



Programmable Controller

**MELSEC iQ-R**  
series

**MELSEC iQ-R  
Motion Module  
User's Manual (Network)**

---

-RD78G4  
-RD78G8  
-RD78G16  
-RD78G32  
-RD78G64  
-RD78GHV  
-RD78GHW



# WHEN USING A SWITCHING HUB WITH CC-Link IE TSN

---

A dedicated TSN hub may be required depending on parameter settings or the network topology used to connect modules on CC-Link IE TSN.

Read "Structure of Authentication Class B Devices and Ethernet Devices" and "Wiring" in PART 1 or PART 2 of the following manual carefully.

📖 MELSEC iQ-R Motion Module User's Manual (Startup)

## SAFETY PRECAUTIONS



---

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product only. Refer to the MELSEC iQ-R Module Configuration Manual for a description of the PLC system safety precautions.

In this manual, the safety precautions are classified into two levels: "⚠️ WARNING" and "⚠️ CAUTION".

 <b>WARNING</b>	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
 <b>CAUTION</b>	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠️ CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

## [Design Precautions]

---

### **WARNING**

---

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
    - (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured external to the programmable controller.
    - (2) When the programmable controller detects an abnormal condition, it stops the operation and all outputs are:
      - Turned off if the overcurrent or overvoltage protection of the power supply module is activated.
      - Held or turned off according to the parameter setting if the self-diagnostic function of the CPU module detects an error such as a watchdog timer error.
    - (3) All outputs may be turned on if an error occurs in a part, such as an I/O control part, where the CPU module cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or a fail-safe circuit external to the programmable controller. For a fail-safe circuit example, refer to "General Safety Requirements" in the MELSEC iQ-R Module Configuration Manual.
    - (4) Outputs may remain on or off due to a failure of a component such as a relay and transistor in an output circuit. Configure an external circuit for monitoring output signals that could cause a serious accident.
  - In an output circuit, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
  - Configure a circuit so that the programmable controller is turned on first and then the external power supply. If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
  - Configure a circuit so that the external power supply is turned off first and then the programmable controller. If the programmable controller is turned off first, an accident may occur due to an incorrect output or malfunction.
  - For the operating status of each station after a communication failure, refer to manuals for the network used. For the manuals, please consult your local Mitsubishi representative. Incorrect output or malfunction due to a communication failure may result in an accident.
-

## [Design Precautions]

---

### **WARNING**

- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents. When a Safety CPU is used, data cannot be modified while the Safety CPU is in SAFETY MODE.
  - Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
  - Do not write any data to the "system area" and "write-protect area" of the buffer memory in the module. Also, do not use any "use prohibited" signals as an output signal from the CPU module to each module. Doing so may cause malfunction of the programmable controller system. For the "system area", "write-protect area", and the "use prohibited" signals, refer to the user's manual for the module used. For areas used for safety communications, they are protected from being written by users, and thus safety communications failure caused by data writing does not occur.
  - If a communication cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations. Configure an interlock circuit in the program to ensure that the entire system will always operate safely even if communications fail. Incorrect output or malfunction due to a communication failure may result in an accident. When safety communications are used, an interlock by the safety station interlock function protects the system from an incorrect output or malfunction.
  - Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
    - (1) Machine homing is controlled by two kinds of data: a homing direction and a homing speed. Deceleration starts when the proximity dog signal turns on. If an incorrect homing direction is set, motion control may continue without deceleration. To prevent machine damage caused by this, configure an interlock circuit external to the programmable controller.
    - (2) When the module detects an error, the motion slows down and stops or the motion rapidly stops, depending on the stop group setting in parameter. Set the parameter to meet the specifications of a positioning control system. In addition, set the homing parameter and positioning data within the specified setting range.
    - (3) Outputs may remain on or off, or become undefined due to a failure of a component such as an insulation element and transistor in an output circuit, where the module cannot detect any error. In a system that the incorrect output could cause a serious accident, configure an external circuit for monitoring output signals.
  - If safety standards (ex., robot safety rules, etc.) apply to the system using the module, drive unit and servomotor, make sure that the safety standards are satisfied.
  - Construct a safety circuit externally of the module or drive unit if the abnormal operation of the module or drive unit differs from the safety directive operation in the system.
-

## [Design Precautions]

---

### **CAUTION**

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Doing so may result in malfunction due to electromagnetic interference. Keep a distance of 100 mm or more between those cables.
  - During control of an inductive load such as a lamp, heater, or solenoid valve, a large current (approximately ten times greater than normal) may flow when the output is turned from off to on. Therefore, use a module that has a sufficient current rating.
  - After the CPU module is powered on or is reset, the time taken to enter the RUN status varies depending on the system configuration, parameter settings, and/or program size. Design circuits so that the entire system will always operate safely, regardless of the time.
  - Do not power off the programmable controller or reset the CPU module while the settings are being written. Doing so will make the data in the flash ROM and SD memory card undefined. The values need to be set in the buffer memory and written to the flash ROM and SD memory card again. Doing so also may cause malfunction or failure of the module.
  - When changing the operating status of the CPU module from external devices (such as remote RUN/STOP), select "Do Not Open by Program" for "Opening Method" in the module parameters. If "Open by Program" is selected, an execution of remote STOP causes the communication line to close. Consequently, the CPU module cannot reopen the communication line, and external devices cannot execute the remote RUN.
- 

## [Security Precautions]

---

### **WARNING**

- To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.
- 

## [Installation Precautions]

---

### **WARNING**

- Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may result in electric shock or cause the module to fail or malfunction.
-

## [Installation Precautions]

---

### CAUTION

- Use the programmable controller in an environment that meets the general specifications in the Safety Guidelines included with the base unit. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
  - To mount a module, place the concave part(s) located at the bottom onto the guide(s) of the base unit, push in the module, and fix it with screw(s). Incorrect interconnection may cause malfunction, failure, or drop of the module.
  - To mount a module with no module fixing hook, place the concave part(s) located at the bottom onto the guide(s) of the base unit, push in the module, and fix it with screw(s). Incorrect interconnection may cause malfunction, failure, or drop of the module.
  - Tighten the screws within the specified torque range. Undertightening can cause drop of the component or wire, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction. For the specified torque range, refer to the MELSEC iQ-R Module Configuration Manual.
  - When using an extension cable, connect it to the extension cable connector of the base unit securely. Check the connection for looseness. Poor contact may cause malfunction.
  - When using an SD memory card, fully insert it into the SD memory card slot. Check that it is inserted completely. Poor contact may cause malfunction.
  - Securely insert an extended SRAM cassette or a battery-less option cassette into the cassette connector of the CPU module. After insertion, close the cassette cover and check that the cassette is inserted completely. Poor contact may cause malfunction.
  - Beware that the module could be very hot while power is on and immediately after power-off.
  - Do not directly touch any conductive parts of the module, SD memory card, extended SRAM cassette, battery-less option cassette, or connector. Doing so can cause malfunction or failure of the module.
-

## [Wiring Precautions]

---

### **WARNING**

- Shut off the external power supply (all phases) used in the system before installation and wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.
  - After installation and wiring, attach a blank cover module (RG60) to each empty slot and an included extension connector protective cover to the unused extension cable connector before powering on the system for operation. Failure to do so may result in electric shock.
- 

## [Wiring Precautions]

---

### **CAUTION**

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
  - Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
  - Check the rated voltage and signal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause fire or failure.
  - Connectors for external devices must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered. Incomplete connections may cause short circuit, fire, or malfunction.
  - Securely connect the connector to the module. Poor contact may cause malfunction.
  - Do not install the control lines or communication cables together with the main circuit lines or power cables. Doing so may result in malfunction due to noise. Keep a distance of 100 mm or more between those cables.
  - Place the cables in a duct or clamp them. If not, dangling cables may swing or inadvertently be pulled, resulting in malfunction or damage to the modules or cables.  
In addition, the weight of the cables may put stress on modules in an environment of strong vibrations and shocks.  
Do not clamp the extension cables with the jacket stripped. Doing so may change the characteristics of the cables, resulting in malfunction.
  - Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the module and external device.
  - Tighten the terminal screws or connector screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, fire, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
-



## [Wiring Precautions]

---

### **CAUTION**

---

- When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
  - Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
  - A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring. Do not remove the film during wiring. Remove it for heat dissipation before system operation.
  - Programmable controllers must be installed in control panels. Connect the main power supply to the power supply module in the control panel through a relay terminal block. Wiring and replacement of a power supply module must be performed by qualified maintenance personnel with knowledge of protection against electric shock. For wiring, refer to the MELSEC iQ-R Module Configuration Manual.
  - For Ethernet cables to be used in the system, select the ones that meet the specifications in the user's manual for the module used. If not, normal data transmission is not guaranteed.
- 

## [Startup and Maintenance Precautions]

---

### **WARNING**

---

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
  - Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Also, do not expose it to liquid or strong shock. Doing so will cause the battery to produce heat, explode, ignite, or leak, resulting in injury and fire.
  - Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal screws, connector screws, or module fixing screws. Failure to do so may result in electric shock.
-

## [Startup and Maintenance Precautions]

---

### CAUTION

- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.
  - Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
  - Do not disassemble or modify the modules. Doing so may cause failure, malfunction, injury, or a fire.
  - Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25 cm away in all directions from the programmable controller. Failure to do so may cause malfunction.
  - Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may cause the module to fail or malfunction.
  - Tighten the screws within the specified torque range. Undertightening can cause drop of the component or wire, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
  - After the first use of the product, do not perform each of the following operations more than 50 times (IEC 61131-2/JIS B 3502 compliant).  
Exceeding the limit may cause malfunction.
    - Mounting/removing the module to/from the base unit
    - Inserting/removing the extended SRAM cassette or battery-less option cassette to/from the CPU module
    - Mounting/removing the terminal block to/from the module
    - Connecting/disconnecting the extension cable to/from the base unit
  - After the first use of the product, do not insert/remove the SD memory card to/from the CPU module more than 500 times. Exceeding the limit may cause malfunction.
  - Do not touch the metal terminals on the back side of the SD memory card. Doing so may cause malfunction or failure of the module.
  - Do not touch the integrated circuits on the circuit board of an extended SRAM cassette or a battery-less option cassette. Doing so may cause malfunction or failure of the module.
  - Do not drop or apply shock to the battery to be installed in the module. Doing so may damage the battery, causing the battery fluid to leak inside the battery. If the battery is dropped or any shock is applied to it, dispose of it without using.
  - Startup and maintenance of a control panel must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel so that only qualified maintenance personnel can operate it.
  - Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Wearing a grounded antistatic wrist strap is recommended. Failure to discharge the static electricity may cause the module to fail or malfunction.
  - Use a clean and dry cloth to wipe off dirt on the module.
-

## [Startup and Maintenance Precautions]

---

### CAUTION

---

- Before testing the operation, set a low speed value for the speed limit parameter so that the operation can be stopped immediately upon occurrence of a hazardous condition.
  - Confirm and adjust the program and each parameter before operation. Unpredictable movements may occur depending on the machine.
  - When using the absolute position system function, on starting up, and when the module or absolute position motor has been replaced, always perform a homing.
  - Before starting the operation, confirm the brake function.
  - Do not perform a megger test (insulation resistance measurement) during inspection.
  - After maintenance and inspections are completed, confirm that the position detection of the absolute position detection function is correct.
  - Lock the control panel and prevent access to those who are not certified to handle or install electric equipment.
- 

## [Operating Precautions]

---

### CAUTION

---

- When changing data and operating status, and modifying program of the running programmable controller from an external device such as a personal computer connected to an intelligent function module, read relevant manuals carefully and ensure the safety before operation. Incorrect change or modification may cause system malfunction, damage to the machines, or accidents.
  - Do not power off the programmable controller or reset the CPU module while the setting values in the buffer memory are being written to the flash ROM in the module. Doing so will make the data in the flash ROM and SD memory card undefined. The values need to be set in the buffer memory and written to the flash ROM and SD memory card again. Doing so also may cause malfunction or failure of the module.
  - Note that when the reference axis speed is specified for interpolation operation, the speed of the partner axis (2nd, 3rd, or 4th axis) may exceed the speed limit value.
  - Do not go near the machine during test operations or during operations such as teaching. Doing so may lead to injuries.
-

## [Computer Connection Precautions]

---

### CAUTION

- When connecting a personal computer to a module having a USB interface, observe the following precautions as well as the instructions described in the manual for the personal computer used. Failure to do so may cause the module to fail.

#### (1) When the personal computer is AC-powered

When the personal computer has a 3-pin AC plug or an AC plug with a grounding wire, connect the plug to a grounding receptacle or ground the grounding wire. Ground the personal computer and the module with a ground resistance of 100 ohms or less.

When the personal computer has a 2-pin AC plug without a grounding wire, connect the computer to the module by following the procedure below. For power supplied to the personal computer and the module, using the same power source is recommended.

1. Unplug the personal computer from the AC receptacle.
2. Check that the personal computer is unplugged. Then, connect the personal computer to the module with a USB cable.
3. Plug the personal computer into the AC receptacle.

#### (2) When the personal computer is battery-powered

The personal computer can be connected to the module without taking specific measures.

For details, refer to the following.

Cautions When Using Mitsubishi Programmable Controllers or GOTs Connected to a Personal Computer With the RS-232/USB Interface (FA-A-0298)

When the USB cable used is the GT09-C30USB-5P manufactured by Mitsubishi Electric, specific measures are not required to connect the AC-powered personal computer to the module. However, note that the signal ground (SG) is common for the module and its USB interface. Therefore, if an SG potential difference occurs between the module and the connected devices, it causes failures of the module and the connected devices.

---

## [Disposal Precautions]

---

### CAUTION

- When disposing of this product, treat it as industrial waste.
  - When disposing of batteries, separate them from other wastes according to the local regulations. For details on battery regulations in EU member states, refer to the MELSEC iQ-R Module Configuration Manual.
- 

## [Transportation Precautions]

---

### CAUTION

- When transporting lithium batteries, follow the transportation regulations. For details on the regulated models, refer to the MELSEC iQ-R Module Configuration Manual.
  - The halogens (such as fluorine, chlorine, bromine, and iodine), which are contained in a fumigant used for disinfection and pest control of wood packaging materials, may cause failure of the product. Prevent the entry of fumigant residues into the product or consider other methods (such as heat treatment) instead of fumigation. The disinfection and pest control measures must be applied to unprocessed raw wood.
-

# INTRODUCTION

---

Thank you for purchasing the Mitsubishi Electric MELSEC iQ-R series programmable controllers.

This manual describes the functions, programming, and troubleshooting of the relevant product listed below.

Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the MELSEC iQ-R series programmable controller to handle the product correctly.

When applying the program examples provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.

Please make sure that the end users read this manual.

## Relevant products

---

RD78G4, RD78G8, RD78G16, RD78G32, RD78G64, RD78GHV, RD78GHW

### Point

Symbols used in this manual are shown below.

- [RD78G]: Symbols indicating that it corresponds to only RD78G
  - [RD78GH]: Symbols indicating that it corresponds to only RD78GH
  - [MODE: PLCopen]: Symbols indicating that it supports only the PLCopen motion control FB mode
  - [MODE: Simple Motion]: Symbols indicating that it supports only the Simple Motion mode
- 


# COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES


---

## Method of ensuring compliance

---

To ensure that Mitsubishi programmable controllers maintain EMC and Low Voltage Directives when incorporated into other machinery or equipment, certain measures may be necessary. Please refer to one of the following manuals.

 MELSEC iQ-R Module Configuration Manual


 Safety Guidelines (This manual is included with the base unit.)


The CE mark on the rating display area of the programmable controller indicates compliance with EMC and Low Voltage Directives.

## Additional measures

---

To ensure that this product maintains EMC and Low Voltage Directives, please refer to one of the following manuals.

 MELSEC iQ-R Module Configuration Manual

 Safety Guidelines (This manual is included with the base unit.)

# CONTENTS

---

WHEN USING A SWITCHING HUB WITH CC-Link IE TSN . . . . .	1
SAFETY PRECAUTIONS . . . . .	1
INTRODUCTION . . . . .	11
COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES . . . . .	11
RELEVANT MANUALS . . . . .	16
TERMS . . . . .	17
GENERIC TERMS AND ABBREVIATIONS . . . . .	19
FUTURE SUPPORT PLANNED . . . . .	20

## PART 1 PLCopen MOTION CONTROL FB MODE

---

### CHAPTER 1 FUNCTIONS 22

---

<b>1.1 Cyclic Transmission . . . . .</b>	<b>22</b>
Communications using RX, RY, RWr, and RWw . . . . .	23
Link refresh . . . . .	25
Direct access to link devices . . . . .	27
Direct access from motion built-in program to link devices . . . . .	30
Cyclic data assurance . . . . .	32
Communication cycles coexistence . . . . .	34
I/O maintenance settings . . . . .	35
Remote device test . . . . .	38
CANopen communication . . . . .	40
<b>1.2 Transient Transmission . . . . .</b>	<b>43</b>
Communications using a dedicated instruction . . . . .	43
Communications using the SLMP . . . . .	43
Communications using the engineering tool . . . . .	44
<b>1.3 Ethernet Connection . . . . .</b>	<b>45</b>
Connection with MELSOFT products and a GOT . . . . .	45
Connecting SLMP-compatible devices . . . . .	49
<b>1.4 Security . . . . .</b>	<b>50</b>
IP filter . . . . .	50
Remote password . . . . .	52
<b>1.5 RAS . . . . .</b>	<b>56</b>
Slave station disconnection . . . . .	56
Automatic return . . . . .	56
Master station duplication detection . . . . .	56
IP address duplication detection . . . . .	57
Time synchronization . . . . .	58
<b>1.6 CC-Link IE TSN Network Synchronous Communication Function . . . . .</b>	<b>59</b>
<b>1.7 Safety Communications . . . . .</b>	<b>70</b>
<b>1.8 Others . . . . .</b>	<b>73</b>
Reserved station setting . . . . .	73
Error invalid station setting . . . . .	73
Slave station parameter automatic setting . . . . .	74

### CHAPTER 2 PARAMETER SETTINGS 76

---

<b>2.1 Setting Parameters . . . . .</b>	<b>76</b>
---	-----------

<b>2.2</b>	<b>Required Settings</b> .....	<b>77</b>
	Station Type .....	77
	Network No.....	78
	Station No./IP Address Settings .....	78
<b>2.3</b>	<b>Basic Settings</b> .....	<b>79</b>
	Refresh Settings .....	80
	Network Topology .....	82
	Communication Period Setting .....	82
	Connection Device Information .....	83
	Slave Station Setting .....	84
	Safety Communication Setting .....	84
<b>2.4</b>	<b>Application Settings</b> .....	<b>89</b>
	Communication Speed Setting .....	90
	Supplementary Cyclic Settings .....	90
	Parameter Name .....	90
	Event Reception from Other Stations .....	90
	Module Operation Mode .....	90
	Security .....	91
<b>2.5</b>	<b>"CC-Link IE TSN Configuration" Window</b> .....	<b>92</b>
	Parameter setting of a slave station .....	92
	Connected/Disconnected Module Detection .....	96
	Parameter processing of a slave station .....	98
	Command execution to slave stations .....	102
	PDO mapping setting .....	104
	Module change .....	106
	Device No. reassignment .....	107
	Object name display .....	108
<b>CHAPTER 3 PROGRAMMING</b>		<b>109</b>
<b>3.1</b>	<b>Precautions for Programming</b> .....	<b>109</b>
<b>3.2</b>	<b>Communication Example of Safety Communication</b> .....	<b>110</b>
	System configuration example .....	110
	Setting in the master station .....	111
	Checking the network status .....	118

## PART 2 Simple Motion MODE

<b>CHAPTER 4 FUNCTIONS</b>		<b>120</b>
<b>4.1</b>	<b>Cyclic Transmission</b> .....	<b>120</b>
	Communications using RX, RY, RWr, and RWw .....	121
	Link refresh .....	123
	Direct access to link devices .....	125
	Cyclic data assurance .....	129
	Communication cycles coexistence .....	131
	I/O maintenance settings .....	132
	Remote device test .....	135
	CANopen communications .....	137
<b>4.2</b>	<b>Transient Transmission</b> .....	<b>139</b>
	Communications using a dedicated instruction .....	139
	Communications using the SLMP .....	139

	Communications using the engineering tool . . . . .	140
<b>4.3</b>	<b>Ethernet Connection . . . . .</b>	<b>141</b>
	Connection with MELSOFT products and a GOT . . . . .	141
	Connection with SLMP-compatible devices . . . . .	144
<b>4.4</b>	<b>Security . . . . .</b>	<b>145</b>
	IP filter . . . . .	145
	Remote password . . . . .	147
<b>4.5</b>	<b>RAS . . . . .</b>	<b>151</b>
	Slave station disconnection . . . . .	151
	Automatic return . . . . .	151
	Master station duplication detection . . . . .	151
	IP address duplication detection . . . . .	152
	Time synchronization . . . . .	153
<b>4.6</b>	<b>CC-Link IE TSN Network Synchronous Communication Function . . . . .</b>	<b>154</b>
<b>4.7</b>	<b>Safety Communications . . . . .</b>	<b>163</b>
<b>4.8</b>	<b>Others . . . . .</b>	<b>166</b>
	Reserved station setting . . . . .	166
	Error invalid station setting . . . . .	166
	Slave station parameter automatic setting . . . . .	167

---

## **CHAPTER 5   PARAMETER SETTINGS 169**

<b>5.1</b>	<b>Setting Parameters . . . . .</b>	<b>169</b>
<b>5.2</b>	<b>Required Settings . . . . .</b>	<b>170</b>
	Station Type . . . . .	170
	Network No. . . . .	171
	Station No./IP Address Settings . . . . .	171
<b>5.3</b>	<b>Basic Settings . . . . .</b>	<b>172</b>
	Refresh Settings . . . . .	173
	Network Topology . . . . .	177
	Communication Period Setting . . . . .	177
	Connection Device Information . . . . .	178
	Slave Station Setting . . . . .	178
	Safety Communication Setting . . . . .	178
<b>5.4</b>	<b>Application Settings . . . . .</b>	<b>183</b>
	Communication speed setting . . . . .	184
	Supplementary Cyclic Settings . . . . .	184
	Parameter Name . . . . .	184
	Event Reception from Other Stations . . . . .	184
	Module Operation Mode . . . . .	185
	Security . . . . .	185
<b>5.5</b>	<b>"CC-Link IE TSN Configuration" window . . . . .</b>	<b>186</b>
	Parameter setting of a slave station . . . . .	186
	Connected/Disconnected Module Detection . . . . .	190
	Parameter processing of a slave station . . . . .	192
	Command execution to slave stations . . . . .	195
	PDO mapping setting . . . . .	196
	Change of module . . . . .	198
	Device number reassignment . . . . .	199
	Object name display . . . . .	200



<b>CHAPTER 6 PROGRAMMING</b>	<b>201</b>
<b>6.1 Precautions for Programming</b> .....	<b>201</b>
<b>6.2 Communication Example of Safety Communication</b> .....	<b>202</b>
System configuration example .....	202
Setting in the master station .....	203
Checking the network status .....	210

## **PART 3 COMMON TO ALL MODES**

<b>CHAPTER 7 TROUBLESHOOTING</b>	<b>212</b>
<b>7.1 Checking with LED</b> .....	<b>212</b>
<b>7.2 Checking the Module Status</b> .....	<b>215</b>
Module Diagnostics .....	215
<b>7.3 Checking the Network Status</b> .....	<b>217</b>
CC-Link IE TSN/CC-Link IE Field Diagnostics .....	217
Communication Test .....	226
Station Information List .....	227
Remote Operation .....	228
<b>7.4 Troubleshooting by Symptom</b> .....	<b>229</b>
<b>7.5 List of Error Codes</b> .....	<b>238</b>
<b>7.6 List of Parameter Nos.</b> .....	<b>263</b>
<b>7.7 Event List</b> .....	<b>269</b>
<b>7.8 Response Code (SDO Abort Code)</b> .....	<b>272</b>

<b>APPENDICES</b>	<b>273</b>
<b>Appendix 1 Buffer Memory [MODE: PLCopen]</b> .....	<b>273</b>
List of buffer memory addresses .....	273
Details of buffer memory addresses .....	281
<b>Appendix 2 Buffer Memory [MODE: Simple Motion]</b> .....	<b>293</b>
List of buffer memory addresses .....	293
Details of buffer memory addresses .....	298
<b>Appendix 3 List of Link Special Relay (SB)</b> .....	<b>310</b>
<b>Appendix 4 List of Link Special Register (SW)</b> .....	<b>314</b>
<b>Appendix 5 Dedicated Instruction</b> .....	<b>322</b>
SLMP communication instruction .....	322
<b>Appendix 6 Processing Time</b> .....	<b>323</b>
Cyclic transmission delay time [MODE: PLCopen] .....	324
Cyclic transmission delay time [MODE: Simple Motion] .....	326
Communication cycle interval .....	328
Transmission delay time of safety communications .....	336
Safety response time .....	336
Monitoring time for safety communications .....	337
<b>Appendix 7 Port No.</b> .....	<b>340</b>
<b>Appendix 8 SLMP Command for Accessing the CAN Application Object</b> .....	<b>341</b>

<b>INDEX</b>	<b>344</b>
REVISIONS .....	346
WARRANTY .....	347
TRADEMARKS .....	348


# RELEVANT MANUALS

Manual name [manual number]	Description	Supported mode*1	Available form
MELSEC iQ-R Motion Module User's Manual (Network) [IB-0300426ENG] (This manual)	Functions, parameter settings, troubleshooting, and buffer memory of CC-Link IE TSN	[MODE: PLCopen] [MODE: Simple Motion]	Print book e-Manual PDF
MELSEC iQ-R Motion Module User's Manual (Startup) [IB-0300406ENG]	Specifications, procedures before operation, system configuration, and wiring of the Motion module	[MODE: PLCopen] [MODE: Simple Motion]	Print book e-Manual PDF
MELSEC iQ-R Motion Module User's Manual (Application) [IB-0300411ENG]	Functions, I/O signals, variables, labels, programming, and troubleshooting of the Motion module	[MODE: PLCopen]	Print book e-Manual PDF
MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode) [IB-0300572ENG]	Functions, I/O signals, buffer memory, parameter settings, programming, and troubleshooting of the Simple Motion mode	[MODE: Simple Motion]	Print book e-Manual PDF
MELSEC iQ-R Motion Module User's Manual (Advanced Synchronous Control for Simple Motion Mode) [IB-0300575ENG]	Functions and programming for the synchronous control of the Simple Motion mode	[MODE: Simple Motion]	Print book e-Manual PDF
MELSEC iQ-R Programming Manual (Motion Module Instructions, Standard Functions/Function Blocks) [IB-0300431ENG]	Instructions for the Motion module and standard functions/function blocks	[MODE: PLCopen]	Print book e-Manual PDF
MELSEC iQ-R Programming Manual (Motion Control Function Blocks) [IB-0300533ENG]	Motion control function blocks, variables, and programming	[MODE: PLCopen]	Print book e-Manual PDF
Motion Module Quick Start Guide [L03191ENG]	System startup, parameter settings, programming for those who are new to the Motion module	[MODE: PLCopen]	e-Manual PDF
Motion Module Quick Start Guide (PLC CPU Ladder Program) [L03194ENG]	Describes system startup, parameter settings, and programming methods for first-time users of the Motion module	[MODE: PLCopen]	e-Manual PDF
MELSEC iQ-R Motion Module (Simple Motion Mode) Function Block Reference [BCN-B62005-1040]	Specifications, functions, and I/O labels of the function blocks of the Motion module (Simple Motion mode)	[MODE: Simple Motion]	e-Manual PDF

\*1 For details, refer to "SUPPORTED MODE" in the following manual.

 MELSEC iQ-R Motion Module User's Manual (Startup)

For programs, refer to the following.

 MELSEC iQ-R Programming Manual (Program Design)

## Point

e-Manual refers to the Mitsubishi Electric FA electronic book manuals that can be browsed using a dedicated tool.

e-Manual has the following features:

- Required information can be cross-searched in multiple manuals.
- Other manuals can be accessed from the links in the manual.
- The hardware specifications of each part can be found from the product figures.
- Pages that users often browse can be bookmarked.
- Sample programs can be copied to an engineering tool.

# TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Authentication Class	A group of devices and switching hubs compatible with CC-Link IE TSN, classified according to the functions and performance by the CC-Link Partner Association. For authentication Class, refer to the CC-Link IE TSN Installation Manual (BAP-C3007ENG-001) published by the CC-Link Partner Association.
Buffer memory	Memory in an intelligent function module to store data such as setting values and monitor values.
Conformance test	Test performed for communications of a CC-Link or CC-Link IE product to ensure their high reliability. For details, refer to the CC-Link Partner Association website. ( <a href="http://www.cc-link.org">www.cc-link.org</a> )
Control CPU	A CPU module that controls connected I/O modules and intelligent function modules. In a multiple CPU system, a control CPU is set for each module.
Cyclic data transfer processing	Processing from the start to completion of a sequence of cyclic transmission by all the stations in a single network. It is performed "asynchronously" with the sequence scan of the CPU module.
Cyclic transmission	A function by which data is periodically exchanged among stations on the network
Dedicated instruction	An instruction that simplifies programming for using functions of intelligent function modules
Device	A memory of a CPU module to store data. Devices such as X, Y, M, D, and others are provided depending on the intended use.
Disconnection	A process of stopping data link if a data link error occurs
General-purpose hub	An authentication Class A switching hub authorized by CC-Link Partner Association
Global label	A label that is enabled for all program data when creating multiple program data in the project. There are two types of global label: a module specific label (module label), which is generated automatically by GX Works3, and an optional label, which can be created for any specified device.
Grandmaster	A source device or station to synchronize clocks in the time synchronization via PTP (Precision Time Protocol)
GX Works3	The product name of the software package for the MELSEC programmable controllers
Intelligent function module	A module that has functions other than input and output, such as an A/D converter module and D/A converter module
Label	A variable used in a program
Link device	A device (RX, RY, RWr, or RWw) in a module on CC-Link IE TSN
Link refresh	Processing of data transfer between link device of the Motion module and CPU module devices. Link refresh is performed in "END processing" of the sequence scan of the CPU module.
Link scan (link scan time)	Time required for all the stations on the network to transmit data. The link scan time depends on data volume and the number of transient transmission requests.
Master station	A station that controls the entire network. This station can perform cyclic transmission and transient transmission with all stations. Only one master station can be used in a network.
Module label	A label that represents one of memory areas (I/O signals and buffer memory areas) specific to each module in a given character string. For the module used, GX Works3 automatically generates this label, which can be used as a global label.
Motion area	Software that performs the motion control in the Motion module
Motion control station	A station that updates a link device in the Motion module
Motion management station	A slave station that exchanges cyclic data by using slave labels through motion control
Motion module	Another term for the RD78G(H)
Motion synchronization station	Another term for the motion control station
MR-J5-G	MR-J5_G_(-RJ) servo amplifier
MR-J5D-G	MR-J5D_-_G_ servo amplifier
MR-J5W-G	MR-J5W_-_G servo amplifier
Multicast mode	A communication mode used to send cyclic data to multiple stations
Object	Various data of a slave device compatible with CANopen
Priority	A value that is assigned to devices or stations in a network to determine the grandmaster for time synchronization. The smaller the value, the higher the priority.
RD78G	Another term for the MELSEC iQ-R series Motion module (compatible with CC-Link IE TSN)
RD78GH	
Relay station	A station that relays data link to other station with mounting more than one network modules on one programmable controller
Remote station	A station that exchanges I/O signals (bit data) and I/O data (word data) with another station by cyclic transmission. This station can perform transient transmission.
Reserved address	An IP address reserved for special purposes, defined by RFC 6890. This IP address cannot be used when the programmable controller is connected via the global IP network.

<b>Term</b>	<b>Description</b>
Reserved station	A station which is not actually connected. It is included as a station in the network when its all number is counted.
Return	A process of restarting data link when a faulty station recovers from an error
Routing	A process of selecting paths for communication with other networks. There are two types of routing: dynamic routing that auto-selects the communication routes, and static routing where communication routes are arbitrarily set.
Safety communications	A function to exchange safety data between safety stations on the same network
Safety connection	A connection established for safety communication
Safety data	Data exchanged through safety communication
SLMP	A SeamLess Message Protocol. This protocol is used to access an SLMP-compatible device or a programmable controller connected to an SLMP-compatible device from an external device.
Standard communications	Communications other than safety communications, such as cyclic transmission and transient transmission of CC-Link IE TSN
Standard station	A slave station other than the motion control (synchronization) station
Transient transmission	A function of data communication unperiodically among nodes (station) on network. A function used to send message to the target station when requested by a link dedicated instruction or the engineering tool Communication is available with station on another network via relay station, or gateway.
Transient transmission group No.	No. that is assigned for transient transmission to any given stations. By specifying a group of stations as transient transmission target, data can be sent to the stations of the same group No.
TSN hub	An authentication Class B switching hub authorized by CC-Link Partner Association
Unicast mode	A communication mode used to send cyclic data to one station

# GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following generic terms and abbreviations.

Generic term/abbreviation	Description
CC-Link IE	A generic term for the following items: <ul style="list-style-type: none"> <li>• CC-Link IE TSN</li> <li>• CC-Link IE Controller Network (MELSEC iQ-R CC-Link IE Controller Network User's Manual (Application))</li> <li>• CC-Link IE Field Network (MELSEC iQ-R CC-Link IE Field Network User's Manual (Application))</li> </ul>
CPU module	An abbreviation for the MELSEC iQ-R series CPU module
CR800-R	An abbreviation for a set of the robot CPU (R16RTCPU) and the CR800 controller (CR800)
Data link	A generic term for a cyclic transmission and a transient transmission
Drive unit	A generic term for motor drive devices such as a servo amplifier
Engineering tool	A generic term for GX Works3 and MR Configurator2
Ethernet device	A generic term for the devices supporting IP communication (such as a personal computer, a vision sensor, and a bar code reader)
Ethernet-equipped module	A generic term for the following modules when the Ethernet function is used: <ul style="list-style-type: none"> <li>• RJ71EN71</li> <li>• CPU module</li> </ul>
GOT	A generic term for Mitsubishi Electric Graphic Operation Terminal GOT1000 and GOT2000 series
MR-J5(W)-G	A generic term for MR-J5-_G_(-RJ)/MR-J5W_-_G/MR-J5D_-_G_ servo amplifiers
Network module	A generic term for the following modules: <ul style="list-style-type: none"> <li>• Ethernet interface module</li> <li>• Module on CC-Link IE TSN (the Motion module and a module on a remote station)</li> <li>• CC-Link IE Controller Network module</li> <li>• Module on CC-Link IE Field Network (a master/local module, and a module on a remote I/O station, a remote device station, and an intelligent device station)</li> <li>• MELSECNET/H network module</li> <li>• MELSECNET/10 network module</li> <li>• RnENCPU (network part)</li> </ul>
PDO	An abbreviation for Process Data Object. It is a group of application objects that are periodically transferred among multiple CANopen nodes.
PTP	An abbreviation for Precision Time Protocol. A predefined protocol for time synchronization between devices on a network.
RAS	An abbreviation for Reliability, Availability, and Serviceability. This term refers to the overall usability of automated equipment.
RD78G(H)	A generic term for RD78G_, RD78GH_ (high performance version)
RWr	An abbreviation for a remote register of the link device. This refers to word data input from a slave station to the master station. (For some areas in a local station, data is input in the opposite direction.)
RWw	An abbreviation for a remote register of the link device. This refers to word data output from the master station to a slave station. (For some areas in a local station, data is output in the opposite direction.)
RX	An abbreviation for remote input of the link device. This refers to bit data input from a slave station to the master station. (For some areas in a local station, data is input in the opposite direction.)
RY	An abbreviation for remote output of the link device. This refers to bit data output from the master station to a slave station. (For some areas in a local station, data is output in the opposite direction.)
Safety CPU	A generic term for the R08SFCPU, R16SFCPU, R32SFCPU, and R120SFCPU
Safety station	A generic term for a station that performs safety communications and standard communications
SB	An abbreviation for a link special relay. Bit data that indicates the operating status and data link status of a module on CC-Link IE.
SDO	An abbreviation for Service Data Object. It is a message to access object entries in the object dictionary of any CANopen node. This message is non-periodically exchanged between stations.
Slave station	<ul style="list-style-type: none"> <li>• A generic term for a local station and remote station on CC-Link IE TSN</li> <li>• A generic term for a local station, remote I/O station, remote device station, and intelligent device station on CC-Link IE Field Network</li> </ul>
SLMPSND	A generic term for the J.SLMPSND, JP.SLMPSND, G.SLMPSND, and GP.SLMPSND
SW	Link special register. Word data that indicates the operating status and data link status of a module on CC-Link IE.

# FUTURE SUPPORT PLANNED

---

The following model and functions are mentioned in this manual, but these are planned for a future support. The information in this page might be changed for improvement without prior notice.

## [MODE: PLCopen]

Item	Description
Communication using engineering tool	Operation as a relay station
Connectable slave station type	Local station

## [MODE: Simple Motion]

Item	Description
Communication using engineering tool	Operation as a relay station
Connectable slave station type	Local station

# PART 1

# PLCopen MOTION CONTROL FB MODE

1 FUNCTIONS

---

2 PARAMETER SETTINGS

---

3 PROGRAMMING

---

# 1 FUNCTIONS

## 1.1 Cyclic Transmission

This section describes periodic data communications among stations on the network using link devices.

- The link devices can be assigned in "Network Configuration Settings" under "Basic Settings". (☞ Page 92 "CC-Link IE TSN Configuration" Window)
- The link refresh is assigned in "Refresh Settings" under "Basic Settings". (☞ Page 80 Refresh Settings)

The cyclic transmission operates as follows with the communication mode set by the module parameter of the master station. The communication mode of the Motion module is fixed to the unicast mode.

Communication mode	Description
Unicast mode	Cyclic data is sent to one station.

Assign RX, RY, RWr, and RWw of standard stations to the link device area according to the parameter setting. For the access to the link device area, refer to the following.

