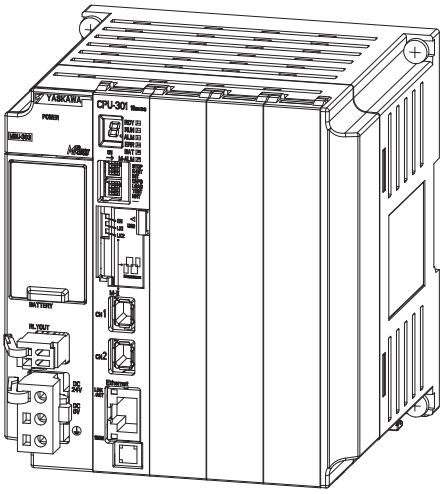
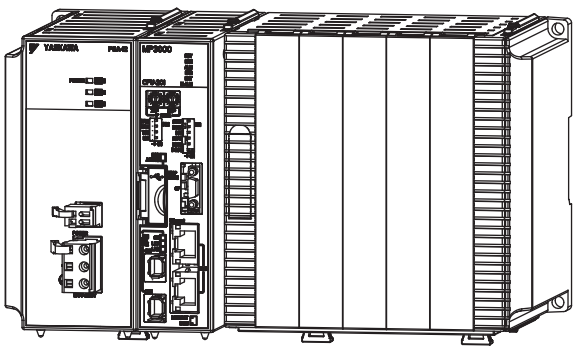
YASKAWA

Machine Controller MP3000 Series

MP3200/MP3300
TROUBLESHOOTING MANUAL





MANUAL NO. SIEP C880725 01C

About this Manual

This manual describes troubleshooting the MP3200 and MP3300.

For information on troubleshooting Optional Modules, refer to the manual for your Optional Modules.

Read this manual carefully to ensure the correct usage of the Machine Controller in the control of 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:

- MP3200: A generic name for the Power Supply Unit, CPU Unit, Base Unit, and Rack Expansion Interface Unit.
- MP3300: A generic name for the CPU Module and Base Unit.
- MPE720: The Engineering Tool or a personal computer running the Engineering Tool
- PLC: A Programmable Logic Controller
- Machine Controller: An MP3000-series Machine Controller
- Motion Control Function Modules: The Function Modules in the Motion Modules and the Function Modules in the SVC, SVR, SVC 32, or SVR 32 built into the CPU Units/ CPU Modules.

◆ Manual Configuration

This manual consists of the chapters listed in the following table. Read the chapters of this manual as required for your application.

Chapter Title		Troubleshooting
Chapter 1	Overview of Troubleshooting	√
Chapter 2	Troubleshooting Errors with LED Indicators and Displays	√
Chapter 3	Troubleshooting using the System Monitor	√
Chapter 4	Troubleshooting Communications and Motion Control	√
Chapter 5	Troubleshooting Programming and Debugging	√
Chapter 6	Troubleshooting Connections with the MPE720	√
Chapter 7	Troubleshooting System Errors	√
Chapter 8	MP3200/MP3300 Battery Replacement	√
Chapter 9	Fan Replacement	√

◆ MPE720 Engineering Tool Version Number

In this manual, the operation of MPE720 is described using screen captures of MPE720 version 7.

◆ Copyrights

- DeviceNet is a registered trademark of the ODVA (Open DeviceNet Venders Association).
- Ethernet is a registered trademark of the Xerox Corporation.
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- Microsoft, Windows, Windows NT, and Internet Explorer are trademarks or registered trademarks of the Microsoft Corporation.
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- MECHATROLINK is a trademark of the MECHATROLINK Members Association.
- Other product names and company names are the trademarks or registered trademarks of the respective company. “TM” and the ® mark do not appear with product or company names in this manual.

◆ 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.

Indicates items for which caution is required or precautions to prevent operating mistakes.

Example

Indicates operating or setting examples.

Information

Indicates supplemental information to deepen understanding or useful information.

Indicates definitions of difficult terms or terms that have not been previously explained in this manual.

Related Manuals

The following table lists the related manuals.

Be aware of all product specifications and restrictions to product application before you attempt to use any product.

Category	Manual Name	Manual Number	Contents
Basic functionality	Machine Controller MP2000/MP3000 Series Machine Controller System Setup Manual	SIEP C880725 00	Describes the functions of the MP2000/MP3000-series Machine Controllers and the procedures that are required to use the Machine Controller, from installation and connections to settings, programming, trial operation, and debugging.
	Machine Controller MP3000 Series MP3200 User's Manual	SIEP C880725 10	Describes the specifications and system configuration of an MP3000-series MP3200 Machine Controller and the functions of the CPU Unit.
	Machine Controller MP3000 Series MP3300 Product Manual	SIEP C880725 21	Describes the specifications and system configuration of an MP3000-series MP3300 Machine Controller and the functions of the CPU Module.
	Machine Controller MP2000 Series MPU-01 Multi-CPU Module User's Manual	SIEP C880781 05	Describes the functions, specifications, operating methods, maintenance, inspections, and troubleshooting of the MP2000-series MPU-01 Multi-CPU Module.
Communications functionality	Machine Controller MP3000 Series Communications User's Manual	SIEP C880725 12	Describes the specifications, system configuration, and communications connection methods for the Ethernet communications that are used with an MP3000-series Machine Controller.
Motion control functionality	Machine Controller MP3000 Series Motion Control User's Manual	SIEP C880725 11	Describes the specifications, system configuration, and operating methods for the SVC, SVC32, SVR, and SVR32 Motion Function Modules that are used in an MP3000-series Machine Controller.
	Machine Controller MP2000 Series Built-in SVB/SVB-01 Motion Module User's Manual	SIEP C880700 33	Describes the functions, specifications, and operating methods of the MP2000-series PO-01 Motion Module.
	Machine Controller MP2000 Series SVC-01 Motion Module User's Manual	SIEP C880700 41	Describes the functions, specifications, and operating methods of the MP2000-series SVA-01 Motion Module.
	Machine Controller MP2000 Series SVA-01 Motion Module User's Manual	SIEP C880700 32	Describes the functions, specifications, and operating methods of MP2000-series Motion Modules (built-in Function Modules: SVB, SVB-01, and SVR).
	Machine Controller MP2000 Series Pulse Output Motion Module PO-01 User's Manual	SIEP C880700 28	Describes the functions, specifications, and operating methods of the MP2000-series PO-01 Motion Module.

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Category	Manual Name	Manual Number	Contents
Programming	Machine Controller MP3000 Series Ladder Programming Manual	SIEP C880725 13	Describes the ladder programming specifications and instructions of MP3000-series Machine Controller.
	Machine Controller MP3000 Series Motion Programming Manual	SIEP C880725 14	Describes the motion programming and sequence programming specifications and instructions of MP3000-series Machine Controller.
Engineering Tools	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

The following signal words and marks are used to indicate safety precautions in this manual.

Information marked as shown below is important for safety. Always read this information and heed the precautions that are provided.

⚠ WARNING	Indicates precautions that, if not heeded, could possibly result in loss of life or serious injury.
⚠ CAUTION	Indicates precautions that, if not heeded, could result in relatively serious or minor injury, or property damage. If not heeded, even precautions classified as cautions (⚠ CAUTION) can lead to serious results depending on circumstances.
PROHIBITED	Indicates prohibited actions. For example,  indicates prohibition of open flame.
MANDATORY	Indicates mandatory actions. For example,  indicates that grounding is required.

The following precautions are for storage, transportation, installation, wiring, operation, maintenance, inspection, and disposal. These precautions are important and must be observed.

◆ General Precautions

⚠ WARNING

- 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 Machine Controller 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 Machine Controller.
  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 Machine Controller, or burning.
- Do not attempt to modify the Machine Controller in any way.
  There is a risk of injury or device damage.

◆ Storage and Transportation

⚠ CAUTION

- Do not store the Machine Controller 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 Machine Controller when transporting it.
  Holding the cables or connectors may damage them or result in injury.
- Do not overload the Machine Controller during transportation. (Follow all instructions.)
  There is a risk of injury or an accident.
- Never subject the Machine Controller 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

⚠ CAUTION

- Do not install the Machine Controller 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 Machine Controller in an atmosphere containing halogen (fluorine, chlorine, bromine, or iodine).
  There is a risk of malfunction or damage.
- Do not step on the Machine Controller or place heavy objects on the Machine Controller.
  There is a risk of injury or an accident.
- Do not block the air exhaust ports on the Machine Controller. Do not allow foreign objects to enter the Machine Controller.
  There is a risk of internal element deterioration, malfunction, or fire.
- Always mount the Machine Controller in the specified orientation.
  There is a risk of malfunction.
- Leave the specified amount of space between the Machine Controller, and the interior surface of the control panel and other devices.
  There is a risk of fire or malfunction.
- Do not subject the Machine Controller 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 of the Battery.
  Static electricity may damage the electrodes.

◆ Wiring

⚠ CAUTION

- 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 wiring.
  There is a risk of fire.
- Provide sufficient shielding when using the Machine Controller 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 manual for details on circuits.

  📖 *MP3000 Series CPU Unit Instructions* (Manual No.: TOBP C880725 16)

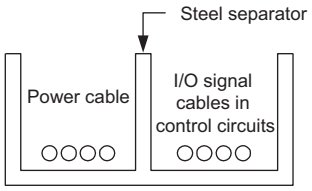
  📖 *MP3000 Series MP3300 CPU Module Instructions Manual* (Manual No.: TOBP C880725 23)

  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 Machine Controller.
  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.
- 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 touch the electrodes when replacing the Battery.
  Static electricity may damage the electrodes.
- Select the I/O signal wires for external wiring to connect the Machine Controller to external devices based on the following criteria:
  - Mechanical strength
  - Noise interference
  - Wiring distance
  - Signal voltage

⚠ CAUTION

- 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



◆ Operation

⚠ CAUTION

- 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 even cause accidents resulting in injury or death.
- Implement interlock signals and other safety circuits external to the Machine Controller to ensure safety in the overall system even if the following conditions occur.
  - Machine Controller failure or errors caused by external factors
  - Shutdown of operation due to Machine Controller 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 Machine Controller 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 Machine Controller 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 Machine Controller through self-diagnosis.

  There is a risk of injury, device damage, or burning.
- Observe the setting methods that are given in the manual for the following parameters.
  - Parameters for absolute position detection when the axis type is set to a finite-length axis
  - Parameters for simple absolute infinite-length position control when the axis type is set to an infinite-length axis

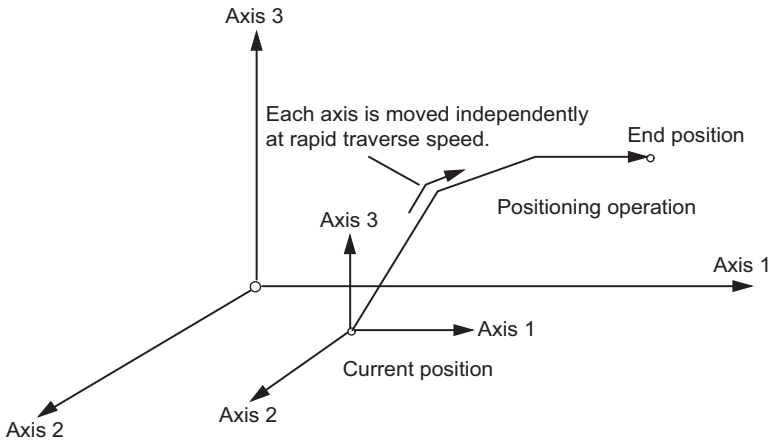
    📖 *MP3000 Series Motion Control User's Manual* (Manual No. SIEP C880725 11)

  If any other methods are used, offset in the current position when the power supply is turned OFF and ON again may result in device damage.
- OL□□□48 (Zero Point Position Offset in Machine Coordinate System) is always valid when the axis type is set to a finite-length axis. Do not change the setting of OL□□□48 while the Machine Controller is operating.
  There is a risk of machine damage or an accident.

⚠ CAUTION

- Always check to confirm the paths of axes when any of the following axis movement instructions are used in programs to ensure that the system operates safely.
  - Positioning (MOV)
  - Linear Interpolation (MVS)
  - Circular Interpolation (MCC or MCW)
  - Helical Interpolation (MCC or MCW)
  - Set-time Positioning (MVT)
  - Linear Interpolation with Skip Function (SKP)
  - Zero Point Return (ZRN)
  - External Positioning (EXM)

  Example



Example of Basic Path for Positioning (MOV) Instruction

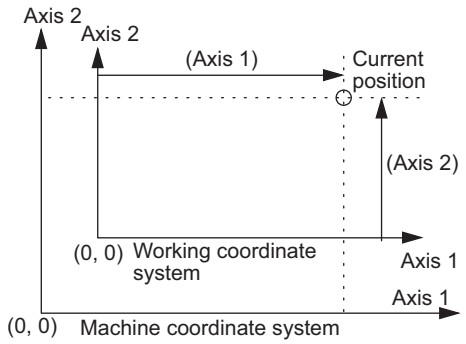
  There is a risk of injury or device damage.

- The same coordinate word will create a completely different travel operation in Absolute Mode and in Incremental Mode. Make sure that the ABS and INC instructions are used correctly before you start operation.
  There is a risk of injury or device damage.
- The travel path for the Positioning (MOV) instructions will not necessarily be a straight line. Check to confirm the paths of the axis when this instruction is used in programs to ensure that the system operates safely.
  There is a risk of injury or device damage.
- The Linear Interpolation (MVS) instruction can be used on both linear axes and rotary axes. However, if a rotary axis is included, the linear interpolation path will not necessarily be a straight line. Check to confirm the paths of the axis when this instruction is used in programs to ensure that the system operates safely.
  There is a risk of injury or device damage.
- The linear interpolation for the Helical Interpolation (MCW and MCC) instructions can be used for both linear axes and rotary axes. However, depending on how the linear axis is taken, the path of helical interpolation will not be a helix. Check to confirm the paths of the axis when this instruction is used in programs to ensure that the system operates safely.
  There is a risk of injury or device damage.

⚠ CAUTION

- Unexpected operation may occur if the following coordinate instructions are specified incorrectly: Always confirm that the following instructions are specified correctly before you begin operation.
  - Absolute Mode (ABS)
  - Incremental Mode (INC)
  - Current Position Set (POS)

Example



Example of Working Coordinate System Created with the Set Current Position (POS) Instruction

There is a risk of injury or device damage.

- The Set Current Position (POS) Instruction creates a new working coordinate system. Therefore, unexpected operation may occur if the POS instruction is specified incorrectly. When you use the POS instruction, always confirm that the working coordinate system is in the correct position before you begin operation.

  There is a risk of injury or device damage.

- The Move on Machine Coordinates (MVM) instruction temporarily performs positioning to a coordinate position in the machine coordinate system. Therefore, unexpected operation may occur if the instruction is executed without confirming the zero point position in the machine coordinate system first. When you use the MVM instruction, always confirm that the machine zero point is in the correct position before you begin operation.

  There is a risk of injury or device damage.

◆ Maintenance and Inspection

⚠ CAUTION

- Do not attempt to disassemble or repair the Machine Controller.
  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.
- Replace the Battery only while power is supplied to the Machine Controller.
  Replacing the Battery while the power supply to the Machine Controller is turned OFF may result in loss of the data stored in memory in the Machine Controller.
- When you replace the Battery, do not touch the electrodes of the Battery.
  There is a risk of electrostatic discharge failure.
- 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

⚠ CAUTION

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

◆ Other General Precautions

Observe the following general precautions to ensure safe application.

- 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.

Contents

4 Troubleshooting Communications and Motion Control

5 Troubleshooting Programming and Debugging

6 Troubleshooting Connections with the MPE720

7 Troubleshooting System Errors

8 MP3200/MP3300 Battery Replacement

9 Fan Replacement

Overview of Troubleshooting

1

This chapter describes the basic troubleshooting and error confirmation procedures.

1.1 Basic Troubleshooting Procedure

When a problem occurs, it is important to recover normal system operation as soon as possible by finding the cause of the problem and taking the necessary measures. The basic troubleshooting procedure is outlined below.

Step 1

Check the following items visually.

- Machine movement, or status if stopped
- Power supply status
- I/O device status
- Wiring conditions
- Status of indicators and display on Units or Modules
- Switch settings (e.g., DIP switches)
- Parameter settings and program contents

Step 2

See if the problem changes when the following operations are performed.

- Stop the Machine Controller.
- Reset the alarms.
- Turn the power supply OFF and ON again.

Step 3

Isolate the location of the problem from the results of steps 1 and 2.

- Inside or outside of the Machine Controller?
- Software or hardware?
- Sequence control or motion control?
- Ethernet communications or MECHATROLINK communications?

1.2 Checking for Errors

This section describes the errors that can occur when using the Machine Controller, and how to troubleshoot them.

Follow the troubleshooting procedures outlined below if a problem occurs with the Machine Controller.

1. Check the status of the indicators on the Machine Controller.

Information Refer to the following sections for details on checking the status of indicators on the Machine Controller.

☞ *2.1 Power Indicators (page 2-2)*
☞ *2.2 CPU Unit/CPU Module Indicators and Display (page 2-3)*

2. Connect the MPE720 to the Machine Controller to check the error information.

If the CPU Unit/CPU Module is not functioning properly, check the status of the indicators on the CPU Unit/CPU Module. Then use the MPE720 to check for errors.

- If a system error and a scan time exceeded error have occurred:
  ☞ *Chapter 3 Troubleshooting using the System Monitor*
- If an Ethernet communications error or a motion control error has occurred:
  ☞ *Chapter 4 Troubleshooting Communications and Motion Control*
- If an error occurred in a motion program or during message communications:
  ☞ *Chapter 5 Troubleshooting Programming and Debugging*
- If you cannot go online with the MPE720:
  ☞ *Chapter 6 Troubleshooting Connections with the MPE720*
- If you want to investigate a system error:
  ☞ *Chapter 7 Troubleshooting System Errors*

Troubleshooting with Indicators and Displays

2

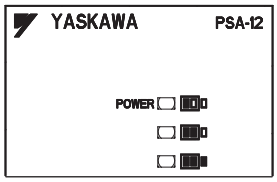
This chapter describes troubleshooting procedures with the indicators and the display on the Machine Controller.

2.1 Power Indicators

You can check the power supply loading status with the power indicators on the MP3000.
With the MP3200, the indicators are on the Power Supply Unit, and with the MP3300, there is an indicator on the Base Unit. This section describes the power indicators for the MP3200 and MP3300.

Power Supply Unit Indicators (MP3200)

This section describes how to check the load on the Power Supply Unit.



The following table gives the relation between the indicators on the Power Supply Unit and the load on the Power Supply Unit.

Load			Normal		Error	
Indicators	POWER	Green	●	●	●	○
		Yellow	○	●	●	○
		Red	○	○	●	○

Note: 1. ●: Lit, ○: Not lit.
2. The indicators show the status when the Power Supply Unit is turned ON.

Check the status in the above table and perform the actions given below if the power loading status indicates an error.

Load	Cause	Correction
Error	The load exceeds the capacity of the Power Supply Unit.	• Reduce the number of Optional Modules installed on the Base Unit. • Reduce the number of Units.

Base Unit Indicators (MP3300)

With the MP3300, you can check the power supply loading status on the Base Unit.

The following table shows the relation between the load status of the Rack power supply and the indicator on the Power Supply Unit.

Load			Normal	Error
LED	POWER ◯	Green	●	○

Check the status in the above table and perform the actions given below if the power loading status indicates an error.

Load	Cause	Correction
Error	The load exceeds the capacity of the Power Supply Unit.	Reduce the number of Optional Modules installed on the Base Unit.

2.2 CPU Unit/CPU Module Indicators and Display

You can use the indicators on the CPU Unit/CPU Module to check the error status of the CPU Unit/CPU Module.

After you check the error status, the system (S) registers will help you isolate the program location that needs to be corrected.

Refer to the following chapter for details on system registers.

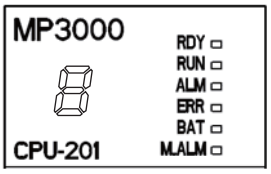
☞ *Chapter 7 Troubleshooting System Errors*

The CPU Unit/CPU Module has the following display and four types of indicators.

- Display
- Status indicators
- USB status indicator
- MECHATROLINK-III status indicators
- Ethernet status indicators

The error status and error details can be checked using the above display and indicators.

The display and indicators will give you a general idea of what the error is and the system (S) registers will help you isolate the program location that needs to be corrected.



Status Indicators

These indicators show the status of the CPU Unit/CPU Module.

RDY
RUN
ALM
ERR
BAT
M-ALM

The patterns of the status indicators are described in the following table.

	Indicator Status						CPU Unit/CPU Module Status	Description
	RDY (Green)	RUN (Green)	ALM (Red)	ERR (Red)	BAT (Red)	M_ALM (Red)		
Normal	○	○	●	●	–	○	Hardware reset	Normally, the CPU Unit will start within 10 seconds. If more than 10 seconds is required, there is an error in a user program or a hardware error. Refer to the following section for information on system errors and implement corrections. ☞ *Chapter 7 Troubleshooting System Errors*
	○	○	○	○	–	○	Initialization	
	○	●	○	○	–	○	Drawing A is being executed.	
	●	○	○	○	–	○	The user programs are stopped (offline stop mode).	• The stop operation was performed from the MPE720. • This is the status after the STOP switch is turned ON. It is not an error.
	●	●	○	○	–	○	The user programs are being executed normally.	Normal operation is in progress.

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Note: ○: Not lit, ●: Lit, ★: Flashing, –: Any status

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	Indicator Status						CPU Unit/CPU Module Status	Description
	RDY (Green)	RUN (Green)	ALM (Red)	ERR (Red)	BAT (Red)	M_ALM (Red)		
Error	○	○	○	●	○	○	A serious failure error occurred.	If the ERR indicator is lit, there is a hardware failure or a user program error. Refer to the following section for the corrective actions to take when the ERR indicator is lit. ☞ *7.3 Troubleshooting for the ERR Indicator (page 7-5)*
	○	○	○	★	–	○	Software Errors: Number of Flashes 2: Machine check exception 3: DSI (writing) exception 4: ISI exception 5: Alignment exception 6: DDR DRAM memory error exception 7: DTLB exception 8: ITLB exception	A hardware failure has occurred. Replace the Unit or Module.
	○	○	★	★	–	○	Hardware Errors: Number of Flashes 2: RAM diagnostic error 3: ROM diagnostic error 4: CPU Function Module diagnostic error 5: FPU Function Module diagnostic error	
	–	–	–	–	–	●	Motion error	If the M_ALM indicator is lit, there is an error in the Motion Control Function Module. Refer to the following section for details on motion errors. ☞ *4.2 Troubleshooting Motion Errors (page 4-7)*

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Note: ○: Not lit, ●: Lit, ★: Flashing, –: Any status

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	Indicator Status						CPU Unit/CPU Module Status	Description
	RDY (Green)	RUN (Green)	ALM (Red)	ERR (Red)	BAT (Red)	M_ALM (Red)		
Alarms	–	–	–	–	●	–	Battery alarm	If the BAT indicator is lit, the Battery must be replaced. Refer to the following section for the Battery replacement procedure. ☞ *Chapter 8 MP3200/MP3300 Battery Replacement*
	●	●	●	○	–	–	Operation error I/O error M-III station address duplication	If the ALM indicator is lit, there is an operation error, an I/O error, or an error for an M-III station address duplication. Refer to the following section for the corrective actions to take when the ALM indicator is lit. ☞ *7.4 Troubleshooting for the ALM Indicator (page 7-6)*

Note: ○: Not lit, ●: Lit, ★: Flashing, –: Any status

Display

If an error or alarm occurs, details will be displayed on the display. This section describes the display patterns and corresponding errors.

Display	Category	Description
 followed by error code	System error	A 3-digit error code is displayed after E, like this: E001: Watchdog timer error E051: Module synchronization error E052: Main CPU Unit system down detected E061: Unit configuration error on Rack 1 E062: Unit configuration error on Rack 2 E063: Unit configuration error on Rack 3 E064: Unit configuration error on Rack 4 E065: Unit configuration error on Rack 5 E066: Unit configuration error on Rack 6 E067: Unit configuration error on Rack 7 E070: Unsupported Sub CPU mode E071: Unsupported Module detected E080: CPU mode mismatch E081: CPU stopped for internal temperature error 1 E082 CPU stopped for internal temperature error 2 E083: Fan stopped E090: Hardware error 1 E091: Hardware error 2 E092: Hardware error 3
 followed by error code	Alarm	A 3-digit error code is displayed after A, like this: A001: Operation error in DWG.A A002: Operation error in DWG.I A003: Operation error in DWG.H A005: Operation error in DWG.L A101: I/O error on Rack 1 A102: I/O error on Rack 2 A103: I/O error on Rack 3 A104: I/O error on Rack 4 A105: I/O error on Rack 5 A106: I/O error on Rack 6 A107: I/O error on Rack 7

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Display	Category	Description
 followed by error code	Alarm	A201: Insufficient power supply capacity warning 1 for Rack 1 A205: Insufficient power supply capacity warning 1 for Rack 5 A206: Insufficient power supply capacity warning 1 for Rack 6 A207: Insufficient power supply capacity warning 1 for Rack 7 A211: Insufficient power supply capacity warning 2 for Rack 1 A215: Insufficient power supply capacity warning 2 for Rack 5 A216: Insufficient power supply capacity warning 2 for Rack 6 A217: Insufficient power supply capacity warning 2 for Rack 7 A221: Power interruption detected on Expansion Rack 1 A225: Power interruption detected on Expansion Rack 5 A226: Power interruption detected on Expansion Rack 6 A227: Power interruption detected on Expansion Rack 7 A230: Hardware error 4 A240: Fan stopped A241: Internal temperature rise detected A301: USB memory write error A302: USB memory read error A303: Security error A305: Folder for batch loading does not exist. A306: Load file model mismatch error A307: Loading error due to program write protection A308: Load file write error A309: Save to flash memory error A30A: Save file read error A30B: No USB memory device A370: Log folder creation error A371: Log file creation error A372: Log file writing error A401: M-III restrictions error A402: Error in MPU-01 A403: Error in Sub CPU A404: M-III station address duplication
 followed by error code	−	h: CPU stopped by failsafe function

Troubleshooting Alarms

The following table describes the causes and corrections of alarms that are displayed on the display. Checkmarks (○) indicate when the alarm codes are displayed by the MP3200 or MP3300.

Alarm Code Alarm Name	MP3200	MP3300	Cause	Confirmation Method	Correction
E001: Watchdog timer error	○	○	There is an infinite loop in a user program.	Check the FOR and WHILE instructions for the possibility of infinite loops. Turn ON the STOP switch and turn the power supply OFF and ON again.	Correct the ladder program.
			The maximum value of the scan time does not meet the following conditions. • The scan times for the high-speed (H) scan and the low-speed (L) scan must be set to values that are higher than the maximum scan times. • The set values must be 1.25 times the maximum values.	Check the set values of the scan times for the high-speed (H) scan and the low-speed (L) scan in relation to the maximum values of the scan times. You can check the set values and maximum values of the high-speed (H) scan and the low-speed (L) scan in SW00004 to SW00012.	Correct the set values of the scan times.
			The main CPU failed.	Turn the power supply OFF and ON again to see if an alarm occurs. If an alarm occurs even after the power supply is turned OFF and ON again several times, the CPU may be faulty.	Replace the CPU.
E051: Module synchronization error	○	○	A synchronization error occurred for an Optional Module.	Turn the power supply OFF and ON again to see if an alarm occurs. If an alarm occurs even after the power supply is turned OFF and ON again several times, the Optional Module may be faulty.	Check the SW00076 system register to identify the Optional Module with the error and replace the Optional Module.
E052: Main CPU Unit system down detected	○	○	A watchdog error occurred in the Main CPU.	Check the indicators or system registers for the Main CPU.	Clear the cause of the watchdog error from the Main CPU.

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Alarm Code Alarm Name	MP3200	MP3300	Cause	Confirmation Method	Correction
E061: Unit configuration error	○	–	There is a configuration error on Rack □. □: 1 to 7	Check the following conditions. • There are more than three MP3000 Units. • There is more than one MP2000 Unit. • There is more than one Sub CPU. • There are more than two Base Units. • An MP2000 Unit is mounted to Rack 5 to 7 (excluding to the right of a Sub CPU). • More than one EXIOIF Module is mounted. • An EXIOIF Module is mounted under a Sub CPU.	Correct the Unit configuration.
E062: Unit configuration error	○	–			
E063: Unit configuration error	○	–			
E064: Unit configuration error	○	–			
E065: Unit configuration error	○	–			
E066: Unit configuration error	○	–			
E067: Unit configuration error	○	–			
E070: Unsupported Sub CPU mode	○	–	A CPU version that does not support operation as a Sub CPU was mounted as a Sub CPU.	Check the system software version.	Use a version of the CPU that supports operation as a Sub CPU.
E071: Unsupported Module detected	○	○	A Module that cannot be used was mounted.	Check to see if the Modules are supported.	Remove any Modules that are not supported.
E080: CPU mode mismatch	○	–	The Main CPU contains a Sub CPU project. Or a Sub CPU contains a Main CPU project.	Log on from the MPE720 and check the Module configuration definitions.	Transfer a Main CPU project to the Main CPU. Transfer a Sub CPU project to the Sub CPU.
E081: CPU stopped for internal temperature error 1	○	○	The temperature continued to increase even further after A241 was detected and is approaching the permissible temperature of the internal parts.	Check SB00041F (temperature warning).	Change the installation environment to lower the temperature around the CPU. If the CPU temperature increases and an error occurs, turn OFF the power supply to the Controller and change the installation environment.
E082: CPU stopped for internal temperature error 2	○	○	The temperature continued to increase even after E081 was detected and has reached the permissible temperature of the internal parts.		
E083: Fan stopped (1 minute)	○	–	The Fan stopped continuously for 1 minute.	Check to see if the Fan is operating. Or, check SB00041E (Fan error).	Check the Fan operation. If the Fan is not operating, turn OFF the power supply to the Controller and replace the Fan.

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Alarm Code Alarm Name	MP3200	MP3300	Cause	Confirmation Method	Correction
E090: Hardware error 1	○	○	A hardware error occurred.	Turn the power supply OFF and ON again.	If the error persists even when you turn the power supply OFF and ON again a few times, there is a hardware failure. Replace the Unit.
E091: Hardware error 2	○	○			
E092: Hardware error 3	○	○			
A001: Operation error in DWG.A	○	○	There is an operation error in DWG.A.	Check the error code in SW00081.	Correct the ladder program.
A002: Operation error in DWG.I	○	○	There is an operation error in DWG.I.	Check the error code in SW00083.	
A003: Operation error in DWG.H	○	○	There is an operation error in DWG.H.	Check the error code in SW00085.	
A005: Operation error in DWG.L	○	○	There is an operation error in DWG.L.	Check the error code in SW00089.	
A101: I/O error on Rack 1	○	○	There is an I/O error on a Main Rack (Rack □). □: 1 to 7	Check the error in SW09560 to SW13699 (System I/O Error Status) to identify the Module with the error.	Remove the cause of the I/O error based on the error status.
A102: I/O error on Rack 2	○	–			
A103: I/O error on Rack 3	○	–			
A104: I/O error on Rack 4	○	–			
A105: I/O error on Rack 5	○	–			
A106: I/O error on Rack 6	○	–			
A107: I/O error on Rack 7	○	–			

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Alarm Code Alarm Name	MP3200	MP3300	Cause	Confirmation Method	Correction
A201: Insufficient power supply capacity warning 1 for Rack 1	○	○	An Insufficient Power Supply Capacity 1 Warning was detected on the Main Rack (Rack □). □: 1 or 5 to 7	Check the indicators on the Power Supply Unit.	Check the configuration of the Optional Modules and either reduce the number of Optional Modules or replace the Power Supply Unit.
A205: Insufficient power supply capacity warning 1 for Rack 5	○	–			
A206: Insufficient power supply capacity warning 1 for Rack 6	○	–			
A207: Insufficient power supply capacity warning 1 for Rack 7	○	–			
A211: Insufficient power supply capacity warning 2 for Rack 1	○	○	An Insufficient Power Supply Capacity 2 Warning was detected on the Main Rack (Rack □). □: 1 or 5 to 7		
A215: Insufficient power supply capacity warning 2 for Rack 5	○	–			
A216: Insufficient power supply capacity warning 2 for Rack 6	○	–			
A217: Insufficient power supply capacity warning 2 for Rack 7	○	–			
A230: Hardware error 4	○	○	A hardware error occurred.	Turn the power supply OFF and ON again.	If the error persists even when you turn the power supply OFF and ON again a few times, there is a hardware failure. Replace the Unit with the hardware failure.
A240: Fan stopped	○	–	The fan stopped.	Check to see if the Fan is operating. Or, check SB00041E (Fan error).	• Connect the Fan correctly. • If the Fan is not operating, turn OFF the power supply to the Controller and replace the Fan.

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Alarm Code Alarm Name	MP3200	MP3300	Cause	Confirmation Method	Correction
A241: Internal temperature rise detected	○	○	The CPU temperature is close to the operating limit.	Check SB00041F (temperature warning).	Change the installation environment to lower the temperature around the CPU. If the CPU temperature increases and an error occurs, turn OFF the power supply to the Controller and change the installation environment.
A301: USB memory write error	○	○	An error occurred while writing data to a file on the USB memory device.	Make sure that the USB memory device is inserted properly.	Reinsert the USB memory device.
				Check the USB memory device.	Make sure that there is space available on the USB memory device.
A302: USB memory read error	○	○	An error occurred while reading data from a file on the USB memory device.	Make sure that the USB memory device is inserted properly.	Reinsert the USB memory device.
				Check the USB memory device.	Make sure that there is space available on the USB memory device.
A303: Security error	○	○	User attempted to load data while online security was enabled.	Check the status of the online security setting.	Disable online security.
A304: Memory diagnosis error for user program	○	○	An error occurred in the user memory data that is stored in flash memory.	Turn ON the INIT switch, turn the power supply OFF and ON again, and save the data to flash memory again. If an alarm occurs even after the power supply is turned OFF and ON again several times, the flash memory may be faulty.	Replace the CPU.
A305: Folder for batch loading does not exist	○	○	There is no data for batch loading on the USB memory device.	Check the USB memory device.	Retry execution of a project transfer from the MPE720 to the USB memory.
A306: Load file model mismatch error	○	○	The model in the batch loading file on the USB memory does not match.	Check the USB memory device.	Retry execution of a project transfer from the MPE720 to the USB memory.
A307: Loading error due to program write protection	○	○	A batch load operation was performed with program write protection enabled.	Check the **Write Protect** setting under **Environment Setting – System Setting**.	Set **Write Protect** to **Writable**, and execute the batch load again.
A308: Load file write error	○	○	Data could not be written to the Controller during batch loading.	Check the available space in the Controller.	Double-check the batch transfer data.

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Alarm Code Alarm Name	MP3200	MP3300	Cause	Confirmation Method	Correction
A309: Save to flash memory error	○	○	Data could not be saved to the flash memory in the Controller during batch loading.	Turn the power supply OFF and ON again, and then execute the batch load again. If the data cannot be saved to flash memory even after several tries, the CPU may be faulty.	Replace the CPU.
A30A: Save file read error	○	○	Data could not be read from the Controller during batch saving.	Turn the power supply OFF and ON again, and then execute the batch save again. (Check by turning ON the INIT switch.) If the data cannot be read even after several tries, the CPU may be faulty.	Replace the CPU.
A30B: No USB memory device	○	○	• The USB memory device was not inserted in the Controller when executing a batch load. • The USB memory device was not inserted in the Controller when executing a batch save.	Make sure that the USB memory device is inserted properly.	Reinsert the USB memory device.
A370: Log folder creation error	○	○	A folder could not be created on the USB memory device.	Make sure that the USB memory device is inserted properly.	Reinsert the USB memory device.
				Check the USB memory device.	Make sure that there is space available on the USB memory device.
A371: Log file creation error	○	○	A file could not be created on the USB memory device.	Make sure that the USB memory device is inserted properly.	Reinsert the USB memory device.
				Check the USB memory device.	Make sure that there is space available on the USB memory device.
A372: Log file writing error	○	○	An error occurred while writing data to a file on the USB memory device.	Make sure that the USB memory device is inserted properly.	Reinsert the USB memory device.
				Check the USB memory device.	Make sure that there is space available on the USB memory device.
A401: M-III restrictions error	○	○	The high-speed scan time does not meet the restrictions and conditions.	Check the SVC/SVC32 MECHATROLINK-III communications cycle and high-speed scan time.	Make the settings to meet the restrictions and conditions.
A402: Error in MPU-01	○	○	An alarm occurred for the MPU-01.	Check the SW01411 to SW01442 system registers (MPU-01 System Status).	Determine the MPU-01 that has an error, and reset the alarm.
A403: Error in Sub CPU	○	–	An alarm occurred in the Sub CPU.	Check system register SB00041B.	Determine the Sub CPU that has an error, and reset the error in the Sub CPU.

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Alarm Code Alarm Name	MP3200	MP3300	Cause	Confirmation Method	Correction
A404: M-III station address duplication	○	○	The same station address was set for more than one of the slave devices connected to SVC/SVC32.	Check system register SB00041C.	Reset the slave device station addresses so that they are correct.
h: CPU stopped by failsafe function	○	○	The failsafe function was activated for E.083 (Fan Alarm) or E.082 (Temperature Warning).	Check to see if the Fan is operating.	If the Fan is not operating, replace the Fan. If the Fan is operating normally, change the installation environment to reduce the temperature around the Controller.

USB Status Indicator

This indicator shows the status of the USB memory.

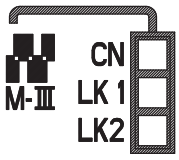
Indicator Name	Indicator Status	Meaning	Status
USB ACTIVE	(Not lit.)	No USB memory device	No USB memory device has been inserted.
	(Lit.)	USB memory device inserted	A USB memory device is inserted.
	(Flashing)	Accessing USB memory	The USB memory is being accessed.

Check the USB status indicator using the above table. If the indicator is not lit, there may be an error in the communications status with the USB memory device.

Indicator Status	Cause	Correction
Not lit.	The USB memory device is not properly seated in the USB connector.	Remove the USB memory device and insert it into the USB connector again.
	The USB memory device failed.	Replace the USB memory device.
	The USB connector is faulty.	Replace the CPU Unit/CPU Module.

MECHATROLINK-III Status Indicators

These indicators show the status of the MECHATROLINK-III communications.



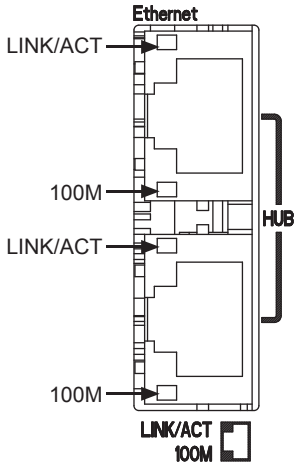
Indicator Name	Color	Indicator Status	Description
CN	Green	Lit.	MECHATROLINK-III communications is established with the CPU Unit as a slave (i.e., the Connect command is ON).
		Not lit.	The connection has not been established.
LK1	Green	Lit.	MECHATROLINK-III communications are active on port 1.
		Not lit.	No MECHATROLINK-III communications are connected on port 1.
LK2	Green	Lit.	MECHATROLINK-III communications are active on port 2.
		Not lit.	No MECHATROLINK-III communications are connected on port 2.

If the LK1 or LK2 status indicator is not lit, there may be an error in the communications with MECHATROLINK-III.

LK1 and LK2 Status Indicators	Cause	Correction
Not lit.	The MECHATROLINK-III cable is not connected properly.	Remove the MECHATROLINK-III cable and insert it into the MECHATROLINK-III connector again.
	The MECHATROLINK-III cable has a broken wire.	Replace the MECHATROLINK-III cable.

Ethernet Connector Indicators

You can check the error status of Ethernet communications. This section describes the indicator lighting patterns.



Indicator Name	Color	Indicator Status	Description
LINK/ ACT	Yellow	Not lit.	There is no Ethernet connection.
		Lit.	An Ethernet link is established.
		Flashing	Ethernet communications are in progress.*
100M	Green	Not lit.	There is a 10M connection.
		Lit.	There is a 100M connection.

* If a communications error occurs when message communications are used with a UDP connection type, communications data may be lost or communications may stop when the LINK/ACT indicator for the Ethernet connector lights or flashes because UDP does not use connections. If this occurs, use the following corrections.
  - Use straight or crossover 100Base-TX (category 5 or higher) Ethernet cables.
  - Separate the Ethernet cables from power cables.

  If the above corrections do not solve the problem, use a TCP connection type. If you use a UDP connection type, write the program to retry Send Message Execute Commands with the MSG-SNDE message function. Refer to the following section for information on resend programming for the MSG-SNDE message function of the MP Series.

☞ *4.1 Troubleshooting Ethernet Communications - Troubleshooting Quick Reference (page 4-5)*

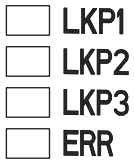
If the LINK/ACT status indicator is not lit, there may be an error in the communications with the Ethernet.

LINK/ACT Status Indicator	Cause	Correction
Not lit.	The Ethernet cable is not connected properly.	Remove the Ethernet cable and insert it into the Ethernet connector again.
	The Ethernet cable has a broken wire.	Replace the Ethernet cable.
	The power to the hub or other Ethernet device that is connected to the Controller with an Ethernet cable is not turned ON.	Turn ON the power to the hub or Ethernet device to which the Ethernet cable is connected to.

2.3 Rack Expansion Interface Unit Indicators

These indicators show the operating status of the Rack Expansion Interface Unit, the communications status of the cable, and the error status.

For Main Rack



For Expansion Rack

Indicator	Color	Status When Lit, Flashing, or Not Lit	
LKP1	Green	Lit	Communications are active with the Rack Expansion Interface Unit connected to PORT1.
		Not lit.	• Communications errors occurred consecutively and communications cannot be recovered automatically. • The cable was disconnected or was not connected to the port. • The current Rack Expansion Interface Unit or another Rack Expansion Interface Unit connected to it has a hardware failure.
LKP2	Green	Lit	Communications are active with the Rack Expansion Interface Unit connected to PORT2.
		Not lit.	Same as LKP1.
LKP3	Green	Lit	Communications are active with the Rack Expansion Interface Unit connected to PORT3.
		Not lit.	Same as LKP1.
ERR	Red	Lit	• Consecutive communications errors occurred on one of the ports and communications cannot be recovered automatically. • The cable was disconnected or was not connected. These errors are not shown on the Main Rack Expansion Interface Unit before the connection is established. • The current Rack Expansion Interface Unit or another Rack Expansion Interface Unit connected to it has a hardware failure.


Important

If communications errors occur consecutively during operation, communications between the Main Rack and Expansion Rack will stop.

Troubleshooting using the System Monitor

3

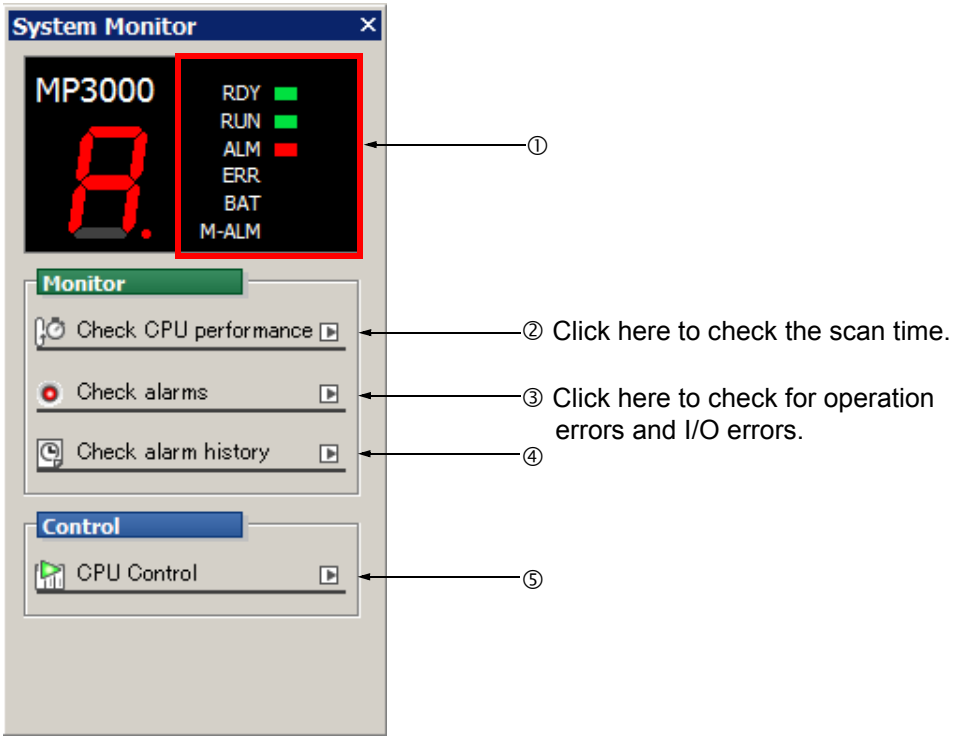
This chapter describes the procedure for checking errors by using the System Monitor.

3.1 Overview of the System Monitor

The System Monitor allows you to monitor the status of the indicators, CPU Unit, and scan time values of the Machine Controller by going online with the Machine Controller from the MPE720. The System Monitor Dialog Box is displayed if an error exists in the Machine Controller when you go online with the Machine Controller from the MPE720. The System Monitor can detect the following errors.

- RUN status of the Machine Controller
- Scan time errors
- Operation errors
- I/O errors

The System Monitor Dialog Box displays the following information.



①Run Status

This area shows the run status of the Machine Controller. The ALM or ERR indicator will be lit if a system error or alarm exists.

②Scan Time

Normally, this area shows the scan times. If the current or maximum values exceed the set values, the values will be displayed in red.

③Alarm detection

This area shows the operation errors that occur in ladder programs, motion programs, and sequence programs, and the I/O errors that occur with the Input Modules and Output Modules. This information will allow you to analyze operation errors and I/O errors.

④Check alarm history

You can check a history of the errors and alarms that have occurred on the Machine Controller.

⑤CPU Control

You can start and stop the CPU and save data to flash memory.

3.2 Troubleshooting Errors with the System Monitor

This section describes how to troubleshoot errors caused by the Machine Controller system, as well as scan time exceeded errors, operation errors, and I/O errors.

System Errors

If one or more of the following errors appear in the System Monitor Dialog Box, a system error has occurred in the Machine Controller.

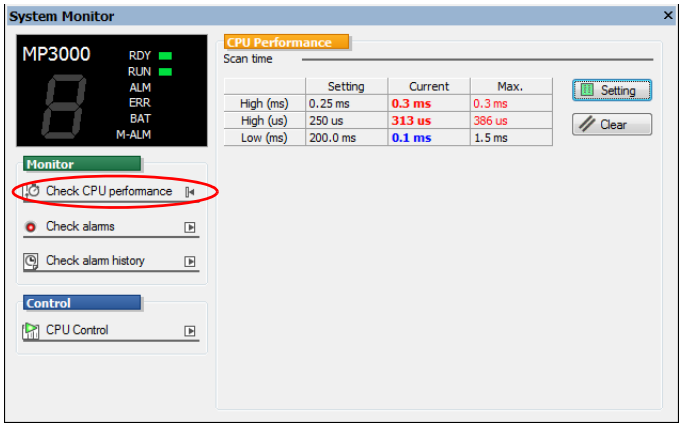
Error Displayed in System Monitor Dialog Box	Meaning of Error	Correction
The ALM indicator is lit red.	The Machine Controller has a system error and cannot enter Run Mode.	Check SB000402 to identify and correct the source of the error.
The ERR indicator is lit red.	An operation error or I/O error has occurred.	Check SB000403 to identify and correct the source of the error.
The BAT indicator is lit red.	The Battery replacement period has come.	Replace the Battery. Refer to the following chapter for Battery replacement procedures. ☞ *Chapter 8 MP3200/MP3300 Battery Replacements*

Scan Time Exceeded

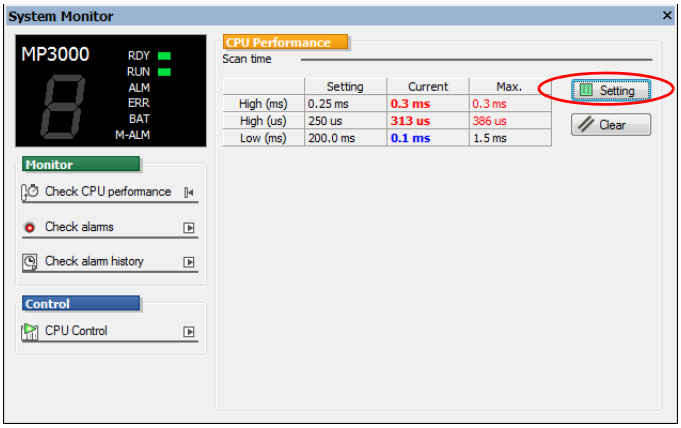
The Scan Time Exceeded error occurs when the current value or maximum value exceeds the set value.

If a scan time exceeded error occurs, check the meaning of the error in the System Monitor Dialog Box.

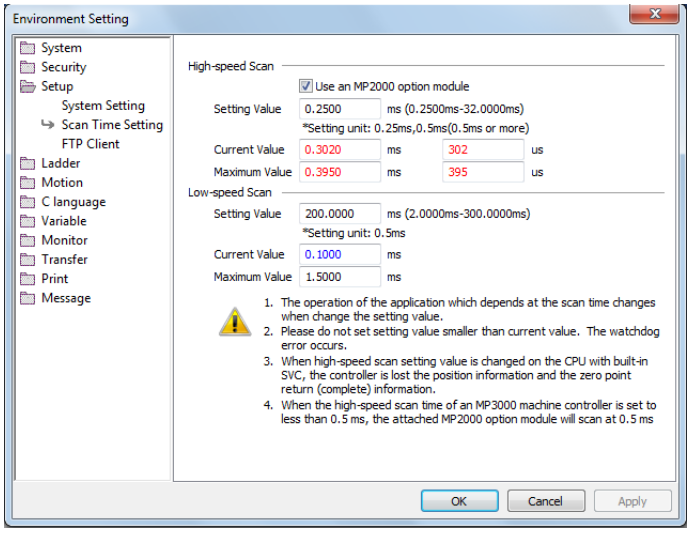
1. Click **Check CPU performance** in the System Monitor Dialog Box.



