abort DB000208
9 9 12/-	N_ 2 N_ 2	DB00020A Lireaut DB000212 DB000212 DB000201 Lireaut DB000201 DB000201		DB 0002 11 complete DB 0002 03 yaiting ende	lbort för timea (M)Set 01000 abort för ti	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. And in 10s afte commund or an e	er sending come	STORE		DB00020A DB00020A ti resu t DB000201 abort DB000208
9 9 12/-	N_ 2 N_ 2	DB00020A tireat DB000212 orror DB000201 orror abort DB000201 orror abort DB000201 orror abort DB000208 orror witing	abot	DB000211 DB000211 DB000209 DB000209 vaiting emb	lbort for timea [N]Set 01000 abort for ti releas	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. And in 10s afte commund or an e	er sending come	STORE		DB00020A tirecut DB000201 abort DB000208 witing
9 9 12/-	NL 2 NL 2 NL	DB00020A H DB000212 H DB000201 H DB000201 H DB000201 H DB000201 H DB000208 Witing DB000208 H H DB000208 H H DB000208 H H DB000208 H H H DB000208 H H H H H H H H H H H H H	abot	DB 0002 11 complete DB 0002 03 yaiting ende	lbort för timea (M)Set 01000 abort för ti	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. And in 10s afte commund or an e	er sending come	STORE		DB00020A DB00020A ti reart DB000201 abort DB000208 witing DB000209
8/- 9 12/- 10 17/-	NL 2 1 2	DB00020A tireat DB000212 dr H DB000201 dr H abort DB000201 dbort DB000201 dbort DB000208 witing DB000208	abot	DB 000 2 11 complete DB 000 2 09 vailing end d	Dert for times (P)Set 01000 abort for ti releas DW10ournt DW00028	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. ted in 10s afte commund or an e	er sending come error cocurred	STORE		DB00020A DB00020A ti resut DB000201 abort DB000208 witing DB000208
87- 9 12/- 10 17/-	NL 2 1 2	DB00020A 	abot	DB 000 2 11 complete DB 000 2 09 vailing end d	Dert for times (P)Set 01000 abort for ti releas DW10ournt DW00028	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. ted in 10s afte commund or an e	er sending come error cocurred	STORE		DB000208 BB000208 BB000208 BB000201 BB000201 BB000208 Saiting DB000208 Saiting BB000209 Vaiting smb
8/- 9 12/- 10 17/-	NL 2 NL 2 NL 2 NL 2 NL 2	DB00020A imenut DB000212 DB000201 abort DB000201 abort DB000201 bort DB000208 imenut DB000208 imenut DB000208 imenut BB000208 imenut imenut BB000208 imenut	abot	DB 000 2 11 complete DB 000 2 09 vailing end d	Dert for times (P)Set 01000 abort for ti releas DW10ournt DW00028	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. ted in 10s afte commund or an e	er sending come	STORE		DB00020A DB00020A ti reat DB000201 abort DB000208 setting DB000209 valting emb
8/- 9 12/- 10 17/- 11 21/-	NL 2 NL 2 NL 2 NL 2 NL 2	DB00020A tireat DB000212 dB000201 db000201 db000201 db000201 db000201 db000201 db000202 witing DB000208 witing DB000208 witing SB000003	abot	DB 000 2 11 complete DB 000 2 09 vailing end d	Dert for times (P)Set 01000 abort for ti releas DW10ournt DW00028	treatment f t if not comple DW00031 Do timeout count nexut for send	or all time. ted in 10s afte commund or an e	er sending come	STORE		DB000208 BB000209 BB000209 BB000209 BB000209 Vaiting emb
87- 9 12/- 10 17/- 11 21/-	NL 2 NL 2 NL 2 NL 2 NL 2	DB00020A tireaut DB000212 dB000212 dB000201 dbrot abort DB000200 dbrot witing DB000208 witing DB000208 witing SB000003 After Low & an Start, On IF San OH DB000200	TOND Ore]	DB 000 2 11 complete DB 000 2 09 vaiting onto d	Dent for times (PI)Set 01000 abort for ti releas releas (PI)Ourt DW00028 	treatment f t if not comple DW00031 Do timeout count recut for send sending commu-	or all time. ted in 10s after commund or an e nd in 60s after er starting soc d 3500001Å for	er sending come	STORE		DB00020A DB00020A ti resut DB000201 abort DB000208 vaiting DB000209 vaiting setb d DB000200 Ss-OA DB000200
8/- 9 12/- 10 17/- 11 21/-	NL 2 NL 2 NL 2 NL 2 NL 2	DB00020A imenut DB000212 imenut DB000201 imenut DB000201 imenut DB000201 imenut DB000201 imenut DB000208 imenut B000208 imenut SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB000008 SB00008 SB00008 SB00008 SB00008 SB00008 SB00008 SB00008 SB0008 SB0008 SB0008 SB0008 SB0	abort	DB 0002 11 complete DB 0002 03 vaiting ende d	DVI Dourt DVI Dourt DVI Dourt DVI Dourt DVI Dourt DVI Dourt Security Security	treatment f t if not comple DW000131 Do timeout count nexus for send seending comma	or all time. ted in 10s after commund or an e nd in 50s after er starting soo d 300001Å for	er serding come error cocurred aborted an for Ss. high soan	STORE		DB000208 BB000208 BB000208 BB000201 abort DB000208 seiting DB000209 vaiting emb

5.1.2 Using the MSG-RCVE Function with the MP3000 as a Slave



5. Save the data to flash memory.

This concludes the setup.

Starting Communications

- 1. Turn ON the power to the MP3000 to start receiving messages. In the ladder program example, message reception starts immediately after the system starts. No further operation is required.
- 2. Turn ON the Execute Bit (e.g., DB000200) for the MSG-SND function in the 2310 to start sending messages.

The ladder program example is designed to send a message every second after five seconds have elapsed from when the low-speed scan (or high-speed scan) starts.

 \cap

To change the message transmission interval, change the timer value $\ensuremath{\mathbb O}.$

	_	-			er starting scan for 5s d SB00001A for higt sca		
13 25/44	SB00003A After 5.0s, Scan Start- up Relay						DB00020D
14 27/46	DB00020D	DB000211	DB000212 error	DB000208	TON[10ms]	[W] Count DW00030 	DB000200 execute

5-15

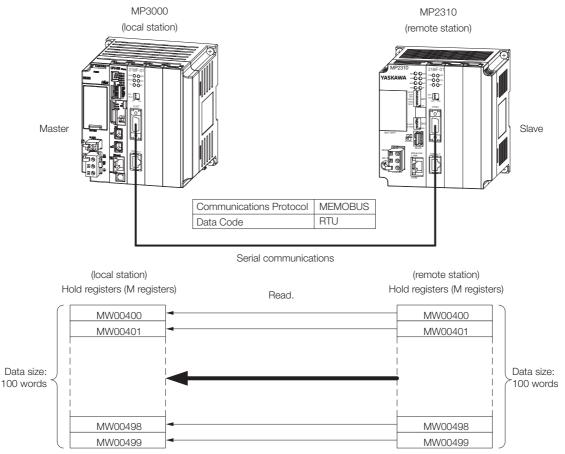
5.1.3 Using the MSG-SNDE Function with the MP3000 as the Master

5.1.3 Using the MSG-SNDE Function with the MP3000 as the Master

This section describes how to perform serial communications with a master MP3000 and slave MP2310 by using the MSG-SNDE function.

System Configuration Example

The following figure illustrates how the contents of the MW00400 to MW00499 hold registers in the MP2310 slave are read into the MW00400 to MW00499 hold registers in the MP3000 master.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

it	Module	Function Module/Slave	Status	Circuit No/Axi	sAddress	Motion Register
	module	Tunction Module/Slave	oracus	Start	supied circu	MOTION MEETSTER
Edit 01 [C	PU-302(32axes)] :					
Status /ersion		01 CPU				
		02 218IFD		문 삼 Circuit No1	1	
	00 (=) CPU302(32)[]	03 ⊞ SVC32		💷 Circuit No1	1	8000 - 87FF[H
	00 (=) OF 0302(32)[]	04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H
9		05 M-EXECUTOR				
MBU		06 UNDEFINED				
-303		07 UNDEFINED				
	01 UNDEFINED[·]				
_		01 217IF)	10101 Circuit No1	1	
	02 🕒 217IF-01[]	02 217IF 관		000 Circuit No2	1	

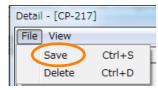
The 217IF Detail Definition Dialog Box will be displayed.

2. Set the detail definition for the 217IF.

Detail - [CP-217]	8
File View	
PT#: CPU#: [CIR#01]	
CIR#01	
Transmission Protocol MEMOBUS 💌	
Master/Slave Master 💌	
Device Address 0 (Master=0,Slave=1-63)	
Serial I/F RS-232 💌	
Transmission Mode RTU 💌	
Data Length 🛛 🛛 💌	
Parity even 💌	
Stop Bit IStop 💌	
Baud Rate 19.2K 💌	
Sending © Disable	
C Enable 0 - (1 - 100 ms)	
Receive monitor time ⓒ Disable (10ms+3bytes transmission	n time)
C Enable 0 (0-255ms)	
Automatically © Disable C Enable	
Automatically Reception settings Slave I/F Register Settings Head REG WD Size	
Readout of Input Relay IW00000 32768	
Readout of Input Register IW00000 32768	
Readout / Write-in of Coil MW00000 65535	
Readout / Write-in of Hold Register MW00000 65535 Write - in width of Coil/Hold Lo. MW00000	
Write - in width of Coil/Hold LO: MW000000 HE: MW65534	
	_
For Help, press F1	//

- ① Select [MEMOBUS] in the [Transmission Protocol] Box.
- ^② Select [Master] in the [Master/Slave] Box.
- ③ For [Transmission Mode], [Data Length], [Parity], [Stop Bit], and [Baud Rate], enter the settings according to the settings on the master.

- 5.1.3 Using the MSG-SNDE Function with the MP3000 as the Master
 - 3. Select [Save] from the File Menu.



4. Click the [Yes] Button.

CP-217:Transmission Parameters	X
Save OK?	
Yes No	

5. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

IF SB000003		ι, Uniy I δα	an UN' == '	TRUE	-			
NI C			clear all I	D registers		[W]Dest	[W]Data	[W]Width
2					SETW	DW00000	00000	00130
NL 2			EXPRESSION					E
			'function DW00112=0 'remote da DW00114=40 'remote da DW00115=0; 'remote da DW00116=0; 'data size	code'=0x00 x0003; //r ata address 00; //remo ata address ; //remote ata type'=0 ; //remote e'=64 00; //data PU' = 1	data addre	ster erss low (4 ss high (0) *cannot be words))	
			DW00120=40 'local dat DW00121=0 'local dat	ta address ; //local ta type'=0	l data addr	s high (O)		specified
END_IF								
	abort f ⊾[W]Set	for timeout if [W]Count		for all time ed in 10s aft		ommand		DB00020
DB000210	abort f [W]Set 00300	for timeout if [W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	omman d		DB00020
DB000210 TON [10ms]	▲ [W]Set	[W]Count DW00031		for all time ed in 10s aft DB000211	DB000212	ommand		
DB000210 TON [10ms] execute DB000202	▲ [W]Set	[W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	ommand		
DB000210 TON[10ms] DB000202 DB000202 abort	▲ [W]Set	[W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	ymman d		abort
DB000210 TON[10ms] execute DB000202 abort DB000202 DB000202 DB000202 DB000202 DB00021B	▲ [W]Set	[W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	nmand		abort
DB000210 TON [10ms] execute DB000202 abort DB000202 DB000202 DB000202 DB00021B abort 	▲ [W]Set 00300	[W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	mman d		abort
DB000210 execute DB000202 abort DB000202 DB000202 DB000202 DB000202 DB000218 DB000202 DB000218 DB000218 DB000218 DB000218 DB000218 DB000218 TOW[10ms] TOW[10ms] DB000218 DB000218 TOW[10ms] DB000218 DB000218 TOW[10ms] DB000218 DB0002	(₩)Set 00300 	[W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	mmand		abort
DB000210 execute DB000202 bbort DB000202 DB000202 DB000202 DB000202 DB000202 DB000201B DB000202 DB000201B DB000202 DB000200 DB000200 DB000200 DB000200 DB000200 DB000200 DB000200 DB000200 DB0000400 DB00400 DB00000 DB00000 DB0000 DB0000 DB0000 DB0000 DB0000 DB00000 DB0000 DB0000 DB00000 DB00000 DB00000	(₩)Set 00300 	[W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	mmand		DB00040
DB000210 TON[10ms] execute DB000202 bbort DB000202 DB000202 DB000202 DB00021B abort IF 'DB000400 IF DB000400	(₩)Set 00300 	[W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	mman d		DB00040
DB000210 execute DB000202 bbort DB000202 DB000200 DB000202 DB000200 DB000200 DB0000400 DB00000 DB00000 DB00000 DB00000 DB00000 DB0000 DB00000 DB00000 DB00000	(₩)Set 00300 	[W]Count DW00031 3s timer c		for all time ed in 10s aft DB000211	DB000212	mmand		→ [WLQ] Dest
DB000210 execute DB000202 bbort DB000202 DB000202 DB000202 DB000202 DB00021B DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB000202 DB0000202 DB0000202 DB0000202 DB0000202 DB0000202 DB0000202 DB0000202 DB0000202 DB0000202 DB0000000 DB0000000 DB000000 DB000000 DB000000 DB0000000 DB0000000 DB0000000 DB0000000 DB0000000 DB0000000 DB0000000 DB0000000 DB0000000 DB0000000 DB0000400 DB00040 DB000400 D	▲ [W] Set 00300 ' == true == true	I(W)Count DWD0031 3s timer o sount		for all time ed in 10s aft DB000211	DB000212	mman d		DB00040
DB000210 TON [10ms] execute DB000202 bort DB000202 DB000202 DB000202 DB000201 TON [10ms] TON [10ms] DB00021 DB000201	(₩)Set 00300 	[W] Count DW00031 Ss timer o sount [W] Count DW00030		for all time ed in 10s aft DB000211	DB000212	mman d		DB00040
DB000210 TON [10ms] execute DB000202 bb00202 DB000202 DB000202 DB00021B DB000202 DB00021B DB000400 DB00400 DB000400 DB000400 DB00400 DB00400 DB00400 DB00400 DB0040 DB00400 DB00400 DB00400 DB00400 DB00400 DB00400 DB00400 DB00400 DB0040 DB00400 DB000400 DB00400 DB00400 DB00400 DB	▲ [W]Set 00300 ' == true == true	[[W]Count DW00031 3s timer o ount		for all time ed in 10s aft DB000211	DB000212	mman d		DB00040
DB000210 TON [10ms] execute DB000202 bort DB000202 DB000202 DB000202 IF DB000200 IF DB000400 IF DB000400 IF DB000201 TON [10ms]	▲ [W]Set 00300 ' == true == true	[W]Count DW00031 3s timer o ount [W]Count DW00030 1s timer o		for all time ed in 10s aft DB000211	DB000212	mman d		DB00040
DB000210 rexecute DB000202 abort DB000202 DB000202 DB000202 TON [10ms] TON [10ms] Command TON [10ms]	<pre> [₩] Set 00300 ' == true true true (₩) Set 00100 </pre>	<pre>[W]Count DW00031 3s timer o ount [W]Count DW00030 1s timer o ount</pre>	The stment of complete	for all time ed in 10s aft DB000211	DB000212	mman d		DB00040

5.1.3 Using the MSG-SNDE Function with the MP3000 as the Master

257-							MSG	-SNDE
							[B]Execute DB000201 command	[B]Busy DB000210 execute
							(B) Abort DB000202 abort	[B] Complete DB000211 complete
							[W] Dev-Typ 00005	[B] Error DB000212 error
							[W] Pro-Typ 00001 [W]Cir-No	
							00001 [W] Ch-No 00001 [A] Param	
							DA00100 message se nd (extend ed) param-	
2	₽▲ !	complete'=	='TRUE'	◆tinis	hed normally			
267-	IF D							
267-		8000211==1	IRUE;		1			
3 277- 2		00002111					INC	
3 27/- 2	END_IF		KUE,				1	DW00024
3 277- 2 287- 5	END_1F	error'=='1 B000212==1		∳finish	ed abnormally		1	DW00024 count norm
3 27/- 2 4 28/-	END_1F			∳finish	ed abnormally		INC	DW00024 count norr ally (WL0) Dest DW00025
3 277- 287- 287- 5 297- 6 8	END_1F			◆finish	ed abnormails	STORE	INC	UW00024 count norm ally (WL0)Dest DW00025 count abno rmally (WLF00)Dest DW00026
3 277- 4L 2 287- 5 297- 6 307- 2 7 HL	END_1F			∳ f in ish	ed abnormails	STORE	INC	UW00024 count norm ally (WL0)Dest DW00025 count abno rmally (WLF00)Dest t (WLF00)Dest t (WLF00)Dest DW00027
3 277- NL 2 297- 5 297- 6 307- 2 7 317- 2 8 NL	END_1F			◆ f in ish	ed abnormalls	STORE	INC INC INC UWLFQD]Sro DW00100 result [WLFQD]Src DW00101 function st	UWD0024 ownt norm ally (WL0]Dest DW00025 ownt abno rmally (WLF00]Dest DW00026 save result (WLF00]Dest DW00027 save statu

6. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

5.1.3 Using the MSG-SNDE Function with the MP3000 as the Master

Setting Up the Remote Device (MP2310)

Use the following procedure to set up the MP2310.

- Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.
- 1. Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

Module Config		lion bound Dewah	ICKO C C	vilm All use adviles	will an a sife of	madula III e
File 🔡 Save	to project Edit Edit	Online 📉 Read	Self Configuratio	n All modules	* specified	module : Snap
Edit	Module	Function Module/Slave	Status	Circuit No/Axis	sAddress	Motion Register
		Turiettori module, olave	Otatus	Start	supied circu	Motion register
Edit	01 [MP2310] :					
Status Version		01 CPU				
version		02 218IFA 🕄		器 Circuit No1	1	
	00 🖲 MP2310[]	08 ⊞ SVB 🕄		💷 Circuit No1	1	8000 - 87FF[H]
		04		💷 Circuit No2	1	8800 - 8FFF[H]
		05 UNDEFINED				
	01 🕒 218IF-01[]	01 217IF	·	10101 Circuit No1	1	
	01 09 2101-01[]	02 218IF 23		몲 Circuit No2	1	
	02 UNDEFINED[]				

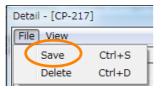
The 217IF Detail Definition Dialog Box will be displayed.

2. Set the detail definition for the 217IF.

	Detail - [CP-217]	8	1
1	File View		
ł	PT#: CPU#: CIR#01	_	l
	CIR#01		
	Transmission Protocol MEMOBUS Master/Slave Slave Device Address 1 Transmission Mode RTU Data Length Bait Parity even Stop Bit 11Stop Baud Rate Sending C Enable (1 - 100ms)		
	Receive monitor time (* Disable (10ms+3bytes transmission time) C Enable 0 (0-255ms)		
	Automatically C Disable C Enable Automatically Reception settings Head REG WD Size Slave I/F Register Settings Head REG WD Size Readout of Input Relay IW00000 \$2768 Readout of Input Register IW00000 \$6535 Readout / Write-in of Coil MW00000 \$6535 Write - in width of Coil/Hold LO: MW00000 HE MW65534 HE		
	For Help, press F1		

- ① Select [MEMOBUS] in the [Transmission Protocol] Box.
- ^② Select [Slave] in the [Master/Slave] Box.
- ③ For [Transmission Mode], [Data Length], [Parity], [Stop Bit], and [Baud Rate], enter the settings according to the settings on the master.
- ④ Select [Enable] for [Automatically].

3. Select [Save] from the File Menu.



4. Click the [Yes] Button.

CP-217:Transmission Parameters	X
Save OK?	
<u>Y</u> es <u>N</u> o	

5. Save the data to flash memory.

This concludes the setup.

Starting Communications

- 1. Turn ON the power to the MP2310 to start automatically receiving messages.
- 2. Turn ON the Execute Bit (e.g., DB000200) for the MSG-SNDE function in the MP3000 to start sending messages.

The ladder program example is designed to send a message every second after five seconds have elapsed from when the low-speed scan (or high-speed scan) starts.

1

To change the message transmission interval, change the timer value $\ensuremath{\mathbbm O}.$

				n every 1s after start or low scan and SB0000			
13 25/44	SB00003A After 5.0s, Scan Start- up Relay				•		DB00020D
14 27/46	DB00020D	DB000211 complete	DB000212 error	DB000208 TON[10 waiting	▲ [₩]Set 00100	[W] Count DW00030 	DB000200 execute

5.1.4 Message Functions

The message functions are used in user communications applications for the MEMOBUS protocol. You can send and receive message data by setting the necessary input items and parameters for the message functions.

Inputs and Outputs for the MSG-SNDE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 217IF = 5
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the MEMO-BUS protocol. 2: No-protocol communications 1 (unit: words) Not used for the MEMOBUS protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the MEMOBUS protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 217IF = 1 to 16
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same station. You can use the same channel number as long as multiple functions are not executed at the same time. 217IF = 1
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the param- eter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

Continued on next page.

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I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
Output Items	put 2 Com- plete B-VAL Process com- pleted. transmission has been con The Complete Bit turns O when message transmissi	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.			
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{e} \blacklozenge \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description	Reference Page
00		Processing Result	Gives the processing status.	I ← Processing Result (PARAM00) on page 2-9
01		Status	Gives the status of the current function.	I Status (PARAM01) on page 2-10
02		Detail Error Code, Lower Word	Gives the details of an error.	
03	Out-	Detail Error Code, Upper Word	Gives the details of an endi.	PARAM03 and PARAM03 on page 2-11
04	puts	Status 1	Not used for the 217IF.	-
05		Status 2	Not used for the 217IF.	-
06		Status 3	Not used for the 217IF.	-
07		Status 4	Not used for the 217IF.	_
08		Status 5	Not used for the 217IF.	-
09		Status 6	Not used for the 217IF.	-

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No.	I/O	Meaning	Description		Reference Page
10		Station Number	Sets the remote station number.	æ	◆ Connection Number (PARAM10) on page 2- 13
11		Option	Not used for the MEMOBUS protocol.		_
12		Function Code	Sets the code of the function in the MEMO- BUS protocol.	F	◆ Function Code (PARAM12) on page 5- 25
13		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	Ŧ	◆ Reserved for System (PARAM13) on page 2- 14
14		Remote Station Data Address, Lower Word	Sets the data address to read/write at the – remote station. (Use word addresses for reg-	मि	◆ Remote Station Data Address (PARAM14 and
15		Remote Station Data Address, Upper Word	isters, bit addresses for relays or coils.)		PARAM15) on page 2-15
16		Remote Station Register Type	Not used for the 217IF.	F	Inputs and Outputs for the MSG-RCVE Function on page 5-26
17	Inputs	Data Size	Sets the size of the data to read/write. (Use word sizes for registers, bit sizes for relays or coils.)	िस्त	◆ Data Size (PARAM17) on page 2-16
18		Remote CPU Module Number	Sets the CPU number at the remote station.	F	◆ Remote CPU Module Number (PARAM18) on page 2-17
19		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	F	◆ Reserved for System (PARAM19) on page 2- 17
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word	(F	◆ Local Station Data Address (PARAM20 and
21		Local Station Data Address, Upper Word	addresses for registers, bit addresses for relays or coils.)		PARAM21) on page 2-18
22		Local station register type	Sets the register type of the read/write data to store in the local station.	F	◆ Local Station Register Type (PARAM22) on page 2-19
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	Ŧ	◆ Reserved for System (PARAM23) on page 2- 19
24		For system use	This parameter is used by the system. It con- tains the channel number of the communica- tions buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	(Fig	◆ Reserved for System (PARAM24) on page 2- 19
25	_	Reserved for system.			
26		Reserved for system.	These parameters are used by the system.	(F	
27	-	Reserved for system.	Do not change the value of these parameters from a user program or by any other means.		(PARAM25 to PARAM28) on page 2-19
28		Reserved for system.			