☞ Page 23 Master station and remote stations (standard stations)

For RX, RY, RWr, and RWw of motion control stations, refer to the following.

☞ Page 24 Master station and remote stations (motion control stations)



# Communications using RX, RY, RWr, and RWw

This allows data to be exchanged in units of bits and in units of words between the master station and slave station.

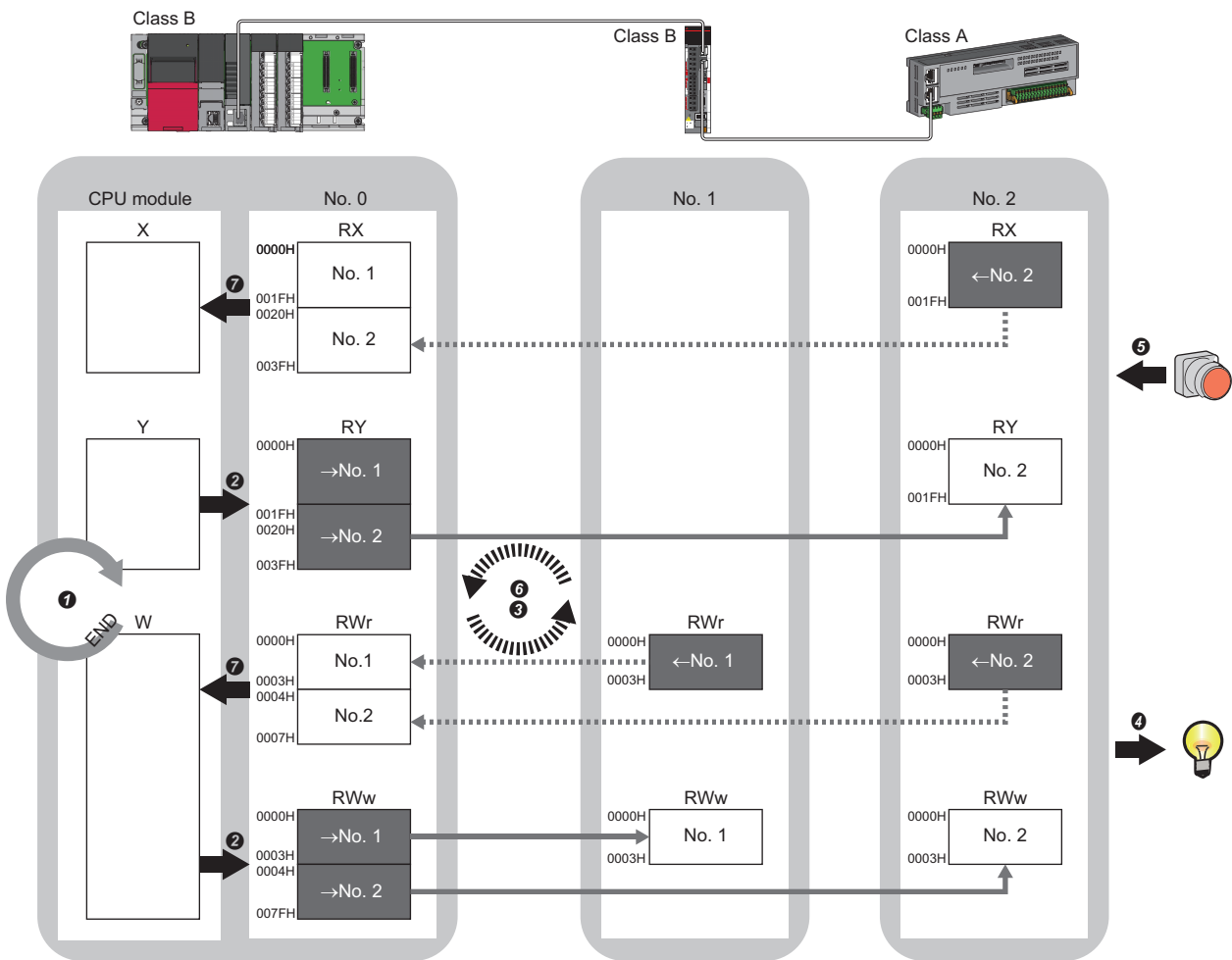
**Restriction**

When the version of Add-on baseSystem is "Ver. 1.18 or earlier", standard stations do not support communications using RX, RY, RWr, and RWw. If a standard station is set in the network configuration settings, an error "Network parameter error" (error code: 2221H) occurs.

## Master station and remote stations (standard stations)

### ■ Unicast mode

1:1 communications between the master station and each remote station (standard station). Remote stations do not communicate with each other.



No. 0, No. 1, No. 2: Station No. 0 (master station), station No. 1, station No. 2  
 →No. 1, →No. 2: Send range: to station No. 1, send range: to station No. 2  
 ←No. 1, ←No. 2: Send range: from station No. 1, send range: from station No. 2  
 Class A: Authentication Class A device  
 Class B: Authentication Class B device

• Output from the master station

- ① The device of the CPU module turns on.
- ② The device status of the CPU module is stored in the link devices (RY, RWw) of the master station by link refresh.
- ③ The status of the link devices (RY, RWw) of the master station is stored in the link devices (RY, RWw) of each remote station by cyclic data transfer processing.
- ④ The status of the link devices (RY, RWw) of the remote station is output to the external device.

• Input from the remote station

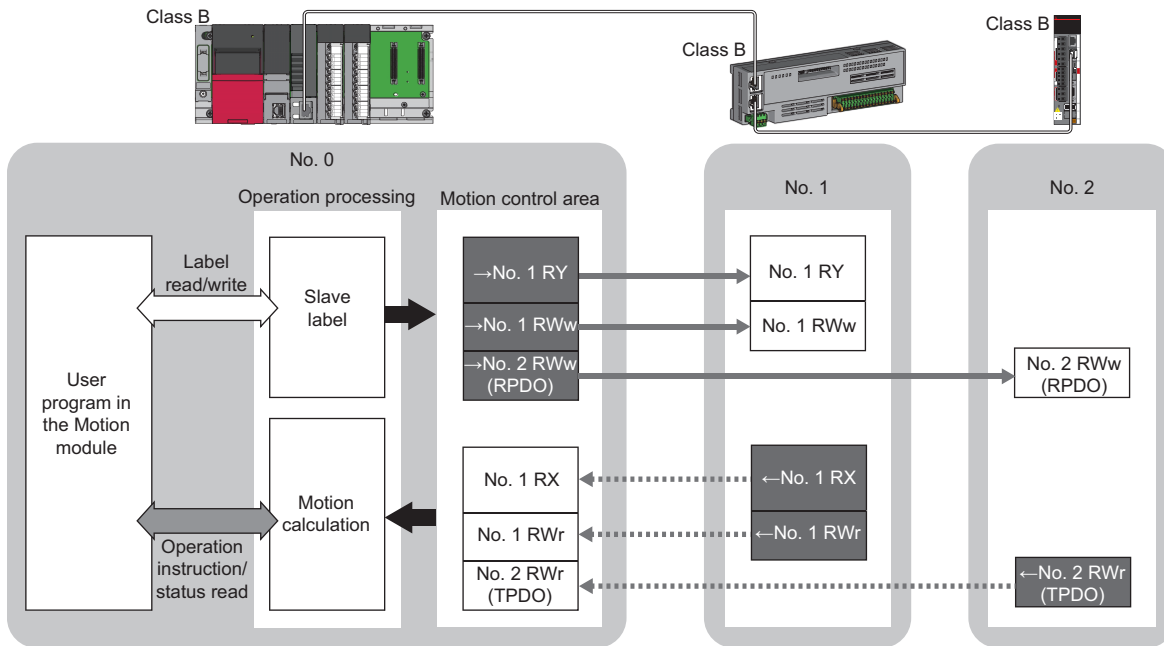
- ⑤ The status of the external device is stored in the link devices (RX, RWr) of the remote station.
- ⑥ The status of the link devices (RX, RWr) of the remote station is sent to the link devices (RX, RWr) of the master station by cyclic data transfer processing.
- ⑦ The status of the link devices (RX, RWr) of the master station is stored in the devices of the CPU module by link refresh.

## Master station and remote stations (motion control stations)

Devices of a motion control station (RX, RY, RWw, and RWr) are assigned to the motion control area (which cannot be referenced from the CPU module) instead of the link device area of the Motion module (which can be referenced from the CPU module). 1:1 communications between the Motion module and motion control station.

The Motion module operates the cyclic data in the motion control area with the motion calculation or slave label. The slave label can be operated from the program in the Motion module. For the method to create a slave label, refer to "Connectable device to CC-Link IE TSN" in the following manual.

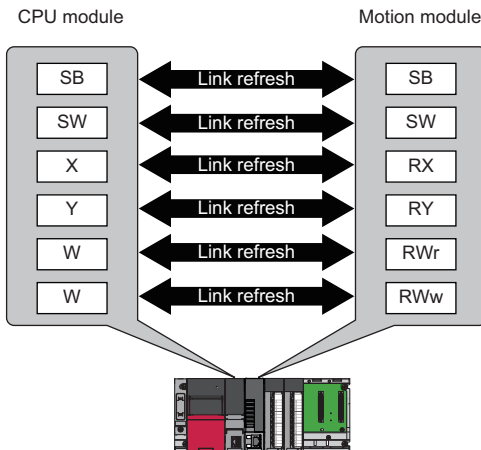
📖 MELSEC iQ-R Motion Module User's Manual (Application)



No. 0, No. 1, No. 2: Station No. 0 (master station), station No. 1, station No. 2  
 →No. 1, →No. 2: Send range: to station No. 1, send range: to station No. 2  
 ←No. 1, ←No. 2: Send range: from station No. 1, send range: from station No. 2  
 ➡ : Data refresh by operation cycle

# Link refresh

This function automatically transfers data between the devices of the Motion module and CPU module.

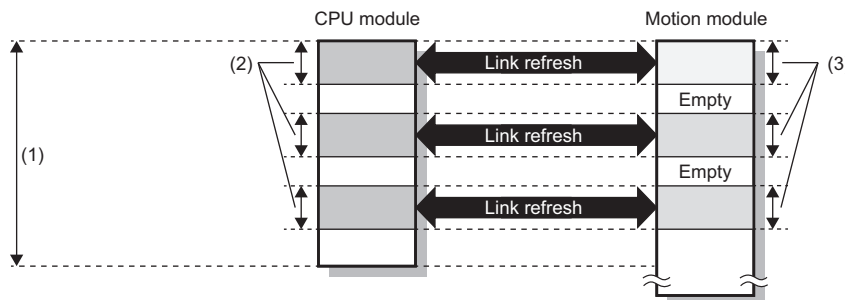


## Restriction

When the version of Add-on baseSystem is "Ver. 1.18 or earlier", the link refresh is not supported. Link refresh will not be performed even if it is set.

## Concept of the link refresh range (number of points)

The link refresh is performed in the range set in "Refresh Settings" under "Basic Settings" and also specified in "Network Configuration Settings".



- (1) Range set in "Refresh Settings" under "Basic Settings"
- (2) Actual link refresh range
- (3) Range set in "Network Configuration Settings" under "Basic Settings"

## Shortening the transmission delay time

The transmission delay time can be shortened by reducing the number of link refresh points and shortening a communication cycle interval. (☞ Page 328 Communication cycle interval)

The following methods can be used to reduce the number of the link refresh points.

- In "Refresh Settings" under "Basic Settings", set only the link devices that are frequently used in the CPU module in the link refresh range. (☞ Page 80 Refresh Settings)
- Remove the link devices that are infrequently used in the CPU module from the link refresh range, and directly read/write the corresponding data from/to the program by direct access. (☞ Page 27 Direct access to link devices)

## Point

Link refresh is performed in END processing of the sequence scan of the CPU module.

## Setting method

The link refresh is assigned in "Refresh Settings" under "Basic Settings". (📖 Page 80 Refresh Settings)

## Precautions

### ■ Latched devices of the CPU module

If data in latched devices of the CPU module are cleared to 0 on a program when the CPU module is powered off and on or reset, the data may be output without being cleared to 0, depending on the timing of the cyclic data transfer processing and link refresh.

CPU module device	How to disable the device data
Latch relay (L), file register (R, ZR)	The device value is cleared to 0 by using the initial device value of the CPU module.*1
CPU module device within the latch range	Delete all the latch range settings specified in "Latch Interval Operation Setting" under "Device Latch Interval Setting" in "Memory/Device Setting" of "CPU Parameter".

\*1 For the initial device value setting of the CPU module, refer to the following.

📖 GX Works3 Operating Manual

## Direct access to link devices

This function directly reads/writes data from/to the link devices of the Motion module from the program.  
Specify a link device as the link direct device (J□\□) for direct access.

### Restriction

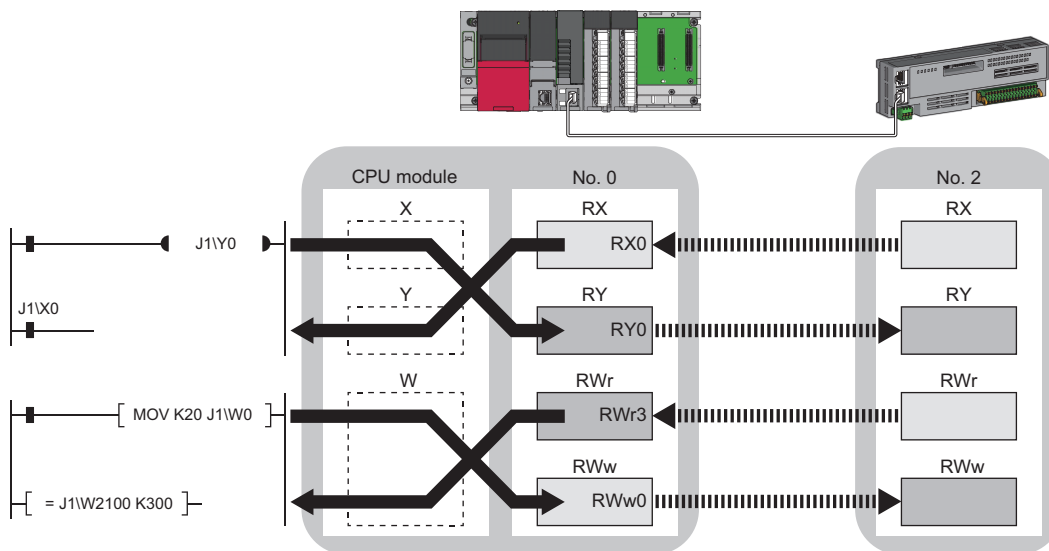
When the version of Add-on baseSystem is "Ver. 1.18 or earlier", the direct access to link devices is not supported.

## Specification method

Specify the network No. and the link device of the Motion module for reading or writing.

- J□\□  
↑ ↑  
(1) (2)
- (1) Network number: 1 to 239
  - (2) Remote input (RX): X0 to X3FFF  
Remote output (RY): Y0 to Y3FFF  
Remote register (RWw): W0 to W1FFF  
Remote register (RWr): W2000 to W3FFF  
Link special relay (SB): SB0 to SBFFF  
Link special register (SW): SW0 to SWFFF

### Ex.



## Readable/writable range

Data can be read or written from/to the Motion module mounted on the same base unit as the CPU module.

### Read

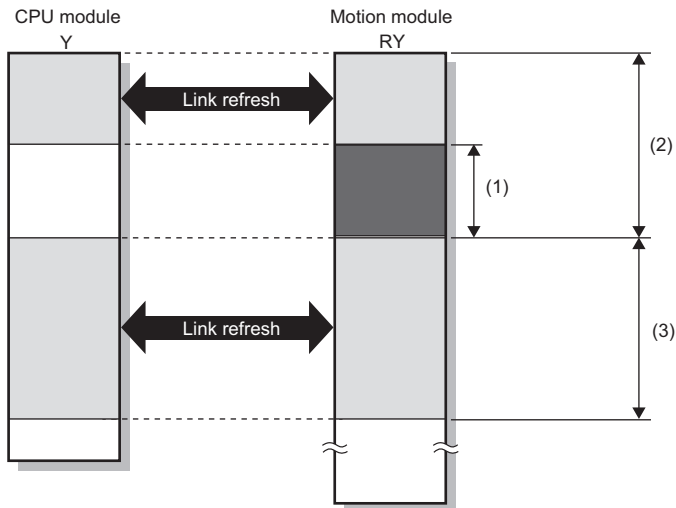
All link devices of the Motion module can be specified. (☞ Page 27 Specification method)

### Write

The range that satisfies all of the following conditions can be specified.

- Area where data is sent to other stations and outside the link refresh range (☞ Page 23 Communications using RX, RY, RWr, and RWw)
- Within the link device range of the Motion module (☞ Page 27 Specification method)

Ex.



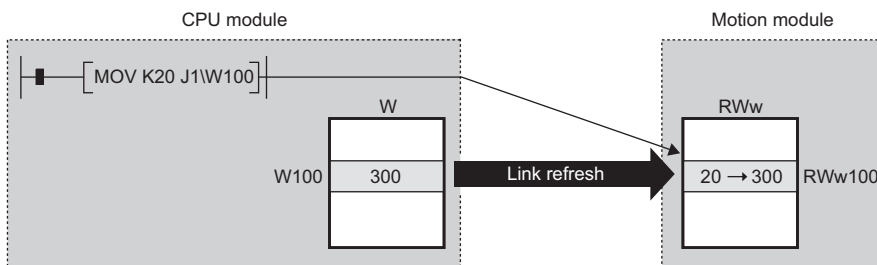
- (1) Out of the link refresh range (Data can be written here.)
- (2) Area where data is sent to other stations
- (3) Area for receiving data from other stations

**Point**

When writing data to the area in the link refresh range, directly access the link device and write the same data in the device of the CPU module.

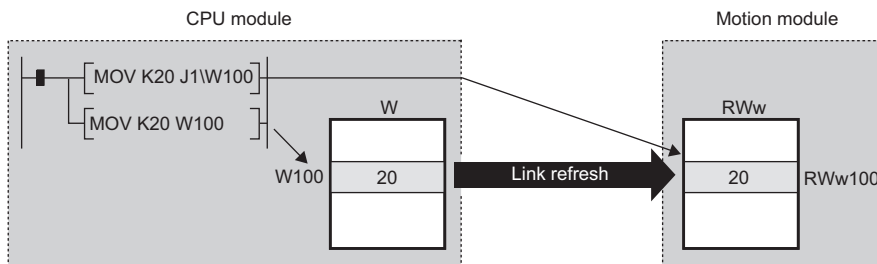
- Bad example (Directly accessing the link refresh target only)

Link refresh overwrites the value.



- Good example (Directly accessing the link device as well as writing the same data to the device of the CPU module)

The value written by the direct access is reflected.



## Differences from link refresh

Item	Access method	
	Link refresh	Direct access
Number of steps	1 step	2 steps
Processing speed	High speed	Low speed*1
Cyclic data assurance	Available	Not available

\*1 For the instruction processing time when using link direct devices (J□\□), refer to the following.

📖 MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)

## Shortening the transmission delay time

The transmission delay time can be shortened by reducing the number of link refresh points and shortening a communication cycle interval. (👉 Page 328 Communication cycle interval)

The following methods can be used to reduce the number of the link refresh points.

- In "Refresh Settings" under "Basic Settings", set only the link devices that are frequently used in the CPU module in the link refresh range. (👉 Page 80 Refresh Settings)
- Remove the link devices that are infrequently used in the CPU module from the link refresh range, and directly read/write the corresponding data from/to the program by direct access.

### Point

Link refresh is performed in END processing of the sequence scan of the CPU module.

## Precautions

### ■Cyclic data assurance

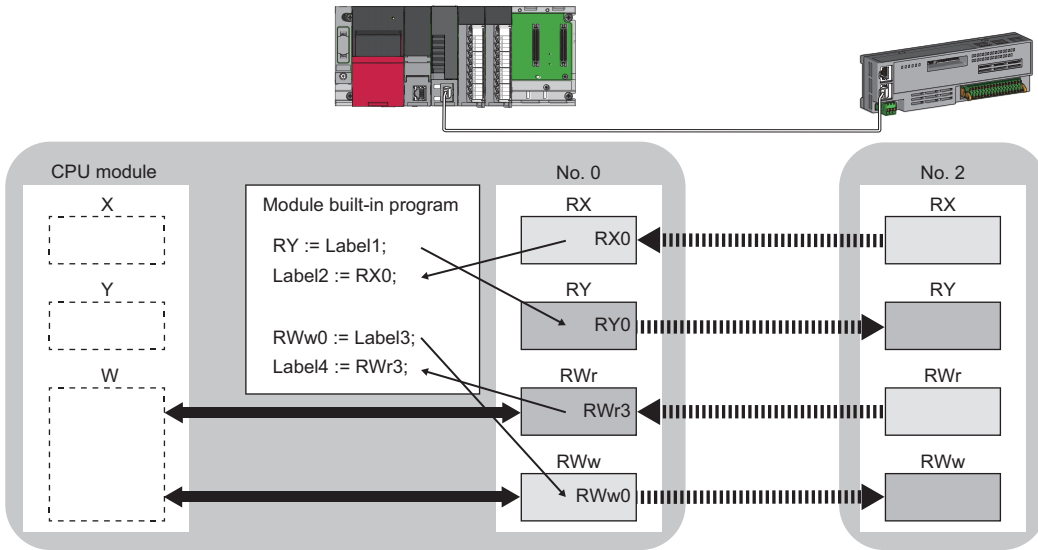
The direct access to link devices does not provide station-based block data assurance. (👉 Page 32 Cyclic data assurance)

### ■Link direct device in a multiple CPU system

In a multiple CPU system, link direct devices cannot be used for the CC-Link IE Controller Network-equipped module controlled by another CPU module.

# Direct access from motion built-in program to link devices

This function directly reads/writes link devices of the Motion module from the motion built-in program as variables. For the variables available in the motion built-in program, refer to "Motion Module Programs" in the following manual.  
 MELSEC iQ-R Programming Manual (Motion Control Function Blocks)

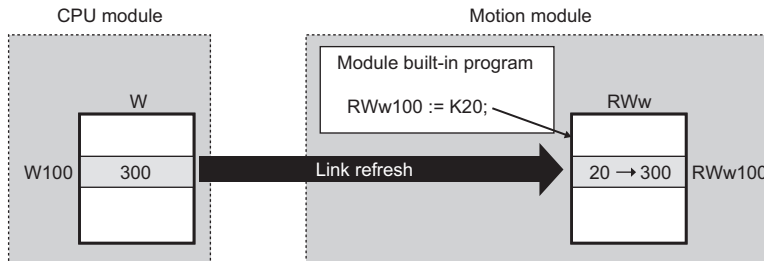


**Point**

When writing data to the area in the link refresh range, directly access the link device and write the same data in the device of the CPU module.

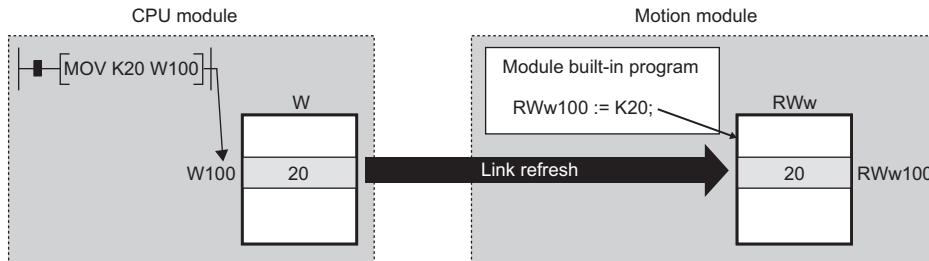
- Bad example (Directly accessing the link refresh target only)

Link refresh overwrites the value.



- Good example (Directly accessing the link device as well as writing the same data to the device of the CPU module)

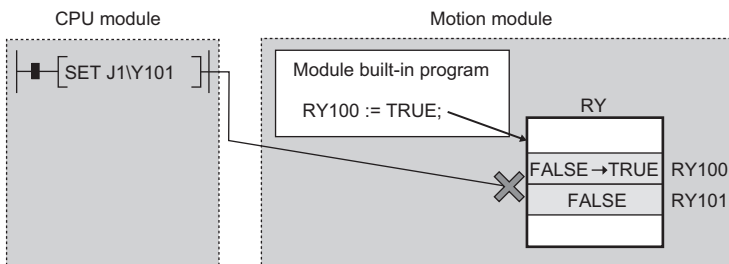
The value written by the direct access is reflected.





## Precautions

- If link direct access was performed from the CPU module and Motion module built-in program at the same time, the processing may not be performed correctly. When performing link direct access with the CPU module and Motion module built-in program, adjust the access timings to prevent overlap. Or, configure them so that they do not access the same area (units of 32 points for bit data/units of 2 points for word data).



- Even if direct access is made on a link device to which station assignment was not performed in "Network Configuration Settings" under "Basic Settings", data can be read or written without any error.

# Cyclic data assurance

This function assures the cyclic data assurance in units of 32 bits or station-based units.

○: Assured, ×: Not assured

Method	Description	Link refresh		Direct access to link devices		Access to buffer memory	
		Standard station	Motion control station	Standard station	Motion control station	Standard station	Motion control station
32-bit data assurance	Assures data in 32-bit units. Data is automatically assured by satisfying assignment conditions of link devices.	○	×*1	○	×*1	○	×*1
Station-based block data assurance	Assures data in station-based units. Data is assured by enabling the station-based block data assurance in the parameter setting.	○	×*1	×	×	×	×

\*1 The operation is performed with the setting of "Disable" regardless of the setting value.

## Restriction

When the version of Add-on baseSystem is "Ver. 1.18 or earlier", the cyclic data assurance is not supported. If "Station-based Block Data Assurance" is set to "Enable" in "Supplementary Cyclic Settings" under "Application Settings", the operation is performed with the setting of "Disable".

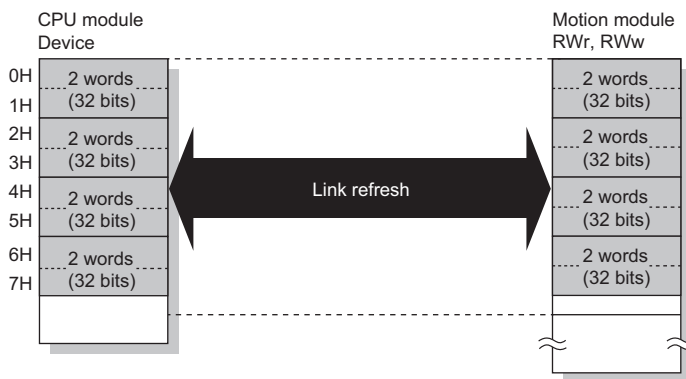
## 32-bit data assurance

The RWr and RWw data can be assured in 32-bit units.

### ■Data assurance at the time of direct access to link devices

When link refresh target devices are accessed, the 32-bit data can be assured by satisfying the following conditions:

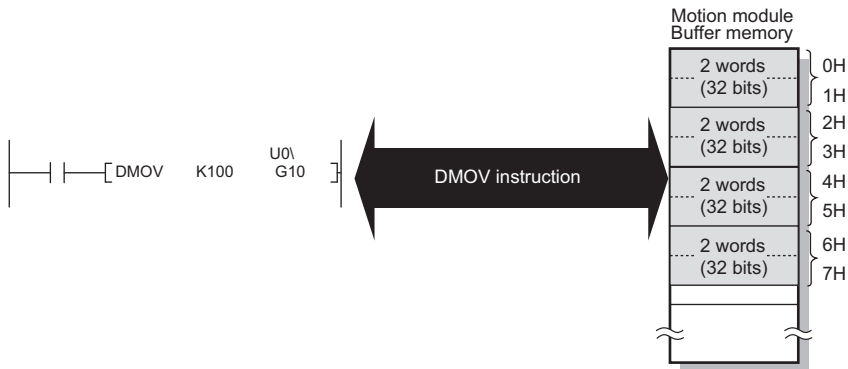
- The start device No. of RWr and RWw is multiples of 2.
- The number of points assigned to RWr and RWw is multiples of 2.



## ■ Data assurance at the time of access to buffer memory

The 32-bit data can be assured by satisfying the following conditions:

- Access using the DMOV instruction
- The start address of the buffer memory is a multiple of 2.



## Station-based block data assurance

Integrity of the cyclic data is assured for each station by handshake between the CPU module and the Motion module for a link refresh.

### ■ Setting

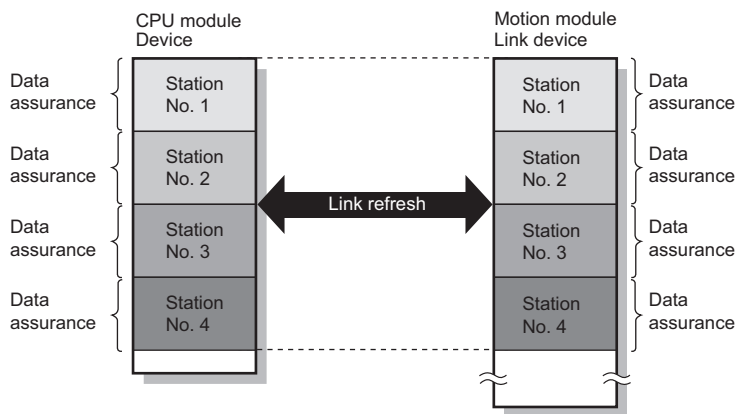
Set station-based block data assurance in "Supplementary Cyclic Settings" under "Application Settings" of the master station.

( Page 89 Application Settings)

Once this setting is enabled on the master station, the data for all stations is assured for each station.

### ■ Access to link devices

During a link refresh, data is assured for each station as shown below.

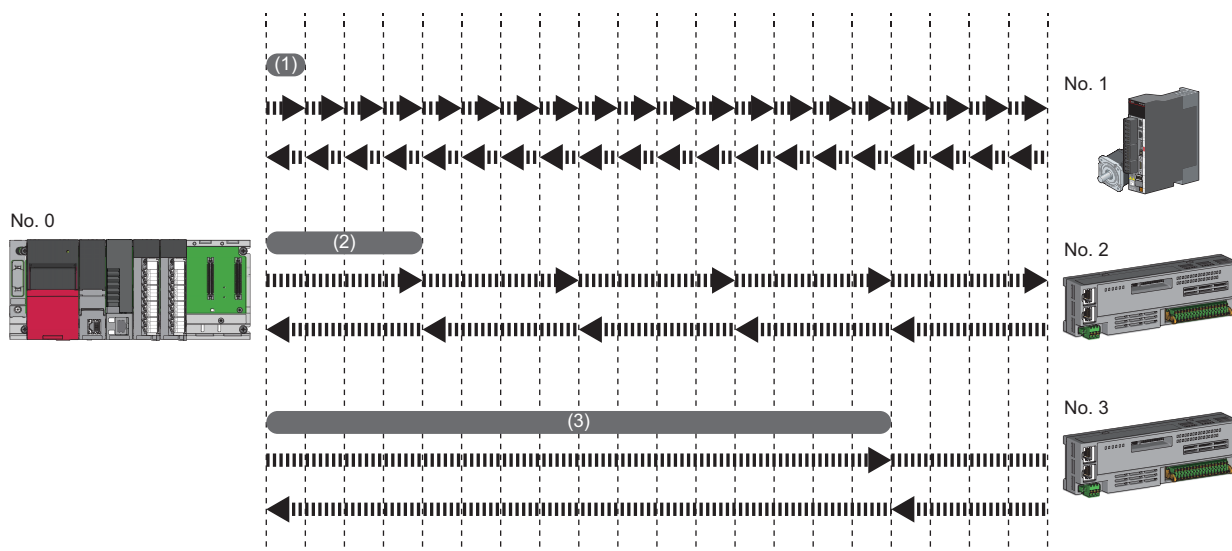


## Communication cycles coexistence

When slave stations with different communication cycles are included in the network, multiple communication cycles according to each slave station are used for communications.

The time for each communication cycle is the total time of cyclic transmission, transient transmission, and system reservation time.

Even if slave stations with different communication cycles are connected to a network, a slave station with a high-speed communication cycle is not affected by a slave station with a low speed.



- (1) Basic cycle
- (2) Normal speed
- (3) Low speed



When the version of Add-on baseSystem is "Ver. 1.18 or earlier" or a motion control station is used, the communication cycles coexistence is not supported. If a slave station is set to normal or low speed cycle, an error "Network parameter error" (error code: 2221H) occurs.

### Setting method

The master station communicates with slave stations by using three communication cycles that are the basic cycle under "Basic Period Setting", and "Normal-Speed" and "Low-Speed" under "Multiple Period Setting". ( Page 82 Communication Period Setting)

The communication cycle of each slave station can be selected from "Basic Period", "Normal-Speed", or "Low-Speed" in "Network Configuration Settings" under "Basic Settings".

## I/O maintenance settings

When using cyclic transmission, set whether to hold or clear output or input by using the following settings. (Page 90 Supplementary Cyclic Settings)

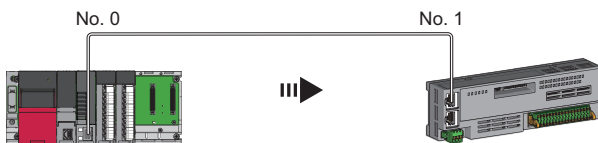
- "Output Mode upon CPU Error" when a stop error occurs in the CPU module
- "Output Hold/Clear Setting during CPU STOP" when the status of the CPU module is changed from RUN to STOP
- "Data Link Faulty Station Setting" when disconnected

"Application Settings" ⇒ "Supplementary Cyclic Settings" ⇒ "I/O Maintenance Settings"

### Restriction

When the version of Add-on baseSystem is "Ver. 1.18 or earlier" or a motion control station is used, the operation is performed with the setting of "Hold" regardless of the parameter setting.

## Input data hold/clear operation



### ■ If a CPU module stop error occurred

- If both "Output Mode upon CPU Error" and "Output Hold/Clear Setting during CPU STOP" are "Hold", the last output data set is sent to the slave station.
- If "Output Mode upon CPU Error" or "Output Hold/Clear Setting during CPU STOP" is "Clear", cleared data is sent to the slave station.

### ■ If the CPU module changed from RUN to STOP

- If "Output Hold/Clear Setting during CPU STOP" is "Hold", the last output data set is sent to the slave station.
- If "Output Hold/Clear Setting during CPU STOP" is "Clear", cleared data is sent to the slave station.

### ■ If the slave station disconnected

- If "Data Link Faulty Station Setting" is "Hold", input data before disconnection is held on the receiving side.
- If "Data Link Faulty Station Setting" is "Clear", input data on the receiving side is cleared.

## Devices where the hold/clear setting is enabled

The following table and figure show devices for which the hold/clear settings are enabled.

Setting items	Hold/clear settings are enabled	Hold regardless of setting	Clear regardless of setting
Output mode upon CPU error	RY	—	—
Output hold/clear setting during CPU STOP	RY (if the link refresh source device is other than Y)	RWw	RY (if the link refresh source device is Y)
Data link faulty station setting	RX	RWr	—

## Precautions

### ■ When "Output Hold/Clear Setting during CPU STOP" is set to "Clear"

When the CPU module is in the STOP state, the forced output to slave stations cannot be executed using the engineering tool.

### ■ When making direct access to link devices

The output of "Output Hold/Clear Setting during CPU STOP" is enabled.

### ■ When the Safety CPU is used

When the safety operation mode is set to the safety mode, the data is cleared even when "Output Hold/Clear Setting during CPU STOP" is set to "Hold".

## Output data hold/clear operation during CPU STOP

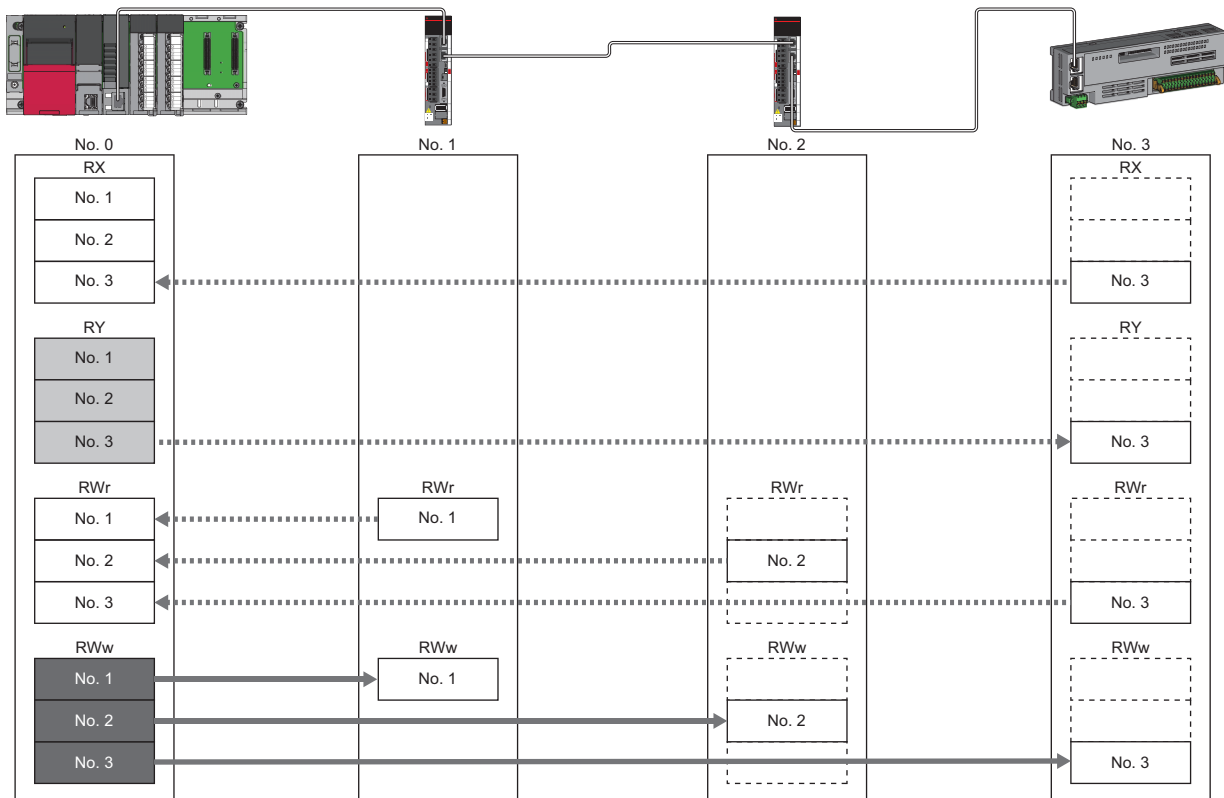
The following figure shows the devices where the setting of "Output Hold/Clear Setting during CPU STOP" is enabled when the CPU module changes from RUN to STOP.