2. Click the **Setting** Button.



The Environment Setting Dialog Box will be displayed.



Information When a Scan Time Exceeded error occurs, the current or maximum values will be displayed in red characters.

Error Displayed in Environment Setting Dialog Box	Meaning of Error	Correction
The current value is red.	The current scan time has exceeded the scan time setting.	Review the set values.
The maximum value is red.	The maximum scan time has exceeded the scan time setting.	

Investigating Operation Errors

An Operation Error occurs when there is an operational error in a ladder program or motion program. When an Operation Error occurs, the System Monitor Dialog Box will be displayed. The following procedure will outline the corrective action to take using the following example: an Operation Error caused by a divisor that is set to 0 in a Divide instruction.

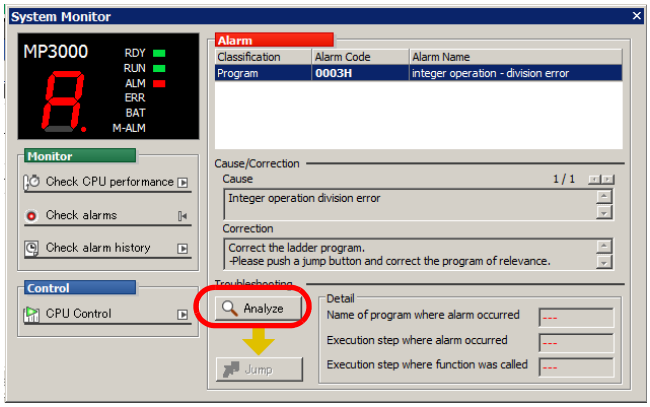
Note

If there are Operation Errors in multiple programs at the same time, correcting the error displayed in the System Monitor Dialog Box will not clear the error information. This may cause the dialog box to show outdated information about the error. Click the **Reset** Button to clear the information from previous errors.

1. Click **Check alarms** in the System Monitor Dialog Box.

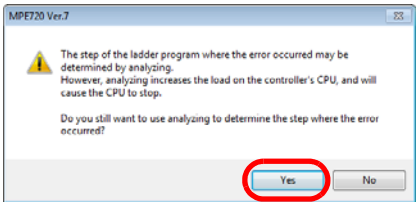
Information on current alarms will be displayed.

2. Click the **Analyze** Button.



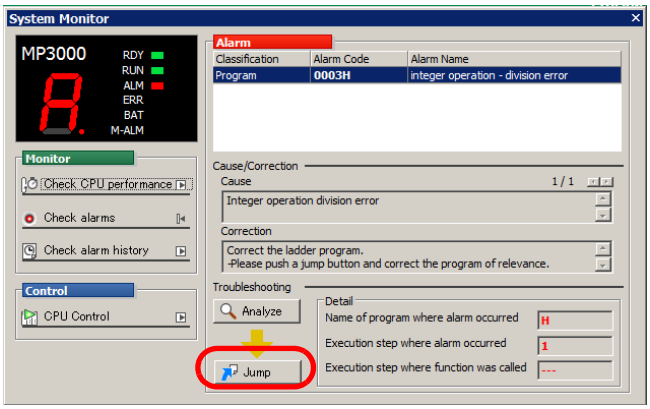
The MPE720 Ver. 7 Dialog Box will be displayed.

3. Click the **Yes** Button.



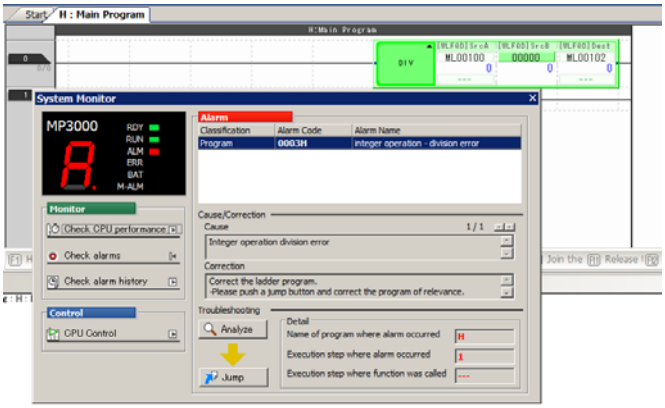
The location of the alarm will be displayed in the **Name of program where alarm occurred** and **Execution step where alarm occurred** Boxes in the **Detail** Area.

4. Click the **Jump** Button.

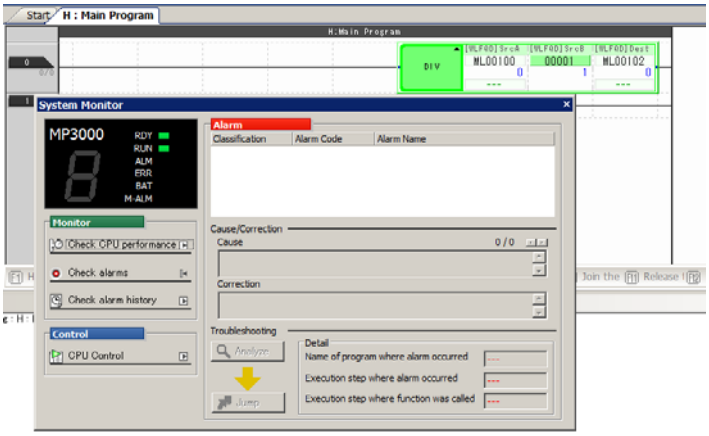


The relevant location on the drawing where the alarm occurred will be displayed.

5. Change the divisor from 0 to 1 where the operation error exists.



6. Make the Ladder Editor Tab Page the active view and press the **F4** Key.



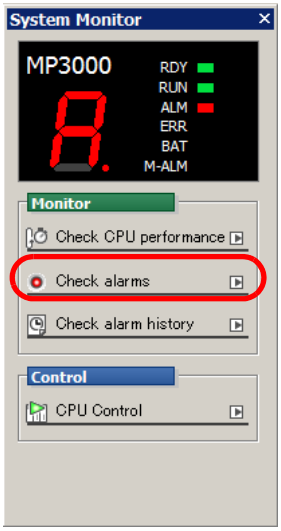
This will compile the program and clear the operation error.

Investigating I/O Errors

I/O errors are errors that occur in the Input and Output Modules.

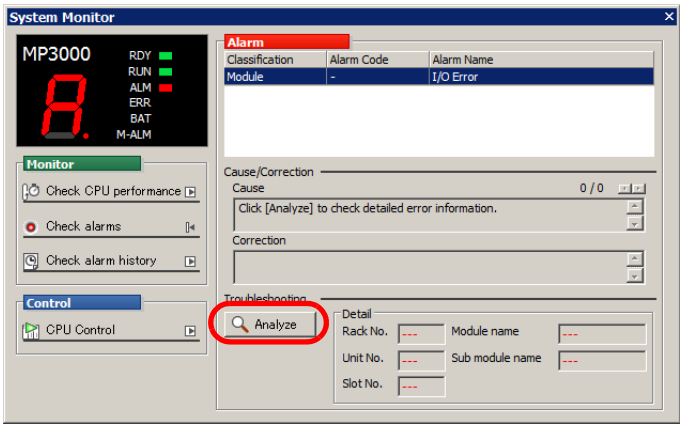
If an I/O error occurs, check the meaning of the I/O error in the System Monitor Dialog Box.

1. Click **Check alarms** in the System Monitor Dialog Box.



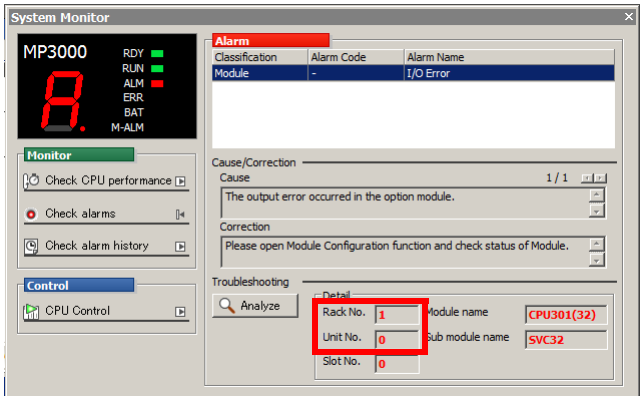
Information on current alarms will be displayed.

2. Click the **Analyze** Button.

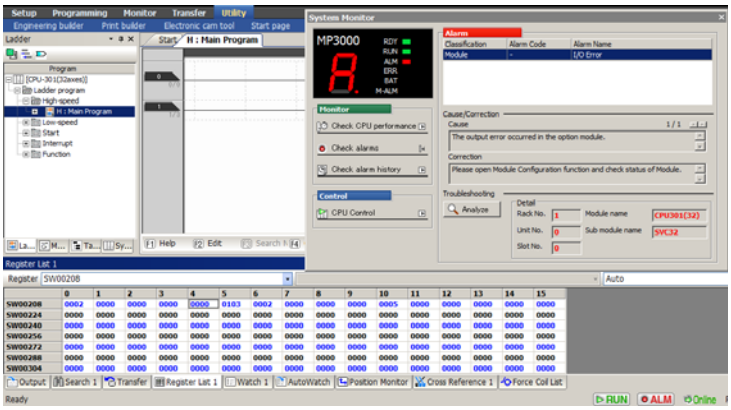


The location of the alarm will be displayed in the **Rack No.**, **Unit No.**, **Slot No.**, **Module name**, and **Sub module name** Boxes in the **Detail** Area.

3. Check the rack number and slot number.



4. Set the system register addresses from SW00208 to SW00215 in the register list and check the contents.



Refer to the following section for details on system I/O error status.

☞ *7.5 System Register Configuration and Error Status (page 7-7) – System I/O Error Status (page 7-15)*

5. Use the contents in the system registers to determine the status of the error.

Information

(SVC/SVC32)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
SW00213	Error code (station error = 1)								Subslot (function) number (= 3)							
SW00214	ST#15	••••••••••••••••												ST#2	ST#1	Not used.
SW00215	Not used.	ST#30	ST#29	••••••••••••••••										ST#17	ST#16	
SW00216	Not used.															
SW00217	Not used.															

Table 3.1 SVC/SVC32 Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
ST#n	0	Communications normal
	1	Communications error at station n

6. Establish communications with ST#1.

This completes the troubleshooting procedure for I/O errors.

Troubleshooting Communications and Motion Control

4

This chapter describes how to troubleshoot errors that can occur in communications or in motion control.

4.1 Troubleshooting Ethernet Communications

When a problem occurs in Ethernet communications, it is important to recover normal system operation as soon as possible by finding the cause of the problem and taking the necessary measures.

The basic troubleshooting procedure is outlined below.

Step 1	Check the following items. • Ethernet cables and Ethernet communications mode • Indicators on the front of the CPU Unit/CPU Module and on the Ethernet connector

↓

Step 2	Try to go online with the Machine Controller from the MPE720.

Connection Cannot Be Established

↓

Step 3	Check the connection settings for the MPE720.

Connection Can Be Established But Message Communications Are Not Possible

↓

Step 3	Check the switch settings.

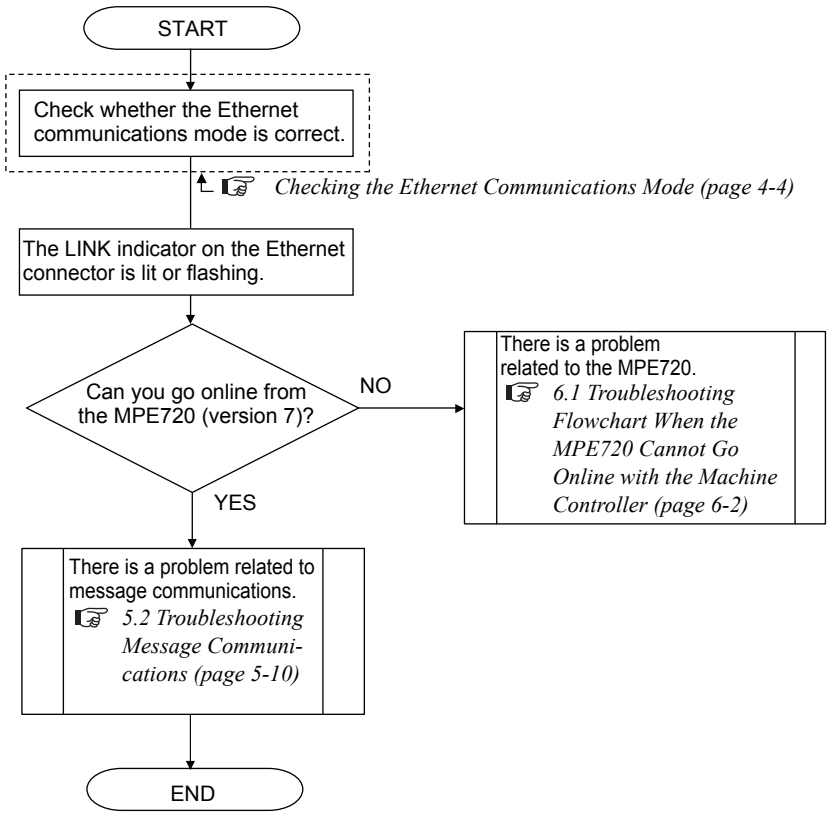
↓

Step 4	Use the MPE720 to check the following items in the detailed definitions. • Error Status • Trans Status (Transmission Status)

↓

Step 5	Use the MPE720 to check the following items in the message functions. • Processing result and status of the message functions • Inputs to the message functions • Parameters of the message functions

Use the following flowchart to troubleshoot any problems that occur in Ethernet communications.



Checking Ethernet Cables

The use of incorrect Ethernet cables may interfere with connecting from the MPE720 or with message communications. For Ethernet cables, use the following twisted-pair cable with RJ-45 connectors.

Communications Function Module	Ethernet Standard	Category	Remarks
218 IFD	100Base-TX	Category 5 or higher	Use a straight or crossover cable.

* Some commercially available devices, such as switching hubs, support automatic MDI/MDI-X configuration, which enables the use of either straight or crossover cables.

Checking the Ethernet Communications Mode

The following table lists the communications modes of the remote device (a directly connected hub or non-Yaskawa controller) for which communications are possible.

Communications Function Module	Communications Mode of Local Station	Communications Mode of Remote Station				
		Auto-negotiation	10Base-T Half-duplex	10Base-T Full-duplex	100Base-TX Half-duplex	100Base-TX Full-duplex
218 IFD	Auto-negotiation*	Depends on the remote device.	Communicates only in 10Base-T half-duplex mode.	Communications are not possible.	Communicates only in 100Base-TX half-duplex mode.	Communications are not possible.

* Auto-negotiation automatically detects the Ethernet communications mode (including the baud rate and duplex mode (half/full)).

Troubleshooting Quick Reference

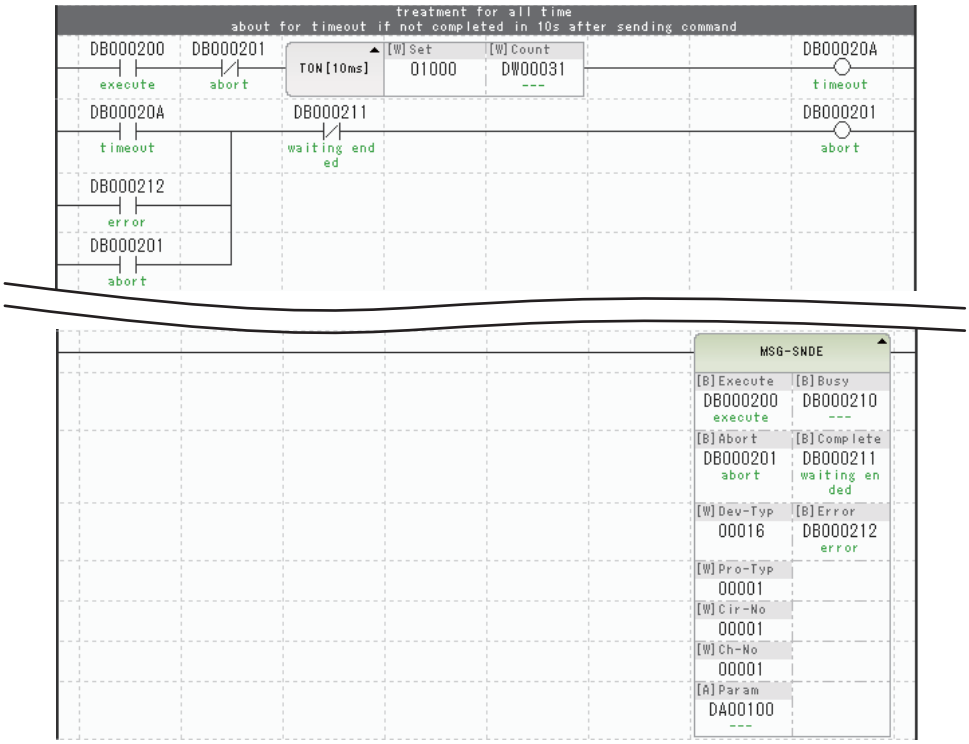
The following table provides examples of problems in Ethernet communications that occur frequently and can be corrected relatively simply.
If you cannot eliminate the error with the following table, refer to the following section.

☞ *4.1 Troubleshooting Ethernet Communications (page 4-2)*

Problem	Cause	Correction
Cannot go online from the MPE720.	The IP address of the PC is set to be automatically assigned.	Set the IP address of the PC manually as shown in the following example. 218IFD: 192.168.1.1 PC: 192.168.1.10
Message communications do not start.	The E-INIT switch on the CPU Unit/CPU Module is set to ON. (The local IP address that is set in the Module's detailed definition is different from the actual local IP address.)	Set the E-INIT switch on the front of the CPU Unit/CPU Module to OFF and then turn the power supply OFF and ON again. This switch does not necessarily have to be set to OFF to perform message communications. However, always set unique IP addresses for the local IP address that is set on the rotary switches and the IP address of the remote station that is set in the connection parameters.
	The data was not saved to the flash memory or the power supply was not turned OFF and ON again after changing the transmission definition or connection parameters.	Save the data to the flash memory and then turn the power supply OFF and ON again. You must turn the power supply OFF and ON again after making changes or additions to the IP addresses or connection parameters to enable the new settings.
	No message function was created or executed in the ladder program.	Create a message function in the ladder program. No message function is required for automatic data reception or I/O message communications with the 218IFD.
	The *Dev-Typ* (Transmission Device Type) setting in the message function is not correct.	Set *Dev-Typ* to 16 for the 218IFD.
	The remote device does not have a communications function or setting for communicating with the Machine Controller.	Check the communications function or setting of the remote device.
Message communications are not completed.	UDP communications stopped.	Write the program* to retry Send Message Execute Commands with the MSG-SNDE message function.

* Use the programming shown on the next page to retry Send Message Execute Commands.

Troubleshooting Quick Reference

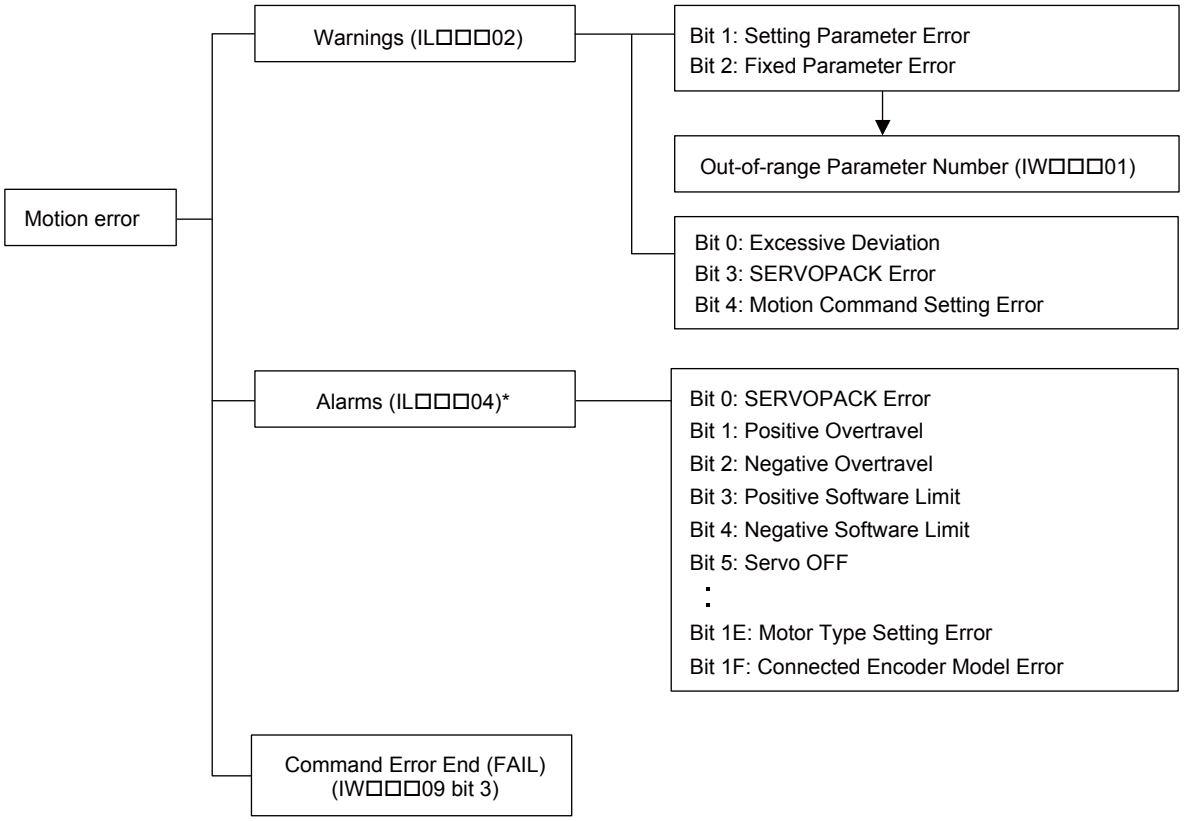


4.2 Troubleshooting Motion Errors

Motion errors are errors that are detected in motion control. If a motion error occurs in the SVC/SVC32, the M_ALM indicator on the CPU Unit/CPU Module will light red.

You can check motion errors in the following motion parameters: Warnings (IL□□□02), Alarms (IL□□□04), and Command Error End (IW□□□09 bit 3).

The following figure illustrates motion errors.



* Refer to the following section for details on the Alarms (IL□□□04) parameter.

☞ *Alarms (IL□□□04) and Corrections (page 4-11)*

Troubleshooting Motion Errors

This section describes the details of and corrections for motion errors.

Warnings (IL□□□02)

The following table lists the bits in the Warnings (IL□□□02) parameter.

Register Address	Name	Contents
IL□□□02	Warnings	Bit 0: Excessive Deviation
		Bit 1: Setting Parameter Error
		Bit 2: Fixed Parameter Error
		Bit 3: SERVOPACK Error
		Bit 4: Motion Command Setting Error
		Bit 5: Reserved for system.
		Bit 6: Positive Overtravel
		Bit 7: Negative Overtravel
		Bit 8: Servo ON Incomplete
		Bit 9: SERVOPACK Communications Warning
		Bit A: SERVOPACK Stop Signal Active
		Bits B to 1F: Reserved for system.

Note: "IW□□□00" indicates the first input register address plus 00.

◆ Troubleshooting Warnings (IL□□□02)

■ Bit 0: Excessive Deviation

Detection Timing	Anytime except during speed or torque control. This warning is detected only when bit 0 (Excessive Deviation Error Level Setting) in the OW□□□01 setting parameter is set to 1 (Warning).
Processing When Warning Occurs	The current movement command is continued. Movement commands can be executed.
Details and Cause	The position deviation exceeded the OL□□□22 setting parameter (Excessive Deviation Detection Value). Any of the following is possible. • Response was poor because the position loop or speed loop gain is not suitable. • The value of OL□□□22 (Excessive Deviation Detection Value) is too small. • The capacity of the motor is too small for the load. • The SERVOPACK malfunctioned.
Correction	Check the following and make suitable corrections where necessary. • Check the position loop or speed loop gain. • Check the OL□□□22 (Excessive Deviation Detection Value) parameter. • Check the capacity of the motor.

Note: The deviation is not checked if the OL□□□22 (Excessive Deviation Detection Value) parameter is set to 0.

■ Bit 1: Setting Parameter Error

Detection Timing	At execution of a motion command.
Processing When Warning Occurs	The number of the setting parameter in which an error was detected is reported in the IW□□□01 monitor parameter (Out-of-range Parameter Number).
Details and Cause	Any of the following is possible. • The set value of the setting parameter exceeds the setting range. • The value of the setting parameter that was specified when a motion command was executed was not correct.
Correction	Check the set value of the setting parameter that was reported in the IW□□□01 monitor parameter (Out-of-range Parameter Number).

■ Bit 2: Fixed Parameter Error

Detection Timing	When saving the fixed parameters.
Processing When Warning Occurs	The number of the fixed parameter in which an error was detected is reported in the IW□□□01 monitor parameter (Out-of-range Parameter Number). Bit 0 (Motion Operation Ready) in the IW□□□01 monitor parameter changes to 0 (Motion operation not ready).
Details and Cause	A setting range error or operation error occurred in internal processing that used more than one fixed parameter.
Correction	Check the set value of the fixed parameter that was reported in the IW□□□01 monitor parameter (Out-of-range Parameter Number).

Note: The following fixed parameters are related to a fixed parameter error for the electronic gear. Check the settings of these parameters.
Bit 0 (Axis Selection) and bit 9 (Simple Absolute Infinite Axis Position Management) in the Function Selection Flags 1 parameter, and the Reference Unit Selection, Travel Distance per Machine Rotation, Servomotor Gear Ratio Term, Machine Gear Ratio Term, Infinite-length Axis Reset Position, Encoder Selection, Number of Pulses per Motor Rotation, and Maximum Number of Absolute Encoder Rotations parameters

■ Bit 3: SERVOPACK Error

Detection Timing	Anytime
Processing When Warning Occurs	The current movement command is continued. Movement commands can be executed.
Details and Cause	This warning indicates that a warning occurred in the SERVOPACK. Check the nature of the warning in bits 8 to B (Command Error Status) and bits C to F (Communications Error Status) of the IW□□□2C monitor parameter, and the IW□□□2D monitor parameter (SERVOPACK Alarm Code).
Correction	Check the nature of the SERVOPACK warning and eliminate the cause.

■ Bit 4: Motion Command Setting Error

Detection Timing	At start of motion command execution.
Processing When Warning Occurs	The motion command is disabled.
Details and Cause	An unsupported motion command code was set.
Correction	Correct the motion command code.

■ Bit 6: Positive Overtravel and Bit 7: Negative Overtravel

Detection Timing	During execution of a movement motion command. Overtravel detection is enabled while the OT signal in travel direction is OFF.
Processing When Warning Occurs	• Stop processing is performed in the SERVOPACK. The stop method and the operation after stopping depend on the SERVOPACK parameter settings. • Controller Processing The current movement command is continued.
Details and Cause	Any of the following is possible. • A command was issued that caused a travel limit of the machine to be exceeded for one of the following: A command from a user program Manual operation that exceeds the travel limit • An error in the overtravel signal
Correction	• Check the following items: Check the overtravel signal. Check programmed and manual operation. • After completing the above checks, return the axis to eliminate the overtravel condition.

■ Bit 8: Servo ON Incomplete

Detection Timing	Anytime
Processing When Warning Occurs	Movement commands cannot be executed.
Details and Cause	The power to the Servomotor was not turned ON even though bit 0 (Servo ON) of the OW□□□00 setting parameter was turned ON. Any of the following is possible. • The change in the Servo ON command from OFF to ON was not detected. • There is an alarm in the SERVOPACK. • The main circuit power supply to the SERVOPACK is OFF.
Correction	Turn ON the Servo ON command again. Check the SERVOPACK for alarms and check the power supply status and stop signal status.

■ Bit 9: SERVOPACK Communications Warning

Detection Timing	Anytime
Processing When Warning Occurs	The current movement command is continued. Movement commands can be executed.
Details and Cause	This bit shows individual errors in MECHATROLINK communications.
Correction	When the communications error stops, normal status is recovered automatically. If warnings occur frequently, reroute the MECHATROLINK cable, change the ground, or implement other noise countermeasures.

Note: If communications errors occur consecutively, an alarm will be shown in IL□□□04 bit 11 (SERVOPACK Communications Error).

■ Bit A: SERVOPACK Stop Signal Active

Detection Timing	Anytime
Processing When Warning Occurs	The power supply to the Servomotor is turned OFF and movement commands are not executed.
Details and Cause	The stop signal (or an HWBB for Σ-V/Σ-7 SERVOPACKs) was received by the SERVOPACK.
Correction	Confirm safety, and then disable the stop signal.

Alarms (IL□□□04) and Corrections

This section describes the alarms that are given in IL□□□04 and the corrections for them.

◆ Alarms in IL□□□04

The following table lists the bits in the Alarms (IL□□□04) parameter.

IL□□□04	Alarm	IL□□□04	Alarm
Bit 0	SERVOPACK Error	Bit 10	SERVOPACK Synchronized Communications Error
Bit 1	Positive Overtravel	Bit 11	SERVOPACK Communications Error
Bit 2	Negative Overtravel	Bit 12	SERVOPACK Communications Timeout Error
Bit 3	Positive Software Limit	Bit 13	Excessive Absolute Encoder Rotations
Bit 4	Negative Software Limit	Bit 14	Reserved for system.
Bit 5	Servo OFF	Bit 15	Reserved for system.
Bit 6	Positioning Time Exceeded	Bit 16	Not used.
Bit 7	Excessive Positioning Travel Distance	Bit 17	Not used.
Bit 8	Excessive Speed	Bit 18	Not used.
Bit 9	Excessive Deviation	Bit 19	Not used.
Bit A	Filter Type Change Error	Bit 1A	Not used.
Bit B	Filter Time Constant Change Error	Bit 1B	Not used.
Bit C	Not used.	Bit 1C	Not used.
Bit D	Zero Point Unset	Bit 1D	Not used.
Bit E	Not used.	Bit 1E	Motor Type Setting Error
Bit F	Not used.	Bit 1F	Connected Encoder Model Error

◆ Corrections for Alarms (IL□□□04)

■ Bit 0: SERVOPACK Error

Detection Timing	SERVOPACK alarms are detected in the alarm control section (always).
Processing When Alarm Occurs	The current command is canceled. If a SERVOPACK Error alarm occurs during execution of a POSING command, the POSING operation is canceled and the axis decelerates to a stop. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	The cause depends on the specific alarm. The specific alarm is given in IW□□□2D (SERVOPACK Alarm Code).
Correction	• Check the specific SERVOPACK alarm and eliminate the cause. • Reset the alarm.

Note: This bit changes to 1 when an alarm that is classified as a SERVOPACK alarm occurs in MECHATROLINK communications.

■ Bit 1: Positive Overtravel and Bit 2: Negative Overtravel

Detection Timing	These alarms are detected by the position control section during execution of a motion command (always). Overtravel detection is enabled while the OT signal in travel direction is OFF.
Processing When Alarm Occurs	• Stop processing is performed in the SERVOPACK. The stop method and the operation after stopping depend on the SERVOPACK parameter settings. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON. • Controller Processing The command is canceled and the axis decelerates to a stop. Followup processing to align the command position with the current machine position is performed.
Details and Cause	Any of the following is possible. • A command was issued that caused a travel limit of the machine to be exceeded for one of the following: A command from a user program Manual operation that exceeds the travel limit • An error in the overtravel signal
Correction	• Check the following items: Check the overtravel signal. Check programmed and manual operation. • After checking the above items, clear the motion command code and reset the alarm. Then return the axis to eliminate the overtravel condition. (Commands in the overtravel direction will be disabled. If you attempt to execute one, the alarm will occur again.)

Note: For a vertical axis, we recommend that you make the following settings in the SERVOPACK to prevent falling or oscillation at the overtravel boundary.
- Using an emergency stop to decelerate to a stop
- Implementing a zero clamp after decelerating to a stop

■ Bit 3: Positive Software Limit and Bit 4: Negative Software Limit

Detection Timing	Detection is enabled when a motion command is used. These alarms are detected by the position control section. Detection is enabled after completion of a Zero Point Return or a Set Zero Point command.
Processing When Alarm Occurs	The axis decelerates to a stop at the software limit. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	A command was issued that caused a software limit to be exceeded for one of the following: • A command from a user program that exceeds the travel limit • Manual operation that exceeds the travel limit
Correction	• Check programmed and manual operation. • After checking the above item, clear the motion command code and reset the alarm. Then return the axis to within the software limit. (Commands in the direction of the software limit will be disabled. If you attempt to execute one, the alarm will occur again.)

■ Bit 5: Servo OFF

Detection Timing	This alarm is detected when a movement command is attempted when the power to the Servomotor is OFF.
Processing When Alarm Occurs	The movement command is not executed. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	A movement command (Positioning, External Positioning, Jog, or STEP Operation) was issued when the power to the Servomotor was OFF.
Correction	Clear the motion command code, reset the alarm, and then turn ON the power to the Servomotor.

■ Bit 6: Positioning Time Exceeded

Detection Timing	Positioning was not completed within the time set in OW□□□26 (Positioning Completion Check Time) after the completion of pulse distribution.
Processing When Alarm Occurs	The current command is aborted. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	Any of the following is possible. • Response was poor or oscillation occurred because the position loop or speed loop gain is not suitable. • The time in OW□□□26 (Positioning Completion Check Time) is too short. • The capacity of the Servomotor is too small for the load. • The SERVOPACK and Servomotor are not connected correctly.
Correction	Check the following items. • Check the parameters that are related to the characteristics (gains) of the SERVOPACK. • Check the connection between the SERVOPACK and Servomotor. • See if the capacity of the Servomotor is sufficient. • Check the time in OW□□□26 (Positioning Completion Check Time).

Note: The positioning time is not checked if the OW□□□26 (Positioning Completion Check Time) parameter is set to 0.

■ Bit 7: Excessive Positioning Travel Distance

Detection Timing	This alarm is detected when a positioning command is executed.
Processing When Alarm Occurs	Movement commands are not executed. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	A movement command (Positioning, STEP Operation, or External Positioning) that exceeded the positioning travel limit was issued.
Correction	Check the axis travel distance specification in the positioning command.

The positioning travel limits depend on the setting of fixed parameter No. 4 (Reference Unit Selection) as given below.

Setting of Fixed Parameter No. 4	0	1	2	3	4
Reference unit	Pulses	mm	Degrees	Inches	μm
Positioning travel limit	2,147,483,647	$2{,}147{,}483{,}647 \times \frac{\text{No. 6 (Travel Distance per Machine Rotation)} \times \text{No. 9 (Machine Gear Ratio Term)}}{\text{No. 36 (Numbers of Pulses Per Motor Rotation)} \times \text{No. 8 (Servomotor Gear Ratio Term)}}$			

■ Bit 8: Excessive Speed

Detection Timing	This alarm is detected when a movement command is executed.
Processing When Alarm Occurs	Movement commands are not executed. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	The command speed (or, for interpolation, the distributed travel distance for one scan) that was sent to the SERVOPACK with MECHATROLINK communications exceeded the allowed upper limit.
Correction	Check the speed reference, travel distance per scan for the interpolation reference, and the speed compensation setting.

■ Bit 9: Excessive Deviation

Detection Timing	Anytime except during speed or torque control.
Processing When Alarm Occurs	Movement commands are not executed. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	Any of the following is possible. • Response was poor because the position loop or speed loop gain is not suitable. • The value of OL□□□22 (Excessive Deviation Detection Value) is too small. • The capacity of the motor is too small for the load. • The SERVOPACK malfunctioned.
Correction	Check the following and make suitable corrections where necessary. If recovery is not possible, contact the maintenance division. • Check the position loop or speed loop gain. • Check the OL□□□22 (Excessive Deviation Detection Value) parameter. • Check the capacity of the motor.

Note: The deviation is not checked if the OL□□□22 (Excessive Deviation Detection Value) parameter is set to 0.

■ Bit A: Filter Type Change Error

Detection Timing	Always detected (This alarm is detected by the motion command processing section.)
Processing When Alarm Occurs	The Change Filter Type command is not executed. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	An error will occur if the Change Filter Type command is specified when pulse distribution has not been completed for a command (i.e., when bit 0 in IW□□□0C is OFF).
Correction	Correct the program so that the Change Filter Type command is executed only after pulse distribution is completed (i.e., only when bit 0 in IW□□□0C is ON).

Note: The current command will not stop even if this error occurs. To stop the current command, program stop processing in a user program.

■ Bit B: Filter Time Constant Change Error

Detection Timing	Always detected (This alarm is detected by the motion command processing section.)
Processing When Alarm Occurs	Commands are not executed. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	An error will occur if the Change Filter Time Constant command is specified when pulse distribution has not been completed for a command (i.e., when bit 0 in IW□□□0C is OFF).
Correction	Correct the program so that the Change Filter Time Constant command is executed only after pulse distribution is completed (i.e., only when bit 0 in IW□□□0C is ON).

Note: The current command will not stop even if this error occurs. To stop the current command, program stop processing in a user program.

■ Bit D: Zero Point Unset

Detection Timing	Detection of this alarm is enabled only when an absolute encoder and an infinite-length axis are used. The alarm is detected when the following command is set in OW□□□08 (Motion Commands). Commands: Positioning, External Positioning, Interpolation, Latch, or Issue Phase Reference
Processing When Alarm Occurs	The command that was set is not executed. Bit 3 (Command Error End) in IW□□□09 (Motion Command Status) turns ON.
Details and Cause	A movement command was set when the zero point was not set (i.e., when bit 5 of IW□□□0C was OFF).
Correction	Clear the motion command, reset the alarm, and then perform an operation to set the zero point.

■ Bit 10: SERVOPACK Synchronized Communications Error

Detection Timing	This alarm is detected by the communications control section when MECHATROLINK communications are synchronized between the Machine Controller and the SERVOPACK.
Processing When Alarm Occurs	The current command is canceled.
Details and Cause	Data was not updated properly on either the Machine Controller or the SERVOPACK.
Correction	Check the connection of the MECHATROLINK cable, and then reset the alarm.

■ Bit 11: SERVOPACK Communications Error

Detection Timing	This alarm is detected by the communications control section when MECHATROLINK communications is being performed between the Machine Controller and the SERVOPACK.
Processing When Alarm Occurs	• The current command is canceled. • The SERVOPACK turns OFF the power to the Servomotor.
Details and Cause	MECHATROLINK communications stopped because the cable was disconnected, there is an error in MECHATROLINK communications (e.g., noise entered the communications path), the power supply to the SERVOPACK was interrupted, etc.
Correction	Check the connection of the MECHATROLINK cable, and then reset the alarm.

■ Bit 12: SERVOPACK Communications Timeout Error

Detection Timing	This alarm is detected during execution of a motion command. This alarm is detected by the MECHATROLINK communications control section when the servo command/response check is performed in the processing sections.
Processing When Alarm Occurs	The current command is canceled.
Details and Cause	The servo command in MECHATROLINK communications was not completed within the specified time (5 seconds).
Correction	Check for alarms in the SERVOPACK with MECHATROLINK Communications.

Note: This alarm occurs in the SERVOPACK with MECHATROLINK Communications when Module assignment is completed but the power supply to the SERVOPACK is not turned ON.

■ Bit 13: Excessive Absolute Encoder Rotations

Detection Timing	Detection of this alarm is enabled only when an absolute encoder, finite-length axis, and electronic gear are used. This alarm is detected by the position control section when the power supply is turned ON.
Processing When Alarm Occurs	The absolute position information that is read from the absolute encoder when the SEN signal turns ON is ignored.
Details and Cause	An operation error occurred when converting the absolute position information that was read from the absolute encoder when the power supply was turned ON from pulses to reference units.
Correction	Correct the settings of the gear ratio, encoder pulses, and other related fixed parameters.

■ Bit 16: Scan Setting Error

Detection Timing	This alarm is detected when the Machine Controller is started, when the high-speed scan setting is changed or saved, or when the MECHATROLINK communications settings are changed or saved.
Processing When Alarm Occurs	A communications alarm will occur for all SERVOPACKs and I/O stations connected to the MECHATROLINK.
Details and Cause	The high-speed scan setting and the MECHATROLINK communications cycle setting are not an integer multiple of 1, or an integer fraction of 1.
Correction	Check the settings for the high-speed scan or the MECHATROLINK communications cycle.

■ Bit 1C: Cyclic Communications Initialization Incomplete

Detection Timing	This alarm is detected by the MECHATROLINK communications control section when MECHATROLINK communications are in progress.
Processing When Alarm Occurs	Communications cannot be performed with the slave station where this error occurred.
Details and Cause	The slave station was assigned for MECHATROLINK communications but was not actually connected, or was connected while communications were in progress but failed to join in the communications.
Correction	Turn the power supply to the Controller OFF and ON again, or execute a network reset (0W□□□00 = Bit C).

■ Bit 1D: Detected SERVOPACK Model Error

Detection Timing	This alarm is detected when trying to establish MECHATROLINK communications with a SERVOPACK.
Processing When Alarm Occurs	Communications cannot be performed with the SERVOPACK where this error occurred.
Details and Cause	The SERVOPACK model assigned in the SVC definitions does not match the actual SERVOPACK model that is connected.
Correction	• Change the model selected for the SERVOPACK to match the one that is actually connected. • If the model is not supported by the latest version of the MPE720, assign it as a wildcard SERVOPACK.

■ Bit 1E: Motor Type Setting Error

Detection Timing	This alarm is detected when communications is established with the SERVOPACK.
Processing When Alarm Occurs	No special processing is performed.
Details and Cause	The setting (rotary/linear) of the Motor Type fixed parameter does not agree with the setting in the SERVOPACK (Pn000.3 (Startup Selection Settings) for an SGDH SERVOPACK or Rotary/Linear for an SGDS SERVOPACK).
Correction	Check the settings and model number of the SERVOPACK.

■ Bit 1F: Connected Encoder Model Error

Detection Timing	This alarm is detected when communications is established with the SERVOPACK.
Processing When Alarm Occurs	No special processing is performed.
Details and Cause	The setting (rotary/linear) of the Motor Type fixed parameter does not agree with the Servomotor that is connected to the SERVOPACK.
Correction	Check the Servomotor.

Causes of Command Error End Alarms (IW□□□09 Bit 3)

Bit 3 (Command Error End) of the IW□□□09 monitor parameter will turn ON when a motion command cannot be executed for some reason or if execution does not end normally. The reasons that cause this bit to turn ON depend on the motion command.

The following table gives the reasons that cause this bit to turn ON for each motion command.

Motion Command Code		Reason for Command Error End	Warnings (W) and Alarms (A) That Occur at the Same Time
1	POSING (Positioning)	The positioning travel distance exceeded the allowed value.	A: Excessive Positioning Travel Distance
		An absolute infinite-length axis is being used but the zero point is not set.	A: Zero Point Unset
		The power to the Servomotor is OFF.	A: Servo OFF
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
2	EX_POSING (External Positioning)	The positioning travel distance exceeded the allowed value.	A: Excessive Positioning Travel Distance
		An absolute infinite-length axis is being used but the zero point is not set.	A: Zero Point Unset
		The power to the Servomotor is OFF.	A: Servo OFF
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		Writing the SERVOPACK parameters was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		An A.94 or A.95 warning occurred in the SERVOPACK.	W: SERVOPACK Error
		An external signal selection is not within the setting range.	W: Setting Parameter Error
3	Zero Point Return (ZRET)	The machine is locked.	–
		The power to the Servomotor is OFF.	A: Servo OFF
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		Reading or writing the SERVOPACK parameters was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		An A.94 or A.95 warning occurred in the SERVOPACK.	W: SERVOPACK Error
		The zero point return method is not set within the setting range.	W: Setting Parameter Error
		The zero point return method is set to P-OT, but the approach speed is negative.	W: Setting Parameter Error
		The zero point return method is set to N-OT, but the approach speed is positive.	W: Setting Parameter Error
		The zero point return method is set to DEC1 + phase-C pulse, ZERO signal, DEC1 + ZERO signal, or Phase-C pulse, but the OT signal in the zero point return direction is ON.	OT alarm or OT warning in the zero point return direction

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Motion Command Code		Reason for Command Error End	Warnings (W) and Alarms (A) That Occur at the Same Time
4 or 5	INTERPOLATE (Interpolation) END_OF_INTERPOLATE (Last Interpolation Segment)	The travel distance for one scan exceeded the allowable segment for a SERVOPACK with MECHATROLINK Communications or the speed feedforward value exceeded the maximum speed.	A: Excessive Speed
		An absolute infinite-length axis is being used but the zero point is not set.	A: Zero Point Unset
		The power to the Servomotor is OFF.	A: Servo OFF
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
6	LATCH (Latch)	The travel distance for one scan exceeded the allowable segment for a SERVOPACK with MECHATROLINK Communications or the speed feedforward value exceeded the maximum speed.	A: Excessive Speed
		An absolute infinite-length axis is being used but the zero point is not set.	A: Zero Point Unset
		The power to the Servomotor is OFF.	A: Servo OFF
		An alarm has occurred.	–
		The latch signal is set outside of the setting range.	W: Setting Parameter Error
7	FEED (Jog)	The machine is locked.	–
		The power to the Servomotor is OFF.	A: Servo OFF
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
8	STEP (STEP Operation)	The positioning travel distance exceeded the allowed value.	A: Excessive Positioning Travel Distance
		The power to the Servomotor is OFF.	A: Servo OFF
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
9	ZSET (Set Zero Point)	An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
10 or 11	ACC (Change Linear Acceleration Time Constant) DCC (Change Linear Deceleration Time Constant)	An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		The command was executed when pulse distribution was not completed (i.e., when DEN was OFF).	–
		Writing the SERVOPACK parameters was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		An A.94 or A.95 warning occurred in the SERVOPACK.	W: SERVOPACK Error

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Motion Command Code		Reason for Command Error End	Warnings (W) and Alarms (A) That Occur at the Same Time
12	SCC (Change Filter Time Constant)	An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		The command was executed when pulse distribution was not completed (i.e., when DEN was OFF).	A: Filter Time Constant Change Error
		Writing the SERVOPACK parameters was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		An A.94 or A.95 warning occurred in the SERVOPACK.	W: SERVOPACK Error
13	CHG_FILTER (Change Filter Type)	An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		The command was executed when pulse distribution was not completed (i.e., when DEN was OFF).	A: Filter Time Constant Change Error
		The filter type is set outside of the setting range.	W: Setting Parameter Error
14, 15, or 16	KVS (Change Speed Loop Gain) KPS (Change Position Loop Gain) KFS (Change Feedforward)	An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		Writing the SERVOPACK parameters was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		An A.94 or A.95 warning occurred in the SERVOPACK.	W: SERVOPACK Error
17 or 18	PRM_RD (Read Parameter) PRM_WR (Write Parameter)	An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		Reading the SERVOPACK parameter was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		An A.94 or A.95 warning occurred in the SERVOPACK.	W: SERVOPACK Error
		The SERVOPACK parameter number or parameter size is set outside of the setting range.	W: Setting Parameter Error
19 or 20	ALM_MON (Monitor Alarms) ALM_HIST (Monitor Alarm History)	The command to the SERVOPACK was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		The SERVOPACK alarm monitor number was set outside of the setting range.	W: Setting Parameter Error
21	ALMHIST_CLR (Clear Alarm History)	The command to the SERVOPACK was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
22	ABS_RST (Reset Absolute Encoder)	The command was issued when the power to the Servomotor was ON.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		The command to the SERVOPACK was not completed within the specified time.	A: SERVOPACK Communications Timeout Error

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Motion Command Code		Reason for Command Error End	Warnings (W) and Alarms (A) That Occur at the Same Time
23	VELO (Issue Speed Reference)	The command was issued for a MECHATROLINK-I connection.	–
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
24	TRQ (Issue Torque Reference)	The command was issued for a MECHATROLINK-I connection.	–
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
25	PHASE (Issue Phase Reference)	An absolute infinite-length axis is being used but the zero point is not set.	A: Zero Point Unset
		The power to the Servomotor is OFF.	A: Servo OFF
		An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
26	KIS (Change Position Loop Integral Time)	An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		Writing the SERVOPACK parameters was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		An A.94 or A.95 warning occurred in the SERVOPACK.	W: SERVOPACK Error
–	SERVOPACK parameter auto-write when other movement commands are executed*	An alarm has occurred.	–
		Communications are not synchronized.	A: SERVOPACK Synchronized Communications Error
		Writing the SERVOPACK parameters was not completed within the specified time.	A: SERVOPACK Communications Timeout Error
		An A.94 or A.95 warning occurred in the SERVOPACK.	W: SERVOPACK Error
		Pulse distribution is not completed (i.e., DEN is OFF).	–

* This applies when the SERVOPACK Parameter Auto-Write fixed parameter is set to 0 (Enabled) and the set value of the Filter Time Constant, Acceleration Rate/Acceleration Time Constant, or Deceleration Rate/Deceleration Time Constant parameter is changed at the same time as the movement command is set.

Checking Status and Alarms of a Reference-type SERVOPACK with MECHATROLINK-III Communications

Use the MPE720 to check the status and alarms of a Reference-type SERVOPACK with MECHATROLINK-III Communications.

This section gives the items that can be checked in the SERVOPACK status and alarm information.

SERVOPACK Status Monitor (IW□□□2C) Table

The status of a Reference-type SERVOPACK with MECHATROLINK-III Communications can be monitored in the SERVOPACK Status Monitor parameter (IW□□□2C).