◆ Function Code (PARAM12)

Set the function code to send.

You can use the functions that are registered to the function codes.

Function Code	Target	Target Data Function		en Acting as aster
Code	Туре	Tunction	Send Registers	Receive Registers
00 hex	_	Not used for the MEMOBUS protocol.		
01 hex	В	Reads the states of coils.		
02 hex	В	Reads the states of input relays.		
03 hex	W	Reads the contents of hold registers.		
04 hex	W	Reads the contents of input registers.		
05 hex	В	Changes the state of a single coil.	S, M, G, I, or O	M or G
06 hex	W	Writes to a single hold register.		
07 hex	_	Not used for the MEMOBUS protocol.		
08 hex	-	Performs a loopback test.		
0F hex	В	Changes the states of multiple coils.		
10 hex	W	Writes to multiple hold registers.		

Note: B: Bit data, W: Integer data

Inputs and Outputs for the MSG-RCVE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 217IF = 5
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the MEMO-BUS protocol. 2: No-protocol communications 1 (unit: words) Not used for the MEMOBUS protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the MEMOBUS protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 217IF = 1 to 16
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same station. You can use the same channel number as long as multiple functions are not executed at the same time. 217IF = 1
	7	Param	Address Inputs	Parameter list first address (MA,DA)	Specify the first address of the parameter list. A total of 52 words starting from the specified first word are automatically used for the param- eter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

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I/O Definitions	No.	Name	I/O Designation	Meaning	Description
Output Items	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
	2	Com- plete	B-VAL	Process completed.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{e} \leftarrow Error$ on page 2-23

MSG-RCVE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-RCVE function.

No.	I/O	Meaning	Description		Reference Page
00		Processing Result	Gives the processing status.	(F	◆ Processing Result (PARAM00) on page 2- 25
01		Status	Gives the status of the current function.	(F	◆ Status (PARAM01) on page 2-25
02		Detail Error Code, Lower Word			Detail Error Code (PARAM02 and
03		Detail Error Code, Upper Word	Gives the details of an error.		PARAM03) on page 2- 27
04	Out- puts	Status 1	Not used for the 217IF.		-
05	puto	Status 2	Not used for the 217IF.		_
06		Status 3	Not used for the 217IF.		_
07		Status 4	Not used for the 217IF.		_
08		Status 5	Not used for the 217IF.		-
09		Status 6	Not used for the 217IF.		-
10		Station Number	Sets the remote station number.	٤	◆ Connection Number (PARAM10) on page 2- 29
11	I/O	Option	Not used for the MEMOBUS protocol.		_
12	Output	Function Code	Gives the function associated with reading or writing that was received from the remote station as the function code.	(F	◆ Function Code (PARAM12) on page 2- 29
13	I/O	Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	٦	◆ Reserved for System (PARAM13) on page 2- 30

Continued on next page.

Reference Page No. I/0 Meaning Description Data Address. 14 Data Address F Lower Word Gives the first address of the data that was (PARAM14 and requested by the remote station. PARAM15) on page 2-Data Address. 15 30 Upper Word Out-16 **Register Types** Not used for the 217IF. puts Gives the data size that was requested by Data Size (PARAM17) A Data Size 17 on page 2-31 the remote station. Remote CPU 18 Not used for the MEMOBUS protocol. Module Number This parameter is used by the system. Reserved for System Æ Reserved for Do not change the value of this parameter 19 I/O (PARAM19) on page 2system. from a user program or by any other 31 means. Coil Offset 20 ◆ Coil Offset (PARAM20 Lower Word Æ Sets the offset word address for a coil (MB). and PARAM21) on page Coil offset 2-31 21 Upper Word Input Relay Offset, 22 ♦ Input Relay Offset F Lower Word Sets the offset word address for an input (PARAM22 and PARAM23) on page 2-Input Relay Offset. relay (IB). 23 32 Upper Word Input Register Input Register Offset 24 F Offset, Lower Word Sets the offset word address for an input (PARAM24 and register (IW). PARAM25) on page 2-Input Register 25 32 Offset, Upper Word Hold Register Hold Register Offset 26 (F Offset, Lower Word Sets the offset word address for a hold reg-(PARAM26 and ister (MW). PARAM27) on page 2-Hold Register 27 32 Offset, Upper Word Data Relay Offset, 28 ♦ Data Relay Offset नि Lower Word Sets the offset word address for a data (PARAM28 and relay (GB). PARAM29) on page 2-Data Relay Offset, Inputs 29 32 Upper Word Data Register ♦ Data Register Offset 30 Æ Offset, Lower Word Sets the offset word address for a data reg-(PARAM30 and ister (GW). PARAM31) on page 2-Data Register 31 32 Offset, Upper Word Output Coil Offset, F ♦ Output Coil Offset 32 Lower Word Sets the offset word address for an output (PARAM32 and PARAM33) on page 2coil (OB). Output Coil Offset, 33 32 Upper Word Output Register ◆ Output Register Off-34 F Offset, Lower Word Sets the offset address for an output regisset (PARAM34 and PARAM35) on page 2ter (OW). **Output Register** 35 32 Offset, Upper Word M Register Writing 36 Range LO, ♦ M Register Writing क्रि Lower Word Sets the first address of the writing range Range LO (PARAM36 for hold register coils. and PARAM37) on page M Register Writing 2-33 37 Range LO, Upper Word

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Continued from previous page.

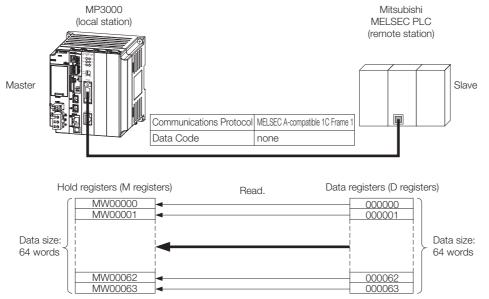
No.	I/O	Meaning	Description		ed from previous page. Reference Page
110.	1/0	M register Writing	Description		Hororonoo r age
38		Range HI, Lower Word	Sets the last address of the writing range	(F	♦ M Register Writing Range HI (PARAM38
39		M Register Writing Range HI, Upper Word	for hold register coils.		and PARAM39) on page 2-33
40		G register Writing Range LO, Lower Word	Sets the first address of the writing range	ଲ୍ଲ	
41		G Register Writing Range LO, Upper Word	for data register data relays.		and PARAM41) on page 2-33
42	Innuto	G Register Writing Range HI, Lower Word	Sets the last address of the writing range	۶.	◆ G Register Writing Range HI (PARAM42
43	Inputs	G Register Writing Range HI, Upper Word	for data register data relays.		and PARAM43) on page 2-33
44		O Register Writing Range LO, Lower Word	Sets the first address of the writing range	۲.	◆ O Register Writing Range LO (PARAM44
45		O Register Writing Range LO, Upper Word	for output registers.		and PARAM45) on page 2-33
46		O Register Writing Range HI, Lower Word	Sets the last address of the writing range	۲.	◆ O Register Writing Range HI (PARAM46
47		O Register Writing Range HI, Upper Word	for output registers.		and PARAM47) on page 2-34
48	_	For system use	This parameter is used by the system. It contains the channel number of the com- munications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	\$	 ◆ For System Use (PARAM48) on page 2- 34
49		Reserved for system.	These parameters are used by the system.	बि	Reserved for System
50		Reserved for system.	Do not change the value of these parame- ters from a user program or by any other		(PARAM49 to PARAM51) on page 2- 34
51		Reserved for system.	means.		04

5.2 A-Compatible 1C Frame Protocol

5.2.1 Using the MSG-SNDE Function with the MP3000 as the Master

Setting Example

The following figure illustrates how the contents of 64 words from the MB00000 to MB00063 hold registers in the MP3000 master are written to the 000000 to 00063 data registers in the CPU Unit of the Mitsubishi PLC slave.



MP3000 Setup

Use the following procedure to set up the MP3000.

Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.

1. Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

🗄 File 🔄 Save to project 📳 Edit 🏥 Setting 📳 Online 🐀 Read 🍙 Write 📳 Self Configuration ዀ All modules 🤺 specified module 📳 Snap 🏢 Si									
< Edit	Module	Function Module/Slave	Status	Circuit No/Axis Start	Motion Register				
Edit	01 [CPU-302(32axes)] :								
Status Version		01 CPU							
Version		02 218IFD		击 Circuit No1	1				
	00 CPU302(32)[]	03 ± SVC32 <℃		💷 Circuit No1	1	8000 - 87FF[H]			
		04 🛨 SVR32		💷 Circuit No3	1	9000 - 97FF[H]			
	2	05 M-EXECUTOR							
	M BC	06 UNDEFINED							
		07 UNDEFINED							
	01 UNDEFINED[-]							
	02 💽 217IF-01[]	01 217IF		10101 Circuit No1	1				
		02 217IF		10101 Circuit No2	1				

The 217IF Detail Definition Dialog Box will be displayed.

2. Set the detail definition for the 217IF.

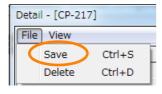
File View PT#: CPU#: CIR#01	
PT#: CPU#: CIR#01	
CIR#01	
Transmission Protocol MELSEC	1
Master/Slave Master	2
Device Address 0 🔄 (Master=0,Slave=1-63)	
Serial I/F RS-232 💌	
Transmission Mode none 💌	
Data Length 8Bit 💌	3
Parity even 💌	
Stop Bit IStop 💌	
Baud Rate 19.2K 💌	
Sending (Disable	
C Enable 0 📫 (1 - 100ms)	
Receive monitor time (Disable (10ms+3bytes transmission time)	
○ Enable 0	
Automatically 💿 Disable 🔿 Enable	
Automatically Reception settings Head REG WD Size	
Readout of Input Relay IW00000 32768	
Readout of Input Register IW00000 32768	
Readout / Write-in of Coil MW00000 65535 -	
For Help, press F1	

① Select [MELSEC] in the [Transmission Protocol] Box.

^② Select [Master] in the [Master/Slave] Box.

③ Configure the other settings, from [Device Address] to [Baud Rate], as necessary.

3. Select [Save] from the File Menu.

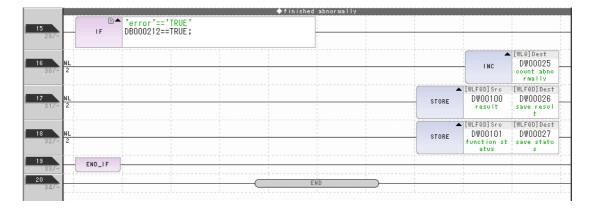


4. Click the [Yes] Button.

CP-217:Transmission Parameters	×
Save OK?	
Yes <u>N</u> o	

5. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

	IF		Scan Start		■ initia rs for MSG-SND or low scan an can ON' == '					
					clear all D	registers				
NL 2							SETW A	[W]Dest DW00000	[W]Data 00000	[W]Width 00130
۲ 411										
2					'function DW001120x 'remote da DW00115-0; 'remote da DW00115-0; 'remote da DW00118-0; data size DW00118-8 data size DW00118-8 'iccal dat DW00120-0; 'local dat	//set re code'=0x00 0003; //r ta address //remote ta type'=0 //remote '=64 u' = 1 1; //se a address //local a address //local a type'=0	data type > size (64 work) t remote CPI low'=0 data address high'=0 data address data address	ster ss low (O) ss high (O) *cannot be rds) J number s low (O) s high (O)	specified	Ē
	END_IF				DWOO122=0;		data type ()	l register)	*can be sp	ecified
			abort [W]Set	for timeout [W]Count	if not complet	ed in 10s at	fter sending c	ommand		
	DB000210	TON [10ms]	00300	DW00031 3s timer c		DB000211	DB000212			DB00020
	execute DB000202		1	ount	ļ	complete	error			abort
\vdash	abort									
	DB000202	DB00 <u>0</u> 21B								DB00040
	abort		 							<u> </u>
\vdash	- IF 🗎	'DB000400' DB000400 =:			1					
NL				1						[WLQ]Dest DW00023
2										DW0002
H	END_IF			<u></u>				 		
	DB000201	TON [10ms]	[W]Set 00100	[W] Count DW00030						DB00020
	command			1s timer c ount						start sei ng
	DB000200		DB000211	DB000212	DB000202					DB00020
	start sendi ng		complete	error	abort					comman
	DB000201									
	command									
										SNDE
									[B] Execute DB000201 command	[B] Busy DB00021 execute
									[B] Abort	[B]Comple
									DB000202 abort	DB00021 complet
									[W] Dev-Typ 00005	[B]Error DB00021
									[W]Pro-Typ	error
									00001 [W]Cir-No	1
									00001 [W]Ch-No	
									00001	
									(A)Param DAOO1OO message se	
									nd (extend ed) param-	
i an	LF BA	'complete' DB000211==			◆finished	normally				
				1					-	
NL 2			,	1					INC	[WLQ]Dest DW0002 count no



6. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

Setting Up the Remote Device (Mitsubishi PLC)

Use the following procedure to set up the Mitsubishi PLC (MELSEC device). The AJ71UC24 is used as an example.

Information MELSEC devices are manufactured by Mitsubishi Electric Corporation. Contact Mitsubishi Electric Corporation for further information on MELSEC devices.

Buffer Memory Settings

Change the two locations shown in the following table.

The buffer memory is not backed up. Set these values in the user program.

Address	Name	Default	Recommended Value	
10B hex	RS-232C CD terminal check setting area	0 (Check)	1 (Do not check)	
11A hex	Transfer flow control designation area	0 (DTR flow control)	1 (No DTR flow control)	

Note: 1. Keep the other addresses at the default settings.

2. The above addresses are the values when the 217IF-01 is mounted in Slot 1. The values will change in other slots.

Station Number Setting Switches

Set the station number between 01 and 31. (Recommended value: 01)

Switch Name	Parameter	Recommended Value
\times 10 (Rotary switch from 0 to 9)	Sets the tens place of the station number.	0
\times 1 (Rotary switch from 0 to 9)	Sets the ones place of the station number.	1

Switch	Parameter	Desc	Description			
Name	Parameter	ON	OFF	Value ^{*1}		
SW11	Main channel setting	RS-422	RS-232C	OFF		
SW12	Data bits setting	8 bits	7 bits	ON		
SW13				OFF		
SW14	Baud rate setting	*2 See the following	ON			
SW15			ON			
SW16	Parity bit selection	Use	Do not use	ON		
SW17	Even parity/odd parity	Even	Odd	ON		
SW18	Stop bit setting	2 bits	1 bit	OFF		
SW21	Checksum selection	Use	Do not use	ON		
SW22	Allow writes while running	Allow	Prohibit	ON		
SW23	Computer link/multidrop	Computer link Multidrop		ON		
SW24	Not used	_		OFF		

Communications Settings Switches on the AJ71UC24 Module

*1. The values in shaded cells are example settings.

*2. The following table shows the relationship between the settings of switches SW13 to SW15 and the baud rate.

Rate in bps	300	600	1200	2400	4800	9600	19200
SW13	OFF	ON	OFF	ON	OFF	ON	OFF
SW14	OFF	OFF	ON	ON	OFF	OFF	ON
SW15	OFF	OFF	OFF	OFF	ON	ON	ON

Note: For the AJ71C24-S8, the selection of terminating resistance on the sending device and the settings to use as well as the selection of terminating resistance on the receiving device and the settings to use depends on the wiring.

Switch	Setting	Port Ope			
Name	Switch Number	RS-232C Port		RS-422/485-side Port	Setting Value
	0	Cannot be used			
	1	Format 1 protocol mode		No-protocol communica- tions	
	2	Format 2 protocol mode		No-protocol communica- tions	
	3	Format 3 protocol mode		No-protocol communica- tions	
	4	Format 4 protocol mode		No-protocol communica- tions	-
MODE	5	No-protocol communication	S	Format 1 protocol mode	RS-232C connec-
(Rotary	6	No-protocol communication	S	Format 2 protocol mode	tion: 1
switch	7	No-protocol communication	S	Format 3 protocol mode	RS-422/485 con- nection: 5
from 0 to F)	8	No-protocol communications	S	Format 4 protocol mode	THECTION: 5
	9	No-protocol communica- tions	\leftrightarrow	No-protocol communica- tions	
	А	Format 1 protocol mode	\leftrightarrow	Format 1 protocol mode	
	В	Format 2 protocol mode	\leftrightarrow	Format 2 protocol mode	
	С	Format 3 protocol mode	\leftrightarrow	Format 3 protocol mode	
	D	Format 4 protocol mode	\leftrightarrow	Format 4 protocol mode	
	E	Cannot be used			
	F	For standalone testing			

Mode Setting Switch

Starting Communications

Use the following procedure to write the data in the hold registers in the MP3000 to the internal relays in the CPU Unit of the Mitsubishi PLC.

1. Start receiving messages on the Mitsubishi PLC.

The system will automatically start the message reception operation. No further operation is required.

2. Turn ON the power to the MP3000 to start transmitting messages.

The ladder program example is designed to turn ON the Execute Bit (DB000201) in the message send function after one second has elapsed from when the low-speed scan (or high-speed scan) starts. Thereafter, the message send function is executed every second by alternating the Execute Bit (DB000201) between OFF and ON each time the message send function completes execution normally or with an error.

5.2.2 Message Functions

Inputs and Outputs for the MSG-SNDE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Exe- cute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 217IF = 5
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	 Specify the type code of the communications protocol. 1: MEMOBUS Select this protocol when using the A-compatible 1C Frame protocol. MEMOBUS is automatically converted to the A-compatible 1C Frame protocol inside the 217IF. 2: No-protocol communications 1 (unit: words) Not used for the A-compatible 1C Frame protocol. 3: No-protocol communications 2 (unit: bytes) Not used for the A-compatible 1C Frame protocol.
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 217IF = 1 to 16
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communi- cations buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel num- ber for the same station. You can use the same channel number as long as multiple functions are not executed at the same time. 217IF = 1
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the parameter list. The parameter list is used by inputting function codes and relevant parame- ter data. It is also where the process results and status are output.

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Continued from previous page.

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
Output Items	2	Com- plete	B-VAL	Process completed.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{e} \blacklozenge$ Error on page 2-8

MSG-SNDE Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description	Reference Page
00		Processing Result	Gives the processing status.	I → Processing Result (PARAM00) on page 2-9
01		Status	Gives the status of the current function.	Status (PARAM01) on page 2-10
02		Detail Error Code, Lower Word	Gives the details of an error.	⊕ Detail Error Code (PARAM02 and
03	Out-	Detail Error Code, Upper Word	Gives the details of all error.	PARAM02 and PARAM03) on page 2-11
04	puts	Status 1	Not used for the 217IF.	-
05		Status 2	Not used for the 217IF.	-
06		Status 3	Not used for the 217IF.	-
07		Status 4	Not used for the 217IF.	-
08		Status 5	Not used for the 217IF.	-
09		Status 6	Not used for the 217IF.	-

Continued on next page.

No.	I/O	Meaning	Description		Reference Page
10		Station Number	Sets the remote station number.	٤	◆ Station Number (PARAM10) on page 5- 39
11		Option	Not used for the A-compatible 1C Frame protocol.		-
12		Function Code	Sets the code of the function in the A-compatible 1C Frame protocol.	F	◆ Function Code (PARAM12) on page 5- 39
13		Reserved for system.	Not used for the A-compatible 1C Frame protocol.		-
14		Remote Station Data Address, Lower Word	Sets the data address to read/write at the remote station. (Use word addresses for	Ē	◆ Data Addresses (PARAM14 and
15		Remote Station Data Address, Upper Word	registers, bit addresses for relays or coils.)		PARAM15) on page 5-39
16		Remote Station Register Type	Not used for the A-compatible 1C Frame protocol.		_
17	Inputs	Data Size	Sets the size of the data to read/write. (Use word sizes for registers, bit sizes for relays or coils.)	Ē	◆ Data Size (PARAM17) on page 5-40
18		Remote CPU Module Number	Not used for the A-compatible 1C Frame protocol.		-
19		Reserved for system.	Not used for the A-compatible 1C Frame protocol.		_
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word	(F	◆ Data Addresses (PARAM14 and
21		Local Station Data Address, Upper Word	addresses for registers, bit addresses for relays or coils.)		PARAM15) on page 5-39
22		Local Station Register Type	Sets the register type of the read/write data to store in the local station.	۶.	◆ Local Station Register Type (PARAM22) on page 2-19
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	L.	◆ Reserved for System (PARAM23) on page 2- 19
24		For system use	This parameter contains the channel num- ber of the communications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	E.	◆ Reserved for System (PARAM24) on page 2- 19
25	_	Reserved for system.			
26	+	Reserved for system.	These parameters are used by the system. Do not change the value of these parame-	(F	◆ Reserved for System (PARAM25 to PARAM28)
27	+	Reserved for system.	ters from a user program or by any other means.		on page 2-19
28		Reserved for system.			

Station Number (PARAM10)

Specify the station number. The valid setting range is given in the following table.

Communications Device	Station Number	Remarks
	0x100	Sends the message to the remote station set to station number 0.
Serial (217IF)	1 to 254	Sends the message to the remote station set by the specified sta- tion number.

Note: The station number setting may be fixed to 0 depending on the MELSEC serial unit. In this case, set the remote station number to 0x100.

◆ Function Code (PARAM12)

This parameter gives the function code that was received.

The following table lists the function code when using MELSEC as the protocol type.

Common Instructions for MELSEC ACPUs	Function Code	Target Data Type	Function
WB	01 or 02 hex	В	Reads bit devices in units of 16 points.
VV n	03 or 04 hex	W	Reads word devices in units of one point.
WW	0F hex	В	Writes bit devices in units of 16 points.
VVVV	10 hex	W	Writes word devices in units of one point.
TT	08 hex	-	Performs a loopback test.

Note: 1. B: Bit data, W: Integer data

2. AnCPU special instructions cannot be used. Instructions for extended file registers are also not supported.

Data Addresses (PARAM14 and PARAM15)

Set the first address of the data.

Enter the first address as a decimal or hexadecimal number.

Example: If the first address is MW01000, enter 1000 (decimal) or 3E8 (hexadecimal).

The applicable function codes and valid range of data addresses depend on the device type and device range of the MELSEC PLC.

The following table lists the setting ranges of data addresses when using MELSEC as the protocol type.

Device	Common Instruc- tions for ACPUs Device Range	Decimal/ Hexa- decimal	Function Code	Data Address Setting Range	Corresponding Register Addresses
х	X0000 to X07FF	Hexa- decimal	02 hex: Input relay	0 to 2047	MB000000 to MB00127F
Y	Y0000 to Y07FF	Hexa- decimal	01 or 0F hex: Coil	0 to 2047	MB000000 to MB00127F
М	M000 to M2047	Decimal	01 or 0F hex: Coil	2048 to 4095	MB001280 to MB00255F
М	M9000 to M9255	Decimal	01 or 0F hex: Coil	4096 to 4351	MB002560 to MB002715F
В	B0000 to B03FF	Hexa- decimal	01 or 0F hex: Coil	4352 to 5375	MB002720 to MB00335F
F	F0000 to F0255	Decimal	01 or 0F hex: Coil	5376 to 5631	MB003360 to MB00351F
TS	TS000 to TS255	Decimal	02 hex: Input relay	2048 to 2303	MB001280 to MB00143F
TC	TC000 to TC255	Decimal	02 hex: Input relay	2304 to 2559	MB001440 to MB00159F
CS	CS000 to CS255	Decimal	02 hex: Input relay	2560 to 2815	MB001660 to MB00175F
CC	CC000 to CC255	Decimal	02 hex: Input relay	2816 to 3071	MB001760 to MB00191F
TN	TN0000 to TN255	Decimal	04 hex: Input register	0 to 255	MW00000 to MW00255
CN	CN0000 to CN255	Decimal	04 hex: Input register	256 to 511	MW00256 to MW00511
D	D0000 to D1023	Decimal	03 or 10 hex: Hold register	0 to 1023	MW00000 to MW01023

Continued on next page.