Even if the Motion module is changed from RUN to STOP, it is not affected by this setting, and the output data does not change even if the Motion module is stopped.

The program is changed from STOP to ON when the PLC ready [Y0] is turned on.

### ■ Unicast mode



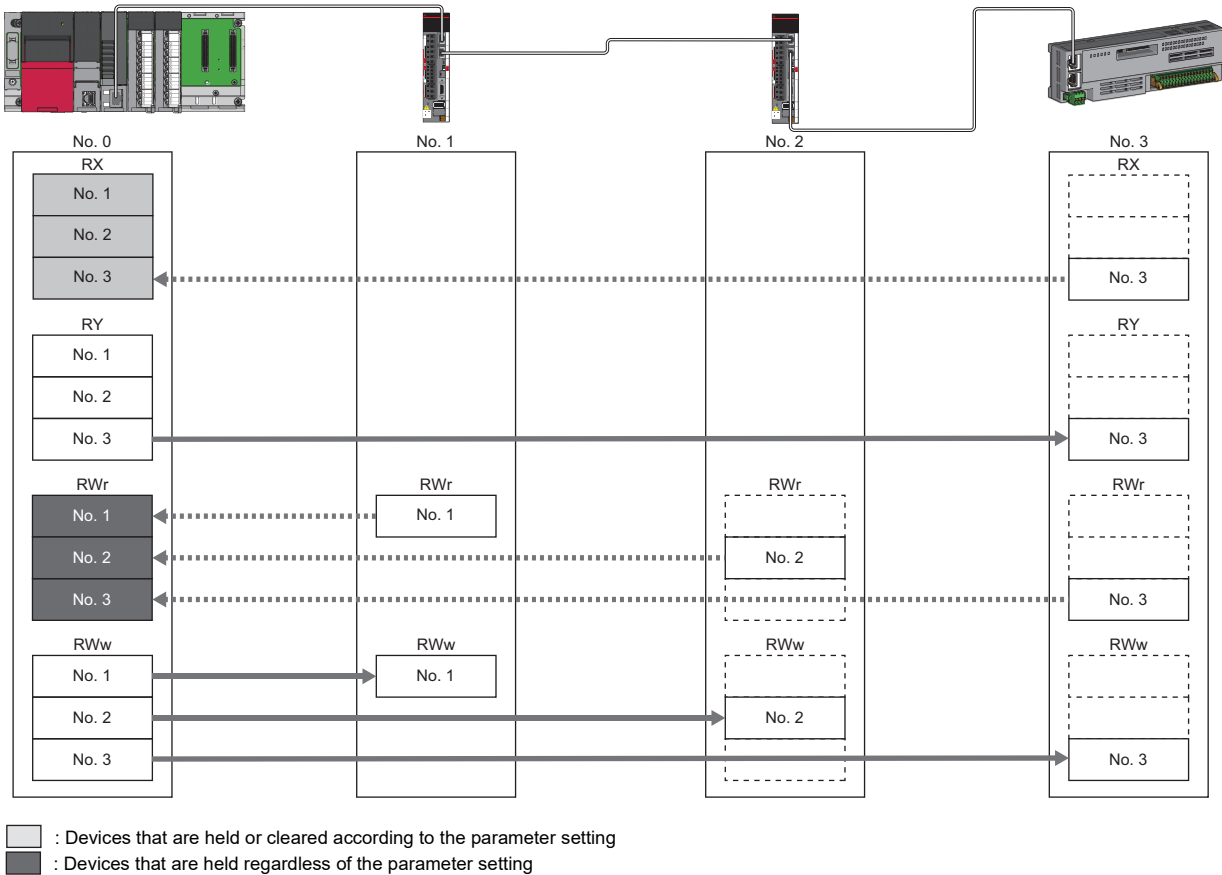
□ : When the link refresh source is set to other than Y, data is held or cleared according to the parameter setting. When the link refresh source is set to Y, data is cleared regardless of the parameter setting.

■ : Data is held regardless of the parameter setting.

## Input data hold/clear operation from the data link faulty station

The following figure shows the devices where "Data Link Faulty Station Setting" is enabled when each station becomes faulty.

### ■ Unicast mode



## Remote device test

The output of the standard remote station can be turned on or off when the CPU module is in STOP state.

Ordinarily, the output of the remote station with the output HOLD/CLEAR setting function cannot be turned on or off. In that case, use the remote device test function.

When checking the connection between the standard remote station and the external device by turning the remote output on or off, the connection can be checked during CPU STOP (without using a program) if the remote device test is used.

For the output HOLD/CLEAR setting function, refer to the following.

 Manual for the remote station used

### Restriction

- When the version of Add-on baseSystem is "Ver. 1.18 or earlier", the remote device test is not supported.
- Since a motion control station always operates as CPU RUN state regardless of the actual state of the CPU module, the output can be changed even during CPU STOP.

## Output hold/clear setting during CPU STOP

The following shows the current value of RY when "Output Hold/Clear Setting during CPU STOP" is set to "Clear".

- When the remote device test is disabled ('Remote device forced output request' (SB0016) is off): The current value of RY is cleared.
- When the remote device test is enabled ('Remote device forced output request' (SB0016) is on): The current value of RY is output and can be checked.

### ■ Output value in the standard remote station when the remote device test is enabled

The following table lists outputs in the standard remote station according to the operating status of the CPU module.

Operating status of the CPU module on the master station	Output Hold/Clear Setting during CPU STOP of the CPU module on the master station	Setting of the output HOLD/CLEAR setting function on the standard remote station	Output of the standard remote station*1
RUN or PAUSE	Hold	Hold	Current value of RY
		Clear	
	Clear	Hold	
		Clear	
RUN→STOP	Hold	Hold	
		Clear	
	Clear	Hold	
		Clear	
When a stop error occurs	Hold	Hold	Fixed to the value prior to STOP
		Clear	Fixed to 0
	Clear	Hold	Fixed to the value prior to STOP
		Clear	Fixed to 0

\*1 The output of the remote station is RWw for the digital-analog converter module on CC-Link IE TSN. RWw is also not fixed to 0, but output with an offset value.


## Setting method

Execute the remote device test according to the following procedure.

1. Set the RUN/STOP/RESET switch of the CPU module to the STOP position.
2. Turn off and on the 'Remote device forced output request' (SB0016) to start the remote device test.
3. Check that the 'Remote device forced output request accept' (SB0086) and 'Remote device forced output status' (SB0087) are on. (In addition, check that the 'Remote device forced output result' (SW025A) is 0 (no error).)
4. Check by turning on or off the output of the remote station.
5. Turn on and off the 'Remote device forced output request' (SB0016) to end the remote device test.



After starting the remote device test, errors can be checked by the 'Remote device forced output result' (SW025A).

If an error has occurred, the error code is stored. Take actions according to the error code. (  Page 238 List of Error Codes)

When this function is used for the Motion module with the Add-on baseSystem version of "Ver. 1.18 or earlier", the value to be stored in 'Remote device forced output result' (SW025A) is 0.

## Precautions

### ■ Conditions

- The remote device test does not start even if the 'Remote device forced output request' (SB0016) is turned off and on while the CPU module is in RUN or PAUSE state.
- Even if the CPU module is changed to STOP state after the 'Remote device forced output request' (SB0016) is turned off and on, the remote device test does not start.
- If the CPU module is changed to RUN or PAUSE state during the remote device test, the remote device test ends.

### ■ Output HOLD/CLEAR setting function

- During the remote device test, the output HOLD/CLEAR setting function of the remote station is disabled, and the output of the remote station is turned on or off by the master station. The output HOLD/CLEAR setting function is also disabled for all remote stations including the remote station whose output is to be turned on or off.
- If a stop error occurs in the CPU module during the remote device test, the test ends and the data is output from the remote station according to the output HOLD/CLEAR setting function.

# CANopen communication

The CANopen communication is used for controlling a device that supports the CANopen profile.

The CANopen communication can control a device that supports the CANopen profile with the SDO communication by transient transmission and the PDO communication by cyclic transmission. The SDO communication reads/writes objects non-periodically by using the SLMPSND instruction to send a command for accessing the CAN application object to the target slave station.

For details of the commands for accessing the CAN application objects, refer to the following.

📖 Page 341 SLMP Command for Accessing the CAN Application Object

For a station which executes motion control as a real axis, SDO communication can be performed by using MC\_ReadParameter (parameter read) and MC\_WriteParameter (parameter write).

For details of MC\_ReadParameter (parameter read) and MC\_WriteParameter (parameter write), refer to "Parameter Read/Write Function" of the following manual.

📖 MELSEC iQ-R Motion Module User's Manual(Application)

For details of the SLMPSND instruction, refer to the following.

📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

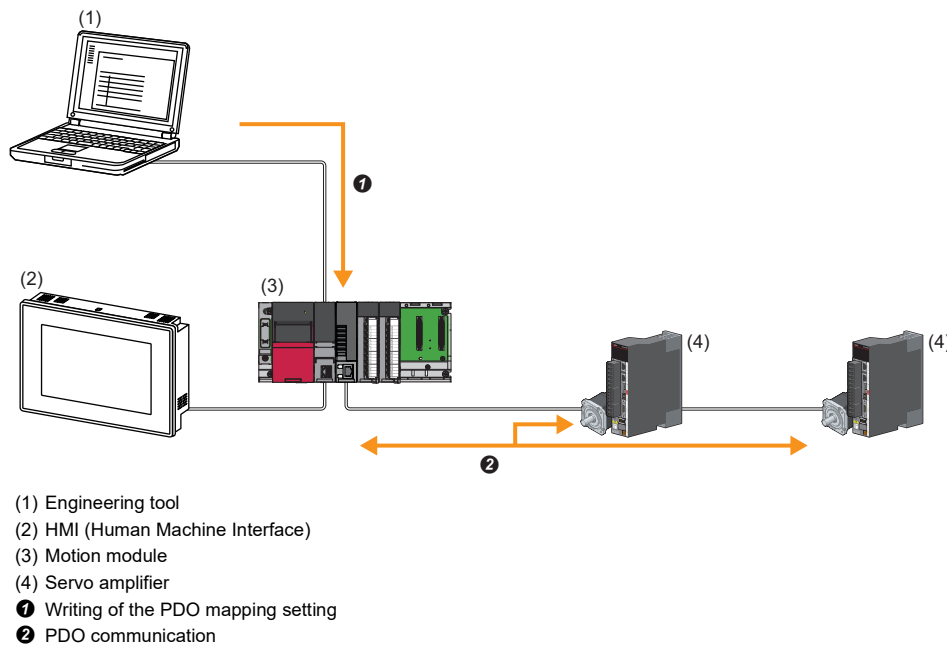
The PDO communication reads/writes objects defined with the PDO mapping by using the cyclic transmission.

PDO mapping settings are configured in "Batch Setting of PDO Mapping" or "PDO Mapping Setting" of the engineering tool.

The contents of the PDO mapping setting are sent to slave devices when the cyclic transmission with slave devices starts.

## Restriction

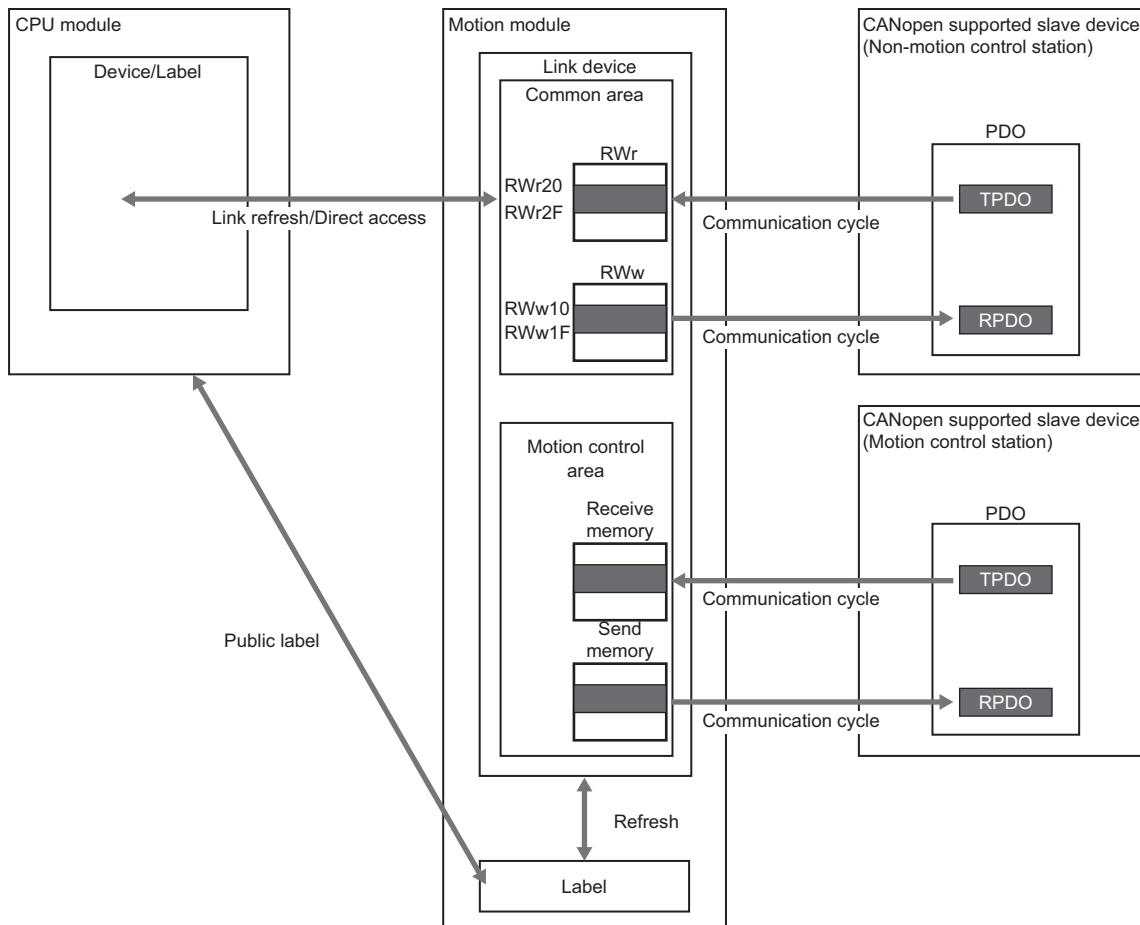
When the version of Add-on baseSystem is "Ver. 1.18 or earlier", standard stations do not support the CANopen communication. If a standard station is set in the network configuration settings, an error "Network parameter error" (error code: 2221H) occurs.



The PDO (RPDO) output from the master station and PDO (TPDO) input from the slave stations are assigned as follows.

- Motion control station: Motion control area
- Standard station: RWr/RWw in common area

The PDO of the standard station can be controlled from link refresh (label/device) and direct access. PDO of the motion control station can be controlled from the CPU module or program in the Motion module by slave label.



### Restriction

When the version of Add-on baseSystem is "Ver. 1.18 or earlier" or a motion control station is used, the communication cycles coexistence is not supported. If a slave station is set to normal or low speed cycle, an error "Network parameter error" (error code: 2221H) occurs.

## Setting method

Set "Batch Setting of PDO Mapping" or "PDO Mapping Setting" in "Network Configuration Setting" of "Basic Settings".

(☞ Page 104 PDO mapping setting)

## Precautions

### ■PDO mapping setting

When a device that supports the CANopen profile is added to "Network Configuration Settings" of the Motion module, configure "PDO Mapping Setting".

If PDO mapping setting is not configured, GX Works3 will detect the following errors.

#### When MR-J5-G is added as the slave station

- **\*\*Error\*\*** RPDO of module MR-J5-G PDO mapping setting is not set. Please set PDO mapping parameter in PDO mapping setting screen or batch setting of PDO mapping. MR-J5-G NV\_E02731
- **\*\*Error\*\*** TPDO of module MR-J5-G PDO mapping setting is not set. Please set PDO mapping parameter in PDO mapping setting screen or batch setting of PDO mapping. MR-J5-G NV\_E02732

### ■Multi-axis servo amplifier

When a multi-axis servo amplifier to the network configuration setting is added, a single slave station can use up to eight axes.

### ■Error code

If the PDO mapping settings are incorrect, the slave device responds "PDO mapping setting error" at the initial communication and the data link does not start.

For the error causes, check the response code (SDO Abort Code) (saved in the detail information of the event history) and take corrective actions. (🔍 Page 272 Response Code (SDO Abort Code))

## 1.2 Transient Transmission

The transient transmission is used for communications at any timing and has the following three types.

- ☞ Page 43 Communications using a dedicated instruction
- ☞ Page 43 Communications using the SLMP
- ☞ Page 44 Communications using the engineering tool

### Communications using a dedicated instruction

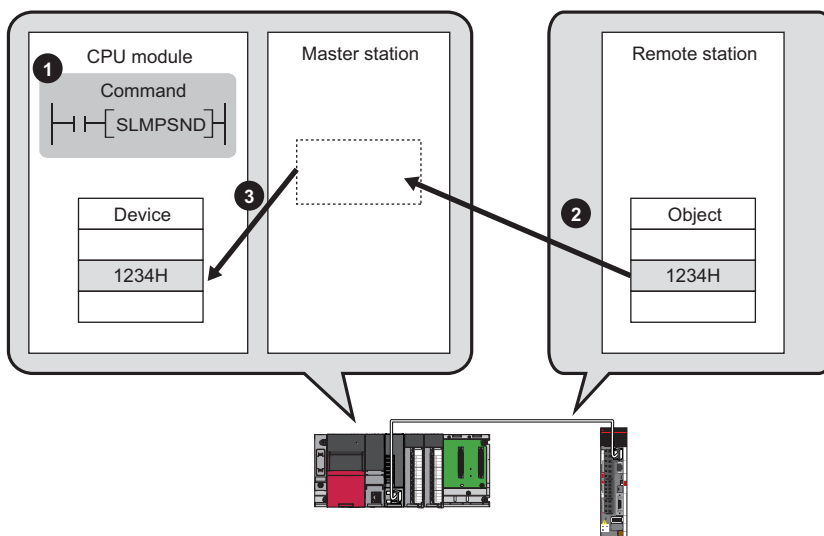
Data is read/written from the master station to a remote station using the dedicated instructions.

For dedicated instructions that can be used and details on dedicated instructions, refer to the following.

- ☞ Page 322 Dedicated Instruction

**Ex.**

Reading an object from the remote station using the dedicated instruction (SLMPSND instruction)

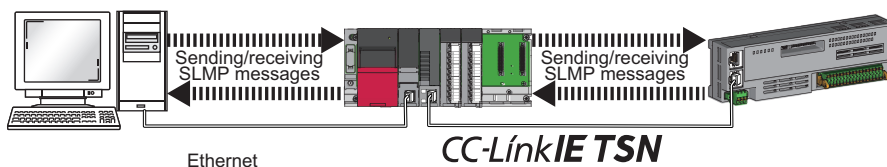


### Communications using the SLMP

By SLMP, data is read/written from the Motion module, the external device such as a personal computer or HMI (Human Machine Interface) to the master station and the remote station.

The Motion module sends and receives messages. For details on an SLMP, refer to the following.

- ☞ SLMP Reference Manual




#### Precautions

For SLMP communications, set the same communication speed for the connected station and access destination. When different communication speeds are set for the connected station and access destination, SLMP communication may not be possible.

## Communications using the engineering tool

This type of communications are used to configure the settings of or monitor each station using the engineering tool. It allows seamless communications with stations on different types networks.

### Point

- Communications can be made with stations up to eight networks apart (number of relay stations: 7).
- There are restrictions in communication paths when communicating by the motion control setting function. For details, refer to "Communication with the engineering tool" in PART 1 of the following manual.  
 MELSEC iQ-R Motion Module User's Manual (Startup)

### When the networks consist of only MELSEC iQ-R series



Communication paths are automatically set for communications with the following networks of MELSEC iQ-R series.

- Ethernet
- CC-Link IE TSN
- CC-Link IE Controller Network
- CC-Link IE Field Network

#### ■Setting method

Check that "Dynamic Routing" in "Application Settings" is set to "Enable".

### Point


- Communication paths are automatically set, but they can also be manually set. ( Page 44 When the networks consist of MELSEC iQ-R series and other series)
- The communication path cannot be set automatically for Ethernet-equipped modules connected via a router. Set the communication path manually. ( Page 44 When the networks consist of MELSEC iQ-R series and other series)

### When the networks consist of MELSEC iQ-R series and other series


Setting communication paths allow communications with the following networks configured with modules other than MELSEC iQ-R series.

- Ethernet
- CC-Link IE Controller Network
- CC-Link IE Field Network
- MELSECNET/H
- MELSECNET/10

#### ■Setting method

Set communication paths in "Routing Setting" of "CPU Parameter". ( MELSEC iQ-R CPU Module User's Manual (Application))

### Communication test

This test checks if transient transmission data can be properly routed from the own station to the communication target. ( Page 226 Communication Test)

# 1.3 Ethernet Connection

This type of connection allows one module to be connected to an Ethernet device without interfering with CC-Link IE TSN.

## Connection with MELSOFT products and a GOT

Programming and monitoring of the programmable controller with the engineering tool, and monitoring and testing of the programmable controller from the GOT is performed via Ethernet. This function enables remote control using Ethernet's long-distance connectivity and high-speed communications.


This section describes the methods of connecting the Motion module, MELSOFT product (such as engineering tool and MX Component), and GOT.

○: Connection available, ×: Connection not available

Connection method	Purpose	Availability		Reference
		MELSOFT product	GOT	
Connection via HUB (Connection by specifying the IP address)	To connect multiple MELSOFT products	○	×	Page 45 Connection via HUB
Connection via HUB (Connection by specifying the network No. and station No.)	To connect multiple MELSOFT products and GOTs	○	○	

### Point

For the procedures to connect the Motion module and a GOT, refer to the following.


 Manual for the GOT used

### Restriction

- The station with a communication speed different from the station connected to the engineering tool cannot be connected by specifying other station. The online and debug function of the engineering tool may not be used.
- When connecting a MELSOFT product or GOT via the Motion module, if another Motion module set to the same network No. is mounted on the same base unit (basic base unit and extension base unit) of the Motion module to be passed through, connection cannot be performed.


## Connection via HUB

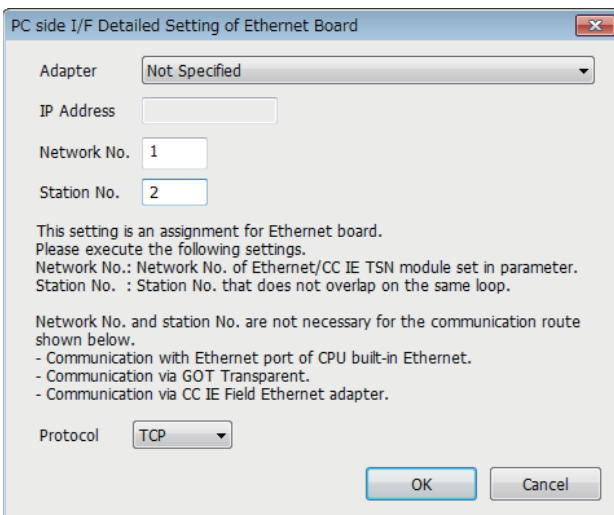
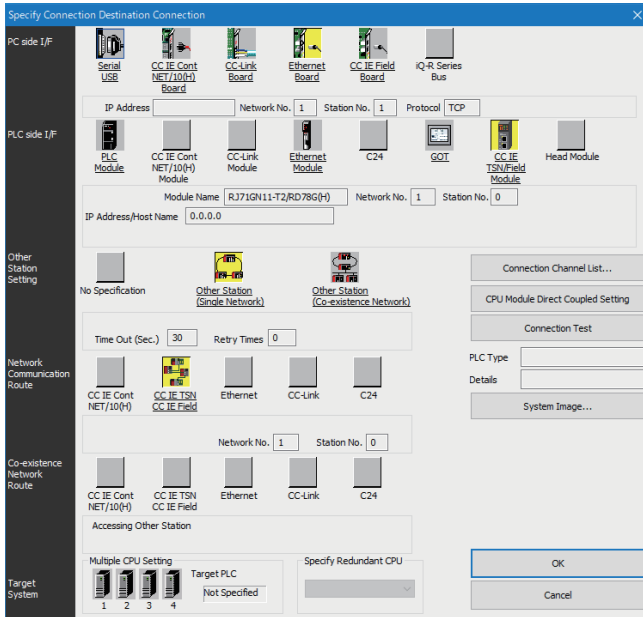
### ■Settings on the Motion module side

- For connection by specifying the IP address, set the IP address using "Required Settings". ( Page 78 Station No./IP Address Settings)
- When connecting by specifying the network No. and station No., set the network No. and station No. in "Required Settings". Neither of connections require "Network Configuration Settings" under "Basic Settings".

## ■ Settings on the engineering tool side

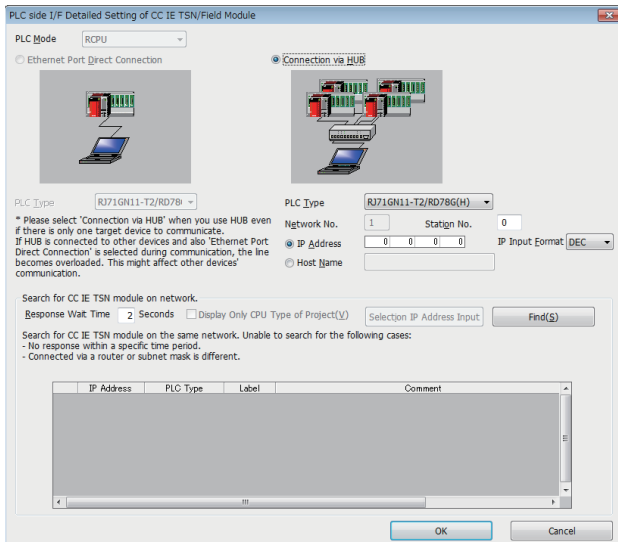
Set in the "Specify Connection Destination Connection" window.

 [Online] ⇔ [Current Connection Destination]



1. Set "PC side I/F" to "Ethernet Board".
2. Double-click "Ethernet Board", and open the "PC side I/F Detailed Setting of Ethernet Board" window.
3. Set the network No., station No., and protocol of the personal computer.  
 TCP: A connection is established during communication. Since data is exchanged while checking that the data has correctly reached the communication destination, the data reliability can be ensured. Note that the line load is larger than UDP/IP communications.  
 UDP: Since a connection is not established during communication and whether the communication destination has correctly received the data is not checked, the line load is lower. Note that the data reliability is lower than TCP/IP communications.
4. Set the "PLC side I/F" to the module to be connected.

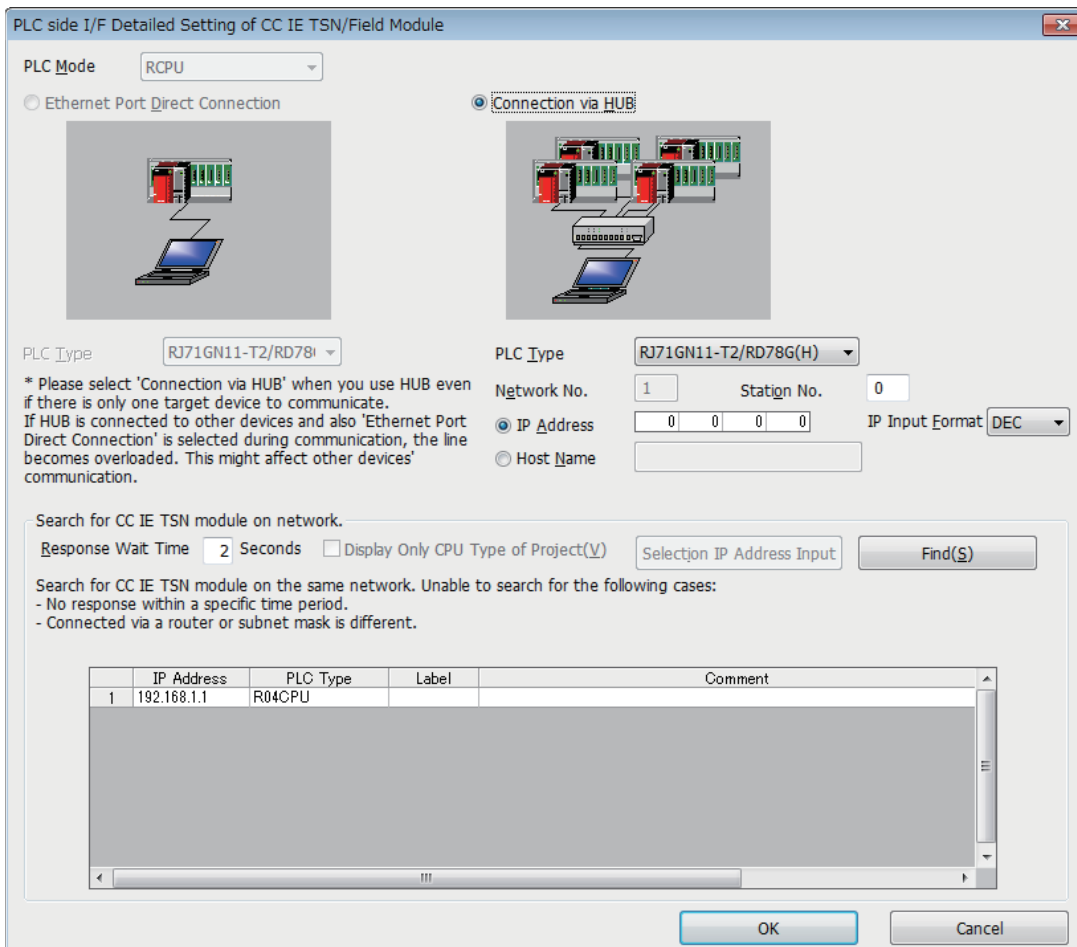




5. Double-click the icon set in step 4, and open the detailed setting window.
6. Select "Connection via HUB" for the connection method, and enter the station No. and IP address or host name of the Motion module.
7. Specify "Other Station Setting" or "Network Communication Route" if necessary.

## ■ Searching modules on the network

For a connection using a switching hub, a list of modules that can be searched for will appear by clicking the [Find] button on the detailed setting window.



Search target modules are as follows.

- The control CPU of the Motion module connected to the same switching hub as the engineering tool
- The control CPU of the Motion module connected to cascade-connected switching hub

If the connected Motion module does not appear in the list after searching the modules on the network, check the following items.

- Search cannot be performed if it is disabled with the IP filter.
- Modules connected via a router cannot be searched.
- If the module is connected via a wireless LAN, IP packet loss can prevent the Ethernet communication from stabilizing, and may inhibit the module search.
- If modules with the same IP address are listed, correct the setting of the IP address in "Network Configuration Settings" under "Basic Settings" of the master station.
- If the service processing load of the search-target CPU module is high, it may not be possible to search for the corresponding module. If the search cannot be performed, increase the response waiting time in the search dialog, and execute the search again.

## Connecting SLMP-compatible devices

---

This type of connection allows SLMP-compatible devices (such as a personal computer or a vision sensor) to be connected to the Motion module.

For details on an SLMP, refer to the following.

 SLMP Reference Manual

### **Restriction**

---

- For SLMP communication in the structure where communication speeds of 1 Gbps and 100 Mbps exist, set the same communication speed for the connected station and access destination. When different communication speeds are set for the connected station and access destination, SLMP communication may not be possible.
- When the system structure is mixed with an Ethernet device, there are restrictions for the network topology and connection destination of the Ethernet device. For details, refer to "SYSTEM CONFIGURATION" in PART 1 of the following manual.

 MELSEC iQ-R Motion Module User's Manual (Startup)

---

# 1.4 Security

Security for the network environment is structured by restricting access by each communication path to the CPU module. The following two access restriction methods can be used.

☞ Page 50 IP filter

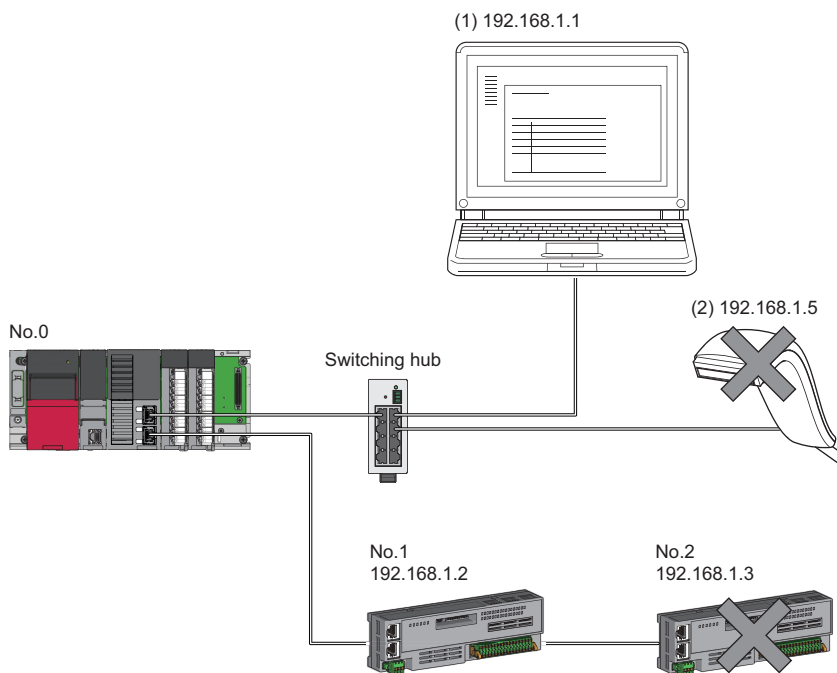
☞ Page 52 Remote password

## IP filter

Identifies the IP address of the access source, and prevents unauthorized access.

By setting the IP address of the access source using the engineering tool, IP packets are allowed or blocked. (Allows or blocks the IP packets received from the access source. IP packets sent from the own station are ignored.)

Use of this function is recommended when using in an environment connected to a LAN line.



When the "Allow" IP addresses are set to 192.168.1.1 and 192.168.1.2 using the IP filter of the master station No.0:

Only the Ethernet device (1) and slave station No.1 can access the master station, and the Ethernet device (2) and slave station No.2 cannot access the master station.

### Restriction

This function cannot be used when accessing via a network other than Ethernet or CC-Link IE TSN.

### Point

The IP filter is one method of preventing unauthorized access (such as a program or data destruction) from an external device. It does not completely prevent unauthorized access. To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

Our company is not responsible for any problems that occur in the programmable controller and system due to a DoS attack, unauthorized access, computer virus, or other cyberattacks.

Examples of measures for unauthorized access are given below.

- Install a firewall or VPN

## Setting method

1. Set the IP address to be allowed or blocked in the "IP Filter Settings" window of "Security" under "Application Settings".  
([Page 91 Security](#)) A warning is displayed in the following cases.
  - When blocking the IP address of the slave station set in "Network Configuration Settings" under "Basic Settings" was attempted
  - When a slave station is not set in "Network Configuration Settings" under "Basic Settings", and the "Allow" target IP address is not set in the "IP Filter Settings" window (because the IP filter blocks every IP address)
2. Write the module parameters to the CPU module.
3. The IP filter is enabled when power is turned off and on or the CPU module is reset.

### Point

Even if the connection was specified in "Network Configuration Settings" under "Basic Settings" or by a program, access from the external device is either allowed or blocked according to the setting in the "IP Filter Settings" window.

## Setting Target

Allow or block should be set to all IP addresses that connect to the same network. Also, set allow or block to the IP address of the slave station that is registered in "Network Configuration Settings" under "Basic Settings".

Register the setting details to the master station, and allow or block the IP packets received from the slave station of the registered IP address.

## Operation

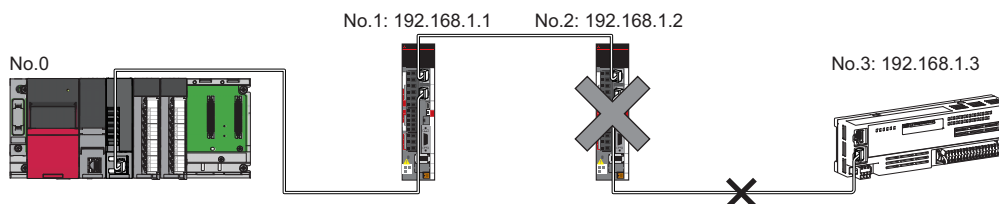
Even for the slave station registered in "Network Configuration Settings" under "Basic Settings", a station with an IP address set as blocked can become a disconnected station. As a result, cyclic transmission and transient transmission are not performed. Such a station is also displayed as a disconnected station on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window. However, Ethernet devices are not displayed on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window. ([Page 217 CC-Link IE TSN/CC-Link IE Field Diagnostics](#))

When an IP packet is received from an IP address that is set as blocked, the denial is registered in the event history of the master station.

([Page 269 Event List](#))

## Precautions

- Do not set the IP addresses of the master station or slave stations as blocked. When a slave station using line topology is set as blocked, cyclic and transient transmissions cannot be performed on the slave stations that are connected after the slave station set as blocked.



When the "Deny" IP address is set to 192.168.1.2 using the IP filter of the master station No.0:

Only the slave station No.1 can access the master station, and the slave station No.2 and slave station No.3 cannot access the master station.