Bit	Status	Meaning
Bit 0	Drive Alarm (D_ALM)	0: No drive alarm. 1: Drive alarm occurred.
Bit 1	Drive Warning (D_WAR)	0: No drive warning. 1: Drive warning occurred.
Bit 2	Command Ready (CMDRDY)	0: Commands cannot be received. 1: Commands can be received.
Bit 3	Alarm Clear Execution Completed (ALM_CLR_CMP)	0: Servo OFF (base lock) 1: Servo ON (no base lock)
Bit 6 and Bit 7	Echo-back of Command ID (RCMD_ID)	This parameter reports the echo-back value of the command ID of a MECHATROLINK-III command.
Bit 8 to Bit B	Command Error (CMD_ALM)	This parameter reports the alarm status of a MECHATROLINK-III command.
Bit C to Bit F	Communications Error (COMM_ALM)	This parameter reports the communications alarm status of a MECHATROLINK-III command.

SERVOPACK Alarm Code (IW□□□2D) Tables

If bit 0 (SERVOPACK Error) in IL□□□04 (Alarms) is ON, an alarm has occurred in the Reference-type SERVOPACK with MECHATROLINK-III Communications. If bit 0 (SERVOPACK Error) in IL□□□04 (Alarms) is ON, an alarm has occurred in the SERVOPACK with MECHATROLINK Communications. You can check the specific alarm in IW□□□2D (SERVOPACK Alarm Code).
The alarm codes are listed in the following tables. Refer to the relevant SERVOPACK manual for corrective measures.

◆ Σ-7-series SERVOPACKs

Register Address	Name	Code	Meaning
IW□□□2D	SERVOPACK Alarm Code	020	Parameter Checksum Error
		021	Parameter Format Error
		022	System Checksum Error
		024	System Alarm
		025	System Alarm
		030	Main Circuit Detector Error
		040	Parameter Setting Error
		041	Encoder Output Pulse Setting Error
		042	Parameter Combination Error
		044	Semi-closed/Fully-closed Loop Control Parameter Setting Error
		050	Combination Error
		051	Unsupported Device Alarm
		070	Detected Motor Type Change
		080	Linear Encoder Scale Pitch Setting Error
		0B0	Canceled Servo ON Command Alarm
		100	Overcurrent Detected
		300	Regeneration Error
		320	Regeneration Overload
		330	Main Circuit Power Supply Wiring Error
		331	Power Monitor Input Signal Error
		400	Overvoltage
		410	Undervoltage
		450	Main Circuit Capacitor Overvoltage
		510	Overspeed
		511	Overspeed of Encoder Output Pulse Rate
		520	Vibration Alarm
		521	Autotuning Alarm
		550	Maximum Speed Setting Error
		710	Maximum Momentary Overload
		720	Maximum Continuous Overload
		730, 731	Dynamic Brake Overload
		740	Overload of Surge Current Limit Resistor
		7A1	Internal Temperature Error 1 (Control Board Temperature Error)
		7A2	Internal Temperature Error 2 (Power Board Temperature Error)
		7A3	Internal Temperature Detector Error
		7AB	Built-in Fan in SERVOPACK Stopped
		810	Encoder Backup Alarm
		820	Encoder Checksum Alarm
		830	Encoder Battery Alarm
		840	Encoder Data Alarm
		850	Encoder Overspeed
		860	Encoder Overheated
		861	Overheat
		890	Encoder Scale Error
		891	Encoder Module Error
		8A0	External Encoder Error

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Register Address	Name	Code	Meaning
IW□□□2D	SERVOPACK Alarm Code	8A1	External Encoder Module Error
		8A2	External Incremental Encoder Sensor Error
		8A3	External Absolute Encoder Position Error
		8A5	External Encoder Overspeed Error
		8A6	External Encoder Overheat Error
		B10	Speed Reference A/D Error
		B11	Speed Reference A/D Conversion Data Error
		B20	Torque Reference A/D Error
		B33	Current Detection Error 3
		BF0	System Alarm 0
		BF1	System Alarm 1
		BF2	System Alarm 2
		BF3	System Alarm 3
		BF4	System Alarm 4
		C10	Runaway Detected
		C20	Phase Detection Error
		C21	Hall Sensor Error
		C22	Phase Information Disagreement
		C50	Magnetic Pole Detection Failed
		C51	Overtravel Detected during Magnetic Pole Detection
		C52	Magnetic Pole Detection Incomplete
		C53	Magnetic Pole Detection Variable Range Exceeded
		C54	Magnetic Pole Detection Failed 2
		C80	Absolute Encoder Clear Error and Multiturn Limit Setting Error
		C90	Encoder Communications Error
		C91	Encoder Communications Position Data Acceleration Rate Error
		C92	Encoder Communications Timer Error
		CA0	Encoder Parameter Error
		CB0	Encoder Echoback Error
		CC0	Multiturn Limit Disagreement
		CF1	Feedback Optional Module Communications Error, Reception Failed
		CF2	Feedback Optional Module Communications Error, Timer Stopped
		D00	Position Error Overflow
		D01	Position Error Overflow Alarm at Servo ON
		D02	Position Error Overflow Alarm by Speed Limit at Servo ON
		D10	Motor-load Position Error Overflow
		D30	Position Data Overflow
		E72	Feedback Optional Module Detection Failure Alarm
		EB1	Safety Function Signal Input Timing Error
		F10	Main Circuit Cable Open Phase
		F50	Motor Main Circuit Cable Disconnection

◆ Σ-V-series SERVOPACKs

Register Address	Name	Code	Meaning
IW□□□2D	SERVOPACK Alarm Code	020	Parameter Checksum Error
		021	Parameter Format Error
		022	System Checksum Error
		023	Parameter Password Error
		030	Main Circuit Detector Error
		040	Parameter Setting Error
		041	Encoder Output Pulse Setting Error
		042	Parameter Combination Error
		044	Semi-closed/Fully-closed Loop Control Parameter Setting Error
		050	Combination Error
		051	Unsupported Device Alarm
		0B0	Canceled Servo ON Command Alarm
		100	Overcurrent Detected
		300	Regeneration Error
		320	Regeneration Overload
		330	Main Circuit Power Supply Wiring Error
		400	Overvoltage
		410	Undervoltage
		510	Overspeed
		511	Overspeed of Encoder Output Pulse Rate
		520	Vibration Alarm
		521	Autotuning Alarm
		710	Maximum Momentary Overload
		720	Maximum Continuous Overload
		730 731	Dynamic Brake Overload
		740	Overload of Surge Current Limit Resistor
		7A0	Heat Sink Overheated
		7AB	Built-in Fan in SERVOPACK Stopped
		810	Encoder Backup Alarm
		820	Encoder Checksum Alarm
		830	Encoder Battery Alarm
		840	Encoder Data Alarm
		850	Encoder Overspeed
		860	Encoder Overheated
		891	Encoder Module Error
		8A0	External Encoder Scaling Error
		8A1	External Encoder Module Error
		8A2	External Incremental Encoder Sensor Error
		8A3	External Absolute Encoder Position Error
		B10	Speed Reference A/D Error
		B11	Speed Reference A/D Conversion Data Error
		B20	Torque Reference A/D Error
		B31	Current Detection Error 1
		B32	Current Detection Error 2
		B33	Current Detection Error 3
		BF0	System Alarm 0 (Scan C Error)

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Register Address	Name	Code	Meaning
IW□□□2D	SERVOPACK Alarm Code	BF1	System Alarm 1 (CPU Stack Memory Error)
		BF2	System Alarm 2 (Current Control Processing Section Program Error)
		BF3	System Alarm 3 (Scan A Error)
		BF4	System Alarm 4 (CPU WDT Error)
		C10	Runaway Prevention Detected
		C20	Phase Detection Error*1
		C21	Hole Sensor Error*1
		C22	Phase Information Disagreement*1
		C50	Magnetic Pole Detection Failed*1
		C51	Overtravel Detected during Magnetic Pole Detection*1
		C52	Magnetic Pole Detection Incomplete*1
		C53	Magnetic Pole Detection Variable Range Exceeded
		C54	Magnetic Pole Detection Failed 2
		C80	Absolute Encoder Clear Error and Multiturn Limit Setting Error
		C90	Encoder Communications Error
		C91	Encoder Communications Position Data Acceleration Rate Error
		C92	Encoder Communications Timer Error
		CA0	Encoder Parameter Error
		CB0	Encoder Echoback Error
		CC0	Multiturn Limit Disagreement
		CF1	Fully-closed Serial Conversion Unit Communications Error*1
		CF2	Fully-closed Serial Conversion Unit Communications Error*1
		D00	Position Error Overflow
		D01	Position Error Overflow Alarm at Servo ON
		D02	Position Error Overflow Alarm by Speed Limit at Servo ON
		D10	Motor-load Position Error Overflow
		EB0	Safety Function Drive Monitor Circuit Error*2
		EB1	Safety Function Signal Input Timing Error
		EB2	Safety Function Drive Internal Signal Error*2
		EB3	Safety Function Drive Communications Error 1*2
		EB4	Safety Function Drive Communications Error 2*2
		EB5	Safety Function Drive Communications Error 3*2
		EB6	Safety Function Drive Communications Data Error*2
		EC7	Safety Option Card Stop Command Error*2
		F10	Main Circuit Cable Open Phase
		CPF00	Digital Operator Transmission Error 1
		CPF01	Digital Operator Transmission Error 2
		- -	Not an error.

*1. These alarm codes are possible only when the feedback option is used.
*2. These alarm codes are possible only when the safety function is used.

Troubleshooting Programming and Debugging

5

This chapter describes how to troubleshoot errors that can occur when programming or debugging.

5.1 Troubleshooting Motion Program Alarms

This section describes how to troubleshoot alarms that can occur for motion programs.

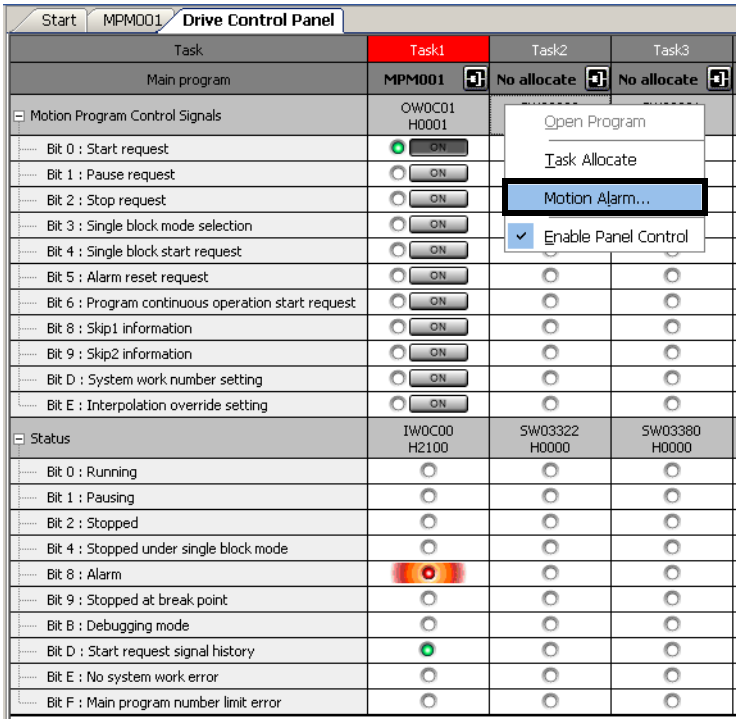
Checking for Motion Program Alarms

You can check the alarm codes, alarm names, and corrections for any alarms in motion programs in the Motion Alarm Dialog Box.

There are two ways to display the Motion Alarm Dialog Box.

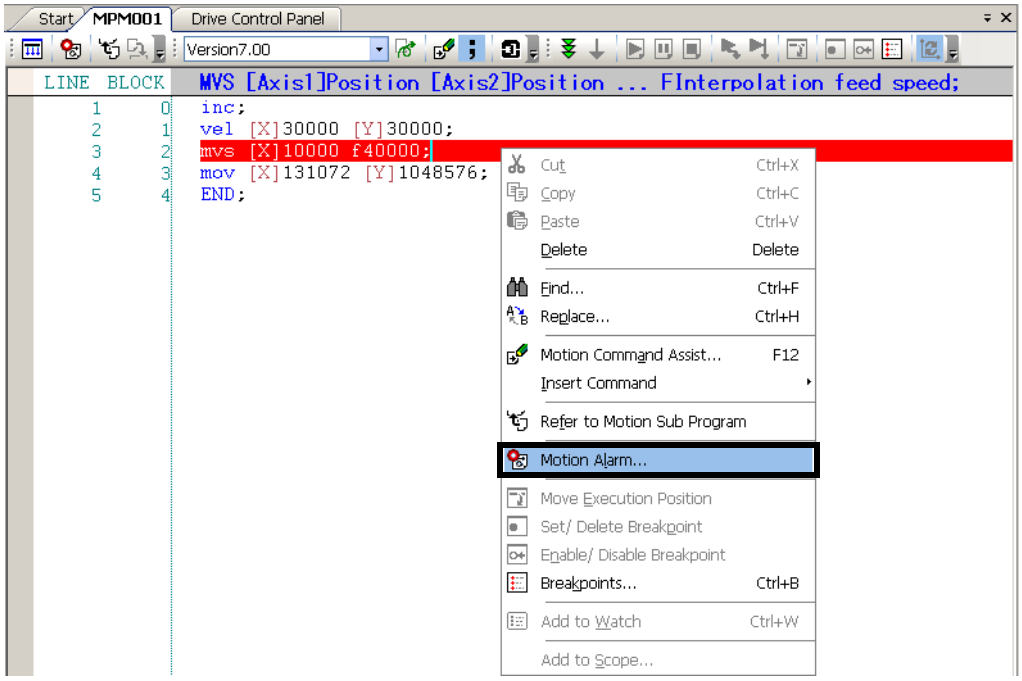
Using the Drive Control Panel

Right-click in the Drive Control Panel Tab Page and select ***Motion Alarm*** from the pop-up menu.



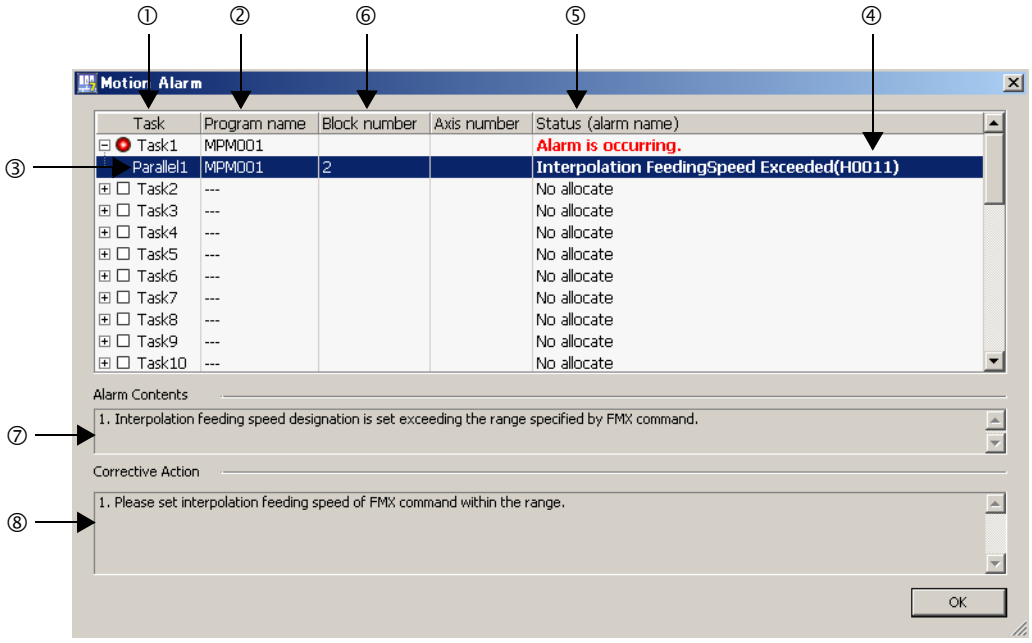
Using the Motion Editor

Right-click in the Motion Editor Tab Page and select ***Motion Alarm*** from the pop-up menu.



◆ Motion Alarm Dialog Box Details

This section describes the Motion Alarm Dialog Box.



① Task

If the alarm occurred in a motion program that was registered for execution in the M-EXECUTOR, then this column will show the M-EXECUTOR task.

If the alarm occurred in a motion program that was called from a ladder program with an MSEE instruction, then this box will show ---.

② Program Name

If the alarm occurred in a motion program that was registered for execution in the M-EXECUTOR, then this box will show the name of the program registered in the M-EXECUTOR.

If the alarm occurred in a motion program that was called from a ladder program with an MSEE instruction, then this box will show ---.

③ Fork

When parallel execution (PFORK) is used in a motion program, sometimes more than one alarm will occur at the same time. Refer to the following manual for details on parallel execution instructions.

📖 *MP3000 Series Motion Programming Manual* (Manual No. SIEP C880725 14)

④ Alarm Code

The alarm code is displayed here.

⑤ Status (Alarm Name)

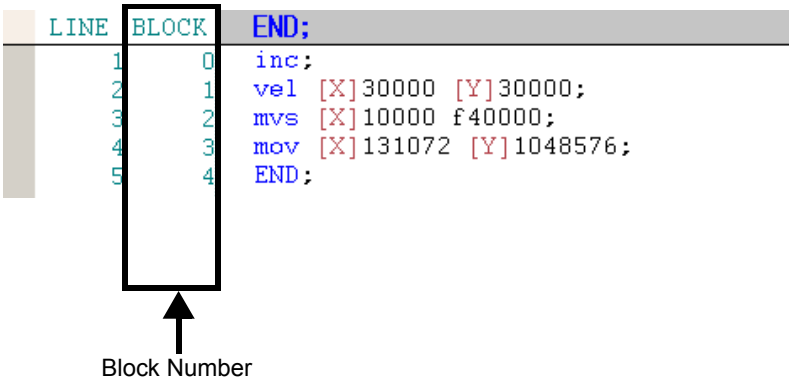
This column displays the status and the names of the alarms.

⑥ Block Number

This column displays the numbers of the blocks where the errors occurred.

Double-click the block number to jump to the program where the error occurred.

The block numbers are displayed in the Motion Editor Tab Page.



⑦ Alarm Contents

This box displays a description of the alarm.

⑧ Correction

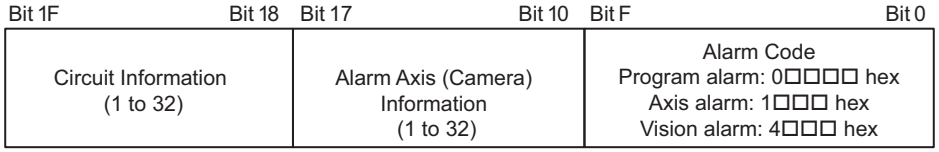
This box displays instructions to correct the error that caused the alarm to occur.

If an alarm occurs in motion program, use the alarm code to isolate the cause.

Structure of Motion Program Alarms

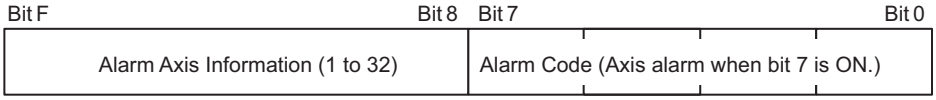
You can monitor for motion program alarms in the SL26000 to SL26510 system registers.

The structure of the motion program alarm data stored in the system registers is shown below.



Information

You can also monitor for motion program alarms in the SW03268 system registers.
The structure of the motion program alarm data stored in the SW03268 system register is shown below.



Note: The system register addresses depend on the system work number. Refer to the following section for details.

Example

Alarm Indications

Alarm (Example)	Expansion Motion Program Alarm	Motion Program Alarm
Program Alarm	000000□□ hex	00□□ hex
Circuit 2 Axis 3 Axis Alarm	020310□□ hex	03□□ hex
Circuit 2 Camera 3 Vision Alarm	02034□□□ hex	037F hex
Circuit 2 Vision Alarm	02004□□□ hex	007F hex

Motion Program Alarm Codes

The following table lists the alarm codes for motion programs.

Alarm Code		Alarm Name	Alarm	Correction
Program Alarms	0002 hex	Division error	The data was divided by 0.	Correct the motion program.
	0010 hex	Turn specified instead of radius	A number of turns (T) was specified instead of a radius for a circular or helical interpolation instruction.	• Convert the radius setting to a center point coordinate setting to execute the circular or helical interpolation instruction. • Do not specify a number of turns.
	0011 hex	Interpolation feed speed over limit	The interpolation feed speed exceeded the setting range of the FMX instruction.	Correct the feed speed of the interpolation instruction.
	0012 hex	No interpolation feed speed setting	The interpolation feed speed has never been set. (If you set it once, further settings can be omitted within the same program.)	Set the feed speed of the interpolation instruction.
	0013 hex	Range exceeded after acceleration parameter conversion	The indirectly designated acceleration parameter exceeded the setting range.	Change the value of the register that is used for the indirect designation.
	0014 hex	Circular arc length exceeded LONG_MAX	The circular arc length that was specified for a circular or helical interpolation instruction exceeded the setting range.	Correct the circular arc length setting for the circular or helical interpolation instruction.
	0015 hex	No vertical axis set for the circular arc plane	The vertical axis was not set for a circular or helical interpolation instruction.	Set the vertical axis with the PLN instruction.
	0016 hex	No horizontal axis set for the circular arc plane	The horizontal axis was not set for a circular or helical interpolation instruction.	Set the horizontal axis with the PLN instruction.
	0017 hex	Number of axes over limit	The number of specified axes exceeds the limit of a circular interpolation instruction (2 axes max.) or a helical interpolation instruction (3 axes max.).	Correct the axis setting of the circular or helical interpolation instruction.
	0018 hex	Number of turns over limit	The number of turns that was specified for a circular or helical interpolation instruction exceeded the setting range.	Correct the number of turns setting of the circular or helical interpolation instruction.
	0019 hex	Radius exceeded LONG_MAX	The radius that was specified for a circular or helical interpolation instruction exceeded the setting range.	Correct the radius setting of the circular or helical interpolation instruction.
	001A hex	Center point setting error	The correct center point was not set for a circular or helical interpolation instruction.	Specify a correct center point for the circular or helical interpolation instruction.
	001B hex	Emergency stop	The axis movement instruction was stopped due to a Request for Stop of Program.	Turn OFF the Request for Stop of Program motion program control signal, and turn ON the Alarm Reset Request.
	001C hex	Linear interpolation travel distance exceeded LONG_MAX	The travel distance that was specified for a linear interpolation instruction exceeded the setting range.	Correct the travel distance for the linear interpolation instruction.

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Alarm Code		Alarm Name	Alarm	Correction
Program Alarms	001D hex	FMX is not defined	There was no FMX instruction executed in a motion program that includes an interpolation instruction.	Execute an FMX instruction. An FMX instruction is required for each program that contains an interpolation instruction.
	001E hex	T address out of range	The address setting in an IAC/IDC/FMX instruction exceeds the setting range.	Correct the setting in the IAC/IDC/FMX instruction.
	001F hex	P address out of range	The address setting in an IFP instruction exceeds the setting range.	Correct the setting in the IFP instruction.
	0021 hex	PFORK execution error	Motion instructions were executed at the same time in the second fork of the PFORK instruction in the calling motion program and the second fork of the PFORK instruction in the subprogram.	Correct the motion program or the subprogram.
	0022 hex	Indirect designation register range error	The specified register address exceeds the range of the register size.	Correct the motion program.
	0023 hex	Travel distance out of range	The decimal-format axis travel distance specified in an axis movement instruction exceeds the allowed range.	Correct the axis travel distance.
	0024 hex	Interpolation override out of range	The interpolation override setting exceeded the setting range.	Correct the Interpolation Override Setting.
	0026 hex	PFORK number of parallel forks error	The number of parallel forks exceeded the number set for the parallel mode.	• Correct the motion program. • Correct the parallel mode setting.
	0028 hex	No composite travel distance for linear interpolation setting when target axis setting for interpolation feed speed was enabled	The composite travel distance was not set for a linear interpolation instruction when the target axis setting for interpolation feed speed was enabled.	Set the composite travel distance for the linear interpolation instruction when the target axis setting for interpolation feed speed is enabled.
	007F hex	Refer to the expansion alarm registers.	A vision alarm occurred.	Check the expansion motion program alarm and correct the problem.

Continued on next page.

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Alarm Code		Alarm Name	Alarm	Correction
Axis Alarms*1	0080 hex	Logical axis use prohibited	More than one motion instruction was executed for the same axis.	Correct the motion program.
	0081 hex	The infinite-length axis setting exceeded POSMAX	The travel distance setting for infinite-length axis exceeded the POSMAX setting.	• Correct the setting of fixed parameter No. 10 (Infinite-length Axis Reset Position). • Correct the motion program.
	0082 hex	The axis travel distance exceeded LONG_MAX	The axis travel distance setting exceeded the allowed range.	Correct the motion program.
	0084 hex	Duplicated motion command	More than one instruction was executed for the same axis.	Check for and remove simultaneous references for the same axis from other programs.
	0085 hex	Motion command response error	A response for a different motion command was reported by the Motion Control Function Module when a motion instruction was executed.	• Remove the cause of the alarm at the target axis. • If the Servo is not ON, turn ON the Servo. • Check for and remove simultaneous references for the same axis from other programs.
	0087 hex	VEL setting out of range	The setting in the VEL instruction exceeds the allowed range.	Correct the VEL instruction.
	0088 hex	INP setting out of range	The setting in the INP instruction exceeds the allowed range.	Correct the INP instruction.
	0089 hex	ACC/SCC/DCC setting out of range	The setting in the ACC/SCC/DCC instruction exceeds the allowed range.	Correct the ACC/SCC/DCC instruction.
	0090 hex	Exceeded IFMX (maximum interpolation feed speed setting for individual axes)	The interpolation feed speed for the axis that was specified for the IFMX instruction exceeded the speed setting in the IFMX instruction.	Correct the speed setting in the IFMX instruction.
	008A hex	No time setting in MVT instruction	The T setting in the MVT instruction is zero.	Correct the MVT instruction.
	008B hex	Command cannot be executed	The specified motion instruction cannot be executed on the target Motion Control Function Module.	Correct the motion program.
	008C hex	Distribution incomplete	A motion instruction was executed when the Motion Control Function Module had not completed distribution for a previous instruction.	Correct the motion program so that the motion instruction is executed when the Distribution Completed Bit is ON.
	008D hex	Motion command error termination	The Motion Control Function Module is in Command Error status.	• Clear the error at the target axis. • Correct the motion program.
	008E hex	Servo ON Incomplete	An axis motion instruction was executed when the power to the Servomotor was OFF.	• Clear the error at the target axis. • Correct the motion program so that the motion instruction is executed when the power to the Servomotor is ON.
	008F hex	Axis alarm	An alarm occurred in the Motion Control Function Module to which a command was sent.	Clear the error at the target axis.

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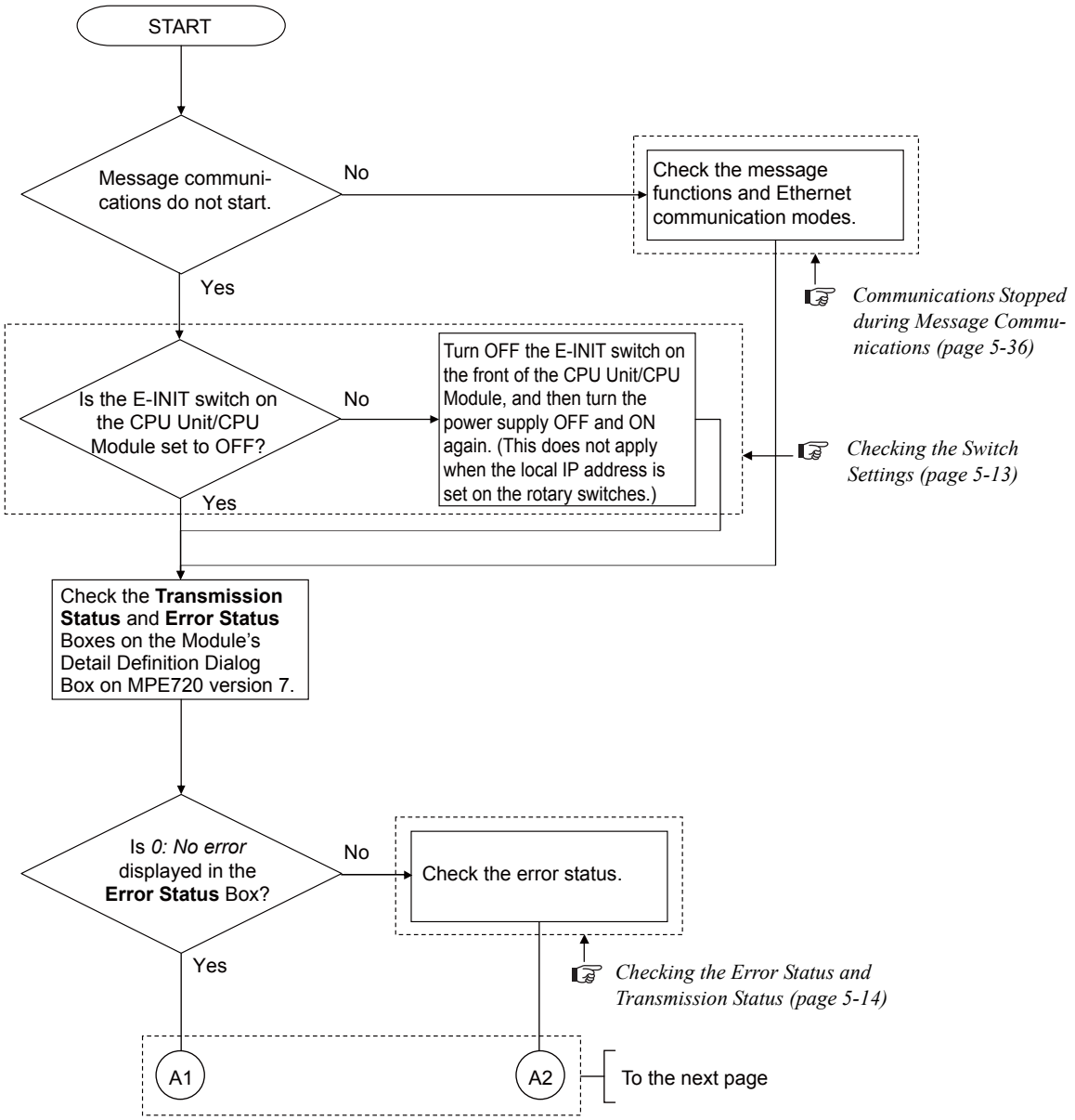
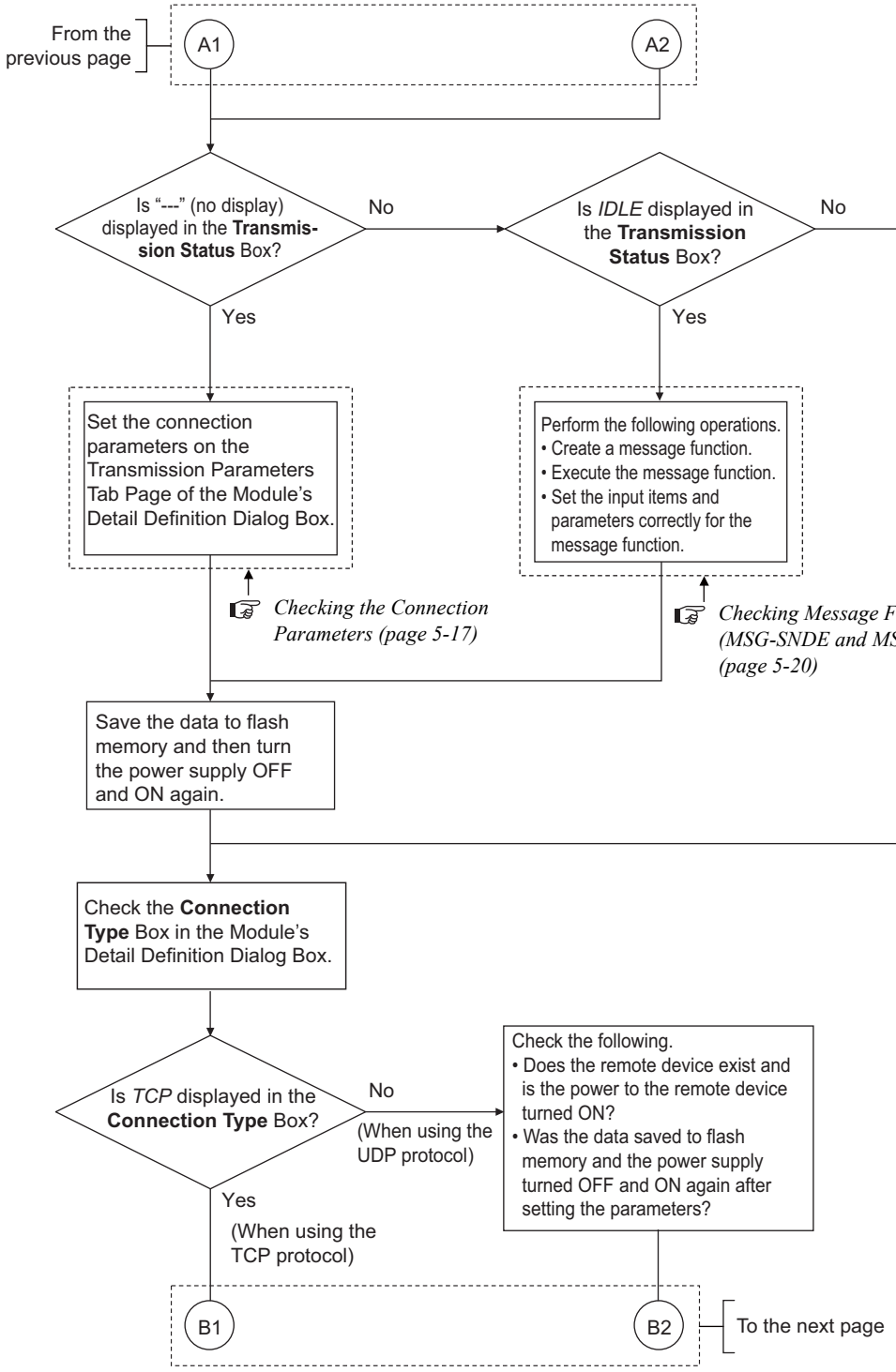
Alarm Code		Alarm Name	Alarm	Correction
Vision Alarms*2	4001 hex	Vision command cannot be executed	A command was executed for an unknown Vision Unit.	Check the Module configuration definitions to see if the Vision Unit exists. Make sure that the specified circuit is correct and check the motion program.
	4002 hex	Duplicate image capture commands	Image capture was executed for a camera that was already executing an image capture command (VCAPI or VCAPS).	Correct the motion program.
	4003 hex	Duplicate vision commands	A vision command was executed during execution of a previous vision command (VFIL, VANA, or VRES).	Correct the motion program.
	4004 hex	Vision command circuit error	A circuit number of 0 was specified for a vision command (VCAPI, VCAPS, VFIL, VANA, or VRES).	Make sure the specified circuit is correct and check the motion program.
	4005 hex	Image capture command response error	A response for an image capture command (VCAPI or VCAPS) was not received within a specific time period.	Replace the Vision Unit.
	4006 hex	Vision command response error	A response for a vision command (VFIL, VANA, or VRES) was not received within a specific time period.	Replace the Vision Unit.
	4007 hex	Function number error	An unknown function number was specified.	Correct the specified function number.
	4040 hex	Duplicate image memory usage	More than one vision instruction was executed for the same image memory.	Correct the motion program.
	4041 hex	Parameter numeric range error	An out-of-range number was specified for a vision parameter.	Correct the vision parameter.
	4042 hex	Unregistered template	An unregistered template was specified.	Register the template.
	4043 hex	Image capture error	An image could not be captured for an image capture command (VCAPI or VCAPS).	Correct the camera parameters in the fixed parameters.
	4044 hex	VRES instruction execution error	The VRES instruction was executed while the VANA instruction was not being executed.	Correct the motion program.

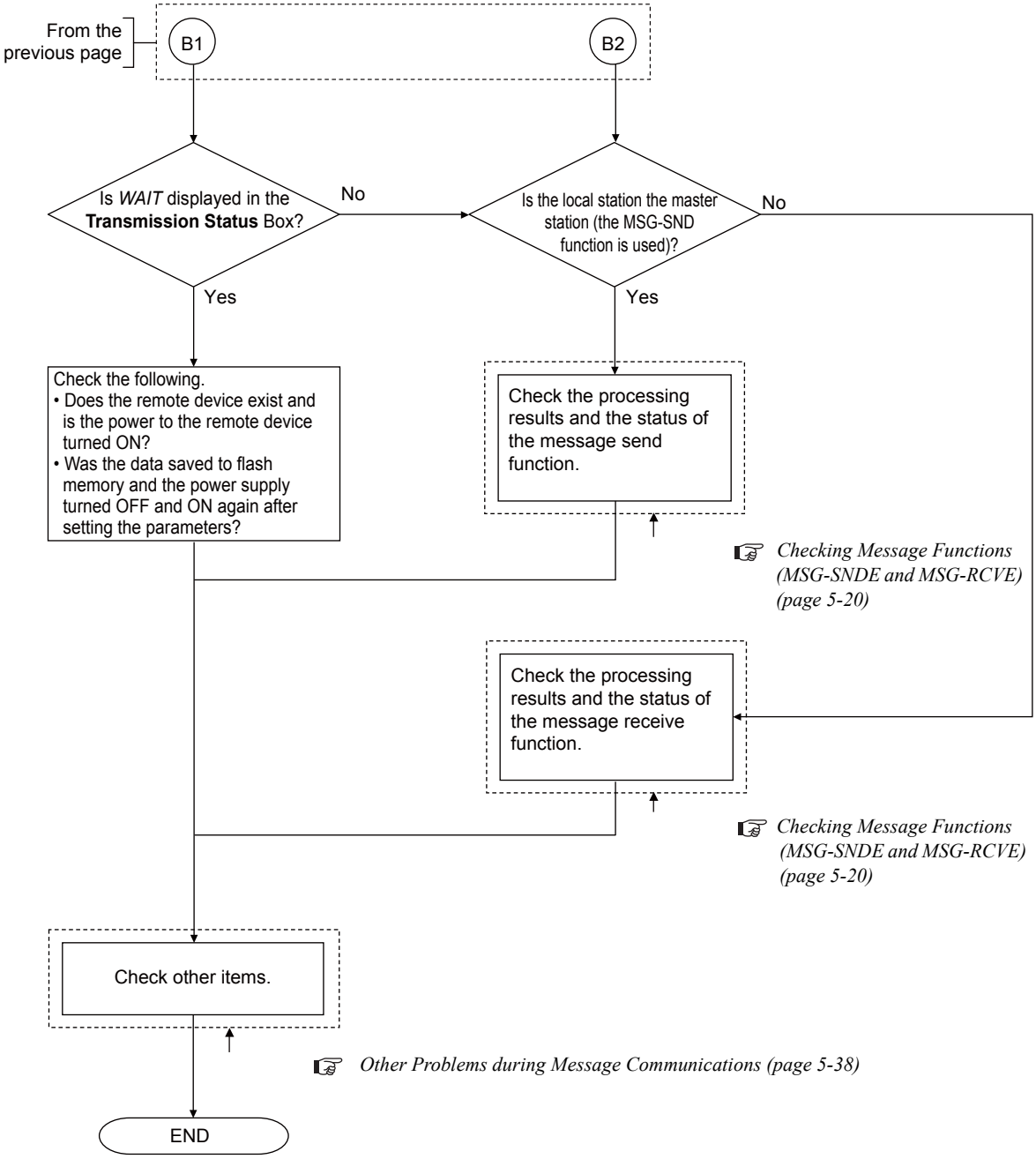
*1. If an axis alarm occurs, the axis number is stored in bits 8 to C.
*2. If a vision alarm occurs, check the SL26000 to SL26510 system registers.

5.2 Troubleshooting Message Communications

Use the following flowchart to troubleshoot problems in message communications with other controllers, touch panel, or PC.

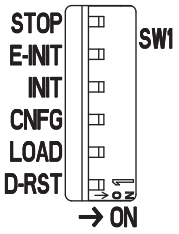



From the previous page
A1
A2
Is "---" (no display) displayed in the **Transmission Status** Box?
No
Is *IDLE* displayed in the **Transmission Status** Box?
No
Yes
Yes
Set the connection parameters on the Transmission Parameters Tab Page of the Module's Detail Definition Dialog Box.
Perform the following operations.
• Create a message function.
• Execute the message function.
• Set the input items and parameters correctly for the message function.
Checking the Connection Parameters (page 5-17)
Checking Message Functions (MSG-SNDE and MSG-RCVE) (page 5-20)
Save the data to flash memory and then turn the power supply OFF and ON again.
Check the **Connection Type** Box in the Module's Detail Definition Dialog Box.
Is *TCP* displayed in the **Connection Type** Box?
No
(When using the UDP protocol)
Check the following.
• Does the remote device exist and is the power to the remote device turned ON?
• Was the data saved to flash memory and the power supply turned OFF and ON again after setting the parameters?
Yes
(When using the TCP protocol)
B1
B2
To the next page


From the previous page
B1
B2
Is *WAIT* displayed in the **Transmission Status** Box?
No
Yes
Is the local station the master station (the MSG-SND function is used)?
No
Yes
Check the following.
• Does the remote device exist and is the power to the remote device turned ON?
• Was the data saved to flash memory and the power supply turned OFF and ON again after setting the parameters?
Check the processing results and the status of the message send function.
☞ *Checking Message Functions (MSG-SNDE and MSG-RCVE) (page 5-20)*
Check the processing results and the status of the message receive function.
☞ *Checking Message Functions (MSG-SNDE and MSG-RCVE) (page 5-20)*
Check other items.
☞ *Other Problems during Message Communications (page 5-38)*
END

Checking the Switch Settings

If message communications with a controller or touch panel from another manufacturer does not start even though a connection from the MPE720 can be established properly, check the following switch settings.



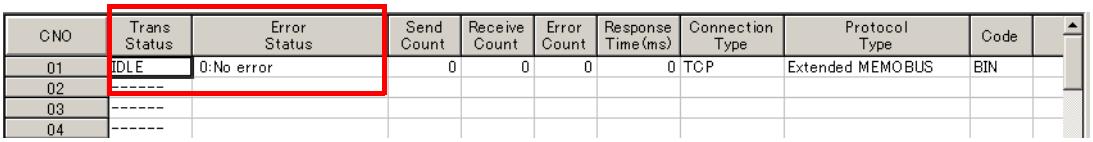
Device Code	Pin Name	Status	Operating Mode	Default	Remarks
S1_6	STOP	ON	Stops the user programs.	OFF	Turn ON the pin to stop execution of the user programs.
		OFF	Executes the user programs.		
S1_5	E-INIT	ON	Sets the IP address to 192.168.001.□□□.	OFF	The setting of □□□ is determined by the rotary switch setting.
		OFF	Sets the IP address that is set in the MPE720.		–
S1_4	INIT	ON	Resets memory.	OFF	Turn OFF the pin to execute the programs that are stored in flash memory.
		OFF	Normal operation		
S1_3	CNFG	ON	Configuration Mode	OFF	Turn ON the pin to perform self configuration. Turn OFF the pin to operate according to the definitions that are stored in flash memory.
		OFF	Normal operation		
S1_2	LOAD	ON	Loads data.	OFF	Turn ON the pin and then turn ON the power to batch load data from the USB memory to the CPU Unit.
		OFF	Does not load data.		
S1_1	D-RST	ON	Reserved for system.	OFF	Keep this pin OFF at all times.
		OFF	Normal operation		

Message Communications Errors

This section describes errors that can occur in message communications.

Checking the Error Status and Transmission Status

If message communications with a PLC, touch panel, or PC from another manufacturer do not start, get a general idea of the error in the status information in the Module's Detail Definition Dialog Box on the MPE720.



CNO	Trans Status	Error Status	Send Count	Receive Count	Error Count	Response Time(ms)	Connection Type	Protocol Type	Code
01	IDLE	0:No error	0	0	0	0	TCP	Extended MEMOBUS	BIN
02	------								
03	------								
04	------								

◆ Error Status Box = 0: No error

Get a general idea of the error by referring to the **Trans Status** Column.

■ When the TCP Protocol Is Selected

Trans Status (Transmission Status)	Status	Cause	Correction	Reference
- - - - -	Message communications are not set.	Connection parameters have not been set.	Set the connection parameters.	*Checking the Connection Parameters (page 5-17)*
		The data was not saved to flash memory or the power supply to the Module was not turned OFF and ON again after changing the connection parameters.	Save the data to flash memory and turn the power supply OFF and ON again to the Module after setting connection parameters.	
IDLE	Standby mode for executing message functions.	No message functions have been created in the ladder program.	Create message functions in the ladder program.	*Checking Message Functions (MSG-SNDE and MSG-RCVE) (page 5-20)*
		Message functions have been created in the ladder program but they have not been executed.	Create and execute message functions in the ladder program.	
		There is an error in a message function parameter setting (PARAM□□).	Set the message function parameter (PARAM□□) correctly.	
WAIT	Waiting for establishment of TCP connection with the remote device	The remote device is not connected or the power to the remote device is OFF.	Connect the remote device and turn ON the power to the remote device.	–
		The remote device does not have a communications function or setting for communicating with the Machine Controller or there is an error in communications settings.	Check the communications function or setting and the communication settings of the remote device.	–
		There is an error in the connection parameter settings in the Machine Controller.	Check the connection parameter settings in the Machine Controller.	*Checking the Connection Parameters (page 5-17)*

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Trans Status (Transmission Status)	Status	Cause	Correction	Reference
CONNECT	Data communications with the remote device are enabled.	There is an error in the communications protocol.	Check the error status of the message function.	*Checking Message Functions (MSG-SNDE and MSG-RCVE) (page 5-20)*

■ When the UDP Protocol Is Selected

Trans Status (Transmission Status)	Status	Cause	Correction	Reference
- - - - -	Message communications are not set.	Connection parameters have not been set.	Set the connection parameters.	*Checking the Connection Parameters (page 5-17)*
		The data was not saved to flash memory or the power supply to the Module was not turned OFF and ON again after changing the connection parameters.	Save the data to flash memory and turn the power supply OFF and ON again to the Module after setting connection parameters.	
IDLE	Standby mode for executing message functions.	No message functions have been created in the ladder program.	Create message functions in the ladder program.	*Checking Message Functions (MSG-SNDE and MSG-RCVE) (page 5-20)*
		Message functions have been created in the ladder program but they have not been executed.	Create and execute message functions in the ladder program.	
		There is an error in a message function parameter setting (PARAM□□).	Set the message function parameter (PARAM□□) correctly.	
CONNECT	Data communications with the remote device are enabled.	The remote device is not connected or the power to the remote device is OFF.	Connect the remote device and turn ON the power to the remote device.	–
		The remote device does not have a communications function or setting for communicating with the Machine Controller or there is an error in communications settings.	Check the communications function or setting and the communication settings of the remote device.	–
		There is an error in the connection parameter settings in the Machine Controller.	Check the connection parameter settings in the Machine Controller.	*Checking the Connection Parameters (page 5-17)*
		There is an error in the communications protocol.	Check the error status of the message function.	*Checking Message Functions (MSG-SNDE and MSG-RCVE) (page 5-20)*

◆ When Error Status Box Shows an Error

Check the nature of the error in the error status. The following tables list the most frequent error status.

Information The **Error Status** Column gives the most recent error. The error information is retained even after recovering from the error and starting normal communications.

■ When the TCP Protocol Is Selected

Error Status	Description	Cause	Correction
2: Local Port Number Error	Setting error in local station port number	The port number of a broken TCP connection was bound.	Correct the application so that at least one minute elapses after completion of the execution of the Abort command before the Execute command is turned ON in the message function in the Machine Controller.
		A command was simultaneously executed by another message function for the same remote device before the connection was ended.	Correct the program so that no more than one message function is executed for each connection.
4: M-SND Connection Error	TCP connection error when using the Send Message function	The TCP connection request from the Machine Controller was rejected by the remote device.	Make sure that the network settings of the remote device are set to open a port for communicating with the Machine Controller. (Settings to check: The port number for communicating with the Machine Controller, TCP/UDP selection, etc.)
5: M-RCV Connection Error	TCP connection error when using the Receive Message function	An error has occurred in the Machine Controller while processing a TCP connection request from the remote device.	Make sure that the network settings of the remote device are set correctly for the port for communicating with the Machine Controller.
7: TCP Data Send Error	Data sending error	The remote device is not connected or the power to the remote device is OFF.	Make sure that the power to the remote device is ON and that the remote device is connected to the Machine Controller with Ethernet cables.
9: TCP Data Receive Error	Data reception error	A TCP connection close request was received from the remote device.	If the close request was unexpected, correct the connection closing sequence at the remote device.
12: Data Conversion Error	Error in protocol conversion	There was a protocol data format error.	Match the settings for the protocol type and code (BIN/RTU/ASCII) between the remote device and the Machine Controller.

■ When the UDP Protocol Is Selected

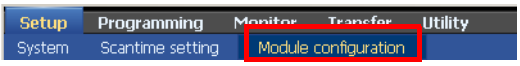
Error Status	Description	Cause	Correction
12: Data Conversion Error	Error in protocol conversion	There was a protocol data format error.	Match the settings for the protocol type and code (BIN/RTU/ASCII) between the remote device and the Machine Controller.

Checking the Connection Parameters

If message communications with a PLC, touch panel, or PC from another manufacturer do not start, the connection parameter settings in the Module's Detail Definition Dialog Box may be incorrect.