				00	nandod nom providuo pago.
Device	Common Instruc- tions for ACPUs Device Range	Decimal/ Hexa- decimal	Function Code	Data Address Setting Range	Corresponding Register Addresses
D (Special)	D9000 to D9255	Decimal	03 or 10 hex: Hold register	1024 to 1279	MW01024 to MW01279
W	W0000 to W03FF	Hexa- decimal	03 or 10 hex: Hold register	1280 to 2303	MW01280 to MW02303
R	R0000 to R8191	Decimal	03 or 10 hex: Hold register	2304 to 10495	MW02304 to MW10495

Continued from previous page.

Note: 1. The address range of the device area depends on the MELSEC PLC, even if addresses are within the given range. Refer to the MELSEC manual for details.

2. The corresponding register address in the MP3000-series Machine Controller can be adjusted by using the offset settings of the MSG-SND function.

Data Size (PARAM17)

Set the data size for the read/write request as the number of bits or words.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and communications device.

The following table lists the setting ranges of data sizes when using MELSEC as the protocol type.

MELSEC Common Instruc- tions for ACPUs	Function Code	Function	Data Size Setting Range
WB	01 or 02 hex	Reads bit devices in units of 16 points.	1 to 512 points (32 words)
VVII	03 or 04 hex	Reads word devices in units of one point.	1 to 64 points
WW	0F hex	Writes bit devices in units of 16 points.	1 to 160 points (10 words)
~~~~	10 hex	Writes word devices in units of one point.	1 to 64 points
TT	08 hex	Performs a loopback test.	-

# 5.3 OMRON Protocol

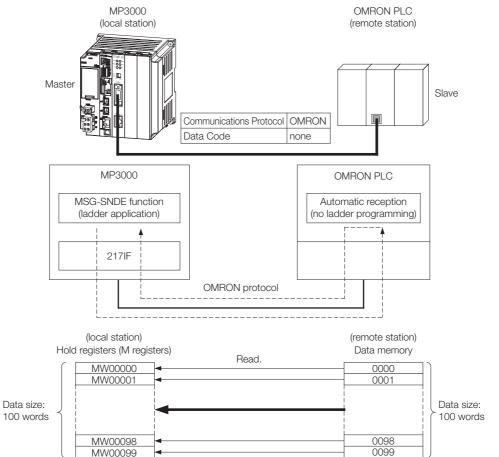
# 5.3.1 Using the MSG-SNDE Function with the MP3000 as the Master

This section describes how to communicate with an OMRON PLC by using the MSG-SNDE function.

# **Setting Example**

The following figure illustrates how the contents of 100 words from the MW00000 to MW00099 hold registers in the MP3000 master are written to the DM0000 to DM0099 data memory in the CPU Unit of the OMRON PLC slave.

On the MP3000, bits are written and read in word units. It is not possible to write or read less than whole words.



#### MP3000 Setup

Use the following procedure to set up the MP3000.

- Information If the communications parameters (IP address and subnet mask) have already been set, skip to step 3.
- 1. Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

t	Module	Function Module/Slave	Status	Circuit No/Axis	Address	Motion Register
	module	Tunction Module/Slave	oracus	Start	supied circu	MOTION NEEDSTER
Edit 01 [CPU	-302(32axes)] :					
itatus		01 CPU				
		02 218IFD		면 Circuit No1	1	
	CPU302(32)[]	03 ⊞ SVC32 – ₹		💷 Circuit No1	1	8000 - 87FF[H]
		04		<b>⊏⊞</b> Circuit No3	1	9000 - 97FF[H]
2		05 M-EXECUTOR				
Ê		06 UNDEFINED				
MBU-303		07 UNDEFINED				
[∞] 01	UNDEFINED[]					
		01 217IF		IOIOI Circuit No1	1	
02 (	■ 217IF-01[]	02 217IF		001 Circuit No2	1	

The 217IF Detail Definition Dialog Box will be displayed.

#### 2. Set the detail definition for the 217IF.

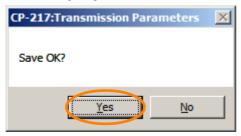
	Detail - [CP-217]					[	×	]
	File View							
l	PT#: CPU#:		CIR;	#01				
	CIR#01						*	
	Master/Slave N Device Address 0 Serial L/F R Transmission Mode n Data Length 8 Parity e	S-232 one Bit ven	<pre>(Master= (Master= ) </pre>	0,Slav	re=1−63)		E	
		Stop	-					
	Baud Rate 1	9.2K	<u>•</u>					
		Disable Enable	0 -	(1 -	- 100ms)			
		Disable Enable	(10ms+3byt		ansmission ti 255ms)	me)		
	Automatically 👩 [	Disable	C Enable					
	Automatically Reception sett Slave I/F Register Settings	tings —	Head RE	G	WD Size			
l	Readout of Input Relay		IW00000		32768			
	Readout of Input Register		IW00000		32768			
	Readout / Write-in of Coil		MW0000	0	65535		Ŧ	
	For Help, press F1						//	

- ① Select [OMRON] in the [Transmission Protocol] Box.
- ² Select [Master] in the [Master/Slave] Box.
- ③ Configure the other settings, from [Device Address] to [Baud Rate], as necessary.

3. Select [Save] from the File Menu.

Detai	il - [CP-217	]	
File	View		
	Save	Ctrl+S	L
	Delete	Ctrl+D	

4. Click the [Yes] Button.



5. Create a ladder program for the MSG-SNDE function. A ladder program example is shown below.

07-	IF S	After Low BOOOOO3 =:	Scan Star = TRUE;	t, Only 1 Sc	can ON' == 'TRUE'	1		1		
									<u> </u>	
					clear all D regist	ers	<b>_</b>	[W]Dest	[W]Data	[W]Width
17- 2							SETW	DW00000	00000	00130
							·		-,	
2/- 2					EXPRESSION 'remote station'	-1				Ē
					DW00112=0x0003; 'remote data add DW00114=0; //re 'remote data add DW00115=0; //re 'remote data typ DW00116=0; //re 'data size'=100 DW00117=100; // 'remote CPU' = 1	mote c ress H mote c e'=0 mote c data s	data addre: high'=0 data addre: data type : size (64 w	ss low (O) ss high (O) *cannot be ords)	) specified	
					DW00118 = 1; 'local data addr DW00120=0; //lo 'local data addr DW00121=0; //lo 'local data type DW00122=0; //lo	ess lo cal da ess hi çal da '=0	remote CPI ow'=0 ata addres: igh'=0 ata addres:	J number s low (O) s high (O)	) *can be s	specified
3/- E	END_IF				'local data addr DW00120=0; //lo 'local data addr DW00121=0; //lo 'local data type	ess lo cal da ess hi çal da '=0	remote CPI ow'=0 ata addres: igh'=0 ata addres:	J number s low (O) s high (O)	) *can be s	specified
37- E			abort	for timeout	'local data addr DW00120=0; //lo 'local data addr DW00121=0; //lo 'local data type DW00122=0; //lo	ess lo cal da ess hi çal da '=0 cal da time	remote CPI ow'=0 ata addres: igh'=0 ata addres: ata type (1	J number s low (O) s high (O) ∦ register	) *can be s	specified
37-	000210		[W]Set	[W]Count	'local data addr DW00120=0; //ic 'local data addr DW00121=0; //ic 'local data type DW00122=0; //ic = treatment for all if not completed in DB000	ess lo cal da ess hi cal da '20 cal da time 0s afto 211	remote CPI w'=0 ata addres: ata addres: ata type (I er sending c DB000212	J number s low (O) s high (O) ∦ register	) *can be s	
3/- DB	000210	TON [10ms]		[W]Count DWOOO31 3s timer c	'local data addr DW00120=0; //loc 'local data addr DW00121=0; //loc 'local data type DW00122=0; //loc treatment for all f not completed in DB000	ess lo cal da ess hi cal da '=0 cal da time 0s afto 211	remote CPI ow'=0 ata addres: igh'=0 ata addres: ata type (I er sending o DB000212	J number s low (O) s high (O) ∦ register	) *can be s	DB00020
37- DB	000210     xecute		[W]Set	[W]Count DW00031	'local data addr DW00120=0; //ic 'local data addr DW00121=0; //ic 'local data type DW00122=0; //ic = treatment for all if not completed in DB000	ess lo cal da ess hi cal da '=0 cal da time 0s afto 211	remote CPI w'=0 ata addres: ata addres: ata type (I er sending c DB000212	J number s low (O) s high (O) ∦ register	) *can be s	
3/- DB 4/- DB	000210		[W]Set	[W]Count DWOOO31 3s timer c	'local data addr DW00120=0; //loc 'local data addr DW00121=0; //loc 'local data type DW00122=0; //loc treatment for all f not completed in DB000	ess lo cal da ess hi cal da '=0 cal da time 0s afto 211	remote CPI ow'=0 ata addres: igh'=0 ata addres: ata type (I er sending o DB000212	J number s low (O) s high (O) ∦ register	) *can be s	DB00020
3/- DBI	000210 	TON [10ms]	[W]Set	[W]Count DWOOO31 3s timer c	'local data addr DW00120=0; //loc 'local data addr DW00121=0; //loc 'local data type DW00122=0; //loc treatment for all f not completed in DB000	ess lo cal da ess hi cal da '=0 cal da time 0s afto 211	remote CPI ow'=0 ata addres: ata addres: ata type (I er sending o DB000212	J number s low (O) s high (O) ∦ register	) *can be s	DB00020
4/- DBI	000210 xecute 0000202 bort 000202 [	TON [10ms]	[W]Set	[W]Count DWOOO31 3s timer c	'local data addr DW00120=0; //loc 'local data addr DW00121=0; //loc 'local data type DW00122=0; //loc treatment for all f not completed in DB000	ess lo cal da ess hi cal da '=0 cal da time 0s afto 211	remote CPI ow'=0 ata addres: ata addres: ata type (I er sending o DB000212	J number s low (O) s high (O) ∦ register	) *can be s	DB00020 abort
A7- DBI	000210 	DB00021B	[W] Set 00300	[W]Count DWOOO31 3s timer c	'local data addr DW00120=0; //loc 'local data addr DW00121=0; //loc 'local data type DW00122=0; //loc treatment for all f not completed in DB000	ess lo cal da ess hi cal da '=0 cal da time 0s afto 211	remote CPI ow'=0 ata addres: ata addres: ata type (I er sending o DB000212	J number s low (O) s high (O) ∦ register	) *can be s	DB00020
87- DBI 47- ex DBI 107- a	000210 xecute 000202 000202 000202 000202 000202 000202 000202 000202 000202 000210 000210 000210 000210 000210 000210 000210 000210 000210 000210 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 0002 00020 00020 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 000 0002 0002 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000	TON [10ms]	(W)Set 00300 == true	[W]Count DWOOO31 3s timer c	'local data addr DW00120=0; //loc 'local data addr DW00121=0; //loc 'local data type DW00122=0; //loc treatment for all f not completed in DB000	ess lo cal da ess hi cal da '=0 cal da time 0s afto 211	remote CPI ow'=0 ata addres: ata addres: ata type (I er sending o DB000212	J number s low (O) s high (O) ∦ register	) *can be s	DB0002C abort
47- 107- 87- 0Bi 0Bi 0Bi 0Bi 0Bi	000210 xecute 000202 000202 000202 000202 000202 000202 000202 000202 000202 000210 000210 000210 000210 000210 000210 000210 000210 000210 000210 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 000202 0002 00020 00020 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 0002 000 0002 0002 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000	DB00021B	(W)Set 00300 == true	[W]Count DWOOO31 3s timer c	'local data addr DW00120=0; //loc 'local data addr DW00121=0; //loc 'local data type DW00122=0; //loc treatment for all f not completed in DB000	ess lo cal da ess hi cal da '=0 cal da time 0s afto 211	remote CPI ow'=0 ata addres: ata addres: ata type (I er sending o DB000212	J number s low (O) s high (O) ∦ register		DB00020 abor t DB00040

#### 5.3 OMRON Protocol

	END_IF							
	DB000201	1	[W] Set	[W] Count				DB00020
9 167-	command	- TON [10ms]	00100	DW00030 1s timer c ount				start sen ng
10	DB000200		DB000211	DB000212	DB000202			DB00020
197-	start sendi		complete	error	abort			command
-	ng DB000201							
-	command							
							MSG	-SNDE
257-							[B]Execute	[B]Busy
							DB000201 command	DB000210 execute
							[B]Abort	[B]Complet
							abort	DB000211 complete
							[W] Dev-Typ 00005	[B] Error DB000212 error
							[W] Pro-Typ 00001	
							[W]Cir-No	
							00001 [W]Ch-No	
							00001 [A] Param	
							DA00100	
							message se nd (extend ed) param-	
					♦ finished normally		Cot hai aili.	
2	IF E	'complete' DB000211==	'=='TRUE' =TRUE;					
26/-								
1	L							[WLQ]Dest DW00024
3 N			1				INC	count nor ally
13 277- 1	2							a 1 1 y
277- 2	END_IF							4117
27/-	END_IF				♦finished abnormally			arry
27/- 1 14 28/-	END_IF	'error'==' DB000212==	TRUE '		♦ finished abnormally			arry
14	END_IF	'error'==' DB000212==	TRUE' TRUE;		◆finished abnormally			
27/- 2 4 28/- 5 29/-	END_IF	'error'== DB000212==	'TRUE' TRUE;		◆finished abnormally			[WLQ]Dest
27/- 2 4 28/- 5 29/-	END_IF	'error'== DB000212==	TRUE ' TRUE ;		◆finished abnormally			[WLQ]Dest DW00025 count abn
27/- 1 14 287- 15 297- 16 30/- 1	END_IF	'error'==' DB000212==	TRUE' TRUE;		◆finished abnormally 		INC	[WLQ] Dest DW00025 count abn rmally [WLFQD] Des
27/- 1 14 28/- 15 29/- 16 30/- 1		'error'== DB000212==	TRUE ; TRUE ;		◆finished abnormally		INC	(WLQ]Dest DW00025 count abn rmally
277- 14 287- 15 297- 16 807- 17 817- 17		'error'== DB000212==	TRUE':		◆finished abnormally	STORE	INC (WLFQD)Src DWOO100 result (WLFQD)Src	(WLQ)Dest DW00025 count abn rmally (WLFQD)Des DW00026 save resu t (WLFQD)Des
27/- 1 14 28/ 15 29/ 16 30/- N 17 N		'error'==' DB000212==	'TRUE '		◆finished abnormally	STORE	INC (WLFQD)Src DW00100 result	<pre>(WLQ)Dest DW00025 count abn rmally (WLFQDDes DW0026 save resu t (WLFQDDes DW00027</pre>
277- 1 287- 15 297- 16 307- <mark>N</mark> 17 317- <u>N</u> 18 NN		'error'==' DB000212=:	TRUE;		◆ finished abnormally	STORE	INC ↓ [WLFQD]Src DW00100 result ↓ [WLFQD]Src DW00101 function st	<ul> <li>[WLQ] Dest</li> <li>DW00025</li> <li>count abn</li> <li>rmally</li> <li>[WLFQD] Des</li> <li>DW00026</li> <li>save resu</li> <li>[WLFQD] Des</li> <li>DW00027</li> <li>Save stat</li> </ul>

#### 5.3.1 Using the MSG-SNDE Function with the MP3000 as the Master

#### 6. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

### Setting Up the Remote Device (OMRON PLC)

Setting the remote device (OMRON PLC) depends on the model of OMRON PLC. Refer to the OMRON manual for details.

Item	Setting Value (Recommended Value)
Baud Rate	Set to the value on the Communications Module.
Start Bit	1 bit
Data Length	7 or 8 bits (Use same value as 217IF.)
Stop Bit	1 or 2 bits (Use same value as 217IF.)
Parity Bit	Even, odd, or none (Use same value as 217IF.)
Communications Mode	Host link
RS/CS flow control setting	No flow control
Unit No.	Set to a value other than 0.*

* The default value for the unit number is 0. However, change the unit number on the OMRON PLC to a value other than 0 because the device address of an MP3000-series Machine Controller is 0 when it acts as the master.

### Starting Communications

Use the following procedure to write the data in the hold registers in the MP3000 to the I/O bits in the CPU Unit of the OMRON PLC.

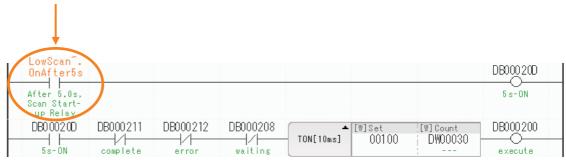
1. Start the message receive operation on the OMRON PLC.

The system will automatically start the message reception operation. No further operation is required.

#### 2. Turn ON the power to the MP3000 to start transmitting messages.

The ladder program example is designed to turn ON the Execute Bit (DB000200) in the message send function after six seconds has elapsed from when the low-speed scan (or high-speed scan) starts. Thereafter, the message send function is executed every second by alternating the Execute Bit (DB000200) between OFF and ON each time the message send function completes execution normally or with an error.

Note: The MP3000 will establish the TCP connection when it starts execution of the MSG-SNDE function. SB00003A: Turns ON 5 seconds after start.



# 5.3.2 Message Functions

# Inputs and Outputs for the MSG-SNDE Function

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Execute	B-VAL	Executes the transmission.	Specify the bit to use to execute the message transmission. When the Execute Bit turns ON, the message will be sent. Keep the Execute Bit ON until the Complete or Error Bit turns ON. To send another message, turn OFF the Execute Bit for at least one scan and then turn it ON again.
	2	Abort	B-VAL	Forces the transmission to end.	Specify the bit to use to abort the message transmission. When the Abort Bit turns ON, the message transmission will be stopped unconditionally. The Abort Bit takes precedence over the Execute Bit.
	3	Dev-Typ	I-REG	Communica- tions device type	Specify the type code of the communications device. 217IF = 5
Input Items	4	Pro-Typ	I-REG	Communica- tions protocol	<ul> <li>Specify the type code of the communications protocol.</li> <li>1: MEMOBUS Select this protocol when using the OMRON protocol.</li> <li>MEMOBUS is automatically converted to the OMRON protocol inside the 217IF.</li> <li>2: No-protocol communications 1 (unit: words) Not used for the OMRON protocol.</li> <li>3: No-protocol communications 2 (unit: bytes) Not used for the OMRON protocol.</li> </ul>
	5	Cir-No	I-REG	Circuit number	Specify the circuit number for the communica- tions device. Specify the same circuit number as displayed in the MPE720 Module Configuration Definition Tab Page. 217IF = 1 to 16
	6	Ch-No	I-REG	Communica- tions buffer channel number	Specify the channel number of the communica- tions buffer. You can specify any channel number provided it is within the valid range. When executing more than one function at the same time, do not use the same channel number for the same station. You can use the same channel number as long as multiple functions are not executed at the same time. 217IF = 1
	7	Param	Address Inputs	Parameter list first address (MA, DA)	Specify the first address of the parameter list. A total of 29 words starting from the specified first word are automatically used for the parame- ter list. The parameter list is used by inputting function codes and relevant parameter data. It is also where the process results and status are output.

Continued on next page.

Continued from previous page.

I/O Definitions	No.	Name	I/O Designation	Meaning	Description
	1	Busy	B-VAL	Processing.	Specify the bit that shows that the message transmission is in progress. The Busy Bit is ON while a message transmis- sion or abort is in progress. Keep the Execute Bit or Abort Bit turned ON while the Busy Bit is ON.
Output Items	2	Com- plete	B-VAL	Process com- pleted.	Specify the bit that shows when the message transmission has been completed. The Complete Bit turns ON only for one scan when message transmission or forced abort processing has been completed normally.
	3	Error	B-VAL	Error occurred.	Specify the bit that shows if an error occurred when sending the message. When an error occurs, the Error Bit will turn ON only for one scan. Refer to the following section for an example of a timing chart for when an error occurs. $\overrightarrow{error} \bullet Error$ on page 2-8

# **MSG-SNDE** Function Parameters

The following table describes the contents of the addresses specified by the PARAM input parameter to the MSG-SNDE function.

No.	I/O	Meaning	Description	Reference Page
00		Processing Result	Gives the processing status.	
01		Status	Gives the status of the current function.	I Status (PARAM01) on page 2-10
02		Detail Error Code, Lower Word	- Gives the details of an error.	I → Detail Error Code (PARAM02 and
03	Out- puts	Detail Error Code, Upper Word	- Gives the details of an error.	<i>PARAM03)</i> on page 2- 11
04		Status 1	Not used for the 217IF.	-
05		Status 2	Not used for the 217IF.	-
06		Status 3	Not used for the 217IF.	-
07		Status 4	Not used for the 217IF.	-
08		Status 5	Not used for the 217IF.	-
09		Status 6	Not used for the 217IF.	-

Continued on next page.

Continued from previous page.

No.	I/O	Meaning	Description		Reference Page
10		Station Number	Sets the remote station number.	٦.	♦ Station Number (PARAM10) on page 5- 49
11		Option	Not used for the OMRON protocol.		_
12		Function Code	Sets the code of the function in the OMRON protocol.	٦.	◆ Function Code (PARAM12) on page 5- 49
13		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(F	◆ Reserved for System (PARAM13) on page 2- 14
14		Remote Station Data Address, Lower Word	Sets the data address to read/write at the remote station. (Use word addresses for reg-	F	◆ Data Addresses (PARAM14 and
15		Remote Station Data Address, Upper Word	isters, bit addresses for relays or coils.)		PARAM15) on page 5- 49
16		Remote Station Register Type	Not used for the OMRON protocol.		-
17	Inputs	Data Size	Sets the size of the data to read/write. (Use word sizes for registers, bit sizes for relays or coils.)	(F	◆ Data Size (PARAM17) on page 5-50
18		Remote CPU Module Number	Not used for the OMRON protocol.		_
19		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	(F	◆ Reserved for System (PARAM19) on page 2- 17
20		Local Station Data Address, Lower Word	Sets the data address to store read/write data in the local station. (Use word	(Ja	◆ Data Addresses (PARAM14 and
21		Local Station Data Address, Upper Word	addresses for registers, bit addresses for relays or coils.)		<i>PARAM15)</i> on page 5- 49
22		Local Station Register Type	Sets the register type of the read/write data to store in the local station.	۲.	◆ Local Station Regis- ter Type (PARAM22) on page 2-19
23		Reserved for system.	This parameter is used by the system. Do not change the value of this parameter from a user program or by any other means.	۲.	◆ Reserved for System (PARAM23) on page 2- 19