- If there is a proxy server in the LAN line, block the IP address for the proxy server. If the IP address is allowed, it will not be possible to prevent access from personal computers that access the proxy server.
- To block access from an external device to another station, block access to the connected station (station connected directly to an external device) by using the IP filter.

## Remote password

---

Permits or prohibits access from the external device to the CPU module via Motion module. This function can prevent unauthorized access of the CPU module from a remote location.

### **Point**

The remote password is one method of preventing unauthorized access (such as program or data destruction) from an external device. It does not completely prevent unauthorized access. To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

Our company is not responsible for any problems that occur in the programmable controller and system due to a DoS attack, unauthorized access, computer virus, or other cyberattacks.

Examples of measures for unauthorized access are given below.

- Install a firewall or VPN
- 

## Number of settable modules

---

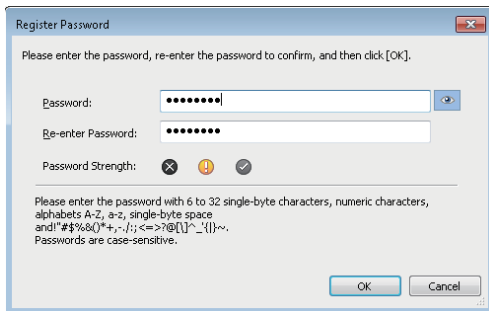
Up to eight modules can be set for remote passwords.

When using the multiple CPU system configuration, up to eight modules can be set for each CPU module.

## Setting method

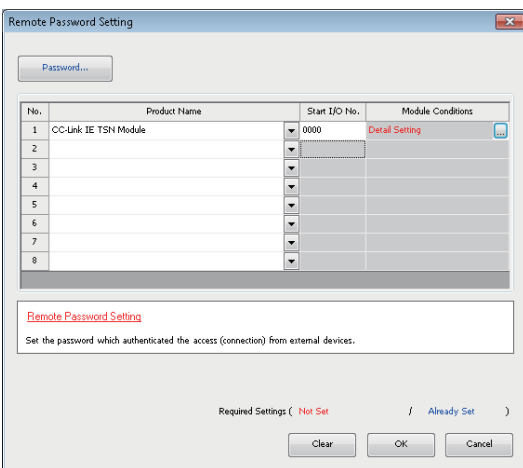
Set on the "Remote Password Setting" window.

[Navigation window] ⇒ [Parameter] ⇒ [Remote Password]

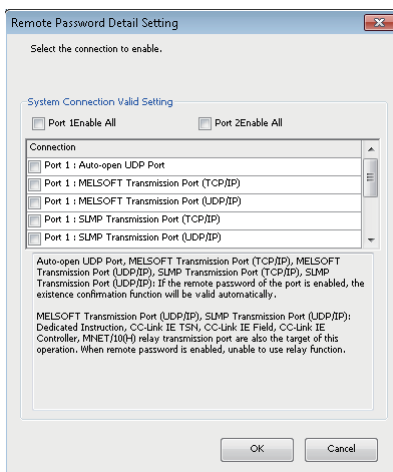


1. Click the [Password] button, and register the remote password on the "Register Password" window.

[Password] button



2. Select the module for which the remote password is to be applied, and set the start I/O No..



3. Set the target connection on the "Remote Password Detail Setting" window.

"Detail Setting" for the target module

4. Write the remote password to the CPU module.
5. The remote password is enabled when the CPU module is reset or powered off and on.

## ■PING

This function uses the PING command to perform an alive check of external devices whose access is permitted in UDP communications. Therefore, if external devices do not respond to PING, an alive check error (event code: 00906) occurs. When this function is used for UDP communications, check if the security setting of external devices (such as a firewall) is set to respond to PING.

## Access permitted/prohibited processing operation

This section describes the processing for permitting or prohibiting access of the CPU module with remote password by the external device.

### ■Access permit processing (Unlock processing)

The external device trying to communicate unlocks the remote password set for the connected Motion module.

If the password is not unlocked, the Motion module to which the external device is connected prohibits access, so an error occurs in the external device.

The unlocking methods are shown below.

- SLMP dedicated command (Remote Password Unlock)
- Input password from engineering tool

### ■Access processing

Access to the specified station is possible when the remote password is correctly unlocked. Execute any access.

### ■Access prohibit processing (Lock processing)

When access to the specified station ends, lock the remote password from the external device to disable subsequent access.

The locking methods are shown below.

- SLMP dedicated command (Remote Password Lock)
- Lock with engineering tool (executed automatically)



## Precautions

The following section describes the precautions for using remote password.

### ■Set connection

Set the remote password for the connection used for data communication with an external device that can execute the unlock/lock processing.

### ■When remote password is set for UDP/IP connection

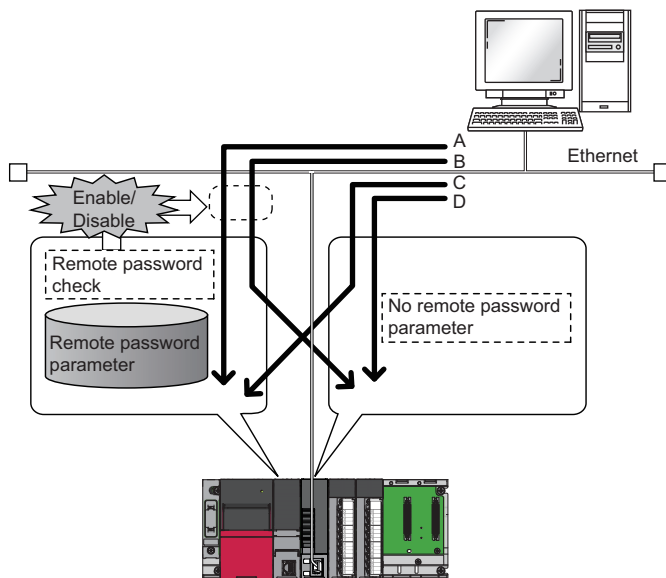
- Determine the external device to communicate with and perform data communication. (With UDP/IP, after the remote password is unlocked, data can be exchanged with devices other than the unlocked external device, too. Determine the communication destination before starting use.)
- Always lock the remote password after data communication is finished. (If the remote password is not locked, the unlocked state is held until timeout occurs.)

### ■TCP/IP close processing

If the TCP/IP is closed before the TCP/IP is locked, the CPU module will automatically start the lock processing.

### ■Remote password valid range

The remote password is valid only for access from the Motion module for which the parameters are set. When using multiple CPU modules in a multiple CPU system, set a remote password for each CPU module for requiring a remote password.



The remote password is checked when accessing with path A or B.

The remote password is not checked when accessing with path C or D.

### ■Accessing the programmable controller of another station

When the external device is accessing the programmable controller of another station via the Motion module, accessing the programmable controller may not be possible if a remote password is set for the CPU module at the relay station or station to be accessed.

# 1.5 RAS

This acronym stands for Reliability, Availability, and Serviceability. This function improves overall usability of automated equipment.

## Slave station disconnection


Data link of the station where the error occurred is stopped, and the data link continues only for stations that are operating normally.

## Automatic return

When the disconnected slave station recovers from an error, the data link is automatically resumed.

### Precautions

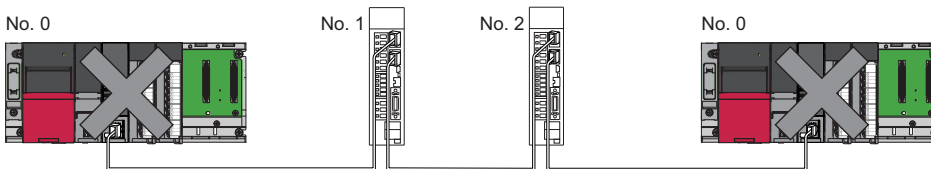
- When removing a slave station while the system is operating, check that the slave station is performing cyclic transmission or has been disconnected.
- When removing the Motion module, check that the D LINK LED is on or off.
- When the version of Add-on baseSystem is "Ver. 1.9 or earlier" Automatic return is not supported. If return is performed after disconnection, the slave label will not be updated.
- When the version of Add-on baseSystem is "Ver. 1.10 or later" When a slave station with a model name different from the disconnected slave station is returned, the error "Configuration mismatch on return" (error code: 1C49H) occurs. For details, refer to "List of Error Codes" in the following manual.

 MELSEC iQ-R Motion Module User's Manual(Application)

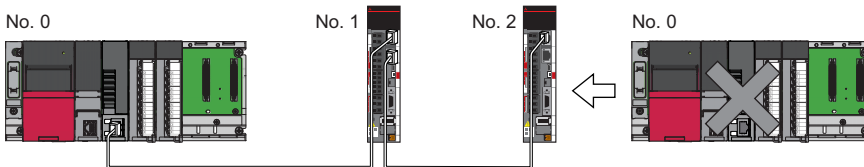
## Master station duplication detection

If one network has multiple master stations, an overlap is detected.

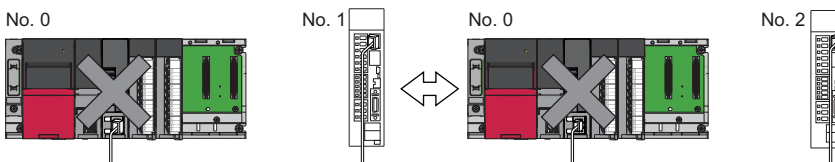
- When multiple master stations are simultaneously powered on, or when multiple master stations are simultaneously connected, an error "Master station duplication detection" (error code: 300FH) is detected in all master stations and cyclic transmission cannot be performed in all stations. (Transient transmission available)



- If another master station is added to the network during data link, an error "Master station duplication detection" (error code: 300FH) is detected in the added master station and cyclic transmission cannot be performed. (Transient transmission available) Other stations continue data link.



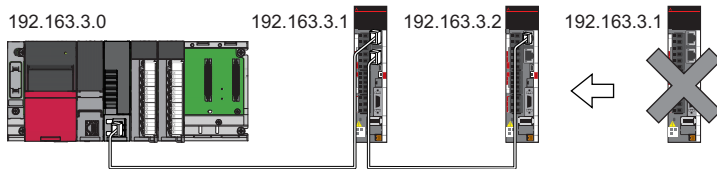
- If two networks are connected during data link, an error "Master station duplication detection" (error code: 300FH) is detected in master stations on both networks and cyclic transmission cannot be performed in all stations. (Transient transmission with IP address specification is available)



## IP address duplication detection

If one network has stations with the same IP address, an overlap is detected.

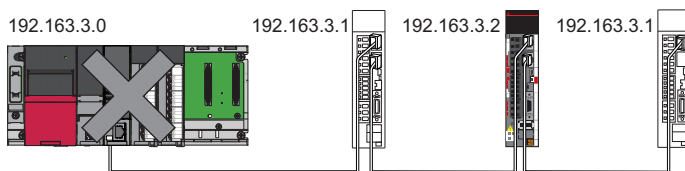
- When adding a slave station, if a station with the same IP address already exists, an error "IP address duplication detection" (error code: 2160H) is detected in a station to be added and data link cannot be performed. (Other stations continue data link.)



### Precautions

When adding a slave station, which has already been connected (linked up) with a TSN hub and the TSN hub is added to the network, an overlapping IP address is not detected in a station to be added. If an error "IP address duplication detection" (error code: 1802H) is detected in the master station, disconnect the relevant slave station from the network. Otherwise, multiple stations with the same IP address will exist on the same network, possibly leading to transient transmission being sent to an unintended station.

- If the startup processing of cyclic transmission is executed by powering off and on the master station, when a station with the same IP address is in the network, an error "Slave station IP address duplication" (error code: 3021H) is detected in the master station and data link cannot be performed.



- During cyclic transmission, an overlapping IP address is regularly checked in the master station. When there are overlapping IP addresses, an error "IP address duplication detection" (error code: 1802H) is detected in the master station and cyclic transmission cannot be performed with the relevant slave station. (Other stations continue data link.)

### Restriction

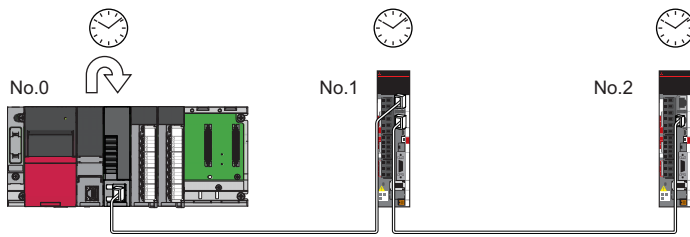
- An overlapping IP address between an Ethernet device and a CC-Link IE TSN device, and an overlapping IP address between Ethernet devices are not detected at cyclic transmission startup of the master station.
- Station No. duplication is not detected.

### Methods of recovery from an overlapping IP address

If an error "IP address duplication detection" (error codes: 1802H) or "Slave station IP address duplication" (error code: 3021H) is detected in the master station, the Motion module changes the indication (such as LEDs) of the stations with overlapping IP addresses. Remove the corresponding station or change its IP address, and power off and on or reset the master station.

# Time synchronization

This synchronizes the time of slave stations with the time synchronization source (CPU module of the master station).



## Setting method

The time synchronization is set with the buffer memory. (📖 Page 285 Time synchronization)

### Point

When setting the Motion module as the master station, do not connect time synchronization devices with time synchronization priority of 0 to 15.

The priority is a value assigned to time synchronization devices from devices within the network to determine the grandmaster. The priority increases as the value decreases.

For the priority verification method and setting method, refer to the manual of the time synchronization device.


## Precautions

- If this function is used, the time setting function (SNTP client) of the Ethernet-equipped module cannot be used. (📖 MELSEC iQ-R Ethernet User's Manual (Application))
- If multiple Motion modules are mounted to a CPU module on the same base, set time synchronization for only one Motion module. If time synchronization is set for multiple, they are overwritten by the time that is synchronized later.
- When using the multiple CPU system configuration, the CPU module No.1 becomes the time synchronization source.


# 1.6 CC-Link IE TSN Network Synchronous Communication Function

This section describes the CC-Link IE TSN Network synchronous communication function.

For the inter-module synchronization function, refer to "Inter-Module Synchronization Function" in the following manual.

 MELSEC iQ-R Motion Module User's Manual (Application)

## Restriction

- For the firmware versions of the CPU module compatible with the CC-Link IE TSN Network synchronous communication function of standard stations, refer to the following.  
 MELSEC iQ-R CPU Module User's Manual (Application)
- When the version of Add-on baseSystem is "Ver. 1.4 or earlier", the CC-Link IE TSN network synchronous communication function is not supported. If the network synchronous communication setting is set to "Synchronous", an error occurs in the Motion module.
- When the version of Add-on baseSystem is "Ver. 1.15 or earlier", the inter-module synchronization function is not supported. If the inter-module synchronization is enabled, an error occurs in the CPU module.
- When the version of Add-on baseSystem is "Ver. 1.18 or earlier", standard stations do not support the CC-Link IE TSN Network synchronous communication function. If a standard station is set in the network configuration settings, an error "Network parameter error" (error code: 2221H) occurs.

# Overview

## Standard station

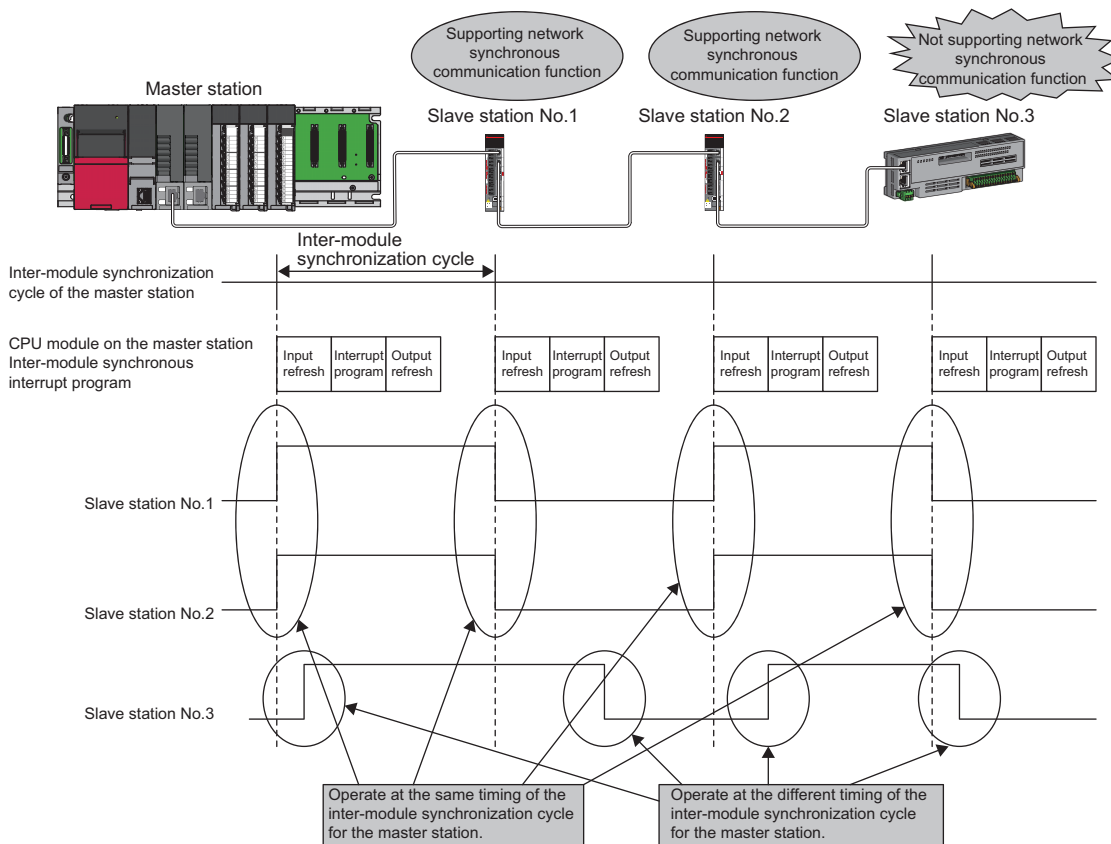
This function synchronizes the control cycle of slave devices of standard stations according to the inter-module synchronization cycle specified in the master station via CC-Link IE TSN. This adjusts the operation timing with those of the other slave stations connected to the same network.

For details, refer to the following.

IMELSEC iQ-R Inter-Module Synchronization Function Reference Manual

### Point

- The following slave stations can be connected: slave stations not supporting the CC-Link IE TSN Network synchronous communication function and slave stations in which the network synchronous communication setting is not set. However, they cannot synchronize with the inter-module synchronization cycle.
- For the availability of the CC-Link IE TSN Network synchronous communication function for each slave device, refer to the manual of each slave device.

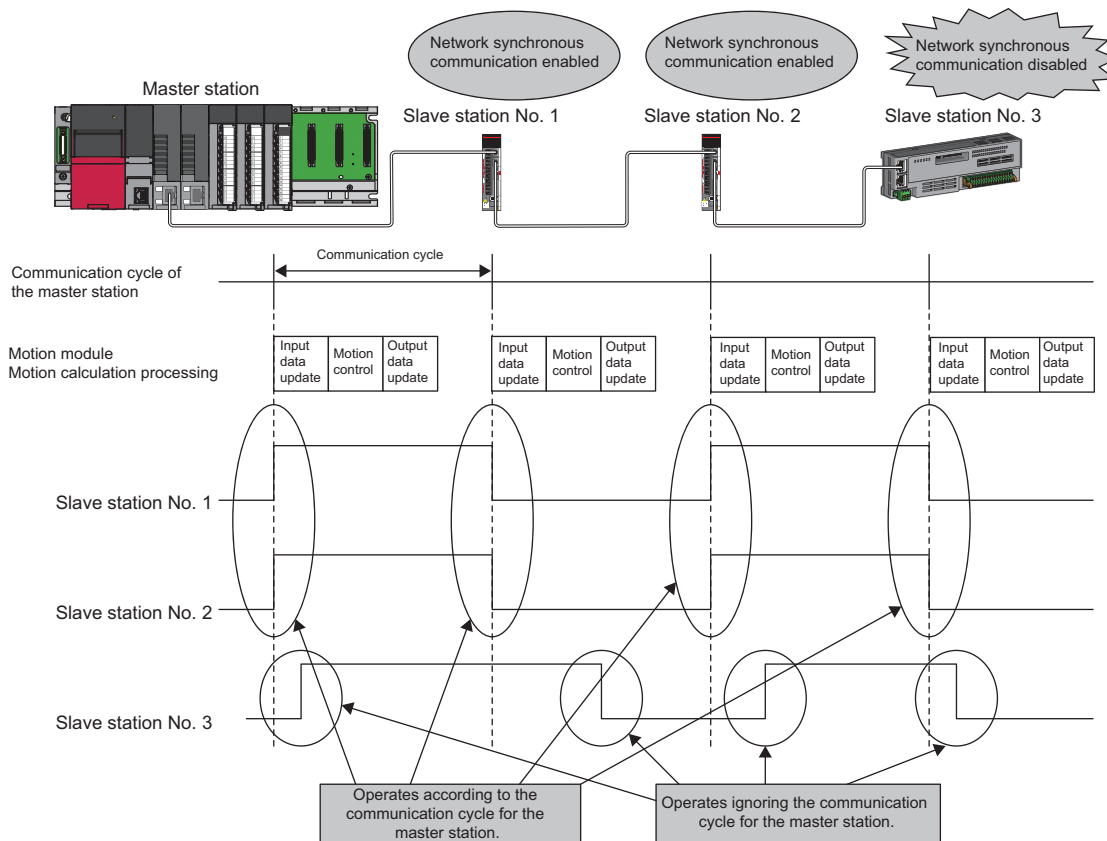


## ■ Motion control station

This function synchronizes the control cycle of a slave station according to the communication cycle of the master station. This adjusts the operation timing of the motion calculation of the Motion module with a slave station set as the motion control station.

### Point

The following slave stations can be connected: slave stations not supporting the CC-Link IE TSN Network synchronous communication function and slave stations in which the network synchronous communication setting is not set. However, they cannot synchronize with the motion calculation of the Motion module. For the availability of the CC-Link IE TSN Network synchronous communication function for each slave device, refer to the manual of each slave device.




## Setting method

In "Network Configuration Settings" under "Basic Settings" of the module parameter, set "Network Synchronous Communication" of the slave station to enable the network synchronous communication to "Synchronous".

In addition, when the network synchronous communication of a standard station is enabled, the inter-module synchronization function needs to be enabled as well.

For the setting method of the inter-module synchronization function, refer to the following manual.

 MELSEC iQ-R Inter-Module Synchronization Function Reference Manual

### ■Inter-module synchronization cycle

To use the inter-module synchronization function, set the same cycle for the following two items.

- "Fixed Scan Interval Setting" under "Inter-module Synchronization Setting" of the system parameter
- "Communication Period Interval Setting" under "Basic Settings" of the module parameter

Set the cycle in the following range.


0.25/0.50/1.00/2.00/4.00/8.00 ms


### ■How to calculate an inter-module synchronization cycle

For the cycle to be set, set a value greater than a value obtained by one of the following formulas.

Condition	Calculation formula*1
Execution time of the inter-module synchronous interrupt program (I44) > Cyclic transmission time	Execution time of the inter-module synchronous interrupt program (I44) + Cyclic processing time
Execution time of inter-module synchronous interrupt program (I44) ≤ Cyclic transmission time	Cyclic transmission time + Cyclic processing time

\*1 For the values obtained by the calculation formulas, refer to the following.

Execution time of the inter-module synchronous interrupt program (I44) ( User's manual of the CPU module used)

Cyclic transmission time and cyclic processing time ( Page 328 Communication cycle interval)

## Precautions

To use the inter-module synchronization function, do not set "Not Set" for "0.05ms Unit Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" in "System Parameter".

None of the inter-module synchronization cycles 0.222 ms, 0.444 ms, 0.888 ms, 1.777 ms, 3.555 ms, and 7.111 ms can be used by the CC-Link IE TSN network synchronous communication function. Therefore, neither the SSCNET III/H supported Simple Motion module nor Motion CPU can synchronize with the inter-module synchronization cycle.



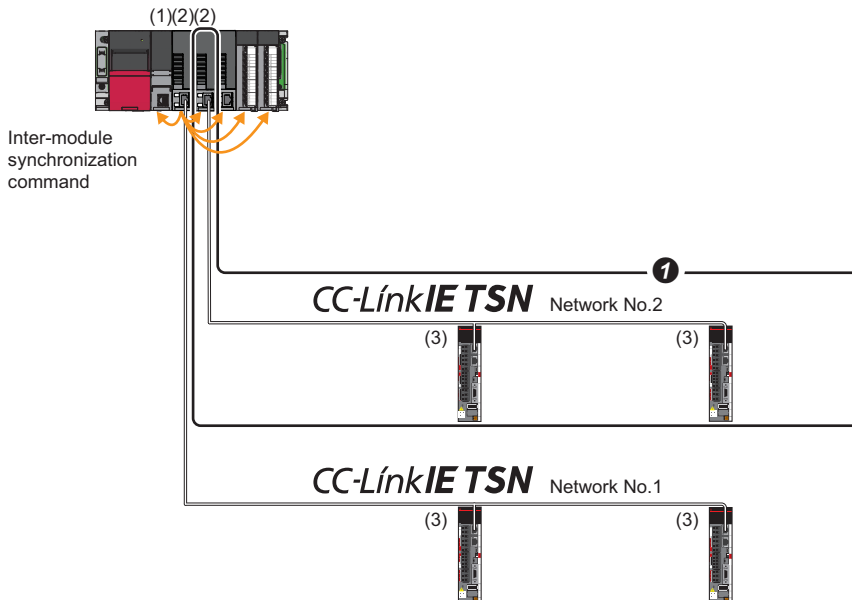
## Synchronizable range of the inter-module synchronization

To use this function, set the master station as the inter-module synchronous master.

The communication cycles match based on time synchronization between the master station and slave stations. This allows a device supporting the CC-Link IE TSN network synchronous communication function to operate in synchronization with the inter-module synchronization cycle of the programmable controllers of the master station.

The following shows the synchronizable ranges.

- Operation can be performed by synchronizing a module supporting the inter-module synchronization function on the same base unit as the master station with slave stations.



- (1) CPU module
- (2) Motion module
- (3) Slave station of CC-Link IE TSN

- ❶ Multiple Motion modules on the same base unit can be synchronized with the inter-module synchronization cycle. At this time, set the Motion module at the left end to the inter-module synchronization master on the same base unit.

## Applicable device

The following table shows the devices that can be synchronized by the CC-Link IE TSN Network synchronous communication function.

○: Synchronizable, ×: Not synchronizable

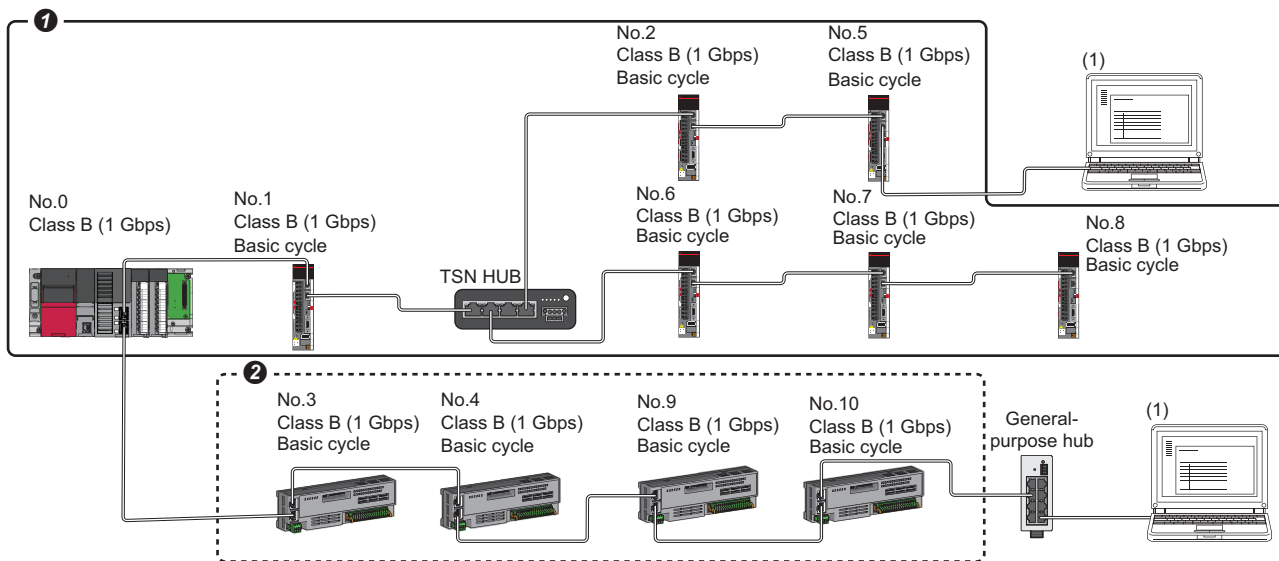
CC-Link IE TSN Network synchronous communication function	Authentication Class	Communication speed	Communication cycle setting	Synchronization
Not supported	—	—	—	×
Supported	Authentication Class A device	—	—	×
			Authentication Class B device	1 Gbps
	Normal-Speed	○		
	Low-Speed	○		
	100 Mbps	Basic cycle	○	
			Normal-Speed	○
Low-Speed			○	

### ■Setting for a station not synchronizable

- When the network synchronous communication setting is set for a slave station that is not synchronizable, Initialization failure (parameter mismatch between master and slave stations) (event code: 00C71) is displayed in the event history in the master station. (Network synchronous communication and cyclic transmission with other slave stations are continued.)

## Available range of network synchronous communication

### ■ Configuration with authentication Class B only



Class B: Authentication Class B device

No. 0: Master station

No.1, No.2, No.5, No.6, No.7, and No.8: Remote station (device where the network synchronous communication setting is set to "Synchronous")

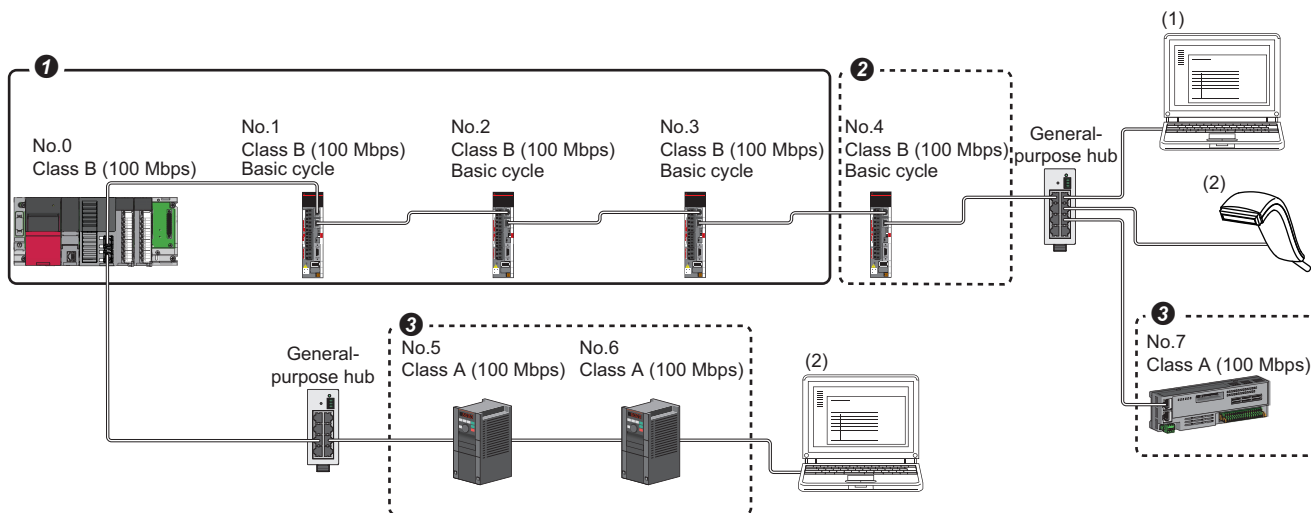
No.3, No.4, No.9, and No.10: Remote station (device where the network synchronous communication setting is set to "Asynchronous")

(1) Ethernet device (1 Gbps)

① The synchronization can be performed using network synchronous communication.

② Even for an authentication Class B device, synchronization is not possible if the network synchronous communication setting is set to "Asynchronous".

## ■ Configuration with mixture of authentication Class B/A



Class A: Authentication Class A device

Class B: Authentication Class B device

No. 0: Master station

No. 1, No. 2, and No. 3: Remote station (device where the network synchronous communication setting is set to "Synchronous")

No. 4: Remote station (device where the network synchronous communication setting is set to "Asynchronous")

No. 5, No. 6, and No. 7: Remote station

(1) Ethernet device (100 Mbps)

(2) Ethernet device (100 Mbps)

① The synchronization can be performed using network synchronous communication.

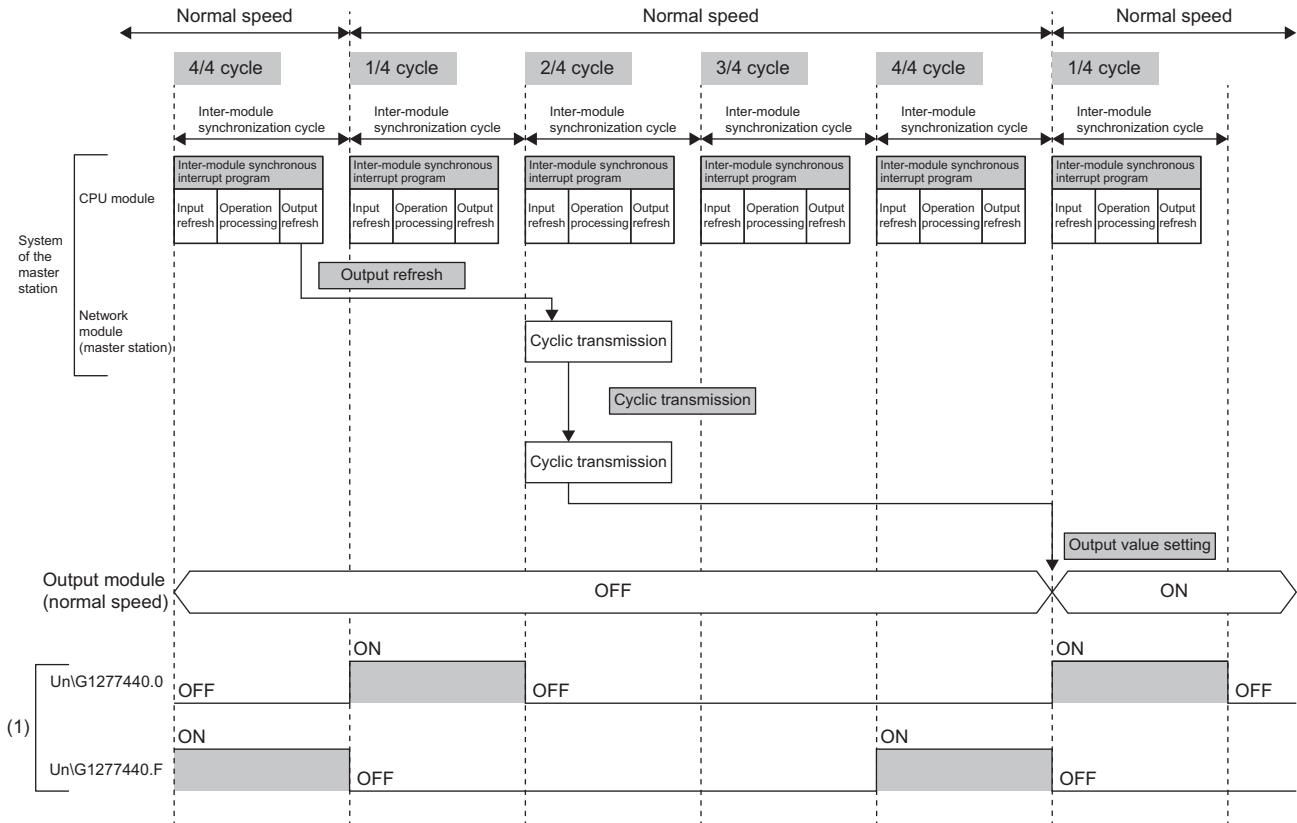
② Even for an authentication Class B device, synchronization is not possible if the network synchronous communication setting is set to "Asynchronous".

③ Authentication Class A devices cannot synchronize using network synchronous communication.

## Network synchronous communication with multiple cycles

When slave stations with different communication cycles are included in the network, cyclic transmission between stations is performed according to the communication cycle. For the cyclic transmission of the master station and a remote station, data can be transmitted to other stations after two cycles.

The following figure shows the cyclic transmission timing when "Communication Period Setting" in "Network Configuration Settings" is set to "Normal-Speed".



- (1) The communication cycle timing can be checked with the communication cycle information of the buffer memory area (UnG1277440 to UnG1277441). The timing of data refreshed in the CPU module can also be checked with this buffer memory area. The 0th bit in this buffer memory area is turned on during the first (1/4) cycle for normal speed. In addition, the 15th bit in this buffer memory area is turned on during the last (4/4) cycle for normal speed. (Page 286 Communication cycle information)

## Cyclic transmission assurance by watchdog counter

The watchdog counter is a function used to assure normal cyclic transmission between stations on CC-Link IE TSN.


Using the watchdog counter, the master station and a slave station mutually monitor the data to be updated every communication cycle; the master station monitors data received from a slave station and a slave station monitors data received from the master station.

If an error "Synchronous watch dog counter error" (error code: 1D20H) has occurred, data of that station will not be received even after the watchdog counter returns to normal. To restart, turn on the power supply of the Motion module again, reset the CPU module, or disconnect the slave station and return it.

### Point

- Whether the slave stations performing data link with the master station is using the watchdog counter can be checked from 'Watchdog counter operating status information for each station' (SW01D0 to SW01D7).
- An error "Synchronous watch dog counter error" (error code: 1D20H) will be detected for slave stations without axis setting with the motion control setting function. For slave stations with axis setting, an error "WDT error" (error code: 1C41H) will be detected instead.
- If an error "WDT error" (error code: 1C41H) has occurred, operation can be resumed by performing error reset.