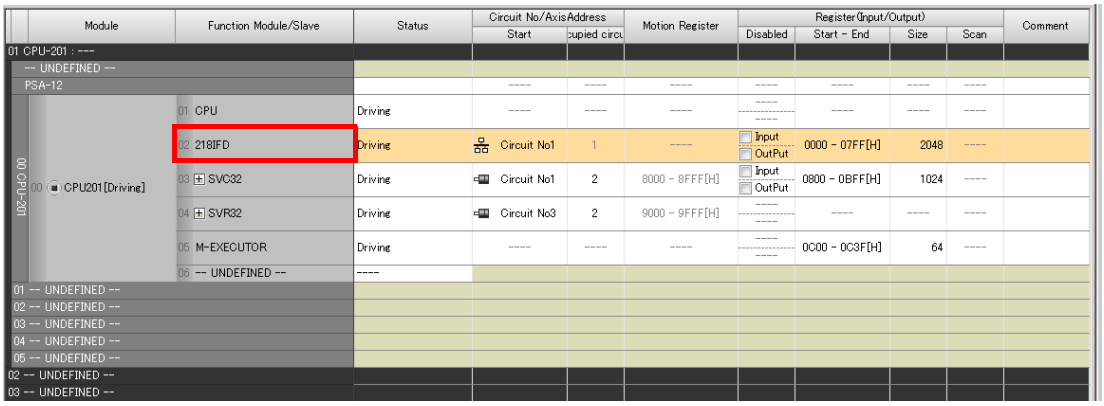
Use the following procedure to check the connection parameter settings.

1. Start MP720 version 7 and connect to the Machine Controller online.
2. Select **Module configuration** from the Setup Menu.

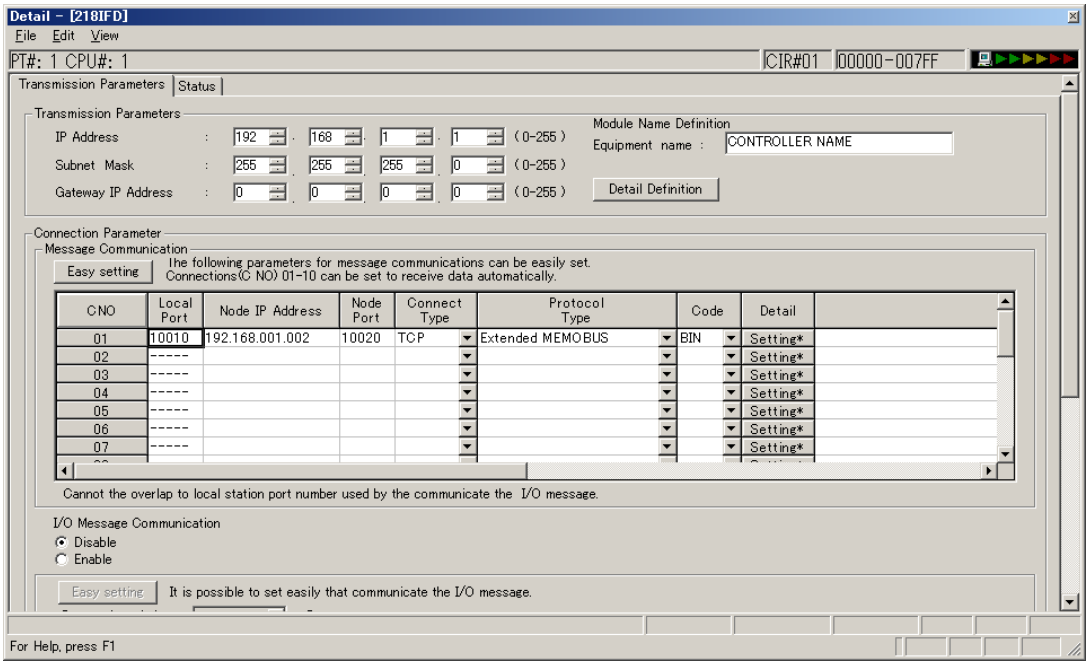


The Module Configuration Tab Page will be displayed.

3. Double-click the cell for 218IFD in the Module Configuration Definition Dialog Box.



The Module's Detail Definition Dialog Box will be displayed.



4. Check the connection parameter settings.

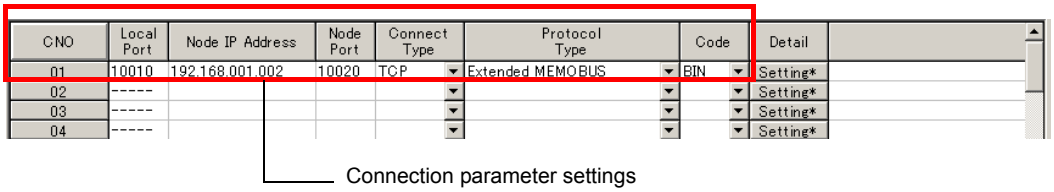


Table 5.1 Connection Parameter Check Items

Item	What to Check	Remarks
Local Port	Set the port number to which the remote station is to send data.	–
Node IP Address	Set the IP address of the remote station.	Set 000.000.000.000 to use the unpassive open mode.
Node Port	Set the port number from which the remote station sends data.	To change the port number of the remote station dynamically, use the unpassive open mode. To use the unpassive open mode, set 0000.
Connect Type	Set the connection type of the remote station.	–
Protocol Type	Set the protocol type that is supported by the remote station.	–
Code	Set the code type of the remote station.	–

Information

Unpassive Open Mode

To use unpassive open mode, set the connection parameters as follows:

- Set the IP address of the remote station (Node IP Address) to 000.000.000.000.
- Set the port number of the remote station (Node Port) to 0.

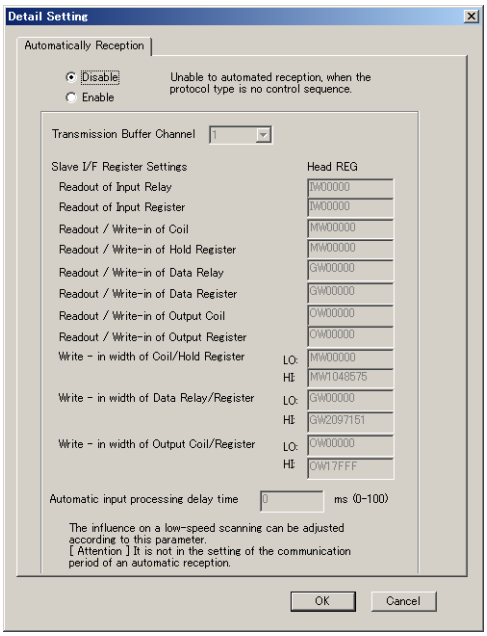
In unpassive open mode, the 218IFD connects to any station that attempts to access the relevant connection number. If more than one station attempts access, the connection will be established with the station that sent the connection request first.

When a connection is established in unpassive open mode, a connection request from another station will break the current connection and establish a connection with the station that sent the connection request later.

Example

Using the 218IFD

Click the **Detail Setting** Button to display the Automatically Reception Dialog Box**.**
Select the **Disable** Option to use message functions.

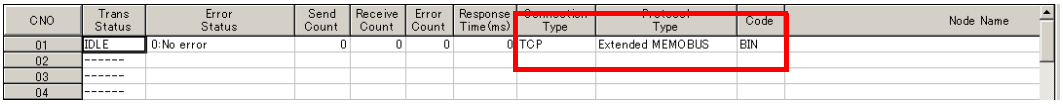


Note: If message functions are used with the **Enable** Option selected, communications may not be performed properly.

5. Click the **Status** Tab to display the Status Tab Page.

Make sure that the following items are the same as those on the Transmission Parameters Tab Page in the Module's Detail Definition Dialog Box.

- Connection Type
- Protocol Type
- Code



CNO	Trans Status	Error Status	Send Count	Receive Count	Error Count	Response Time(ms)	Connection Type	Protocol Type	Code	Node Name
01	IDLE	0:No error	0	0	0	0	TCP	Extended MEMOBUS	BIN	
02	------									
03	------									
04	------									

If the settings are different, the data may not have been saved to flash memory or the power supply to the Module may not have been turned OFF and ON again after changing or adding connection parameter settings.

Save the data to flash memory, turn the power supply to the Module OFF and ON again, and then check the settings again.

Important

When the transmission parameter or connection parameter settings are changed, the new settings are enabled only after the data is saved to flash memory and the power supply to the Module is turned OFF and ON again.

The parameter settings that are displayed on the MPE720 will be updated when you execute ***Save*** or ***Save to Flash***, but you must always turn the power supply to the Module OFF and ON again to enable the new parameter settings.

Checking Message Functions (MSG-SNDE and MSG-RCVE)

If message communications with a PLC, touch panel, or PC do not start, the specific error can be determined by checking the processing results and status of the message functions.

The procedures for checking the processing results, status, and parameter settings of the message functions are given below.

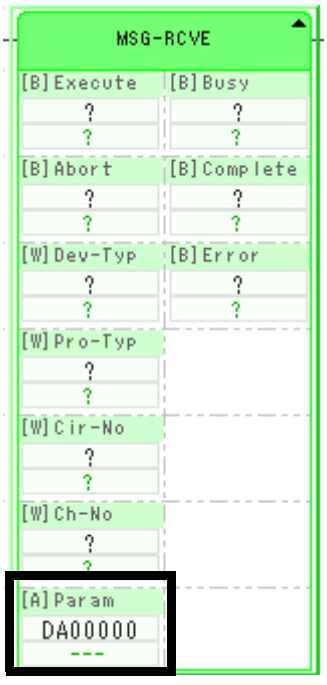
◆ Checking the Processing Results and Status

The processing results and status of a message function can be checked with the parameters in the following table.

Item	Description
Processing Result (PARAM00)	Gives the error that has occurred when the message function was executed. This information is useful for troubleshooting errors that can occur when message function parameters are not properly set.
Status (PARAM01)	This information is useful when a Communications Section Error (88☐☐ hex), which cannot be isolated with the processing results in PARAM00, has occurred.
Detail Error Code (PARAM02 and PARAM03)	Supplemental information for PARAM00 (Processing Result). These parameters give the error code from the remote device.

The procedures for checking the processing results, status, and corrections when using the Send Message and Receive Message functions are given below.

Send Message Function



Receive Message Function

Note

Use the register list on the MPE720 to check the contents of the registers.

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

Parameter List

Register	F ・・・・・・・・・・・・ 0	
DW00000	PARAM00	Processing Result
DW00001	PARAM01	Status
.	.	
.	.	
.	.	
.	.	

■ Checking the Processing Result (PARAM00) for the Send Message Function (MSG-SNDE)

The errors that may be given by the processing result of the Send Message function are listed in the following table.

• Processing Results Other Than a Communications Section Error (88□□ Hex)

Processing Result Value	Error	Cause	Correction
81□□ hex	Function code error	An unused function code was sent from the local station.	Check PARAM12 (function code).
		An unused function code was received from a remote station.	Check whether the remote station sent valid data.
82□□ hex	Address setting error	One of the following parameter settings is outside of the setting range. PARAM14 and PARAM15 (remote data address) PARAM20 and PARAM21 (local data address)	Check the parameter settings that are given on the left.
83□□ hex	Data size error	The send data size of the local station is outside of the setting range.	Check PARAM17 (data size).
		The receive data size from the remote station is outside of the setting range.	Check whether the remote station is sending data of a valid size.
84□□ hex	Circuit number setting error	The circuit number is outside of the setting range.	Check Cir-No (circuit number) in MSG-SNDE. The device may be set incorrectly. Also check the communications device type (Dev-Typ) in the MSG-SNDE function.
85□□ hex	Channel number setting error	The communications buffer channel number is outside of the setting range.	Check Ch-No (communications buffer channel number) in MSG-SNDE.
86□□ hex	Connection number error	The connection number is outside of the setting range.	Check PARAM10 (connection number).
89□□ hex	Device select error	An unavailable device is set.	Check Dev-Typ (communications device type) in MSG-SNDE and select the appropriate device type.
C0□□ hex	Register type error	The register type for the remote station is outside of the setting range.	Check PARAM16 (remote station register type) and set the correct register type.
C1□□ hex	Data type error	The data type is outside of the setting range. This error occurs when using function code 434D hex or 434E hex.	Check the remote address table and set the correct data type.
C2□□ hex	Local register type error	The register type for the local station is outside of the setting range.	Check PARAM22 (local station register type) and set the correct register type.

• Processing Result of Communications Section Error (88□□ Hex)

Processing Result Value	Error	Cause	Correction
88□□ hex	Communications section error (An error response was returned from the communications section or communications device.)	Communications are not enabled in the remote station.	Check the communications settings in the remote station.
		More than one MSG-SNDE was executed simultaneously for the same Cir-No (circuit number) and Ch-No (communications buffer channel number).	Correct the ladder program so that no more than one MSG-SNDE is executed simultaneously.
		More than one MSG-SNDE was executed simultaneously for the same Cir-No (circuit number) and PARAM10 (connection number).	Correct the ladder program so that no more than one MSG-SNDE is executed simultaneously.
		The MSG-SNDE was executed when the 218IFD was not ready to receive message send or receive requests (i.e., not in RUN status).	Adjust the timing for executing the MSG-SNDE for the first time in the ladder program, for example by using a timer command.

■ Checking the Processing Result (PARAM00) for the Receive Message Function (MSG-RCVE)

The errors that may be given by the processing result of the Receive Message function are listed in the following table.

• Processing Results Other Than a Communications Section Error (88□□ Hex)

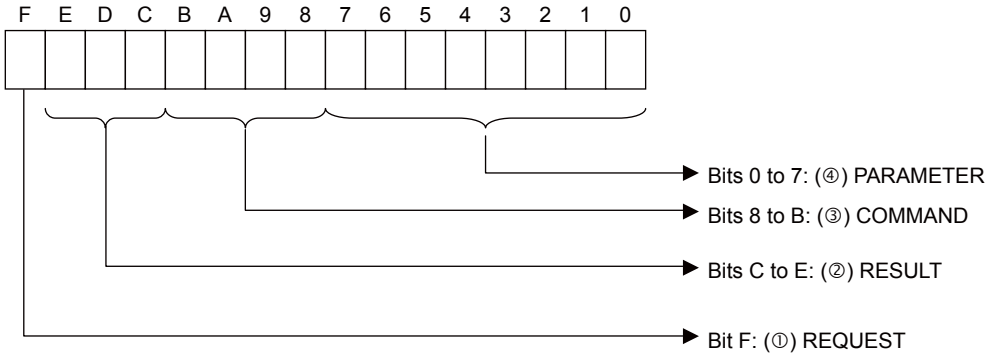
Processing Result Value	Error	Cause	Correction
81□□ hex	Function code error	An unused function code was received from a remote station.	Check whether the remote station sent valid data.
82□□ hex	Address setting error	Data for an address that is outside of the setting range was received from the remote station.	Check whether the remote station sent valid data.
		One of the following settings is outside of the setting range. PARAM14 and PARAM15 (remote data address) PARAM20 and PARAM21 (local data address)	Check the settings that are given on the left.
83□□ hex	Data size error	The receive data size from the remote station is outside of the setting range.	Check whether the remote station is sending data of a valid size.
84□□ hex	Circuit number setting error	The circuit number is outside of the setting range.	Check Cir-No (circuit number) in MSG-RCVE. The device may be set incorrectly. Also check the communications device type (Dev-Typ) in the MSG-RCVE function.
85□□ hex	Channel number setting error	The communications buffer channel number is outside of the setting range.	Check Ch-No (communications buffer channel number) in MSG-RCVE.
86□□ hex	Connection number error	The connection number is outside of the setting range.	Check PARAM10 (connection number).
89□□ hex	Device select error	An unavailable device is set.	Check Dev-Typ (communications device type) in MSG-RCVE and select the appropriate device type.
C0□□ hex	Register type error	The register type specified by the remote (sending) station is out of range.	Check the register type for the remote station specified at the local station and set the correct register type.
C1□□ hex	Data type error	The data type is outside of the setting range. This error occurs when using function code 434D hex or 434E hex.	Check the remote address table set at the sending station and set the correct data type.

• Processing Result of Communications Section Error (88□□ Hex)

Processing Result Value	Error	Cause	Correction
88□□ hex	Communications section error (An error response was returned from the communications section or communications device.)	Communications are not enabled in the remote station.	Check the communications settings in the remote station.
		More than one MSG-RCVE was executed simultaneously for the same Cir-No (circuit number) and Ch-No (communications buffer channel number).	Correct the ladder program so that no more than one MSG-RCVE is executed simultaneously.
		More than one MSG-RCVE was executed simultaneously for the same Cir-No (circuit number) and PARAM10 (connection number).	Correct the ladder program so that no more than one MSG-RCVE is executed simultaneously.
		The MSG-RCVE was executed when the 218IFD was not ready to receive message send or receive requests (i.e., not in RUN status).	Adjust the timing for executing the MSG-RCVE for the first time in the ladder program, for example by using a timer command.

■ Checking the Status (PARAM01)

If the value of the processing result (PARAM00) is 88□□ hex, indicating that a communications section error occurred, check the status in PARAM01 to isolate the error.



① REQUEST

This bit shows the request processing status of the message function.

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

② RESULT (Processing Result)

These bits show the result of executing the message 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.*1
5	SEQ_NG	A command sequence error occurred.*2
6	RESET_NG	A reset occurred.*2
7	REC_NG	A data reception error (error detected in the lower-layer program) occurred.

*1. When this error occurs, detailed information is given in *(④) PARAMETER*.
*2. This error occurs if the message function is executed while the 218IFD is not ready to receive message send or receive requests.

③ COMMAND

These bits show the processing command of the message function. The processing that was executed can be determined from this information.

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 the response is received.
9	M_REC	MEMOBUS command reception: Sends a response when the MEMOBUS command is received.
C	MR_SEND	MEMOBUS response transmission

④ PARAMETER

When the RESULT is 4 (FMT_NG: parameter formatting error), these bits give one of the error codes from the following table.

RESULT	Code (Hex)	Meaning
When RESULT is 4 (FMT_NG: Parameter Formatting Error)	00	No error
	01	Connection number out of range
	02	Watchdog error for MEMOBUS response
	03	Error in number of retries setting
	04	Error in cyclic area setting
	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 based on the contents of PARAM00 (Processing Result).

Value of Processing Result (PARAM00)	Error	Detail Error Code	Description
81□□ hex	Function code error	1	Gives the same value as the value of the detail result.
82□□ hex	Address setting error	2	
83□□ hex	Data size error	3	
84□□ hex	Circuit number setting error	4	
85□□ hex	Channel number setting error	5	
86□□ hex	Connection number error	6	
88□□ hex	Communications device error	8	
89□□ hex	Device select error	9	
8A□□ hex	Remote node error	0 to FF	Gives the error code stored in the error message sent by the remote device. Refer to the manual for the remote device with which communications are being performed for details on the error code.

Note: 1. The detail error code is updated only when the Complete or Error bit of the function turns ON.
2. The detail error code is updated only when the communications section or communications device detects an error.
If the Controller detects an error, the detail error code will be set to 0, even if processing results in an error.

■ Status 1 (PARAM04)

This parameter gives the Transmission Status listed in the following table as Status 1 of the 218IFD.

Status 1 Value	Status
1 (IDLE)	The connection is idle.
2 (WAIT)	The connection is waiting to be established.
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 the Latest Error Status listed in the following table as Status 2 of the 218IFD.

This parameter gives information on the latest error that occurred.

Status 2 Value	Meaning	Remarks
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 Send Count listed in the following table as Status 3 of the 218IFD.

Status 3 Value	Meaning	Remarks
0 to 65,535	Send Count	Counts the number of times a message was sent over the transmission path.

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

■ Status 4 (PARAM07)

This parameter gives the Receive Count listed in the following table as Status 4 of the 218IFD.

Status 4 Value	Meaning	Remarks
0 to 65,535	Receive Count	Counts the number of times a message was received over the transmission path.

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

■ Status 5 (PARAM08)

This parameter gives the Error Count listed in the following table as Status 5 of the 218IFD.

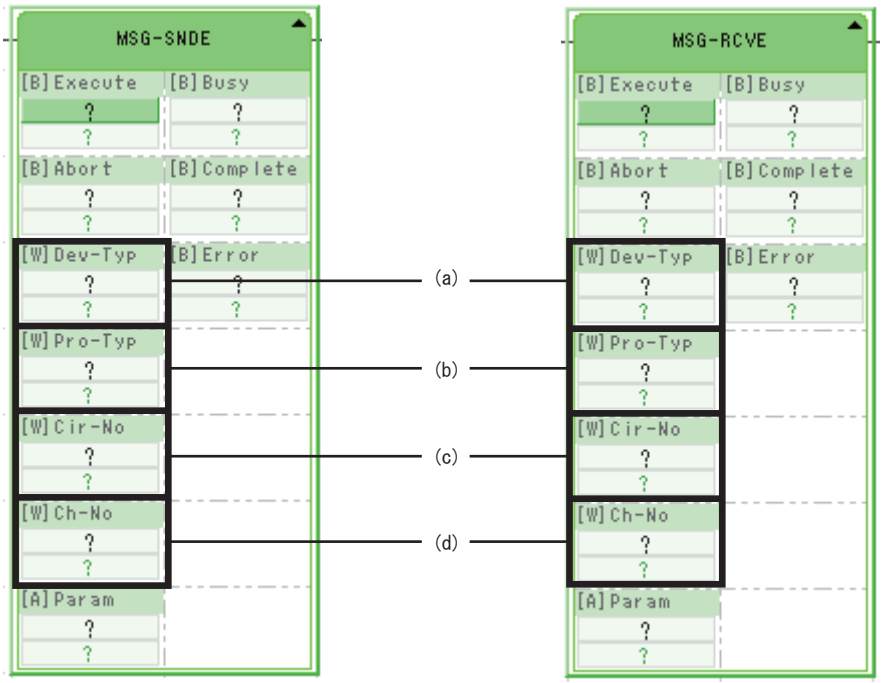
Status 5 Value	Meaning	Remarks
0 to 65,535	Error Counter	Counts the number of errors that occurred during message reception.

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

◆ Checking the Input Items to the Message Function

If message communications with a PLC, touch panel, or PC from another manufacturer do not start, the message function may not have been executed properly due to incorrect input items to the message function.

Use the following procedure to check the input items to the message function.



■ Dev-Typ (Communications Device Type)

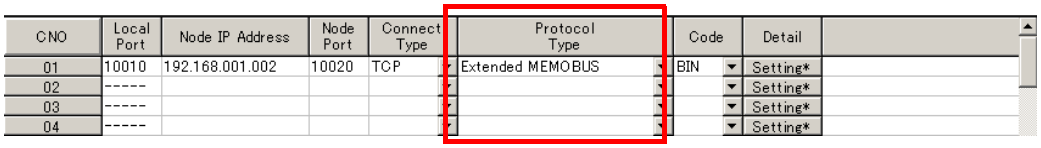
Specify the type code of the communications device.

Device	Type Code (Decimal)
218IFD	16

■ Pro-Typ (Communications Protocol)

Specify the type code of the communications protocol.

Type Code	Communications Protocol	Remarks
1	MEMOBUS	• If the protocol type is set to **Extended MEMOBUS**, **MEMOBUS**, **MELSEC**, or **MODBUS/TCP** on the Connection Parameter Tab Page in the Module's Detail Definition Dialog Box, set 1 for the type code. • The communications protocol that is set here is used between the CPU Unit/CPU Module and the 218IFD. The Communications Function Module converts the data to the protocol that is set in the connection parameters
2	No-protocol communications 1 (unit: words)	Receives data in word units in no-protocol communications. A response is not sent to the remote station.
3	No-protocol communications 2 (unit: bytes)	Receives data in byte units in no-protocol communications. A response is not sent to the remote station.

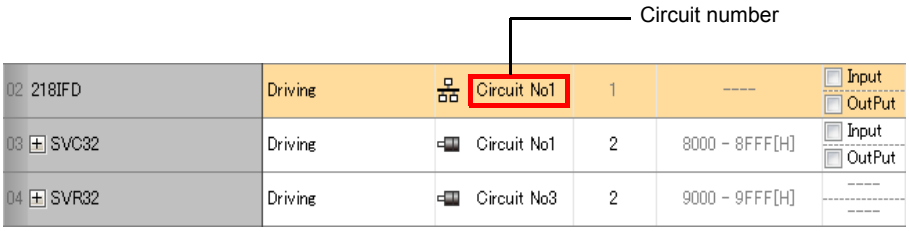


Connection Parameter Tab Page in Module's Detail Definition Dialog Box

◆ Cir-No (Circuit Number)

Specify the circuit number for the communications device.

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



The following table gives the valid circuit numbers.

Communications Device	Valid Circuit Numbers
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.

> Note
> When executing more than one function simultaneously, do not use the same channel number within 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
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 can be used for sending and receiving at the same time by using channels 1 to 10.

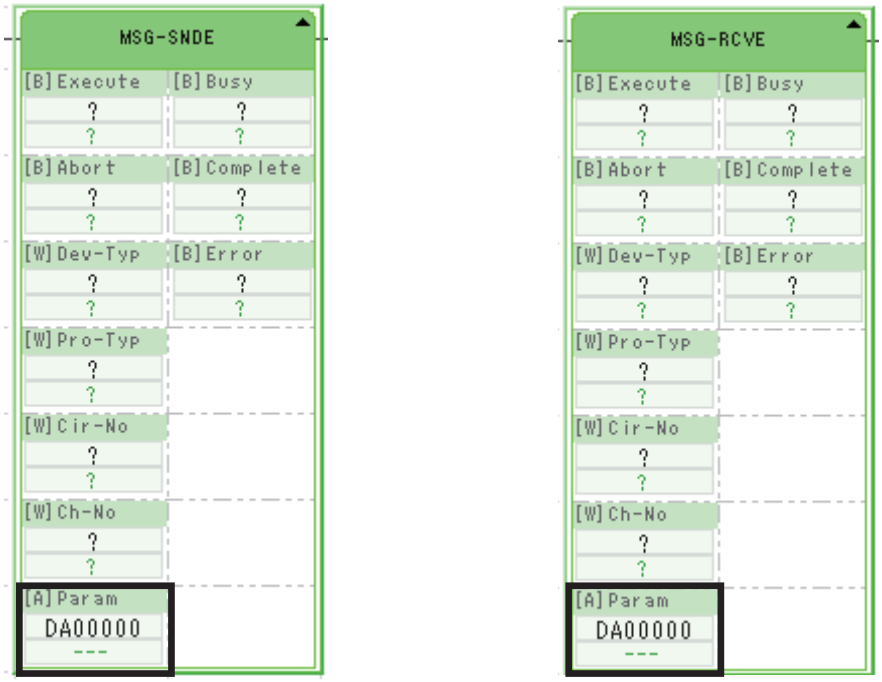
> Note
> There must be as many MSG-RCVE or MSG-SNDE functions as the number of connections used at the same time.

◆ Checking the Message Function Parameters

If message communications with a PLC, touch panel, or PC from another manufacturer do not start, the message function may not have been executed properly due to incorrect parameters in the message function.

Use the following procedure to check the parameters the message function.

Use the register list on the MPE720 to check the contents of the registers.



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

Register	Parameter List F ··· ···· ···· ··· 0
DW00000	PARAM00
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

■ Send Message Function (MSG-SNDE)

The parameters for the Send Message function are checked according to the following two communications protocols.

• Parameter List When Pro-Type (Communications Protocol) Is MEMOBUS

Parameter No.	IN/OUT*	Item	Description and What to Check
10	IN	Connection number	Set the remote station to which to send the message. (Set the connection number that is set in the connection parameters.) Make sure that the setting is within the following setting range. 218IFD: 1 to 20
11	IN	Option	Specify the options. The meaning of this parameter depends on the protocol.
12	IN	Function code	Set the function code to send.
14	IN	Remote data address, lower word	Set the register address to read or write at the remote station. (Specify the word address to access registers, and specify the bit address to access relays or coils.)
15	IN	Remote data address, upper word	
16	IN	Remote station register type	Set the register type to read or write at the remote station.
17	IN	Data size	Set the size of the data to read or write. (Specify the size in words for registers, and in bits for relays or coils.)
18	IN	Remote CPU module number	Set the CPU number at the remote station.
20	IN	Local data address, lower word	Set the data address to store read data or write data in the local station. (Specify the word address to access registers, and specify the bit address to access relays or coils.)
21	IN	Local data address, upper word	
22	IN	Local station register type	Set the register type to store read data or write data in the local station.

* IN: Input item

Note: Refer to the following manual for what to check in parameters 10 to 22 according to the protocol type that is being used.

📖 *MP3000 Series Communications User's Manual* (Manual No.: SIEP C880725 12)

• Parameter List When Pro-Type (Communications Protocol) Is No-protocol 1 or No-protocol 2

Parameter No.	IN/OUT*	Item	Description and What to Check
10	IN	Connection number	Set the remote station to which to send the message. (Set the connection number that is set in the connection parameters.) Make sure that the setting is within the following setting range. 218IFD: 1 to 20
11 to 16	–	Not used.	–
17	IN	Data size	Set the size of the data to write. (Specify the size in words for No-protocol 1, and in bits for No-protocol 2.)
18	–	Not used.	–
20	IN	Local data address, lower word	Set the data address to store write data in the local station.
21	IN	Local data address, upper word	
22	IN	Local station register type	Set the register type of the write data to store in the local station.

* IN: Input item

■ Receive Message Function (MSG-RCVE)

The parameters for the Send Message function are checked according to the following two communications protocols.

• Parameter List When Pro-Type (Communications Protocol) Is MEMOBUS

Parameter No.	IN/OUT*	Item	Description and What to Check
10	IN	Connection number	Set the remote station from which to send the message. (Set the connection number that is set in the connection parameters.) Make sure that the setting is within the following setting range. 218IFD: 1 to 20
11	OUT	Option	Gives the optional settings. The meaning of this option depends on the protocol being used.
12	OUT	Function code	Contains the function code that was requested from the sending side.
14	OUT	Data address, lower word	Contains the start address of the data requested from the sending side. (Contains the word address for register access, or contains the bit address for relay or coil access.)
15	OUT	Data address, upper word	
16	OUT	Register type	Contains the register type that was requested by the sending side.
17	OUT	Data size	Contains the size of read or write data that was requested by the sending side. (Contains the size in words for registers, and in bits for relays or coils.)
18	OUT	Remote CPU module number	Contains the remote CPU number.
20	IN	Coil offset, lower word	Set the offset to the word address of the coil.
21	IN	Coil offset, upper word	
22	IN	Input relay offset, lower word	Set the offset to the word address for the input relay.
23	IN	Input relay offset, upper word	
24	IN	Input register offset, lower word	Set the offset to the word address for the input register.
25	IN	Input register offset, upper word	
26	IN	Holding register offset, lower word	Set the offset to the word address for the hold register.
27	IN	Holding register offset, upper word	
28	IN	Data relay offset, lower word	Set the offset to the word address for the data relay.
29	IN	Data relay offset, upper word	
30	IN	Data register offset, lower word	Set the offset to the word address for the data register.
31	IN	Data register offset, upper word	
32	IN	Output coil offset, lower word	Set the offset to the word address of the output coil.
33	IN	Output coil offset, upper word	

Continued on next page.

Continued from previous page.

Parameter No.	IN/OUT*	Item	Description and What to Check
34	IN	Output register offset, lower word	Set the offset to the word address for the output register.
35	IN	Output register offset, upper word	
36	IN	M writing range lower limit, lower word	Set the word address of the lower limit for the writing range for hold registers and coils.
37	IN	M writing range lower limit, upper word	
38	IN	M writing range upper limit, lower word	Set the word address of the upper limit for the writing range for hold registers and coils.
39	IN	M writing range upper limit, upper word	
40	IN	G writing range lower limit, lower word	Set the word address of the lower limit for the writing range for data registers and data relays.
41	IN	G writing range lower limit, upper word	
42	IN	G writing range upper limit, lower word	Set the word address of the upper limit for the writing range for data registers and data relays.
43	IN	G writing range upper limit, upper word	
44	IN	O writing range lower limit, lower word	Set the word address of the lower limit for the writing range for output registers and output coils.
45	IN	O writing range lower limit, upper word	
46	IN	O writing range upper limit, lower word	Set the word address of the upper limit for the writing range for output registers and output coils.
47	IN	O writing range upper limit, upper word	

* IN: Input item, OUT: Output item

Note: Refer to the following manual for what to check in parameters 04 to 11 according to the protocol type that is being used.

📖 *MP3000 Series Communications User's Manual* (Manual No.: SIEP C880725 12)

• Parameter List When Pro-Type (Communications Protocol) Is No-protocol 1 or No-protocol 2

Parameter No.	IN/OUT*	Item	Description and What to Check
10	IN	Connection number	Set the remote station from which to send the message. (Set the connection number that is set in the connection parameters.) Make sure that the setting is within the following setting range. 218IFD: 1 to 20
11 to 16	–	Not used.	–
17	OUT	Data size	Contains the size of read or write data that was requested by the sending side. (Contains the size in words for registers, and in bits for relays or coils.)
18 to 35	–	Not used.	–
36	IN	M writing range lower limit, lower word	Set the offset to the word address for the hold register.
37	IN	M writing range lower limit, upper word	
38	IN	M writing range upper limit, lower word	Set the word address of the upper limit for the writing range for hold registers.
39	IN	M writing range upper limit, upper word	
40 to 47	–	Not used.	–

* IN: Input item, OUT: Output item

Communications Stopped during Message Communications

There are two general causes for message communications to be cut off.

No Error in Message Function

The following table shows the possible causes for message communications to stop during normal communications when no error is indicated in the error status in the Module's detailed definition or in the processing result of the message function.

Communications Function Module	Condition	Cause	Correction
218IFD	The communications mode of the remote station that is connected to the Ethernet Module is set to a fixed speed in 10Base-T/100Base-TX half-duplex communications,*1 and there is high traffic on the network.	There is high traffic on the network with frequent data collisions, and the data that was sent from the local or remote station was lost.	1. Set the communications mode of the remote station to auto-negotiation and perform full-duplex communications. 2. Divide the network into segments using a switching hub to reduce the traffic on the network. 3. Adjust the sent timing at the master devices so that multiple devices do not start communications at the same time. This does not apply when the no-protocol communications is specified as the protocol type.
	The communication mode of the remote station connected to the Ethernet Module is set to the fixed speed in 10Base-T/100Base-TX full-duplex.*2	Communication between the Ethernet Module and the remote station cannot be performed properly because the communication modes of the two stations are different, and the data that was sent from the local or remote station was lost.	1. Set the communications mode of the remote station to auto-negotiation and perform full-duplex communications. 2. Set the communications mode of the remote station to a fixed speed and perform 10Base-T/100Base-TX half-duplex communications.

*1. When connected to a hub, the communications mode of the hub is set to a fixed speed in 10Base-T/100Base-TX half-duplex communications.
*2. When connected to a hub, the communications mode of the hub is set to a fixed speed in 10Base-T/100Base-TX half-duplex communications.

Error in Message Function

The following table shows the possible causes for message communications to stop during normal communications when an error is indicated in the error status of the Module's detailed definition or in the processing result of the message function. These are in addition to the causes listed in when no error occurs.

Communications Function Module	Condition	Cause	Correction
218IFD	Communications are performed simultaneously with multiple remote stations.	The connection parameters or message functions were not prepared for the number of remote stations to communicate with.	Prepare the connection parameters and message functions for the number of remote stations to communicate with. (Communications with only one station (one connection) at one time is possible with one set of connection parameters and one message function.)
	Multiple message functions are being executed simultaneously.	More than one message function was executed simultaneously for the same Cir- No (circuit number) and Ch-No (communications buffer channel number) or PARAM02 (connection number).	Correct the ladder program so that no more than one message function is executed simultaneously. If the communications stop due to this cause, the error can be checked in the processing result of the message function. Refer to the following section for details on the processing results of message functions. ☞ ◆ *Checking the Processing Results and Status (page 5-20)*
	There is a connection for which automatic reception is enabled.	A message function and automatic reception were executed at the same time for the same connection or communications buffer channel.	Execute only automatic reception or only the message function according to the application. Automatic reception can be enabled for connection numbers 1 to 10. It is disabled by default.

Other Problems during Message Communications

If the problem cannot be resolved with the corrections that are given in *Checking the Switch Settings (page 5-13)* to *Communications Stopped during Message Communications (page 5-36)*, perform troubleshooting with the following table.

Communications Function Module	Error	Cause	Correction
218IFD	In a configuration where the remote station is the master station and the local station is the slave station, the remote station cannot write to certain register addresses in the Machine Controller.	There are errors in the following parameter settings of the MSG-RCVE function. • PARAM36 and PARAM37 (M writing range lower limit) • PARAM38 and PARAM39 (M writing range upper limit) • PARAM40 and PARAM41 (G writing range lower limit) • PARAM42 and PARAM43 (G writing range upper limit) • PARAM44 and PARAM45 (O writing range lower limit) • PARAM46 and PARAM47 (O writing range upper limit)	Correct the parameter settings of the MSG-RCVE function where the errors exist. Refer to the following manual for details on the parameters of the MSG-RCVE function. 📖 *MP3000 Series Communications User's Manual* (Manual No.: SIEP C880725 12)
	In a configuration where the local station is the master station and the remote station is the slave station, the Machine Controller cannot read or write from/to certain register addresses in the remote station.	An attempt has been made to access special registers or memory-protected registers in the remote station.	Check the specifications of the device that is used as the remote station.
	The addresses of the registers to read/write from the local station to the remote station and those of the registers to read/write from the remote station to the local station are inconsistent.	There are errors in the following parameter settings of the MSG-RCVE function. • PARAM20 and PARAM21 (coil offset) • PARAM22 and PARAM23 (input relay offset) • PARAM24 and PARAM25 (input register offset) • PARAM26 and PARAM27 (hold register offset) • PARAM28 and PARAM29 (data relay offset) • PARAM30 and PARAM31 (data register offset) • PARAM32 and PARAM33 (output coil offset) • PARAM34 and PARAM35 (output register offset)	Correct the parameter settings of the MSG-RCVE function where the errors exist. Refer to the following manual for details on the parameters of the MSG-RCVE function. 📖 *MP3000 Series Communications User's Manual* (Manual No.: SIEP C880725 12)

Continued on next page.

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Communications Function Module	Error	Cause	Correction
218IFD	I/O message communications do not start.	There are no slave settings (message receive settings and instructions) at the remote station.	Make the necessary slave settings (message receive settings and instructions) at the remote station. (I/O message communications can be used to execute the Send Message function without a ladder program. Two connections are used to read and write registers. Two connections are used to read and write registers. For this reason, receive settings (message receive settings and instructions) for two connections are required at the remote station.)

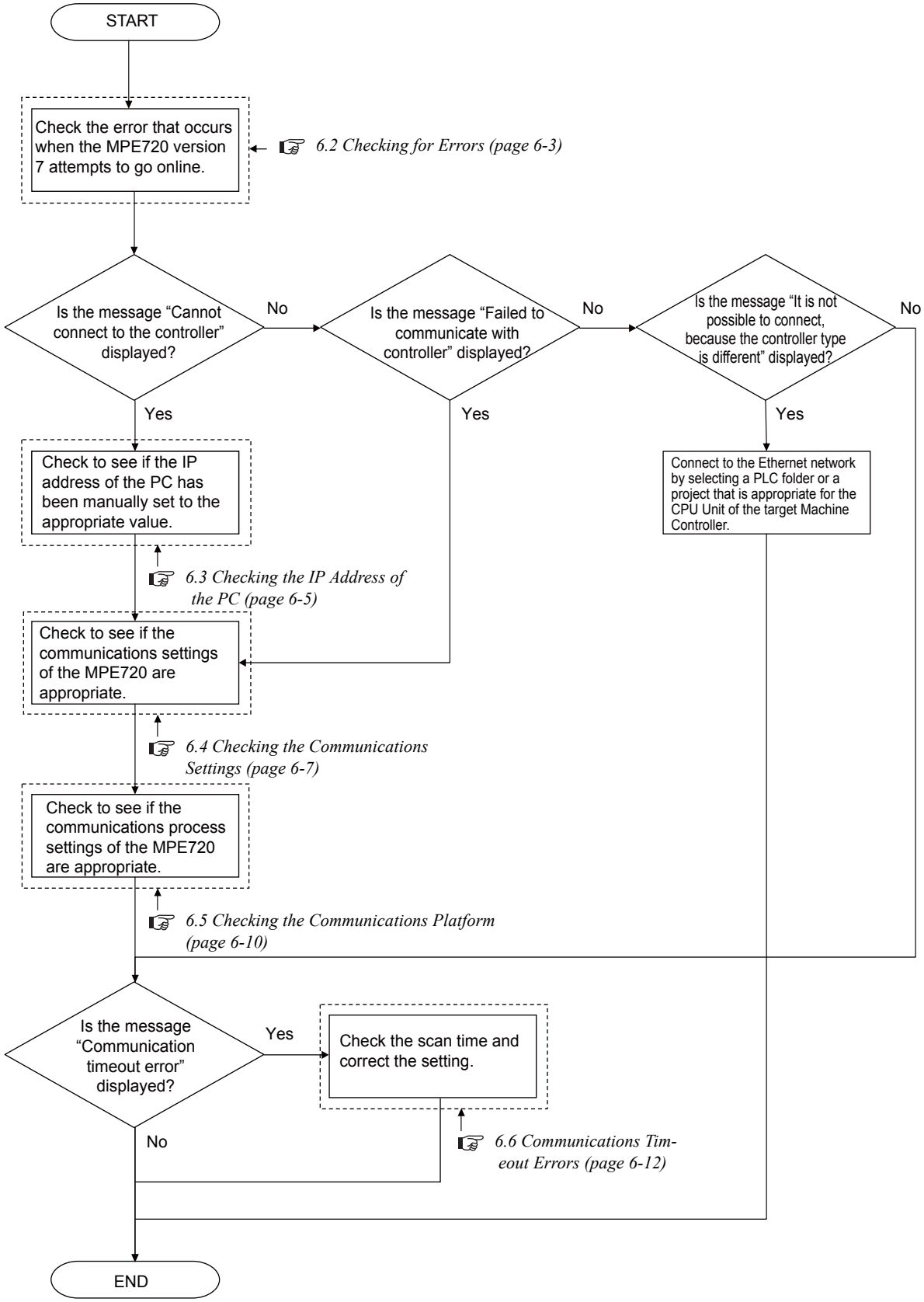
Troubleshooting Connections with the MPE720

6

This chapter describes how to troubleshoot the problem when you cannot go online with the Machine Controller from the MPE720.

6.1 Troubleshooting Flowchart When the MPE720 Cannot Go Online with the Machine Controller

Use the following flowchart to troubleshoot the problem when you cannot go online with the Machine Controller from the MPE720.

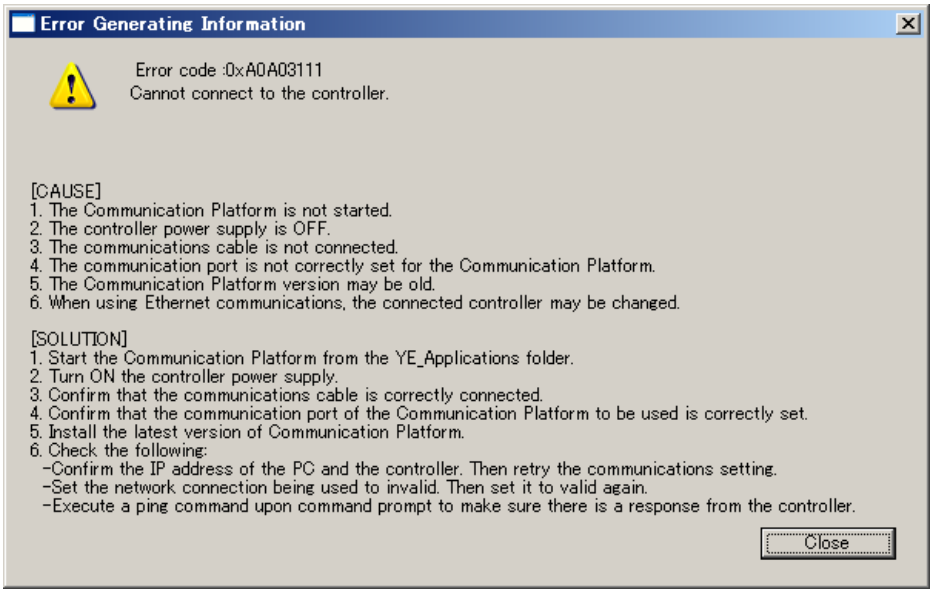


6.2 Checking for Errors

When the MPE720 cannot go online with the Machine Controller, the Error Generating Information Dialog Box will be displayed. This information can be used to identify the error.

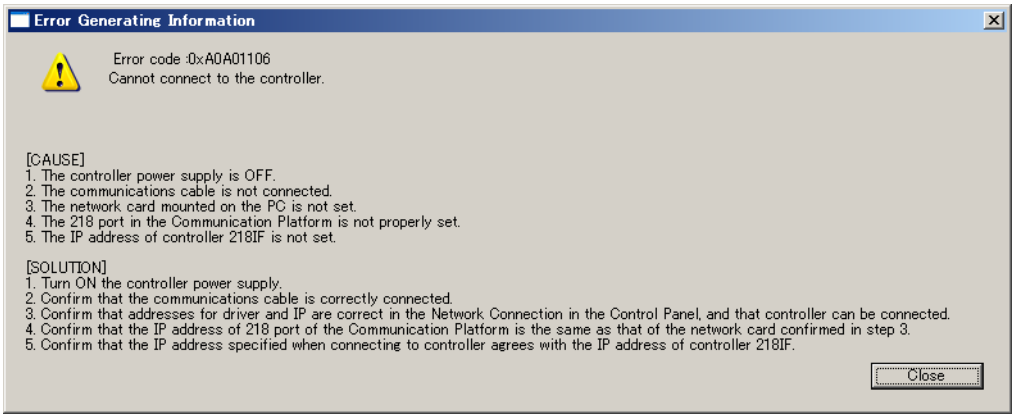
Connection Errors

The following Error Generating Information Dialog Box will be displayed if the IP address of the PC is automatically assigned or if the IP address of the PC is not set correctly due to the communications settings or communications process.



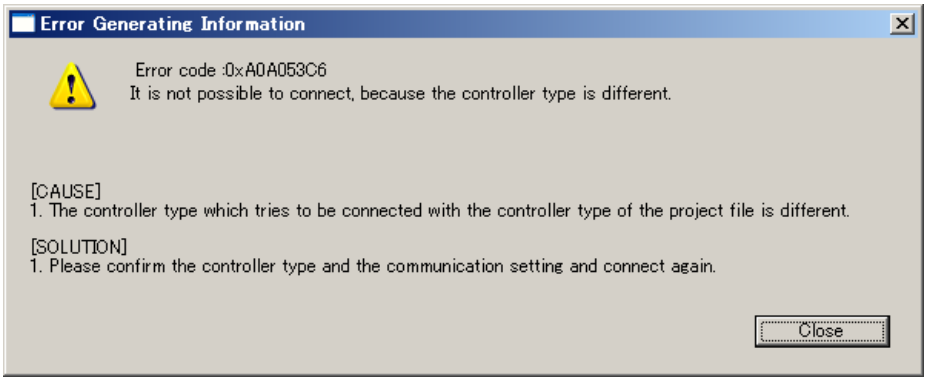
Communications Errors

The following Error Generating Information Dialog Box will be displayed if the IP address of the Machine Controller is not set correctly in the communications settings.



Model Errors

The following Error Generating Information Dialog Box will be displayed if you attempt to connect through Ethernet and the model of the CPU Unit in the current project is different from the model of the CPU Unit in the Machine Controller. Select a project that is appropriate for the CPU Unit of the Machine Controller to connect through Ethernet.



6.3 Checking the IP Address of the PC

The procedure for checking and correcting the network settings of the PC (e.g., the IP address) is given below.

1. Display the Local Area Connection Properties Dialog Box on the PC.

Example

Windows XP

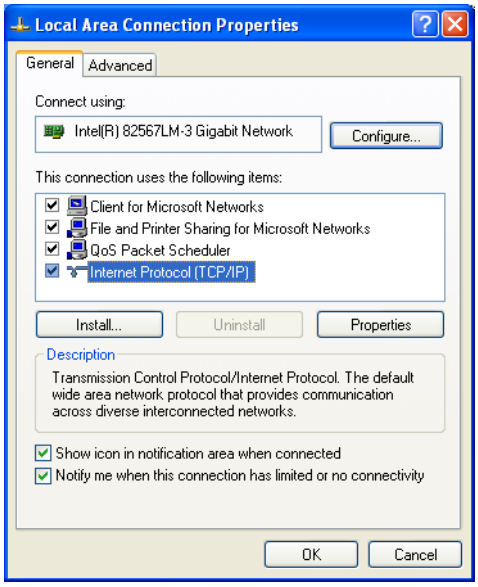
On the PC, select ***Control Panel*** – ***Network Connection*** – ***Local Area Connection*** from the Windows Start Menu and then click the **Properties** Button.

Example

Windows 7

On the PC, select ***Control Panel*** – ***Network and Internet*** - ***Network and Sharing Center*** – ***Local Area Connection*** from the Windows Start Menu and then click the **Properties** Button.

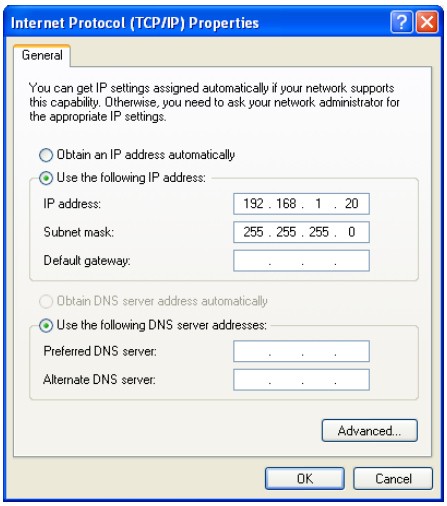
2. Select the ***Internet Protocol (TCP/IP)*** Check Box from the list and click the **Properties** Button.