24		For system use	This parameter contains the channel number of the communications buffer that is currently in use. A user program must set this parameter to 0 on the first scan after startup. Thereafter, do not change the value of this parameter from a user program or by any other means because it will be used by the system.	E.	◆ Reserved for System (PARAM24) on page 2- 19
25	-	Reserved for system.			
26		Reserved for system.	These parameters are used by the system. Do not change the value of these parameters	Ē	♦ Reserved for System (PARAM25 to
27		Reserved for system.	from a user program or by any other means.		<i>PARAM28)</i> on page 2- 19
28		Reserved for system.			

## Station Number (PARAM10)

Specify the station number.

The valid setting range is given in the following table.

Communications Device	Station Number	Remarks
	0	Sends the message to all stations (broadcast).
Serial (217IF)	1 to 254	Sends the message to the remote station set by the specified station number.

Note: For a broadcast, the message is sent without waiting for response data. For this reason, a broadcast can use only write commands.

# Function Code (PARAM12)

Set the function code to send.

You can use the functions (e.g., read bit and word devices and write to word devices) that are registered to the function codes by specifying that code.

The following table lists the function code when using OMRON as the protocol type.

OMRONC Header Code	Function Code	Target Data Type	Function
RR	01 hex	В	Reads CIO Area bits, Work Area bits, and Auxiliary Area bits.
RD	03 hex	W	Reads DM Area.
WR	0F hex	В	Writes CIO Area bits, Work Area bits, and Auxiliary Area bits.
WD	10 hex	W	Writes DM Area.
TS	08 hex	_	Performs a test.

### Data Addresses (PARAM14 and PARAM15)

Set the first address of the data.

Enter the first address as a decimal or hexadecimal number.

Example: If the first address is MW01000, enter 1000 (decimal) or 3E8 (hexadecimal).

The following table lists the setting ranges of data addresses when using OMRON as the protocol type.

Device	Channel Number	Relay Number	Function Code	Data address Setting Range	Corresponding Register Addresses
CIO Area	000 to 039	00000 to 03915	01 or 0F hex: Coil	0 to 639	MB000000 to MB00039F
Work Area	040 to 246	04000 to 24615	01 or 0F hex: Coil	640 to 3951	MB000400 to MB00246F
Auxiliary Area	247 to 255	24700 to 25507	01 or 0F hex: Coil	3952 to 4088	MB002470 to MB002557
DM Area	0000 to 9999	DM0000 to 9999	03 or 10 hex: Hold register	0000 to 9999	MW00000 to MW09999

## ◆ Data Size (PARAM17)

Set the data size for the read/write request as the number of bits or words.

Be sure that the last data address that is determined by the offset, data address, and data size does not exceed the valid data address range.

The range that is allowed for the data size depends on the function code and communications device.

The following table lists the setting ranges of data sizes when using OMRON as the protocol type.

OMRONC Header Code	Function Code	Function	Data Size Setting Range
RR	01 hex	Reads CIO Area bits, Work Area bits, and Auxiliary Area bits.	1 to 2000 bits (125 words)*
RD	03 hex	Reads DM Area.	1 to 125 words
WR	0F hex	Writes CIO Area bits, Work Area bits, and Auxiliary Area bits.	1 to 800 bits (50 words)*
WD	10 hex	Writes DM Area.	1 to 100 words
TS	08 hex	Performs a test.	-

* The data size is set in units of 16 bits.

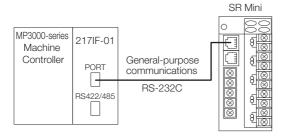
Note: The setting range of the data size is the upper limit on the number of words that can be accessed with one instruction due to MEMOBUS protocol limitations.

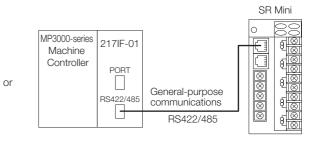
# 5.4 No-Protocol Communications

# 5.4.1 Using the MSG-SNDE and MSG-RCVE Functions with the MP3000 as the Master

# System Configuration Example

In this example, an SR Mini Temperature Controller manufactured by RKC Instrument Inc. is connected to the RS-232C port of a Communications Module or the RS-422/485 port of a 217IF-01 Module to read the temperature data. The MSG-SNDE function is used to send instructions and the MSG-RCVE function is used to receive responses.





# **Cable Specifications**

# ♦ RS-232C (PORT) Cable

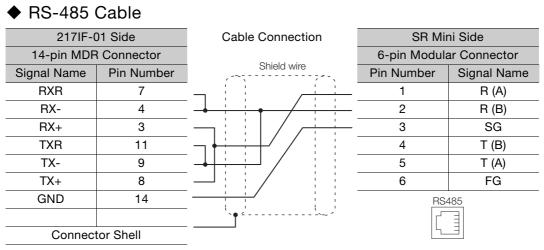
Communication	ns Module Side	Cable Connection and Signal Directions	SR Mini Side		
9-pin D-sub	Connector		6-pin Modula	ar Connector	
Signal Name	Pin Number	Shield wire	Pin Number	Signal Name	
FG	1		1	-	
SD (TXD)	2		2	SD	
RD (RXD)	3		3	SG	
RS (RTS)	4		4	RD	
CS (CTS)	5	▲ / / / / / / / / / / / / / / / / / / /	5	-	
-	6		6	FG	
SG (GND)	7		R <u>S-2</u>	32C	
ER (DTR)	9				
		· · · · · · · · · · · · · · · · · · ·	<u> </u>		

Note: The SR Mini is available with the following three interfaces. Specify the interface when ordering the SR Mini. RS-232C RS422

RS485

♦ RS-422	Cable				
217IF-01 Side		Cable Connection and Signal Directions	SR Mini Side		
14-pin MDF	Connector		6-pin Modula	ar Connector	
Signal Name	Pin Number	Shield wire	Pin Number	Signal Name	
RXR	7		1	R (A)	
RX-	4		2	R (B)	
RX+	3		3	SG	
TXR	11		4	Т (В)	
TX-	9		5	T (A)	
TX+	8		6	FG	
GND	14		RS	422	
Connect	tor Shell				

Note: Wire to enable terminating resistance on the 217IF-01.



Note: Wire to enable terminating resistance on the 217IF-01.

## MP3000 Setup

Use the following procedure to set up the MP3000.

**1.** Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

] Edit	Module	Function Module/Slave	Function Module/Slave Status		Circuit No/AxisAddress		
	Module	Function Module/Slave	Status	Start	supied circu	Motion Register	
Edit	01 [CPU-302(32axes)] :						
Status Version		01 CPU					
Version		02 218IFD	23	뮵 Circuit No1	1		
	00 (a) CPU302(32)[	03	23	💷 Circuit No1	1	8000 - 87FF[H]	
	00 (=) 01 0302(32)[	04 ⊞ SVR32		<b>⊨⊒</b> Circuit No3	1	9000 - 97FF[H]	
	2	05 M-EXECUTOR	23				
	MBC	06 UNDEFINED					
		07 UNDEFINED					
	01 UNDEFINED[	]					
		01 217IF	ع	10101 Circuit No1	1		
	02 🕒 217IF-01[]	02 217IF	27	000 Circuit No2	4		

The 217IF Detail Definition Dialog Box will be displayed.

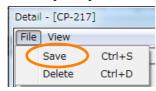
#### 2. Set the detail definition for the 217IF.

ſ	Detail - [CP-217]	Ξ	3
	File View		
	PT#: CPU#:	CIR#01	
	CIR#01		
	Transmission Protocol None	e 💌	
1	Master/Slave Mas	ter	
	Device Address 0	(Master=0,Slave=1-63)	
ľ	Serial I/F RS-2	232 💌	ľ
1	Transmission Mode none		
	Data Length 8Bit	<b>-</b>	
	Parity even		I
	Stop Bit 1Sto	p 💌	
	Baud Rate 19.28	K 💌	
	Sending 📀 Disa	able	
	C Enal	ble 0 (1 - 100ms)	
	Receive monitor time 🛭 🙃 Disa	able (10ms+3bytes transmission time)	
1	C Ena	ble 0 (0-255ms)	
	Automatically 🙃 Disa	able C Enable	
	<ul> <li>Automatically Reception settings</li> <li>Slave I/F Register Settings</li> </ul>	s	
	Readout of Input Relay	IW00000 32768	
	Readout of Input Register	IW00000 32768	
	Readout / Write-in of Coil	MW00000 65535 -	
	Faultale analy 51		
	For Help, press F1	1.	2

① Select [None] in the [Transmission Protocol] Box.

- ^② Select [Master] in the [Master/Slave] Box.
- ③ Configure the other settings, from [Device Address] to [Baud Rate], as necessary.

3. Select [Save] from the File Menu.



#### 4. Click the [Yes] Button.

CP-217:Transmission Parameters	X
Save OK?	
Yes No	

#### 5. Create a ladder program for the MSG-SNDE function.

A ladder program example is shown below.

The ladder program must implement exclusive control to prevent the MSG-SNDE and MSG-RCVE functions from being started simultaneously because there is only one message channel when using no-protocol communications. In the following sample, the MSG-RCVE function is started to receive the response after the instruction is sent with the MSG-SNDE function. After the response is received, the MSG-SNDE function is started again to send the instruction.

					RCVE (no-pro	1			
IF IF	'After Low SB000003 =:		t, Only 1 Sca	n ON' == t	rue				
	00000000						[W]Dest	[W]Data	[W]Width
NL 2						SETW	DW00000	00000	00200
1 8.1									
2					EXPRESSION //setting	MSG-SNDE f	unction pa	rameter	El
						ata address			
					'remote da	ata address	high'= O		
					DWOO115 =  'data size	ə'= 5			
					DW00117 =  'local_dat	5; ta address	low' = 700	n	
					DW00120 =				
					DW00121 =	0:	-		
					DW00122 =	ta`type' = O; //M reg	u lister		
					//setting	MSG-RCVE f	unction pa	rameter	
					'M writing DW00176 =	g range LO 7030:	low' = 703	0	
						g range LO	high'= O		
					'M writing	g range HI	low' = 704	9	
					DW00178 = M writing	g range HI	high'= O		
					DWOO179 = 'M writing	0; g range HI	high' = O		
					DW00179 =				
NL 2			EXPRESSION			1	- r	,	E .
2			//making_se 'MW07000' =		r SR-Mini				
			₩₩07000 = 0	x0002;	//STX and a	address num	iber		
			'M₩07001' = M₩07001 = 0	×0001:	//paramete	r number (C	H1: temper	ature sett	ing)
			"MW07002' = MW07002 = 0	x2000;	//control (	code (order	of CH for	same item	)
			'MW07003' = MW07003 = 0		//number_of	f reading c	lata (4 wor	(sh	
			'MW07004' = MW07004 = 0	0x0AÓD	//CR, LF			,	
					770N; Li				
END_IF									
DB000210	TON [10ms]	[W]Set 00300	[W]Count DW00022		DB000211	DB000212			DB000202
SNDE execut		00000			SNDE comple te				SNDE abor
DB000202									
SNDE abort									
DB000202	DB00021B								DB000800

		DB000800 =	- 1146	1	r				[WLQ]Dest
NL 2								INC	DW00023
	END_IF	 	 						
	DB000601		DB000602	DB000211	DB000212	DB000202			DB00020
	RCVE comman d		RCVE abort	SNDE comple te	SNDE error	SNDE abort			SNDE comm
	DB000201			Le					
	SNDE comman d								
		 						MSG	-SNDE
								[B]Execute DB000201 SNDE comma nd	[B]Busy DB00021 SNDE exec te
								(B) Abort DB000202 SNDE abort	[B]Comple DB00021 SNDE com
								[W]Dev-Typ	ete [B]Error
								00005	DB00021 SNDE err
		     						[W] Pro-Typ 00002	
								[W]Cir-No 00001	
								[W] Ch-No 00001	
								(A) Param DA00100	
								message se nd (extend	
	LF 🗎	'SNDE comp		ue				ed) param-	
		DB000211 =	= true	1					[WLQ]Dest
4L 2								INC	DW0002
-									ally
	END_IF	laung							
	IF	'SNDE erro DB000212 =				-			
NL									[WLQ]Dest DW0002
2								INC	count abr
NL 2						EXPRESSION	- Zeenuld Z		Ē
						DW00026 =	= 'result' DWOO100; //savi = 'function stat	ng result us'	
						D₩00027 =	DW00101; //savi	ng status	·
	END_IF					ND000011	ND000010		DDCCCC
			[W]Set 00300	[W]Count DW00062			DB000612		
	RCVE execut e	L				RCVE comple te	NUVE error		RCVE abo
	DB000602			4					
	DB000602	DB00 <u>0</u> 61B							DB00080
	RCVE abort	<u></u>							<u> </u>
	I F	'DB000801' DB000801 =	== true = true			1			
NL				7	r				[WLQ]Dest
2								INC	DW0006:
-	END_IF	1							
	DB000211		DB000202	DB000611	DB000612	DB000602			DB00060
	SNDE comple te			RCVE comple te	RCVE error				RCVE comm d
	00000004								
	DB000601								

17-			MSG	-RCVE
			[B]Execute DB000601 RCVE comma	[B]Busy DB000610 RCVE exec
			nd	te
			[B]Abort	[B]Complet
			DB000602 RCVE abort	DB000611 RCVE comp ete
1.1			[W]Dev-Typ	[B]Error
			00005	DB000612 RCVE erro
			[W] Pro-Typ	
			00002	J
			[W]Cir-No 00001	
			[W] Ch-No	
			00001	
			[A] Param	
			DA00140 メッセージ [®] 受信 (拡張)N [®] ラメ ~9	
	IF ^{●▲} 'RCVE complete' == true DB000611 == true			
27-	DDUUU611 == true			
NL				[WLQ] Dest
37- 2			INC	DW00064 count nor ally
NL				[W]Dest
47- 2			BSWAP	₩₩07033
- 1-		· · · · · · · · · · · · · · · · · · ·		[W]Dest
57- NL :			BSWAP	₩₩07035
	END_IF			
67-				
77-	IF ACVE error' == true DB000612 == true			
			-	[WLQ]Dest
87- NL :			INC	DW00065
				rmally
97- 2		EXPRESSION		Ē
57-2		'DW00066' = 'result' DW00066 = DW00140; //saving 'DW00067' = 'status' DW00067 = DW00141; //sav	result ing status	
	<u></u>			1
07- H	END_IF			
		END		
17-		END		

#### 6. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

## **Temperature Controller Setup**

Set the switches on the SR Mini Temperature Controller as shown in the following tables.

OFF	Always OFF
OFF	Always OFF
ON	Set according to baud rate.
ON	Set according to baud rate.
Bit4	Baud Rate
OFF	2400 bps
ON	4800 bps
OFF	9600 bps (default setting)
ON	19200 bps
	OFF ON ON Bit4 OFF ON OFF

# **Starting Communications**

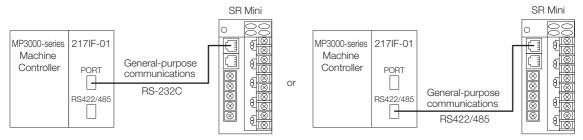
- 1. Turn ON the power to the Temperature Controller to start receiving messages. In the ladder program example, message reception starts immediately after the system starts. No further operation is required.
- 2. Turn ON the power to the MP3000 to start transmitting messages.

# 5.5 No-Protocol FD Communications

# 5.5.1 Using the MSG-SNDE and MSG-RCVE Functions with the MP3000 as the Master

# System Configuration Example

In this example, an SR Mini Temperature Controller manufactured by RKC Instrument Inc. is connected to the RS-232C port of a Communications Module or the RS-422/485 port of a 217IF-01 Module to read the temperature data. The MSG-SNDE function is used to send instructions and the MSG-RCVE function is used to receive responses.



# **Cable Specifications**

For cable specifications, refer to the following sections.

I ← RS-232C (PORT) Cable on page 5-51

## MP3000 Setup

Use the following procedure to set up the MP3000.

1. Double-click the cell for 217IF in the Module Configuration Definition Tab Page.

] idit	Module	Status	Circuit No/Axi	sAddress		
	Module	Function Module/Slave	Status	Start	supied circu	Motion Register
Edit 0	1 [CPU-302(32axes)] :					
Status Version		01 CPU				
Version		02 218IFD \$	23	금 Circuit No1	1	
	00 🝙 CPU302(32)[]	03 🛨 SVC32 🛛 🕅	Z	💷 Circuit No1	1	8000 - 87FF[H]
	00 (=) CF 0802(82)[]	04 🛨 SVR32		<b>⊏⊒</b> Circuit No3	1	9000 - 97FF[H
	2	05 M-EXECUTOR	3			
	è	06 UNDEFINED				
	MBU	07 UNDEFINED				
	^{**} 01 UNDEFINED[	-]				
		01 217IF	<u>ع</u>	10101 Circuit No1	1	
	02 🕒 217IF-01[]	02 217IF	2	000 Circuit No2	4	

The 217IF Detail Definition Dialog Box will be displayed.

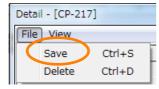
#### 2. Set the detail definition for the 217IF.

ſ	Detail - [CP-217]	8	]
	File View		
ľ	PT#: CPU#:  CIR#01		ľ
	CIR#01	<b>^</b>	
	Transmission Protocol None FD 💌		
	Master/Slave Master 💌		
	Device Address 0 📑 (Master=0,Slave=1-63)		
ľ	Serial I/F RS-232		ľ
	Transmission Mode 🛛 🔽		
	Data Length 🛛 💌	Ξ	
	Parity even 💌		
	Stop Bit IStop 💌		
	Baud Rate 19.2K		
	Sending 🕞 Disable		l
	C Enable 0 (1 - 100ms)		
	Receive monitor time 📀 Disable (10ms+3bytes transmission time)		
	⊂ Enable 0 <u>÷</u> (0-255ms)		
	Automatically 📀 Disable 🔿 Enable		
	Automatically Reception settings Slave I/F Register Settings Head REG WD Size		
	Readout of Input Relay IW00000 32768		
	Readout of Input Register	-	
	For Help, press F1		
	For Help, press F1	1	

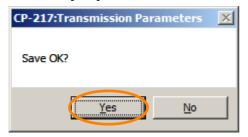
① Select [None FD] in the [Transmission Protocol] Box.
② Select [Master] in the [Master/Slave] Box.

③ Configure the other settings, from [Device Address] to [Baud Rate], as necessary.

#### 3. Select [Save] from the File Menu.

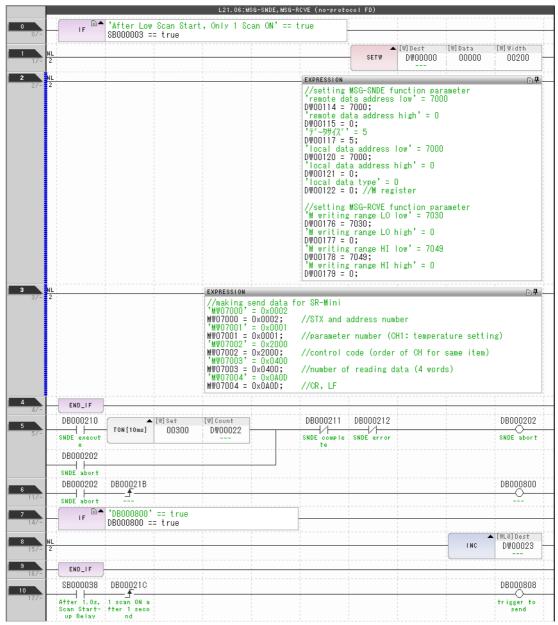


4. Click the [Yes] Button.

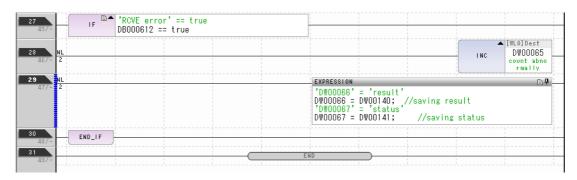


5. Create a ladder program for the MSG-SNDE function.

A ladder program example is shown below. There are two message channels when using no-protocol FD communications. One channel is for sending messages and one channel is for receiving messages. The ladder program can start the MSG-SNDE and MSG-RCVE functions simultaneously. In this sample, the MSG-RCVE is always running to receive responses and the MSG-SNDE function is executed as required to send instructions.



11	DB000611	DB000602	DB000211	DB000212	DB000202		DB000201
20/-	RCVE comple te	RCVE abort	SNDE comple te	SNDE error	SNDE abort		SNDE comman d
	DB000201						
	SNDE comman d						
	DB000808						
	trigger to send						
<b>12</b> 28/-						MSG-	SNDE
						DBOOO2O1 SNDE comma nd	[B]Busy DB000210 SNDE execu te
						[B]Abort DB000202 SNDE abort	[B]Complete DB000211 SNDE compl ete
						[W] Dev-Typ 00005 [W] Pro-Typ	[B]Error DB000212 SNDE error
						(1) 00002 (1) Cir-No 00001 (1) Cir-No 00001 (1) Param DA00100	
13	IF ^{B▲} 'SNDE com	plete' == tr	ue			message se nd (extend ed) param-	
29/-	DB000211	== true	1	· · · · · · · · · · · · · · · · · · ·			[WLQ]Dest
14 307- 2						INC	DW00024
15	5115 L 5						ally
317-	END_IF	or' true					
32/-	IF DB000212	== true					
17 NL							[WLQ]Dest DW00025
33/- 2							count abno
10							rmally
18 34/- 19					EXPRESSION 'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function DW00027 = DW00101; //	'saving result status' 'saving status	rmaliy È⊈
34/- 2 19 35/-					'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	'saving result status' 'saving status	<b>₽ ₽</b>
34/- 2 19 35/- 20	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	'saving result status 'saving status	DB000601
34/- 2 19 35/- 20 36/-	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	'saving status	DB000601 RCVE comman
34/- 2 19 35/- 20	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	'saving status	DB000601 RCVE comman d
34/- 2 19 35/- 20 36/- 21	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	saving status MSG [B]Execute DBD00801 RCVE comma nd	DB000601 RCVE comman RCVE [B] BUSY DB000610 RCVE execu te
34/- 2 19 35/- 20 36/- 21	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	(saving status) (B) Execute DB000601 RCVE comma nd (B) Abort DB000602 RCVE abort	DB000601 RCVE comman d RCVE [B] Busy DB000610 RCVE execu te [B] Complete DB000811 RCVE compl ete
34/- 2 19 35/- 20 36/- 21	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	(saving status (B) Execute (B) Execute (B) Execute (B) B000601 RCVE comma nd (B) Abort DB000602 RCVE abort (W) Dev-Typ 00005	DB000601 RCVE comman d RCVE [8] Busy DB000610 RCVE execu te [B] Complete DB000611 RCVE complete
34/- 2 19 35/- 20 36/- 21	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	(saving status) (Saving status) (B) Execute DBD00801 RCVE comma nd (B) Abort DB000802 RCVE abort (W) Dev-Typ 00005 (W) Pro-Typ 00002	DB000601 RCVE comman d RCVE (B) Busy DB000610 RCVE execu te (B) Complete DB000611 RCVE complete DB000612
34/- 2 19 35/- 20 36/- 21	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	Saving status (B) Execute DB000601 RCVE obort DB000602 RCVE abort (W) Dev-Typ 00005 (W) Pro-Typ 00002 (W) Cir-No 00001	DB000601 RCVE comman d RCVE (B) Busy DB000610 RCVE execu te (B) Complete DB000611 RCVE complete DB000612
34/- 2 19 35/- 20 36/- 21	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	Saving status (Saving status) (B) Execute DB000601 RCVE comma nd (B) Abort DB000602 RCVE abort (W) Dev-Typ 00005 (W) Pro-Typ 00002 (W) Cir-No 00001 (W) Cir-No 00002	DB000601 RCVE comman d RCVE (B) Busy DB000610 RCVE execu te (B) Complete DB000611 RCVE complete DB000612
34/- 2 19 35/- 20 36/- 21	SB000004 DB000602				'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	(saving status) (saving status) (B) Execute DBD00601 RCVE comma (B) Abort DBD00602 RCVE abort (W) Dev-Typ 00005 (W) Pro-Typ 00005 (W) Pro-Typ 00002 (W) Cir-No 00001 (W) Ch-No 00002 (A) Param DA00140 message re oejve (ext	DB000601 RCVE comman d RCVE (B) Busy DB000610 RCVE execu te (B) Complete DB000611 RCVE complete DB000612
34/- 2 13 35/- 20 36/- 21 39/- 21 39/-	SB000004 DB000602 Always ON RCVE abort	plete' == tr	ue		'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	Saving status (Saving status (B) Execute DB000601 RCVE comma nd (B) Abort DB000602 RCVE abort (W) Dev-Typ 00005 (W) Pro-Typ 00005 (W) Pro-Typ 00002 (W) Cir-No 00001 (W) Cir-No 00001 (W) Cir-No 00002 (A) Param DA00140 message re	DB000601 RCVE comman d RCVE (B) Busy DB000610 RCVE execu te (B) Complete DB000611 RCVE complete DB000612
34/- 2 13 35/- 20 36/- 21 39/-	SB000004 DB000602	plete' == tr	ue		'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	saving status (B) Execute DB000601 RCVE comma nd (B) Abort DB000602 RCVE abort (W) Dev-Typ 00005 (W) Pro-Typ 00005 (W) Pro-Typ 00002 (W) Dir-No 00002 (W) Dir-No 00002 (A) Param DA00140 message re ceive (ext ended) pa-	DB000601 RCVE comman d RCVE (B) Busy DB000610 RCVE execu te (B) Complete DB000611 RCVE complete DB000612