Before using this function, check the add-on baseSystem version of the Motion module. For details, refer to "Restrictions by the version" in the following manual.


 MELSEC iQ-R Motion Module User's Manual (Application)

## ■Operation

When the master station is powered off and on (when the CPU module is reset) or a slave station is disconnected and returned, the master station stores insufficient time for the transient transmission time in 'Transient transmission addition time (calculation value)' (SW007A).

If a value has been stored in 'Transient transmission addition time (calculation value)' (SW007A), add the value to the setting values for "Communication Period Interval Setting" and "Transient Transmission Time" of "Communication Period Setting" under "Basic Settings" of the module parameter of the master station.

## ■Setting method


The settings of the master station are not required to use the watchdog counter. However, the settings may be required depending on a slave station used. ( Manual for the slave station used)

## Precautions


When the Motion module with the add-on baseSystem version "Ver. 1.15 or earlier" is used or a slave station does not use the watchdog counter, 0 is stored in 'Transient transmission addition time (calculation value)' (SW007A).

## Program example

For program example using the inter-module synchronization function, refer to "Inter-Module Synchronization Function" in the following manual.

 MELSEC iQ-R Motion Module User's Manual (Application)

## Precautions

- Authentication Class A devices cannot synchronize using network synchronous communication. (☞ Page 64 Applicable device)
- For the number of connectable stations of CC-Link IE TSN-compatible devices and their connection order, refer to "Specifications of Interfaces with External Devices" and "SYSTEM CONFIGURATION" in PART 1 of the following manual.  
 MELSEC iQ-R Motion Module User's Manual (Startup)
- When specifying a Motion module as the inter-module synchronization target, mount it on the main base unit.
- When multiple Motion modules are specified as the target modules for synchronization on the same base unit, set the slot number of the leftmost one for "Mounting Slot No." under "Inter-module Synchronization Master Setting" in "System Parameter".
- In a multiple CPU system configuration, only the Motion module controlled by the CPU No. 1 can be specified as the target for the inter-module synchronization.
- Set the same cycle for "Fixed Scan Interval Setting of Inter-module Synchronization" in "System Parameter" and "Communication Period Interval Setting" in "Basic Settings" of the module parameter.
- To use a switching hub, refer to the CC-Link Partner Association website ([www.cc-link.org](http://www.cc-link.org)) for the models and usage methods of supported switching hubs.
- Do not set "Not Set" for "0.05ms Unit Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" in "System Parameter". Select "Set" for "0.05ms Unit Setting", and select a value from 0.25/0.50/1.00/2.00/4.00/8.00 ms.
- Do not perform the online change in the CPU module. If the online change is used in the CPU module, there may be a delay in the start of the inter-module synchronous interrupt program (I44) in the interrupt program. In this case, the total value of the execution time of the inter-module synchronous interrupt program (I44) and the cyclic processing time exceeds the next inter-module synchronization cycle (next communication cycle), and the inter-module synchronous transmission omission occurs. The watchdog counter also detects an error because cyclic transmission cannot be performed within the communication cycle.

## Restriction of version

### ■Number of settable stations

The following table lists the number of settable stations in "Select Inter-module Synchronization Target Module" of the "Inter-module Synchronization Setting" tab under "System Parameter".

Add-on baseSystem version of the Motion module	Number of settable stations
Add-on baseSystem version of "Ver. 1.16 or later"	8

# 1.7 Safety Communications

This section describes the safety communication function.

## Restriction

- The following modules are required to use the safety communications.
  - Safety CPU and safety function module with a firmware version of "20" or later
  - The Motion module with the add-on baseSystem version of "1.8 or later"
- When the version of Add-on baseSystem is "Ver. 1.18 or earlier", the safety communication with standard stations is not supported. If a standard station is set in the network configuration settings, an error "Network parameter error" (error code: 2221H) occurs.

## Communications with safety stations

This function establishes a safety connection and performs one-on-one safety communications periodically between safety stations in the same network.

Safety data is exchanged by using the safety device of the Safety CPU set by "Safety Communication Setting" under "Basic Settings" from a program.

Whether a safety connection is established or not can be checked in 'Safety refresh communication status of each safety connection (1st module)' (SA\SD1008 to SA\SD1015) of the Safety CPU.\*1

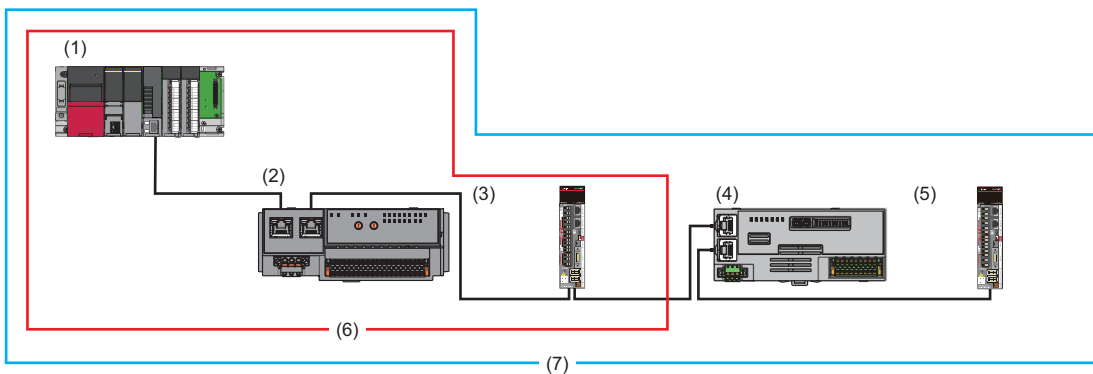
\*1 Safety special register areas for the first Motion module. For safety special register areas for the second or later Motion module, refer to the following.

📖 MELSEC iQ-R CPU Module User's Manual (Application)

## Stations supporting safety communications

Safety communications can be performed between the following stations (safety stations).

- Master station (safety station) (1) ↔ remote station (safety station) (2) (3)



For combination with connection devices, refer to "Relevant functions" under "Connectable device to CC-Link IE TSN" of the following manual.

📖 MELSEC iQ-R Motion Module User's Manual(Application)

## Restriction

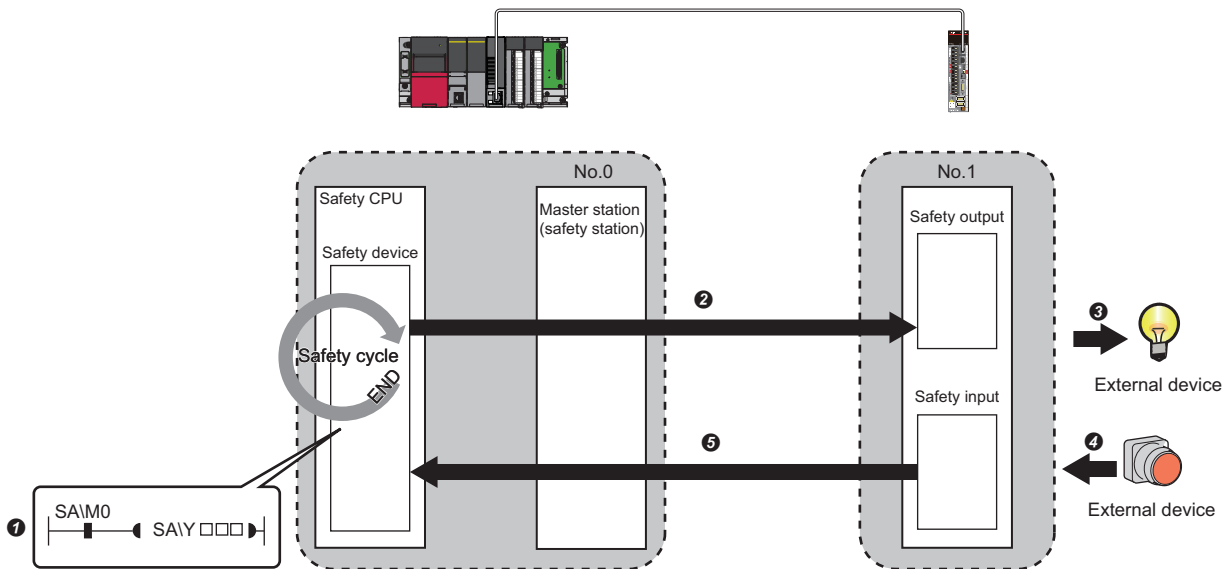
The system can be configured with safety communication unsupported stations (4) and (5) mixed in the same network. However, safety communication (6) cannot be performed with the safety communication unsupported stations (4) and (5). Only standard communication (7) can be performed.



## Safety communications flow

### ■ Master station (safety station) and remote station (safety station)

The safety device status of the Safety CPU on the master station (safety station) is reflected to the safety output of the remote station (safety station). The safety input status of the remote station (safety station) is stored in the Safety CPU on the master station (safety station).



Output from the master station (safety station)

- ① The safety device of the Safety CPU on the master station (safety station) turns on.
- ② The safety device status of the Safety CPU on the master station (safety station) is stored in the Safety output on the remote station (safety station) by safety data transfer.

- ③ The safety output status of the remote station (safety station) is output to an external device.

Input from the remote station (safety station)

- ④ The status of the external device is stored in the safety input of the remote station (safety station).
- ⑤ The safety device status of the Safety input on the remote station (safety station) is stored in the Safety CPU on the master station (safety station) by safety data transfer.

## Setting method

Set safety communications in "Safety Communication Setting" under "Basic Settings". (☞ Page 84 Safety Communication Setting)

## Precautions

- If an error occurs in safety communications, safety data from the faulty station is cleared.
- A safety connection with the safety station can be established only while data link is performed after configuring the "Safety Communication Setting" under "Basic Settings" of the master station. The data link status can be checked in 'Data link status of each station' (SW00B0 to SW00B7).
- Note that stations not set in "Network Configuration Settings" under "Basic Settings" of the master station (safety station) and reserved stations cannot perform safety communications.
- Safety communications cannot be performed among the Motion modules set in the same control CPU.
- This function may detect an error and stop safety communications if a parameter is written to the control CPU of the Motion module during safety communications.
- Safety communications cannot be performed among the safety stations when the IP address and model name of the communication destination set to the safety station are different from the actual system configuration.
- Safety communications cannot be performed with a remote station (safety station) if the safety approval code set in the master station (safety station) and it in the remote station (safety station) are not match.
- An error occurs when a parameter is written to the Safety CPU because the Safety CPU does not support the inter-module synchronization function.
- A remote device test cannot be used for a safety remote I/O module.

## Safety station interlock function

If a communication error has occurred between safety stations, communication is automatically disconnected to prevent incorrect input or output from the faulty station. Safety communications between the stations become safety station interlock state at this time, and the safety communications do not resume until the safety interlock is released.

Create a program which releases the interlock by using Interlock release request for each safety connection to release the safety station interlock state.


Note that standard communication automatically resumes if the communication error cause is eliminated even in the safety station interlock state.

The safety station interlock function prevents equipment stopped by a communication error from suddenly resuming its operation after it recovers from the error.

### ■Checking method

Check the status with the safety special register 'Interlock status of each safety connection (1st module)' (SA\SD1232 to SA\SD1239).


For the safety special register for the second or later modules and its operation details, refer to the following.

 MELSEC iQ-R CPU Module User's Manual (Application)

### ■Release method

Release the interlock using the safety special register 'Interlock release request for each safety connection (1st module)' (SA\SD1240 to SA\SD1247).

For the safety special register for the second or later modules and its operation details, refer to the following.

 MELSEC iQ-R CPU Module User's Manual (Application)

# 1.8 Others

## Reserved station setting

A reserved station is a slave station that is set in the parameters and included in the number of stations in the network for future expansion. This station is not actually connected to the network and not detected as a faulty station even though it is not connected. (☞ Page 92 "CC-Link IE TSN Configuration" Window)

By setting a reserved station, link device assignment will not change even if the slave station is connected (or the reservation is cleared). Therefore, modification of the program is not required.

### Restriction

When the version of Add-on baseSystem is "Ver. 1.18 or earlier", the reserved station setting is not supported. If a slave station is set as a reserved station, an error "Network parameter error" (error code: 2221H) occurs.

### Precautions

If a motion control station is set as a reserved station, the station cannot be controlled. If parameters are read/written with the motion control FB from/to a motion control station set as a reserved station, an error "SDO communication error" (error code: 1800H) occurs.

## Error invalid station setting

An error invalid station is a slave station that is set to be not detected as a faulty station by the master station. It is also set when a slave station is to be replaced during data link. (☞ Page 92 "CC-Link IE TSN Configuration" Window)

Even if a slave station is set as an error invalid station, error events related to the station still occur.

### Restriction

When the version of Add-on baseSystem is "Ver. 1.18 or earlier", the error invalid station setting is not supported. If a slave station is set as an error invalid station, an error "Network parameter error" (error code: 2221H) occurs.

## Slave station parameter automatic setting

Parameters of the slave station are saved in the master station, and the parameters will be automatically set when the slave station is connected/returned.

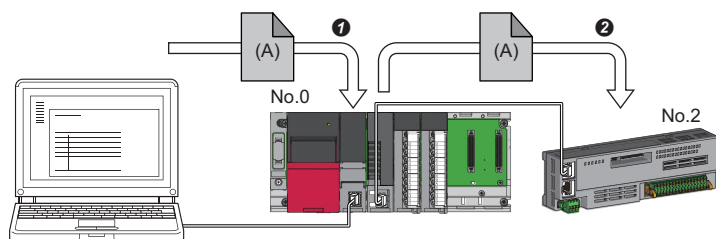
If parameters are changed on the slave station side, saved parameters on the master station side are automatically updated.

### Restriction

When the version of Add-on baseSystem is "Ver. 1.18 or earlier", standard stations do not support the slave station parameter automatic setting. If a standard station is set in the network configuration settings, an error "Network parameter error" (error code: 2221H) occurs.

## Slave station parameter automatic setting from the master station

1. Parameters of the slave station set using the engineering tool are saved in the memory of the CPU module in the master station or the SD memory card by writing.
2. When the slave station is connected/returned by power-on, saved parameters are automatically set from the master station to the slave station.



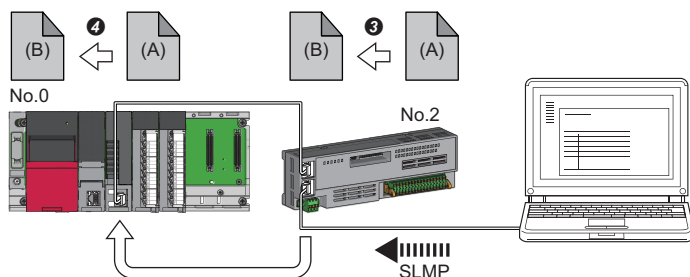
- 1 Save parameter (A) of the slave station to the CPU module on the master station.
- 2 When the slave station is returned/connected, saved parameter (A) is automatically set from the master station to the slave station.

### Point

- The master station automatically sets the parameters of the slave station and then starts data link with the slave station.
- The slave station parameter automatic setting is also executed for slave stations set as reserved stations.

## Automatic update of saved parameter

1. If parameters on the slave station side are changed by the engineering tool or SLMP, the parameters of the slave station that are saved in the memory of the CPU module or the SD memory card are automatically updated.
2. When the module of the slave station has been replaced, updated parameters are automatically set from the master station by resetting the master station or turning its power off and on.



- 3 Parameter (A) of the slave station is changed to (B) by SLMP.
- 4 Saved parameter (A) of the CPU module on the master station is automatically updated to parameter (B).

### Restriction

The slave station parameter automatic setting is executed in the following condition.

- The slave station is a CC-Link IE TSN module. (For checking if a module is compatible with automatic update of saved parameter, refer to the manual of the module being used for the slave station.)

## Setting method

Set in the "Parameter of Slave Station" window. (  Page 98 Parameter processing of a slave station)

1

### Precautions

- A slave station whose slave station parameter automatic setting abnormally ended does not start data link, and 'Execution result of slave station parameter automatic setting function' (SW0160 to SW0167) turns on. Check 'Detailed execution result of slave station parameter automatic setting' (SW0194) and the event history and perform corrective actions according to Action of the error codes list.
- Do not disconnect the slave station that is currently executing an automatic update of saved parameters. Update of parameter may fail.
- Do not turn off the master station that is currently executing an automatic update of saved parameters. Incorrect parameters are automatically set in the slave station at the next power-on.
- When the version of Add-on baseSystem is "Ver. 1.7 or earlier": If saved parameters are not in the CPU module when executing an automatic update of saved parameters, an error response is returned to the relevant slave station.
- When the version of Add-on baseSystem is "Ver. 1.8 or later": If saved parameters are not in the CPU module when executing an automatic update of saved parameters, slave station parameters are newly created.
- Check if the checkbox of "Parameter Automatic Setting" of the slave station is selected in "Network Configuration Settings" under "Basic Settings".
- Check if the IP address of the slave station in the "Network Configuration settings" under "Basic Settings" matches the actual IP address of the slave station.
- When different communication speeds are set for the master station and the station where slave station parameter automatic setting is performed, the slave station parameter automatic setting may end abnormally. If the setting ends abnormally, check if the communication speed is matched.
- When the parameters of a slave station are stored in the SD memory card, set "Use" of "Slave Station Parameter" in "Setting of File/Data Use or Not in Memory Card" under "Memory Card Parameter" for the CPU module.
- In "Network Configuration Settings" under "Basic Settings" in all master stations controlled by the CPU module, set 1024 or smaller to the total number for the slave station parameter automatic setting including extension modules.

### Point

When changing (writing back) the slave station parameters of MR-J5(W)-G, set the servo parameter "Parameter automatic backup update interval (PN20)". By setting this parameter, parameters are written back at the set interval when there is a difference between the parameters stored in the CPU module and slave station.

To apply the changed parameters to the project, perform the following procedure.

- Slave station parameter setting screen ⇒ "Read" ⇒ Read parameters directly from the servo amplifier ⇒ Apply the slave station parameters to the project

The number of times for writing data from the CPU module to the data memory is limited. For details, refer to the following manual.

 MR-J5-G/MR-J5W-G User's Manual (Parameters)




# 2 PARAMETER SETTINGS

---

This chapter describes the parameter settings required for communications between the Motion module and other stations.

## 2.1 Setting Parameters

---

1. Add the Motion module in the engineering tool.  
 [Navigation window] ⇒ [Parameter] ⇒ [Module Information] ⇒ Right-click ⇒ [Add New Module]
2. The required settings, basic settings, and application settings are included in the parameter settings. Select one of the settings from the tree on the window shown below.  
 [Navigation window] ⇒ [Parameter] ⇒ [Module Information] ⇒ Target Module ⇒ [Module parameter (Network)]
3. After setting parameters, click the [Apply] button.
4. Write parameters to the CPU module using the engineering tool.  
 [Online] ⇒ [Write to PLC]
5. The parameters are reflected by resetting the CPU module or powering off and on the system.

---

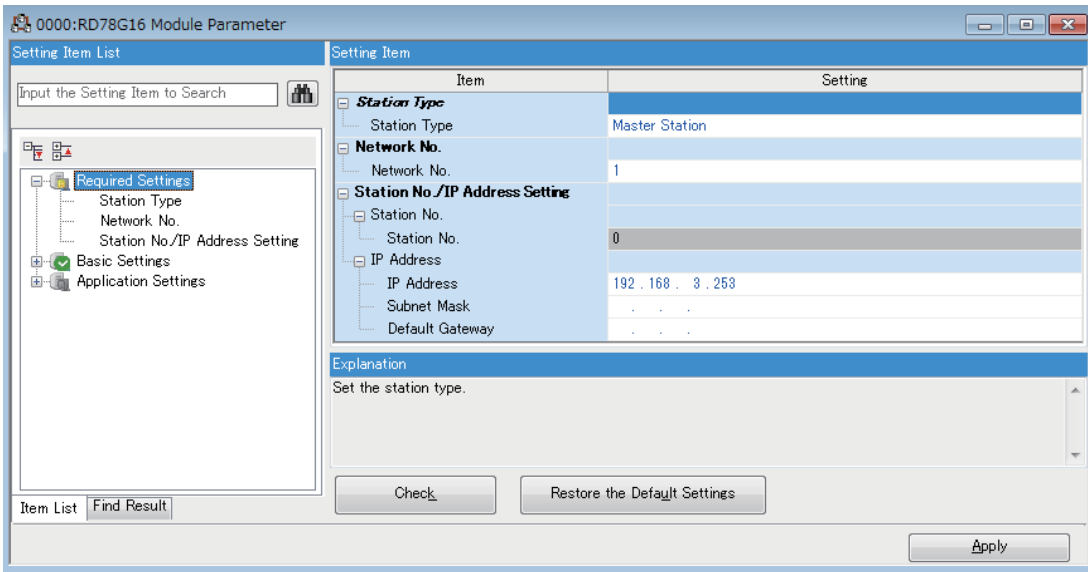
### Point

The settings displayed on the required settings, basic settings, and application settings pages (default: ) are the values that are displayed when the [Restore the Default Settings] button on each window of the engineering tool is clicked.

---

## 2.2 Required Settings

Set the station type or IP address of the Motion module.



Item	Description	Reference
Station Type	Set the station type of the Motion module.	Page 77 Station Type
Network No.	Set the network No. of the Motion module.	Page 78 Network No.
Station No./IP Address Settings	Set the IP address of the Motion module.	Page 78 Station No./IP Address Settings

### Station Type

Set the station type of the Motion module.

Item	Description	Setting range
Station Type	The Motion module is used as the master station. Only one master station can be set in a network.	—

## Network No.

Set the network No. of the own station of the Motion module.

Item	Description	Setting range
Network No.	Set the network No. of the Motion module.	1 to 239 (Default: 1)

### Precautions

Set a network No. that does not overlap any other network Nos.

In particular, when an Ethernet-equipped module (CPU module) is used at default, the IP address is 192.168.3.39 and the network No. is the third octet of the IP address, thus 3. Because setting the network No. of the Motion module to 3 causes an overlap, set another network No.

## Station No./IP Address Settings

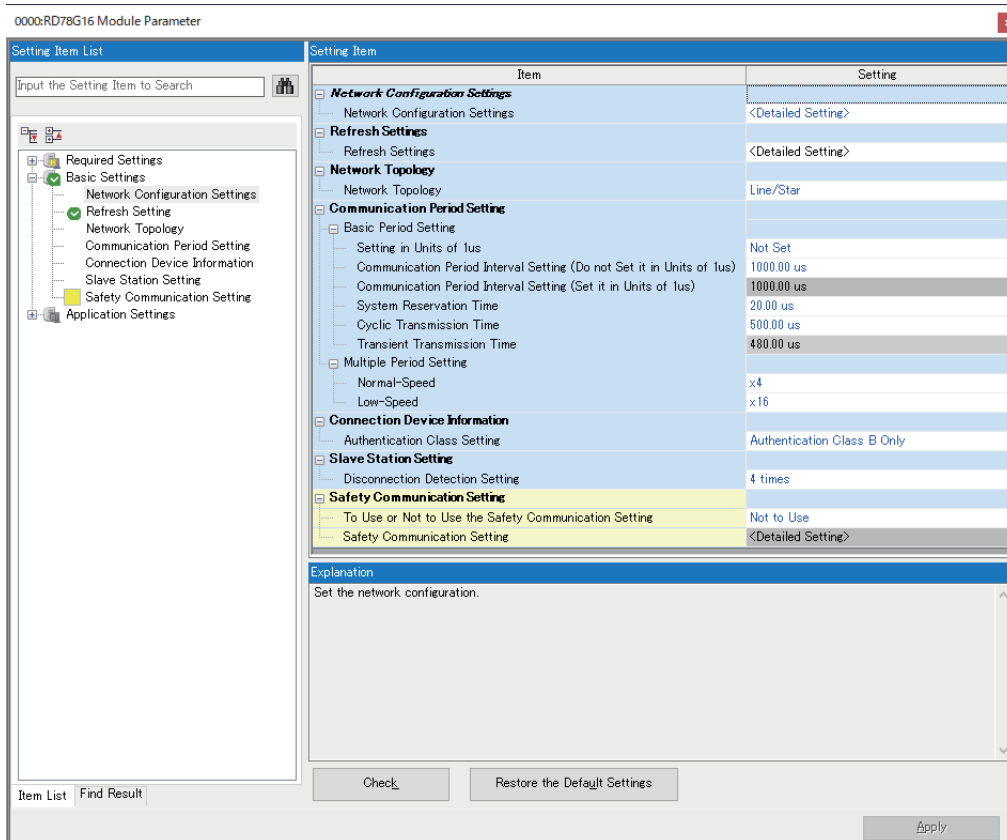
Set the station No. and IP address of the own station of the Motion module.

Item	Description	Setting range
Station No.	The station No. of the master station is fixed to 0.	—
IP Address	Set the IP address of the own station. Set an IP address different from those used in other stations. (☞ Page 57 IP address duplication detection) Do not set the following values. <ul style="list-style-type: none"><li>• The third and fourth octets are all 0 or all 1.</li><li>• The host address bits are all 0 or all 1</li><li>• Reserved address</li></ul>	0.0.0.1 to 223.255.255.254 (Default: 192.168.3.253)
Subnet Mask	Set the subnet mask. Set the same value for the master station and slave station. If the subnet mask is empty, the address class (class A, class B, class C) is determined from the setting of "IP Address", and operation is done with the subnet mask according to the address class. The subnet mask for each class is as follows. <ul style="list-style-type: none"><li>• Class A: 255.0.0.0</li><li>• Class B: 255.255.0.0</li><li>• Class C: 255.255.255.0</li></ul> The IP address for each class is as follows. <ul style="list-style-type: none"><li>• Class A: 0.x.x.x to 127.x.x.x</li><li>• Class B: 128.x.x.x to 191.x.x.x</li><li>• Class C: 192.x.x.x to 223.x.x.x</li></ul> The host address for each class is the 0 section shown below. <ul style="list-style-type: none"><li>• Class A: 255.0.0.0</li><li>• Class B: 255.255.0.0</li><li>• Class C: 255.255.255.0</li></ul>	• Empty • 0.0.0.1 to 255.255.255.255 (Default: empty)
Default Gateway	Set the default gateway.	• Empty • 0.0.0.1 to 223.255.255.254 (Default: empty)



## 2.3 Basic Settings

Set the network configurations, network topology, or other parameters for the Motion module.



Item	Description	Reference
Network Configuration Settings	Set the CC-Link IE TSN configuration.	Page 92 "CC-Link IE TSN Configuration" Window
Refresh Settings <sup>*1</sup>	Assign link refresh ranges between the devices described below. • SB, SW, link devices (RX, RY, RWr, RWw) of the Motion module ↔ Devices of the CPU module	Page 80 Refresh Settings
Network Topology	Select the network topology type according to the actual network configuration.	Page 82 Network Topology
Communication Period Setting	Set the basic cycle setting and multiple cycle setting.	Page 82 Communication Period Setting
Connection Device Information	Set the information of connected devices.	Page 83 Connection Device Information
Slave Station Setting	Set the number of consecutive communication failures until a slave station is considered disconnected.	Page 84 Slave Station Setting
Safety Communication Setting <sup>*2</sup>	Set whether to use the safety communication or not and set the safety connections and the transfer ranges of safety devices.	Page 84 Safety Communication Setting

\*1 When the version of Add-on baseSystem is "Ver. 1.18 or earlier", this setting is treated to be not set.

\*2 This item can be set only in a project of the Safety CPU.

# Refresh Settings

Assign link refresh ranges between the devices described below.

- SB, SW, link devices (RX, RY, RWr, RWw) of the Motion module ↔ Devices of the CPU module

## Setting method

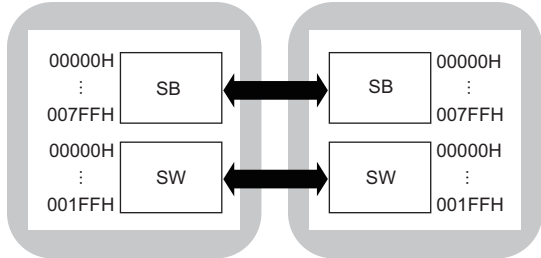


The procedure for the refresh settings is shown below.

1. Set the required items.

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	2048	00000	007FF	↔	Specify Device	SB	2048	00000	007FF
-	SW	512	00000	001FF	↔	Specify Device	SW	512	00000	001FF
1	RX	256	00000	000FF	↔	Specify Device	X	256	01000	010FF
2	RY	1024	00000	003FF	↔	Specify Device	Y	1024	01000	013FF
3	RWr	20	00000	00013	↔	Specify Device	W	20	00000	00013
4	RWw	32	00000	0001F	↔	Specify Device	W	32	00100	0011F

2. Click the [Apply] button to finish the refresh settings.

## Setting items

Item	Description	Setting range
Device Assignment Method	Right-click the setting screen and select a link device assignment method in "Device Assignment Method". <ul style="list-style-type: none"> <li>• Start/End: Enter the start and end numbers of link devices.</li> <li>• Points/Start: Enter the numbers of points and start numbers of link devices.</li> </ul>	<ul style="list-style-type: none"> <li>• Start/End</li> <li>• Points/Start</li> </ul> (Default: Start/End)
—	Link Side Set the link refresh ranges of the link special relay (SB) and link special register (SW). One range can be set for each SB and SW. (☞ Page 25 Link refresh) <b>Ex.</b> 	<ul style="list-style-type: none"> <li>■ Device Name               <ul style="list-style-type: none"> <li>• SB (fixed)</li> <li>• SW (fixed)</li> </ul> </li> <li>■ Points               <ul style="list-style-type: none"> <li>• SB: 16 to 4096</li> <li>• SW: 1 to 4096</li> </ul>               (Default: Grayout)             </li> <li>■ Start               <ul style="list-style-type: none"> <li>• SB: 0H to FF0H (set in increments of 16 points)</li> <li>• SW: 0H to FFFH (set in increments of 1 point)</li> </ul>               (Default: empty)             </li> <li>■ End               <ul style="list-style-type: none"> <li>• SB: FH to FFFH (set in increments of 16 points)</li> <li>• SW: 0H to FFFH (set in increments of 1 point)</li> </ul>               (Default: empty)             </li> </ul>
	CPU Side  Motion module  CPU module	<ul style="list-style-type: none"> <li>■ Target               <ul style="list-style-type: none"> <li>• Specify Device</li> </ul>               (Default: empty)             </li> <li>■ Device Name               <ul style="list-style-type: none"> <li>• Specify Device (link side is SB): SB, M, L, B, D, R, ZR, RD</li> <li>• Specify Device (link side is SW): SW, M, L, B, D, R, ZR, RD</li> </ul>               (Default: Grayout)             </li> <li>■ Points, End               <ul style="list-style-type: none"> <li>• For a specified device: Displayed corresponding to the setting of "Start".</li> </ul>               (Default: Grayout)             </li> <li>■ Start               <ul style="list-style-type: none"> <li>• For a specified device: Device range of CPU modules (Set bit devices in increments of 16 points and word devices in increments of 4 points.)</li> </ul>               (Default: Grayout)             </li> </ul>

Item	Description	Setting range
1 to 256	<p>Link Side</p> <p>Set the link refresh ranges of link devices (RX, RY, RWr, RWw). Up to 256 ranges can be set. (☞ Page 25 Link refresh)</p> <p>Ex.</p> <p>Motion module</p> <p>CPU module</p>	<p>■Device Name</p> <ul style="list-style-type: none"> <li>• RX, RY, RWr, RWw (Default: empty)</li> </ul> <p>■Points</p> <ul style="list-style-type: none"> <li>• RX, RY: 16 to 16384</li> <li>• RWr, RWw: 4 to 8192 (Default: Grayout)</li> </ul> <p>■Start</p> <ul style="list-style-type: none"> <li>• RX, RY: 0000H to 3FF0H (set in increments of 16 points)</li> <li>• RWr, RWw: 0000H to 1FFCH (set in increments of 4 points) (Default: Grayout)</li> </ul> <p>■End</p> <ul style="list-style-type: none"> <li>• RX, RY: 000FH to 3FFFH (set in increments of 16 points)</li> <li>• RWr, RWw: 0003H to 1FFFH (set in increments of 4 points) (Default: Grayout)</li> </ul> <hr/> <p>■Target</p> <ul style="list-style-type: none"> <li>• Specify Device (Default: Grayout)</li> </ul> <p>■Device Name</p> <ul style="list-style-type: none"> <li>• Specify Device (link side is RX): X, M, L, B, D, W, R, ZR, RD</li> <li>• Specify Device (link side is RY): Y, M, L, B, D, W, R, ZR, RD</li> <li>• Specify Device (link side is RWr, RWw): M, L, B, D, W, R, ZR, RD (Default: Grayout)</li> </ul> <p>■Points, End</p> <ul style="list-style-type: none"> <li>• For a specified device: Displayed corresponding to the setting of "Start". (Default: Grayout)</li> </ul> <p>■Start</p> <ul style="list-style-type: none"> <li>• For a specified device: Device range of CPU modules (Set bit devices in increments of 16 points and word devices in increments of 4 points.) (Default: Grayout)</li> </ul>
	<p>CPU Side</p>	

### Point

The link device of the Motion module can be accessed from the program as well. (☞ Page 125 Direct access to link devices)

## Precautions

### ■Devices to be set to "CPU Side"

Set a device range not to overlap the one used for the following:

- "Refresh Setting" of "Basic Settings" of other network modules
- "Refresh Setting" of "Basic Settings" of the CC-Link master/local module
- I/O numbers used for I/O modules and intelligent function modules
- "Refresh Setting" of the intelligent function module
- Module label used (When the refresh setting is configured in "Refresh Setting" of "Basic Settings")
- "Refresh Setting between Multiple CPUs" of "CPU Parameter" of the multiple CPU system

### ■Link refresh range

Set only link devices used in the CPU module for link refresh range. Doing so will reduce the number of excess points, resulting in a shorter link refresh time.

### ■When the assignment of the link device is changed in "Network Configuration Settings" of "Basic Settings"

Correct the setting range of "Refresh Setting" of "Basic Settings".

# Network Topology

Select the network topology type according to the actual network configuration.

Item	Description	Setting range
Network topology	Select the network topology type according to the actual network configuration.	<ul style="list-style-type: none"> <li>Line topology, star topology, or coexistence of star and line topologies</li> <li>Ring topology [RD78GH]<sup>1</sup></li> </ul> (Default: Line topology, star topology, or coexistence of star and line topologies)



\*1 Setting this item causes an error.

## Precautions

For the communication period, 31.25 μs/62.50 μs, the network topology is compatible with line topology only. When connecting with star topology or star and line mixed, set the communication period to 125.00 μs or more.

## Communication Period Setting


Set the basic cycle setting and multiple cycle setting.

- For the basic cycle setting, the calculation of the communication cycle interval and cyclic transmission time is required. (  Page 328 Communication cycle interval)
- Multiple cycle setting is used when communication cycles coexist. (  Page 34 Communication cycles coexistence)


Item	Description	Setting range
Basic Period Setting	Setting in Units of 1 μs	Select whether to set the basic cycle in increments of 1 μs.
	Communication Period Interval Setting (Do Not Set it in Units of 1 μs) <sup>1*2</sup>	Select the setting range of the communication cycle interval.
	Communication Period Interval Setting (Set it in Units of 1 μs) <sup>2</sup>	Enter a value of the communication cycle interval.
	System Reservation Time	Necessary time for the system to guarantee the communication cycle interval. When using an authentication Class B/A device with a communication speed of 100Mbps in the basic cycle, select 200 μs.
	Cyclic Transmission Time	Set the time to be allocated to cyclic transmission in communication cycle intervals.
	Transient Transmission Time	The value of "Communication Period Interval Setting" minus "Cyclic Transmission Time" and "System Reservation Time" is displayed.
Multiple Cycle Setting	Normal-Speed	Select the "Normal-Speed" cycle for a basic cycle. Setting is not required and can be left as "×4".
	Low-Speed	Select the "Low-Speed" cycle for a basic cycle. Select a value larger than the one set for "Normal-Speed".

- \*1 An error will occur when a value outside the setting range is set.
- \*2 When using the CC-Link IE TSN Network synchronous communication function, set the same value as "Fixed Scan Interval Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" under "Inter-module Synchronization Setting" on the "Inter-module Synchronization Setting" tab in "System Parameter".
- \*3 For the version of Add-on baseSystem, "Ver. 1.4 or earlier", communication cycle is "125.00  $\mu$ s to 4000.00  $\mu$ s".
- \*4 For the version of Add-on baseSystem, "Ver. 1.4 or earlier", cyclic transmission time is "5.00  $\mu$ s to 3966.00  $\mu$ s".
- \*5 When the cyclic transmission time is 31.25  $\mu$ s or 62.5  $\mu$ s, no error will occur even though the calculation result of the transient transmission is the lower limit value or less.
- \*6 For the version of Add-on baseSystem, "Ver. 1.4 or earlier", transient transmission time is "14.00  $\mu$ s to 3975.00  $\mu$ s".
- \*7 When the version of Add-on baseSystem is "Ver. 1.18 or earlier", an error occurs if a value other than "x16" is set.

### Point

- When the TSN hub is used, set the timeslot information from the setting values in "Basic Period Setting". The timeslot information can be checked with the buffer memory. (  Page 282 Timeslot information)
- Set "Communication Period Setting" according to the communication cycle supported by the slave station.

## Precautions

- There are slave devices which do not correspond to some communication period setting. Check the specifications of each device.
- When the multiple cycle setting is used, set the cycle so that the calculated value of the communication cycle setting and the magnification of the multiple cycle setting does not exceed 16 ms. The following are the examples.
  - Basic communication cycle 1 ms  $\times$  Low-speed,  $\times 16$ : Setting allowed
  - Basic communication cycle 2 ms  $\times$  Normal-speed,  $\times 8$ : Setting allowed
  - Basic communication cycle 2 ms  $\times$  Low-speed,  $\times 16$ : Setting disallowed
- If there is a standard station in the network configuration setting and the communication cycle setting is set to less than 125  $\mu$ s, an error "Standard station communication cycle combination error" (error code: 3228H) occurs in the Motion module. For details, refer to "List of Error Codes" in the following manual.
  -  MELSEC iQ-R Motion Module User's Manual (Application)


## Connection Device Information

Set the information of the connected device.