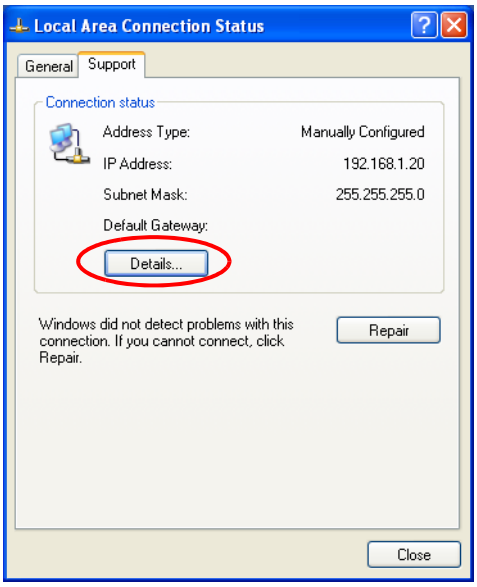
3. In the Internet Protocol (TCP/IP) Properties Dialog Box, select the **Use the following IP address** Option.

Set the **IP address** Box and the **Subnet mask** Box as required. If you change any settings, continue to step *4*.

If you have not changed any settings, click the **OK** Button to complete checking of the IP address of the PC.



4. Click the **Details** Button on the Support Tab Page in the Local Area Connection Status Dialog Box.



5. Check the actual IP address and subnet mask.

Example

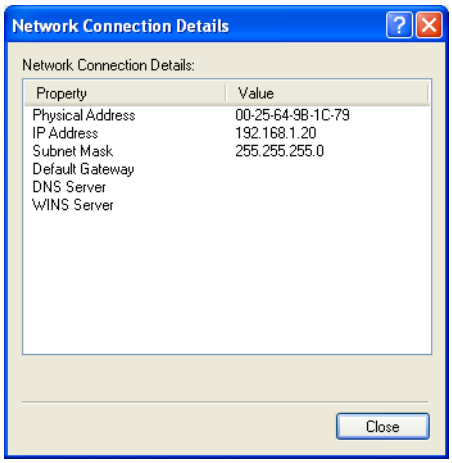
Windows XP

On the PC, select ***Control Panel*** – ***Network Connection*** – ***Local Area Connection Status*** from the Windows Start Menu and then click the **Support** Tab.

Example

Windows 7

On the PC, select ***Control Panel*** – ***Network and Internet*** – ***Network Connection*** - ***Network and Sharing Center*** – ***Local Area Connection Status*** from the Windows Start Menu and then click the **Details** Button.



If the values are the same as those that were set in step 3, click the **Close** Button to close the dialog box.

Information

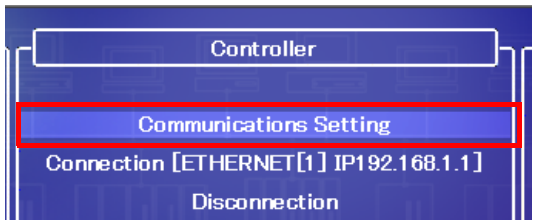
If the displayed values differ from the values that were set in step *3*, restart the PC to enable the settings that were made manually.

6.4 Checking the Communications Settings

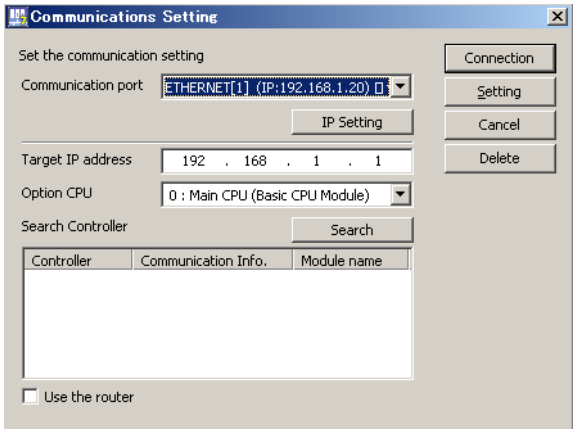
The procedure for checking and correcting the communications settings of MPE720 version 7 is given below.

1. Display the dialog box to set the IP address on the PC.
   Refer to the following section for details on checking the IP address.
   ☞ *6.3 Checking the IP Address of the PC (page 6-5)*

2. After MPE720 version 7 starts, select ***Communications Setting***.

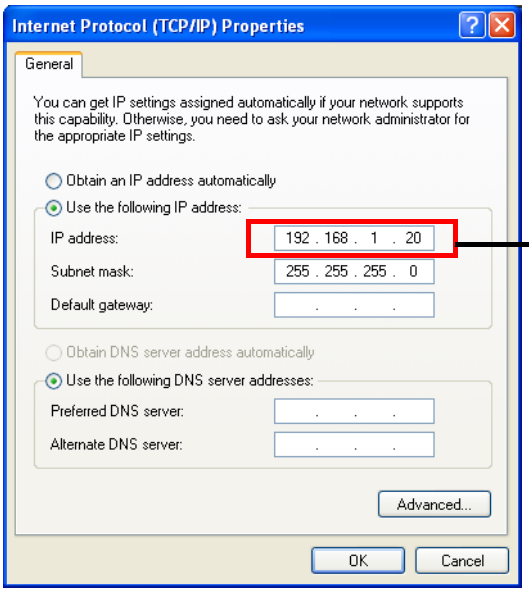


The Communications Setting Dialog Box will be displayed.

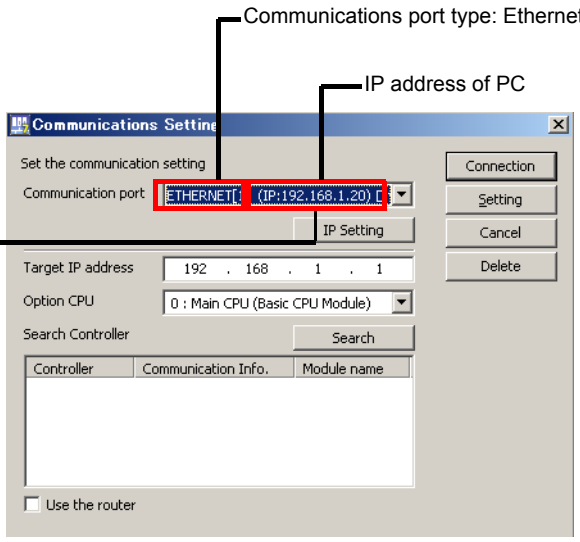


Communications Setting Dialog Box of MPE720 Version 7

3. Make sure that the IP address of the PC and the appropriate communications port type are selected in the **Communication port** Box in the Communications Setting Dialog Box of MPE720 version 7.
   If the communications port type is not appropriate, select the appropriate communications port from the list. If the appropriate communications port or IP address is not displayed, refer to the following section.
   ☞ *6.5 Checking the Communications Platform (page 6-10)*

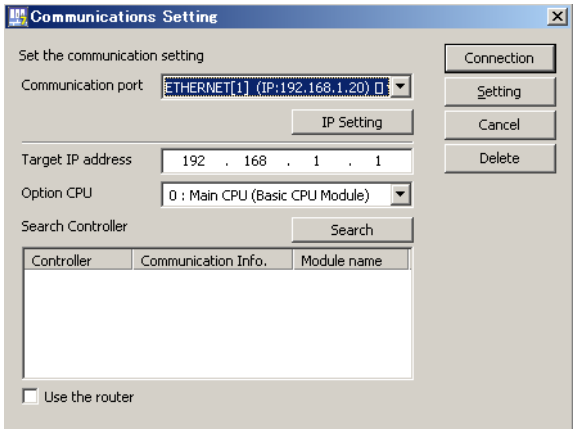


Dialog Box to Set the IP Address on the PC



Communications Setting Dialog Box of MPE720 Version 7

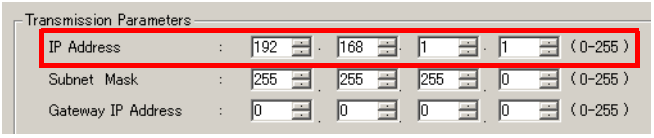
4. Make sure that the IP address of the Machine Controller is properly set in the **Target IP address** Box in the Communications Setting Dialog Box of MPE720 version 7.



Default Network Settings

Information

1. When the E-INIT or INIT Switch on the CPU Unit/CPU Module Is ON, the network settings of the Machine Controller will be as given below.
   In this case, the definition data that is saved in the flash memory of the Machine Controller will be ignored.
   IP address: 192.168.1.1
   Subnet mask: 255.255.255.0
   Default gateway: 0.0.0.0
2. When the E-INIT and INIT Switch on the CPU Unit/CPU Module Are ON, the network settings of the Machine Controller will be as given below. The IP address of the Machine Controller will be the address that was set in the 218IFD Detail Definition Dialog Box from the MPE720 and saved in flash memory.



Note

1. If the settings that were found in step *4* are not appropriate, correct the settings in the Detail Definition Dialog Box of each Module using the MPE720 and save the data to flash memory.
2. To reset the IP address from the Module's Detail Definition Dialog Box, turn OFF the E-INIT and INIT switches on the CPU Unit/CPU Module and turn the power supply OFF and ON again.
3. If a connection with the MPE720 cannot be established in this state, temporarily turn ON the E-INIT or INIT switch on the front of the CPU Unit/CPU Module to establish a connection from the MPE720 with the default network settings and check the settings.

This concludes the procedure to check the communications settings.

6.5 Checking the Communications Platform

The procedure for checking and correcting the communications platform settings on the MPE720 is given below.

1. Display the dialog box to set the IP address on the PC.
   Refer to the following section for details on checking the IP address.
   ☞ *6.3 Checking the IP Address of the PC (page 6-5)*

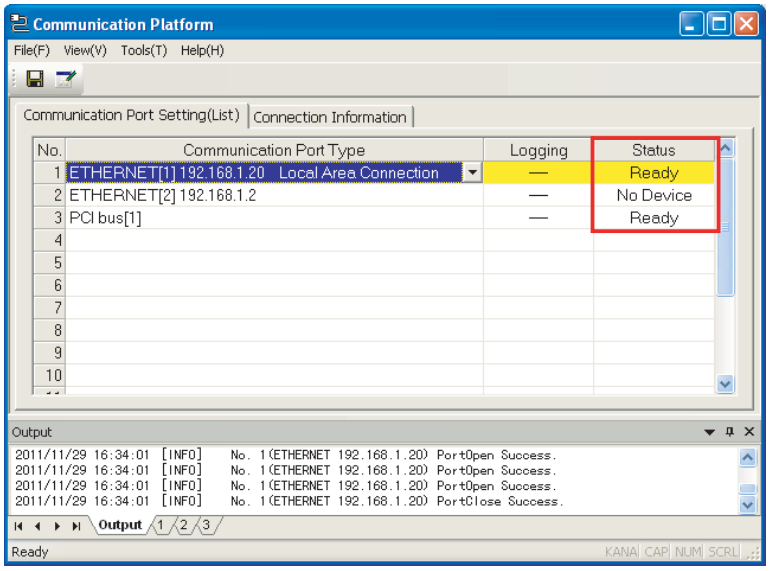
2. Start the communications platform.
   Note: This operation can be skipped if the communications platform has already been started.

   Example
   Windows XP
   On the PC, select ***Programs*** – ***YE_Applications*** – ***Communication Manager*** from the Windows Start Menu.

   Example
   Windows 7
   On the PC, select ***All Programs*** – ***YE_Applications*** – ***Communication Manager*** from the Windows Start Menu.

3. Double-click the communications platform indicator in the task bar of the PC to display the Communication Platform Window.

4. Make sure that the **Status** Column for MPE720 version 7 in the Communication Platform Window shows **Ready**.

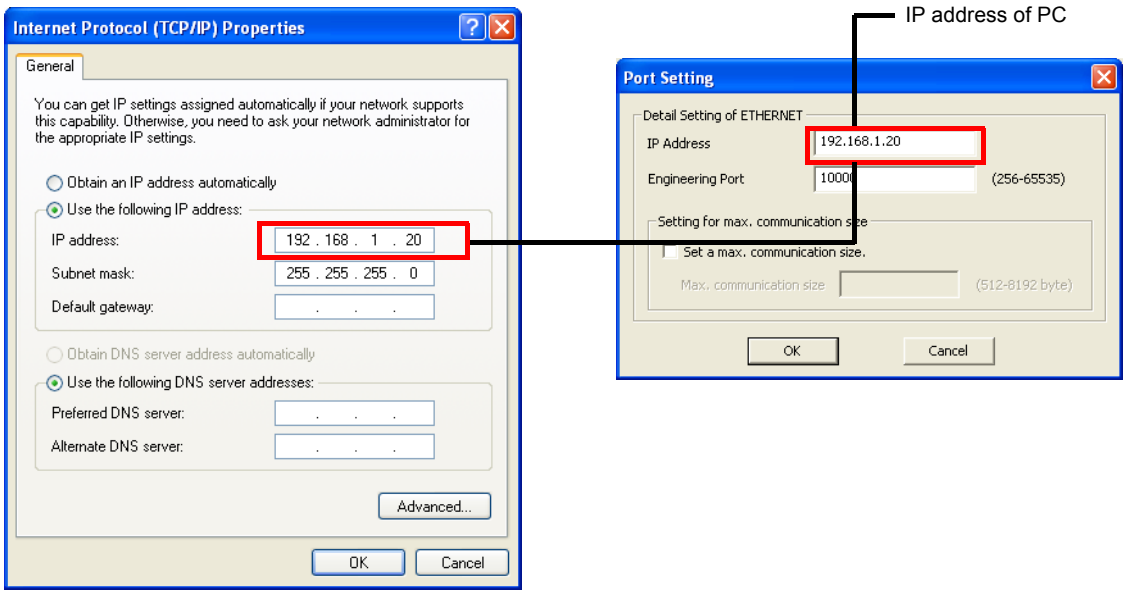


Note

When the **Status** Column Does Not Show **Ready**
The LAN driver of the PC may be faulty.
Perform troubleshooting in Windows Device Manager Window.

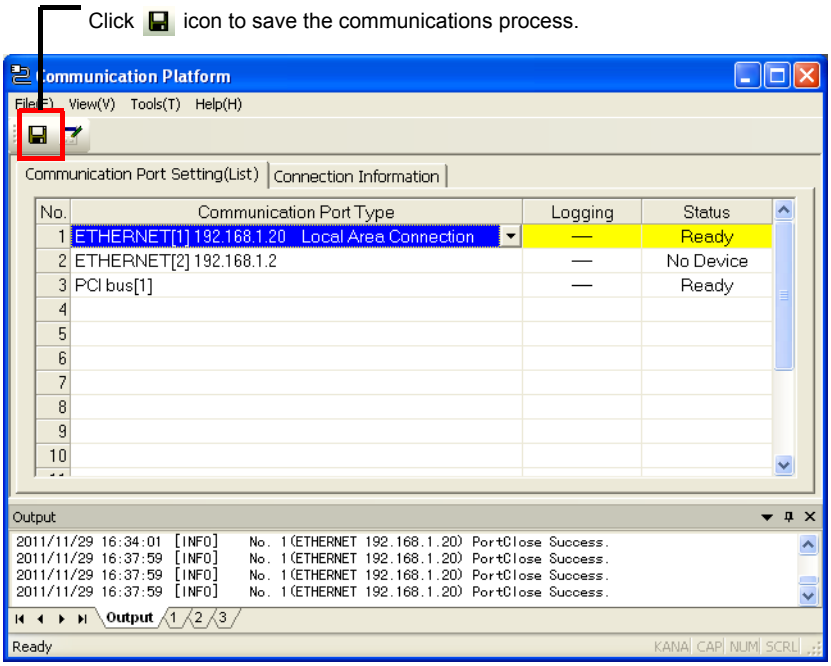
5. Double-click the number in the **No.** Column displayed in the Communication Port Setting (List) Tab Page to display the Port Setting Dialog Box.

6. Make sure that the IP address of the PC is displayed in the **IP Address** Box in the Port Setting Dialog Box.



- If the ***IP Address*** Box shows any address other than the IP address of the PC, enter the IP address of the PC in the box and then click the **OK** Button.

7. Save the communications platform. The settings are enabled immediately.

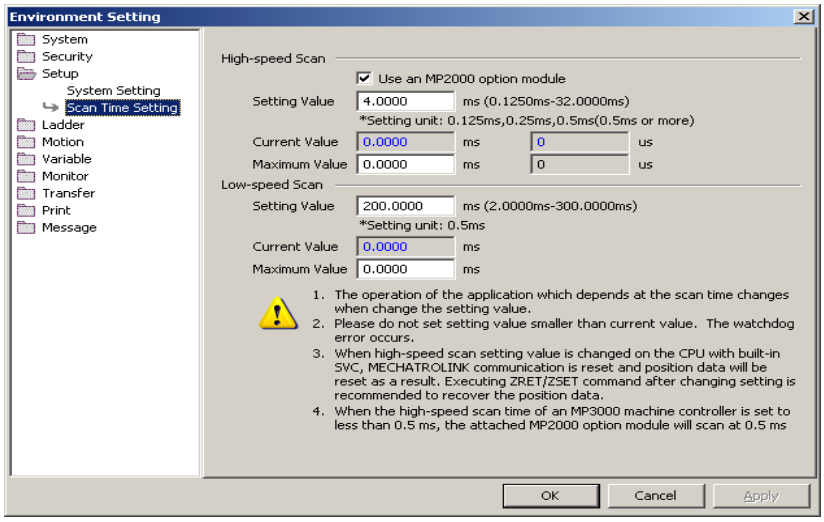


6.6 Communications Timeout Errors

Communications with the MPE720 are processed with a lower priority than the high-speed scan. Because of this, communications with MPE720 may time out if the high-speed scan time is too short.

Set a value for the high-speed scan that is sufficiently long compared with the current and maximum values during operation of the application.

The set value, current value, and maximum value of the high-speed scan can be checked and set in the Environment Setting Dialog Box of MPE720 version 7.



Environment Setting Dialog Box of MPE720 Version 7

Troubleshooting System Errors

7

This chapter describes how to troubleshoot system errors.

7.1 Overall Configuration of the System Registers

The indicators on the CPU Unit/CPU Module show the operating status and error status of the MP3000-series Machine Controller. You can use the system (S) registers to obtain more detailed information on errors. The contents of the system registers will allow you to isolate errors and implement corrections.

The following table shows the overall configuration of the system registers. Refer to the sections that are given in the righthand column for details.

Register Addresses	Contents	Reference
SW00000 to SW00029	System Service Registers	–
SW00030 to SW00049	System Status	*CPU System Status (page 7-7)*
SW00050 to SW00079	System Error Status	*System Error Status (page 7-9)*
SW00080 to SW00089	User Operation Error Status	*User Operation Error Status in Ladder Programs (page 7-11)*
SW00090 to SW00103	System Service Execution Status	*Detailed User Operation Error Status (page 7-14)*
SW00104 to SW00109	Reserved for system.	–
SW00110 to SW00189	Detailed User Operation Error Status	*Detailed User Operation Error Status (page 7-14)*
SW00190 to SW00199	Reserved for system.	–
SW00200 to SW00503	System I/O Error Status	*System I/O Error Status (page 7-15)*
SW00504 and SW00505	Reserved for system.	–
SW00506 and SW00507	Security Status	*Security Status (page 7-15)*
SW00508 to SW00649	Reserved for system.	–
SW00650 to SW00667	USB-related System Status	*USB-related System Status (page 7-16)*
SW00668 to SW00693	Reserved for system.	–
SW00694 to SW00697	Message Relaying Status	*Message Relaying Status (page 7-16)*
SW00698 to SW00789	Interrupt Status	*Interrupt Status (page 7-34)*
SW00790 to SW00799	Reserved for system.	–
SW00800 to SW01095	Module Information	*Module Information (page 7-36)*
SW01096 to SW01410	Reserved for system.	–
SW01411 to SW01442	MPU-01 Status	*MPU-01 Module Status (page 7-40)*
SW01443 to SW03199	Reserved for system.	–

Continued on next page.

Continued from previous page.

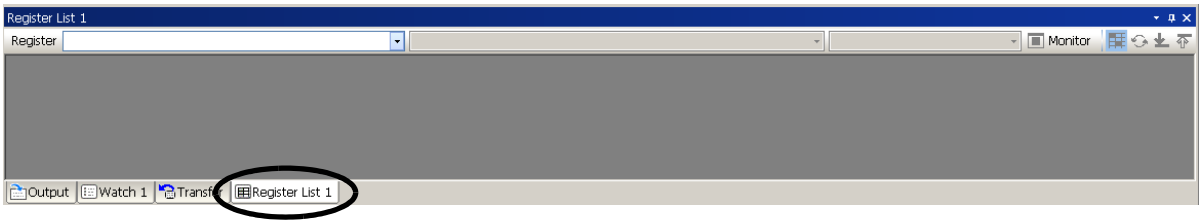
Register Addresses	Contents	Reference
SW03200 to SW05119	Motion Program Information	*Motion Program Execution Information (page 7-48)*
SW05120 to SW05247	Used by the system (system memory read).	–
SW05248 to SW08191	Reserved for system.	–
SW08192 to SW09215	Extended Motion Program Information	*Motion Program Execution Information (page 7-48)*
SW09216 to SW09559	Reserved for system.	–
SW09560 to SW13699	Extended System I/O Error Status	*Extended System Status (page 7-69)*
SW13700 to SW15795	Extended Module Information	*Extended Unit and Module Information (page 7-64)*
SW15796 to SW15799	Reserved for system.	–
SW15800	Extended System Status	*Extended System Status (page 7-69)*
SW15801 to SW15997	Reserved for system.	–
SW15998 to SW16011	Extended System Service Execution Status	*Extended System Service Execution Status (page 7-70)*
SW16012 to SW16199	Reserved for system.	–
SW16200 to SW17999	Alarm History Information	*Alarm History Information (page 7-70)*
SW18000 to SW19999	Reserved for system.	–
SW20000 to SW22063	Product Information	*Product Information (page 7-72)*
SW22064 to SW22999	Reserved for system.	–
SW23000 to SW23159	Unit and Rack Information	*Unit and Rack Information (page 7-73)*
SW23160 to SW23999	Reserved for system.	–
SW24000 to SW24321	Data Logging Execution Status	*Data Logging Execution Status (page 7-75)*
SW24322 to SW24999	Reserved for system.	–
SW25000 to SW25671	Automatic Reception Status during Ethernet Communications	*Automatic Reception Status (Ethernet Communications) (page 7-76)*
SW25672 to SW65535	Reserved for system.	–

7.2 Viewing the Contents of the System Registers

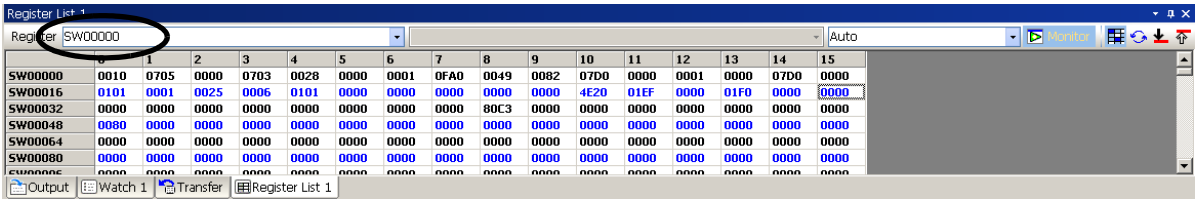
To view the contents of the system registers, start the MPE720 Engineering Tool and display a register list.

Use the following procedure to display the register list.

1. Display the Register List 1 Pane in MPE720 version 7.0.
   By default, there will be a **Register List 1** Tab at the bottom of the Pane.



2. Enter the register address of the first system register to display in the **Register** Box in the form SW□□□□□. The contents of the system registers starting with the specified first register will be displayed.

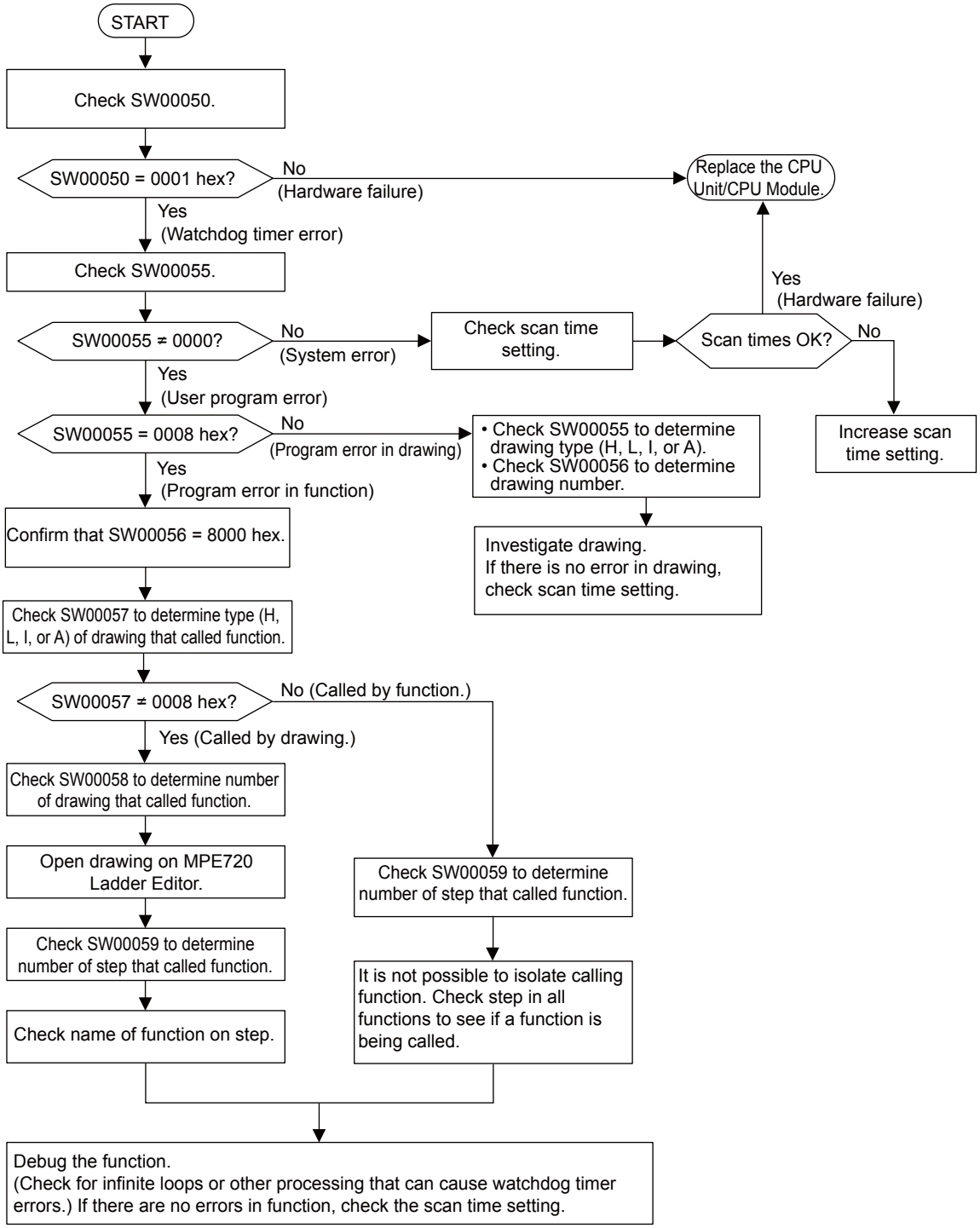


	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SW00000	0010	0705	0000	0703	0028	0000	0001	0FA0	0049	0082	07D0	0000	0001	0000	07D0	0000
SW00016	0101	0001	0025	0006	0101	0000	0000	0000	0000	0000	4E20	01EF	0000	01F0	0000	0000
SW00032	0000	0000	0000	0000	0000	0000	0000	0000	80C3	0000	0000	0000	0000	0000	0000	0000
SW00048	0080	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
SW00064	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
SW00080	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

Note: By default, the data type will be decimal. Right-click in the list and select ***Hexadecimal*** from the pop-up menu to display hexadecimal values (as shown above).

7.3 Troubleshooting for the ERR Indicator

If the ERR indicator on the Machine Controller is lit, a serious error (hardware failure or user program error) may have occurred. Stop the Machine Controller (turn ON pin 6 on the DIP switch) and use the following flowchart to investigate the problem.

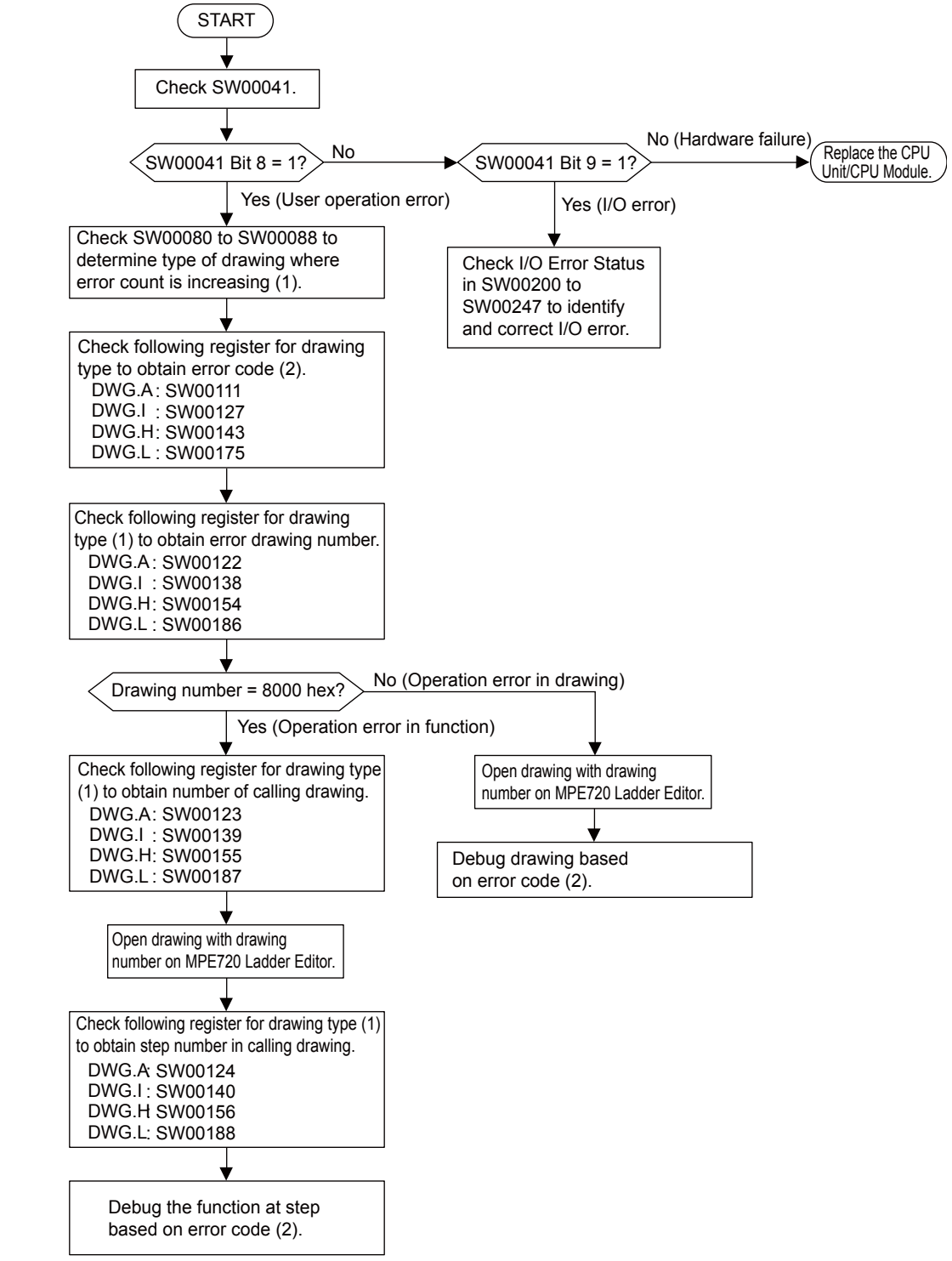


Note: Refer to the following section for the contents of SW00050 to SW00059.

☞ *System Error Status (page 7-9)*

7.4 Troubleshooting for the ALM Indicator

If the ALM indicator on the CPU Unit/CPU Module is lit, a serious error (hardware failure, user operation error, or I/O error) may have occurred. (The RDY and RUN indicators may also be lit.) Stop the CPU Unit/CPU Module (turn ON pin 6 on the DIP switch) and use the following flowchart to investigate the problem.



Note: 1. Refer to the following section for the contents of SW00041.
☞ *System Error Status (page 7-9)*

2. Refer to the following section for the contents of SW00080 to SW00088 and SW00110 to SW00188.
☞ *User Operation Error Status in Ladder Programs (page 7-11)*

3. Refer to the following section for the contents of SW00200 to SW00247.
☞ *System I/O Error Status (page 7-15)*

7.5 System Register Configuration and Error Status

This section describes the configuration of the system registers and errors.

CPU System Status

The system operating status and errors are stored in registers SW00040 to SW00048. You can check the system status to determine whether the cause of the error is hardware or software related.

Name	Register Addresses		Contents	
Reserved for system.	SW00030 to SW00039		–	
CPU Status	SW00040	SB000400	READY	0: Error, 1: Ready
		SB000401	RUN	0: Stopped, 1: Running
		SB000402	ALARM	0: Normal, 1: Alarm
		SB000403	ERROR	0: Normal, 1: Error
		SB000404	Reserved for system.	–
		SB000405	M-ALM	0: Normal, 1: Axis alarm
		SB000406	FLASH	0: INIT Start, 1: Flash Operation
		SB000407	WEN	0: Writing disabled 1: Writing enabled
		SB000408 to SB000409	Reserved for system.	–
		SB00040A	Flash Save Request from MPE720	0: Not saving data to flash memory, 1: Saving data to flash memory
		SB00040B	Status of Synchronization with Main CPU Unit/CPU Module (Sub CPU Units only)	0: High-speed scans synchronized, 1: High-speed scans not synchronized
		SB00040C	CPU Mode	0: Main CPU, 1: Sub CPU
		SB00040D	Operation Stop Request from Main CPU Unit/CPU Module (Sub CPU Units only)	0: RUN selected, 1: STOP selected
		SB00040E	Operation Stop Request from MPE720	0: RUN selected, 1: STOP selected
		SB00040F	Run Switch Status at Power ON	0: STOP, 1: RUN

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Name	Register Addresses		Contents	
CPU Error Status	SW00041	SB000410	Serious Failure	0: Normal, 1: Serious failure
		SB000411 and SB000412	Reserved for system.	–
		SB000413	Exception Error	0: Normal, 1: Exception error
		SB000414 to SB000417	Reserved for system.	–
		SB000418	User Operation Error	0: Normal, 1: User operation error
		SB000419	I/O Error	0: Normal, 1: I/O error
		SB00041A	MPU-01 Error	0: Normal, 1: MPU-01 error
		SB00041B	Sub CPU Error (Main CPU Unit/CPU Module only)	0: Normal, 1: Sub CPU Unit error
		SB00041C	MECHATROLINK-III Station Address Duplication	0: Normal 1: MECHATROLINK-III slave device station address duplication
		SB00041D	MECHATROLINK-III Restrictions Error	0: Normal, 1: Restrictions error in MECHATROLINK-III communications cycle
		SB00041E and SB00041F	Reserved for system.	–
H Scan Exceeded Counter	SW00044		H Scan Exceeded Count	
L Scan Exceeded Counter	SW00046		L Scan Exceeded Count	
Reserved for system.	SW00047	SB000470 to SB00047F	Reserved for system.	–
Hardware Configuration Status	SW00048	SB000480	D-RST	Mode switch 1 setting status: 0: OFF, 1: ON
		SB000481	LOAD	
		SB000482	CNFG	
		SB000483	INIT	
		SB000484	E-INIT	
		SB000485	STOP	
		SB000486	Reserved for system.	–
		SB000487	Battery Alarm	–
		SB000488 and SB000489	Reserved for system.	–
		SB00048A	MNT	Mode switch 2 setting status: 0: OFF, 1: ON
		SB00048B	TEST	
		SB00048C	E-PM1	
		SB00048D	E-PM0	
		SB00048E and SB00048F	Reserved for system.	–
Reserved for system.	SW00049		Reserved for system.	–

System Error Status

The data in these registers give the error status of the system.

Detailed error status is available in system registers SW00050 to SW00079.

Name	Register Addresses	Contents	
32-bit Error Code	SW00050	0001 hex	Watchdog timer error
		0051 hex	Module synchronization error
		0052 hex	Main CPU System Down Detected (Sub CPU only)
	SW00051	For system error analysis	
32-bit Error Address	SW00052 and SW00053	For system error analysis	
Program Error Task	SW00054	0000 hex	system
		0001 hex	DWG.A
		0002 hex	DWG.I
		0003 hex	DWG.H
		0005 hex	DWG.L
Program Type	SW00055	0000 hex	system
		0001 hex	DWG.A
		0002 hex	DWG.I
		0003 hex	DWG.H
		0005 hex	DWG.L
		0008 hex	Function
		000F hex	Motion program/sequence program
Program Error Drawing Number	SW00056	FFFF hex	Ladder program parent drawing
		8000 hex	Ladder program function
		□□00 hex	Ladder program child drawing (□□ hex: Child drawing No.)
		xxyy hex	Ladder program grandchild drawing (xx hex: Child drawing No., yy hex: Grandchild drawing No.)
		F□□□ hex	Motion program or sequence program (□□□ hex: Program No.)
Drawing Type of Calling Program	SW00057	Type of the calling drawing in which the error occurred	
		0001 hex	DWG.A
		0002 hex	DWG.I
		0003 hex	DWG.H
		0005 hex	DWG.L
		0008 hex	Function
		000F hex	Motion program/sequence program
Drawing No. of Calling Program	SW00058	Number of the calling drawing in which the error occurred	
		FFFF hex	Parent drawing
		8000 hex	Function
		□□00 hex	Child drawing (□□ hex: Child drawing No.)
		xxyy hex	Grandchild drawing (xx hex: Child drawing No., yy hex: Grandchild drawing No.)
Drawing Step No. in Calling Program	SW00059	Step Number in the Calling Drawing in Which the Error Occurred This is set to 0 if the error occurs in the parent drawing.	

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Name	Register Addresses	Contents	
Error Data	SW00060 and SW00061	Reserved for system.	
	SW00062 to SW00065	Name of task that caused the error	
	SW00066 and SW00067	Reserved for system.	
	SW00068	Year When Error Occurred	
	SW00069	Month When Error Occurred	
	SW00070	Day of Week When Error Occurred	
	SW00071	Day When Error Occurred	
	SW00072	Hour When Error Occurred	
	SW00073	Minutes When Error Occurred	
	SW00074	Seconds When Error Occurred	
	SW00075	Milliseconds When Error Occurred	
	SW00076	xyzz hex	Slot Where the Module Synchronization Error Was Detected (x: Rack number from 1 to 7, y: unit number from 1 to 4, zz: slot number from 01 to 09)
	SW00077 to SW00079	Reserved for system.	

User Operation Error Status in Ladder Programs

The user operation error status shows operation errors in the ladder programs.

Broadly speaking, the user operation error status includes two main types of status.

Operation errors can be confirmed in system registers SW00080 to SW00089 (user operation error status) and SW00110 to SW00189 (user operation error status details).

Drawing Type	Error Description	Register Addresses	Contents
DWG.A	Error Count	SW00080	• Error Count Gives the number of errors that have occurred. • Error Code Gives the details of the error. 0□□□ hex: Operation error ☞ ◆ *User Operation Error Code -1: Operation Errors (page 7-12)* x□□□ hex (x = 1, 2, 3): Index error ☞ ◆ *User Operation Error Code -2: Index Errors (page 7-13)*
	Error Code	SW00081	
DWG.I	Error Count	SW00082	
	Error Code	SW00083	
DWG.H	Error Count	SW00084	
	Error Code	SW00085	
Reserved for system.		SW00086 and SW00087	
DWG.L	Error Count	SW00088	
	Error Code	SW00089	

◆ User Operation Error Code -1: Operation Errors

	Error Code	Error Description	Operation When an Error Occurs*
Integer Operations	0001 hex	Integer operation underflow	[-32768]
	0002 hex	Integer operation overflow	[32767]
	0003 hex	Integer operation division error	[The A register stays the same.]
	0009 hex	Double-length integer operation underflow	[-2147483648]
	000A hex	Double-length integer operation overflow	[2147483647]
	000B hex	Double-length integer operation division error	[The A register stays the same.]
	000C hex	Quadruple-length integer operation underflow	[-9223372036854775808]
	000D hex	Quadruple-length integer operation overflow	[9223372036854775807]
	000E hex	Quadruple-length integer operation division error	[The A register stays the same.]
	0101 hex to 010E hex	Integer operation error in Operation Error Drawing	[The A register stays the same.]
Real Number Operations	0010 hex	Non-numerical integer storage error	Data is not stored. [00000]
	0011 hex	Integer storage underflow	Data is not stored. [-32768]
	0012 hex	Integer storage overflow	Data is not stored. [+32767]
	0021 hex	Real number storage underflow	Data is not stored. [-1.0E+38]
	0022 hex	Real number storage overflow	Data is not stored. [1.0E+38]
	0023 hex	Real number operation division by zero error	Data is not stored. [F register stays the same]
	0030 hex	Invalid real number operation (non-numeric)	Data is not stored.
	0031 hex	Real number operation exponent underflow	0.0
	0032 hex	Real number operation exponent overflow	Maximum value
	0033 hex	Real number operation division error (0/0)	Operation is not executed.
	0034 hex	Real number storage exponent underflow	Stores 0.0.
	0040 hex to 0059 hex	Real number operation error in standard system function	Operation is aborted and output is set to 0.0.

0040 hex: SQRT	0047 hex: EXP	004E hex: PD	0055 hex: SLAU
0041 hex: SIN	0048 hex: LN	004F hex: PID	0056 hex: REM
0042 hex: COS	0049 hex: LOG	0050 hex: LAG	0057 hex: RCHK
0043 hex: TAN	004A hex: DZA	0051 hex: LLAG	0058 hex: BSRCH
0044 hex: ASIN	004B hex: DZB	0052 hex: FGN	0059 hex: SORT
0045 hex: ACOS	004C hex: LIM	0053 hex: IFGN	–
0046 hex: ATAN	004D hex: PI	0054 hex: LAU	

* The numeric values given in brackets [ ] are set by the system in the Changed A Register or Changed F Register before the operation error drawing is executed.

◆ User Operation Error Code -2: Index Errors

	Error Code	Error Description	Operation When an Error Occurs
Integer and Real Number Operations	1000 hex	Index error in drawing	Re-executed as if i and j were set to 0. (Both i and j registers stay the same.)
	2000 hex	Index error in function	Re-executed as if i and j were set to 0. (Both i and j registers stay the same.)
	3000 hex	Index error in motion program or sequence program	Re-executed as if i and j were set to 0. (Both i and j registers stay the same.)
Real Number Operations	x040 hex to x059 hex (x = 1, 2, 3)	Real number operation error in standard system function	Operation is aborted and output is set to 0.0.
Integer Operations	x060 hex to x0C9 hex (x = 1, 2, 3)	Integer operation error in standard system function	Operation is aborted and output is set to input. [A register stays the same.]

Real number operation error in standard system function:

x040 hex: SQRT	x047 hex: EXP	x04E hex: PD	x055 hex: SLAU
x041 hex: SIN	x048 hex: LN	x04F hex: PID	x056 hex: REM
x042 hex: COS	x049 hex: LOG	x050 hex: LAG	x057 hex: RCHK
x043 hex: TAN	x04A hex: DZA	x051 hex: LLAG	x058 hex: BSRCH
x044 hex: ASIN	x04B hex: DZB	x052 hex: FGN	x059 hex: SORT
x045 hex: ACOS	x04C hex: LIM	x053 hex: IFGN	–
x046 hex: ATAN	x04D hex: PI	x054 hex: LAU	

Integer operation error in standard system function:

x06D hex: PI	x091 hex: ROTR	x0A0 hex: BEXTEND	x0B1 hex: SPEND
x06E hex: PD	x092 hex: MOVB	x0A1 hex: BPRESS	x0C0 hex: TBLBR
x06F hex: PID	x093 hex: MOVW	x0A2 hex: SORT	x0C1 hex: TBLBW
x070 hex: LAG	x094 hex: SETW	x0A4 hex: SORT	x0C2 hex: TBLSRL
x071 hex: LLAG	x095 hex: XCHG	x0A6 hex: RCHK	x0C3 hex: TBLSRC
x072 hex: FGN	x096 hex: LIMIT	x0A7 hex: RCHK	x0C4 hex: TBLCL
x073 hex: IFGN	x097 hex: LIMIT	x0A8 hex: COPYW	x0C5 hex: TBLMW
x074 hex: LAU	x098 hex: DZA	x0A9 hex: ASCII	x0C6 hex: QTBLR
x075 hex: SLAU	x099 hex: DZA	x0AA hex: BINASC	x0C7 hex: QTBLRI
x076 hex: FGN	x09A hex: DZB	x0AB hex: ASCBIN	x0C8 hex: QTBLW
x077 hex: IFGN	x09B hex: DZB	x0AC hex: BSRCH	x0C9 hex: QTBLWI
x08E hex: INS	x09C hex: PWM	x0AD hex: BSRCH	–
x08F hex: OUTS	x09E hex: SHFTL	x0AE hex: TIMEADD	
x090 hex: ROTL	x09F hex: SHFTR	x0AF hex: TIMSUB	

Detailed User Operation Error Status

The data in these registers give details when a user operation error occurs in a user program.

Name	Register Address				Remarks
	DWG.A	DWG.I	DWG.H	DWG.L	
Error Count	SW00110	SW00126	SW00142	SW00174	• Error Drawing No. FFFF hex: Parent drawing □□00 hex: Child drawing (□□ hex: Child drawing No.) xxyy hex: Grandchild drawing (xx hex: Child drawing No., yy hex: Grandchild drawing No.) 8000 hex: Function F□□□ hex: Motion program or sequence program (□□□ hex: Program No.) • Calling Drawing No. Number of the calling drawing in which the operation error occurred • Calling Drawing Step No. Step number in the calling drawing in which the operation error occurred This number is set to 0 if the error occurs in the parent drawing. • Error Step No. Step number when the operation error occurred
Error Code	SW00111	SW00127	SW00143	SW00175	
Error A Registers	SW00112	SW00128	SW00144	SW00176	
	SW00113	SW00129	SW00145	SW00177	
Changed A Registers	SW00114	SW00130	SW00146	SW00178	
	SW00115	SW00131	SW00147	SW00179	
Error F Registers	SW00116	SW00132	SW00148	SW00180	
	SW00117	SW00133	SW00149	SW00181	
Changed F Registers	SW00118	SW00134	SW00150	SW00182	
	SW00119	SW00135	SW00151	SW00183	
Address Where Error Occurred	SW00120	SW00136	SW00152	SW00184	
	SW00121	SW00137	SW00153	SW00185	
Error Drawing No.	SW00122	SW00138	SW00154	SW00186	
Calling Drawing No.	SW00123	SW00139	SW00155	SW00187	
Calling Drawing Step No.	SW00124	SW00140	SW00156	SW00188	
Error Step No.	SW00125	SW00141	SW00157	SW00189	

System Service Execution Status

The data in these registers give the execution status of the system.

Detailed execution status is available in system registers SW00090 to SW00103.

Name	Register Addresses		Remarks	
Reserved for system.	SW00090 to SW00097		–	
Data Trace Definition Existence	SW00098	SB000980	Group 1	0: Definition does not exist 1: Definition exists
		SB000981	Group 2	
		SB000982	Group 3	
		SB000983	Group 4	
		SB000984 to SB00098F	Reserved for system.	
Data Trace Execution Status	SW00099	SB000990	Group 1	0: Tracing in progress 1: Tracing stopped
		SB000991	Group 2	
		SB000992	Group 3	
		SB000993	Group 4	
		SB000994 to SB00099F	Reserved for system.	
Group 1 Record No.	SW00100		Latest record number in group 1.	
Group 2 Record No.	SW00101		Latest record number in group 2.	
Group 3 Record No.	SW00102		Latest record number in group 3.	
Group 4 Record No.	SW00103		Latest record number in group 4.	

System I/O Error Status

The data in these registers give the I/O errors in the system.

Detailed I/O error status is available in system registers SW00200 to SW00503.

Name	Register Addresses	Remarks
I/O Error Count	SW00200	Number of I/O error occurrences
Input Error Count	SW00201	Number of input error occurrences
Input Error Address	SW00202	Latest input error address (register address in IW□□□□)
Output Error Count	SW00203	Number of output error occurrences
Output Error Address	SW00204	Latest output error address (register address in OW□□□□)
Reserved for system.	SW00205 to SW00207	–
I/O Error Status	SW00208 to SW00215	Error status of Rack 1, Slot 0
	SW00216 to SW00223	Reserved for system.
	SW00224 to SW00231	Error status of Rack 1, Slot 1 (Depends on the Modules that are mounted and the error code.)
	SW00232 to SW00239	Error status of Rack 1, Slot 2 (Depends on the Modules that are mounted and the error code.)
	SW00240 to SW00247	Error status of Rack 1, Slot 3 (Depends on the Modules that are mounted and the error code.)
	SW00248 to SW00255	Error status of Rack 1, Slot 4 (Depends on the Modules that are mounted and the error code.)
	:	:
	SW00496 to SW00503	Error status of Rack 4, Slot 9 (Depends on the Modules that are mounted and the error code.)

Information The I/O error status data for Racks 5 to 7 is stored in SW10628 to SW13699.
Refer to the following section for details.

☞ *Extended System Status (page 7-69)*

Security Status

The security status refers to the execution state of online security.

Detailed information on the security status is available in system registers SW00506 and SW00507.

Name	Register Addresses		Description	
Security Status	SW00506		0: Security disabled, 1: Security enabled	
Security Read Protection Information	SW00507	SB005070 to SB005073	Restriction rights for file reading	□□□□H Restriction rights level (0 to 7) Reserved for system. File reading restriction 0: Not restricted 1: Restricted Reserved for system.
		SB005074 to SB005076	Reserved for system.	
		SB005077	File reading restriction	
		SB005078 to SB00507F	Reserved for system.	