34/- 2 13 35/- 20 36/- 21 39/- 21 39/-	SB000004 DB000602 Always ON RCVE abort	plete' == tr	ue		'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	Saving status (B) Execute DB000601 RCVE comma nd (B) Abort DB000602 RCVE abort (W) Dev-Typ 00005 (W) Dro-Typ 00005 (W) Dro-Typ 00002 (W) Cir-No 00002 (W) Cir-No 00002 (M) Cir-No (M) Cir-No (	DB000801 RCVE comman RCVE [B] BUSY DB000810 RCVE execut te DB000811 RCVE comp1 ete [B] Error DB000612 RCVE error DB000612 RCVE error DB000614 count norm ally
24/- 2 13 35/- 20 36/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 33/- 21 22 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/- 23/-	SB000004 DB000602 Always ON RCVE abort	plete' == tr	ue		'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	Saving status (B) Execute DB000601 RCVE comma nd (B) Abort DB000602 RCVE abort (W) Dev-Typ 00005 (W) Dro-Typ 00005 (W) Dro-Typ 00002 (W) Cir-No 00002 (W) Cir-No 00002 (M) Cir-No (M) Cir-No (	DB000601 RCVE comman RCVE BB000610 RCVE (B) Busy DB000610 RCVE execu te (B) Complete DB000611 RCVE error DB000612 RCVE error DB000612 RCVE error
34/-     2       13     35/-       20     36/-       21     39/-       39/-     -       21     -       39/-     -       21     -       39/-     -       21     -       39/-     -       21     -       39/-     -       21     -       39/-     -       21     -       39/-     -       21     -       39/-     -       21     -       39/-     -       21     -       39/-     -       20     -       21     -       22     -       21     -       22     -       23     -       24     -       25     HL	SB000004 DB000602 Always ON RCVE abort	plete' == tr	ue		'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	(Saving status) (Saving status) (B) Execute DBD00801 RCVE comma nd (B) Abort DB00802 RCVE abort (W) Dev-Typ 00005 (W) Dro-Typ 00005 (W) Pro-Typ 00002 (W) Cir-No 00002 (W) Cir-No 00002 (M) Cir-No (M) Cir-No 00002 (M) Cir-No (M)	DB000801 RCVE comman RCVE BB000810 RCVE execu te BB000811 RCVE execu te BB000811 RCVE compl ete BB000812 RCVE error DB000812 RCVE error RCVE error DB000812 RCVE error BCVE error DB00081 RCVE error DB00081 RCVE error DB00081 RCVE error DB00081 RCVE error DB00081 RCVE error RCVE error RCV
34/-     2       13     35/-       20     36/-       21     38/-       38/-     -       21     38/-       21     -       38/-     -       21     -       38/-     -       21     -       38/-     -       21     -       38/-     -       21     -       38/-     -       21     -       38/-     -       21     -       38/-     -       21     -       38/-     -       21     -       38/-     -       21     -       38/-     -       38/-     -       38/-     -       21     -       38/-     -       21     -       38/-     -       38/-     -       38/-     -       38/-     -       38/-     -       38/-     -       38/-     -       38/-     -       38/-     -       38/-     -       38/-     -       38/-     -	SB000004 DB000602 Always ON RCVE abort	plete' == tr	ue		'DW00026' = 'result' DW00026 = DW00100; // 'DW00027' = 'function	Saving status (B) Execute DB000601 RCVE comma nd (B) Abort DB000602 RCVE abort (W) Dev-Typ 00005 (W) Pro-Typ 00005 (W) Pro-Typ 00002 (W) Ch-No 00002 (W) Ch-No 00002 (M) Ch-No 0002 (M) Ch-No 0002 (M) Ch-No 0002 (M) Ch-No 0002 (M) Ch-No 0002 (M) Ch-No (M) Ch-No (M	DB000801 RCVE comman RCVE BB000810 RCVE execut te BB000811 RCVE comp1 ete BB000811 RCVE error DB000612 RCVE error DB000612 RCVE error DB000612 RCVE error DB000613 RCVE error DB000811 RCVE error DB000812 RCVE error DB000813 RCVE error DB000813 RCVE error DB000813 RCVE error DB000813 RCVE error DB000813 RCVE error DB000813 RCVE error DB000813 RCVE error DB00083 RCVE error DB00084 SCVE error SCVE erro



6. Save the data to flash memory.

This concludes the settings for using the MP3000 as the master.

## Setting Up the Temperature Controller

Set the switches on the SR Mini Temperature Controller as shown in the following tables.

OFF	Always OFF
OFF	Always OFF
ON	Set according to baud rate.
ON	Set according to baud rate.
I	
Bit4	Baud Rate
OFF	2400 bps
ON	4800 bps
OFF	9600 bps (default setting)
ON	19200 bps
	OFF ON ON Bit4 OFF ON OFF

# **Starting Communications**

- **1.** Turn ON the power to the Temperature Controller to start receiving messages. In the ladder program example, message reception starts immediately after the system starts. No further operation is required.
- 2. Turn ON the Execute Bit (e.g., DB000200) for the MSG-SNDE function in the MP3000 to start sending messages.

The ladder program example is designed to send a message every second after five seconds have elapsed from when the low-speed scan (or high-speed scan) starts.

 $\cap$ 

To change the message transmission interval, change the timer value  $\ensuremath{\mathbb{O}}.$ 

	-	-			r starting scan for 5s SB00001A for higt sca		_
13 25/44	SB00003A After 5.0s, Scan Start- up Relay						DB00020D
14 27/46	DB00020D	DB000211	DB000212	DB000208	TON[10ms]	[W] Count DW00030 	DB000200 execute

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6.1.1 Ethernet Communications Specifications

# 6.1 Communications Specifications

The following table lists the specifications of Ethernet communications and serial communications.

# 6.1.1 Ethernet Communications Specifications

Item		Specification			
Module		CPU201, CPU202	CPU-301 (16 axes)/ CPU-301 (32 axes), CPU-302 (16 axes)/ CPU-302 (32 axes)	218IF-01	218IF-02
Function Name		218IFD		218IF	218IFB
Communications Interface		10Base-T/100Base-TX		10Base-T	10Base-T/100Base- TX
Number of Communica- tions Ports (Connectors)		2	1	1	1
Communications Protocols		TCP/UDP/IP/ARP/ICMP		TCP/UDP/IP/ARP/ ICMP	TCP/UDP/IP/ARP/ ICMP
Maximum Number of Communications Connections		20 + 2 (I/O message communica- tions) (Simultaneous communications supports up to 12 connections including I/O message communica- tions.)		20 (Simultaneous com- munications sup- ports up to 10 connections.)	20 (Simultaneous com- munications sup- ports up to 10 connections.)
Maximum Number of Communications Channels		10 + 2 (I/O message communica- tions)		10	10
Automatic Reception		Supported.		Not supported.	Not supported.
Number of Automatic Reception Connections		10		_	-
Maximum Size of Message Commu- nications	MEMOBUS	Write: 100 words Read: 125 words		Write: 100 words Read: 125 words	Write: 100 words Read: 125 words
	Extended MEMOBUS	Write: 2043 words Read: 2044 words		Write: 507 words Read: 508 words	Write: 2043 words Read: 2044 words
	MELSEC (A-compati- ble 1E)	Write: 256 words Read: 256 words Read/write when using random- access communications: 1017 words		Write: 256 words Read: 256 words Write when using random-access communications: 507 words Read: 508 words	Write: 256 words Read: 256 words Read/write when using random-access communications: 1017 words
	MELSEC (QnA-com- patible 3E)	Write: 960 words Read: 960 words		_	Write: 960 words Read: 960 words
	MODBUS/ TCP	Write: 100 words Read: 125 words		Write: 100 words Read: 125 words	Write: 100 words Read: 125 words
	OMRON	Write: 996 words Read: 999 words		-	Write: 996 words Read: 999 words
	TOYOPUC	Write: 1022 words		-	Write: 1022 words
	No-protocol	Write: 2046 words		Write: 510 words	Write: 2046 words

Continued on next page.

#### 6.1.1 Ethernet Communications Specifications

Continued from previous page.

			Contin	ued from previous page.
	Item	Sp	pecification	
	MEMOBUS	Write: 100 words Read: 125 words	_	-
	Extended MEMOBUS	Write: 1024 words Read: 1024 words	_	-
	MELSEC (A-compati- ble 1E)	Write: 256 words Read: 256 words	-	-
Maximum Size of I/O	MELSEC (QnA-com- patible 3E)	Write: 256 words Read: 256 words	-	-
Message Commu-	MODBUS/ TCP	Write: 100 words Read: 125 words	_	-
nications	OMRON	Write: 996 words Read: 999 words	-	-
	Execution Conditions	After the power is turned ON, cyclic communications, or start/ stop control from ladder programs.	-	-
	Execution Status Supported. Monitoring		_	-
Receive Buffer Mode Selection for No-protocol Communications		Supported.	_	Supported.
Communic form	ations Plat-	Ethernet	Ethernet	Ethernet
Controller Engineerin	Searches with g Tool	Supported.	_	Supported.

6

6.1.2 Serial Communications Specifications

# 6.1.2 Serial Communications Specifications

Item	Specification									
Module	218IF-02	217IF-01	218IF-01	260IF-01	261IF-01	215AIF-01				
Function Name	217IF	217IF	217IF							
Communications Interface	RS-232C	RS-232C, RS422, RS485	RS-232C							
Communications Ports	1 (RS-232C)	1 (RS-232C) 1 (RS422/RS485)	1 (RS-232	C)						
Communications Speed (Kbps)	9.6, 19.2, 38.4, 57.6, 76.8,115.2	9.6, 14.4, 19.2, 28.8, 38.4, 48.0, 57.6, 76.8	9.6, 19.2							
Connection Type	1: 1	1: 1 (RS232, RS422) 1: N (RS485) N = up to 31	1: 1							
Maximum Number of Communications Channels	1	1 (When using no-protocol FD: 2)	1							
MEMOBUS	Write: 100 words Read: 125 words	Write: 100 words Read: 125 words	Write: 100 Read: 125							
A-compatible 1E	Write: 64 words Read: 64 words	Write: 64 words Read: 64 words	Write: 64 v Read: 64 v							
OMRON	Write: 100 words Read: 125 words	Write: 100 words Read: 125 words	Write: 100 Read: 125							
No-protocol	Write: 254 words	Write: 254 words	Write: 254	words						
No-protocol FD	_	Write: 254 words			_					
Automatic Reception	Supported.	Supported.	Supported							
Number of Automatic Reception Connections	1	2	1							
I/O Message Communications	_	-			_					
Multiple Buffers during No-Protocol Communications	Not supported.	Supported. (only when using no-protocol FD)	Not suppo	rted.						
Communications Platform	Serial	Serial	Serial							
Engineering Tool Function	Supported.	Supported.	Supported							
Controller Searches	Not supported.	Not supported.	Not suppo	rted.						

# 6.2 Communications Buffer Channels

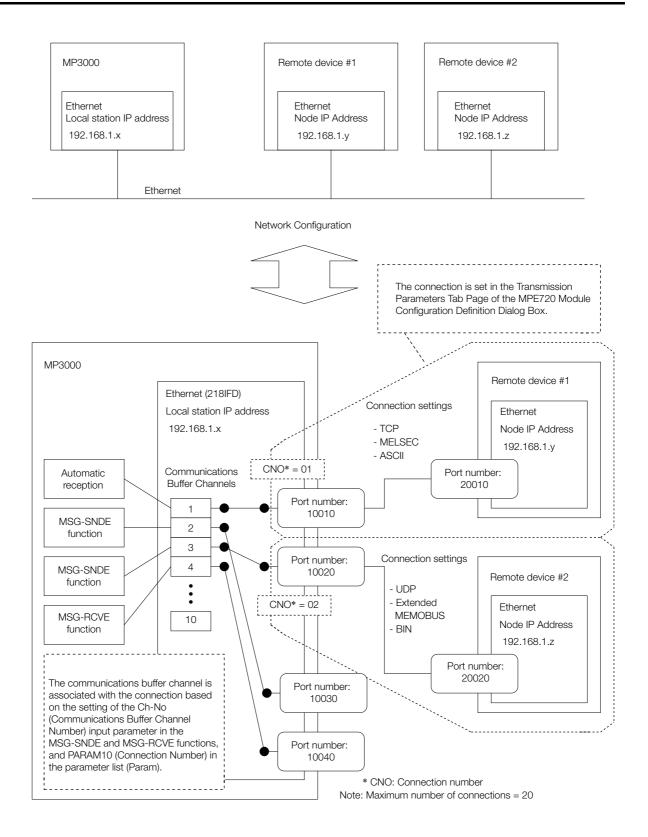
A communications buffer channel is a data buffer that interfaces the MSG-SNDE or MSG-RCVE function with the communications device. This data buffer consists of one or more channels. Each channel is identified by a communications buffer channel number.

The communications buffer channel is associated with the connection based on the setting of the Ch-No (Communications Buffer Channel Number) input parameter in the MSG-SNDE and MSG-RCVE functions, and PARAM10 (Connection Number) in the parameter list (Param).

A connection refers to communications settings between the local station and a remote station. These settings are set in the Transmission Parameters Tab Page of the MPE720 Module Configuration Definition Dialog Box.

	1 CPU#: 1 mission Paramete	ers Stat	ue l									CIR#01	00000-007F	F
Tra	ansmission Param IP Address Subnet Mask Gateway IP Add	neters —	: 192 : 255 : 0	255			1 0		me :		ONTROLLER	NAME		
	nnection Paramet Message Commun Easy setting	ication   The fo   Conne	Illowing paramete ctions(C NO) 01-	ers for n -10 can				ns can be easily set. automatically.	1			1		
	CNO	Local Port	Node IP Addr		Node Port	Conne Type		Protocol Type	Coo	le	Detail		No	e Na
	01	10001	192.168.001.00	02	10001	TOP			BIN	-	Setting*			
	02	10002	192.168.001.00	03	10002	TOP	-	MELSEC (Qn A Compatible 3E 💌	BIN	-	Setting*			
	03						-	-		-	Setting*			
	04						-	-		•	Setting*			
	05						•	-		•	Setting*			
							-	-		-	Setting*			
	06													
	06 07						-	<u>-</u>		-	Setting*			J
							•	-		-	Setting*			

The following figure illustrates the concept of the communications buffer channels.



# 6.3 Using Message Functions

You can use any registered function by specifying the corresponding function code in the message function.

This section describes the function codes and how to use them.

## 6.3.1 Function Codes

The following tables list the function codes for each protocol.

#### Function Codes for the Extended MEMOBUS Protocol

Function Code	Function
00 hex	Not used.
01 hex	Reads the states of coils.
02 hex	Reads the states of input relays.
03 hex	Reads the contents of hold registers.
04 hex	Reads the contents of input registers.
05 hex	Changes the state of a single coil.
06 hex	Writes to a single hold register.
07 hex	Not used.
08 hex	Performs a loopback test.
09 hex	Reads the contents of hold registers (extended).
0A hex	Reads the contents of input registers (extended).
0B hex	Writes to hold registers (extended).
0C hex	Not used.
0D hex	Reads the contents of non-consecutive hold registers (extended).
0E hex	Writes the contents of non-consecutive hold registers (extended).
0F hex	Changes the states of multiple coils.
10 hex	Writes to multiple hold registers.
4341 hex	Reads the states of bits.
4345 hex	Changes the state of a single bit.
4346 hex	Writes to a single register.
4349 hex	Reads the contents of registers.
434B hex	Writes to multiple registers.
434D hex	Reads the contents of non-consecutive registers.
434E hex	Writes the contents of non-consecutive registers.
434F hex	Changes the states of multiple bits.

Function Codes for the A-compatible 1E Frame Protocol

Function Code	Function		
01 or 02 hex	Reads bit devices in units of one point.		
03, 04, 09, or 0A hex	Reads word devices in units of one point.		
05 or 0F hex	Writes bit devices in units of one point.		
06, 0B, or 10 hex	Writes word devices in units of one point.		
08 hex	Performs a loopback test.		
0E hex	Sets/resets word devices in units of one point by specifying a device number.		
31 hex	Writes to a fixed buffer in units of one word.		
32 hex	Reads from the random access buffer in units of one word.		
33 hex	Writes to the random access buffer in units of one word.		

Function Code	Function					
01 or 02 hex	hex Reads bit devices in units of one point.					
03, 04, 09, or 0A hex	Reads word devices in units of one point.					
05 or 0F hex	Writes bit devices in units of one point.					
06, 0B, or 10 hex	Writes word devices in units of one point.					
0E hex	Writes word devices in units of one point.					
0D hex	Reads word devices in units of one point.					
08 hex	Performs a loopback test.					
	Function Codes for the FINS Protocol					
Function Code	Function					
01 hex	Reads CIO Area bits, Work Area bits, Holding Area bits, and Auxiliary Area bits in units of one word.					
03 or 09 hex	Reads DM Area in units of one word.					
0F hex	Writes to CIO Area bits, Work Area bits, Holding Area bits, and Auxiliary Area bits in units of one word.					
0B or 10 hex	Writes to DM Area in units of one word.					
0D hex	Reads non-consecutive words from the DM Area.					

#### Function Codes for the QnA-compatible 3E Frame Protocol

Function Codes for the TOYOPUC Protocol						
Function Code	Function					
31 hex	Writes to the file memory in units of one word.					

#### **Using Function Codes** 6.3.2

This section describes the use of the message function for each function code.

### Function Codes: 01, 02, 03, 04, 09, and 0A Hex

Function: Reads data.

The specified size of data is read from specified registers in the remote station and stored in registers in the local station.

The following parameters need to be set in the MSG-SNDE function.

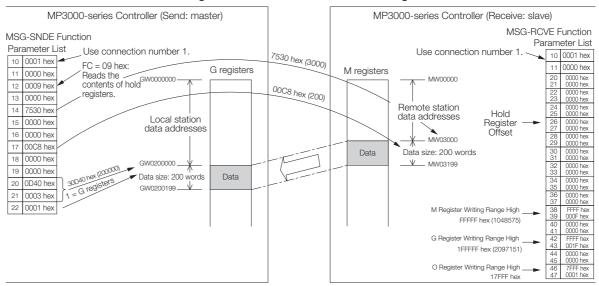
MSG-SN	DE Function Parameter	Description
PARAM10	Connection Number	Set the connection number used to determine the remote station.
PARAM11	Option	This parameter is used with the QnA-compatible 3E Frame protocol and the FINS protocol. Refer to the section for each protocol for details.
PARAM12	Function Code	Set the function code for the function to use.
PARAM14	Remote Station Data Address, Lower Word	Set the first address to read from in the remote station. Specify a bit address for function codes 01 and 02 hex, and a word address for function codes 03, 04, 09, and 0A hex.
PARAM15	Remote Station Data Address, Upper Word	Not used.
PARAM16	Remote Station Register Type	Not used
PARAM17	Data Size	Set the size of the data to read. Specify the size in bits for function codes 01 and 02 hex, and in words for function codes 03, 04, 09, and 0A hex.
PARAM18	Remote CPU Module Number	This parameter is used with the Extended MEMOBUS protocol. Set the CPU number at the remote station.

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MSG-SN	IDE Function Parameter	Description
PARAM20	Local Station Data Address, Lower Word	Set the first register address to store the read data in the local sta- tion. Specify a bit address for function codes 01 and 02 hex, and a
PARAM21	Local Station Data Address, Upper Word	word address for function codes 03, 04, 09, and 0A hex.
PARAM22	Local Station Register Type	Set the register type (M, G, or O) to store the read data in the local station.
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.

The following example illustrates how the contents of hold registers are read by using function code 09 hex. In this example, 200 words of data are read from register MW0030000 in the remote station and stored in registers in the local station starting at address GW0200000.



Example of Addressing and Offset Addressing with Function Codes 01, 02, 03, 04, 09, or 0A Hex

Information If the hold register offset parameters in the MSG-RCVE function are set to a non-zero value, the actual addresses that are read in the remote station will be the sum of the remote station data addresses and the value in the hold register offset parameters.

### Function Codes: 05, 06, 0B, 0F, and 10 Hex

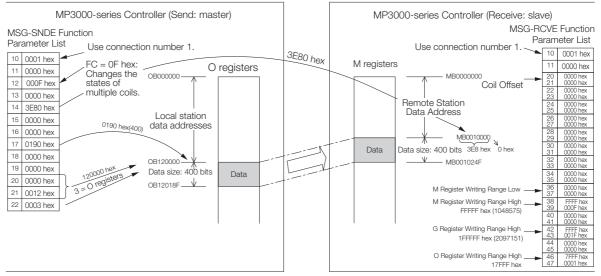
Function: Writes data.

The specified size of data is read from registers in the local station and written to specified registers in the remote station.

The following parameters need to be set in the MSG-SNDE function.

MSG-SN	DE Function Parameter	Description
PARAM10	Connection Number	Set the connection number used to determine the remote station.
PARAM11	Option	This parameter is used with the QnA-compatible 3E Frame protocol and the FINS protocol. Refer to the section for each protocol for details.
PARAM12	Function Code	Set the function code for the function to use.
PARAM14	Remote Station Data Address, Lower Word	Set the first address to write to in the remote station. Specify a bit address for function codes 05 and 0F hex, and a word address for function codes 06, 0B, and 10 hex.
PARAM15	Remote Station Data Address, Upper Word	Not used.
PARAM16	Remote Station Register Type	Not used.
PARAM17	Data Size	Set the size of the data to write. Specify the size in bits for function code 0F hex, and in words for function code 0B and 10 hex. This parameter is not used for func- tion codes 05 and 06 hex.
PARAM18	Remote CPU Module Number	This parameter is used with the Extended MEMOBUS protocol. Set the CPU number at the remote station.
PARAM20	Local Station Data Address, Lower Word	Set the first register address in the local station where the data to be written is stored. Specify a bit address for function codes 05 and 0F
PARAM21	Local Station Data Address, Upper Word	hex, and a word address for function codes 06, 0B, and 10 hex.
PARAM22	Local Station Register Type	Set the register type (M, G, I, O, or S) of the data to be written that is stored in the local station.
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.

The following example illustrates how the states of multiple coils are changed by using function code 0F hex. In this example, 400 bits of data starting from register OB120000 in the local station are written to registers starting at MB00010000 in the remote station.



Example of Addressing and Offset Addressing with Function Codes 05, 06, 0B, 0F, or 10 Hex

# Information 1. If the coil offset parameters in the MSG-RCVE function are set to a non-zero value, the actual addresses that are written to in the remote station will be the sum of the remote station data addresses and the word offset value in the coil offset parameters.

2. Set the address of the registers to write to within the range specified by the M Register Writing Range Low and M Register Writing Range High parameters in the MSG-RCVE function. Data will not be written if an address exceeds the valid setting range.

### **Function Code: 0D Hex**

Function: Reads data from multiple specified registers, one point at a time.