Item	Description	Setting range
Authentication Class Setting <sup>*1</sup>	Set the authentication Class of connected devices.	<ul style="list-style-type: none"> <li>• Authentication Class B only</li> <li>• Mixture of Authentication Class B/A or Authentication Class A Only</li> </ul> (Default: Authentication Class B only)
TSN HUB Setting <sup>*2</sup>	Set whether to use a TSN hub.	<ul style="list-style-type: none"> <li>• Not to Use TSN HUB</li> <li>• Use TSN HUB</li> </ul> (Default: Not to Use TSN HUB)

- \*1 When this setting is set to "Authentication Class B only", the engineering tool checks whether there is a setting for "Authentication Class A" in "Authentication Class Setting" of "Network Configuration Settings".
- \*2 This can be set when "Authentication Class Setting" is set to "Mixture of Authentication Class B/A or Authentication Class A Only".

## Precautions

- In the case of "Authentication Class B Only" and "Mixture of Authentication Class B/A or Authentication Class A Only" system configuration, different restrictions apply. For details, refer to "SYSTEM CONFIGURATION" in PART 1 of the following manual.
  -  MELSEC iQ-R Motion Module User's Manual (Startup)
- To connect a TSN hub when "Authentication Class Setting" is set to "Mixture of Authentication Class B/A or Authentication Class A Only", set "TSN HUB Setting" to "Use TSN HUB".

## Slave Station Setting

Set items related to the slave station.

Item	Description	Setting range
Disconnection Detection Setting	Set the number of consecutive communication failures until a slave station is considered disconnected.	<ul style="list-style-type: none"><li>• 2 times</li><li>• 4 times</li><li>• 8 times</li></ul> (Default: 4 times)


## Safety Communication Setting

Set whether to use the safety communication or not and set safety connections.

Item	Description	Setting range
To Use or Not to Use the Safety Communication Setting	Set whether to use the safety communication or not.	<ul style="list-style-type: none"><li>• Not to Use</li><li>• Use</li></ul> (Default: Not to Use)
Safety Communication Setting	Set the safety connections and transfer ranges of safety devices required for safety communications.	Page 85 Setting method

### **Restriction**

Set the following items before configuring the safety communication setting.

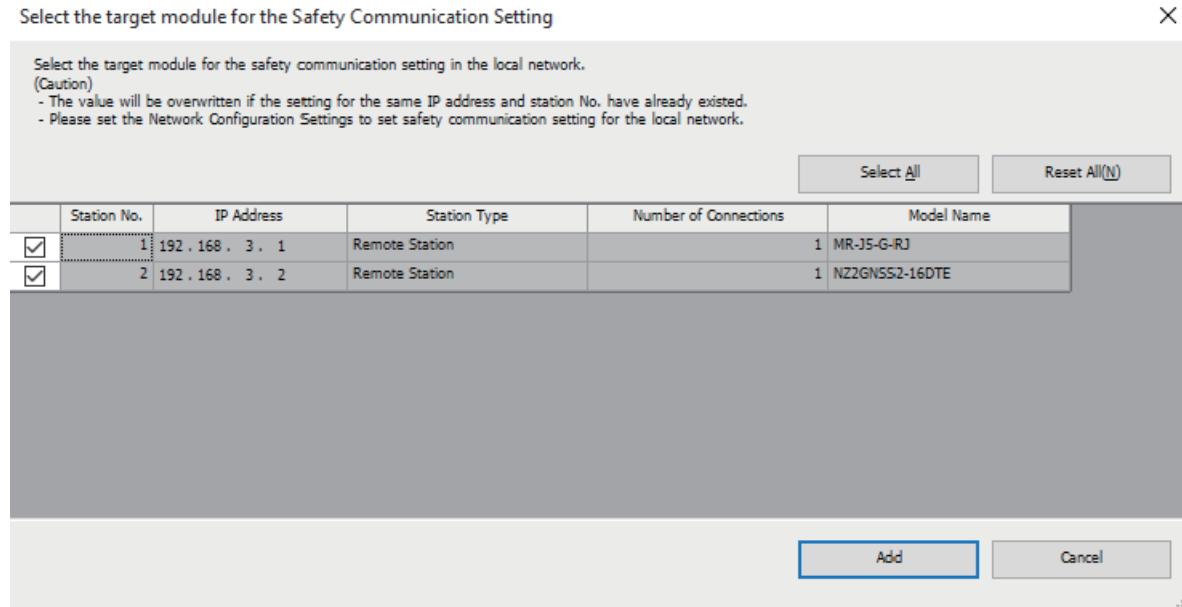
- "Network Configuration Settings" in "Basic Settings" ( Page 92 "CC-Link IE TSN Configuration" Window)

If the above items are not set, the slave station is not displayed as the target module in the "Select the target module for the Safety Communication Setting" window and safety communications cannot be set.

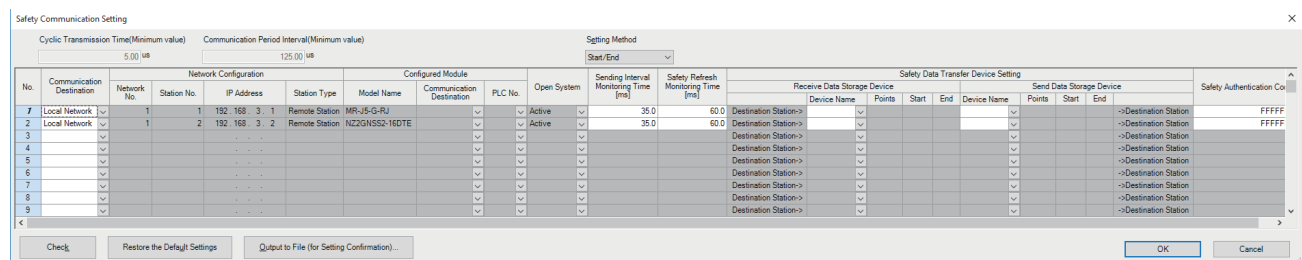
## Setting method

The procedure for the safety communication setting is shown below.

1. Set "Communication Destination" to "Local Network".
2. For the master station, select the target module of safety communications in the "Select the target module for the Safety Communication Setting" window and click the [Add] button.



3. Set the required items.




4. Click the [OK] button to finish the safety communication setting.

## Setting items

Item	Description	Setting range	
Cyclic Transmission Time (Minimum value)	<p>The cyclic transmission time that are calculated by the number of slave stations and the number of points of link devices, or the values set for standard communications and safety communications is displayed. Use the displayed value as a guide.<sup>*1</sup></p> <p>Even if the number of slave stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". For details, refer to the following.</p> <p>☞ Page 328 Communication cycle interval</p> <p>The displayed value can be used for "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" of the module parameter.</p> <p>If cyclic transmission is not performed by setting the displayed value, set a value obtained by adding 10% as follows.</p> <p>Calculation formula: <math>A + A \times 0.1</math></p> <p>A: Cyclic transmission time (minimum value)</p>	—	
Communication Period Interval (Minimum value)	<p>The communication cycle intervals that are calculated by the number of slave stations and the number of points of link devices by using the values set for standard communications and safety communications are displayed. Use the displayed value as a guide.<sup>*1</sup></p> <p>Even if the number of slave stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". For details, refer to the following.</p> <p>☞ Page 328 Communication cycle interval</p> <p>The displayed value can be used for "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the module parameter.</p> <p>If cyclic transmission is not performed by configuring the setting with the displayed value, set a value obtained by adding 10% as follows.</p> <p>Calculation formula: <math>B + A \times 0.1</math></p> <p>A: Cyclic transmission time (minimum value)</p> <p>B: Communication cycle interval (minimum value)</p>	—	
Setting Method	<p>Right-click in the "Safety Communication Setting" window and select an assignment method in "Safety Data Transfer Device Setting".</p> <ul style="list-style-type: none"> <li>• Start/End: Enter the start and end numbers of safety devices.</li> <li>• Points/Start: Enter the points and start numbers of safety devices.</li> </ul>	<ul style="list-style-type: none"> <li>• Start/End</li> <li>• Points/Start (Default: Start/End)</li> </ul>	
No.	Safety connection number for distinguishing settings for each safety connection.	1 to 120 <sup>*2</sup>	
Communication Destination	Set a network of the communication destination.	Local Network (Default: empty)	
Network Configuration	Network No.	The network number of the communication destination is displayed.	—
	Station No.	The station number of communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	—
	IP Address <sup>*3</sup>	The IP address of communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	0.0.0.1 to 223.255.255.254 (Default: empty)
	Station Type	The station type of the communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	Remote station (Default: empty)

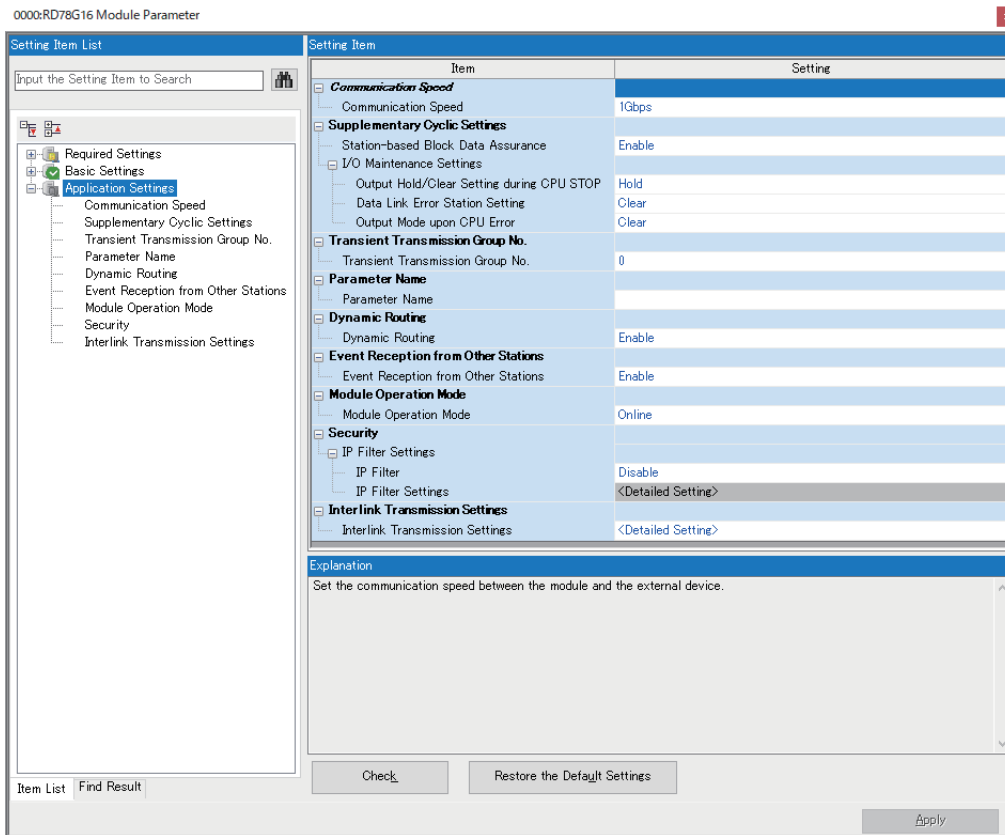


Item		Description	Setting range
Configured Module	Model Name	The module model name of the communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	—
	Communication Destination* <sup>4</sup>	When the communication destination is a local station: Set the CPU model name of communication destination.	<ul style="list-style-type: none"> <li>• R08SF CPU</li> <li>• R16SF CPU</li> <li>• R32SF CPU</li> <li>• R120SF CPU</li> <li>• R16NCC CPU</li> <li>• CR800-R</li> </ul> (Default: empty)
	PLC No.* <sup>4</sup>	Set the CPU number of the communication destination when the CPU module of the communication destination is set to CPU module other than the Safety CPU.	2 to 4 (Default: empty)
Open System		Open system of the own station is displayed.	Active (Fixed) (Default: empty)
Sending Interval Monitoring Time [ms]		In each safety connection, set sending interval monitoring time for a receiving station to detect safety communication errors.	3.0 to 1000.0 (Default: empty)
Safety Refresh Monitoring Time [ms]		In each safety connection, set safety refresh monitoring time for a receiving station to detect safety communication errors.	4.0 to 2000.0 (Default: empty)
Safety Data Transfer Device Setting	Receive Data Storage Device	Set a safety device of the Safety CPU where safety data are received.	■Device name <ul style="list-style-type: none"> <li>• SA\X</li> <li>• SA\M</li> <li>• SA\B</li> <li>• SA\D</li> <li>• SA\W</li> </ul> (Default: empty) ■Points <ul style="list-style-type: none"> <li>• Bit device: 16 to 128 (set in increments of 16 points)<sup>5</sup></li> <li>• Word device: 1 to 8 (set in increments of 1 point)</li> </ul> (Default: empty) ■Start/End Range of a safety device in the Safety CPU (Default: empty)
	Send Data Storage Device	Set a safety device of the Safety CPU where safety data are sent.	■Device name <ul style="list-style-type: none"> <li>• SA\Y</li> <li>• SA\M</li> <li>• SA\B</li> <li>• SA\D</li> <li>• SA\W</li> </ul> (Default: empty) ■Points <ul style="list-style-type: none"> <li>• Bit device: 16 to 128 (set in increments of 16 points)<sup>5</sup></li> <li>• Word device: 1 to 8 (set in increments of 1 point)</li> </ul> (Default: empty) ■Start/End Range of a safety device in the Safety CPU (Default: empty)
Safety Authentication Code		This code is used to identify the communication destination when safety communications perform. Set the same value in the master station and slave station to perform the safety communications.	0 to FFFFFFFFH (Default: empty)
[Output to File (for Setting Confirmation)] button		Outputs the contents of the safety communication setting to a CSV file. The file is used to check whether there is no discrepancy between the safety communication setting written to the Safety CPU and that of the project. (  GX Works3 Operating Manual)	—

- \*1 If the setting cannot be confirmed in the module parameters and "Network Configuration Settings", a hyphen may be displayed or the displayed calculation result may not be correct.
- \*2 Set the safety connection No. starting with 1.  
Even if the safety connection is set in a random line, the unset line is deleted and the No. is set starting with 1 when the [OK] button is clicked.
- \*3 When the setting of IP address and PLC No. is one of the following, an error is displayed on the engineering tool.  
The same IP address is set and PLC No. setting is empty.  
The same IP address and PLC No. are set.
- \*4 Setting this item causes an error.
- \*5 Safety communications are sent/received in increments of 32 points, however a safety data transfer device setting can be set in increments of 16 points.

## 2.4 Application Settings

Set the event reception from other stations, module operation mode, and other settings for the Motion module.



Item	Description	Reference
Communication Speed	Set the communication speed.	Page 90 Communication Speed Setting
Supplementary Cyclic Settings	Set the station-based block data assurance and I/O maintenance settings.	Page 90 Supplementary Cyclic Settings
Transient Transmission Group No. Setting <sup>*1</sup>	Set the transient transmission group No..	—
Parameter Name	Set a name for the module parameter if desired.	Page 90 Parameter Name
Dynamic Routing <sup>*2</sup>	Select whether to enable the dynamic routing function.	—
Event Reception from Other Stations	Select whether to obtain the events occurring in the other stations.	Page 90 Event Reception from Other Stations
Module Operation Mode	Set the module operation mode of the Motion module.	Page 90 Module Operation Mode
Security	Set the security measures for access to the Ethernet device.	Page 91 Security
Interlink Transmission Settings <sup>*2</sup>	Set link device ranges when cyclic data are transferred from a station in the own network to a station in a different network.	—

\*1 An error will occur when a value other than 0 is set.

\*2 The setting is invalid.

## Communication Speed Setting

Set the communication speed of the modules.

Item	Description	Setting range
Communication Speed	Select the communication speed of the modules.	<ul style="list-style-type: none"> <li>• 1 Gbps</li> <li>• 100 Mbps<sup>*1</sup></li> </ul> (Default: 1 Gbps)

\*1 This communication speed can be used for the version of Add-on baseSystem "Ver. 1.8 or later".

For details of the connection of a module or device in the communication speed setting, refer to "SYSTEM CONFIGURATION" in PART 1 of the following manual.

📖 MELSEC iQ-R Motion Module User's Manual (Startup)

### Precautions

- When the speed is set to 100 Mbps, the module can not be connected with the slave station (1 Gbps) which is not compatible with 100 Mbps.

## Supplementary Cyclic Settings

Set the station-based block data assurance and I/O maintenance settings.

Item	Description	Setting range
Station-based Block Data Assurance	Set whether to assure the data by station for link fresh between the CPU module and Motion module. Regardless of the setting, the Motion control station is operated with "Disable". (📖 Page 32 Cyclic data assurance)	<ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul> (Default: Enable)
I/O Maintenance Settings	Output Hold/Clear Setting during CPU STOP	Set whether to hold or clear the output when the CPU module is changed from RUN to STOP on the sending side. Regardless of the setting, the motion control station is operated with "Hold". (📖 Page 35 I/O maintenance settings)
	Data Link Error Station Setting	Set whether to hold or clear the input from a disconnected station on the receiving side. Regardless of the setting, the motion control station is operated with "Hold". (📖 Page 35 I/O maintenance settings)
	Output Mode upon CPU Error	Set whether to hold or clear the output when a stop error occurs in the CPU module on the sending side. Regardless of the setting, the motion control station is operated with "Hold". (📖 Page 35 I/O maintenance settings)

## Parameter Name

Set a name for the module parameter if desired.

Item	Description	Setting range
Parameter Name	Set a name for the module parameter if desired.	Up to 8 one-byte or two-byte characters (Default: empty)

## Event Reception from Other Stations

Select whether to obtain the events occurring in the other stations.

Item	Description	Setting range
Event Reception from Other Stations	Select whether to obtain the events occurring in the other stations.	<ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul> (Default: Enable)

## Module Operation Mode

Set the module operation mode of the Motion module.

Item	Description	Setting range
Module Operation Mode	Online <ul style="list-style-type: none"> <li>• Select this mode to connect the Motion module to the network for performing data link with other stations.</li> </ul>	—

# Security

Set the security measures for access to the Ethernet device.

Item		Description	Setting range
IP Filter Settings	IP Filter	Set whether to use the IP filter.	<ul style="list-style-type: none"><li>• Not Use</li><li>• Use</li></ul> (Default: Not Use)
	IP Filter Settings	Set the IP addresses to be allowed or denied.	—

## IP Filter Settings

Up to 32 IP addresses can be set as an IP address to be allowed or denied by the IP filter.

Range specification and specification of the IP addresses to be excluded from the set range as a single setting are possible.

Item		Description	Setting range
Access from IP address below		Select whether to allow or deny the access from the specified IP addresses.	<ul style="list-style-type: none"><li>• Allow</li><li>• Deny</li></ul> (Default: Allow)
Range Setting		Select this item when specifying the IP addresses by range.	(Default: Clear)
IP Address		Set the IP addresses to be allowed or denied. When selecting "Range Setting", enter the start IP address (left field) and end IP address (right field) of the range.	0.0.0.1 to 223.255.255.254 (Default: empty)
IP Address Excluded from Range		When selecting "Range Setting", set the IP address to be excluded from the set range. Up to 32 IP addresses can be set.	0.0.0.1 to 223.255.255.254 (Default: empty)

## 2.5 "CC-Link IE TSN Configuration" Window

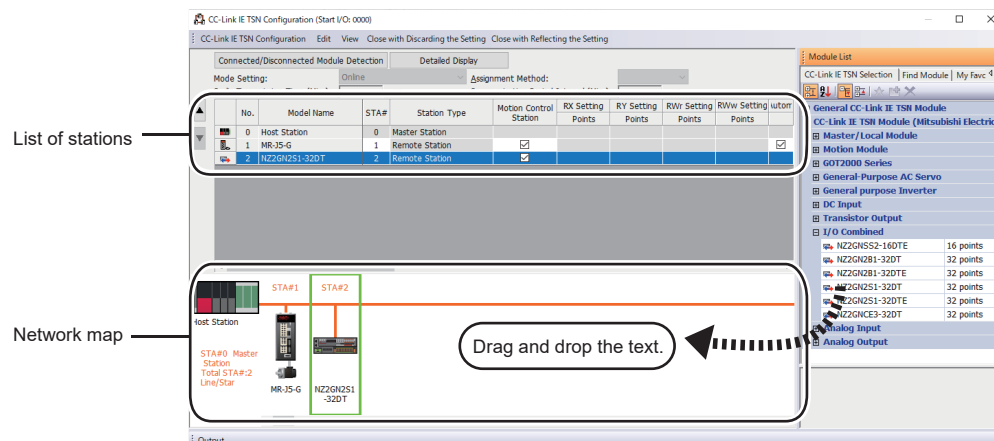
Perform the parameter setting of slave stations, the detection of connected/disconnected devices, or others.

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>

### Parameter setting of a slave station

Set parameters of slave stations (the number of points and assignment of link devices) in the master station.

1. Select the module in "Module List" and drag it to the list of stations or the network map.



2. Set the required items.

3. Check the system configuration.

[CC-Link IE TSN Configuration] ⇒ [Check] ⇒ [System Configuration]







When a warning or error is displayed on the "Output" window, refer to the following.

MELSOFT Navigator Message No.

4. Select [Close with Reflecting the Setting] and close the "CC-Link IE TSN Configuration" window.

## Setting items

- Simple Display: Click the [Simple Display] button to display a narrow portion of items. Use for operation with default settings or the minimum required settings. (Default)
- Detailed Display: Click the [Detailed display] button to display all items.

Simple display	Detailed display	Description	Setting range
Mode Setting		The setting of "Module Operation Mode" is displayed. For details on the setting, refer to the following. • Module Operation Mode:  Page 90 Module Operation Mode	—
—	Assignment Method	Select a link device assignment method. Select "Points/Start" for the motion control station. • Points/Start: Enter the Nos. of points and start Nos. of link devices. • Start/End: Enter the start and end Nos. of link devices.	• Points/Start • Start/End (Default: Points/Start)
Cyclic Transmission Time (Min.)		The cyclic transmission time that are calculated by the number of slave stations and the number of link device points is displayed. Use the displayed value as a guide.* <sup>1</sup> Even if the number of slave stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". For details, refer to the following.  Page 328 Communication cycle interval The displayed value can be used for "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" of the module parameter. If cyclic transmission is not performed by setting the displayed value, set a value obtained by adding 10% as follows. Calculation formula: $A + A \times 0.1$ A: Cyclic transmission time (minimum value)	—
Communication Period Interval (Min.) <sup>*2</sup>		The communication cycle intervals that are calculated by the number of slave stations and the number of link device points are displayed. Use the displayed value as a guide.* <sup>1</sup> Even if the number of slave stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". For details, refer to the following.  Page 328 Communication cycle interval The displayed value can be used for "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the module parameter. If cyclic transmission is not performed by configuring the setting with the displayed value, set a value obtained by adding 10% as follows. Calculation formula: $B + A \times 0.1$ A: Cyclic transmission time (minimum value) B: Communication cycle interval (minimum value)	—
No.		The total number of slave stations set in the "CC-Link IE TSN Configuration" window is displayed.	• Master station: Fixed to "0" • Slave station: 1 to 256 <sup>*6</sup>
Model Name		The module model name is displayed. To set a module where the profile is not registered, select it from the "General CC-Link IE TSN Module" list or register the profile before setting the model name. For how to register a profile, refer to the following.  GX Works3 Operating Manual	—
STA#		Enter the station No. of each slave station connected to the network. Station numbers do not need to be set consecutively, but must be unique.* <sup>3</sup>	• Master station: Fixed to "0" • Slave station: 1 to 120 <sup>*6</sup> (Default: Serial No. of added stations)
Station Type <sup>*4</sup>		Set the station types. Select the station types same as those of the modules connected to the network.	• Remote Station (Default: Varies depending on the set module)
Motion Control Station <sup>*5</sup>		Use the profile to allow selection of target stations for motion control.	• Checked: Motion control target • Not checked: Not motion control target (Default: Checked)
RX Setting		Assign RX/Ry points in increments of 16. (  Page 23 Communications using RX, RY, RWr, and RWw)	• Number of points: No point, 16 to 16384
RY Setting		Modules with settings provided by the device profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed) For the motion control station, only the number of points is set.	• Start: 0000H to 3FF0H • End: 000FH to 3FFFH (Default: Varies depending on the set module)
RWr Setting		Assign RWr/RWw points in increments of 4. (  Page 23 Communications using RX, RY, RWr, and RWw)	• Number of points: No point, 4 to 8192
RWw Setting		Modules with settings provided by the device profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed) For the motion control station, only the number of points is set.	• Start: 0000H to 1FFCH • End: 0003H to 1FFFH (Default: Varies depending on the set module)


Simple display	Detailed display	Description	Setting range
—	LB Setting*7	Assign LB points in increments of 16 and LW points in increments of 1. Modules with settings provided by the device profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed)	—
	LW Setting*7		—
Parameter Automatic Setting		Set whether to set the parameters of each slave station automatically. This cannot be set for extension modules. However, the parameter automatic setting of extension modules is interlocked with the settings of the connected main module.	<ul style="list-style-type: none"> <li>• Checked: Distribute parameters</li> <li>• Not checked: Do not distribute parameters (Default: Not checked)</li> </ul>
PDO Mapping Setting		Set the PDO mapping to the station that supports CANOpen communications. (☞ Page 104 PDO mapping setting)	—
IP Address		Set the IP address of a station that performs cyclic transmission.	0.0.0.1 to 223.255.255.254 (Default: The first to third octets have the same values as the master station, the fourth octet has a serial No. from 1 to 254)
Subnet Mask		Set a subnet mask to identify a network address. Set the same value for the master station and slave station. Even if a slave station has a different subnet mask from the master station, it does not result in an input error. If 255.255.255.255 is set, leave it empty.	0.0.0.1 to 255.255.255.255 (Default: The same value as the master station, or 255.255.255.0 if there is no master station)
Default Gateway		Set the default gateway address to connect to the external network. If 223.255.255.255 is set, leave it empty.	<ul style="list-style-type: none"> <li>• 0.0.0.1 to 223.255.255.254 (When the address is inputted by decimal values)</li> <li>• Empty (0.0.0.0)</li> </ul>
Reserved/Error Invalid Station		Set the slave station as a reserved station or error invalid station. <ul style="list-style-type: none"> <li>• No Setting: The slave station is connected to the network.</li> <li>• Reserved Station: The slave station is reserved in the parameters for future expansion. By using a reserved station, link device assignment will not change even if the slave station is added (reservation is canceled). Therefore, modification of the program is not required. Physical connection of the slave station on the network is not required.</li> <li>• Error Invalid Station: Even if a slave station is disconnected during data link, the master station will not detect the slave station as a faulty station.</li> </ul>	<ul style="list-style-type: none"> <li>• No Setting</li> <li>• Reserved Station*8</li> <li>• Error Invalid Station*9</li> </ul> (Default: No setting, master station is fixed as empty)
Network Synchronous Communication*10		Set whether to synchronize each slave station with network synchronous communication.	<ul style="list-style-type: none"> <li>• Synchronous</li> <li>• Asynchronous</li> </ul> (Default: Asynchronous)
Communication Period Setting*11*12		When multiple communication cycles are set, set the cycle of each slave station. (☞ Page 34 Communication cycles coexistence)	<ul style="list-style-type: none"> <li>• Basic Period</li> <li>• Normal-Speed</li> <li>• Low-Speed</li> </ul> (Default: Basic Period)
Station Information	■Alias	Enter the name of a device if required. The entered device name is displayed in "Network Status" in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window. For the extension module of the remote station, the name is not displayed in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window, even if entered.	Up to 32 one-byte characters (one-byte or two-byte) (Default: empty)
	■Comment	Information entered in "Comment1" on the "Properties" window displayed by right-clicking the module in the list of stations or the network map is displayed.	Up to 32 one-byte characters (one-byte or two-byte) (Default: empty)
	■Station-specific mode setting	Set the station-specific mode of the slave station. (Only when the slave station supports the station-specific mode)	The setting varies depending on the set slave station.
Authentication Class Setting		For each slave station, select which authentication Class the device is.	<ul style="list-style-type: none"> <li>• Authentication Class B</li> <li>• Authentication Class A</li> </ul> (Default: Automatically determined by the profile)



- \*1 If the setting cannot be confirmed in the module parameters and "Network Configuration Settings", a hyphen may be displayed or the displayed calculation result may not be correct.
- \*2 When the communication cycle is set to 31.25  $\mu$ s or 62.50  $\mu$ s, the following restrictions are applied.  
Ignore the value displayed in "Communication Period Interval (Minimum value)" of "Network Configuration Settings" when setting it. In 'Communication cycle intervals (Calculation value)' (SW0072) and 'Cyclic transmission time (Calculation value)' (SW0073), 0 is stored.
- \*3 When the version of Add-on baseSystem is "Ver. 1.15 or earlier", set consecutive numbers less than or equal to the total number of stations.
- \*4 An error will occur when a value outside the setting range is set.
- \*5 When the version of Add-on baseSystem is "Ver. 1.18 or earlier", an error occurs if "Not checked" is set.
- \*6 For the version of Add-on baseSystem, "Ver. 1.4 or earlier", the station No. of the stations is "1 to 64".
- \*7 An error will occur when the number of points are set.
- \*8 For the motion control station, only "No Setting" can be set. Any other setting will result in an error.
- \*9 When the version of Add-on baseSystem is "Ver. 1.18 or earlier", only "No Setting" can be set for the motion control station. Any other setting will result in an error.
- \*10 For the version of Add-on baseSystem, "Ver. 1.4 or earlier", an error will occur when "Synchronous" is set.
- \*11 When the version of Add-on baseSystem is "Ver. 1.18 or earlier", an error occurs if any setting other than "Basic Period" is configured.
- \*12 For the motion control station, only "Basic Period" can be set. Any other setting will result in an error.

### Point

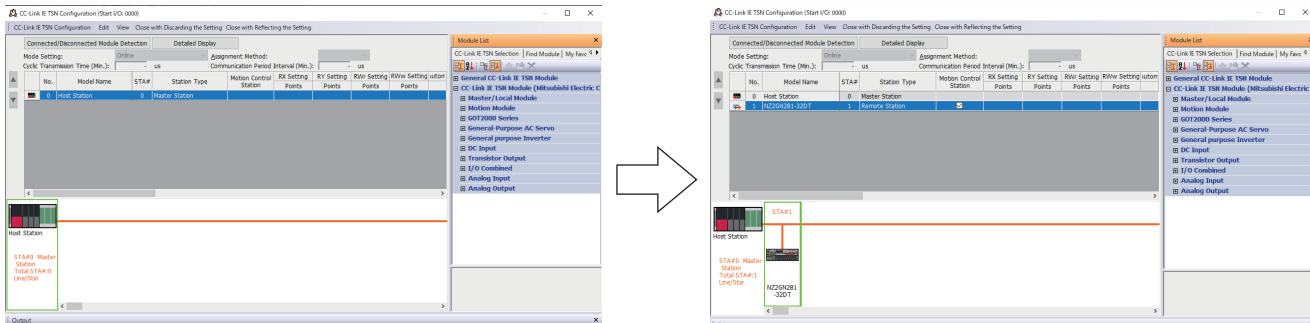
- Because a portion of the setting items are not displayed in simple display, when there are deficiencies in setting items that are not displayed, the "Output" window may display a warning or error by selecting [Close with Reflecting the Setting].  
If a warning is displayed, switch to detailed display and correct the items.
- Stations which have the station No. can be set up to 120 stations (For the version of Add-on baseSystem, "Ver. 1.4 or earlier", the station No. is up to "64 stations".), and up to 256 stations (For the version of Add-on baseSystem, "Ver. 1.4 or earlier", the number of the stations is up to "64 stations".) can be set the network configuration settings. When using extended modules supporting the CANopen communication, one module is counted as one station.
- A slave station to be controlled as a real axis needs to be set as a motion control station.
- A slave station to be controlled with the external signal high-accuracy input or slave label needs to be set as a motion control station. For the external signal high-accuracy input and slave label, refer to "Connectable device to CC-Link IE TSN" in the following manual.

 MELSEC iQ-R Motion Module User's Manual (Application)

# Connected/Disconnected Module Detection

Connected slave stations are detected and displayed on the "CC-Link IE TSN Configuration" window.

1. Click the [Connected/Disconnected Module Detection] button.
2. When the [Execute] button is clicked according to the instruction on the window, connected slave stations are detected and displayed on the "CC-Link IE TSN Configuration" window.



3. Check items in the list of stations and change them as necessary. (Page 93 Setting items)
4. Select [Close with Reflecting the Setting] and close the "CC-Link IE TSN Configuration" window.

## Point

Detection of connected/disconnected devices cannot be executed in the following cases.

- "Link Direct Device Setting" of the CPU parameter is not "Extended Mode (iQ-R Series Mode)".
- The actual system configuration is incorrect. (An overlapping IP address or others)
- The master station does not perform data link.

## Connection/Disconnection/Replacement

When the [Connected/Disconnected Module Detection] button is clicked while the saved CC-Link IE TSN configuration is displayed, IP addresses of detected slave stations are compared with the saved IP addresses of slave stations and displayed as follows by connection/disconnection/replacement.

IP address verification result	Operation	Display	When station Nos. of detected slave stations are not set
Detected slave stations are in the saved CC-Link IE TSN structure.	Replace	<p>When parameters between a detected slave station and a saved CC-Link IE TSN structure mismatch, the parameters are replaced with the parameters of the detected slave station.</p> <p>When the model name, model version, and station type are mismatched, the following settings are inherited.</p> <ul style="list-style-type: none"> <li>• "Motion Control Station"</li> <li>• "RX Setting", "RY Setting", "RWr Setting", "RWw Setting", "LB Setting", "LW Setting"</li> <li>• "IP Address" of the master station</li> <li>• "Subnet Mask"</li> <li>• "Default Gateway"</li> <li>• "Reserved/Error Invalid Station" (Note that if "Reserved Station" is set, the setting will change to the default.)</li> <li>• "Network Synchronous Communication"</li> <li>• "Communication Period Setting"</li> </ul> <p>If only the station No. is mismatched, only the station No. is reflected, and all the settings are inherited.</p> <p>(Note that if the station No. of the detected device has not been set, the station No. of the device before replacement is inherited.)</p>	The station No. takes over the station No. of the saved CC-Link IE TSN structure.
Slave stations in the saved CC-Link IE TSN structure are not detected.	Disconnect	<ul style="list-style-type: none"> <li>• Modules other than extension modules: Setting of "Reserved/Error Invalid Station" is changed to "Reserved Station".</li> <li>• Extension modules: Are deleted.</li> </ul>	—

IP address verification result	Operation	Display	When station Nos. of detected slave stations are not set
Detected slave stations are not in the saved CC-Link IE TSN structure.	Connect	Detected slave stations are added. (Settings other than "IP Address", "STA#", and "Station Type" are default) When adding a device, the defaults other than IP address, station No., and station type are set. (Note that if the station No. of the detected device has not been set, the station No. is also set to the default.) Added slave stations are displayed in the list of stations in the following order. <ul style="list-style-type: none"> <li>• Modules other than extension modules: In the order of IP addresses, following disconnected slave stations.</li> <li>• Extension modules: In the order of sub-IDs, following connected main modules and extension modules.</li> </ul>	A station No. is automatically numbered as the youngest unused station No. in the range from 1 to 120.*1 The order of automatic numbering is the same as the displayed order in the list of stations (see left).

\*1 If the automatically numbered station No. and the station No. set by the slave station do not match, one of the following actions is required.  
 In the network configuration settings of the master station, change the station No. to the same value as the one set by the slave station.  
 Change the station No. of the slave station to the same value as the one in the network configuration settings of the master station.

## Precautions

When the station No. is set in the slave station using the CC-Link IE TSN structure and parameters are written in CPU modules, the station No. of the slave station is held in the master station. When parameters are not to be written in CPU modules, they are saved in the CC-Link IE TSN structure as slave stations with the station No. not set.

### Point

Register the profile of the target device to detect in advance.

If the profile is not registered, the following may be displayed.

- "Model Name" is "General Remote Station", "General Local Station", or "General Extension Module".
- "Station Type" is "Remote Station", "Local Station", or "Extension Module".

For how to register a profile, refer to the following.

 GX Works3 Operating Manual

### Restriction

- Even when the profile is registered, if modules that are not available for detection of connected/disconnected devices are used, "Model Name" and "Station Type" are not displayed correctly.
- Reserved stations and data link faulty stations cannot be detected by this function.

# Parameter processing of a slave station

The processing is to read and save the parameters from the slave station, and to write the saved parameters to the slave station.

Also, it automatically sets parameters of the slave station from the master station. (☞ Page 74 Slave station parameter automatic setting)

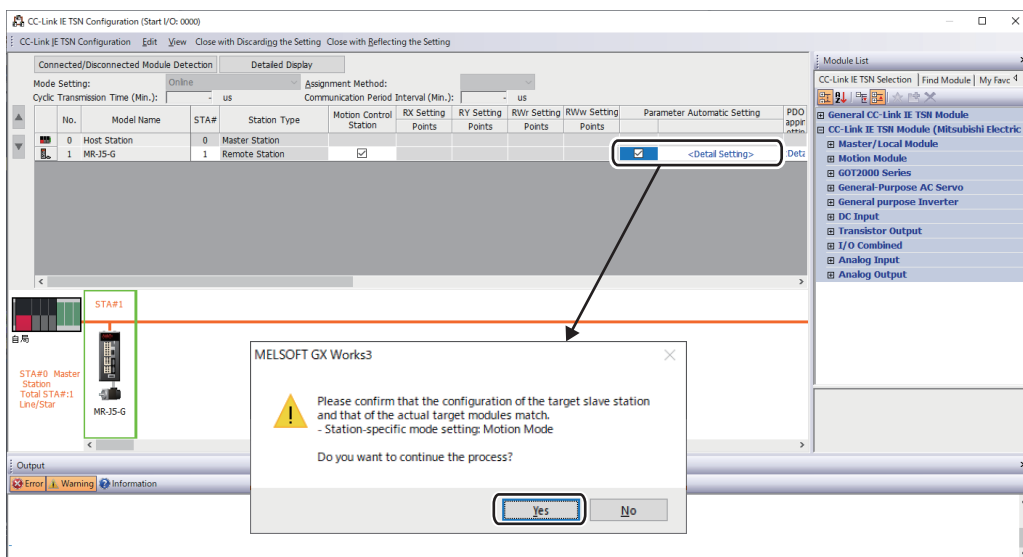
## Restriction

When performing the parameter processing to the main module to which the extended module is connected, use the following module.