USB-related System Status

The data in these registers give information on the USB memory and give the error status.

Name	Register Addresses		Remarks	
Available USB Memory	SL00650		Unit: Kilobytes	
Total USB Memory	SL00652			
USB Status	SW00654	SB006540	0: No USB memory device 1: USB memory device inserted	
		SB006541	0: Not supplying power 1: Supplying power	
		SB006542	0: Cannot recognize USB memory device 1: Recognized USB memory device	
		SB006543	0: Not accessing USB memory device 1: Accessing USB memory device	
		SB006544	0: - 1: Checking FAT file system	
		SB006545 to SB00654F	Reserved for system.	
FAT Type	SW00655		0002 hex	FAT16
			0003 hex	FAT32
Reserved for system.	SW00656 and SW00657		–	
Batch Load and Batch Save	SW00658	SB006580	1: Batch load in progress	
		SB006581	1: USB memory read error	
		SB006582	1: Load file model mismatch error	
		SB006583	1: Load file write error	
		SB006584	1: Save to flash memory error	
		SB006585	1: Folder for batch loading does not exist	
		SB006586	1: Loading error due to program write protection	
		SB006587	Reserved for system.	
		SB006588	1: Batch save in progress	
		SB006589	1: USB memory write error	
		SB00658A	1: Save file read error	
		SB00658B	1: Security error	
		SB00658C to SB00658F	Reserved for system.	
Reserved for system.	SW00659		–	

Message Relaying Status

The data in these registers give the status of the command or response in the message function.

Name	Register Address	Description
Message Relaying Information	SW00694	Normally processed command message counter
	SW00695	Command message error counter
	SW00696	Normally processed response message counter
	SW00697	Response message error counter

Error Status for Individual Products

Category	Abbreviation	I/O	Interrupt	Remarks
CPU Unit	CPU-201 or CPU-202	○	×	CF, Ethernet, USB [CPU, SVR32, SVC32, 218IFD, or M-EXECUTOR]
CPU Function Module	CPU-301	○	×	CF, Ethernet, USB [CPU, SVR, SVC, 218IFD, or M-EXECUTOR]
Optional Modules	SVA-01	×	×	Analog output [SVA01]
	SVB-01	○	×	M-II [SVB01]
	SVC-01	○	×	M-III [SVC01]
	PO-01	×	×	Pulse output [PO]
	MPU-01	○	×	M-III Multi-CPU [MPUIF]
Communications Modules	215AIF-01 (MPLINK)	○	×	RS-232C, MPLINK [217IF or MPLINK]
	216AIF-01	○	×	CP-216 [216IF]
	217IF-01	×	×	RS-232C, RS-422 [217IF or 217IF]
	218IF-01	×	×	RS-232C, Ethernet (10 Mbps) [217IF or 218IF]
	218IF-02	×	×	RS-232C, Ethernet (100 Mbps) [217IF or 218IFB]
	260IF-01	○	×	RS-232C, DeviceNet [217IF or 260IF]
	261IF-01	○	×	RS-232C, PROFIBUS (Slave) [217IF or 216IFS]
	262IF-01	○	×	FL-net [FL-net]
	263IF-01	○	×	EtherNet/IP [EtherNetIP]
	264IF-01	○	×	EtherCAT (Slave) [EtherCAT-S]
	265IF-01	○	×	CompoNet [CompoNet-M]
I/O Modules	LIO-01	○	○	16 inputs, 16 outputs, 1 pulse input channel (sinking outputs) [(LIO or CNTR]
	LIO-02	○	○	16 inputs, 16 outputs, 1 pulse input channel (sourcing outputs) [LIO or CNTR]
	LIO-04	○	○	32 inputs, 32 outputs (sinking outputs) [LIO32]
	LIO-05	○	○	32 inputs, 32 outputs (sourcing outputs) [LIO32]
	LIO-06	○	○	8 inputs, 8 outputs, 1 analog input channel, 1 analog output channel, 1 pulse input channel [MIXIO or CNTR-A]
	DO-01	○	×	64 outputs (sinking outputs) [DO]
	AI-01	○	×	8 analog inputs [AI]
	AO-01	○	×	8 analog outputs [AVO]
	CNTR-01	○	○	2 pulse input channels [CNTR01]

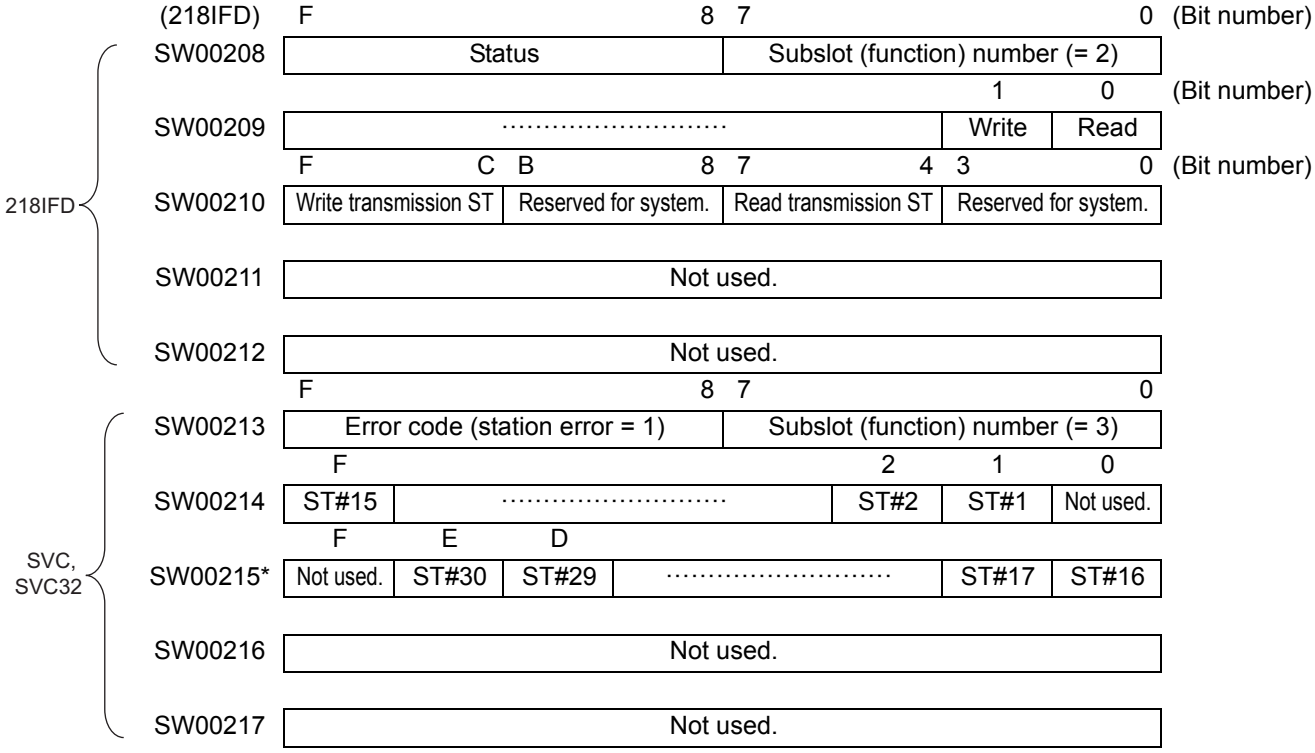
Note: ○: Supported, ×: Not supported.

CPU Unit/CPU Module Error Status

The following table lists the registers that are related to errors in the CPU Unit/CPU Module.

Name	Register Addresses	Remarks
I/O Error Count	SW00200	Number of I/O error occurrences
Input Error Count	SW00201	Number of input error occurrences
Input Error Address	SW00202	Latest input error address (register address in IW□□□□□)
Output Error Count	SW00203	Number of output error occurrences
Output Error Address	SW00204	Latest output error address (register address in OW□□□□□)
Reserved for system.	SW00205	Not used.
	SW00206	
	SW00207	
I/O Error Status	SW00208 to SW00217	CPU Unit/CPU Module Error Status
	SW00218 to SW00223	Reserved for system.
	SW00224 to SW00231	Error status of Slot 1 (Depends on the Modules that are mounted and the error code.)

The CPU Unit/CPU Module error status is illustrated in the following figure.



* SW00215 is not used by the MP3300.

Table 7.1 218IFD Error Status Details

Item	Code	Remarks
Error code	0	Normal
	1	Station error
Read/write	0	Communications normal
	1	Communications error
Read/write transmission ST	0□0	No error
	0□4	Parameter formatting error
	0□5	Command sequence error
	0□6	Reset
	0□7	Data reception error
	0□8	Data sending error
	0□A	Connection error

Table 7.2 SVC/SVC32 Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
ST#n	0	Communications normal
	1	Communications error at station n

Error Status for Optional Modules

This section shows the error status for the SVA-01, SVB-01, SVC-01, PO-01, and MPU-01 Modules.

◆ SVA-01 Error Status

SW00□□□ + 0	Not used.
SW00□□□ + 1	Not used.
SW00□□□ + 2	Not used.
SW00□□□ + 3	Not used.
SW00□□□ + 4	Not used.
SW00□□□ + 5	Not used.
SW00□□□ + 6	Not used.
SW00□□□ + 7	Not used.

◆ SVB-01 Error Status

	F	E	D	·····	2	1	0	(Bit number)
SW00□□□ + 0	Error code (station error = 1)						Subslot (function) number (= 1)	
SW00□□□ + 1	ST#15			·····	ST#2	ST#1	Not used.	
SW00□□□ + 2	Not used.	ST#30	ST#29	·····		ST#17	ST#16	
SW00□□□ + 3	Not used.							
SW00□□□ + 4	Not used.							
SW00□□□ + 5	Not used.							
SW00□□□ + 6	Not used.							
SW00□□□ + 7	Not used.							

Table 7.3 SVB-01 Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
ST#n	0	Communications normal
	1	Communications error at station n

◆ SVC-01 Error Status

	F	8	7	0	(Bit number)
SW00□□□ + 0	Error code (station error = 1)		Subslot (function) number (= 1)		

	F	·····	2	1	0	(Bit number)
SW00□□□ + 1	ST#15	·····	ST#2	ST#1	Not used.	

	F	E	D	·····	1	0
SW00□□□ + 2	Not used.	ST#30	ST#29	·····	ST#17	ST#16

SW00□□□ + 3	Not used.
SW00□□□ + 4	Not used.
SW00□□□ + 5	Not used.
SW00□□□ + 6	Not used.
SW00□□□ + 7	Not used.

Table 7.4 SVC-01 Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
ST#n	0	Communications normal
	1	Communications error at station n

◆ PO-01 Error Status

SW00□□□ + 0	Not used.
SW00□□□ + 1	Not used.
SW00□□□ + 2	Not used.
SW00□□□ + 3	Not used.
SW00□□□ + 4	Not used.
SW00□□□ + 5	Not used.
SW00□□□ + 6	Not used.
SW00□□□ + 7	Not used.

◆ MPU-01 Error Status

(MPUIF)	F	8	7	0	(Bit number)
SW00□□□ + 0	Not used.		Subslot (function) number (= 1)		
SW00□□□ + 1	Not used.				
SW00□□□ + 2	Not used.				
SW00□□□ + 3	Not used.				
SW00□□□ + 4	Not used.				
SW00□□□ + 5	Not used.				
SW00□□□ + 6	Not used.				
SW00□□□ + 7	Not used.				

Error Status for Communications Modules

This section shows the error status for the 11 models of Communications Modules.

◆ 215AIF-01 Error Status

(MPLINK/CP-215)	F	8	7	0	(Bit number)
SW00□□□ + 0	Error code (station error = 1)		Subslot (function) number (= 2)		
	F			0	(Bit number)
SW00□□□ + 1	ST#16	·····		ST#1	
SW00□□□ + 2	ST#32	·····		ST#17	
SW00□□□ + 3	ST#48	·····		ST#33	
SW00□□□ + 4	ST#64	·····		ST#49	
SW00□□□ + 5	Not used.				
SW00□□□ + 6	Not used.				
SW00□□□ + 7	Not used.				

Table 7.5 MPLINK/CP-215 Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
ST#n	0	Communications normal
	1	Communications error at station n

◆ 216AIF-01 Error Status

(216IF)	F	8	7	0	(Bit number)
SW00□□□ + 0	Error code (station error = 1)		Subslot (function) number (= 1)		

	F			2	1	0	(Bit number)
SW00□□□ + 1	ST#15	·····		ST#2	ST#1	Not used.	

	F	E	D				
SW00□□□ + 2	Not used.	ST#30	ST#29	·····	ST#17	ST#16	

SW00□□□ + 3	Not used.
SW00□□□ + 4	Not used.
SW00□□□ + 5	Not used.
SW00□□□ + 6	Not used.
SW00□□□ + 7	Not used.

Table 7.6 216IF-01 Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
ST#n	0	Communications normal
	1	Communications error at station n

◆ 217IF-01 Error Status

SW00□□□ + 0	Not used.
SW00□□□ + 1	Not used.
SW00□□□ + 2	Not used.
SW00□□□ + 3	Not used.
SW00□□□ + 4	Not used.
SW00□□□ + 5	Not used.
SW00□□□ + 6	Not used.
SW00□□□ + 7	Not used.

◆ 218IF-01 Error Status

SW00□□□ + 0	Not used.
SW00□□□ + 1	Not used.
SW00□□□ + 2	Not used.
SW00□□□ + 3	Not used.
SW00□□□ + 4	Not used.
SW00□□□ + 5	Not used.
SW00□□□ + 6	Not used.
SW00□□□ + 7	Not used.

◆ 218IF-02 Error Status

SW00□□□ + 0	Not used.
SW00□□□ + 1	Not used.
SW00□□□ + 2	Not used.
SW00□□□ + 3	Not used.
SW00□□□ + 4	Not used.
SW00□□□ + 5	Not used.
SW00□□□ + 6	Not used.
SW00□□□ + 7	Not used.

◆ 260IF-01 Error Status

(260IF)	F	8	7	0	(Bit number)
SW00□□□ + 0	Error code (station error = 1)		Subslot (function) number (= 2)		
	F			0	(Bit number)
SW00□□□ + 1	ST#15	·····		ST#0	
SW00□□□ + 2	ST#31	·····		ST#16	
SW00□□□ + 3	ST#47	·····		ST#32	
SW00□□□ + 4	ST#63	·····		ST#48	
SW00□□□ + 5	Not used.				
SW00□□□ + 6	Not used.				
SW00□□□ + 7	Not used.				

Table 7.7 260IF-01 Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
ST#n	0	Communications normal
	1	Communications error at station n

◆ 261IF-01 Error Status

(261IFS)	F	8	7	0	(Bit number)
SW00□□□ + 0	Error code (station error = 1)		Subslot (function) number (= 2)		
	F			0	(Bit number)
SW00□□□ + 1	ST#16	·····		ST#1	
SW00□□□ + 2	ST#32	·····		ST#17	
SW00□□□ + 3	ST#48	·····		ST#33	
SW00□□□ + 4	ST#64	·····		ST#49	
SW00□□□ + 5	Not used.				
SW00□□□ + 6	Not used.				
SW00□□□ + 7	Not used.				

Table 7.8 261IFS Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
ST#n	0	Communications normal
	1	Communications error at station n

◆ 262IF-01 Error Status

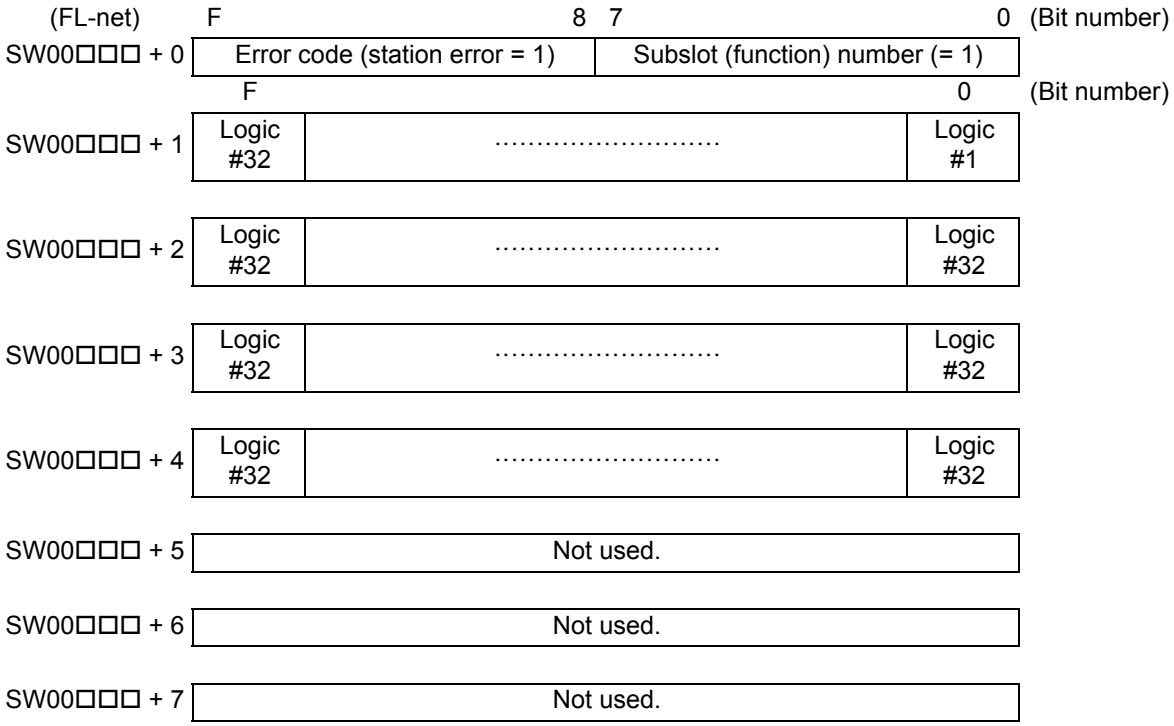


Table 7.9 FL-net Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
Logic #n	0	Communications normal
	1	Communications error at station n

◆ 263IF-01 Error Status

(EtherNetIP)	F		8	7		0	(Bit number)
SW00□□□+ 0	Error code (station error = 1)			Subslot (function) number (= 1)			
	F					0	(Bit number)
SW00□□□ + 1	CNO #16	·····				CNO#1	
SW00□□□ + 2	ST#32	·····				ST#17	
SW00□□□ + 3	ST#48	·····				ST#33	
SW00□□□ + 4	ST#64	·····				ST#49	
SW00□□□ + 5	Not used.						
SW00□□□ + 6	Not used.						
SW00□□□ + 7	Not used.						

Table 7.10 EtherNet/IP Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
CNO#n	0	Communications normal
	1	Communications error at station n

◆ 264IF-01 Error Status

(EtherCAT-S)	F		8	7		0	(Bit number)
SW00□□□ + 0	Error code (station error = 1)			Subslot (function) number (= 1)			
							(Bit number)
SW00□□□ + 1	Reserved.						
SW00□□□ + 2	Communications error code						
SW00□□□ + 3	Communications phase						
SW00□□□ + 4	Data valid flags						
SW00□□□ + 5	Not used.						
SW00□□□ + 6	Not used.						
SW00□□□ + 7	Not used.						

Table 7.11 EtherCAT-S Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
Communications phase	0	Non-INIT
	1	INIT
	2	PRE-OPERATIONAL
	3	SAFE-OPERATIONAL
	4	OPERATIONAL
Data valid flags	Bit 0	0: Process data not communicated 1: Process data communications in progress
	Bit 1 to Bit F	Reserved.

◆ 265IF-01 Error Status

(CompoNet-M)	F 8	7 0 (Bit number)
SW00□□□ + 0	Error code (station error = 1)	Subslot (function) number (= 1)
SW00□□□ + 1	Reserved.	
SW00□□□ + 2	Communications status flags	
SW00□□□ + 3	Module status code	
SW00□□□ + 4	Network status code	
SW00□□□ + 5	Not used.	
SW00□□□ + 6	Not used.	
SW00□□□ + 7	Not used.	

Table 7.12 CompoNet-M Error Status Details

Item	Code	Remarks
Error code	0	No error
	1	Station error
Communications status flags	Bit 0	0: Communications error or no communications 1: All communications normal
	Bit 1	0: No slave communications error 1: Slave communications error
	Bit 2	0: No repeater communications error 1: Repeater communications error
	Bit 3 to Bit F	Reserved.
Module status code	0	–
	1	–
	2	Normal
	3	Minor error
	4	Fatal error

Continued on next page.

Table 7.12 CompoNet-M Error Status Details

Continued from previous page.

Item	Code	Remarks
Network status code	0	Power OFF/startup
	1	Communications startup
	2	Communicating
	3	Minor communications error
	4	Fatal communications error

Error Status for I/O Modules

This section shows the error status for the seven models of I/O Modules.

◆ LIO-01/LIO-02 Error Status

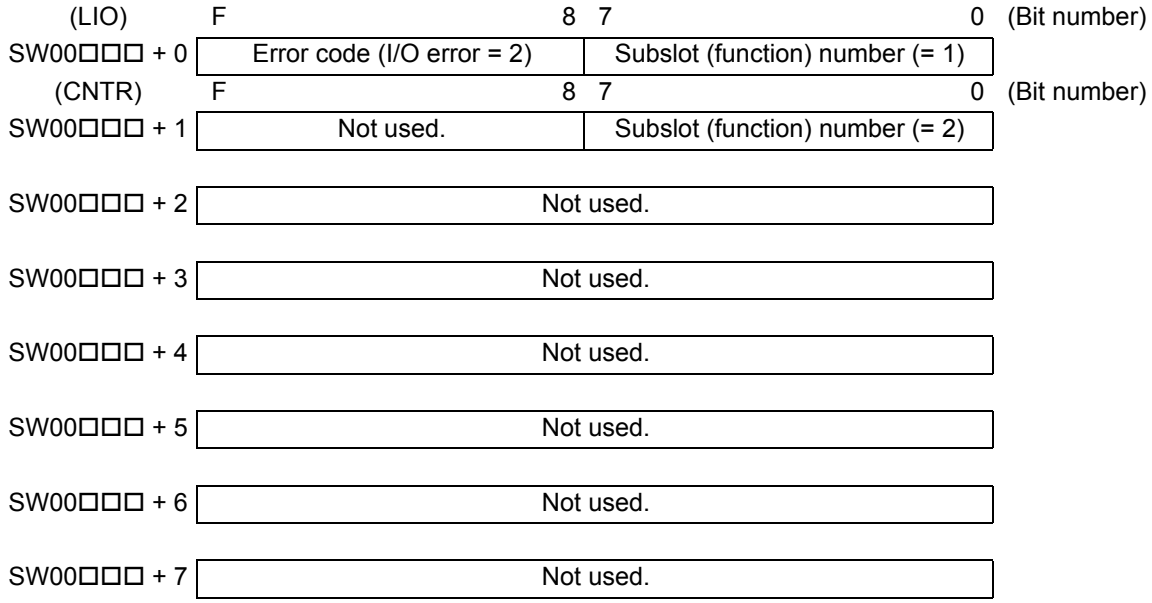


Table 7.13 LIO-01/LIO-02 Error Status Details

Item	Code	Remarks
Error code	0	No error
	2	I/O Error Cause of Error • Fuse error

◆ LIO-04/LIO-05 Error Status

(LIO32)	F 8	7 0 (Bit number)
SW00□□□ + 0	Error code (I/O error = 2)	Subslot (function) number (= 1)
SW00□□□ + 1	Not used.	
SW00□□□ + 2	Not used.	
SW00□□□ + 3	Not used.	
SW00□□□ + 4	Not used.	
SW00□□□ + 5	Not used.	
SW00□□□ + 6	Not used.	
SW00□□□ + 7	Not used.	

Table 7.14 LIO-04/LIO-05 Error Status Details

Item	Code	Remarks
Error code	0	No error
	2	I/O Error Cause of Error • Fuse error

◆ LIO-06 Error Status

(MIXIO)	F 8	7 0 (Bit number)
SW00□□□ + 0	Error code (I/O error = 2)	Subslot (function) number (= 1)
		3 2 1 0 (Bit number)
SW00□□□ + 1	Not used.	ADJO / ADJI / FUSE / FLT
(CNTR-A)		
SW00□□□ + 2	Error code (I/O error = 2)	Subslot (function) number (= 2)
		2 1 0 (Bit number)
SW00□□□ + 3	Not used.	PB / PA / FLT
SW00□□□ + 4	Not used.	
SW00□□□ + 5	Not used.	
SW00□□□ + 6	Not used.	
SW00□□□ + 7	Not used.	

Table 7.15 MIXIO Error Status Details

Item	Code	Remarks
Error code	0	No error
	2	I/O Error
FLT	0	Oscillator and ASIC for AO are normal.
	1	Oscillator error or error in ASIC for AO
FUSE	0	Fuse normal
	1	Fuse error
ADJI	0	AI shipping adjustment value normal
	1	AI shipping adjustment value not set or adjustment value error
ADJO	0	AO shipping adjustment value normal
	1	AO shipping adjustment value not set or adjustment value error

Valid Ranges for AI/AO Adjustment Values

Offset: -9,999 to 9,999

Gain: 0.0001 to 1.9999

Table 7.16 CNTR-A Error Status Details

Item	Code	Remarks
Error code	0	No error
	2	I/O Error
FLT	0	Counter ASIC normal
	1	Counter ASIC error
PA	0	Phase A normal
	1	Phase A disconnection detected
PB	0	Phase B normal
	1	Phase B disconnection detected

◆ DO-01 Error Status

(DO)	F … 8	7 … 0 (Bit number)
SW00□□□ + 0	Error code (I/O error = 2)	Subslot (function) number (= 1)
SW00□□□ + 1	Not used.	
SW00□□□ + 2	Not used.	
SW00□□□ + 3	Not used.	
SW00□□□ + 4	Not used.	
SW00□□□ + 5	Not used.	
SW00□□□ + 6	Not used.	
SW00□□□ + 7	Not used.	

Table 7.17 DO-01 Error Status Details

Item	Code	Remarks
Error code	0	No error
	2	I/O Error Cause of Error • Fuse error

◆ AI-01 Error Status

(AI)	F 8	7 0 (Bit number)
SW00□□□ + 0	Not used.	Subslot (function) number (= 1)
SW00□□□ + 1	Not used.	
SW00□□□ + 2	Not used.	
SW00□□□ + 3	Not used.	
SW00□□□ + 4	Not used.	
SW00□□□ + 5	Not used.	
SW00□□□ + 6	Not used.	
SW00□□□ + 7	Not used.	

◆ AO-01 Error Status

(AVO)	F 8	7 0 (Bit number)
SW00□□□ + 0	Error code (I/O error = 2)	Subslot (function) number (= 1)
		1 0 (Bit number)
SW00□□□ + 1	Not used.	FLT ADJO
SW00□□□ + 2	Not used.	
SW00□□□ + 3	Not used.	
SW00□□□ + 4	Not used.	
SW00□□□ + 5	Not used.	
SW00□□□ + 6	Not used.	
SW00□□□ + 7	Not used.	

Table 7.18 AO-01 Error Status Details

Item	Code	Remarks
Error code	0	No error
	2	I/O Error
ADJO	0	AO shipping adjustment value normal
	1	AO shipping adjustment value not set or adjustment value error
FLT	0	Oscillator normal
	1	Oscillator error

Valid Ranges for AO Adjustment Value

Offset: -9,999 to 9,999

Gain: 0.0001 to 1.9999

◆ CNTR-01 Error Status

(CNTR01)	F … 8	7 … 0 (Bit number)
SW00□□□ + 0	Not used.	Subslot (function) number (= 1)
SW00□□□ + 1	Not used.	
SW00□□□ + 2	Not used.	
SW00□□□ + 3	Not used.	
SW00□□□ + 4	Not used.	
SW00□□□ + 5	Not used.	
SW00□□□ + 6	Not used.	
SW00□□□ + 7	Not used.	

Interrupt Status

The data in these registers give the status of information on interrupts from each I/O Module.

Detailed interrupt information is available in system registers SW00698 to SW00789.

Register Configuration

Name	Register Addresses	Remarks
Interrupt Detection Count	SW00698	–
Module Where an Interrupt Occurred	SW00699	Number of Modules with a single interrupt
Interrupt Modules	SW00700 to SW00702	Interrupt Module 1
	SW00703 to SW00705	Interrupt Module 2
	:	:
	SW00787 to SW00789	Interrupt Module 30

Details

The following table gives details on the Interrupt Module.

Register Address	Remarks
SW007□□ + 0	Rack No., Unit No., Slot No. □□□□ hex 01 to 09: Gives the slot number where the Module in which the interrupt occurred is mounted. 1 to 4: Gives the unit number of the Module in which the interrupt occurred is mounted. 1 to 7: Gives the Rack number where the Module in which the interrupt occurred is mounted.
SW007□□ + 1	Interrupt Type 1: Reserved for system. 2: DI interrupt for LIO-01, LIO-02, LIO-04, or LIO-05 3: Counter interrupt for LIO-01, LIO-02, LIO-06, or CNTR-01
SW007□□ + 2	Register value for hardware interrupt cause Depends on the hardware.

◆ Hardware Interrupt Cause Register Values

■ Interrupt Type = 1 (CPU I/O)

Bit	Meaning
0 to F	Reserved for system.

■ Interrupt Type = 2 (LIO-01 or LIO-02/LIO)

Bit	Meaning
0 to 4	Reserved for system.
5	LIO-01 or LIO-02 interrupt input 1 = Interrupt input, 0 = No interrupt input
6 to F	Reserved for system.

■ Interrupt Type = 2 (LIO-04 or LIO-05/LIO32)

Bit	Meaning
0 to 8	Reserved for system.
9	LIO-04 or LIO-05 interrupt input 1 1 = Interrupt input, 0 = No interrupt input
A	LIO-04 or LIO-05 interrupt input 2 1 = Interrupt input, 0 = No interrupt input
B	LIO-04 or LIO-05 interrupt input 3 1 = Interrupt input, 0 = No interrupt input
C	LIO-04 or LIO-05 interrupt input 4 1 = Interrupt input, 0 = No interrupt input
D to F	Reserved for system.

■ Interrupt Type = 2 (LIO-06/MIXIO)

Bit	Meaning
0 to 4	Reserved for system.
5	MIXIO interrupt input 1 = Interrupt input, 0 = No interrupt input
6 to F	Reserved for system.

■ Interrupt Type = 3 (LIO-01/CNTR)

Bit	Meaning
0 to 3	Reserved for system.
4	Counter agreement status 1 = Counter agreement, 0 = Counter disagreement
5 to F	Reserved for system.

■ Interrupt Type = 3 (LIO-06/CNTR-A)

Bit	Meaning
0 to 3	Reserved for system.
4	Counter agreement status 1 = Counter agreement, 0 = Counter disagreement
5 to F	Reserved for system.

■ Interrupt Type = 3 (CNTR-01/CNTR01)

Bit	Meaning
0	Counter agreement status 1 = Counter agreement, 0 = Counter disagreement
1 to F	Reserved for system.

Module Information

The data in these registers give hardware information on the Units and Modules that are used in the Machine Controller.

Configuration

◆ CPU Unit/CPU Module

Name	Register Addresses	Remarks
CPU Unit Information	SW00800	CPU Unit ID/CPU Module ID
	SW00801	Hardware version (BCD)
	SW00802	Software version (BCD)
	SW00803	Number of subslots (hex)
	SW00804	Function Module 1 ID (hex)
	SW00805	Function Module 1 Status
	SW00806	Function Module 2 ID (hex)
	SW00807	Function Module 2 Status
	SW00808	Function Module 3 ID (hex)
	SW00809	Function Module 3 Status
	SW00810	Function Module 4 ID (hex)
	SW00811	Function Module 4 Status
	SW00812	Function Module 5 ID (hex)
	SW00813	Function Module 5 Status
	SW00814	Function Module 6 ID (hex)
	SW00815	Function Module 6 Status
Optional Module Information	SW00816 to SW01095	Optional Module information (Depends on CPU Unit model and mounted Optional Modules.)

◆ Optional Modules

Name	Register Address	Remarks
Module Information	SW00□□□ + 0	Optional Module ID
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (hex)
	SW00□□□ + 4	ID of Function Module 1 (hex)
	SW00□□□ + 5	Status of Function Module 1
	SW00□□□ + 6	ID of Function Module 2 (hex)
	SW00□□□ + 7	Status of Function Module 2

◆ Function Module Status Details

Value	Text Displayed in MPE720 Module Configuration Definition	Status
0	None	There is no Module Definition and the Module is not mounted.
1	Empty	There is a Module Definition, but the Module is not mounted.
2	Operating (Driving)	The Module is operating normally.
3	Standby (Reserved for system.)	The Module is on standby.
4	Failure	An error was detected in the Module.
5	× Module name	The mounted Module does not match the definition.
6	Waiting for initialization	The Module is mounted, but there is no Detailed Function Module Definition.
7	Driving Stop	Local I/O is stopped.
8	Duplicate Address	The same station address is set for more than one of the connected MECHATROLINK-III slave devices.
9 or higher	–	Reserved for system.

CPU Unit/CPU Module Information

◆ CPU-201, CPU-202, or CPU-301

Name	Register Addresses	Remarks
CPU Unit Information	SW00800	CPU Unit ID/CPU Module ID
	SW00801	Hardware version (BCD)
	SW00802	Software version (BCD)
	SW00803	Number of sub-slots (hex)
	SW00804	Function Module 1 ID (hex)
	SW00805	Function Module 1 Status
	SW00806	Function Module 2 ID (hex)
	SW00807	Function Module 2 Status
	SW00808	Function Module 3 ID (hex)
	SW00809	Function Module 3 Status
	SW00810	Function Module 4 ID (hex)
	SW00811	Function Module 4 Status
	SW00812	Function Module 5 ID (hex)
	SW00813	Function Module 5 Status
	SW00814	Function Module 6 ID (hex)
	SW00815	Function Module 6 Status

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Name	Register Addresses	Remarks			
Optional Module Information	SW00816	Rack 1	Unit 1	Slot 1	Module ID
	SW00817				Hardware version (BCD)
	SW00818				Software version (BCD)
	SW00819				Number of sub-slots
	SW00820				ID of Function Module 1
	SW00821				Status of Function Module 1
	SW00822				ID of Function Module 2
	SW00823				Status of Function Module 2
	SW00824 to SW00831			Slot 2	Same as above.
	SW00832 to SW00839			Slot 3	Same as above.
	SW00840 to SW00847			Slot 4	Same as above.
	SW00848 to SW00855			Slot 5	Same as above.
	SW00856 to SW00863			Slot 6	Same as above.
	SW00864 to SW00871			Slot 7	Same as above.
	SW00872 to SW00879			Slot 8	Same as above.
	SW00880 to SW00887	Rack 2	Unit 1	Slot 1	Same as above.
	SW00888 to SW00895			Slot 2	Same as above.
	SW00896 to SW00903			Slot 3	Same as above.
	SW00904 to SW00911			Slot 4	Same as above.
	SW00912 to SW00919			Slot 5	Same as above.
	SW00920 to SW00927			Slot 6	Same as above.
	SW00928 to SW00935			Slot 7	Same as above.
	SW00936 to SW00943			Slot 8	Same as above.
	SW00944 to SW00951			Reserved for system.	Reserved for system.

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Name	Register Addresses	Remarks			
Optional Module Information	SW00952 to SW00959	Rack 3	Unit 1	Slot 1	Same as above.
	SW00960 to SW00967			Slot 2	Same as above.
	SW00968 to SW00975			Slot 3	Same as above.
	SW00976 to SW00983			Slot 4	Same as above.
	SW00984 to SW00991			Slot 5	Same as above.
	SW00992 to SW00999			Slot 6	Same as above.
	SW01000 to SW01007			Slot 7	Same as above.
	SW01008 to SW01015			Slot 8	Same as above.
	SW01016 to SW01023			Reserved for system.	Reserved for system.
	SW01024 to SW01031	Rack 4	Unit 1	Slot 1	Same as above.
	SW01032 to SW01039			Slot 2	Same as above.
	SW01040 to SW01047			Slot 3	Same as above.
	SW01048 to SW01055			Slot 4	Same as above.
	SW01056 to SW01063			Slot 5	Same as above.
	SW01064 to SW01071			Slot 6	Same as above.
	SW01072 to SW01079			Slot 7	Same as above.
	SW01080 to SW01087			Slot 8	Same as above.
	SW01088 to SW01095			Reserved for system.	Reserved for system.

Information The Optional Module information data for Racks 5 to 7 is stored in SW14260 to SW15795. Refer to the following section for details.

☞ *Extended Unit and Module Information (page 7-64)*

◆ MPU-01 Module Status

The data in these registers give the status of the MPU-01 Multi-CPU Module.

Name	Register Address	Description
MPU-01 Module Status	SW01411	MPU-01 Module Circuit 1 Status
	SW01412	MPU-01 Module Circuit 1 Error Status
	SW01413	MPU-01 Module Circuit 2 Status
	SW01414	MPU-01 Module Circuit 2 Error Status
	SW01415	MPU-01 Module Circuit 3 Status
	SW01416	MPU-01 Module Circuit 3 Error Status
	SW01417	MPU-01 Module Circuit 4 Status
	SW01418	MPU-01 Module Circuit 4 Error Status
	SW01419	MPU-01 Module Circuit 5 Status
	SW01420	MPU-01 Module Circuit 5 Error Status
	SW01421	MPU-01 Module Circuit 6 Status
	SW01422	MPU-01 Module Circuit 6 Error Status
	SW01423	MPU-01 Module Circuit 7 Status
	SW01424	MPU-01 Module Circuit 7 Error Status
	SW01425	MPU-01 Module Circuit 8 Status
	SW01426	MPU-01 Module Circuit 8 Error Status
	SW01427	MPU-01 Module Circuit 9 Status
	SW01428	MPU-01 Module Circuit 9 Error Status
	SW01429	MPU-01 Module Circuit 10 Status
	SW01430	MPU-01 Module Circuit 10 Error Status
	SW01431	MPU-01 Module Circuit 11 Status
	SW01432	MPU-01 Module Circuit 11 Error Status
	SW01433	MPU-01 Module Circuit 12 Status
	SW01434	MPU-01 Module Circuit 12 Error Status
	SW01435	MPU-01 Module Circuit 13 Status
	SW01436	MPU-01 Module Circuit 13 Error Status
	SW01437	MPU-01 Module Circuit 14 Status
	SW01438	MPU-01 Module Circuit 14 Error Status
	SW01439	MPU-01 Module Circuit 15 Status
	SW01440	MPU-01 Module Circuit 15 Error Status
	SW01441	MPU-01 Module Circuit 16 Status
	SW01442	MPU-01 Module Circuit 16 Error Status

Optional Module Information

◆ SVA-01

Name	Register Address	Remarks
SVA-01 Information	SW00□□□ + 0	Module ID (9093 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	SVA-01 Function Module ID (9013 hex)
	SW00□□□ + 5	SVA-01 Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ SVB-01

Name	Register Address	Remarks
SVB-01 Information	SW00□□□ + 0	Module ID (9195 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	SVB-01 Function Module ID (9115 hex)
	SW00□□□ + 5	SVB-01 Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ SVC-01

Name	Register Address	Remarks
SVC-01 Information	SW00□□□ + 0	Module ID (9490 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	SVC-01 Function Module ID (9410 hex)
	SW00□□□ + 5	SVC-01 Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ PO-01

Name	Register Address	Remarks
PO-01 Unit Information	SW00□□□ + 0	Module ID (9390 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	PO Function Module ID (9310 hex)
	SW00□□□ + 5	PO Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ MPU-01

Name	Register Address	Remarks
MPU-01 Information	SW00□□□ + 0	Module ID (82E0 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	MPU-01 Function Module ID (8260 hex)
	SW00□□□ + 5	MPU-01 Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ 215AIF-01

Name	Register Address	Remarks
215AIF-01 Information	SW00□□□ + 0	Module ID (8580 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0002 hex)
	SW00□□□ + 4	215IF Function Module ID (8510 hex)
	SW00□□□ + 5	215IF Function Module Status
	SW00□□□ + 6	MPLINK Function Module ID (8122 hex)
	SW00□□□ + 7	MPLINK Function Module Status

◆ 216AIF-01

Name	Register Address	Remarks
216AIF-01 Information	SW00□□□ + 0	Module ID (84A0 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	216IF Function Module ID (8420 hex)
	SW00□□□ + 5	216IF Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ 217IF-01

Name	Register Address	Remarks
217IF-01 Information	SW00□□□ + 0	Module ID (8280 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	217IF Function Module ID (8520 hex)
	SW00□□□ + 5	217IF Function Module Status
	SW00□□□ + 6	217IF Function Module ID (8520 hex)
	SW00□□□ + 7	217IF Function Module Status

◆ 218IF-01

Name	Register Address	Remarks
218IF-01 Information	SW00□□□ + 0	Module ID (8180 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0002 hex)
	SW00□□□ + 4	218IF Function Module ID (8620 hex)
	SW00□□□ + 5	218IF Function Module Status
	SW00□□□ + 6	218IF Function Module ID (8620 hex)
	SW00□□□ + 7	218IF Function Module Status

◆ 218IF-02

Name	Register Address	Remarks
218IF-02 Information	SW00□□□ + 0	Module ID (8181 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0002 hex)
	SW00□□□ + 4	218IFB Function Module ID (8622 hex)
	SW00□□□ + 5	218IFB Function Module Status
	SW00□□□ + 6	218IFB Function Module ID (8622 hex)
	SW00□□□ + 7	218IFB Function Module Status

◆ 260IF-01

Name	Register Address	Remarks
260IF-01 Information	SW00□□□ + 0	Module ID (8380 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0002 hex)
	SW00□□□ + 4	260IF Function Module ID (8B20 hex)
	SW00□□□ + 5	260IF Function Module Status
	SW00□□□ + 6	260IF Function Module ID (8B20 hex)
	SW00□□□ + 7	260IF Function Module Status

◆ 261IF-01

Name	Register Address	Remarks
261IF-01 Information	SW00□□□ + 0	Module ID (8480 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0002 hex)
	SW00□□□ + 4	261IFS Function Module ID (8C21 hex)
	SW00□□□ + 5	261IFS Function Module Status
	SW00□□□ + 6	261IFS Function Module ID (8C21 hex)
	SW00□□□ + 7	261IFS Function Module Status

◆ 262IF-01

Name	Register Address	Remarks
262IF-01 Information	SW00□□□ + 0	Module ID (8DA0 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	FL-net Function Module ID (8D20 hex)
	SW00□□□ + 5	FL-net Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ 263IF-01

Name	Register Address	Remarks
263IF-01 Information	SW00□□□ + 0	Module ID (8BA8 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	EtherNetIP Function Module ID (8B28 hex)
	SW00□□□ + 5	EtherNetIP Function Module Status
	SW00□□□ + 6	Reserved for system.

◆ 264IF-01

Name	Register Address	Remarks
264IF-01 Information	SW00□□□ + 0	Module ID (87A0 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	EtherCAT-S Function Module ID (8720 hex)
	SW00□□□ + 5	EtherCAT-S Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ 265IF-01

Name	Register Address	Remarks
265IF-01 Information	SW00□□□ + 0	Module ID (8BA4 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	CompoNet-M Function Module ID (8B24 hex)
	SW00□□□ + 5	CompoNet-M Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ LIO-01

Name	Register Address	Remarks
LIO-01 Information	SW00□□□ + 0	Module ID (8080 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0002 hex)
	SW00□□□ + 4	LIO Function Module ID (8050 hex)
	SW00□□□ + 5	LIO Function Module Status
	SW00□□□ + 6	CNTR Function Module ID (8230 hex)
	SW00□□□ + 7	CNTR Function Module Status

◆ LIO-02

Name	Register Address	Remarks
LIO-02 Information	SW00□□□ + 0	Module ID (8081 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0002 hex)
	SW00□□□ + 4	LIO Function Module ID (8050 hex)
	SW00□□□+ 5	LIO Function Module Status
	SW00□□□ + 6	CNTR Function Module ID (8230 hex)
	SW00□□□ + 7	CNTR Function Module Status

◆ LIO-04

Name	Register Address	Remarks
LIO-04 Information	SW00□□□ + 0	Module ID (80D5 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	LIO32 Function Module ID (8055 hex)
	SW00□□□ + 5	LIO32 Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ LIO-05

Name	Register Address	Remarks
LIO-05 Information	SW00□□□ + 0	Module ID (80D6 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	LIO32 Function Module ID (8055 hex)
	SW00□□□ + 5	LIO32 Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ LIO-06

Name	Register Address	Remarks
LIO-06 Information	SW00□□□ + 0	Module ID (80D7 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0002 hex)
	SW00□□□ + 4	MIXIO Function Module ID (8056 hex)
	SW00□□□ + 5	MIXIO Function Module Status
	SW00□□□ + 6	CNTR-A Function Module ID (8232 hex)
	SW00□□□ + 7	CNTR-A Function Module Status

◆ DO-01

Name	Register Address	Remarks
DO-01 Information	SW00□□□ + 0	Module ID (80D4 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	DO Function Module ID (8054 hex)
	SW00□□□ + 5	DO Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ AI-01

Name	Register Address	Remarks
AI-01 Information	SW00□□□ + 0	Module ID (80D0 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	AI Function Module ID (8051 hex)
	SW00□□□ + 5	AI Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ AO-01

Name	Register Address	Remarks
AO-01 Information	SW00□□□ + 0	Module ID (80D1 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	AVO Function Module ID (8052 hex)
	SW00□□□ + 5	AVO Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

◆ CNTR-01

Name	Register Address	Remarks
CNTR-01 Information	SW00□□□ + 0	Module ID (82B0 hex)
	SW00□□□ + 1	Hardware version (BCD)
	SW00□□□ + 2	Software version (BCD)
	SW00□□□ + 3	Number of sub-slots (0001 hex)
	SW00□□□ + 4	CNTR01 Function Module ID (8231 hex)
	SW00□□□ + 5	CNTR01 Function Module Status
	SW00□□□ + 6	Reserved for system.
	SW00□□□ + 7	Reserved for system.

MPU-01 System Status

Name	Register Address	Remarks
MPU-01 #1 Status	SW01411	MPU-01 Module Circuit 1 Status
MPU-01 #1 Error Status	SW01412	MPU-01 Module Circuit 1 Error Status
MPU-01 #2 Status	SW01413	MPU-01 Module Circuit 2 Status
MPU-01 #2 Error Status	SW01414	MPU-01 Module Circuit 2 Error Status
MPU-01 #3 Status	SW01415	MPU-01 Module Circuit 3 Status
MPU-01 #3 Error Status	SW01416	MPU-01 Module Circuit 3 Error Status
MPU-01 #4 Status	SW01417	MPU-01 Module Circuit 4 Status
MPU-01 #4 Error Status	SW01418	MPU-01 Module Circuit 4 Error Status
MPU-01 #5 Status	SW01419	MPU-01 Module Circuit 5 Status
MPU-01 #5 Error Status	SW01420	MPU-01 Module Circuit 5 Error Status
MPU-01 #6 Status	SW01421	MPU-01 Module Circuit 6 Status
MPU-01 #6 Error Status	SW01422	MPU-01 Module Circuit 6 Error Status
MPU-01 #7 Status	SW01423	MPU-01 Module Circuit 7 Status
MPU-01 #7 Error Status	SW01424	MPU-01 Module Circuit 7 Error Status
MPU-01 #8 Status	SW01425	MPU-01 Module Circuit 8 Status
MPU-01 #8 Error Status	SW01426	MPU-01 Module Circuit 8 Error Status
MPU-01 #9 Status	SW01427	MPU-01 Module Circuit 9 Status
MPU-01 #9 Error Status	SW01428	MPU-01 Module Circuit 9 Error Status
MPU-01 #10 Status	SW01429	MPU-01 Module Circuit 10 Status
MPU-01 #10 Error Status	SW01430	MPU-01 Module Circuit 10 Error Status
MPU-01 #11 Status	SW01431	MPU-01 Module Circuit 11 Status
MPU-01 #11 Error Status	SW01432	MPU-01 Module Circuit 11 Error Status
MPU-01 #12 Status	SW01433	MPU-01 Module Circuit 12 Status
MPU-01 #12 Error Status	SW01434	MPU-01 Module Circuit 12 Error Status
MPU-01 #13 Status	SW01435	MPU-01 Module Circuit 13 Status
MPU-01 #13 Error Status	SW01436	MPU-01 Module Circuit 13 Error Status
MPU-01 #14 Status	SW01437	MPU-01 Module Circuit 14 Status
MPU-01 #14 Error Status	SW01438	MPU-01 Module Circuit 14 Error Status
MPU-01 #15 Status	SW01439	MPU-01 Module Circuit 15 Status
MPU-01 #15 Error Status	SW01440	MPU-01 Module Circuit 15 Error Status
MPU-01 #16 Status	SW01441	MPU-01 Module Circuit 16 Status
MPU-01 #16 Error Status	SW01442	MPU-01 Module Circuit 16 Error Status

Motion Program Execution Information

The data in these registers give the execution status of the motion programs.

This section gives the register configuration of and details on the motion program execution information.