Data is read one word at a time from registers in the remote station as specified in the remote station address table that is stored in registers in the local station. This function reads the number of data items that is specified in the data size parameter.

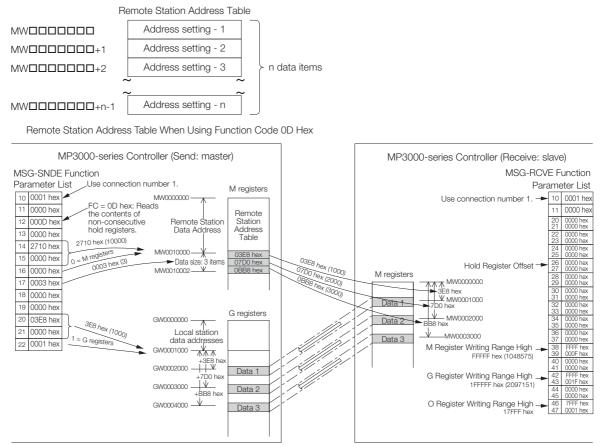
The applicable registers that can be read from the remote station are the M registers. The register addresses to store the data in the local station are set to the sum of each address specified in the remote station address table and the local station data address.

**MSG-SNDE** Function Parameter Description PARAM10 Connection Number Set the connection number used to determine the remote station. This parameter is used with the QnA-compatible 3E Frame protocol PARAM11 Option and the FINS protocol. Refer to the section for each protocol for details. PARAM12 Set the function code for the function to use. **Function Code** Remote Station Data PARAM14 Address, Lower Word Set the first register address where the remote station address table is stored. Remote Station Data PARAM15 Address, Upper Word Remote Station Register Set the register type (M, G, I, O, or S) in the local station where the PARAM16 remote station address table is stored. Type PARAM17 Data Size Set the number of data items to read. This parameter is used with the Extended MEMOBUS protocol. Set Remote CPU Module PARAM18 Number the CPU number at the remote station. Local Station Data These parameters are used to offset the address for writing data in PARAM20 Address, Lower Word registers in the local station that have been read from the remote station. Data will be written to the addresses that are the sum of Local Station Data each address specified in the remote station address table and the PARAM21 Address, Upper Word local station data address Local Station Register Set the register type (M, G, or O) to store the read data in the local PARAM22 station. Туре Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not PARAM24 For system use change the value of this parameter. This parameter is used by the system.

The following parameters need to be set in the MSG-SNDE function.

The following example illustrates how the contents of non-consecutive hold registers are read by using function code 0D hex. In this example, the contents of registers MW0001000, MW0002000, and MW0003000 in the remote station are read and stored in registers GW0002000, GW0003000, and GW0004000 in the local station. The remote station address table starts at register MW0010000 in the local station.

The remote station address table contains a one-word address specifier for each data item, as illustrated below.



Example of Addressing and Offset Addressing with Function Code 0D Hex

Information If the hold register offset parameters in the MSG-RCVE function are set to a non-zero value, the actual addresses that are read in the remote station will be the sum of the specified data addresses and the value in the hold register offset parameters.

### Function Code: 0E Hex

Function: Writes data to multiple specified registers, one point at a time.

Data is written one word at a time in registers in the remote station as specified in the remote station address table that is stored in registers in the local station. This function writes the number of data items specified by the data size parameter.

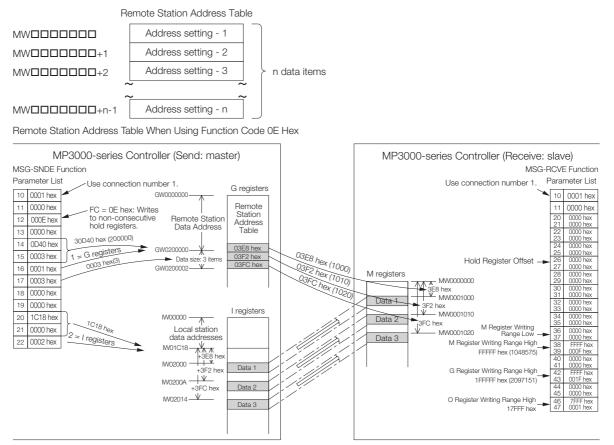
The applicable registers that can be written to in the remote station are the M registers. The register addresses to store the data to be written in the local station are set to the sum of each address specified in the remote station address table and the local station data address.

The following parameters need to be set in the MSG-SNDE function.

MSG-SN	DE Function Parameter	Description
PARAM10	Connection Number	Set the connection number used to determine the remote station.
PARAM11	Option	This parameter is used with the QnA-compatible 3E Frame protocol. Refer to the section for each protocol for details.
PARAM12	Function Code	Set the function code for the function to use.
PARAM14	Remote Station Data Address, Lower Word	Set the first register address where the remote station address table
PARAM15	Remote Station Data Address, Upper Word	is stored.
PARAM16	Remote Station Register Type	Set the register type (M, G, I, O, or S) in the local station where the remote station address table is stored.
PARAM17	Data Size	Set the number of data items to write.
PARAM18	Remote CPU Module Number	This parameter is used with the Extended MEMOBUS protocol. Set the CPU number at the remote station.
PARAM20	Local Station Data Address, Lower Word	These parameters are used to offset the address for reading data from registers in the local station for writing in the remote station.
PARAM21	Local Station Data Address, Upper Word	Data will be read from the addresses that are the sum of each address specified in the remote station address table and the local station data address.
PARAM22	Local Station Register Type	Set the register type (M, G, I, O, or S) of the data to be written that is stored in the local station.
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.

The following example illustrates how the contents of non-consecutive hold registers are written by using function code 0E hex. In this example, data stored in registers IW0002000, IW000200A, and IW0002014 in the local station are written to registers MW0001000, MW0001010, and MW0001020 in the remote station. The remote station address table starts at register GW0200000 in the local station.

The remote station address table contains a one-word address specifier for each data item, as illustrated below.



Example of Addressing and Offset Addressing with Function Code 0E Hex

Information If the hold register offset parameters in the MSG-RCVE function are set to a non-zero value, the actual addresses that are written to in the remote station will be the sum of the specified data addresses and the value in the hold register offset parameters.

### Function Codes: 4341 and 4349 Hex

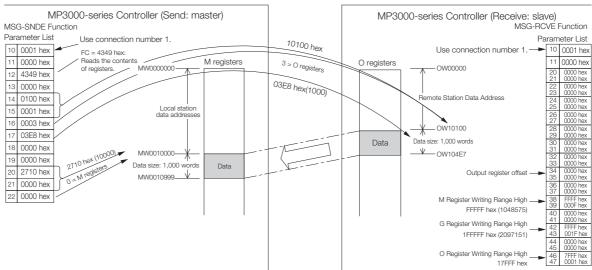
Function: Reads data from a data address in the remote station specified with a 32-bit address.

The specified size of data is read from specified registers in the remote station and stored in registers in the local station.

The following parameters need to be set in the MSG-SNDE function.

MSG-SN	DE Function Parameter	Description
PARAM10	Connection Number	Set the connection number that determines the remote station.
PARAM11	Option	Not used.
PARAM12	Function Code	Set the function code for the function to use.
PARAM14	Remote Station Data Address, Lower Word	Set the first address to read from in the remote station. Specify a bit address for function code 4341 hex, and a word
PARAM15	Remote Station Data Address, Upper Word	address for function code 4349 hex.
PARAM16	Remote Station Register Type	Set the register type (M, G, I, O, or S) to read from in the remote station.
PARAM17	Data Size	Set the size of the data to read. Specify the size in bits for function code 4341 hex, and in words for function code 4349 hex.
PARAM18	Remote CPU Module Number	This parameter is used with the Extended MEMOBUS protocol. Set the CPU number at the remote station.
PARAM20	Local Station Data Address, Lower Word	Set the first register address to store the read data in the local sta-
PARAM21	Local Station Data Address, Upper Word	tion. Specify a bit address for function code 4341 hex, and a word address for function code 4349 hex.
PARAM22	Local Station Register Type	Set the register type (M, G, or O) to store the read data in the local station.
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.

The following example illustrates how the contents of multiple registers are read by using function code 4349 hex. In this example, 1000 words of data are read from register OW10100 in the remote station and stored in registers in the local station starting at address MW0010000.



Example of Addressing and Offset Addressing with Function Code 4314 or 4349 Hex

Information If the output register offset parameters in the MSG-RCVE function are set to a non-zero value, the actual addresses that are read in the remote station will be the sum of the remote station data addresses and the value in the output register offset parameters.

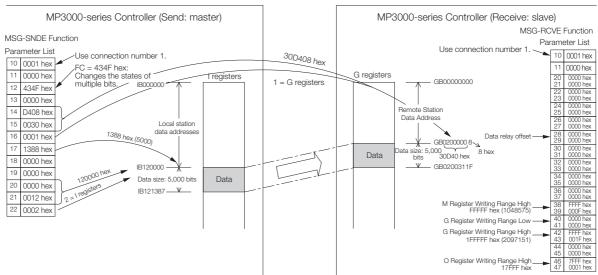
### Function Codes: 4345, 4346, 434B, and 434F Hex

Function: Writes data to a data address in the remote station specified by a 32-bit address. The specified size of data is read from registers in the local station and written to specified registers in the remote station.

The following parameters need to be set in the MSG-SNDE function.

MSG-SNI	DE Function Parameter	Description
PARAM10	Connection Number	Set the connection number used to determine the remote station.
PARAM11	Option	Not used.
PARAM12	Function Code	Set the function code for the function to use.
PARAM14	Remote Station Data Address, Lower Word	Set the first address to write to in the remote station. Specify a bit address for function code 4345 or 434F hex, and a word address for
PARAM15	Remote Station Data Address, Upper Word	function code 4346 or 434B hex.
PARAM16	Remote Station Register Type	Set the register type (M, G, O, or S) to write to in the remote station.
PARAM17	Data Size	Set the size of the data to write. Specify the size in bits for function code 434F hex, and in words for function code 434B hex. This parameter is not used for function codes 4345 and 4346 hex.
PARAM18	Remote CPU Module Number	This parameter is used with the Extended MEMOBUS protocol. Set the CPU number at the remote station.
PARAM20	Local Station Data Address, Lower Word	Set the first register address in the local station where the data to be written is stored. Specify a bit address for function code 4345 or 434F
PARAM21	Local Station Data Address, Upper Word	hex, and a word address for function code 4346 or 434B hex.
PARAM22	Local Station Register Type	Set the register type (M, G, I, O, or S) of the data to be written that is stored in the local station.
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.

The following example illustrates how the states of multiple bits are changed by using function code 434F hex. In this example, 5000 bits of data starting from register IB120000 in the local station are written to registers starting at GB02000008 in the remote station.



Example of Addressing and Offset Addressing with Function Code 4345, 4346, 434B, or 434F Hex

Information 1. If the data relay offset parameters in the MSG-RCVE function are set to a non-zero value, the actual addresses that are written to in the remote station will be the sum of the remote station data addresses and the word offset value in the data relay offset parameters.

2. Set the address of the registers to write to within the range specified by the G Register Writing Range Low and G Register Writing Range High parameters in the MSG-RCVE function. Data will not be written if an address exceeds the valid setting range.

### Function Code: 434D Hex

Function: Reads data from multiple registers specified by a 32-bit address, one point at a time. Data is read one or two words at a time from registers in the remote station as specified in the remote station address table that is stored in registers in the local station. This function reads the number of data items that is specified in the data size parameter.

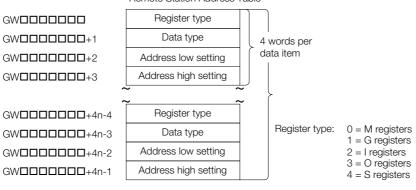
The register to read from in the remote station is listed in the remote station address table.

The following parameters need to be set in the MSG-SNDE function.

MSG-SNDE Function Parameter		Description
PARAM10	Connection Number	Set the connection number used to determine the remote station.
PARAM11	Option	Not used.
PARAM12	Function Code	Set the function code for the function to use.
PARAM14	Remote Station Data Address, Lower Word	Set the first register address where the remote station address table
PARAM15	Remote Station Data Address, Upper Word	is stored.
PARAM16	Remote Station Register Type	Set the register type (M or G) in the local station where the remote station address table is stored.
PARAM17	Data Size	Set the number of data items to read.
PARAM18	Remote CPU Module Number	This parameter is used with the Extended MEMOBUS protocol. Set the CPU number at the remote station.
PARAM20	Local Station Data Address, Lower Word	Set the first register address to store the read data in the local sta-
PARAM21	Local Station Data Address, Upper Word	tion.
PARAM22	Local Station Register Type	Set the register type (M or G) where the read data is to be stored in the local station.
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.

The following example illustrates how the contents of non-consecutive registers are read by using function code 434D hex. In this example, 2 words of data are read from register MW0001000, 1 word from register GW0200000, and 2 words from register IW17FFE in the remote station. These words are stored in the same order in registers in the local station starting at address MW0500000. The remote station address table starts at register GW020000 in the local station.

The remote station address table consists of 4 words per data item, as illustrated below.



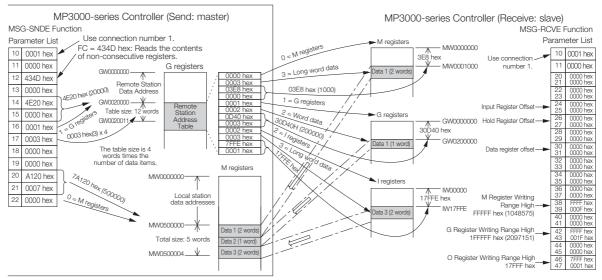
Remote Station Address Table

Data type: 2 = Word

3 = Long word

Remote Station Address Table When Using Function Code 434D Hex

6



Example of Addressing and Offset Addressing with Function Code 434D Hex

Information If the various offset parameters in the MSG-RCVE function are set to non-zero values, the actual addresses that are read in the remote station will be the sum of the specified data addresses and the values in the offset parameters.

### Function Code: 434E Hex

Function: Writes data to multiple registers specified by a 32-bit address, one point at a time. Data is written one or two words at a time in registers in the remote station as specified in the remote station address table that is stored in registers in the local station. This function writes the number of data items specified by the data size parameter.

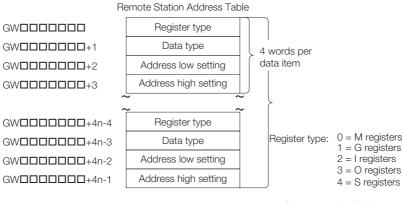
The register type and data address that are specified in the remote station address table determine the registers in the remote station.

The following parameters need to be set in the MSG-SNDE function.

MSG-SN	DE Function Parameter	Description
PARAM10	Connection Number	Set the connection number used to determine the remote station.
PARAM11	Option	Not used.
PARAM12	Function Code	Set the function code for the function to use.
PARAM14	Remote Station Data Address, Lower Word	Set the first register address where the remote station address table
PARAM15	Remote Station Data Address, Upper Word	is stored.
PARAM16	Remote Station Register Type	Set the register type (M or G) in the local station where the remote station address table is stored.
PARAM17	Data Size	Set the number of data items to write.
PARAM18	Remote CPU Module Number	This parameter is used with the Extended MEMOBUS protocol. Set the CPU number at the remote station.
PARAM20	Local Station Data Address, Lower Word	Set the register address that points to the first address of the local
PARAM21	Local Station Data Address, Upper Word	station address table that lists where the data to be written is stored.
PARAM22	Local Station Register Type	Set the register type (M or G) in the local station where the local station address table is stored.
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.

The following example illustrates how the contents of non-consecutive registers are written by using function code 434E hex. In this example, 2 words of data are read from register IW0002000, 2 words from register MW0120000, and 1 word from register SW00200 in the local station. These words are written to registers MW0001000, GW1000000, and GW2097151 in the remote station. The remote station address table starts at register GW0002000 in the local station.

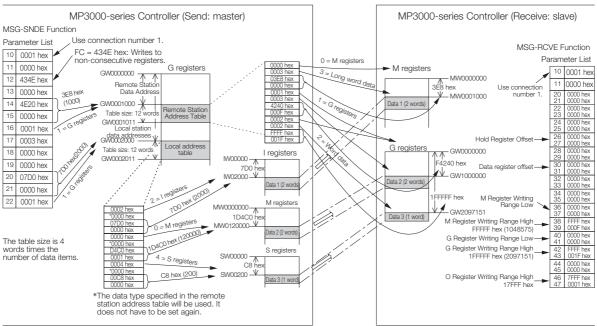
The remote station address table and local station address table consist of 4 words per data item, as illustrated below.



Data type: 2 = Word 3 = Long word

Remote Station Address Table When Using Function Code 434E Hex

Appendi



Example of Addressing and Offset Addressing with Function Code 434E Hex

- **Information** 1. If the various register offset parameters in the MSG-RCVE function are set to non-zero values, the actual addresses that are written to in the remote station will be the sum of the remote station data addresses and the word offset values in the register offset parameters.
  - Set the address of the registers to write to within the range specified by the Register Writing Range Low and Register Writing Range High parameters in the MSG-RCVE function. Data will not be written if an address exceeds the valid setting range.

### **Function Code: 31 Hex**

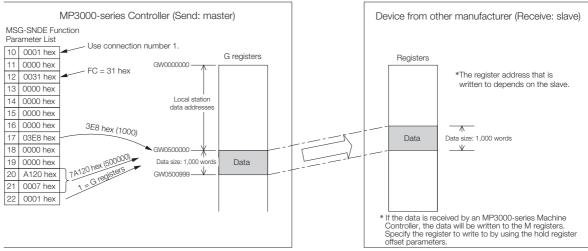
Function: Writes to the fixed buffer in a Mitsubishi PLC, or to the file memory in a TEKT PLC. The specified size of data is read from registers in the local station and written to registers in the remote station.

The register address in the remote station cannot be specified.

The following parameters need to be set in the MSG-SNDE function.

MSG-SND	E Function Parameter	Description	
PARAM10	Connection Number	Set the connection number used to determine the remote station.	
PARAM11	Option	Not used.	
PARAM12	Function Code	Set the function code for the function to use.	
PARAM14	Remote Station Data Address, Lower Word	Set the first address to write to in the remote station.	
PARAM15	Remote Station Data Address, Upper Word	Not used.	
PARAM16	Remote Station Register Type	Not used.	
PARAM17	Data Size	Set the size of the data to write. (Specify the size in words.)	
PARAM18	Remote CPU Module Number	Not used.	
PARAM20	Local Station Data Address, Lower Word	Set the first register address in the local station where the data to be	
PARAM21	Local Station Data Address, Upper Word	written is stored. (Set the word address.)	
PARAM22	Local Station Register Type	Set the register type (M, G, I, O, or S) of the data to be written that is stored in the local station.	
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.	

The following example illustrates how data is written to fixed buffers by using function code 31 hex. In this example, 1,000 bits of data starting from register GW0500000 in the local station are written to fixed buffers in the remote station.



Example of Addressing and Offset Addressing with Function Code 31 Hex

- Information 1. If the data is being received by an MP3000 slave, the data will be written to the addresses that are specified by the hold register offset parameters in the MSG-RCVE function.
  - 2. Set the address of the register to write to within the range specified by the M Register Writing Range Low and M Register Writing Range High parameters in the MSG-RCVE function. Data will not be written if an address exceeds the valid setting range.

### **Function Code: 32 Hex**

Function: Reads from the random access buffer in a Mitsubishi PLC.

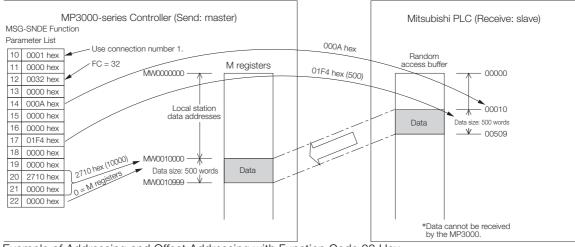
- The specified size of data is read from specified registers in the remote station and stored in registers in the local station.
- The read works only with the random access buffer in the remote station.

The following parameters need to be set in the MSG-SNDE function.

MSG-SN	DE Function Parameter	Description	
PARAM10	Connection Number	Set the connection number used to determine the remote station.	
PARAM11	Option	Not used.	
PARAM12	Function Code	Set the function code for the function to use.	
PARAM14	Remote Station Data Address, Lower Word	Set the first address to read from in the remote station. (Set the word address.)	