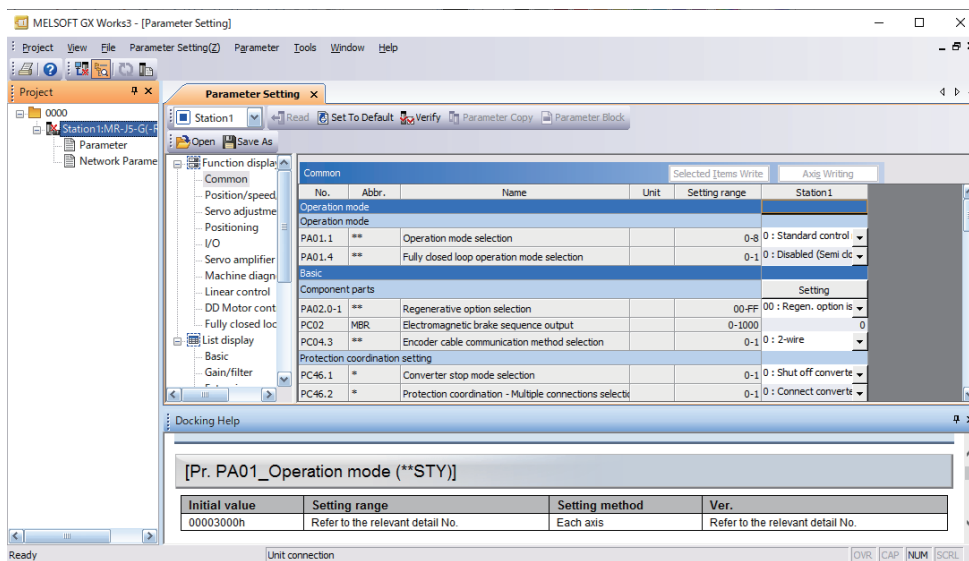
- Motion module whose Add-on baseSystem version is "Ver. 1.16" or later

## For MR-J5(W)-G

☞ Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>



Select "Parameter Automatic Setting" ⇒ <Detail Setting> to display the "Parameter Setting" window.



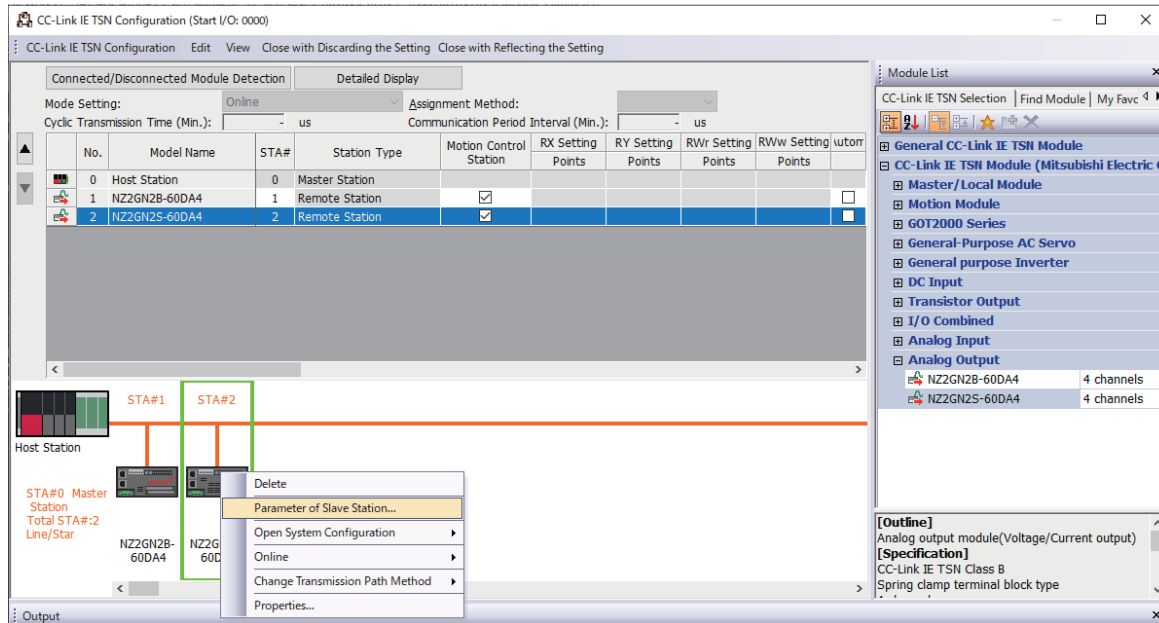
The following operations can be performed in addition to the slave station parameter setting. For the details of the window, click [Help].

- Reading and writing parameters from/to MR-J5(W)-G during data link (online)
- Saving parameters of MR-J5(W)-G in a separate file/reading them from the saved file

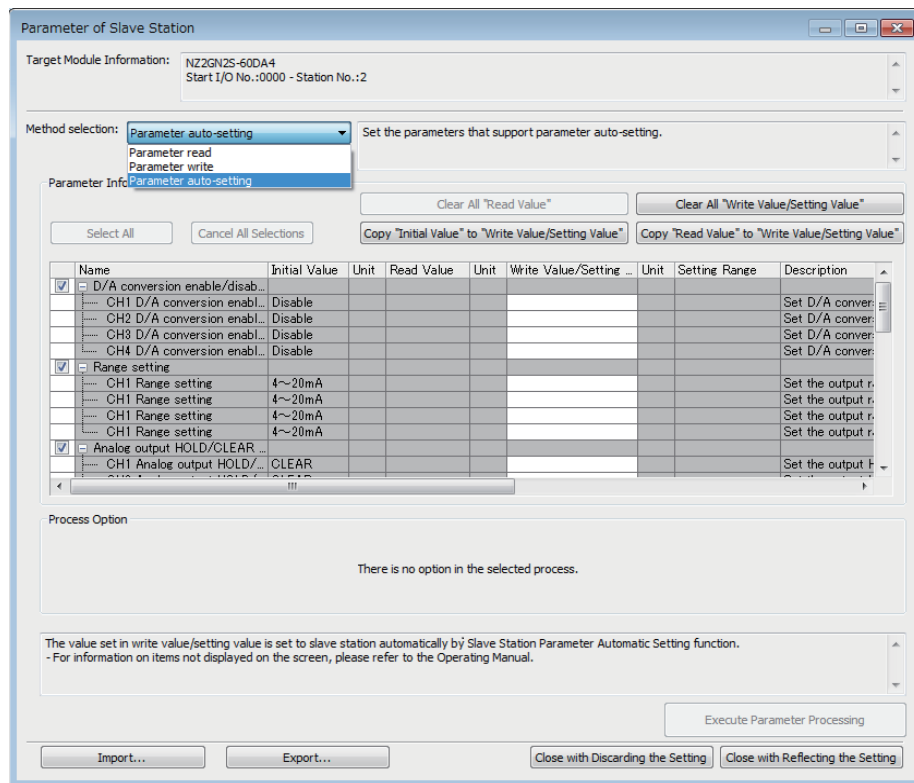
Once the setting is complete, click [Project] ⇒ [Exit MR Configurator2] or the close button on the top right to close the "Parameter Setting" window.

## For other than MR-J5(W)-G

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>



Select and right-click the slave station, and select "Parameter of Slave Station" to display the "Parameter of Slave Station" window.



Item	Description	
Target Module Information	Information for the selected slave stations is displayed.	
Method selection	Select processing to be executed for selected slave stations. <ul style="list-style-type: none"> <li>Parameter auto-setting: Automatically set contents of "Write Value/Setting Value" to the slave station. (Page 74 Slave station parameter automatic setting)</li> <li>Parameter read: Read parameters from the selected slave station.</li> <li>Parameter write: Write parameters to the selected slave station.</li> </ul>	
Parameter Information	[Clear All "Read Value"] button	Click to clear all setting details that were read using "Parameter read".
	[Clear All "Write Value/Setting Value"] button	Click to clear all setting details that are written using "Parameter write".
Processing option	When there are options for processing selected by "Method Selection", setting items are displayed.	
[Import] button	Read contents of parameter processing created in a CSV file.	
[Export] button	Output contents of parameter processing set in this window to a CSV file.	

## Procedure for clearing a saved parameter

When returning the saved parameters of a not-required slave station to the not-set status, perform the following procedure.

1. If the saved parameters are to be saved, output them in a CSV file using the [Export] button.
2. Delete not-required slave stations from the list of stations.
3. Select the same module as the deleted slave station in "Module List", and drag it to the list of stations or the network map.

## Conditions for clearing a saved parameter

Saved parameters of a slave station can be cleared under the following conditions.

When saved parameters are cleared, execute "Parameter auto-setting" or "Parameter read" in the "Parameter of Slave Station" window and read the parameters of the slave station.

Item	Operation	Description
"CC-Link IE TSN Configuration" window	Open the "CC-Link IE TSN Configuration" window.	When there is no slave station with a station No. that matches the saved parameter information in the "CC-Link IE TSN Configuration" window, saved parameters of the relevant slave station are skipped. Skipped parameters of the slave station are cleared.
	Reflect setting and close the window.	Saved parameters of a slave station that is not in the actual system configuration are cleared.
	Execute detection of connected/disconnected devices.	All saved parameters are cleared.
	Change the function version in the "Properties" window.	When the "Properties" window is closed, saved parameters are cleared.
"Parameter of Slave Station" window	Open the "Parameter of Slave Station" window.	Saved parameters that mismatch the relevant slave station are skipped. Clicking the [Close with Reflecting the Setting] button in the above state clears the skipped saved parameters.
Module Parameter	Manually delete "Network Configuration Settings" to apply.	Parameters of "Network Configuration Settings" return to default.
	Change "Station Type" or set parameters that do not exist.	
System Parameter	Divert system parameters from another project.	Parameters of the slave station are not diverted.
Module Configuration	Delete a module and check.	Parameters are deleted together with the module.
Navigation window	Delete a module.	
Read from PLC	Read module parameters that have a different network configuration and the same start I/O No..	Parameters are overwritten.
Navigation window	Import the data of a Motion module to take network settings.	
MELSOFT Navigator	Reflect the parameter.	Saved parameters are cleared.

# Command execution to slave stations

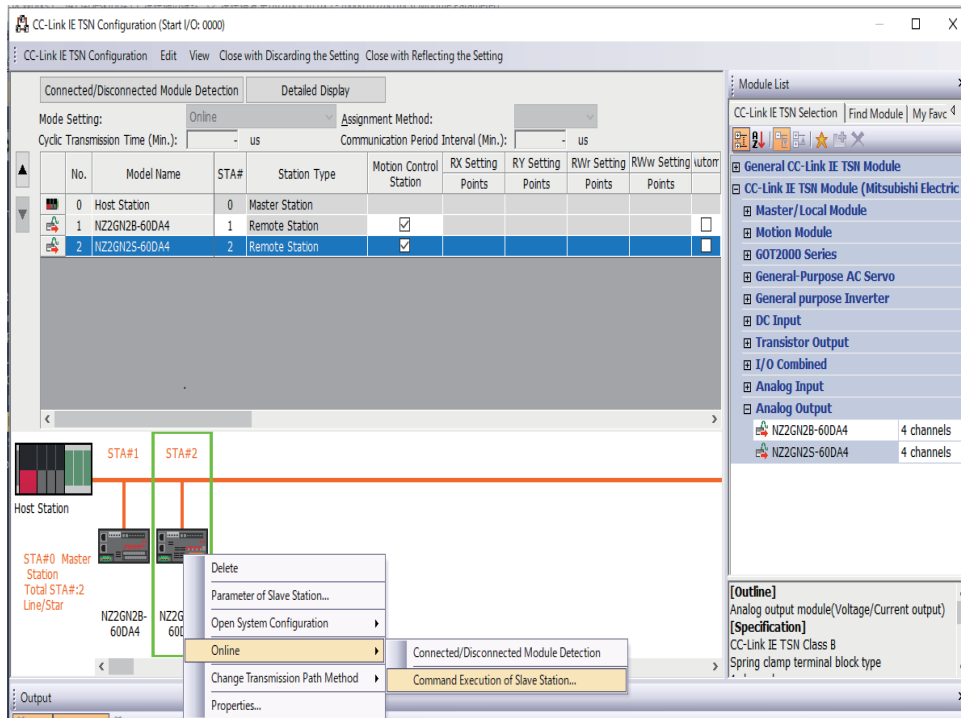
Commands to a slave station (Error clear request, Error history clear request) are executed.

## Restriction

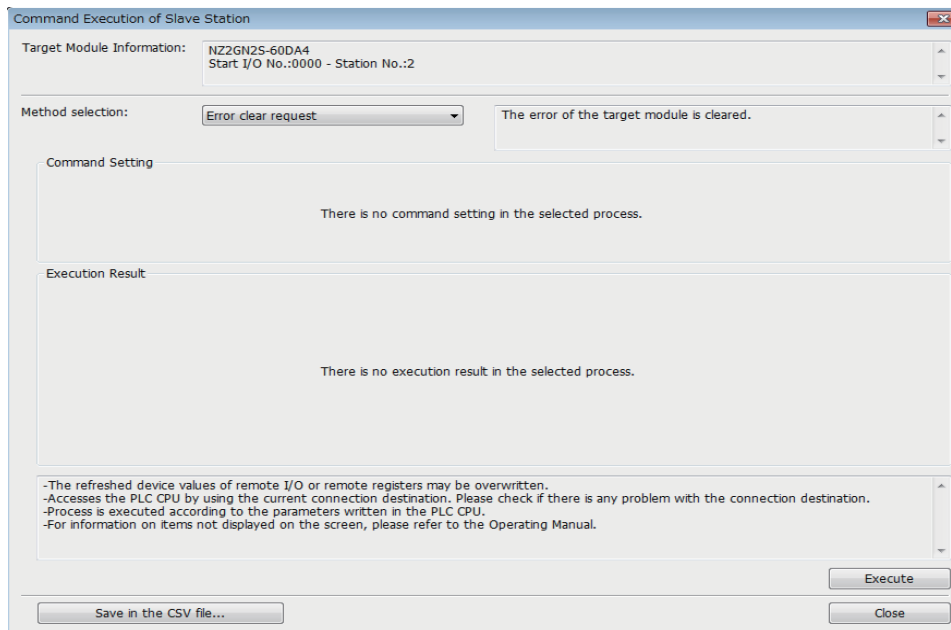
When performing the command execution to the main module to which the extended module is connected, use the following module.

- Motion module whose Add-on baseSystem version is "Ver. 1.16" or later

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>



Select and right-click the slave station, select "Command Execution of Slave Station" from "Online" to display the "Command Execution of Slave Station" window.





Item	Description
Target Module Information	Information for the selected slave stations is displayed.
Method selection	Select processing to be executed for selected slave stations. <ul style="list-style-type: none"><li>• Error clear request</li><li>• Error history clear request</li></ul>
Command setting	When there are command settings for processing selected by "Method selection", setting items are displayed.
Execution Result	Execution results of the processing selected in "Method selection" are displayed.
[Save in the CSV file] button	Outputs the contents of this window to a CSV file.

# PDO mapping setting

Set the PDO mapping to the station that supports CANopen communications.

When connecting extended modules such as a multi-axis servo amplifier that has the PDO mapping information, the maximum number of connectable stations changes depending on the number of axes.

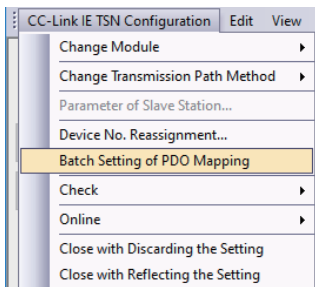
**Ex.**

When connecting a multi-axis servo amplifier with 3 axes, up to 40 stations with 120 (maximum number of connectable stations)<sup>\*1</sup>/3 (number of axes) can be connected.

\*1 The maximum number of connectable stations depends on the add-on baseSystem version. (☞ Page 93 Setting items)

## "Batch Setting of PDO Mapping"

Set the default PDO mapping for the slave station in a batch.



1. Click [Batch Setting of PDO Mapping].

☞ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ [CC-Link IE TSN Configuration] ⇒ [Batch Setting of PDO Mapping]

2. Check the output confirmation message, and click the [Yes] button.

3. When the completion window of [Batch Setting of PDO Mapping] is displayed, click the [OK] button.

### ■Conditions under which the PDO mapping is not set

In the following cases, the PDO mapping is not set for the slave station.

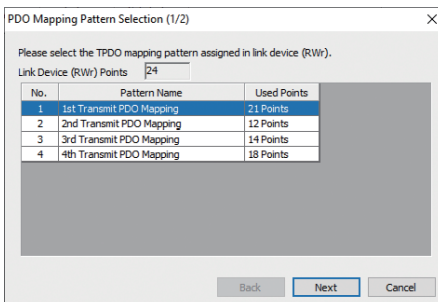
- There is no station for which the PDO mapping can be set.
- The number of points of "RW<sub>r</sub> Setting" and "RW<sub>w</sub> Setting" is less than the number of points used of the default pattern.
- The setting is performed when "RW<sub>r</sub> Setting" and "RW<sub>w</sub> Setting" are blanks, and the checkbox of "Batch set default pattern only when PDO mapping is unset slave station." is not selected.

## "PDO Mapping Setting"

Set the default PDO mapping to the slave station individually.

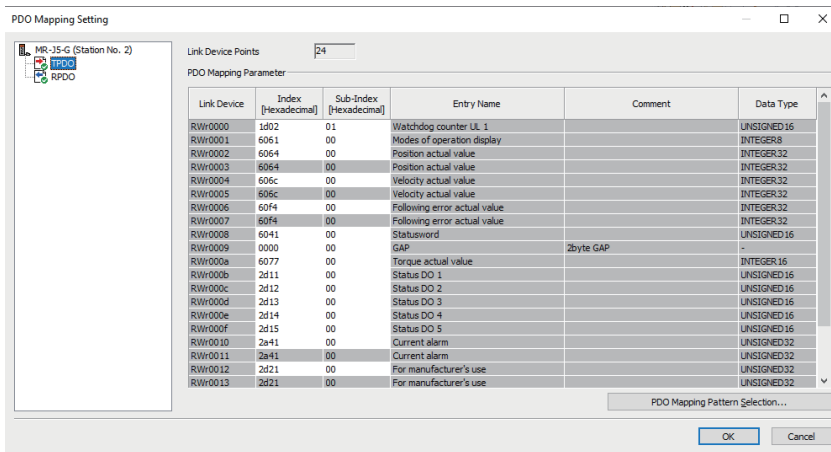
☞ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ "PDO Mapping Setting" ⇒ Double-click <Detailed Setting> of the slave station

1. Select the PDO mapping pattern of TPDO to be assigned to the link device (RW<sub>r</sub>). Click the [Next] button.



2. Select the PDO mapping pattern of RPDO to be assigned to the link device (RW<sub>w</sub>). Click the [OK] button.

### 3. Check the selected PDO mapping pattern.



### 4. Click the [OK] button to close "PDO Mapping Setting".

#### ■ Conditions under which the PDO mapping is not set

In the following cases, the PDO mapping is not set for the slave station.

- The number of points of "RWr Setting" is 1 or larger and no entry is assigned to TPDO.
- The number of points of "RWw Setting" is 1 or larger and no entry is assigned to RPDO.
- "Index" has a value and there is a blank row in "Sub Index".
- An entry is assigned beyond the link device range.
- The same entry is assigned to multiple link devices.

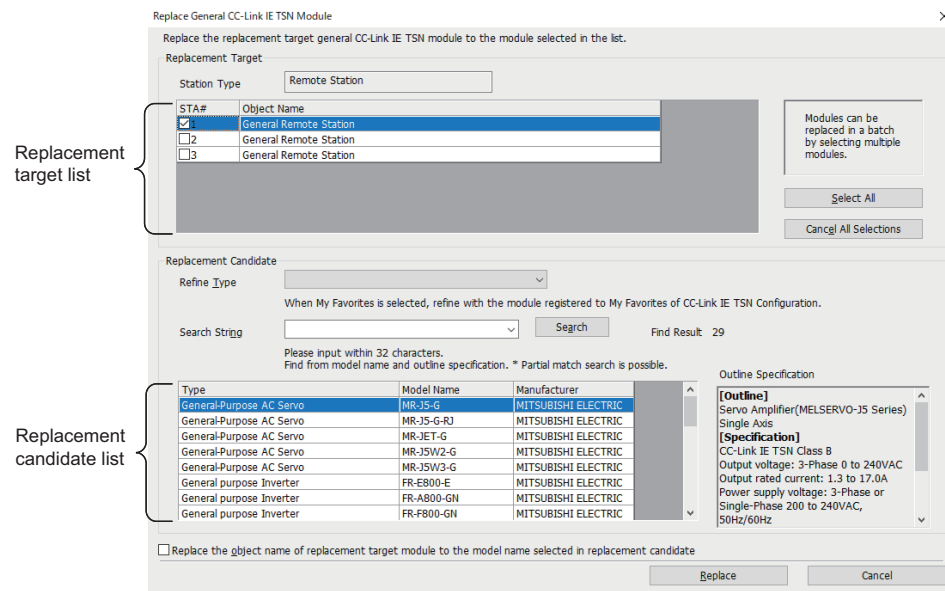
# Module change

The following shows how to replace the general-purpose CC-Link IE TSN module with a slave station and how to change a slave station to the general-purpose CC-Link IE TSN module.

## Replacement of the general-purpose CC-Link IE TSN module

Replace the general-purpose CC-Link IE TSN module with a slave station.

- Right-click a general-purpose CC-Link IE TSN module in the station list on the "CC-Link IE TSN Configuration" window ⇒ click [Change Module] ⇒ [Replace General CC-Link IE TSN Module].



Item	Description	
Replacement Target	Station Type	The station type of the general-purpose CC-Link IE TSN module selected in the station list on the "CC-Link IE TSN Configuration" window is displayed.
	Replacement target list	The general-purpose CC-Link IE TSN modules whose station type is the same as the one selected in the station list on the "CC-Link IE TSN Configuration" window are displayed. By selecting the checkboxes, multiple general-purpose CC-Link IE TSN modules can be replaced.
	[Select All] button	Selects all the checkboxes in the replacement target list.
	[Cancel All Selections] button	Deselects all the checkboxes in the replacement target list.
Replacement Candidate	Refine Type	Filters the replacement candidate list by type.
	Search String	Searches the input string with the model name and outline specification.
	[Search] button	Displays the replacement candidate list with the conditions set in "Refine Type" and "Search String".
	Replacement candidate list	Displays the replaceable modules.
	Outline Specification	Displays the outline specification of the module selected in the replacement candidate list.
	Replace the object name of replacement target module to the model name selected in replacement candidate	Selecting this checkbox replaces the object name of the replacement target module with the model name of the module selected as the replacement candidate.
	[Replace] button	Replaces the module selected in the replacement target list with the one selected in the replacement candidate list.
	[Cancel] button	Stops the replacement processing and closes the window.

## Changing a slave station

Change a slave station to a general-purpose CC-Link IE TSN module with the same station type.


- Right-click a slave station in the station list on the "CC-Link IE TSN Configuration" window ⇒ click [Change Module] ⇒ [Change to General CC-Link IE TSN Module].

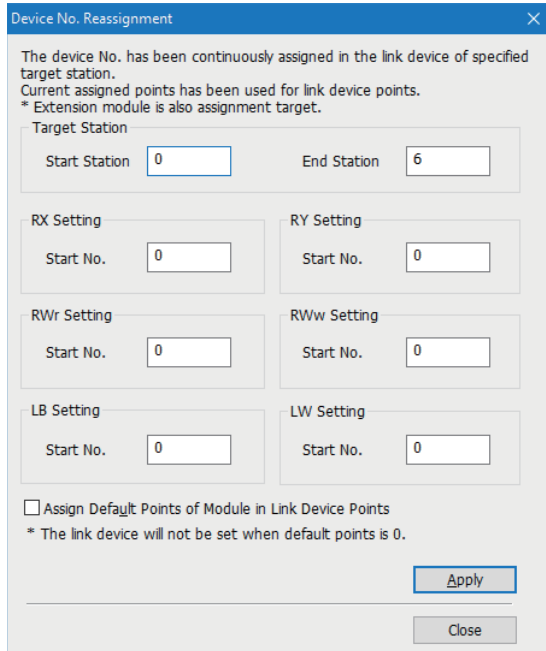
# Device No. reassignment

Assign the device Nos. continuously to the link devices of the specified target station.

Use the points assigned in the station list on the "CC-Link IE TSN Configuration" window for the number of link device points.

1. Open the "Device No. Reassignment" window.

 [CC-Link IE TSN Configuration] ⇒ [Device No. Reassignment]



2. Enter the items on the "Device No. Reassignment" window and click the [Apply] button.

## Point

Select the checkbox for "Assign Default Points of Module in Link Device Points" and click the [Apply] button to reassign the device Nos. to the number of default points of each module. When the number of default points is 0, the corresponding link device is not set.

# Object name display

The object names of the modules displayed in the station list on the "CC-Link IE TSN Configuration" window are displayed.

[View] ⇒ [Object Name Display]

No.	Object Name	Model Name	STA#	Station Type
0	Host Station	Host Station	0	Master Station
1	General Remote Station A	General Remote Station	1	Remote Station
2	General Remote Station B	General Remote Station	2	Remote Station
3	General Remote Station C	General Remote Station	3	Remote Station

Host Station

STA#0 Master Station  
Total STA#:3  
Line/Star

General Remote Station A  
General Remote Station B  
General Remote Station C

## Changing the object name

Change the object name.

By changing the object name to an arbitrary one, it becomes easier to distinguish each module on the "CC-Link IE TSN Configuration" window.

1. Right-click the module whose object name is to be changed in the network configuration on the "CC-Link IE TSN Configuration" window, and click "Properties".

Properties

Model Name: Host Station

Object Name: Host Station

Comment1

Comment2

Comment3

Outline Specification

[Outline]  
Host Station

OK Cancel

2. Change "Object Name".
3. Click the [OK] button.

# 3 PROGRAMMING

## 3.1 Precautions for Programming


This section describes precautions to create CC-Link IE TSN programs.

### Program using safety communications

For a program using safety communications, interlock with the safety special register described below. (For the 1st module)

- 'Safety refresh communication status of each safety connection (1st module)' (SA\SD1008 to SA\SD1015)

For program examples of the safety communications, refer to the following.

 MELSEC iQ-R CC-Link IE TSN User's Manual (Application)

For a communication example using the safety communications, refer to the following.

 Page 110 Communication Example of Safety Communication

## 3.2 Communication Example of Safety Communication

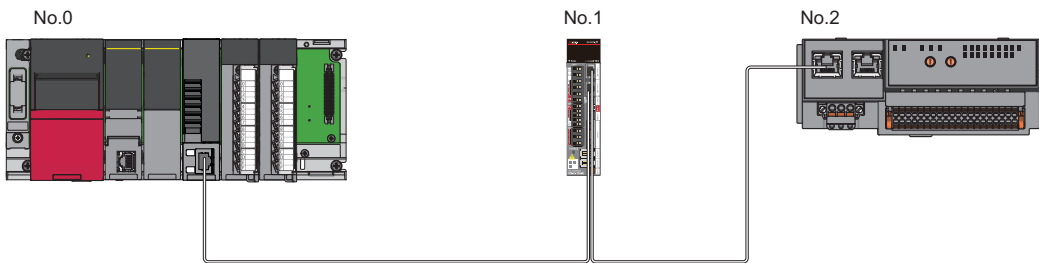
This section describes the communication example of the system using the Safety CPU.

### System configuration example

The following system configuration is used to explain communications using the Safety CPU.

#### System configuration

- Power supply module: R61P
- Safety CPU: R08SF CPU
- Safety function module: R6SFM
- Motion module: RD78G16
- Drive unit: MR-J5-G-RJ
- Remote I/O module with safety functions: NZ2GNSS2-16DTE

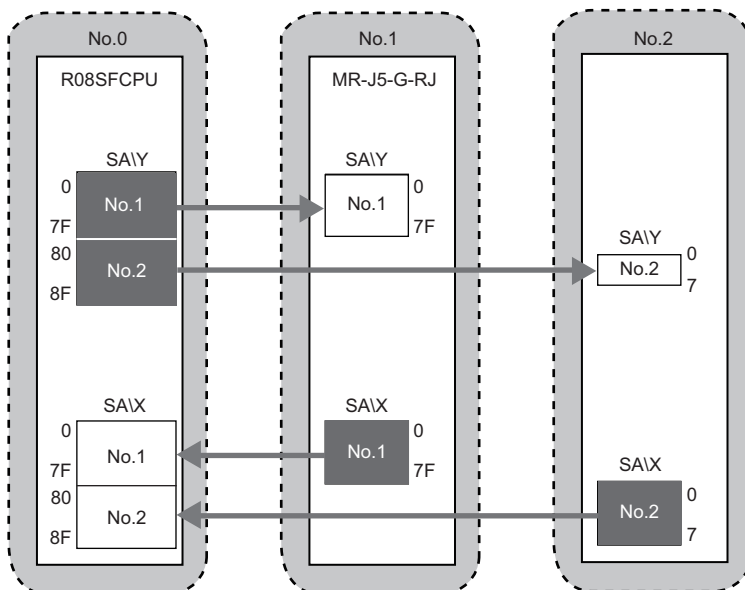


In this program example, I/O devices are connected to X0, X1 (double input) and Y0, Y1 (double output) of the remote station. For combination with connection device, refer to "Relevant functions" under "Connectable device to CC-Link IE TSN" in the following manual.

📖 MELSEC iQ-R Motion Module User's Manual(Application)

#### Safety device assignment

The following figure shows safety device assignment to be set in "Safety Communication Setting" under "Basic Settings".



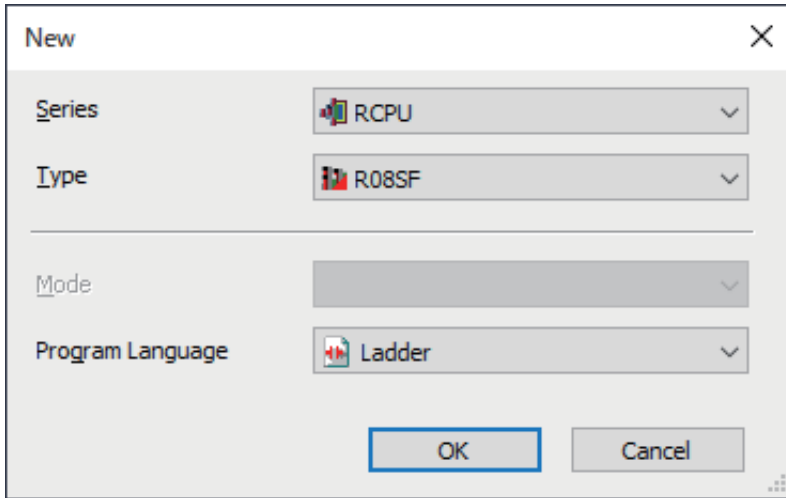


# Setting in the master station

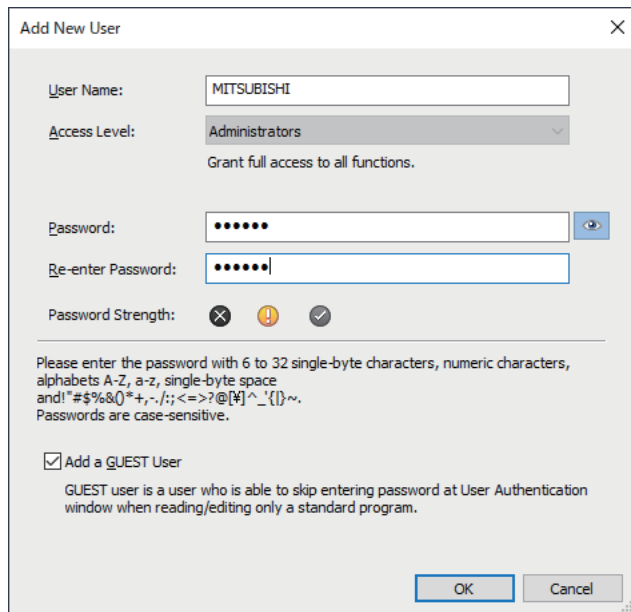
Connect the engineering tool to the Safety CPU of the master station and set parameters.

1. Set the Safety CPU as follows.

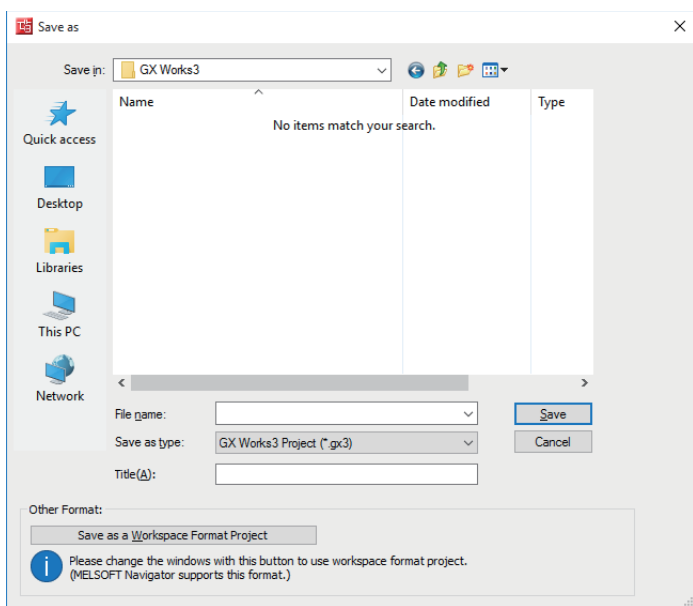
 [Project] ⇒ [New]



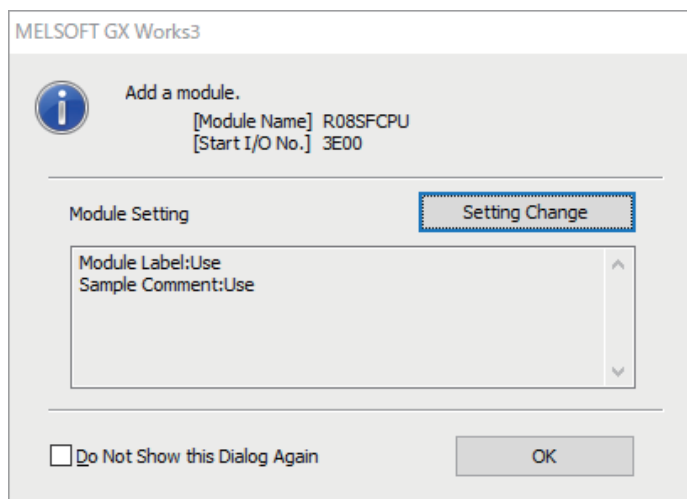
2. In the following window, enter a password and re-enter password, and click the [OK] button.



3. In the following window, enter a file name, and click the [Save] button.



4. Click the [Setting Change] button to use the module labels of the CPU module.



5. Add the safety program in the following.

Navigation window ⇒ "Program" ⇒ "Fixed Scan" ⇒ Right-click ⇒ [New Data]

Basic Setting	
Category	Safety
Data Type	Program Block
(Data Name)	ProgPou1

Detail Setting	
Program Configuration	
Program Language	Ladder
Program file	
Execution type	Fixed Scan
Program file for add destination	MAIN1

6. Add the safety global label in the following.

Navigation window ⇒ "Label" ⇒ "Global Label" ⇒ Right-click ⇒ [New Data]

Basic Setting	
Category	Safety
Data Type	Global Label
(Data Name)	SGlobal

7. Set "Link Direct Device Setting" in "CPU Parameter" to "Extended Mode (iQ-R Series Mode)".

"Navigation window" ⇒ "CPU Parameter" ⇒ "Memory/Device Setting" ⇒ "Link Direct Device Setting" ⇒ "Link Direct Device Setting"

Setting Item	
Item	Setting
+ Device/Label Memory Area Setting	
+ Index Register Setting	
+ Refresh Memory Setting	
+ Device Latch Interval Setting	
+ Pointer Setting	
+ Internal Buffer Capacity Setting	
- Link Direct Device Setting	
<i>Link Direct Device Setting</i>	Extended Mode (iQ-R Series Mode)

**Point**

To write module parameters of the Motion module to a Safety CPU using an engineering tool, set "Link Direct Device Setting" to "Extended Mode (iQ-R Series Mode)".

If "Link Direct Device Setting" is "Q Series Compatible Mode", "Write to PLC" cannot be executed.

8. In the I/O assignment setting, set the safety function module for slot No.0.

"Navigation window" ⇒ "Parameter" ⇒ "System Parameter" ⇒ "I/O Assignment" tab ⇒ "I/O Assignment Setting"

Add New Module ×

---

**Module Selection**

Module Type: CPU Extension

Module Name: R6SFM

Station Type:

---

**Advanced Settings**

**Mounting Position**

Mounting Base: Main Base

Mounting Slot No.: 0

Start I/O No. Specification: Not Set

Start I/O No.: 0000 H

Number of Occupied Points per 1 Slot: 16 Points

---

**Module Name**

Select module name.