◆ Register Configuration

Register Addresses	Name	Reference
SW03200	Number of Currently Executing Program for Work 1	–
SW03201	Number of Currently Executing Program for Work 2	–
SW03202	Number of Currently Executing Program for Work 3	–
SW03203	Number of Currently Executing Program for Work 4	–
SW03204	Number of Currently Executing Program for Work 5	–
SW03205	Number of Currently Executing Program for Work 6	–
SW03206	Number of Currently Executing Program for Work 7	–
SW03207	Number of Currently Executing Program for Work 8	–
SW03208	Number of Currently Executing Program for Work 9	–
SW03209	Number of Currently Executing Program for Work 10	–
SW03210	Number of Currently Executing Program for Work 11	–
SW03211	Number of Currently Executing Program for Work 12	–
SW03212	Number of Currently Executing Program for Work 13	–
SW03213	Number of Currently Executing Program for Work 14	–
SW03214	Number of Currently Executing Program for Work 15	–
SW03215	Number of Currently Executing Program for Work 16	–
SW03216	Number of Currently Executing Program for Work 17	–
SW03217	Number of Currently Executing Program for Work 18	–
SW03218	Number of Currently Executing Program for Work 19	–
SW03219	Number of Currently Executing Program for Work 20	–
SW03220	Number of Currently Executing Program for Work 21	–
SW03221	Number of Currently Executing Program for Work 22	–
SW03222	Number of Currently Executing Program for Work 23	–
SW03223	Number of Currently Executing Program for Work 24	–
SW03224	Number of Currently Executing Program for Work 25	–
SW03225	Number of Currently Executing Program for Work 26	–
SW03226	Number of Currently Executing Program for Work 27	–
SW03227	Number of Currently Executing Program for Work 28	–
SW03228	Number of Currently Executing Program for Work 29	–
SW03229	Number of Currently Executing Program for Work 30	–
SW03230	Number of Currently Executing Program for Work 31	–
SW03231	Number of Currently Executing Program for Work 32	–
SW03232 to SW03263	Program Running Bits	◆ *Details (page 7-50)*
SW03264 to SW03321	Work 1 Program Information	*System Work Numbers 1 to 8 (page 7-51)*
SW03322 to SW03379	Work 2 Program Information	
SW03380 to SW03437	Work 3 Program Information	
SW03438 to SW03495	Work 4 Program Information	
SW03496 to SW03553	Work 5 Program Information	
SW03554 to SW03611	Work 6 Program Information	
SW03612 to SW03669	Work 7 Program Information	
SW03670 to SW03727	Work 8 Program Information	

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Register Addresses	Name	Reference
SW03728 to SW03785	Work 9 Program Information	*System Work Numbers 9 to 16 (page 7-53)*
SW03786 to SW03843	Work 10 Program Information	
SW03844 to SW03901	Work 11 Program Information	
SW03902 to SW03959	Work 12 Program Information	
SW03960 to SW04017	Work 13 Program Information	
SW04018 to SW04075	Work 14 Program Information	
SW04076 to SW04133	Work 15 Program Information	
SW04134 to SW04191	Work 16 Program Information	
SW04192 to SW04249	Work 17 Program Information	*System Work Numbers 17 to 24 (page 7-55)*
SW04250 to SW04307	Work 18 Program Information	
SW04308 to SW04365	Work 19 Program Information	
SW04366 to SW04423	Work 20 Program Information	
SW04424 to SW04481	Work 21 Program Information	
SW04482 to SW04539	Work 22 Program Information	
SW04540 to SW04597	Work 23 Program Information	
SW04598 to SW04655	Work 24 Program Information	
SW04656 to SW04713	Work 25 Program Information	*System Work Numbers 25 to 32 (page 7-57)*
SW04714 to SW04771	Work 26 Program Information	
SW04772 to SW04829	Work 27 Program Information	
SW04830 to SW04887	Work 28 Program Information	
SW04888 to SW04945	Work 29 Program Information	
SW04946 to SW05003	Work 30 Program Information	
SW05004 to SW05061	Work 31 Program Information	
SW05062 to SW05119	Work 32 Program Information	
SW08192 to SW08223	Work 1 Extended Program Information	*System Work Numbers 1 to 8 (page 7-51)*
SW08224 to SW08255	Work 2 Extended Program Information	
SW08256 to SW08287	Work 3 Extended Program Information	
SW08288 to SW08319	Work 4 Extended Program Information	
SW08320 to SW08351	Work 5 Extended Program Information	
SW08352 to SW08383	Work 6 Extended Program Information	
SW08384 to SW08415	Work 7 Extended Program Information	
SW08416 to SW08447	Work 8 Extended Program Information	
SW08448 to SW08479	Work 9 Extended Program Information	*System Work Numbers 9 to 16 (page 7-53)*
SW08480 to SW08511	Work 10 Extended Program Information	
SW08512 to SW08543	Work 11 Extended Program Information	
SW08544 to SW08575	Work 12 Extended Program Information	
SW08576 to SW08607	Work 13 Extended Program Information	
SW08608 to SW08639	Work 14 Extended Program Information	
SW08640 to SW08671	Work 15 Extended Program Information	
SW08672 to SW08703	Work 16 Extended Program Information	
SW08704 to SW08735	Work 17 Extended Program Information	*System Work Numbers 17 to 24 (page 7-55)*
SW08736 to SW08767	Work 18 Extended Program Information	
SW08768 to SW08799	Work 19 Extended Program Information	
SW08800 to SW08831	Work 20 Extended Program Information	
SW08832 to SW08863	Work 21 Extended Program Information	
SW08864 to SW08895	Work 22 Extended Program Information	
SW08896 to SW08927	Work 23 Extended Program Information	
SW08928 to SW08959	Work 24 Extended Program Information	

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Register Addresses	Name	Reference
SW08960 to SW08991	Work 25 Extended Program Information	*System Work Numbers 25 to 32 (page 7-57)*
SW08992 to SW09023	Work 26 Extended Program Information	
SW09024 to SW09055	Work 27 Extended Program Information	
SW09056 to SW09087	Work 28 Extended Program Information	
SW09088 to SW09119	Work 29 Extended Program Information	
SW09120 to SW09151	Work 30 Extended Program Information	
SW09152 to SW09183	Work 31 Extended Program Information	
SW09184 to SW09215	Work 32 Extended Program Information	

◆ Details

The following table gives details on the Program Execution Bits from system register addresses SW03232 to SW03263.

The program is being executed when the corresponding bit is 1.

Register Address	Contents
SW03232	MP□016 (Bit F) to MP□001 (Bit 0)
SW03233	MP□032 (Bit F) to MP□017 (Bit 0)
SW03234	MP□048 (Bit F) to MP□033 (Bit 0)
SW03235	MP□064 (Bit F) to MP□049 (Bit 0)
SW03236	MP□080 (Bit F) to MP□065 (Bit 0)
SW03237	MP□096 (Bit F) to MP□081 (Bit 0)
SW03238	MP□112 (Bit F) to MP□097 (Bit 0)
SW03239	MP□128 (Bit F) to MP□113 (Bit 0)
SW03240	MP□144 (Bit F) to MP□129 (Bit 0)
SW03241	MP□160 (Bit F) to MP□145 (Bit 0)
SW03242	MP□176 (Bit F) to MP□161 (Bit 0)
SW03243	MP□192 (Bit F) to MP□177 (Bit 0)
SW03244	MP□208 (Bit F) to MP□193 (Bit 0)
SW03245	MP□224 (Bit F) to MP□209 (Bit 0)
SW03246	MP□240 (Bit F) to MP□225 (Bit 0)
SW03247	MP□256 (Bit F) to MP□241 (Bit 0)
SW03248	MP□272 (Bit F) to MP□257 (Bit 0)
SW03249	MP□288 (Bit F) to MP□273 (Bit 0)
SW03250	MP□304 (Bit F) to MP□289 (Bit 0)
SW03251	MP□320 (Bit F) to MP□305 (Bit 0)
SW03252	MP□336 (Bit F) to MP□321 (Bit 0)
SW03253	MP□352 (Bit F) to MP□337 (Bit 0)
SW03254	MP□368 (Bit F) to MP□353 (Bit 0)
SW03255	MP□384 (Bit F) to MP□369 (Bit 0)
SW03256	MP□400 (Bit F) to MP□385 (Bit 0)
SW03257	MP□416 (Bit F) to MP□401 (Bit 0)
SW03258	MP□432 (Bit F) to MP□417 (Bit 0)
SW03259	MP□448 (Bit F) to MP□433 (Bit 0)
SW03260	MP□464 (Bit F) to MP□449 (Bit 0)
SW03261	MP□480 (Bit F) to MP□465 (Bit 0)
SW03262	MP□496 (Bit F) to MP□481 (Bit 0)
SW03263	MP□512 (Bit F) to MP□497 (Bit 0)

◆ Registers Used for System Work Numbers 1 to 32

The registers that are used for system work numbers 1 to 32 are given in the following table.

Two system registers are given in the register table for the alarm code, but we recommend that you use system registers SL26□□□. You can use the system registers that are given in parentheses to check for alarms in most cases, but they do not report all alarms.
Refer to the following section for details on alarm codes.

☞ *5.1 Troubleshooting Motion Program Alarms (page 5-2) – Motion Program Alarm Codes (page 5-6)*

• System Work Numbers 1 to 8

System Work Numbers		Work 1	Work 2	Work 3	Work 4	Work 5	Work 6	Work 7	Work 8
Executing Main Program No.		SW03200	SW03201	SW03202	SW03203	SW03204	SW03205	SW03206	SW03207
Status		SW03264	SW03322	SW03380	SW03438	SW03496	SW03554	SW03612	SW03670
Control Signals		SW03265	SW03323	SW03381	SW03439	SW03497	SW03555	SW03613	SW03671
Fork 0	Program Number	SW03266	SW03324	SW03382	SW03440	SW03498	SW03556	SW03614	SW03672
	Block Number	SW03267	SW03325	SW03383	SW03441	SW03499	SW03557	SW03615	SW03673
	Alarm Code	SL26000 (SW03268)	SL26016 (SW03326)	SL26032 (SW03384)	SL26048 (SW03442)	SL26064 (SW03500)	SL26080 (SW03558)	SL26096 (SW03616)	SL26112 (SW03674)
Fork 1	Program Number	SW03269	SW03327	SW03385	SW03443	SW03501	SW03559	SW03617	SW03675
	Block Number	SW03270	SW03328	SW03386	SW03444	SW03502	SW03560	SW03618	SW03676
	Alarm Code	SL26002 (SW03271)	SL26018 (SW03329)	SL26034 (SW03387)	SL26050 (SW03445)	SL26066 (SW03503)	SL26082 (SW03561)	SL26098 (SW03619)	SL26114 (SW03677)
Fork 2	Program Number	SW03272	SW03330	SW03388	SW03446	SW03504	SW03562	SW03620	SW03678
	Block Number	SW03273	SW03331	SW03389	SW03447	SW03505	SW03563	SW03621	SW03679
	Alarm Code	SL26004 (SW03274)	SL26020 (SW03332)	SL26036 (SW03390)	SL26052 (SW03448)	SL26068 (SW03506)	SL26084 (SW03564)	SL26100 (SW03622)	SL26116 (SW03680)
Fork 3	Program Number	SW03275	SW03333	SW03391	SW03449	SW03507	SW03565	SW03623	SW03681
	Block Number	SW03276	SW03334	SW03392	SW03450	SW03508	SW03566	SW03624	SW03682
	Alarm Code	SL26006 (SW03277)	SL26022 (SW03335)	SL26038 (SW03393)	SL26054 (SW03451)	SL26070 (SW03509)	SL26086 (SW03567)	SL26102 (SW03625)	SL26118 (SW03683)
Fork 4	Program Number	SW03278	SW03336	SW03394	SW03452	SW03510	SW03568	SW03626	SW03684
	Block Number	SW03279	SW03337	SW03395	SW03453	SW03511	SW03569	SW03627	SW03685
	Alarm Code	SL26008 (SW03280)	SL26024 (SW03338)	SL26040 (SW03396)	SL26056 (SW03454)	SL26072 (SW03512)	SL26088 (SW03570)	SL26104 (SW03628)	SL26120 (SW03686)
Fork 5	Program Number	SW03281	SW03339	SW03397	SW03455	SW03513	SW03571	SW03629	SW03687
	Block Number	SW03282	SW03340	SW03398	SW03456	SW03514	SW03572	SW03630	SW03688
	Alarm Code	SL26010 (SW03283)	SL26026 (SW03341)	SL26042 (SW03399)	SL26058 (SW03457)	SL26074 (SW03515)	SL26090 (SW03573)	SL26106 (SW03631)	SL26122 (SW03689)
Fork 6	Program Number	SW03284	SW03342	SW03400	SW03458	SW03516	SW03574	SW03632	SW03690
	Block Number	SW03285	SW03343	SW03401	SW03459	SW03517	SW03575	SW03633	SW03691
	Alarm Code	SL26012 (SW03286)	SL26028 (SW03344)	SL26044 (SW03402)	SL26060 (SW03460)	SL26076 (SW03518)	SL26092 (SW03576)	SL26108 (SW03634)	SL26124 (SW03692)
Fork 7	Program Number	SW03287	SW03345	SW03403	SW03461	SW03519	SW03577	SW03635	SW03693
	Block Number	SW03288	SW03346	SW03404	SW03462	SW03520	SW03578	SW03636	SW03694
	Alarm Code	SL260014 (SW03289)	SL26030 (SW03347)	SL26046 (SW03405)	SL26062 (SW03463)	SL26078 (SW03521)	SL26094 (SW03579)	SL26110 (SW03637)	SL26126 (SW03695)
Logical Axis 1 Program Current Position		SL03290	SL03348	SL03406	SL03464	SL03522	SL03580	SL03638	SL03696
Logical Axis 2 Program Current Position		SL03292	SL03350	SL03408	SL03466	SL03524	SL03582	SL03640	SL03698

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System Work Numbers	Work 1	Work 2	Work 3	Work 4	Work 5	Work 6	Work 7	Work 8
Logical Axis 3 Program Current Position	SL03294	SL03352	SL03410	SL03468	SL03526	SL03584	SL03642	SL03700
Logical Axis 4 Program Current Position	SL03296	SL03354	SL03412	SL03470	SL03528	SL03586	SL03644	SL03702
Logical Axis 5 Program Current Position	SL03298	SL03356	SL03414	SL03472	SL03530	SL03588	SL03646	SL03704
Logical Axis 6 Program Current Position	SL03300	SL03358	SL03416	SL03474	SL03532	SL03590	SL03648	SL03706
Logical Axis 7 Program Current Position	SL03302	SL03360	SL03418	SL03476	SL03534	SL03592	SL03650	SL03708
Logical Axis 8 Program Current Position	SL03304	SL03362	SL03420	SL03478	SL03536	SL03594	SL03652	SL03710
Logical Axis 9 Program Current Position	SL03306	SL03364	SL03422	SL03480	SL03538	SL03596	SL03654	SL03712
Logical Axis 10 Program Current Position	SL03308	SL03366	SL03424	SL03482	SL03540	SL03598	SL03656	SL03714
Logical Axis 11 Program Current Position	SL03310	SL03368	SL03426	SL03484	SL03542	SL03600	SL03658	SL03716
Logical Axis 12 Program Current Position	SL03312	SL03370	SL03428	SL03486	SL03544	SL03602	SL03660	SL03718
Logical Axis 13 Program Current Position	SL03314	SL03372	SL03430	SL03488	SL03546	SL03604	SL03662	SL03720
Logical Axis 14 Program Current Position	SL03316	SL03374	SL03432	SL03490	SL03548	SL03606	SL03664	SL03722
Logical Axis 15 Program Current Position	SL03318	SL03376	SL03434	SL03492	SL03550	SL03608	SL03666	SL03724
Logical Axis 16 Program Current Position	SL03320	SL03378	SL03436	SL03494	SL03552	SL03610	SL03668	SL03726
Logical Axis 17 Program Current Position	SL08192	SL08224	SL08256	SL08288	SL08320	SL08352	SL08384	SL08416
Logical Axis 18 Program Current Position	SL08194	SL08226	SL08258	SL08290	SL08322	SL08354	SL08386	SL08418
Logical Axis 19 Program Current Position	SL08196	SL08228	SL08260	SL08292	SL08324	SL08356	SL08388	SL08420
Logical Axis 20 Program Current Position	SL08198	SL08230	SL08262	SL08294	SL08326	SL08358	SL08390	SL08422
Logical Axis 21 Program Current Position	SL08200	SL08232	SL08264	SL08296	SL08328	SL08360	SL08392	SL08424
Logical Axis 22 Program Current Position	SL08202	SL08234	SL08266	SL08298	SL08330	SL08362	SL08394	SL08426
Logical Axis 23 Program Current Position	SL08204	SL08236	SL08268	SL08300	SL08332	SL08364	SL08396	SL08428
Logical Axis 24 Program Current Position	SL08206	SL08238	SL08270	SL08302	SL08334	SL08366	SL08398	SL08430
Logical Axis 25 Program Current Position	SL08208	SL08240	SL08272	SL08304	SL08336	SL08368	SL08400	SL08432
Logical Axis 26 Program Current Position	SL08210	SL08242	SL08274	SL08306	SL08338	SL08370	SL08402	SL08434
Logical Axis 27 Program Current Position	SL08212	SL08244	SL08276	SL08308	SL08340	SL08372	SL08404	SL08436
Logical Axis 28 Program Current Position	SL08214	SL08246	SL08278	SL08310	SL08342	SL08374	SL08406	SL08438

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System Work Numbers	Work 1	Work 2	Work 3	Work 4	Work 5	Work 6	Work 7	Work 8
Logical Axis 29 Program Current Position	SL08216	SL08248	SL08280	SL08312	SL08344	SL08376	SL08408	SL08440
Logical Axis 30 Program Current Position	SL08218	SL08250	SL08282	SL08314	SL08346	SL08378	SL08410	SL08442
Logical Axis 31 Program Current Position	SL08220	SL08252	SL08284	SL08316	SL08348	SL08380	SL08412	SL08444
Logical Axis 32 Program Current Position	SL08222	SL08254	SL08286	SL08318	SL08350	SL08382	SL08414	SL08446

• System Work Numbers 9 to 16

System Work Numbers		Work 9	Work 10	Work 11	Work 12	Work 13	Work 14	Work 15	Work 16
Executing Main Program No.		SW03208	SW03209	SW03210	SW03211	SW03212	SW03213	SW03214	SW03215
Status		SW03728	SW03786	SW03844	SW03902	SW03960	SW04018	SW04076	SW04134
Control Signal		SW03729	SW03787	SW03845	SW03903	SW03961	SW04019	SW04077	SW04135
Fork 0	Program Number	SW03730	SW03788	SW03846	SW03904	SW03962	SW04020	SW04078	SW04136
	Block Number	SW03731	SW03789	SW03847	SW03905	SW03963	SW04021	SW04079	SW04137
	Alarm Code	SL26128 (SW03732)	SL26144 (SW03790)	SL26160 (SW03848)	SL26176 (SW03906)	SL26192 (SW03964)	SL26208 (SW04022)	SL26224 (SW04080)	SL26240 (SW04138)
Fork 1	Program Number	SW03733	SW03791	SW03849	SW03907	SW03965	SW04023	SW04081	SW04139
	Block Number	SW03734	SW03792	SW03850	SW03908	SW03966	SW04024	SW04082	SW04140
	Alarm Code	SL26130 (SW03735)	SL26146 (SW03793)	SL26162 (SW03851)	SL26178 (SW03909)	SL26194 (SW03967)	SL26210 (SW04025)	SL26226 (SW04083)	SL26242 (SW04141)
Fork 2	Program Number	SW03736	SW03794	SW03852	SW03910	SW03968	SW04026	SW04084	SW04142
	Block Number	SW03737	SW03795	SW03853	SW03911	SW03969	SW04027	SW04085	SW04143
	Alarm Code	SL26132 (SW03738)	SL26148 (SW03796)	SL26164 (SW03854)	SL26180 (SW03912)	SL26196 (SW03970)	SL26212 (SW04028)	SL26228 (SW04086)	SL26244 (SW04144)
Fork 3	Program Number	SW03739	SW03797	SW03855	SW03913	SW03971	SW04029	SW04087	SW04145
	Block Number	SW03740	SW03798	SW03856	SW03914	SW03972	SW04030	SW04088	SW04146
	Alarm Code	SL26134 (SW03741)	SL26150 (SW03799)	SL26166 (SW03857)	SL26182 (SW03915)	SL26198 (SW03973)	SL26214 (SW04031)	SL26230 (SW04089)	SL26246 (SW04147)
Fork 4	Program Number	SW03742	SW03800	SW03858	SW03916	SW03974	SW04032	SW04090	SW04148
	Block Number	SW03743	SW03801	SW03859	SW03917	SW03975	SW04033	SW04091	SW04149
	Alarm Code	SL26136 (SW03744)	SL26152 (SW03802)	SL26168 (SW03860)	SL26184 (SW03918)	SL26200 (SW03976)	SL26216 (SW04034)	SL26232 (SW04092)	SL26248 (SW04150)
Fork 5	Program Number	SW03745	SW03803	SW03861	SW03919	SW03977	SW04035	SW04093	SW04151
	Block Number	SW03746	SW03804	SW03862	SW03920	SW03978	SW04036	SW04094	SW04152
	Alarm Code	SL26138 (SW03747)	SL26154 (SW03805)	SL26170 (SW03863)	SL26186 (SW03921)	SL26202 (SW03979)	SL26218 (SW04037)	SL26234 (SW04095)	SL26250 (SW04153)
Fork 6	Program Number	SW03748	SW03806	SW03864	SW03922	SW03980	SW04038	SW04096	SW04154
	Block Number	SW03749	SW03807	SW03865	SW03923	SW03981	SW04039	SW04097	SW04155
	Alarm Code	SL26140 (SW03750)	SL26156 (SW03808)	SL26172 (SW03866)	SL26188 (SW03924)	SL26204 (SW03982)	SL26220 (SW04040)	SL26236 (SW04098)	SL26252 (SW04156)
Fork 7	Program Number	SW03751	SW03809	SW03867	SW03925	SW03983	SW04041	SW04099	SW04157
	Block Number	SW03752	SW03810	SW03868	SW03926	SW03984	SW04042	SW04100	SW04158
	Alarm Code	SL26142 (SW03753)	SL26158 (SW03811)	SL26174 (SW03869)	SL26190 (SW03927)	SL26206 (SW03985)	SL26222 (SW04043)	SL26238 (SW04101)	SL26254 (SW04159)

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System Work Numbers	Work 9	Work 10	Work 11	Work 12	Work 13	Work 14	Work 15	Work 16
Logical Axis 1 Program Current Position	SL03754	SL03812	SL03870	SL03928	SL03986	SL04044	SL04102	SL04160
Logical Axis 2 Program Current Position	SL03756	SL03814	SL03872	SL03930	SL03988	SL04046	SL04104	SL04162
Logical Axis 3 Program Current Position	SL03758	SL03816	SL03874	SL03932	SL03990	SL04048	SL04106	SL04164
Logical Axis 4 Program Current Position	SL03760	SL03818	SL03876	SL03934	SL03992	SL04050	SL04108	SL04166
Logical Axis 5 Program Current Position	SL03762	SL03820	SL03878	SL03936	SL03994	SL04052	SL04110	SL04168
Logical Axis 6 Program Current Position	SL03764	SL03822	SL03880	SL03938	SL03996	SL04054	SL04112	SL04170
Logical Axis 7 Program Current Position	SL03766	SL03824	SL03882	SL03940	SL03998	SL04056	SL04114	SL04172
Logical Axis 8 Program Current Position	SL03768	SL03826	SL03884	SL03942	SL04000	SL04058	SL04116	SL04174
Logical Axis 9 Program Current Position	SL03770	SL03828	SL03886	SL03944	SL04002	SL04060	SL04118	SL04176
Logical Axis 10 Program Current Position	SL03772	SL03830	SL03888	SL03946	SL04004	SL04062	SL04120	SL04178
Logical Axis 11 Program Current Position	SL03774	SL03832	SL03890	SL03948	SL04006	SL04064	SL04122	SL04180
Logical Axis 12 Program Current Position	SL03776	SL03834	SL03892	SL03950	SL04008	SL04066	SL04124	SL04182
Logical Axis 13 Program Current Position	SL03778	SL03836	SL03894	SL03952	SL04010	SL04068	SL04126	SL04184
Logical Axis 14 Program Current Position	SL03780	SL03838	SL03896	SL03954	SL04012	SL04070	SL04128	SL04186
Logical Axis 15 Program Current Position	SL03782	SL03840	SL03898	SL03956	SL04014	SL04072	SL04130	SL04188
Logical Axis 16 Program Current Position	SL03784	SL03842	SL03900	SL03958	SL04016	SL04074	SL04132	SL04190
Logical Axis 17 Program Current Position	SL08448	SL08480	SL08512	SL08544	SL08576	SL08608	SL08640	SL08672
Logical Axis 18 Program Current Position	SL08450	SL08482	SL08514	SL08546	SL08578	SL08610	SL08642	SL08674
Logical Axis 19 Program Current Position	SL08452	SL08484	SL08516	SL08548	SL08580	SL08612	SL08644	SL08676
Logical Axis 20 Program Current Position	SL08454	SL08486	SL08518	SL08550	SL08582	SL08614	SL08646	SL08678
Logical Axis 21 Program Current Position	SL08456	SL08488	SL08520	SL08552	SL08584	SL08616	SL08648	SL08680
Logical Axis 22 Program Current Position	SL08458	SL08490	SL08522	SL08554	SL08586	SL08618	SL08650	SL08682
Logical Axis 23 Program Current Position	SL08460	SL08492	SL08524	SL08556	SL08588	SL08620	SL08652	SL08684
Logical Axis 24 Program Current Position	SL08462	SL08494	SL08526	SL08558	SL08590	SL08622	SL08654	SL08686
Logical Axis 25 Program Current Position	SL08464	SL08496	SL08528	SL08560	SL08592	SL08624	SL08656	SL08688
Logical Axis 26 Program Current Position	SL08466	SL08498	SL08530	SL08562	SL08594	SL08626	SL08658	SL08690

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System Work Numbers	Work 9	Work 10	Work 11	Work 12	Work 13	Work 14	Work 15	Work 16
Logical Axis 27 Program Current Position	SL08468	SL08500	SL08532	SL08564	SL08596	SL08628	SL08660	SL08692
Logical Axis 28 Program Current Position	SL08470	SL08502	SL08534	SL08566	SL08598	SL08630	SL08662	SL08694
Logical Axis 29 Program Current Position	SL08472	SL08504	SL08536	SL08568	SL08600	SL08632	SL08664	SL08696
Logical Axis 30 Program Current Position	SL08474	SL08506	SL08538	SL08570	SL08602	SL08634	SL08666	SL08698
Logical Axis 31 Program Current Position	SL08476	SL08508	SL08540	SL08572	SL08604	SL08636	SL08668	SL08700
Logical Axis 32 Program Current Position	SL08478	SL08510	SL08542	SL08574	SL08606	SL08638	SL08670	SL08702

- System Work Numbers 17 to 24

System Work Number		Work 17	Work 18	Work 19	Work 20	Work 21	Work 22	Work 23	Work 24
Executing Main Program No.		SW03216	SW03217	SW03218	SW03219	SW03220	SW03221	SW03222	SW03223
Status		SW04192	SW04250	SW04308	SW04366	SW04424	SW04482	SW04540	SW04598
Control Signal		SW04193	SW04251	SW04309	SW04367	SW04425	SW04483	SW04541	SW04599
Fork 0	Program Number	SW04194	SW04252	SW04310	SW04368	SW04426	SW04484	SW04542	SW04600
	Block Number	SW04195	SW04253	SW04311	SW04369	SW04427	SW04485	SW04543	SW04601
	Alarm Code	SL26256 (SW04196)	SL26272 (SW04254)	SL26288 (SW04312)	SL26304 (SW04370)	SL26320 (SW04428)	SL26336 (SW04486)	SL26352 (SW04544)	SL26368 (SW04602)
Fork 1	Program Number	SW04197	SW04255	SW04313	SW04371	SW04429	SW04487	SW04545	SW04603
	Block Number	SW04198	SW04256	SW04314	SW04372	SW04430	SW04488	SW04546	SW04604
	Alarm Code	SL26258 (SW04199)	SL26274 (SW04257)	SL26290 (SW04315)	SL26306 (SW04373)	SL26322 (SW04431)	SL26338 (SW04489)	SL26354 (SW04547)	SL26370 (SW04605)
Fork 2	Program Number	SW04200	SW04258	SW04316	SW04374	SW04432	SW04490	SW04548	SW04606
	Block Number	SW04201	SW04259	SW04317	SW04375	SW04433	SW04491	SW04549	SW04607
	Alarm Code	SL26260 (SW04202)	SL26276 (SW04260)	SL26292 (SW04318)	SL26308 (SW04376)	SL26324 (SW04434)	SL26340 (SW04492)	SL26356 (SW04550)	SL26372 (SW04608)
Fork 3	Program Number	SW04203	SW04261	SW04319	SW04377	SW04435	SW04493	SW04551	SW04609
	Block Number	SW04204	SW04262	SW04320	SW04378	SW04436	SW04494	SW04552	SW04610
	Alarm Code	SL26262 (SW04205)	SL26278 (SW04263)	SL26294 (SW04321)	SL26310 (SW04379)	SL26326 (SW04437)	SL26342 (SW04495)	SL26358 (SW04553)	SL26374 (SW04611)
Fork 4	Program Number	SW04206	SW04264	SW04322	SW04380	SW04438	SW04496	SW04554	SW04612
	Block Number	SW04207	SW04265	SW04323	SW04381	SW04439	SW04497	SW04555	SW04613
	Alarm Code	SL26264 (SW04208)	SL26280 (SW04266)	SL26296 (SW04324)	SL26312 (SW04382)	SL26328 (SW04440)	SL26344 (SW04498)	SL26360 (SW04556)	SL26376 (SW04614)
Fork 5	Program Number	SW04209	SW04267	SW04325	SW04383	SW04441	SW04499	SW04557	SW04615
	Block Number	SW04210	SW04268	SW04326	SW04384	SW04442	SW04500	SW04558	SW04616
	Alarm Code	SL26266 (SW04211)	SL26282 (SW04269)	SL26298 (SW04327)	SL26314 (SW04385)	SL26330 (SW04443)	SL26346 (SW04501)	SL26362 (SW04559)	SL26378 (SW04617)
Fork 6	Program Number	SW04212	SW04270	SW04328	SW04386	SW04444	SW04502	SW04560	SW04618
	Block Number	SW04213	SW04271	SW04329	SW04387	SW04445	SW04503	SW04561	SW04619
	Alarm Code	SL26268 (SW04214)	SL26284 (SW04272)	SL26300 (SW04330)	SL26316 (SW04388)	SL26332 (SW04446)	SL26348 (SW04504)	SL26364 (SW04562)	SL26380 (SW04620)

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System Work Number		Work 17	Work 18	Work 19	Work 20	Work 21	Work 22	Work 23	Work 24
Fork 7	Program Number	SW04215	SW04273	SW04331	SW04389	SW04447	SW04505	SW04563	SW04621
	Block Number	SW04216	SW04274	SW04332	SW04390	SW04448	SW04506	SW04564	SW04622
	Alarm Code	SL26270 (SW04217)	SL26286 (SW04275)	SL26302 (SW04333)	SL26318 (SW04391)	SL26334 (SW04449)	SL26350 (SW04507)	SL26366 (SW04565)	SL26382 (SW04623)
Logical Axis 1 Program Current Position		SL04218	SL04276	SL04334	SL04392	SL04450	SL04508	SL04566	SL04624
Logical Axis 2 Program Current Position		SL04220	SL04278	SL04336	SL04394	SL04452	SL04510	SL04568	SL04626
Logical Axis 3 Program Current Position		SL04222	SL04280	SL04338	SL04396	SL04454	SL04512	SL04570	SL04628
Logical Axis 4 Program Current Position		SL04224	SL04282	SL04340	SL04398	SL04456	SL04514	SL04572	SL04630
Logical Axis 5 Program Current Position		SL04226	SL04284	SL04342	SL04400	SL04458	SL04516	SL04574	SL04632
Logical Axis 6 Program Current Position		SL04228	SL04286	SL04344	SL04402	SL04460	SL04518	SL04576	SL04634
Logical Axis 7 Program Current Position		SL04230	SL04288	SL04346	SL04404	SL04462	SL04520	SL04578	SL04636
Logical Axis 8 Program Current Position		SL04232	SL04290	SL04348	SL04406	SL04464	SL04522	SL04580	SL04638
Logical Axis 9 Program Current Position		SL04234	SL04292	SL04350	SL04408	SL04466	SL04524	SL04582	SL04640
Logical Axis 10 Program Current Position		SL04236	SL04294	SL04352	SL04410	SL04468	SL04526	SL04584	SL04642
Logical Axis 11 Program Current Position		SL04238	SL04296	SL04354	SL04412	SL04470	SL04528	SL04586	SL04644
Logical Axis 12 Program Current Position		SL04240	SL04298	SL04356	SL04414	SL04472	SL04530	SL04588	SL04646
Logical Axis 13 Program Current Position		SL04242	SL04300	SL04358	SL04416	SL04474	SL04532	SL04590	SL04648
Logical Axis 14 Program Current Position		SL04244	SL04302	SL04360	SL04418	SL04476	SL04534	SL04592	SL04650
Logical Axis 15 Program Current Position		SL04246	SL04304	SL04362	SL04420	SL04478	SL04536	SL04594	SL04652
Logical Axis 16 Program Current Position		SL04248	SL04306	SL04364	SL04422	SL04480	SL04538	SL04596	SL04654
Logical Axis 17 Program Current Position		SL08704	SL08736	SL08768	SL08800	SL08832	SL08864	SL08896	SL08928
Logical Axis 18 Program Current Position		SL08706	SL08738	SL08770	SL08802	SL08834	SL08866	SL08898	SL08930
Logical Axis 19 Program Current Position		SL08708	SL08740	SL08772	SL08804	SL08836	SL08868	SL08900	SL08932
Logical Axis 20 Program Current Position		SL08710	SL08742	SL08774	SL08806	SL08838	SL08870	SL08902	SL08934
Logical Axis 21 Program Current Position		SL08712	SL08744	SL08776	SL08808	SL08840	SL08872	SL08904	SL08936
Logical Axis 22 Program Current Position		SL08714	SL08746	SL08778	SL08810	SL08842	SL08874	SL08906	SL08938
Logical Axis 23 Program Current Position		SL08716	SL08748	SL08780	SL08812	SL08844	SL08876	SL08908	SL08940
Logical Axis 24 Program Current Position		SL08718	SL08750	SL08782	SL08814	SL08846	SL08878	SL08910	SL08942

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System Work Number	Work 17	Work 18	Work 19	Work 20	Work 21	Work 22	Work 23	Work 24
Logical Axis 25 Program Current Position	SL08720	SL08752	SL08784	SL08816	SL08848	SL08880	SL08912	SL08944
Logical Axis 26 Program Current Position	SL08722	SL08754	SL08786	SL08818	SL08850	SL08882	SL08914	SL08946
Logical Axis 27 Program Current Position	SL08724	SL08756	SL08788	SL08820	SL08852	SL08884	SL08916	SL08948
Logical Axis 28 Program Current Position	SL08726	SL08758	SL08790	SL08822	SL08854	SL08886	SL08918	SL08950
Logical Axis 29 Program Current Position	SL08728	SL08760	SL08792	SL08824	SL08856	SL08888	SL08920	SL08952
Logical Axis 30 Program Current Position	SL08730	SL08762	SL08794	SL08826	SL08858	SL08890	SL08922	SL08954
Logical Axis 31 Program Current Position	SL08732	SL08764	SL08796	SL08828	SL08860	SL08892	SL08924	SL08956
Logical Axis 32 Program Current Position	SL08734	SL08766	SL08798	SL08830	SL08862	SL08894	SL08926	SL08958

• System Work Numbers 25 to 32

System Work Numbers		Work 25	Work 26	Work 27	Work 28	Work 29	Work 30	Work 31	Work 32
Executing Main Program No.		SW03224	SW03225	SW03226	SW03227	SW03228	SW03229	SW03230	SW03231
Status		SW04656	SW04714	SW04772	SW04830	SW04888	SW04946	SW05004	SW05062
Control Signal		SW04657	SW04715	SW04773	SW04831	SW04889	SW04947	SW05005	SW05063
Fork 0	Program Number	SW04658	SW04716	SW04774	SW04832	SW04890	SW04948	SW05006	SW05064
	Block Number	SW04659	SW04717	SW04775	SW04833	SW04891	SW04949	SW05007	SW05065
	Alarm Code	SL26384 (SW04660)	SL26400 (SW04718)	SL26416 (SW04776)	SL26432 (SW04834)	SL26448 (SW04892)	SL26464 (SW04950)	SL26480 (SW05008)	SL26496 (SW05066)
Fork 1	Program Number	SW04661	SW04719	SW04777	SW04835	SW04893	SW04951	SW05009	SW05067
	Block Number	SW04662	SW04720	SW04778	SW04836	SW04894	SW04952	SW05010	SW05068
	Alarm Code	SL26386 (SW04663)	SL26402 (SW04721)	SL26418 (SW04779)	SL26434 (SW04837)	SL26450 (SW04895)	SL26466 (SW04953)	SL26482 (SW05011)	SL26498 (SW05069)
Fork 2	Program Number	SW04664	SW04722	SW04780	SW04838	SW04896	SW04954	SW05012	SW05070
	Block Number	SW04665	SW04723	SW04781	SW04839	SW04897	SW04955	SW05013	SW05071
	Alarm Code	SL26388 (SW04666)	SL26404 (SW04724)	SL26420 (SW04782)	SL26436 (SW04840)	SL26452 (SW04898)	SL26468 (SW04956)	SL26484 (SW05014)	SL26500 (SW05072)
Fork 3	Program Number	SW04667	SW04725	SW04783	SW04841	SW04899	SW04957	SW05015	SW05073
	Block Number	SW04668	SW04726	SW04784	SW04842	SW04900	SW04958	SW05016	SW05074
	Alarm Code	SL26390 (SW04669)	SL26406 (SW04727)	SL26422 (SW04785)	SL26438 (SW04843)	SL26454 (SW04901)	SL26470 (SW04959)	SL26486 (SW05017)	SL26502 (SW05075)
Fork 4	Program Number	SW04670	SW04728	SW04786	SW04844	SW04902	SW04960	SW05018	SW05076
	Block Number	SW04671	SW04729	SW04787	SW04845	SW04903	SW04961	SW05019	SW05077
	Alarm Code	SL26392 (SW04672)	SL26408 (SW04730)	SL26424 (SW04788)	SL26440 (SW04846)	SL26456 (SW04904)	SL26472 (SW04962)	SL26488 (SW05020)	SL26504 (SW05078)
Fork 5	Program Number	SW04673	SW04731	SW04789	SW04847	SW04905	SW04963	SW05021	SW05079
	Block Number	SW04674	SW04732	SW04790	SW04848	SW04906	SW04964	SW05022	SW05080
	Alarm Code	SL26394 (SW04675)	SL26410 (SW04733)	SL26426 (SW04791)	SL26442 (SW04849)	SL26458 (SW04907)	SL26474 (SW04965)	SL26490 (SW05023)	SL26506 (SW05081)

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System Work Numbers		Work 25	Work 26	Work 27	Work 28	Work 29	Work 30	Work 31	Work 32
Fork 6	Program Number	SW04676	SW04734	SW04792	SW04850	SW04908	SW04966	SW05024	SW05082
	Block Number	SW04677	SW04735	SW04793	SW04851	SW04909	SW04967	SW05025	SW05083
	Alarm Code	SL26396 (SW04678)	SL26412 (SW04736)	SL26428 (SW04794)	SL26444 (SW04852)	SL26460 (SW04910)	SL26476 (SW04968)	SL26492 (SW05026)	SL26508 (SW05084)
Fork 7	Program Number	SW04679	SW04737	SW04795	SW04853	SW04911	SW04969	SW05027	SW05085
	Block Number	SW04680	SW04738	SW04796	SW04854	SW04912	SW04970	SW05028	SW05086
	Alarm Code	SL26398 (SW04681)	SL26414 (SW04739)	SL26430 (SW04797)	SL26446 (SW04855)	SL26462 (SW04913)	SL26478 (SW04971)	SL26494 (SW05029)	SL26510 (SW05087)
Logical Axis 1 Program Current Position		SL04682	SL04740	SL04798	SL04856	SL04914	SL04972	SL05030	SL05088
Logical Axis 2 Program Current Position		SL04684	SL04742	SL04800	SL04858	SL04916	SL04974	SL05032	SL05090
Logical Axis 3 Program Current Position		SL04686	SL04744	SL04802	SL04860	SL04918	SL04976	SL05034	SL05092
Logical Axis 4 Program Current Position		SL04688	SL04746	SL04804	SL04862	SL04920	SL04978	SL05036	SL05094
Logical Axis 5 Program Current Position		SL04690	SL04748	SL04806	SL04864	SL04922	SL04980	SL05038	SL05096
Logical Axis 6 Program Current Position		SL04692	SL04750	SL04808	SL04866	SL04924	SL04982	SL05040	SL05098
Logical Axis 7 Program Current Position		SL04694	SL04752	SL04810	SL04868	SL04926	SL04984	SL05042	SL05100
Logical Axis 8 Program Current Position		SL04696	SL04754	SL04812	SL04870	SL04928	SL04986	SL05044	SL05102
Logical Axis 9 Program Current Position		SL04698	SL04756	SL04814	SL04872	SL04930	SL04988	SL05046	SL05104
Logical Axis 10 Program Current Position		SL04700	SL04758	SL04816	SL04874	SL04932	SL04990	SL05048	SL05106
Logical Axis 11 Program Current Position		SL04702	SL04760	SL04818	SL04876	SL04934	SL04992	SL05050	SL05108
Logical Axis 12 Program Current Position		SL04704	SL04762	SL04820	SL04878	SL04936	SL04994	SL05052	SL05110
Logical Axis 13 Program Current Position		SL04706	SL04764	SL04822	SL04880	SL04938	SL04996	SL05054	SL05112
Logical Axis 14 Program Current Position		SL04708	SL04766	SL04824	SL04882	SL04940	SL04998	SL05056	SL05114
Logical Axis 15 Program Current Position		SL04710	SL04768	SL04826	SL04884	SL04942	SL05000	SL05058	SL05116
Logical Axis 16 Program Current Position		SL04712	SL04770	SL04828	SL04886	SL04944	SL05002	SL05060	SL05118
Logical Axis 17 Program Current Position		SL08960	SL08992	SL09024	SL09056	SL09088	SL09120	SL09152	SL09184
Logical Axis 18 Program Current Position		SL08962	SL08994	SL09026	SL09058	SL09090	SL09122	SL09154	SL09186
Logical Axis 19 Program Current Position		SL08964	SL08996	SL09028	SL09060	SL09092	SL09124	SL09156	SL09188
Logical Axis 20 Program Current Position		SL08966	SL08998	SL09030	SL09062	SL09094	SL09126	SL09158	SL09190
Logical Axis 21 Program Current Position		SL08968	SL09000	SL09032	SL09064	SL09096	SL09128	SL09160	SL09192

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System Work Numbers	Work 25	Work 26	Work 27	Work 28	Work 29	Work 30	Work 31	Work 32
Logical Axis 22 Program Current Position	SL08970	SL09002	SL09034	SL09066	SL09098	SL09130	SL09162	SL09194
Logical Axis 23 Program Current Position	SL08972	SL09004	SL09036	SL09068	SL09100	SL09132	SL09164	SL09196
Logical Axis 24 Program Current Position	SL08974	SL09006	SL09038	SL09070	SL09102	SL09134	SL09166	SL09198
Logical Axis 25 Program Current Position	SL08976	SL09008	SL09040	SL09072	SL09104	SL09136	SL09168	SL09200
Logical Axis 26 Program Current Position	SL08978	SL09010	SL09042	SL09074	SL09106	SL09138	SL09170	SL09202
Logical Axis 27 Program Current Position	SL08980	SL09012	SL09044	SL09076	SL09108	SL09140	SL09172	SL09204
Logical Axis 28 Program Current Position	SL08982	SL09014	SL09046	SL09078	SL09110	SL09142	SL09174	SL09206
Logical Axis 29 Program Current Position	SL08984	SL09016	SL09048	SL09080	SL09112	SL09144	SL09176	SL09208
Logical Axis 30 Program Current Position	SL08986	SL09018	SL09050	SL09082	SL09114	SL09146	SL09178	SL09210
Logical Axis 31 Program Current Position	SL08988	SL09020	SL09052	SL09084	SL09116	SL09148	SL09180	SL09212
Logical Axis 32 Program Current Position	SL08990	SL09022	SL09054	SL09086	SL09118	SL09150	SL09182	SL09214

Extended System I/O Error Status

The data in these registers give the I/O errors in the system for Racks 1 and 5 to 7.

The details of the error status depend on the Modules that are mounted and the error code.

Name	Register Address	Remarks
I/O Error Count	SW09560	Number of I/O error occurrences
Input Error Count	SW09561	Number of input error occurrences
Input Error Address	SL09562	Latest input error address (register address in IW□□□□□)
Reserved for system.	SW09564	–
Output Error Count	SW09565	Number of output error occurrences
Output Error Address	SL09566	Latest output error address (register address in OW□□□□□)
Reserved for system.	SW09568 to SW09571	–

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Name	Register Address	Remarks		
Extended I/O Error Status	SW09572 to SW09603	CPU Unit/CPU Module		
	SW09604 to SW09635	Rack 1	Unit 1	Slot 1
	SW09636 to SW09667			Slot 2
	SW09668 to SW09699			Slot 3
	SW09700 to SW09731			Slot 4
	SW09732 to SW09763			Slot 5
	SW09764 to SW09795			Slot 6
	SW09796 to SW09827			Slot 7
	SW09828 to SW09859			Slot 8
	SW09860 to SW09891		Unit 2	Slot 1
	SW09892 to SW09923			Slot 2
	SW09924 to SW09955			Slot 3
	SW09956 to SW09987			Slot 4
	SW09988 to SW10019			Slot 5
	SW10020 to SW10051			Slot 6
	SW10052 to SW10083			Slot 7
	SW10084 to SW10115			Slot 8
	SW10116 to SW10147		Unit 3	Slot 1
	SW10148 to SW10179			Slot 2
	SW10180 to SW10211			Slot 3
	SW10212 to SW10243			Slot 4
	SW10244 to SW10275			Slot 5
	SW10276 to SW10307			Slot 6
	SW10308 to SW10339			Slot 7
	SW10340 to SW10371			Slot 8
	SW10372 to SW10403		Unit 4	Slot 1
	SW10404 to SW10435			Slot 2
	SW10436 to SW10467			Slot 3
	SW10468 to SW10499			Slot 4
	SW10500 to SW10531			Slot 5
	SW10532 to SW10563			Slot 6
	SW10564 to SW10595			Slot 7
	SW10596 to SW10627			Slot 8

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Name	Register Address	Remarks		
Extended I/O Error Status	SW10628 to SW10659	Rack 5	Unit 1	Slot 1
	SW10660 to SW10691			Slot 2
	SW10692 to SW10723			Slot 3
	SW10724 to SW10755			Slot 4
	SW10756 to SW10787			Slot 5
	SW10788 to SW10819			Slot 6
	SW10820 to SW10851			Slot 7
	SW10852 to SW10883			Slot 8
	SW10884 to SW10915		Unit 2	Slot 1
	SW10916 to SW10947			Slot 2
	SW10948 to SW10979			Slot 3
	SW10980 to SW11011			Slot 4
	SW11012 to SW11043			Slot 5
	SW11044 to SW11075			Slot 6
	SW11076 to SW11107			Slot 7
	SW11108 to SW11139			Slot 8
	SW11140 to SW11171		Unit 3	Slot 1
	SW11172 to SW11203			Slot 2
	SW11204 to SW11235			Slot 3
	SW11236 to SW11267			Slot 4
	SW11268 to SW11299			Slot 5
	SW11300 to SW11331			Slot 6
	SW11332 to SW11363			Slot 7
	SW11364 to SW11395			Slot 8
	SW11396 to SW11427		Unit 4	Slot 1
	SW11428 to SW11459			Slot 2
	SW11460 to SW11491			Slot 3
	SW11492 to SW11523			Slot 4
	SW11524 to SW11555			Slot 5
	SW11556 to SW11587			Slot 6
	SW11588 to SW11619			Slot 7
	SW11620 to SW11651			Slot 8

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Name	Register Address	Remarks		
Extended I/O Error Status	SW11652 to SW11683	Rack 6	Unit 1	Slot 1
	SW11684 to SW11715			Slot 2
	SW11716 to SW11747			Slot 3
	SW11748 to SW11779			Slot 4
	SW11780 to SW11811			Slot 5
	SW11812 to SW11843			Slot 6
	SW11844 to SW11875			Slot 7
	SW11876 to SW11907			Slot 8
	SW11908 to SW11939		Unit 2	Slot 1
	SW11940 to SW11971			Slot 2
	SW11972 to SW12003			Slot 3
	SW12004 to SW12035			Slot 4
	SW12036 to SW12067			Slot 5
	SW12068 to SW12099			Slot 6
	SW12100 to SW12131			Slot 7
	SW12132 to SW12163			Slot 8
	SW12164 to SW12195		Unit 3	Slot 1
	SW12196 to SW12227			Slot 2
	SW12228 to SW12259			Slot 3
	SW12260 to SW12291			Slot 4
	SW12292 to SW12323			Slot 5
	SW12324 to SW12355			Slot 6
	SW12356 to SW12387			Slot 7
	SW12388 to SW12419			Slot 8
	SW12420 to SW12451		Unit 4	Slot 1
	SW12452 to SW12483			Slot 2
	SW12484 to SW12515			Slot 3
	SW12516 to SW12547			Slot 4
	SW12548 to SW12579			Slot 5
	SW12580 to SW12611			Slot 6
	SW12612 to SW12643			Slot 7
	SW12644 to SW12675			Slot 8

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Name	Register Address	Remarks		
Extended I/O Error Status	SW12676 to SW12707	Rack 7	Unit 1	Slot 1
	SW12708 to SW12739			Slot 2
	SW12740 to SW12771			Slot 3
	SW12772 to SW12803			Slot 4
	SW12804 to SW12835			Slot 5
	SW12836 to SW12867			Slot 6
	SW12868 to SW12899			Slot 7
	SW12900 to SW12931			Slot 8
	SW12932 to SW12963		Unit 2	Slot 1
	SW12964 to SW12995			Slot 2
	SW12996 to SW13027			Slot 3
	SW13028 to SW13059			Slot 4
	SW13060 to SW13091			Slot 5
	SW13092 to SW13123			Slot 6
	SW13124 to SW13155			Slot 7
	SW13156 to SW13187			Slot 8
	SW13188 to SW13219		Unit 3	Slot 1
	SW13220 to SW13251			Slot 2
	SW13252 to SW13283			Slot 3
	SW13284 to SW13315			Slot 4
	SW13316 to SW13347			Slot 5
	SW13348 to SW13379			Slot 6
	SW13380 to SW13411			Slot 7
	SW13412 to SW13443			Slot 8
	SW13444 to SW13475		Unit 4	Slot 1
	SW13476 to SW13507			Slot 2
	SW13508 to SW13539			Slot 3
	SW13540 to SW13571			Slot 4
	SW13572 to SW13603			Slot 5
	SW13604 to SW13635			Slot 6
	SW13636 to SW13667			Slot 7
	SW13668 to SW13699			Slot 8

Information The I/O error status data for Racks 2 to 4 is stored in SW00288 to SW00503. Refer to the following section for details.