PARAM15	Remote Station Data Address, Upper Word	Not used.	
PARAM16	Remote Station Register Type	Not used.	
PARAM17	Data Size	Set the size of the data to read. (Specify the size in words.)	
PARAM18	Remote CPU Module Number	Not used.	
PARAM20	Local Station Data Address, Lower Word	Set the first register address to store the read data in the local sta-	
PARAM21	Local Station Data Address, Upper Word	tion. (Set the word address.)	
PARAM22	Local Station Register Type	Set the register type (M, G, or O) to store the read data in the local station.	
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.	

Appendix

The following example illustrates how the contents of the random access buffer is read by using function code 32 hex. In this example, 500 words of data are read starting from register 00010 in the remote station and stored in registers in the local station starting at address MW0010000.



Example of Addressing and Offset Addressing with Function Code 32 Hex

Information When the MP3000 acts as a slave, function command 32 hex cannot be used to receive data.

### **Function Code: 33 Hex**

Function: Writes to the random access buffer in a Mitsubishi PLC.

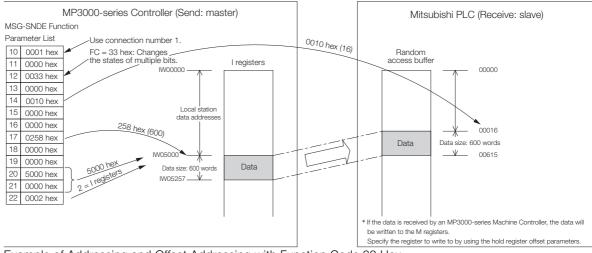
The specified size of data is read from registers in the local station and written to the remote station starting from the specified register.

The read works only with the random access buffer in the remote station.

The following parameters need to be set in the MSG-SNDE function.

MSG-SN	DE Function Parameter	Description
PARAM10	Connection Number	Set the connection number used to determine the remote station.
PARAM11	Option	Not used.
PARAM12	Function Code	Set the function code for the function to use.
PARAM14	Remote Station Data Address, Lower Word	Set the first address to write to in the remote station. (Set the word address.)
PARAM15	Remote Station Data Address, Upper Word	Not used.
PARAM16	Remote Station Register Type	Not used.
PARAM17	Data Size	Set the size of the data to write. (Specify the size in words.)
PARAM18	Remote CPU Module Number	Not used.
PARAM20	Local Station Data Address, Lower Word	Set the first register address in the local station where the data to be
PARAM21	Local Station Data Address, Upper Word	written is stored. (Set the word address.)
PARAM22	Local Station Register Type	Set the register type (M, G, I, O, or S) of the data to be written that is stored in the local station.
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.

The following example illustrates how to write to the random access buffer by using function code 33 hex. In this example, 600 words of data starting from register IW05000 in the local station are written to registers starting at 00016 in the remote station.



Example of Addressing and Offset Addressing with Function Code 33 Hex

- Information 1. If the data is being received by an MP3000 slave, the data will be written to the addresses that are specified by the hold register offset parameters in the MSG-RCVE function.
  - 2. Set the address of the register to write to within the range specified by the M Register Writing Range Low and M Register Writing Range High parameters in the MSG-RCVE function. Data will not be written if an address exceeds the valid setting range.

### **No-protocol Communications (No Function Code)**

#### Function: Writes data.

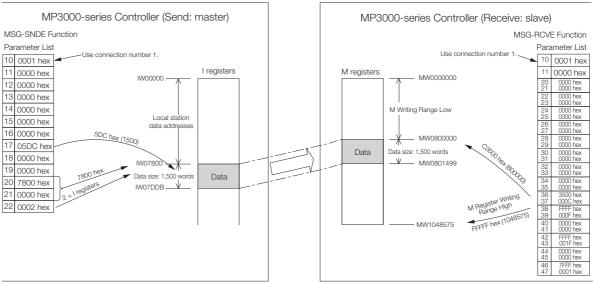
The specified size of data is read from registers in the local station and written to M registers in the remote station.

The applicable registers in the remote station are the M registers.

The following parameters need to be set in the MSG-SNDE function.

MSG-SN	DE Function Parameter	Description	
PARAM10	Connection Number	Set the connection number used to determine the remote station.	
PARAM11	Option	Not used.	
PARAM12	Function Code	Not used.	
PARAM14	Remote Station Data Address, Lower Word	Not used.	
PARAM15	Remote Station Data Address, Upper Word	Not used.	
PARAM16	Remote Station Register Type	Not used.	
PARAM17	Data Size	Set the size of the data to write. Specify the size in words for no- protocol 1 and in bytes for no-protocol 2.	
PARAM18	Remote CPU Module Number	Not used.	
PARAM20	Local Station Data Address, Lower Word	Set the first register address in the local station where the data to	
PARAM21	Local Station Data Address, Upper Word	written is stored.	
PARAM22	Local Station Register Type	Set the register type (M, G, I, O, or S) of the data to be written that is stored in the local station.	
PARAM24	For system use	Set this parameter to 0 from a user program or by other means in the first scan after the power is turned ON. Thereafter, do not change the value of this parameter. This parameter is used by the system.	

The following example illustrates how data is written using no-protocol communications. In this example, 1,500 words of data starting from register IW07800 in the local station are written to registers starting at MW0800000 in the remote station.



Example of Addressing and Offset Addressing with No-Protocol Communications

- **Information** 1. The registers in the remote station are specified by the M Register Writing Range Low parameter in the MSG-RCVE function.
  - 2. Set the address of the registers to write to within the range specified by the M Register Writing Range Low and M Register Writing Range High parameters in the MSG-RCVE function. Data will not be written if an address exceeds the valid setting range.

# 6.4 Details on Protocols

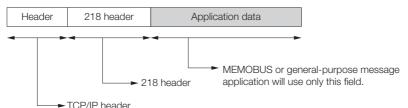
This section provides details on the Extended MEMOBUS protocol, MEMOBUS protocol, and no-protocol communications.

### 6.4.1 Extended MEMOBUS protocol

### **Message Structure**

The following message structure is used in Ethernet communications. Use this as reference when developing a PC-based application.

When the Extended MEMOBUS protocol is used to send and receive data, each message consists of three fields: a header field, a 218 header field, and the application data field.



The header is used for TCP/IP and UDP/IP. User programs do not need to be aware of this header because it is automatically appended and removed in the 218IFD.

The 218 header is required when using the Extended MEMOBUS protocol for Ethernet communications. User programs also do not need to be aware of the 218 header because it is automatically appended and removed in the 218IFD.

The actual data for the Extended MEMOBUS protocol is stored in the application data field.

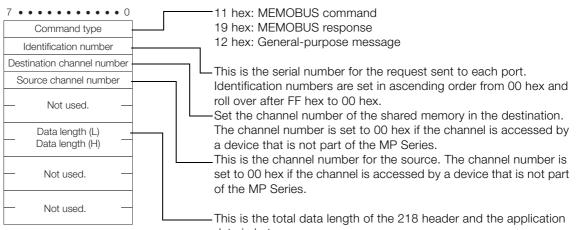
When communicating between a 218IFD and a host computer, the application on the host computer must append and remove the 218 header.

The application data field contains the following parameter structure based on the combination of communications protocol and the code that is specified.

Communications Protocols	Code	Reference
MEMOBUS message communications	BIN	MEMOBUS Binary Mode on page 6-27
MEMOBUS message communications	ASCII	MEMOBUS ASCII Mode on page 6-47
General-purpose message communications (no-protocol)	BIN	General-purpose Message Binary Mode on page 6-47
General-purpose message communications (no-protocol)	ASCII	General-purpose Message ASCII Mode on page 6-48

#### 218 Header

When communicating with the Extended MEMOBUS protocol, a 12-byte header called the 218 header is appended before the application data. The following figure illustrates the 218 header structure and contents.



### data in bytes.

#### Extended MEMOBUS Commands

The commands that make up the Extended MEMOBUS messages are identified by function codes and provide the functions given in the following table.

Major Function Code	Sub Function Code	Function
	01 hex	Reads the states of coils.
	02 hex	Reads the states of input relays.
	03 hex	Reads the contents of hold registers.
	04 hex	Reads the contents of input registers.
	05 hex	Changes the state of a single coil.
	06 hex	Writes to a single hold register or one word.
	08 hex	Performs a loopback test.
20 hex	09 hex	Reads the contents of hold registers (extended).
	0A hex	Reads the contents of input registers (extended).
	0B hex	Writes to hold registers (extended).
	0D hex	Reads the contents of non-consecutive hold registers (extended).
	0E hex	Writes the contents of non-consecutive hold registers (extended).
	0F hex	Changes the states of multiple coils.
	10 hex	Writes to multiple hold registers.
	41 hex	Reads the states of bits.
	45 hex	Changes the state of a single bit.
43 hex	46 hex	Writes to a single register.
(extended function for accessing	49 hex	Reads the contents of registers.
registers using	4B hex	Writes to multiple registers.
32-bit addresses)	4D hex	Reads the contents of non-consecutive registers.
	4E hex	Writes the contents of non-consecutive registers.
	4F hex	Changes the states of multiple bits.

### Register Types

When the major function code is 43 hex and the function specified by the sub function code references the contents of a register, such as a read, write, or change of state, specify the target register type in the slave. The codes for register types are given below.

Register Types	Code	Available Sub Function Codes
Hold Registers (M)	4D hex	41, 45, 46, 49, 4B, 4D, 4E, or 4F hex
Data registers (G)	47 hex	41, 45, 46, 49, 4B, 4D, 4E, or 4F hex
Input Registers (I)	49 hex	41, 49, or 4D hex
Output Registers (O)	4F hex	41, 45, 46, 49, 4B, 4D, 4E, or 4F hex
System Registers (S)	53 hex	41, 45, 46, 49, 4B, 4D, 4E, or 4F hex

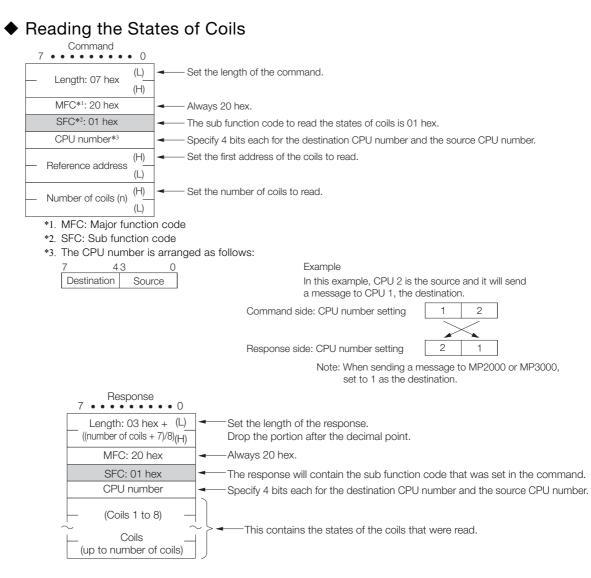
### ♦ Data Types

When the major function code is 43 hex and the function specified by the sub function code reads or writes to non-consecutive registers, specify the type of the target data. The codes for data types are given below.

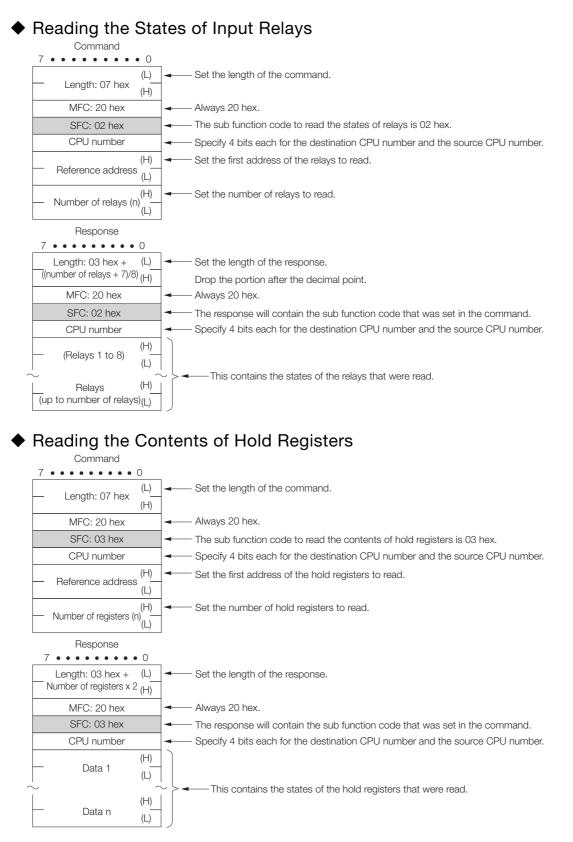
Data Types	Code	Available Sub Function Codes
Word (2 bytes)	2	4D or 4E hex
Long word (4 bytes)	3	4D or 4E hex

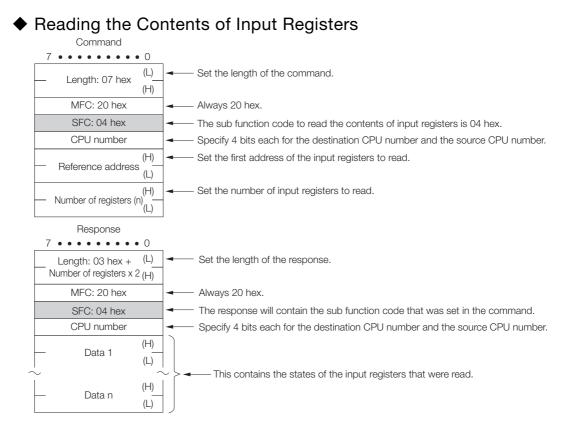
### **MEMOBUS Binary Mode**

The following formats are used for MEMOBUS message communications in binary mode.

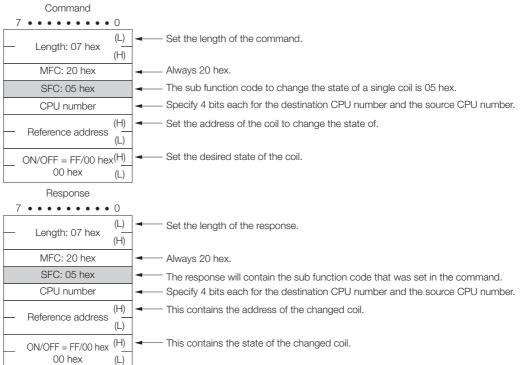


Appendix





### Changing the State of a Single Coil



7 • • • • • • • •	• 0	
- Length: 07 hex	(L) (H)	Set the length of the command.
MFC: 20 hex		. Always 20 hex.
SFC: 06 hex	-	. The sub function code to change the contents of a single hold register is 06 h
CPU number	-	Specify 4 bits each for the destination CPU number and the source CPU nun
- Reference address	s (H) (L)	Set the address of the single hold register to change.
- Register data	(H) (L)	Set the contents of the single hold register to change.
Response		
7 • • • • • • • •	• 0	
- Length: 07 hex	(L) (H)	Set the length of the response.
MFC: 20 hex		Always 20 hex.
SFC: 06 hex		The response will contain the sub function code that was set in the command
CPU number	-	Specify 4 bits each for the destination CPU number and the source CPU num
- Reference address	s (H) s (L)	This contains the address of the changed single hold register.
- Register data	(H) (L)	This contains the state of the changed single hold register.
Command	• 0	
- Leneth, OZ hav	(L)	Set the length of the command.
Length: 07 hex	(H)	
MFC: 20 hex	(H)	Always 20 hex.
-	(H)	Always 20 hex. The sub function code to perform a loopback test is 08 hex.
MFC: 20 hex	(H)	The sub function code to perform a loopback test is 08 hex.
MFC: 20 hex SFC: 08 hex		The sub function code to perform a loopback test is 08 hex. Specify 4 bits each for the destination CPU number and the source CPU num
MFC: 20 hex SFC: 08 hex CPU number		The sub function code to perform a loopback test is 08 hex.
MFC: 20 hex SFC: 08 hex CPU number - Test code: 0000 he		The sub function code to perform a loopback test is 08 hex. Specify 4 bits each for the destination CPU number and the source CPU num
MFC: 20 hex SFC: 08 hex CPU number Test code: 0000 he Data AAAA hex Response		The sub function code to perform a loopback test is 08 hex. Specify 4 bits each for the destination CPU number and the source CPU num
MFC: 20 hex SFC: 08 hex CPU number Test code: 0000 he Data AAAA hex Response 7	• 0 (L)	The sub function code to perform a loopback test is 08 hex. Specify 4 bits each for the destination CPU number and the source CPU num — Set the data for the test.
MFC: 20 hex SFC: 08 hex CPU number Test code: 0000 he Data AAAA hex Response 7 • • • • • • •	• 0 (L)	<ul> <li>The sub function code to perform a loopback test is 08 hex.</li> <li>Specify 4 bits each for the destination CPU number and the source CPU num</li> <li>Set the data for the test.</li> <li>Set the length of the response.</li> </ul>

 CPU number
 Specify 4 bits each for the destination CPU number and the source CPU number.

 Test code: 0000 hex
 If the test is successful, the response will contain the same data that was sent in the command.

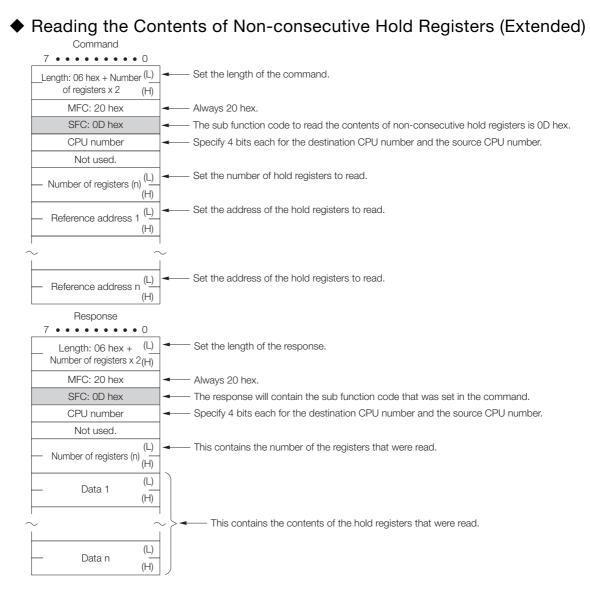
### Reading the Contents of Hold Registers (Extended)

Command	
7 • • • • • • • • 0 Length: 08 hex (L) (H)	<ul> <li>Set the length of the command.</li> </ul>
MFC: 20 hex	Always 20 hex.
SFC: 09 hex	The sub function code to read the contents of hold registers is 09 hex.
CPU number	Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.	
Reference address (L)     (H)	Set the first address of the hold registers to read.
— Number of registers (n) (L) (H)	Set the number of hold registers to read.
Response	
7 • • • • • • • • 0	
Length: 06 hex + (L) Number of registers x 2 (H)	- Set the length of the response.
MFC: 20 hex	Always 20 hex.
SFC: 09 hex	- The response will contain the sub function code that was set in the command.
CPU number	Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.	
Number of registers (n) ^(L) (H)	This contains the number of the registers that were read.
— Data 1 (L)(H)	
-~	$\frac{1}{2}$ > This contains the contents of the hold registers that were read.
Data n (L)(H)	

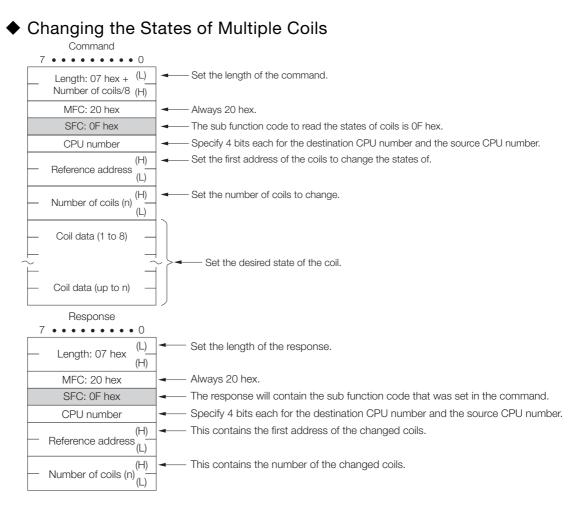
### Reading the Contents of Input Registers (Extended)

Command	
7 • • • • • • • • • 0 Length: 08 hex (L) (H)	- Set the length of the command.
MFC: 20 hex	Always 20 hex.
SFC: 0A hex	- The sub function code to read the contents of input registers is 0A hex.
CPU number	Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.	
$ Reference address \frac{(L)}{(H)}$	Set the first address of the input registers to read.
Number of registers (n) (L) (H)	<ul> <li>Set the number of input registers to read.</li> </ul>
Response 7 • • • • • • • • 0	
Length: 06 hex + Number (L) of registers x 2 (H)	Set the length of the response.
MFC: 20 hex	Always 20 hex.
SFC: 0A hex	- The response will contain the sub function code that was set in the command.
CPU number	Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.	
Number of registers (n) (L) (H)	This contains the number of the input registers that were read.
— Data 1 (L)(H)	
Data n (L) (H)	This contains the contents of the input registers that were read.

Command	0
Length: 08 hex + Numbe of registers x 2	
MFC: 20 hex	Always 20 hex.
SFC: 0B hex	The sub function code to write data into hold registers is 0B hex.
CPU number	Specify 4 bits each for the destination CPU number and the source CPU num
Not used.	
<ul> <li>Reference address</li> </ul>	(L) Set the first address of the hold registers to write.
— Number of registers (n)	(L) Set the number of hold registers to write.
– Data 1	(L) (H)
J.	$\sim$ > Set the data to write into the hold registers.
— Data n	(L) (H)
Response	
1	0
Length: 08 hex	(L) Set the length of the response. (H)
MFC: 20 hex	Always 20 hex.
SFC: 0B hex	The response will contain the sub function code that was set in the command
CPU number	Specify 4 bits each for the destination CPU number and the source CPU num
Not used.	
- Reference address	(L) This contains the first address of the hold registers that were written to.



Nriting to No Command	on-consecutive Hold Registers (Extended)
7 • • • • • • • • • • • • • • • • • • •	<ul> <li>0</li> <li>(L) ← Set the length of the command.</li> <li>↓ (H)</li> </ul>
MFC: 20 hex	Always 20 hex.
SFC: 0E hex	The sub function code to write data into non-consecutive hold registers is 0E
CPU number	Specify 4 bits each for the destination CPU number and the source CPU num
Not used.	
<ul> <li>Number of registers (r</li> </ul>	(L) Set the number of hold registers to write.
<ul> <li>Reference address 1</li> </ul>	(L) Set the address of the hold registers to write.
– Register data 1	(L) Set the data to write into the hold registers.
<ul> <li>Reference address r</li> </ul>	(L) Set the address of the hold registers to write.
– Register data n	(L) Set the data to write into the hold registers.
Response	
<ul> <li>Length: 06 hex</li> </ul>	<ul> <li>O</li> <li>(L) Set the length of the response.</li> <li>(H)</li> </ul>
MFC: 20 hex	Always 20 hex.
SFC: 0E hex	The response will contain the sub function code that was set in the command.
CPU number	Specify 4 bits each for the destination CPU number and the source CPU number
Not used.	
— Number of registers (r	(L) This contains the number of hold registers that were written to. (H) (H) $(L)$



Writing to Mul	tiple Hold Registers
Command	
7 • • • • • • • • • • • • • • • • • • •	Set the length of the command.
MFC: 20 hex	Always 20 hex.
SFC: 10 hex	The sub function code to write data into hold registers is 10 hex.
CPU number	Specify 4 bits each for the destination CPU number and the source CPU num
Beference address`	<ul> <li>−) Set the first address of the hold registers to write.</li> </ul>
Number of registers (n)	<ul> <li>A) Set the number of hold registers to write.</li> <li>A) Set the number of hold registers to write.</li> </ul>
Data 1	
~(ł	H) $\sim$ > Set the data to write into the hold registers.
🛏 Data n	<u>⊣)</u>
Response	
7 • • • • • • • • • • • • • • • • • • •	
MFC: 20 hex	Always 20 hex.
SFC: 10 hex	The response will contain the sub function code that was set in the command.
CPU number	Specify 4 bits each for the destination CPU number and the source CPU number.
(H Reference address (I	H) This contains the first address of the hold registers that were written to.
Number of registers (n)	H) ← This contains the number of hold registers that were written to.

### • Reading the States of Bits Using 32-bit Addressing

Command 7 • • • • • • • • •		
	(L)	Set the length of the command.
Length: 0E hex	(H)	
MFC: 43 hex		Always 43 hex.
SFC: 41 hex		- The sub function code to read the states of bits is 01 hex.
CPU number		Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.		
Register type		
Not used.		
	(LL)	<ul> <li>Set the first address of the bits to read.</li> </ul>
First address	(LH)	
First address	(HL)	
	(HH)	
	(LL)	Set the number of bits to read.
	(LH)	
Number of bits	(HL)	
	(HH)	
Response	• 0	
Length: 06 hex +	(L)	
((number of bits + 7)/8)	(H)	<ul> <li>Set the length of the response.</li> </ul>
MFC: 43 hex		Always 43 hex.
SFC: 41 hex		- The response will contain the sub function code that was set in the command.
CPU number		- Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.		
Register type		
Not used.		
States of first 8 bits	S	- This contains the states of the bits that were read.
States of next 8 bit	S	
States of next 8 bit	S	
States of next 8 bit	S	

•	• 0		
Longth, OC boy	(L)	]◄—	- Set the length of the command.
Length: 0C hex	(H)		
MFC: 43 hex			Always 43 hex.
SFC: 45 hex			The sub function code to change the state of a single bit is 05 hex.
CPU number		]◄—	- Specify 4 bits each for the destination CPU number and the source CPU number
Not used.			
Register type			
Not used.			
	(LL)	]◄—	- Set the address of the coil to change.
	(LH)		
Coil address	(HL)		
	(HH)		
Creative datate	(L)	<b> </b> ←	- Set the desired state of the coil.
Specified state	(H)		ON = 00FF hex OFF = 0000 hex
Response 7 • • • • • • • • •	(L)		- Set the length of the response.
7 • • • • • • • • • • • • • • • • • • •	1		
7 • • • • • • • • • • • • • • • • • • •	(L)	-	Always 43 hex.
7 • • • • • • • • • • • • • • • • • • •	(L)	-	- Always 43 hex. - The response will contain the sub function code that was set in the comma
7 • • • • • • • • • • • • • • • • • • •	(L)	-	- Always 43 hex. - The response will contain the sub function code that was set in the comma
7 • • • • • • • • • • • • • • • • • • •	(L)	-	- Always 43 hex. - The response will contain the sub function code that was set in the comma
7 • • • • • • • • • • • • • • • • • • •	(L)	-	- Always 43 hex. - The response will contain the sub function code that was set in the comma
7 • • • • • • • • • • • • • • • • • • •	(L) (H)		<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comma</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number and the</li></ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H)		- Always 43 hex. - The response will contain the sub function code that was set in the comma
7 • • • • • • • • • • • • • • • • • • •	(L) (H) (LL) (LL)		<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comma</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number and the</li></ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) (LL) (LL) (LL)		<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comma</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number and the</li></ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) (LL) (LL)		<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comma</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number and the</li></ul>

## ◆ Writing to a Single Register Using 32-bit Addressing

Command		
7 • • • • • • • • •	• 0	
Length: 0C hex	(L)	Set the length of the command.
Length. OC hex	(H)	
MFC: 43 hex		Always 43 hex.
SFC: 46 hex		The sub function code to write to a single register is 06 hex.
CPU number		Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.		
Register type		
Not used.		
	(LL)	Set the address of the register to write.
Register address	(LH)	
negister address	(HL)	
	(HH)	
M/rite data	(L)	Set the data to write into the register.
Write data	(H)	

Response		
7 • • • • • • • •	• 0	1
Length: 0C hex	(L)	Set the length of the response.
Length. 00 hex	(H)	
MFC: 43 hex		Always 43 hex.
SFC: 46 hex		- The response will contain the sub function code that was set in the command.
CPU number		Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.		
Register type		
Not used.		
	(LL)	This contains the address of the register that was written to.
De vieten e delucer	(LH)	
Register address	(HL)	
	(HH)	
Muite dete	(L)	This contains the data in the register that was written to.
Write data	(H)	

6

7••••	• 0	
Length: 0C hex	(L)	Set the length of the command.
Length. 00 hex	(H)	
MFC: 43 hex		Always 43 hex.
SFC: 49 hex		The sub function code to read the contents of registers is 09 hex.
CPU number		Specify 4 bits each for the destination CPU number and the source CPU number
Not used.		
Register type		
Not used.		
	(LL)	<ul> <li>Set the first address of the registers to read.</li> </ul>
First address	(LH)	
First address	(HL)	
	(HH)	
Number of words	(L)	<ul> <li>Set the number of registers to read.</li> </ul>
Number of words		
Response	(H) • 0	
	• 0 (L)	Set the length of the response.
7 • • • • • • • • • • • • • • • • • • •	• 0 (L)	<ul> <li>Set the length of the response.</li> <li>Always 43 hex.</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	• 0 (L)	Always 43 hex.
7 • • • • • • • • • • • • • • • • • • •	• 0 (L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	• 0 (L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	• 0 (L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	• 0 (L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	• 0 (L) (H)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (L) (H)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> <li>Specify 4 bits each for the destination CPU number and the source CPU nu</li> <li>This contains the number of words that were read.</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) (H) (L) (H) (L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) (H) (H) (L) (H) (L) (H)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> <li>Specify 4 bits each for the destination CPU number and the source CPU nu</li> <li>This contains the number of words that were read.</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) (H) (L) (H) (L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the commar</li> <li>Specify 4 bits each for the destination CPU number and the source CPU nu</li> <li>This contains the number of words that were read.</li> </ul>

## ◆ Writing to Multiple Registers Using 32-bit Addressing

U I	•	0	0 0
Command 7 • • • • • • • •	- 0		
		Sot the lengt	h of the command.
Length: 0C hex + Number of registers x 2	(L)		n or the command.
	(H)	_	
MFC: 43 hex		Always 43 he	ЭХ.
SFC: 4B hex		The sub func	tion code to write to multiple registers is 0B hex.
CPU number		Specify 4 bits	s each for the destination CPU number and the source CPU num
Not used.			
Register type			
Not used.		-	
	(LL)	→	address of the registers to write.
	(LH)	-	<u> </u>
First address	(HL)	_	
		-	
	(HH)	_	
Number of words	(L)	Set the numb	per of registers to write.
	(H)	_	
Data 1	(L)	Set the data	to write into the register.
Data	(H)		
	(L)		
Data 2	(H)	7	
	(L)	1	
Data 3	(H)	-	
	( )		
Response	. 0		
7••••		7	
Longth: OC box	(L)	Cat the langet	h of the response

( • • • • • • • • • •	• 0	_	
Longth, OC boy	(L)	- Cat the length of the response	
Length: 0C hex	(H)	Set the length of the response.	
MFC: 43 hex		Always 43 hex.	
SFC: 4B hex		The response will contain the sub function code that was set in the command.	
CPU number		Specify 4 bits each for the destination CPU number and the source CPU number.	
Not used.			
Register type			
Not used.			
	(LL)	This contains the first address of the registers that were written to.	
	(LH)		
First address	(HL)		
	(HH)		
Number of succession	(L)	This contains the number of registers that were written to.	
Number of words	(H)		

Reading the C	onte	nts o	of Non-consecutive Registers Using 32-bit
Addressing Command	0		
	(L)	]	Set the length of the command.
Length: 06 hex + Number of registers x 6	(H)		
MFC: 43 hex			Always 43 hex.
SFC: 4D hex			The sub function code to read the contents of non-consecutive registers is 0D hex.
CPU number			Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.		]	
Number of data items	(L)		Set the number of data items to read.
Number of data items	(H)		
Register type of first item	to read	◄	Set the type of the first register to read.
Data type of first item to	read		Set the data type of the first register to read.
	(LL)		Set the address of the first register to read.
Address of	(LH)	-	
Address of first register to read	(HL)	-	
	(HH)	-	
Register type of next item	. ,	-	
Data type of next item to		-	
		-	
	(LL)	-	
Address of	(LH)	-	
next register to read	(HL)	-	
	(HH)	_	
Register type of next item	to read	_	
Data type of next item to	o read	_	
	(LL)	_	
Address of	(LH)		
next register to read	(HL)		
	(HH)		
Response 7 • • • • • • Length: 06 hex + Number of word registers x 2 + Number of long word registers x 4 MFC: 43 hex	0 (L) (H)	-	Set the length of the response. Always 43 hex.
SFC: 4D hex		-	The response will contain the sub function code that was set in the command.
CPU number		-	Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.		-	
Number of data items	(L) (H)		This contains the number of data items that were read.
Contents of first word register	(L) (H)		This contains the contents of the first data item that was read.
Contents of next word register	(L) (H)	_	
	(LL)		
Contents of next	(LH)		
long word register	(HL)		
	(HH)	1	
L		1	

## • Writing to Non-consecutive Registers Using 32-bit Addressing

7 • • • • • • • • •		7
_ength: 06 hex + Number of vord registers x 8 + Number	(L)	Set the length of the command.
of long word registers x 10	(H)	
MFC: 43 hex		Always 43 hex.
SFC: 4E hex		- The sub function code to write data into non-consecutive registers is 0E hex.
CPU number		Specify 4 bits each for the destination CPU number and the source CPU number
Not used.		
	(L)	Set the number of data items to write.
Number of data items	(H)	
Type of first register to	write	Set the type of the first register to write.
Data type of first item to	write	Set the data type of the first register to write.
	(LL)	Set the address of the first register to write.
Address of	(LH)	
first register to write	(HL)	
	(HH)	
Data to write to	(L)	Set the contents to write into the first register.
first register	(H)	
Type of next register to	write	
Data type of next item to	o write	
	(LL)	
Address of next register	(LH)	
to write	(HL)	
	(HH)	
Data to write to	(L)	
next register	(H)	

1100001100		
7 • • • • • • • • •	• 0	
Length: 06 hex	(L)	Cat the length of the upperson
	(H)	Set the length of the response.
MFC: 43 hex		Always 43 hex.
SFC: 4E hex		- The response will contain the sub function code that was set in the command.
CPU number		Specify 4 bits each for the destination CPU number and the source CPU number.
Not used.		
Number of data items	(L)	This contains the number of data items that were written.
	(H)	

Appendix

7••••	• • •	
Length: 0E hex +	(L) -	Set the length of the command.
((number of bits + 7)/8)	(H)	
MFC: 43 hex	-	Always 43 hex.
SFC: 4F hex	-	The sub function code to change the states of multiple bits is 0F hex.
CPU number	-	<ul> <li>Specify 4 bits each for the destination CPU number and the source CPU number</li> </ul>
Not used.		
Register type		
Not used.		
	(LL) -	<ul> <li>Set the first address of the bits to change.</li> </ul>
	(LH)	
First address	(HL)	
	(HH)	
	(LL) -	<ul> <li>Set the number of bits to change.</li> </ul>
	(LH)	
Number of bits	(HL)	
	(HH)	
States of first 8 bi	its -	Set the state to change the bits to.
States of next 8 b	its	
States of next 8 b	its	
States of next 8 b	its	
Response		
	(L)	Set the length of the response.
7 • • • • • • • • • • • • • • • • • • •		
7 • • • • • • • • • • • • • • • • • • •	(L)	Always 43 hex.
7 • • • • • • • • • • • • • • • • • • •	(L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L)	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) -	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) 	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) 	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> <li>Specify 4 bits each for the destination CPU number and the source CPU num</li> <li>This contains the first address of the changed bits.</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) 	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> <li>Specify 4 bits each for the destination CPU number and the source CPU number</li> </ul>
7 • • • • • • • • • • • • • • • • • • •	(L) (H) 	<ul> <li>Always 43 hex.</li> <li>The response will contain the sub function code that was set in the comman</li> <li>Specify 4 bits each for the destination CPU number and the source CPU nur</li> <li>This contains the first address of the changed bits.</li> </ul>

### ♦ Error Responses

### Major Function Code of 20 Hex

The following message is returned.

- The sub function code in the command message is illegal.
- The reference address is illegal.
- The number of data items is incorrect.

	Command		
	7 • • • • • • • •	• 0	
	Length	(L)	
	Longar	(H)	
	MFC: 20 hex		
	SFC: 01 to 33 he	x	
	CPU number		
	— Message body		
~	$\sim$	$\sim$	_
	Response		
	7 • • • • • • • •	• 0	
	Length: 04 hex	(L)	
	Length. 04 hex	(H)	
	MFC: 20 hex		
	SFC: SFC + 80 he	ex	
		ex	
	SFC: SFC + 80 he	ex.	E

Error code

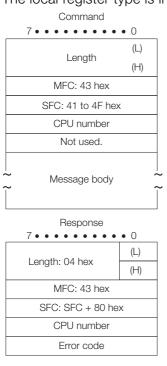
01: SFC error02: Reference address error03: Number of data items error

6

### ■ Major Function Code of 43 Hex

The following message is returned.

- The register type is incorrect.
- The command is incorrect for the data type to be accessed.
- The local register type is incorrect.



Error code

01 hex: SFC error

02 hex: Reference address error

03 hex: Number of data items error

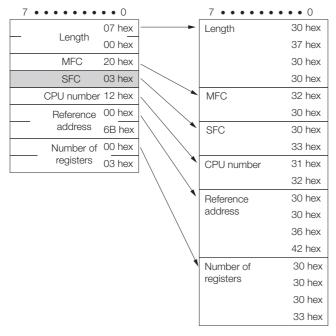
40 hex: Register type error

41 hex: Data type error42 hex: Local station register type error

## **MEMOBUS ASCII Mode**

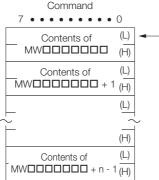
In ASCII Mode, binary data is converted to ASCII before being sent or received.

The following diagram illustrates the conversion from binary to ASCII. As shown in the example, 8-bit data is converted into two 7-bit ASCII characters. The example shows the conversion of only the application data field. In actual conversion, however, the EIF header is also converted to ASCII.



## General-purpose Message Binary Mode

In the general-purpose message mode, the values of the MW hold registers in the Machine Controller are sent and received in the application data field that follows the EIF header.

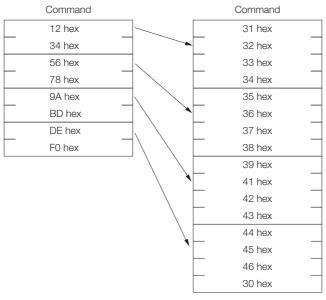


- The contents of the MWDDDDDD to MWDDDDDD + n -1 hold registers in the Machine Controller are set in these fields. No response is returned when a message is sent.

## General-purpose Message ASCII Mode

In ASCII Mode, binary data is converted to ASCII before being sent or received.

The following diagram illustrates the conversion from binary to ASCII. As shown in the example, 8-bit data is converted into two 7-bit ASCII characters. The example shows the conversion of only the application data field. In actual conversion, however, the EIF header is also converted to ASCII.



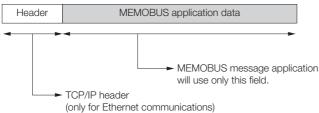
# 6.4.2 MEMOBUS Protocol

## Message Structure

The following message structure is used in communications with 217IF and 218IF Modules. Refer to the following manual for details.

MEMOBUS Descriptive Information Industrial Communication System (Manual No. SIE-C815-13.60)

When the MEMOBUS protocol is used to send and receive data, each message consists of two fields: a header field and the application data field. The 218 header that is used for the Extended MEMOBUS protocol is not used.



The header is for TCP/IP and UDP/IP connections and is used only for Ethernet communications. User programs do not need to be aware of this header because it is automatically appended and removed in the 218IFD.

When communicating using the 217IF, only the MEMOBUS application data field is sent and received.

The structure for parameters in the application data field is given below. The actual data for the MEMOBUS protocol is stored in the application data field.

Communications Protocols	Code	Reference
MEMOBUS message communications	RTU	MEMOBUS RTU Mode on page 6-49
MEMOBUS message communications	ASCII	MEMOBUS ASCII Mode on page 6-54

Information Whether RTU or ASCII is used for Ethernet communications depends on the code setting for the remote station in the connection parameters. When communicating with a 217IF Module, this is determined by the communications mode setting in the communications parameters. When a message is received in Ethernet communications, neither the CRC-16 in RTU Mode nor the LRC in ASCII Mode are checked. Error checking for received messages is performed using error detection in the TCP, UDP, and IP headers. It is therefore not necessary to calculate the CRC-16 or LRC when sending a message.

### MEMOBUS Commands

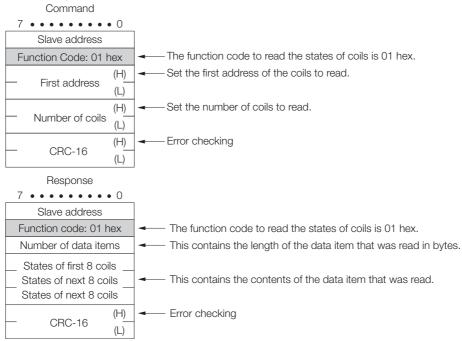
The commands that make up the MEMOBUS messages are identified by function codes and provide the functions given in the following table.

Function Code	Sub Function Code	Function	Maximum Size (RTU/ASCII)
01 hex	-	Reads the states of coils.	2000 points
02 hex	-	Reads the states of input relays.	2000 points
03 hex	-	Reads the contents of hold registers.	125 words
04 hex	-	Reads the contents of input registers.	125 words
05 hex	-	Changes the state of a single coil.	1 point
06 hex	-	Writes to a single hold register or one word.	1 word
08 hex	-	Performs a loopback test.	-
0F hex	-	Changes the states of multiple coils.	800 points
10 hex	-	Writes to multiple hold registers.	100 words

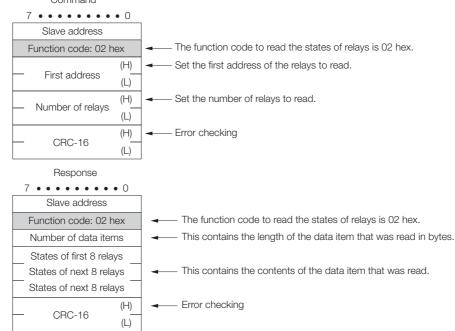
## **MEMOBUS RTU Mode**

Information When a message is received on a 218IFD Module using the MEMOBUS protocol, the CRC-16 is not checked.

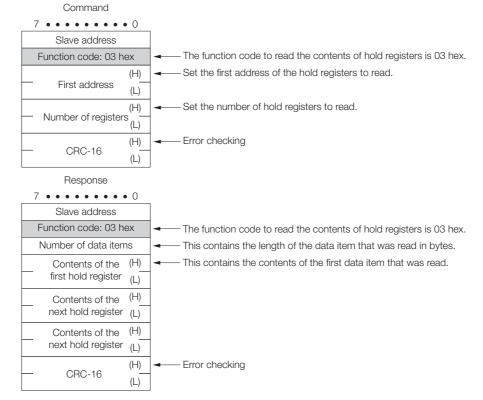
### Reading the States of Coils

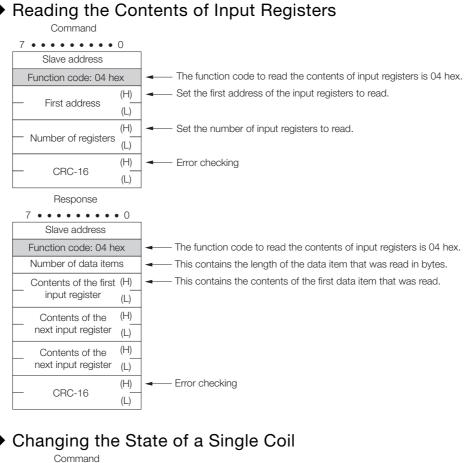


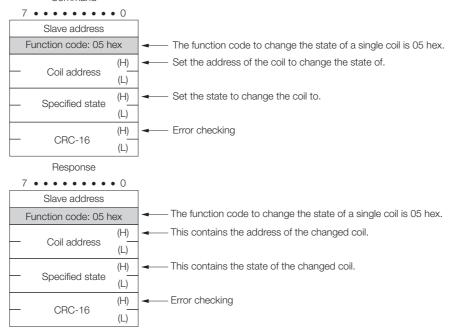
### Reading the States of Input Relays Command



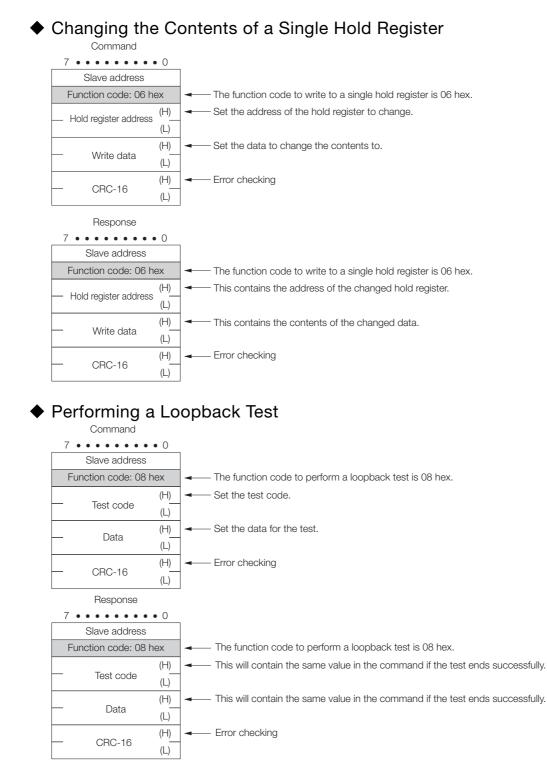
## Reading the Contents of Hold Registers

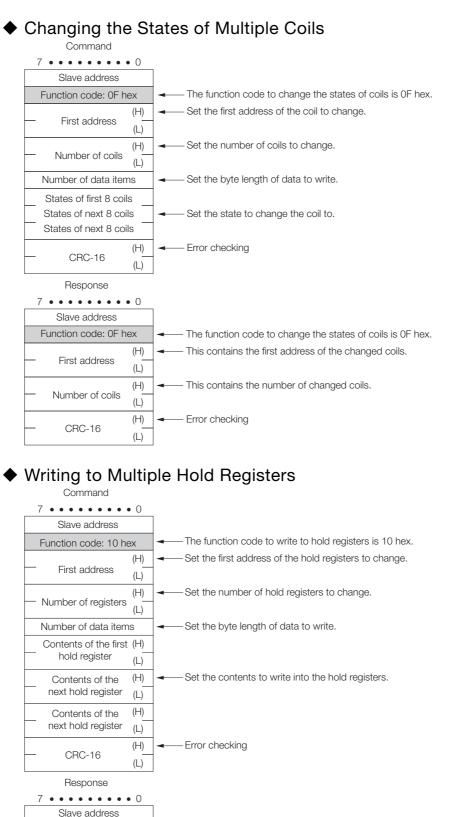






Appendix





The function code to write to hold registers is 10 hex. This contains the first address of the changed hold registers.

This contains the number of hold registers that were read.

Function code: 10 hex

First address

Number of registers

CRC-16

(H)

(L)

(H)

(L)

(H)

(L)

Error checking

Appendix

6

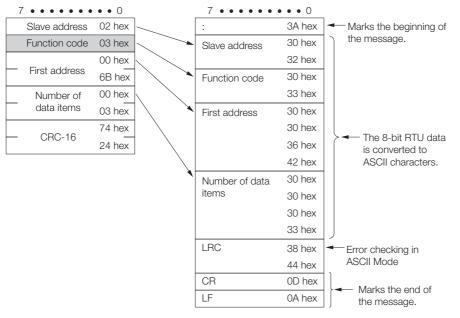
### Error Responses

If the command message contains an error, the slave will ignore the requested function and return an error response message.

7 • • • • • • • • • 0	
Slave address	Error code
Function code + 80 hex	<ol> <li>Illegal function code</li> <li>Illegal address for a coil, input relay, or register</li> </ol>
Error code	3: Incorrect number of coils, input relays, or registers
CRC-16	

## **MEMOBUS ASCII Mode**

In ASCII Mode, RTU data is converted to ASCII before being sent or received. The following diagram illustrates the conversion from RTU to ASCII. As shown in the example, 8-bit data in the application data field is converted into two 7-bit ASCII characters. In the MEMOBUS format, the code for a ":" is added to the beginning of the data to indicate where the data starts, and the codes "CR" and "LF" are added to the end of the data to indicate where it ends. Error checking is done with the LRC.

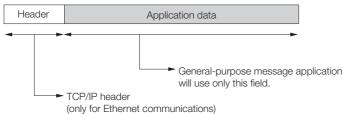


Information When a message is received on a 218IFD Module using the MEMOBUS protocol, the LRC is not checked.

## 6.4.3 No-Protocol Communications

### Message Structure

When no-protocol communications is set as the communications protocol, application data is handled as a general-purpose message. When sending and receiving data, each message consists of two fields: a header and the application data field.



The header is for TCP/IP and UDP/IP connections and is used only for Ethernet communications. User programs do not need to be aware of this header because it is automatically appended and removed in the 218IFD.

The application data field can be formatted as required by the application. The application data field has the following message structure.

Communications Protocols	Code	Reference
No-protocol communications	BIN	General-purpose Binary Mode on page 6-55
No-protocol communications	ASCII	General-purpose ASCII Mode on page 6-56

Information Ethernet communications will use either binary or ASCII data based on the code setting in the connection parameters.

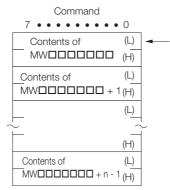
The difference compared to using the general-purpose messaging mode with the Extended MEMOBUS protocol is that the 218 header is not appended before the application data.

### General-purpose Message Commands

General-purpose message commands can be set as required by the application.

## General-purpose Binary Mode

In no-protocol communications, the values of the MW hold registers in the Machine Controller are sent and received in the application data field.



The contents of the MWDDDDDD to MWDDDDD + n -1 hold registers in the Machine Controller are set in these fields. No response is returned when a message is sent.

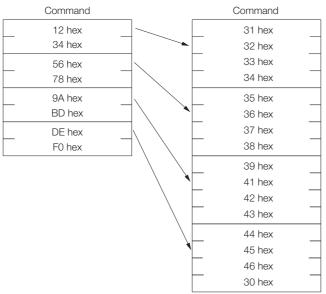
Appendix

6.4.3 No-Protocol Communications

## General-purpose ASCII Mode

In ASCII Mode, binary data is converted to ASCII before being sent or received.

The following diagram illustrates the conversion from binary to ASCII. As shown in the example, 8-bit data is converted into two 7-bit ASCII characters.



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