☞ *System I/O Error Status (page 7-15)*

Extended Unit and Module Information

The data in these registers give hardware information about the CPU Unit/CPU Module and Optional Modules on Racks 1 and 5 to 7.

Name	Register Address	Remarks
CPU Information	SW13700	CPU Unit ID/CPU Module ID (Low)
	SW13701	CPU Unit ID/CPU Module ID (High)
	SW13702	Hardware version (BCD)
	SW13703	Software version (BCD)
	SW13704	Number of sub-slots (hex)
	SW13705 to SW13707	Reserved for system.
	SW13708	Function Module 1 ID (Low)
	SW13709	Function Module 1 ID (High)
	SW13710	Function Module 1 Status
	SW13711	Reserved for system.
	SW13712	Function Module 2 ID (Low)
	SW13713	Function Module 2 ID (High)
	SW13714	Function Module 2 Status
	SW13715	Reserved for system.
	SW13716	Function Module 3 ID (Low)
	SW13717	Function Module 3 ID (High)
	SW13718	Function Module 3 Status
	SW13719	Reserved for system.
	SW13720	Function Module 4 ID (Low)
	SW13721	Function Module 4 ID (High)
	SW13722	Function Module 4 Status
	SW13723	Reserved for system.
	SW13724	Function Module 5 ID (Low)
	SW13725	Function Module 5 ID (High)
	SW13726	Function Module 5 Status
	SW13727	Reserved for system.
	SW13728	Function Module 6 ID (Low)
	SW13729	Function Module 6 ID (High)
	SW13730	Function Module 6 Status
	SW13731	Reserved for system.
	SW13732	Function Module 7 ID (Low)
	SW13733	Function Module 7 ID (High)
	SW13734	Function Module 7 Status
	SW13735	Reserved for system.
	SW13736	Function Module 8 ID (Low)
	SW13737	Function Module 8 ID (High)
	SW13738	Function Module 8 Status
	SW13739	Reserved for system.
	SW13740	Function Module 9 ID (Low)
	SW13741	Function Module 9 ID (High)
	SW13742	Function Module 9 Status
	SW13743	Reserved for system.
	SW13744	Function Module 10 ID (Low)
	SW13745	Function Module 10 ID (High)
	SW13746	Function Module 10 Status
	SW13747	Reserved for system.

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Name	Register Address	Remarks			
Unit and Optional Module Information	SW13748	Rack 1	Unit 1	Slot 1	Optional Unit and Module ID (Low)
	SW13749				Optional Unit and Module ID (High)
	SW13750				Hardware version (BCD)
	SW13751				Software version (BCD)
	SW13752				Number of sub-slots (hex)
	SW13753 to SW13755				Reserved for system.
	SW13756				Function Module 1 ID (Low)
	SW13757				Function Module 1 ID (High)
	SW13758				Function Module 1 Status
	SW13759				Reserved for system.
	SW13760				Function Module 2 ID (Low)
	SW13761				Function Module 2 ID (High)
	SW13762				Function Module 2 Status
	SW13763				Reserved for system.
	SW13764 to SW13779			Slot 2	Same as above.
	SW13780 to SW13795			Slot 3	
	SW13796 to SW13811			Slot 4	
	SW13812 to SW13827			Slot 5	
	SW13828 to SW13843			Slot 6	
	SW13844 to SW13859			Slot 7	
	SW13860 to SW13875			Slot 8	
	SW13876 to SW13891		Unit 2	Slot 1	
	SW13892 to SW13907			Slot 2	
	SW13908 to SW13923			Slot 3	
	SW13924 to SW13939			Slot 4	
	SW13940 to SW13955			Slot 5	
	SW13956 to SW13971			Slot 6	
	SW13972 to SW13987			Slot 7	
	SW13988 to SW14003			Slot 8	
	SW14004 to SW14019		Unit 3	Slot 1	
	SW14020 to SW14035			Slot 2	
	SW14036 to SW14051			Slot 3	
	SW14052 to SW14067			Slot 4	
	SW14068 to SW14083			Slot 5	
	SW14084 to SW14099			Slot 6	
	SW14100 to SW14115			Slot 7	
	SW14116 to SW14131			Slot 8	

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Name	Register Address	Remarks			
Unit and Optional Module Information	SW14132 to SW14147	Rack 1	Unit 4	Slot 1	Same as above.
	SW14148 to SW14163			Slot 2	
	SW14164 to SW14179			Slot 3	
	SW14180 to SW14195			Slot 4	
	SW14196 to SW14211			Slot 5	
	SW14212 to SW14227			Slot 6	
	SW14228 to SW14243			Slot 7	
	SW14244 to SW14259			Slot 8	
	SW14260 to SW14275	Rack 5	Unit 1	Slot 1	Same as above.
	SW14276 to SW14291			Slot 2	
	SW14292 to SW14307			Slot 3	
	SW14308 to SW14323			Slot 4	
	SW14324 to SW14339			Slot 5	
	SW14340 to SW14355			Slot 6	
	SW14356 to SW14371			Slot 7	
	SW14372 to SW14387			Slot 8	
	SW14388 to SW14403		Unit 2	Slot 1	
	SW14404 to SW14419			Slot 2	
	SW14420 to SW14435			Slot 3	
	SW14436 to SW14451			Slot 4	
	SW14452 to SW14467			Slot 5	
	SW14468 to SW14483			Slot 6	
	SW14484 to SW14499			Slot 7	
	SW14500 to SW14515			Slot 8	
	SW14516 to SW14531		Unit 3	Slot 1	
	SW14532 to SW14547			Slot 2	
	SW14548 to SW14563			Slot 3	
	SW14564 to SW14579			Slot 4	
	SW14580 to SW14595			Slot 5	
	SW14596 to SW14611			Slot 6	
	SW14612 to SW14627			Slot 7	
	SW14628 to SW14643			Slot 8	
	SW14644 to SW14659		Unit 4	Slot 1	
	SW14660 to SW14675			Slot 2	
	SW14676 to SW14691			Slot 3	
	SW14692 to SW14707			Slot 4	
	SW14708 to SW14723			Slot 5	
	SW14724 to SW14739			Slot 6	
	SW14740 to SW14755			Slot 7	
	SW14756 to SW14771			Slot 8	

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Name	Register Address	Remarks			
Unit and Optional Module Information	SW14772 to SW14787	Rack 6	Unit 1	Slot 1	Same as above.
	SW14788 to SW14803			Slot 2	
	SW14804 to SW14819			Slot 3	
	SW14820 to SW14835			Slot 4	
	SW14836 to SW14851			Slot 5	
	SW14852 to SW14867			Slot 6	
	SW14868 to SW14883			Slot 7	
	SW14884 to SW14899			Slot 8	
	SW14900 to SW14915		Unit 2	Slot 1	
	SW14916 to SW14931			Slot 2	
	SW14932 to SW14947			Slot 3	
	SW14948 to SW14963			Slot 4	
	SW14964 to SW14979			Slot 5	
	SW14980 to SW14995			Slot 6	
	SW14996 to SW15011			Slot 7	
	SW15012 to SW15027			Slot 8	
	SW15028 to SW15043		Unit 3	Slot 1	
	SW15044 to SW15059			Slot 2	
	SW15060 to SW15075			Slot 3	
	SW15076 to SW15091			Slot 4	
	SW15092 to SW15107			Slot 5	
	SW15108 to SW15123			Slot 6	
	SW15124 to SW15139			Slot 7	
	SW15140 to SW15155			Slot 8	
	SW15156 to SW15171		Unit 4	Slot 1	
	SW15172 to SW15187			Slot 2	
	SW15188 to SW15203			Slot 3	
	SW15204 to SW15219			Slot 4	
	SW15220 to SW15235			Slot 5	
	SW15236 to SW15251			Slot 6	
	SW15252 to SW15267			Slot 7	
	SW15268 to SW15283			Slot 8	

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Name	Register Address	Remarks			
Unit and Optional Module Information	SW15284 to SW15299	Rack 7	Unit 1	Slot 1	Same as above.
	SW15300 to SW15315			Slot 2	
	SW15316 to SW15331			Slot 3	
	SW15332 to SW15347			Slot 4	
	SW15348 to SW15363			Slot 5	
	SW15364 to SW15379			Slot 6	
	SW15380 to SW15395			Slot 7	
	SW15396 to SW15411			Slot 8	
	SW15412 to SW15427		Unit 2	Slot 1	
	SW15428 to SW15443			Slot 2	
	SW15444 to SW15459			Slot 3	
	SW15460 to SW15475			Slot 4	
	SW15476 to SW15491			Slot 5	
	SW15492 to SW15507			Slot 6	
	SW15508 to SW15523			Slot 7	
	SW15524 to SW15539			Slot 8	
	SW15540 to SW15555		Unit 3	Slot 1	
	SW15556 to SW15571			Slot 2	
	SW15572 to SW15587			Slot 3	
	SW15588 to SW15603			Slot 4	
	SW15604 to SW15619			Slot 5	
	SW15620 to SW15635			Slot 6	
	SW15636 to SW15651			Slot 7	
	SW15652 to SW15667			Slot 8	
	SW15668 to SW15683		Unit 4	Slot 1	
	SW15684 to SW15699			Slot 2	
	SW15700 to SW15715			Slot 3	
	SW15716 to SW15731			Slot 4	
	SW15732 to SW15747			Slot 5	
	SW15748 to SW15763			Slot 6	
	SW15764 to SW15779			Slot 7	
	SW15780 to SW15795			Slot 8	

Information The Optional Module information data for Racks 2 to 4 is stored in SW00880 to SW01095. Refer to the following section for details.

☞ *Module Information (page 7-36)*

Extended System Status

The data in these registers give the status of the power supply to Racks 1 and 5 to 7.

Name	Register Addresses		Name	Remarks
Power Supply Status	SW15800	SB158000	RACK1 WARN1	0: No warning 1 for Rack 1 Power Supply Unit 1: Warning 1 for Rack 1 Power Supply Unit
		SB158001	RACK1 WARN2	0: No warning 2 for Rack 1 Power Supply Unit 1: Warning 2 for Rack 1 Power Supply Unit
		SB158002, SB158003	Reserved for system.	–
		SB158004	RACK5 WARN1	0: No warning 1 for Rack 5 Power Supply Unit 1: Warning 1 for Rack 5 Power Supply Unit
		SB158005	RACK5 WARN2	0: No warning 2 for Rack 5 Power Supply Unit 1: Warning 2 for Rack 5 Power Supply Unit
		SB158006	RACK5 PWOFF	0: Rack 5 Power Supply Unit is turned ON 1: Rack 5 Power Supply Unit is turned OFF
		SB158007	Reserved for system.	–
		SB158008	RACK6 WARN1	0: No warning 1 for Rack 6 Power Supply Unit 1: Warning 1 for Rack 6 Power Supply Unit
		SB158009	RACK6 WARN2	0: No warning 2 for Rack 6 Power Supply Unit 1: Warning 2 for Rack 6 Power Supply Unit
		SB15800A	RACK6 PWOFF	0: Rack 6 Power Supply Unit is turned ON 1: Rack 6 Power Supply Unit is turned OFF
		SB15800B	Reserved for system.	–
		SB15800C	RACK7 WARN1	0: No warning 1 for Rack 7 Power Supply Unit 1: Warning 1 for Rack 7 Power Supply Unit
		SB15800D	RACK7 WARN2	0: No warning 2 for Rack 7 Power Supply Unit 1: Warning 2 for Rack 7 Power Supply Unit
		SB15800E	RACK7 PWOFF	0: Rack 7 Power Supply Unit is turned ON 1: Rack 7 Power Supply Unit is turned OFF
		SB15800F	Reserved for system.	–

Note: For the MP3300, this information is for the Base Unit of each Rack and not the Power Supply Unit of each Rack.

Extended System Service Execution Status

The data in these registers give the execution status of the system when the Units are extended.

Name	Register Address		Remarks	
Data Trace Definition Existence	SW15998	SB159980	Group 1	0: Definition does not exist 1: Definition exists
		SB159981	Group 2	
		SB159982	Group 3	
		SB159983	Group 4	
		SB159984 to SB15998F	Reserved for system.	
Data Trace Execution Status	SW15999	SB159990	Group 1	0: Tracing in progress 1: Tracing stopped
		SB159991	Group 2	
		SB159992	Group 3	
		SB159993	Group 4	
		SB159994 to SB15999F	Reserved for system.	
Group 1 Record No.	SL16000		Latest record number in group 1.	
Group 2 Record No.	SL16002		Latest record number in group 2.	
Group 3 Record No.	SL16004		Latest record number in group 3.	
Group 4 Record No.	SL16006		Latest record number in group 4.	
Reserved for system.	SL16008		Reserved for system.	
Reserved for system.	SL16010		Reserved for system.	

Alarm History Information

This section gives the register configuration of and details on the alarm history information in the system registers.

Register Configuration

Name	Register Addresses	Remarks	
Current Alarm	SW16200	Cleared when the power is turned ON.	
Alarm History Entries	SW16201	Number of alarm history entries	
Alarm Clear	SW16202	1: Alarm cleared 2: Current alarm and history cleared	
Alarm History	SW16203 to SW16218	Alarm History Entry 1	Refer to the following sections for details. ☞ *Details (page 7-71)*
	SW16219 to SW16231	Alarm History Entry 2	
	:	⋮	
	SW17787 to SW17802	Alarm History Entry 100	
Reserved for system.	SW17803 to SW17999	–	

Details

The registers for the alarm history entries are structured as shown below. This example shows the system register addresses for alarm history entry 1.

Register Address	Remarks	Register Address Example
SW□□□□□ + 0	□□□□ hex 01 to 09: Gives the slot number where the Module in which the alarm occurred is mounted. 1 to 4: Gives the unit number of the Module in which the alarm occurred is mounted. 1 to 7: Gives the Rack number where the Module in which the alarm occurred is mounted.	SW16203
SW□□□□□ + 1	Alarm Code	SW16204
SW□□□□□ + 2	Alarm Details Format Type 1: Operation error 2: I/O error 3: Other error	SW16205
SW□□□□□ + 3	Year when alarm occurred	SW16206
SW□□□□□ + 4	Month when alarm occurred	SW16207
SW□□□□□ + 5	Day when alarm occurred	SW16208
SW□□□□□ + 6	Hour when alarm occurred	SW16209
SW□□□□□ + 7	Minutes when alarm occurred	SW16210
SW□□□□□ + 8	Seconds when alarm occurred	SW16211
SW□□□□□ + 9	Alarm details The information depends on the alarm details format type. ☞ *Alarm Details (page 7-71)*	SW16212
SW□□□□□ + 10		SW16213
SW□□□□□ + 11		SW16214
SW□□□□□ + 12		SW16215
SW□□□□□ + 13		SW16216
SW□□□□□ + 14	Reserved for system.	SW16217
SW□□□□□ + 15	Reserved for system.	SW16218

Alarm Details

Alarm details are given based on the alarm details format type.

- When the Alarm Details Format Type Is 1 (Operation Error)

Register Address	Remarks	Register Address Example
SW□□□□□ + 9	Error Drawing No.	SW16212
SW□□□□□ + 10	Calling Drawing No.	SW16213
SW□□□□□ + 11	Calling Drawing Step No.	SW16214
SW□□□□□ + 12	Reserved for system.	SW16215
SW□□□□□ + 13	Reserved for system.	SW16216

- When the Alarm Details Format Type Is 2 (I/O Error)

Register Address	Remarks	Register Address Example
SW□□□□□ + 9	Depends on the specifications of the Optional Module.	SW16212
SW□□□□□ + 10	Depends on the specifications of the Optional Module.	SW16213
SW□□□□□ + 11	Depends on the specifications of the Optional Module.	SW16214
SW□□□□□ + 12	Depends on the specifications of the Optional Module.	SW16215
SW□□□□□ + 13	Depends on the specifications of the Optional Module.	SW16216

- When the Alarm Details Format Type Is 3 (Other Errors)

Register Address	Remarks	Register Address Example
SW□□□□□ + 9	Reserved for system.	SW16212
SW□□□□□ + 10	Reserved for system.	SW16213
SW□□□□□ + 11	Reserved for system.	SW16214
SW□□□□□ + 12	Reserved for system.	SW16215
SW□□□□□ + 13	Reserved for system.	SW16216

Product Information

The data in these registers give information on the CPU Unit.

Name	Register Addresses	Remarks
Serial ID Information	SW20000	CPU Unit/CPU Module serial ID (15 ASCII characters + NULL character)
	SW20001	
	SW20002	
	SW20003	
	SW20004	
	SW20005	
	SW20006	
	SW20007	
	SW20008 to SW20015	Reserved for system.
Reserved for system.	SW20016 to SW22063	–

Unit and Rack Information

The data in these registers give hardware information on the Racks and Units for Racks 1 and 5 to 7.

Register Configuration

Name	Register Addresses	Remarks		
Rack Information	SW23000	Rack 1	0: Rack not mounted, 1: Rack mounted	
	SW23001		Rack Status Refer to the following sections for details. ☞ *Rack Status Details (page 7-74)*	
	SW23002 to SW23007		Reserved for system.	
	SW23008		Rack Expansion Interface Unit	Unit ID (Low)
	SW23009			Unit ID (High)
	SW23010			Unit Status Refer to the following sections for details. ☞ *Unit Status Details (page 7-74)*
	SW23011			Reserved for system.
	SW23012 to SW23015		Power Supply Unit*	Same as above.
	SW23016 to SW23019		CPU Unit/CPU Module	Same as above.
	SW23020 to SW23023		Unit 1	Same as above.
	SW23024 to SW23027		Unit 2	Same as above.
	SW23028 to SW23031		Unit 3	Same as above.
	SW23032 to SW23035		Unit 4	Same as above.
	SW23036 to SW23039		Unit 5	Same as above.

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Name	Register Addresses	Remarks		
Rack Information	SW23040	Rack 5	0: Rack not mounted, 1: Rack mounted	
	SW23041		Rack Status Refer to the following sections for details. ☞ *Rack Status Details (page 7-74)*	
	SW23042 to SW23047		Reserved for system.	
	SW23048 to SW23051		Rack Expansion Interface Unit	Same as above.
	SW23052 to SW23055		Power Supply Unit	Same as above.
	SW23056 to SW23059		Unit 1	Same as above.
	SW23060 to SW23063		Unit 2	Same as above.
	SW23064 to SW23067		Unit 3	Same as above.
	SW23068 to SW23071		Unit 4	Same as above.
	SW23072 to SW23075		Unit 5	Same as above.
	SW23076 to SW23079		Unit 6	Same as above.
	SW23080 to SW23119	Rack 6	Same as above.	
	SW23120 to SW23159	Rack 7	Same as above.	

* For the MP3300, this information is for the Base Unit of each Rack and not the Power Supply Unit of each Rack.

Rack Status Details

The possible Rack status values are listed in the following table.

Value	Status
0	No Rack has been set up.
1	A Rack has been set up, but has not been mounted.
2	A Rack has been set up, and a Rack that matches the settings has been mounted.
3 to	Reserved for system.

Unit Status Details

The possible Unit status values are listed in the following table.

Value	Status
0	No Unit has been set up.
1	A Unit has been set up, but it has not been mounted.
2	A Unit has been set up, and a Unit that matches the settings has been mounted.
3 and 4	Reserved for system.
5	A Unit has been set up, but the Unit mounted does not match the settings.
6 to	Reserved for system.

Information Refer to the Module Configuration Definitions Tab Page for details on Unit settings.

Data Logging Execution Status

The data in these registers give the execution status of data logging.

Name		Register Addresses		Remarks
Data Logging Definition Existence		SW24000	SB240000	0: Logging 1 definition does not exist, 1: Logging 1 definition exists
			SB240001	0: Logging 2 definition does not exist, 1: Logging 2 definition exists
Data Logging Execution Status		SW24001	SB240010	0: Logging 1 is in progress, 1: Logging 1 is stopped
			SB240011	0: Logging 2 is in progress, 1: Logging 2 is stopped
			SB240012	0: Logging 3 is in progress, 1: Logging 3 is stopped
			SB240013	0: Logging 4 is in progress, 1: Logging 4 is stopped
			SB240014 to SB240017	Reserved for system.
			SB240018	0: Logging 1 is not waiting for trigger condition, 1: Logging 1 is waiting for trigger condition
			SB240019	0: Logging 2 is not waiting for trigger condition, 1: Logging 2 is waiting for trigger condition
			SB24001A	0: Logging 3 is not waiting for trigger condition, 1: Logging 3 is waiting for trigger condition
			SB24001B	0: Logging 4 is not waiting for trigger condition, 1: Logging 4 is waiting for trigger condition
			SB24001C to SB24001F	Reserved for system.
Data Logging Execution Status Details	Logging 1	SL24002		File update counter
		SQ24004		Latest record number
		SW24008		Overrun counter
		SW24009		Error code 0000 hex: No error, 0001 hex: No USB memory device (at start of logging), 0002 hex: No USB memory device (while logging is in progress), 0003 hex: Directory creation error, 0004 hex: File creation error, 0005 hex: File write error
		SW24010 to SW24011		Reserved for system.
		SW24012 to SW24043		Latest folder name
		SW24044 to SW24065		Latest file name (includes extension such as □□□.csv)
	Logging 2	SW24066 to SW24129		Same as Logging 1.
	Logging 3	SW24130 to SW24193		Same as Logging 1.
	Logging 4	SW24194 to SW24257		Same as Logging 1.
Reserved for system.		SW24258 to SW24321		–

Automatic Reception Status (Ethernet Communications)

The data in these registers give the execution status of automatic reception (message functions).

Circuit Number	Name	Register Addresses	Name
Circuit Number 1	Common Status	SW25000	Rack No.
		SW25001	Unit No.
		SW25002	Slot No.
		SW25003	Sub-slot No.
	CH1 Status	SW25004	Transmission Status Refer to the following section for details. ☞ *Transmission Status (page 7-80)*
		SW25005	Latest Error Status Refer to the following section for details. ☞ *Error Status (page 7-80)*
		SW25006	Send Count
		SW25007	Receive Count
		SW25008	Error Counter
		SW25009	Reserved.
		SW25010	Reserved.
		SW25011	Reserved.
	CH2 Status	SW25012 to SW25019	Same as CH1 status
	CH3 Status	SW25020 to SW25027	Same as CH1 status
	CH4 Status	SW25028 to SW25035	Same as CH1 status
	CH5 Status	SW25036 to SW25043	Same as CH1 status
	CH6 Status	SW25044 to SW25051	Same as CH1 status
	CH7 Status	SW25052 to SW25059	Same as CH1 status
	CH8 Status	SW25060 to SW25067	Same as CH1 status
	CH9 Status	SW25068 to SW25075	Same as CH1 status
	CH10 Status	SW25076 to SW25083	Same as CH1 status
Circuit Number 2	Common Status	SW25084	Rack No.
		SW25085	Unit No.
		SW25086	Slot No.
		SW25087	Sub-slot No.
	CH1 Status	SW25088	Transmission Status Refer to the following section for details. ☞ *Transmission Status (page 7-80)*
		SW25089	Latest Error Status Refer to the following section for details. ☞ *Error Status (page 7-80)*
		SW25090	Send Count
		SW25091	Receive Count
		SW25092	Error Counter
		SW25093	Reserved.
		SW25094	Reserved.
		SW25095	Reserved.
	CH2 Status	SW25096 to SW25103	Same as CH1 status
	CH3 Status	SW25104 to SW25111	Same as CH1 status
	CH4 Status	SW25112 to SW25119	Same as CH1 status
	CH5 Status	SW25120 to SW25127	Same as CH1 status
	CH6 Status	SW25128 to SW25135	Same as CH1 status

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Circuit Number	Name	Register Addresses	Name
Circuit Number 2	CH7 Status	SW25136 to SW25143	Same as CH1 status
	CH8 Status	SW25144 to SW25151	Same as CH1 status
	CH9 Status	SW25152 to SW25159	Same as CH1 status
	CH10 Status	SW25160 to SW25167	Same as CH1 status
Circuit Number 3	Common Status	SW25168	Rack No.
		SW25169	Unit No.
		SW25170	Slot No.
		SW25171	Sub-slot No.
	CH1 Status	SW25172	Transmission Status Refer to the following section for details. ☞ *Transmission Status (page 7-80)*
		SW25173	Latest Error Status Refer to the following section for details. ☞ *Error Status (page 7-80)*
		SW25174	Send Count
		SW25175	Receive Count
		SW25176	Error Counter
		SW25177	Reserved.
		SW25178	Reserved.
		SW25179	Reserved.
	CH2 Status	SW25180 to SW25187	Same as CH1 status
	CH3 Status	SW25188 to SW25195	Same as CH1 status
	CH4 Status	SW25196 to SW25203	Same as CH1 status
	CH5 Status	SW25204 to SW25211	Same as CH1 status
	CH6 Status	SW25212 to SW25219	Same as CH1 status
	CH7 Status	SW25220 to SW25227	Same as CH1 status
	CH8 Status	SW25228 to SW25235	Same as CH1 status
	CH9 Status	SW25236 to SW25243	Same as CH1 status
	CH10 Status	SW25244 to SW25251	Same as CH1 status
Circuit Number 4	Common Status	SW25252	Rack No.
		SW25253	Unit No.
		SW25254	Slot No.
		SW25255	Sub-slot No.
	CH1 Status	SW25256	Transmission Status Refer to the following section for details. ☞ *Transmission Status (page 7-80)*
		SW25257	Latest Error Status Refer to the following section for details. ☞ *Error Status (page 7-80)*
		SW25258	Send Count
		SW25259	Receive Count
		SW25260	Error Counter
		SW25261	Reserved.
		SW25262	Reserved.
		SW25263	Reserved.
	CH2 Status	SW25264 to SW25271	Same as CH1 status
	CH3 Status	SW25272 to SW25279	Same as CH1 status
	CH4 Status	SW25280 to SW25287	Same as CH1 status

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Circuit Number	Name	Register Addresses	Name
Circuit Number 4	CH5 Status	SW25288 to SW25295	Same as CH1 status
	CH6 Status	SW25296 to SW25303	Same as CH1 status
	CH7 Status	SW25304 to SW25311	Same as CH1 status
	CH8 Status	SW25312 to SW25319	Same as CH1 status
	CH9 Status	SW25320 to SW25327	Same as CH1 status
	CH10 Status	SW25328 to SW25335	Same as CH1 status
Circuit Number 5	Common Status	SW25336	Rack No.
		SW25337	Unit No.
		SW25338	Slot No.
		SW25339	Sub-slot No.
	CH1 Status	SW25340	Transmission Status Refer to the following section for details. ☞ *Transmission Status (page 7-80)*
		SW25341	Latest Error Status Refer to the following section for details. ☞ *Error Status (page 7-80)*
		SW25342	Send Count
		SW25343	Receive Count
		SW25344	Error Counter
		SW25345	Reserved.
		SW25346	Reserved.
		SW25347	Reserved.
	CH2 Status	SW25348 to SW25355	Same as CH1 status
	CH3 Status	SW25356 to SW25363	Same as CH1 status
	CH4 Status	SW25364 to SW25371	Same as CH1 status
	CH5 Status	SW25372 to SW25379	Same as CH1 status
	CH6 Status	SW25380 to SW25387	Same as CH1 status
	CH7 Status	SW25388 to SW25395	Same as CH1 status
	CH8 Status	SW25396 to SW25403	Same as CH1 status
	CH9 Status	SW25404 to SW25411	Same as CH1 status
	CH10 Status	SW25412 to SW25419	Same as CH1 status
Circuit Number 6	Common Status	SW25420	Rack No.
		SW25421	Unit No.
		SW25422	Slot No.
		SW25423	Sub-slot No.
	CH1 Status	SW25424	Transmission Status Refer to the following section for details. ☞ *Transmission Status (page 7-80)*
		SW25425	Latest Error Status Refer to the following section for details. ☞ *Error Status (page 7-80)*
		SW25426	Send Count
		SW25427	Receive Count
		SW25428	Error Counter
		SW25429	Reserved.
		SW25430	Reserved.
		SW25431	Reserved.
	CH2 Status	SW25432 to SW25439	Same as CH1 status
	CH3 Status	SW25440 to SW25447	Same as CH1 status

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Circuit Number	Name	Register Addresses	Name
Circuit Number 6	CH4 Status	SW25448 to SW25455	Same as CH1 status
	CH5 Status	SW25456 to SW25463	Same as CH1 status
	CH6 Status	SW25464 to SW25471	Same as CH1 status
	CH7 Status	SW25472 to SW25479	Same as CH1 status
	CH8 Status	SW25480 to SW25487	Same as CH1 status
	CH9 Status	SW25488 to SW25495	Same as CH1 status
	CH10 Status	SW25496 to SW25503	Same as CH1 status
Circuit Number 7	Common Status	SW25504	Rack No.
		SW25505	Unit No.
		SW25506	Slot No.
		SW25507	Sub-slot No.
	CH1 Status	SW25508	Transmission Status Refer to the following section for details. ☞ *Transmission Status (page 7-80)*
		SW25509	Latest Error Status Refer to the following section for details. ☞ *Error Status (page 7-80)*
		SW25510	Send Count
		SW25511	Receive Count
		SW25512	Error Counter
		SW25513	Reserved.
		SW25514	Reserved.
		SW25515	Reserved.
	CH2 Status	SW25516 to SW25523	Same as CH1 status
	CH3 Status	SW25524 to SW25531	Same as CH1 status
	CH4 Status	SW25532 to SW25539	Same as CH1 status
	CH5 Status	SW25540 to SW25547	Same as CH1 status
	CH6 Status	SW25548 to SW25555	Same as CH1 status
	CH7 Status	SW25556 to SW25563	Same as CH1 status
	CH8 Status	SW25564 to SW25571	Same as CH1 status
	CH9 Status	SW25572 to SW25579	Same as CH1 status
	CH10 Status	SW25580 to SW25587	Same as CH1 status
Circuit Number 8	Common Status	SW25588	Rack No.
		SW25589	Unit No.
		SW25590	Slot No.
		SW25591	Sub-slot No.
	CH1 Status	SW25592	Transmission Status Refer to the following section for details. ☞ *Transmission Status (page 7-80)*
		SW25593	Latest Error Status Refer to the following section for details. ☞ *Error Status (page 7-80)*
		SW25594	Send Count
		SW25595	Receive Count
		SW25596	Error Counter
		SW25597 to SW25599	Reserved.
	CH2 Status	SW25600 to SW25607	Same as CH1 status

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Circuit Number	Name	Register Addresses	Name
Circuit Number 8	CH3 Status	SW25608 to SW25615	Same as CH1 status
	CH4 Status	SW25616 to SW25623	Same as CH1 status
	CH5 Status	SW25624 to SW25631	Same as CH1 status
	CH6 Status	SW25632 to SW25639	Same as CH1 status
	CH7 Status	SW25640 to SW25647	Same as CH1 status
	CH8 Status	SW25648 to SW25655	Same as CH1 status
	CH9 Status	SW25656 to SW25663	Same as CH1 status
	CH10 Status	SW25664 to SW25671	Same as CH1 status

Transmission Status

Register Value	Status	Description
0	–	Unused connection.
1	IDLE	Standby mode for executing message functions.
2	WAIT	Waiting to establish a connection.
3	CONNECT	Ready to send and receive data.

Error Status

Register Value	Status	Description
0	No error	Normal
1	Socket creation error	System error
2	Local port number error	Local port number setting error (The same address is bound during disconnection of the TCP connection.)
3	Changing socket attribute error	System error (for TCP)
4	Connection Error (M-SND)	Connection error (The connection was rejected by the remote station when establishing a connection with an unpassive open for TCP.)
5	Connection error (M-RCV)	Connection error (With a passive open for TCP)
6	System error	System error
7	TCP data send error	Data sending error (The remote station does not exist or has not started when using TCP.)
8	UDP data send error	Data sending error (for UDP)
9	TCP data receive error	Data reception error (The MP3000 received a request to disconnect from the remote station for TCP.)
10	UDP data receive error	Data reception error (for UDP)
11	Changing socket option error	System error
12	Data conversion error	Data conversion error

MP3200/MP3300 Battery Replacement

8

This chapter describes how to replace the Battery in the MP3200 or MP3300.

8.1 MP3200 Battery Replacement

The replacement procedure for the Battery is given below.

This procedure assumes that the power supply is already turned ON.

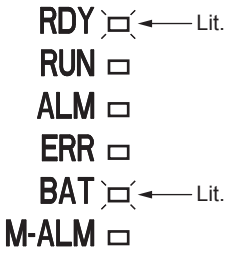
⚠ CAUTION

- 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.
- Replace the Battery only while power is supplied to the Machine Controller.
  Replacing the Battery while the power supply to the Machine Controller is turned OFF may result in loss of the data stored in memory in the Machine Controller.
- Do not touch the electrodes when replacing the Battery.
  Static electricity may damage the electrodes.
- Observe all local laws and ordinances when you dispose of used Batteries.

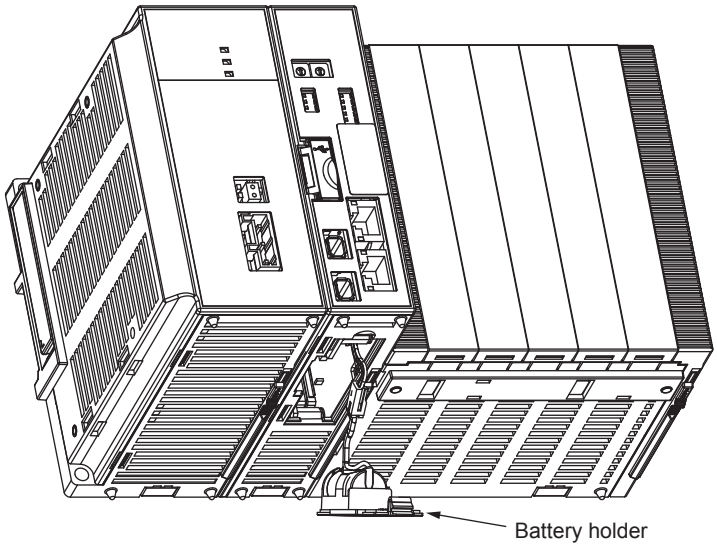
1. Back up the programs and data stored in the CPU Unit.

Note: The backup can be used to recover the data if the data accidentally gets deleted during Battery replacement.

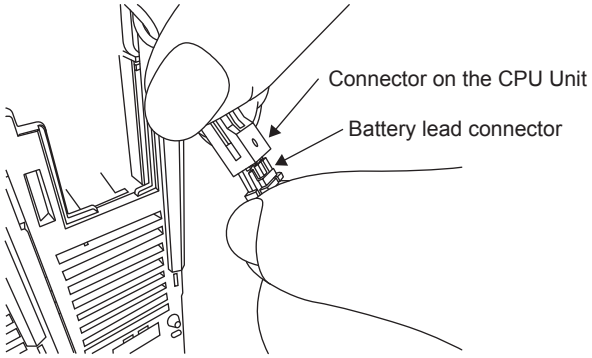
2. Confirm that the RDY indicator on the CPU Unit is lit.



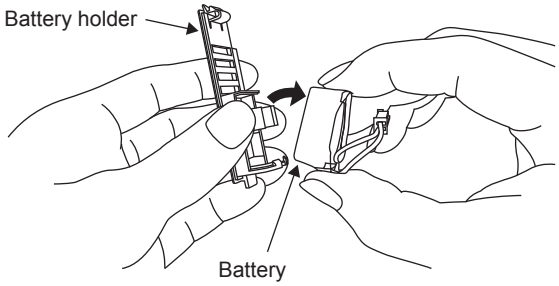
3. Open the battery holder on the bottom of the CPU Unit.



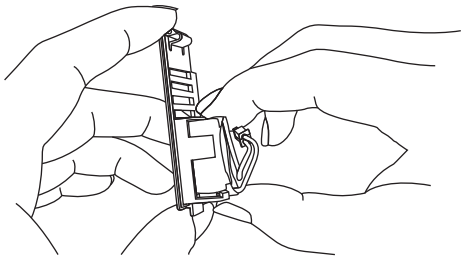
4. Remove the connector on the end of the Battery lead from the connector on the CPU Unit.



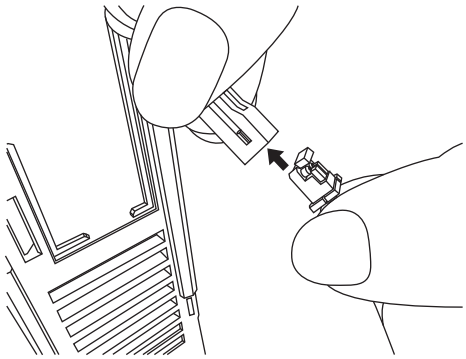
5. Remove the Battery from the battery holder.



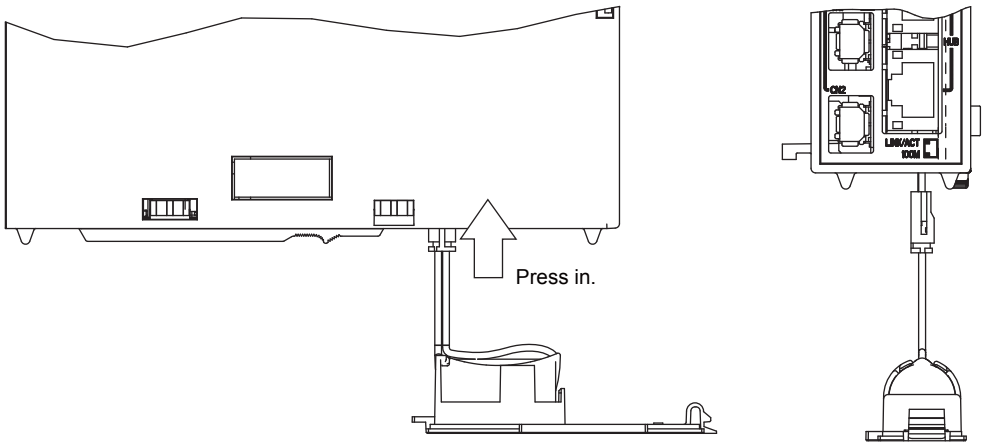
6. Insert the new Battery into the battery holder.



7. Securely connect the lead connector on the lead wires of the new Battery to the connector on the CPU Unit.

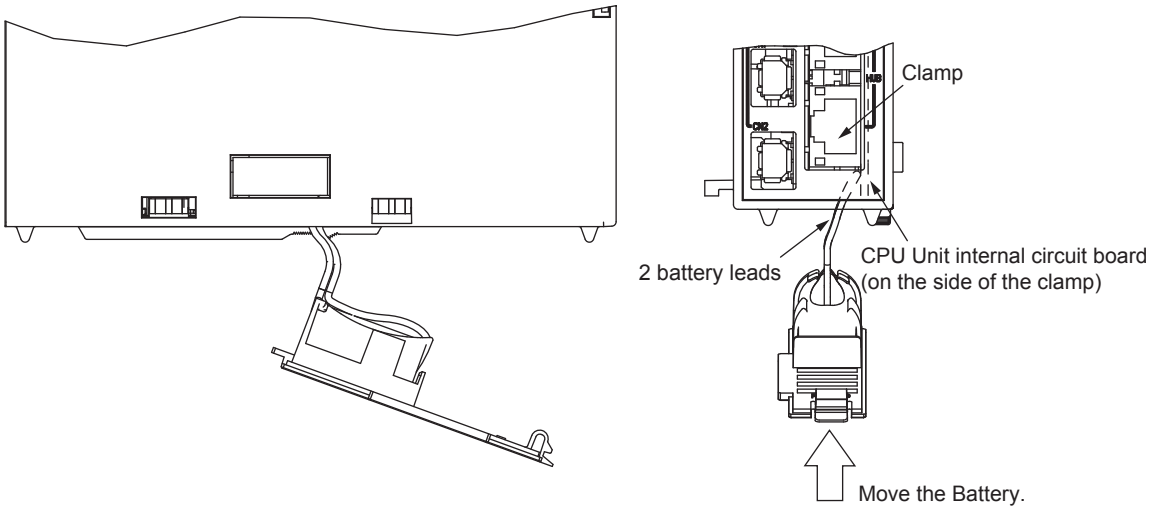


8. Press the connector back into the CPU Unit.

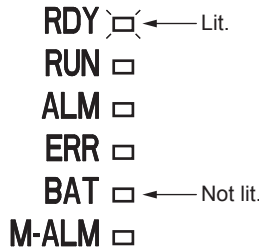


9. Hold the connector, and while pressing it toward the CPU Unit's internal circuit board (the board on the side of the clamp), move the Battery and the battery holder into the CPU Unit.

Note: If this procedure is not followed, the battery leads may pinched between the Battery and the circuit board, causing stress on the leads. If that occurs, the battery holder will bulge after step 8 of the procedure.



10. Close the battery holder and confirm that the BAT indicator on the CPU Unit is not lit.



This concludes the Battery replacement procedure.

8.2 MP3300 Battery Replacement

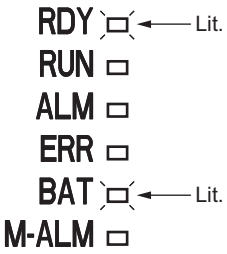
⚠ CAUTION

- 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.
- Replace the Battery only while power is supplied to the Machine Controller.
  Replacing the Battery while the power supply to the Machine Controller is turned OFF may result in loss of the data stored in memory in the Machine Controller.
- Do not touch the electrodes of the Battery.
  Static electricity may damage the electrodes.
- Observe all local laws and ordinances when you dispose of used Batteries.

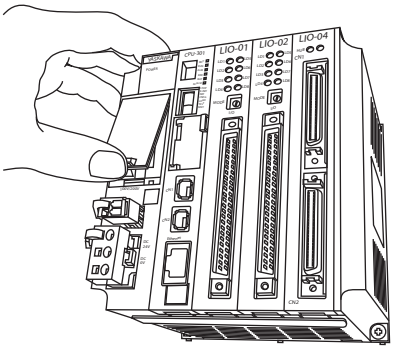
1. Back up the programs and data stored in the CPU Module.

Note: The backup can be used to recover the data if the data accidentally gets deleted during Battery replacement.

2. Confirm that the RDY indicator on the CPU Module is lit.

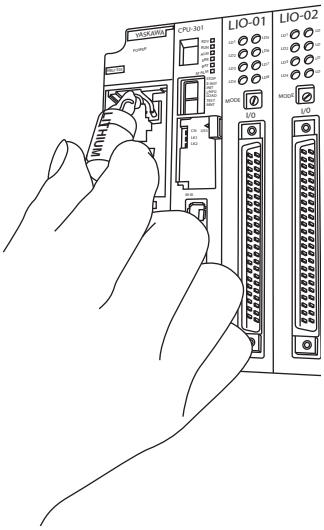


3. Open the battery cover on the front of the Base Unit.



4. Disconnect the lead connector of the Battery from the connector on the Base Unit, and remove the Battery from the battery holder.

5. Securely connect the lead connector of the Replacement Battery to the connector on the Base Unit, and insert the Replacement Battery into the battery holder.



6. Confirm that the BAT indicator of the CPU Module is not lit.

7. Close the cover.

This concludes the Battery replacement procedure.

Fan Replacement

9

This section describes how to replace the MP3200 Fan.

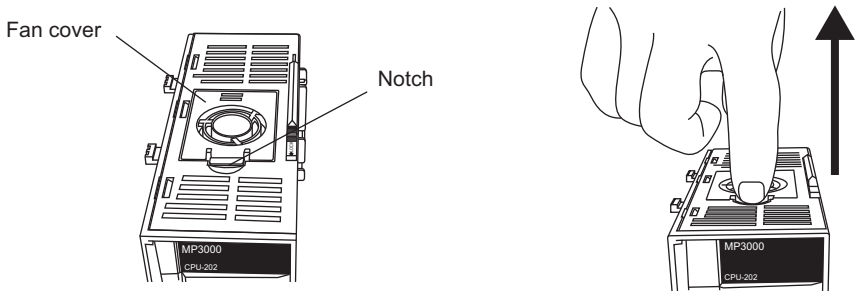
A Fan is built into the CPU-202 Unit of the MP3200.

The Fan service life is 50,000 hours minimum (at an average ambient operating temperature of 40°C). The FAN indicator on the CPU Unit will light if the Fan stops. If the Fan service life has expired and the fan stops, you must replace it (replacement part: JEPMC-OP3101-E).

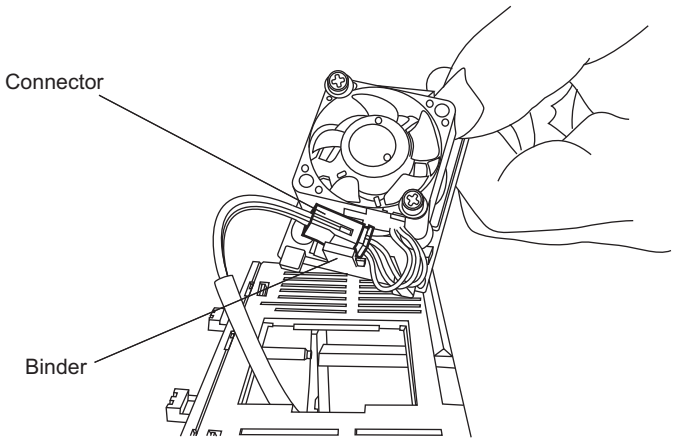
Use the following procedure to replace the Fan.

1. Turn OFF the power supply to the Machine Controller.
   Confirm that all of the indicators on the MP3200 are not lit.

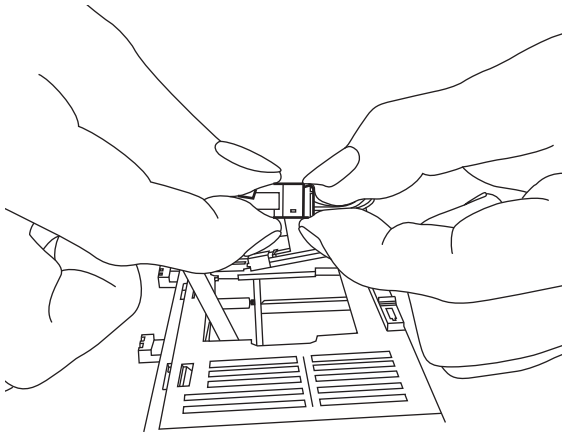
2. Catch your nail in the notch in the fan cover on the top of the CPU Unit and lift up the cover.



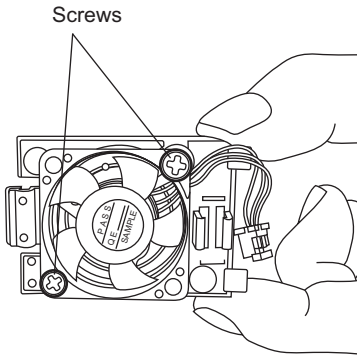
3. Remove the connector from the binder on the back of the fan cover.



4. Disconnect the connector and remove the fan cover from the CPU Unit.



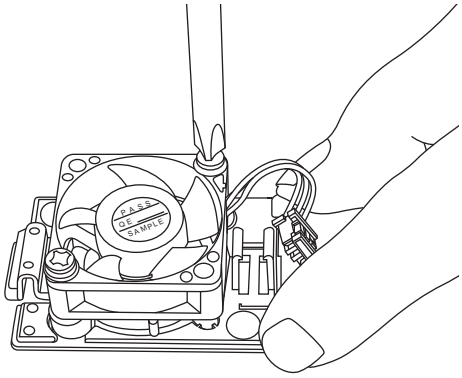
5. Remove the two screws that hold the Fan to the fan cover and remove the Fan.
Keep the screws. You will use these screws to attach the new Fan.



6. Attach the new Fan to the fan cover with the screws.

Note

- Use the screws that you removed (M3 × 14 length, spring and small washers) to attach the Fan.
- Tighten the screws to a torque of 0.49 N·m ±10% when you attach the Fan.
  If the screws are not tightened sufficiently, the Fan may fall off or fail.



7. Attached the fan cover to the CPU Unit by reversing steps 2, 3, and 4.

This concludes the Fan replacement procedure.

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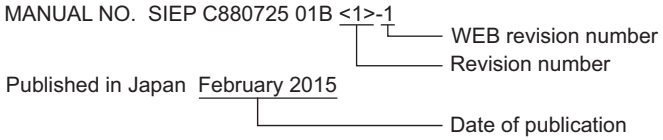
Revision History

The revision dates and numbers of the revised manuals are given on the bottom of the back cover.



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			2.2, chapter 7	Addition: Information on A404 error code
			Chapter 3	Revision: Operating procedures
			Back cover	Revision: Address and format
February 2015	<1>	1	7.5	Deletion: Description of SW00□□□+8
			Back cover	Revision: Address
July 2014		0	All chapters	Addition: Description of MP3300
				Revision: Basic Unit → MP3200
				Revision: Description of the motion program information
				Addition: Information on vision alarms
				Addition: Information on Rack Expansion Interface Unit
			2.2	Revision: Error codes of A and E
				Addition: Error codes of h
			Chapter 9	Addition: New chapter
			Back cover	Revision: Address
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MP3200/MP3300
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