9. Set the Motion module for slot No.1.

10. Click the [OK] button to use the module labels of the safety function module.

11. Click the [OK] button with the setting not to use the module labels of the Motion module.

12. Set the items in "Required Settings" as follows.

"Navigation window" ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16" ⇒ "Required Settings"

Setting Item	
Item	Setting
<b>Station Type</b>	
Station Type	Master Station
<b>Network No.</b>	
Network No.	1
<b>Station No./IP Address Setting</b>	
Station No.	
Station No.	0
IP Address	
IP Address	192.168.3.253
Subnet Mask	. . .
Default Gateway	. . .

13. Set the network configuration as follows.

"Navigation window" ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16" ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>

No.	Model Name	Motion Control Station	RX Setting Points	RY Setting Points	RWw Setting Points	RWR Setting Points	Parameter Automatic Setting	PDO Mapping Setting	IP Address	Subnet Mask	Default Gateway	Reserved/Error Invalid Station	Network Synchronous Communication	Communication Period Setting	Alias	Station Information Comment	Station-specific mode setting
0	Host Station								192.168.3.253								
1	MR-J5-G-R	<input checked="" type="checkbox"/>			24	20	<input type="checkbox"/>	<Detail Setting>	192.168.3.1			No Setting	Asynchronous	Basic Period			Motion Mode (Safety)
2	N2ZGH2B1-3Z0TE	<input checked="" type="checkbox"/>	32	32	4	4	<input type="checkbox"/>	<Detail Setting>	192.168.3.2			No Setting	Asynchronous	Basic Period			

- RX/Ry setting of the remote station is used as a remote control and monitor input signal in standard communications.

**Point**

When setting the safety communication, set "Station-specific mode setting" of the drive unit to "Motion Mode (Safety)".

14. Click the [Close with Reflecting the Setting] button to close the "CC-Link IE TSN Configuration" window.

15. Set the refresh settings as follows.

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16" ⇒ "Basic Settings" ⇒ "Refresh Settings" ⇒ <Detailed Setting>

No.	Link Side				Target	CPU Side			
	Device Name	Points	Start	End		Device Name	Points	Start	End
-	SB	2048	00000	007FF	Specify Device	SB	2048	00000	007FF
-	SW	512	00000	001FF	Specify Device	SW	512	00000	001FF
1	RX	256	00000	000FF	Specify Device	X	256	01000	010FF
2	RY	1024	00000	003FF	Specify Device	Y	1024	01000	013FF
3	RWw	20	000000	00013	Specify Device	W	20	000000	00013
4	RWw	32	000000	0001F	Specify Device	W	32	00100	0011F

16. Log on to the programmable controller.

[Online] ⇒ [User Authentication] ⇒ [Log on to PLC]

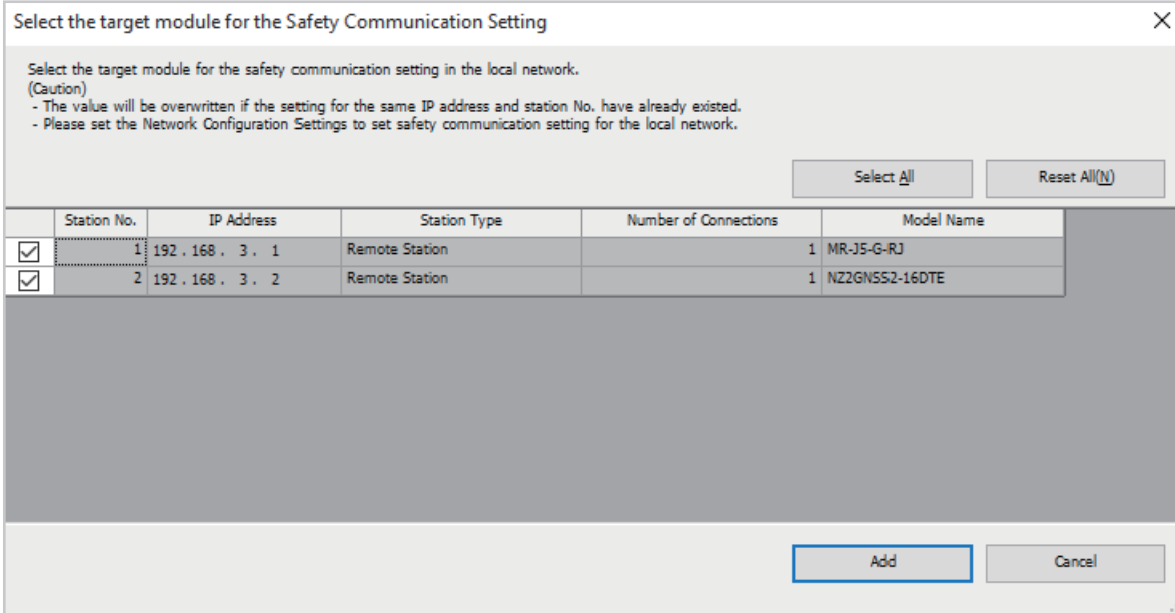
If logon fails, writing user information or initializing all information of the programmable controller is required. (GX Works3 Operating Manual)

17. Set "To Use or Not to Use the Safety Communication Setting" to "Use".

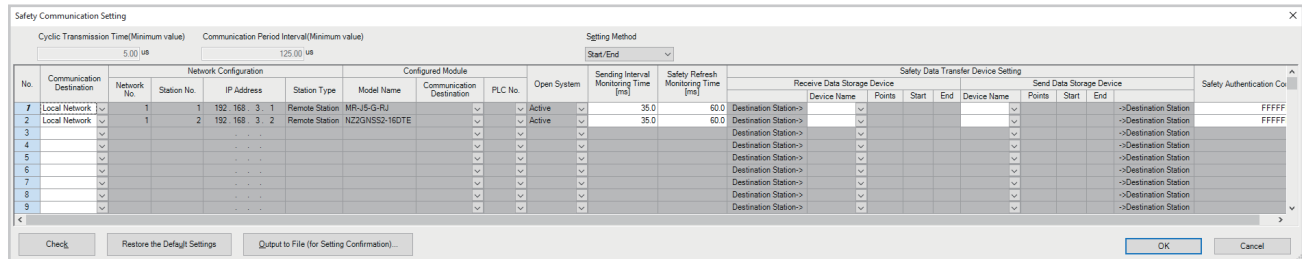
☞ "Navigation window" ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16" ⇒ "Basic Settings" ⇒ "Safety Communication Setting" ⇒ "To Use or Not to Use the Safety Communication Setting"

18. Select "Local Network" from "Communication Destination" in "Safety Communication Setting" window and set the destination module in "Select the target module for the Safety Communication Setting" window.

☞ "Navigation window" ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16" ⇒ "Basic Settings" ⇒ "Safety Communication Setting" ⇒ "To Use or Not to Use the Safety Communication Setting" ⇒ <Detailed Setting>



19. Set the safety communication setting as follows.



20. Click the [Apply] button.

21. Write the set parameters to the Safety CPU on the master station.

☞ [Online] ⇒ [Write to PLC]

22. Visually check if the safety communication setting is correctly written after writing parameters. For how to check the parameters, refer to the following.


📖 GX Works3 Operating Manual

23. Reset the CPU modules or power off and on the system.

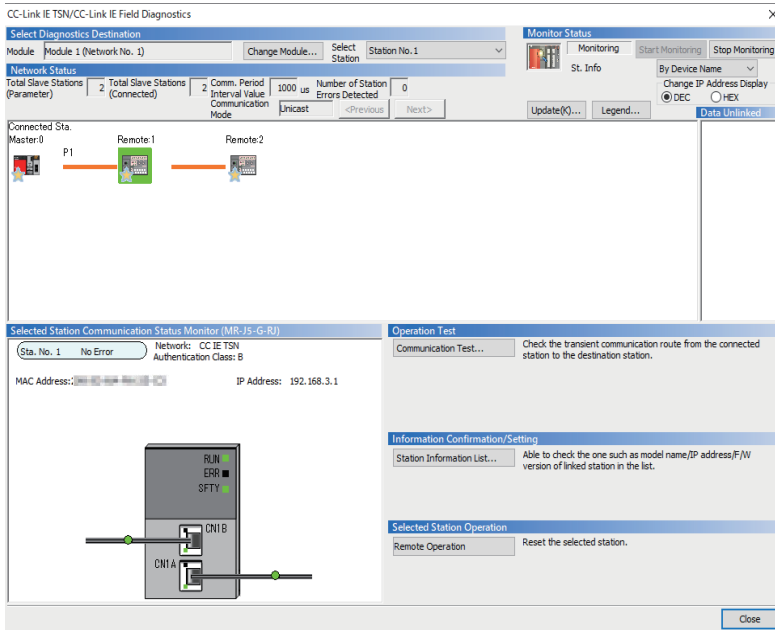
# Checking the network status


After starting up the system, check whether a data link can be normally performed. Use the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool to check the status.

1. Connect the engineering tool to the Safety CPU on the master station.
2. Start the CC-Link IE TSN/CC-Link IE Field diagnostics.

 [Diagnostics] ⇒ [CC-Link IE TSN/CC-Link IE Field Diagnostics]

If the following display appears, a data link is normal.



If an error icon appears in "Network Status" area in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window, use the CC-Link IE TSN/CC-Link IE Field diagnostics to identify the cause of the error and take corrective actions. ( Page 217 Checking the Network Status)



# PART 2

# Simple Motion MODE

4 FUNCTIONS

---

5 PARAMETER SETTINGS

---

6 PROGRAMMING

---

# 4 FUNCTIONS

## 4.1 Cyclic Transmission

This section describes periodic data communications among stations on the network using link devices.

- The link devices can be assigned in "Network Configuration Settings" under "Basic Settings". (☞ Page 186 "CC-Link IE TSN Configuration" window)
- The link refresh is assigned in "Refresh Settings" under "Basic Settings". (☞ Page 173 Refresh Settings)

Cyclic transmission operates as follows with the communication mode set by the module parameter of the master station.

The communication mode of the Motion module is fixed to the unicast mode.

Communication mode	Description
Unicast mode	Cyclic data is sent to one station.

RX, RY, RWr, and RWw of standard stations are assigned to the link device area according to the parameter setting. For the access to the link device area, refer to the following.

☞ Page 121 Master station and remote stations (standard stations)

For RX, RY, RWr, and RWw of motion control stations, refer to the following.

☞ Page 122 Master station and remote stations (motion control stations)

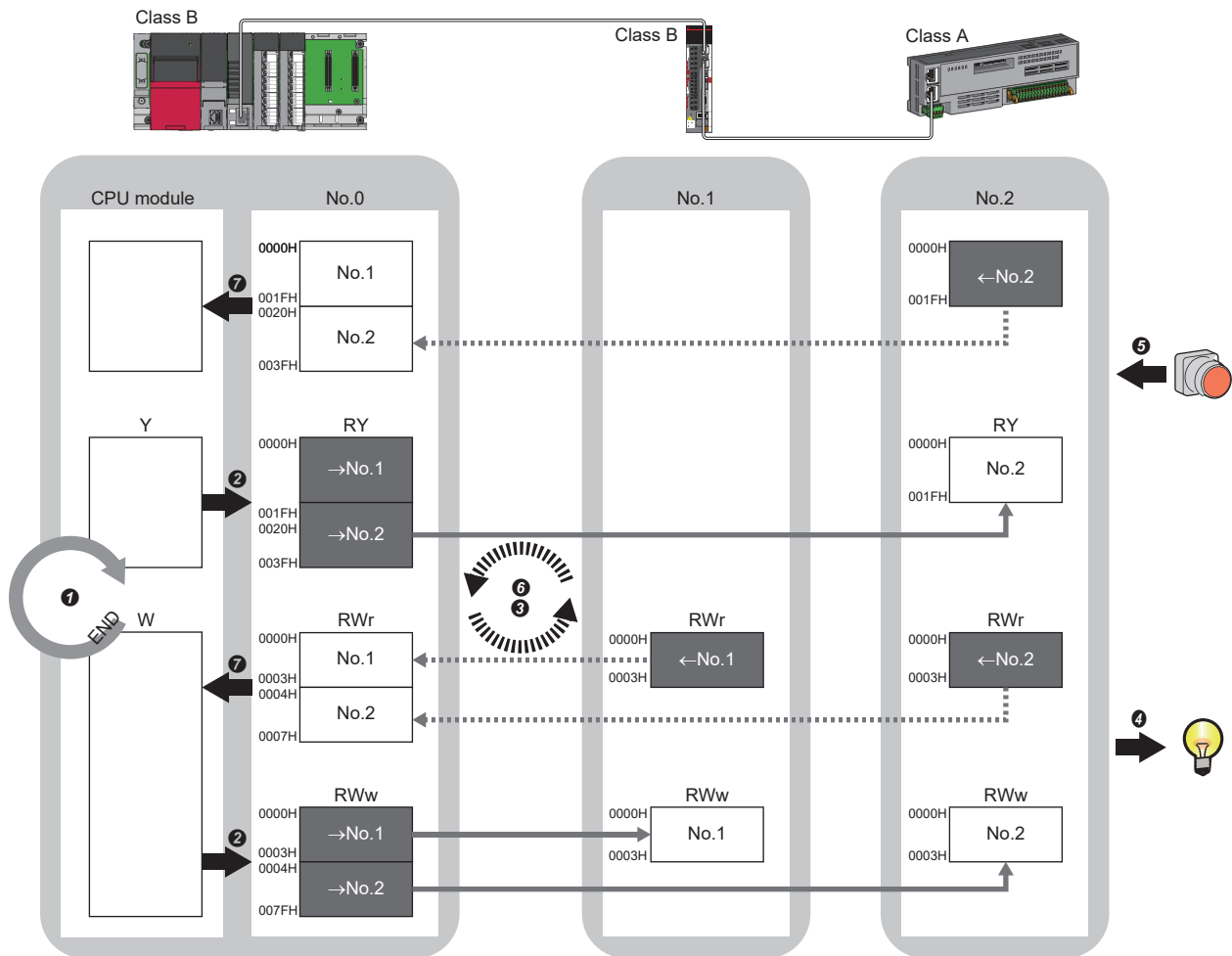
# Communications using RX, RY, RWr, and RWw

This allows data to be exchanged in units of bits and in units of words between the master station and slave station.

## Master station and remote stations (standard stations)

### ■ Unicast mode

1:1 communications between the master station and each remote station (standard station). Remote stations do not communicate with each other.



No.0, No.1, No.2: Station No.0 (master station), station No.1, station No.2  
 →No.1, →No.2: Send range: to station No.1, send range: to station No.2  
 ←No.1, ←No.2: Send range: from station No.1, send range: from station No.2  
 Class A: Authentication Class A device  
 Class B: Authentication Class B device

#### • Output from the master station

- ① The device of the CPU module turns on.
- ② The device status of the CPU module is stored in the link devices (RY, RWw) of the master station by link refresh.
- ③ The status of the link devices (RY, RWw) of the master station is stored in the link devices (RY, RWw) of each remote station by cyclic data transfer processing.
- ④ The status of the link devices (RY, RWw) of the remote station is output to the external device.

#### • Input from the remote station

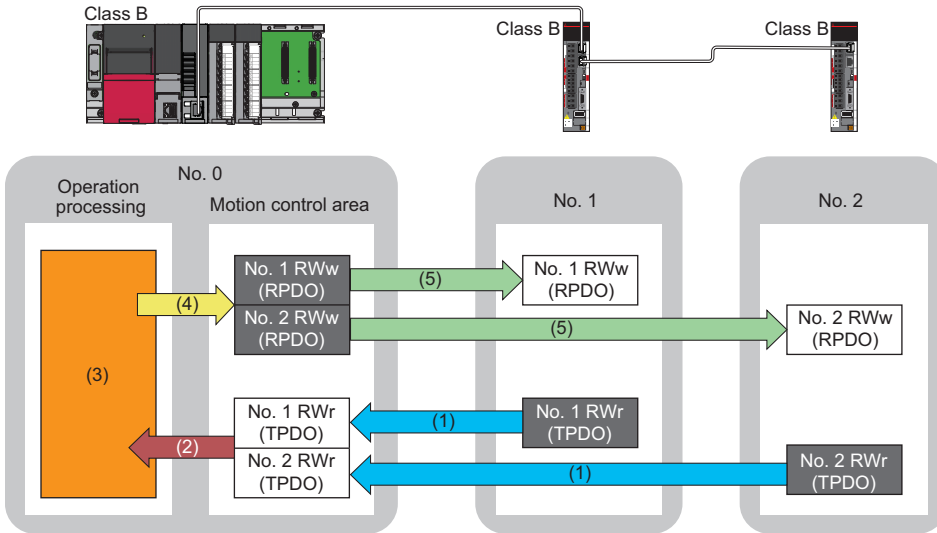
- ⑤ The status of the external device is stored in the link devices (RX, RWr) of the remote station.
- ⑥ The status of the link devices (RX, RWr) of the remote station is stored in the link devices (RX, RWr) of the master station by cyclic data transfer processing.
- ⑦ The status of the link devices (RX, RWr) of the master station is stored in the devices of the CPU module by link refresh.

# Master station and remote stations (motion control stations)

## ■ Unicast mode

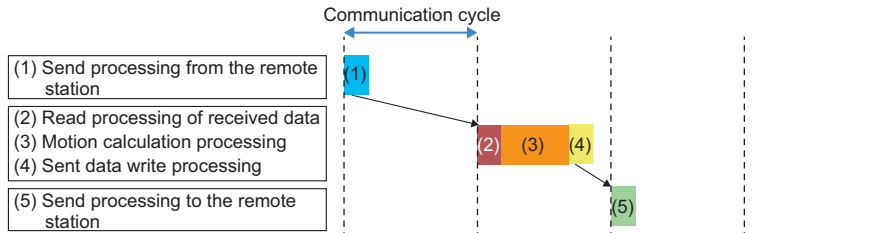
Devices of a motion control station (RX, RY, RWw, and RWr) are assigned to the motion control area (which cannot be referenced from the CPU module) instead of the link device area of the Motion module (which can be referenced from the CPU module). 1:1 communications between the Motion module and motion control station.

The Motion module operates the cyclic data in the motion control area by motion calculation. At least three cycles are required for feedback to the cyclic data sent from a motion control station.



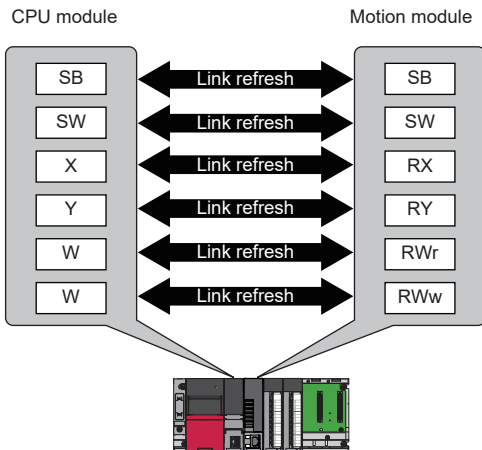
No. 0, No. 1, No. 2: Station No. 0 (master station), station No. 1, station No. 2

- (1) Sending from the remote station
- (2) Reading the received data
- (3) Motion calculation
- (4) Writing the sent data
- (5) Sending to the remote station



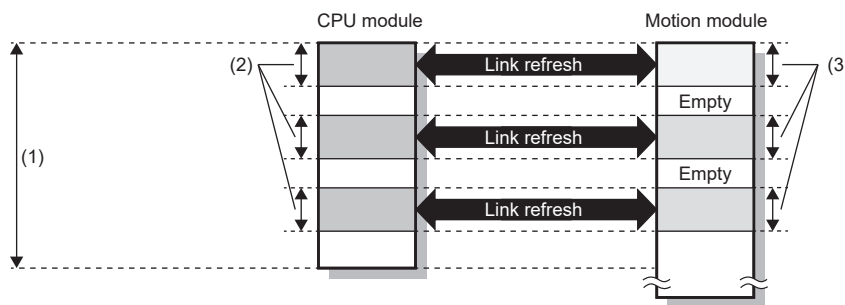
# Link refresh

This function automatically transfers data between the devices of the Motion module and CPU module.



## Concept of the link refresh range (number of points)

The link refresh is performed in the range set in "Refresh Settings" under "Basic Settings" and also specified in "Network Configuration Settings".



- (1) Range set in "Refresh Settings" under "Basic Settings"
- (2) Actual link refresh range
- (3) Range set in "Network Configuration Settings" under "Basic Settings"

## Shortening the transmission delay time

The transmission delay time can be shortened by reducing the number of link refresh points and shortening a communication cycle interval. (👉 Page 328 Communication cycle interval)

The following methods can be used to reduce the number of the link refresh points.

- In "Refresh Settings" under "Basic Settings", set only the link devices that are frequently used in the CPU module in the link refresh range. (👉 Page 173 Refresh Settings)
- Remove the link devices that are infrequently used in the CPU module from the link refresh range, and directly read/write the corresponding data from/to the program by direct access. (👉 Page 125 Direct access to link devices)

**Point** 🔍

Link refresh is performed in END processing of the sequence scan of the CPU module.

## Setting method

The link refresh is assigned in "Refresh Settings" under "Basic Settings". (📖 Page 173 Refresh Settings)

## Precautions

### ■ Latched devices of the CPU module

If data in latched devices of the CPU module are cleared to 0 on a program when the CPU module is powered off and on or reset, the data may be output without being cleared to 0, depending on the timing of the cyclic data transfer processing and link refresh.

CPU module device	How to disable the device data
Latch relay (L), file register (R, ZR)	The device value is cleared to 0 by using the initial device value of the CPU module.*1
CPU module device within the latch range	Delete all the latch range settings specified in "Latch Interval Operation Setting" under "Device Latch Interval Setting" in "Memory/Device Setting" of "CPU Parameter".

\*1 For the initial device value setting of the CPU module, refer to the following.

📖 GX Works3 Operating Manual

# Direct access to link devices

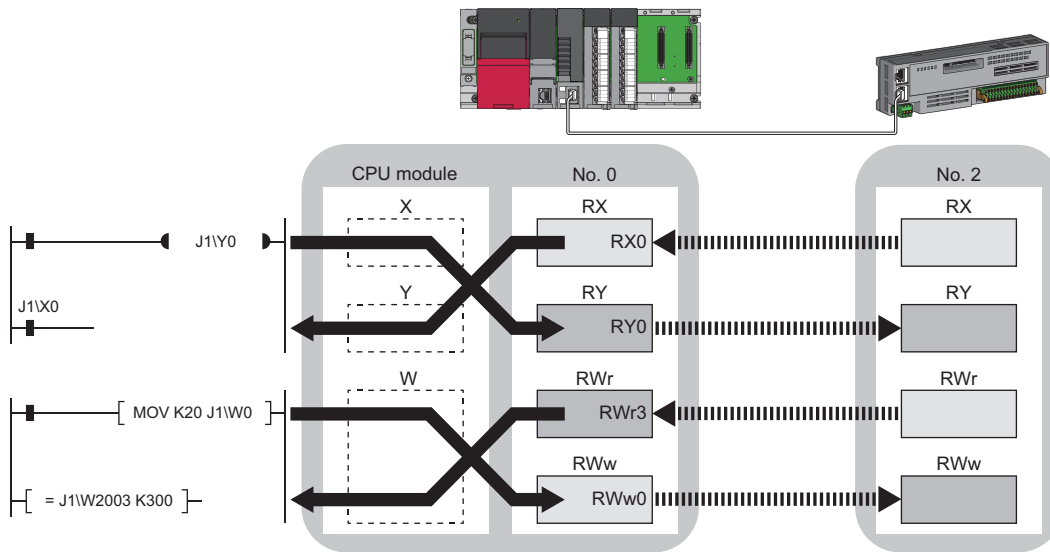
This function directly reads/writes data from/to the link devices of the Motion module from the program.  
Specify a link device as the link direct device (J□\□) for direct access.

## Specification method

Specify the network No. and the link device of the Motion module for reading or writing.

- J□\□  
↑ ↑  
(1) (2)
- (1) Network number: 1 to 239
  - (2) Remote input (RX): X0 to X3FFF  
Remote output (RY): Y0 to Y3FFF  
Remote register (RWw): W0 to W1FFF  
Remote register (RWr): W2000 to W3FFF  
Link special relay (SB): SB0 to SBFFF  
Link special register (SW): SW0 to SWFFF

Ex.



## Readable/writable range

Data can be read or written from/to the Motion module mounted on the same base unit as the CPU module.

### ■Read

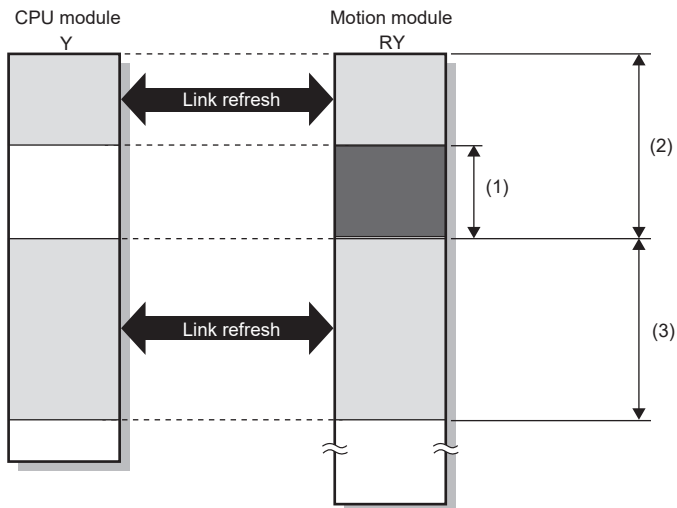
All link devices of the Motion module can be specified. (☞ Page 125 Specification method)

### ■Write

The range that satisfies all of the following conditions can be specified.

- Area where data is sent to other stations and outside the link refresh range (☞ Page 121 Communications using RX, RY, RWr, and RWw)
- Within the link device range of the Motion module (☞ Page 125 Specification method)

Ex.



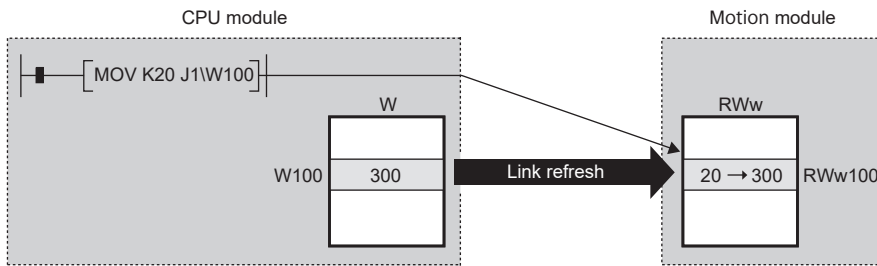
- (1) Out of the link refresh range (Data can be written here.)  
(2) Area where data is sent to other stations  
(3) Area for receiving data from other stations



When writing data to the area in the link refresh range, directly access the link device and write the same data in the device of the CPU module.

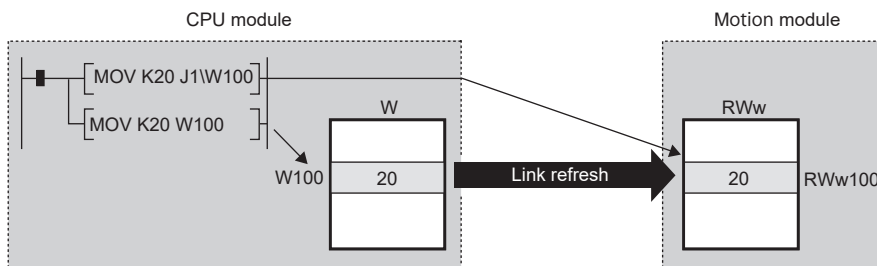
- Bad example (Directly accessing the link refresh target only)

Link refresh overwrites the value.



- Good example (Directly accessing the link device as well as writing the same data to the device of the CPU module)

The value written by the direct access is reflected.



## Differences from link refresh

Item	Access method	
	Link refresh	Direct access
Number of steps	1 step	2 steps
Processing speed	High speed	Low speed*1
Cyclic data assurance	Available	Not available

\*1 For the instruction processing time when link direct devices (J□\□) are used, refer to the following.

📖 MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)

## Shortening the transmission delay time

The transmission delay time can be shortened by reducing the number of link refresh points and shortening a communication cycle interval. (👉 Page 328 Communication cycle interval)

The following methods can be used to reduce the number of the link refresh points.

- In "Refresh Settings" under "Basic Settings", set only the link devices that are frequently used in the CPU module in the link refresh range. (👉 Page 173 Refresh Settings)
- Remove the link devices that are infrequently used in the CPU module from the link refresh range, and directly read/write the corresponding data from/to the program by direct access.

### Point

Link refresh is performed in END processing of the sequence scan of the CPU module.

## Precautions

### ■Cyclic data assurance

The direct access to link devices does not provide station-based block data assurance. (👉 Page 129 Cyclic data assurance)

### ■Link direct device in a multiple CPU system

In a multiple CPU system, link direct devices cannot be used for the CC-Link IE Controller Network-equipped module controlled by another CPU module.

# Cyclic data assurance

This function assures the cyclic data assurance in units of 32 bits or station-based units.

○: Assured, ×: Not assured

Method	Description	Link refresh		Direct access to link devices		Access to buffer memory	
		Standard station	Motion control station	Standard station	Motion control station	Standard station	Motion control station
32-bit data assurance	Assures data in 32-bit units. Data is automatically assured by satisfying assignment conditions of link devices.	○	×	○	×	○	×
Station-based block data assurance	Assures data in station-based units. Data is assured by enabling the station-based block data assurance in the parameter setting.	○	×*1	×	×	×	×

\*1 The operation is performed with the setting of "Disable" regardless of the setting value.

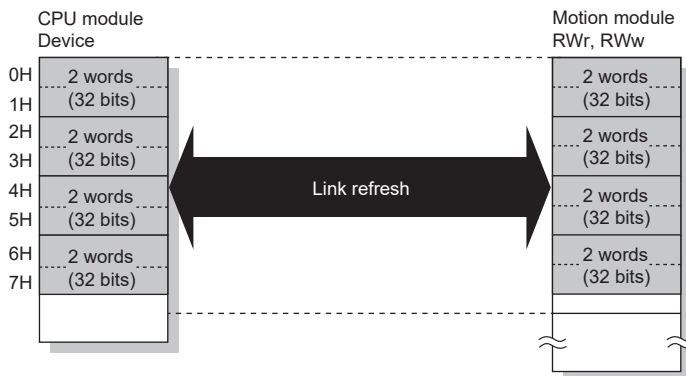
## 32-bit data assurance

The RWr and RWw data can be assured in 32-bit units.

### ■Data assurance at the time of direct access to link devices

When link refresh target devices are accessed, the 32-bit data can be assured by satisfying the following conditions:

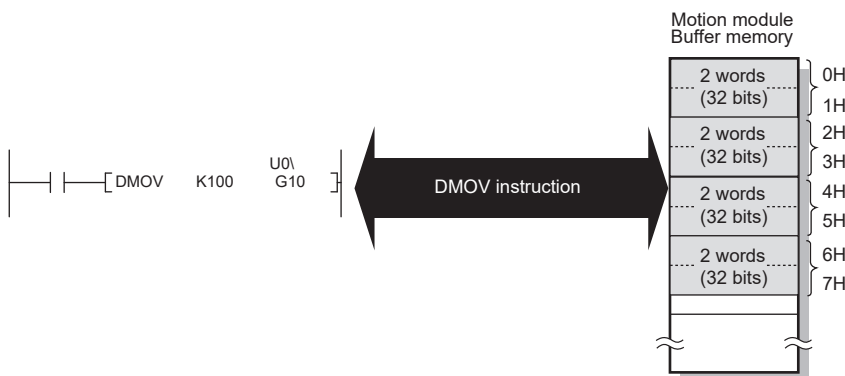
- The start device No. of RWr and RWw is multiples of 2.
- The number of points assigned to RWr and RWw is multiples of 2.



### ■Data assurance at the time of access to buffer memory

The 32-bit data can be assured by satisfying the following conditions:

- Access using the DMOV instruction
- The start address of the buffer memory is a multiple of 2.



## Station-based block data assurance

Integrity of the cyclic data is assured for each station by handshake between the CPU module and the Motion module for a link refresh.

### ■Setting

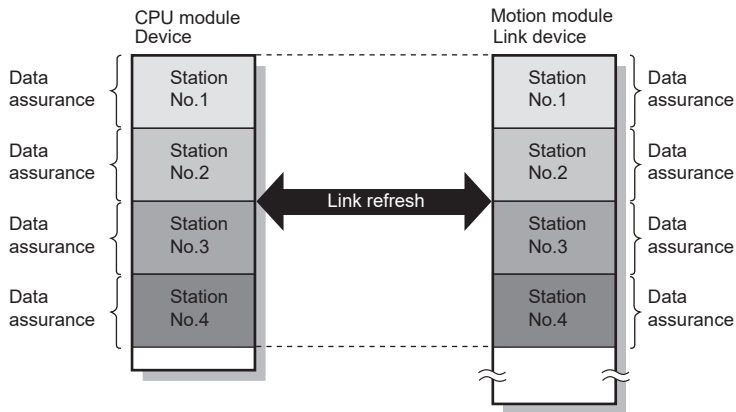
Set station-based block data assurance in "Supplementary Cyclic Settings" under "Application Settings" of the master station.

( Page 183 Application Settings)

Once this setting is enabled on the master station, the data for all stations is assured for each station.

### ■Access to link devices

During a link refresh, data is assured for each station as shown below.

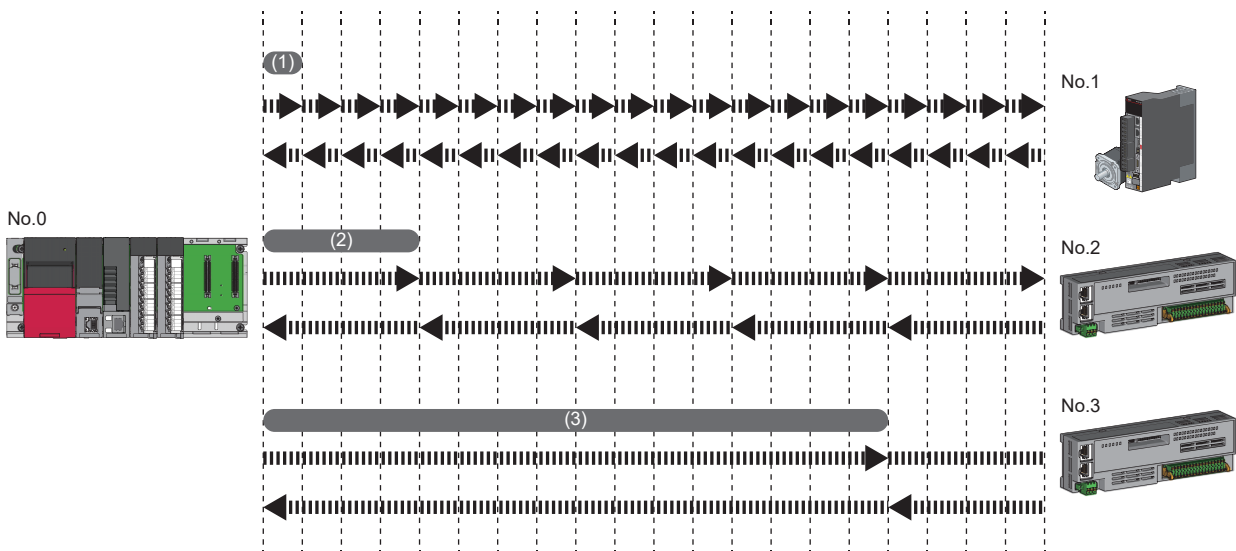


# Communication cycles coexistence

When slave stations with different communication cycles are included in the network, multiple communication cycles according to each slave station are used for communications.

The time for each communication cycle is the total time of cyclic transmission, transient transmission, and system reservation time.

Even if slave stations with different communication cycles are connected to a network, a slave station with a high-speed communication cycle is not affected by a slave station with a low speed.



- (1) Basic cycle
- (2) Normal speed
- (3) Low speed

## Point

If a motion control station is set to normal or low speed cycle, an error "Network parameter error" (error code: 2221H) occurs.

## Setting method

The master station communicates with slave stations by using three communication cycles that are the basic cycle under "Basic Period Setting", and "Normal-Speed" and "Low-Speed" under "Multiple Period Setting". (Page 177 Communication Period Setting)

The communication cycle of each slave station can be selected from "Basic Period", "Normal-Speed", or "Low-Speed" in "Network Configuration Settings" under "Basic Settings".

## I/O maintenance settings

When using cyclic transmission, set whether to hold or clear output or input by using the following settings. (📖 Page 184 Supplementary Cyclic Settings)

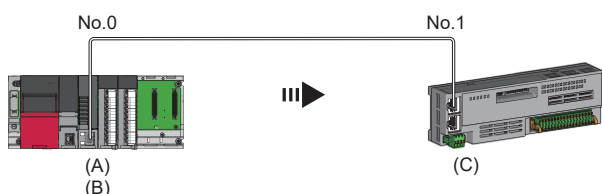
- "Output Mode upon CPU Error" when a stop error occurs in the CPU module
- "Output Hold/Clear Setting during CPU STOP" when the status of the CPU module is changed from RUN to STOP
- "Data Link Faulty Station Setting" when disconnected

🔗 "Application Settings" ⇒ "Supplementary Cyclic Settings" ⇒ "I/O Maintenance Settings"

### Point

Motion control stations operate as "Hold" even if the parameters are set to "Clear".

## Input data hold/clear operation



### ■If a CPU module stop error occurred

- If both "Output Mode upon CPU Error" and "Output Hold/Clear Setting during CPU STOP" are "Hold", the last output data set is sent to the slave station.
- If "Output Mode upon CPU Error" or "Output Hold/Clear Setting during CPU STOP" is "Clear", cleared data is sent to the slave station.

### ■If the CPU module changed from RUN to STOP

- If "Output Hold/Clear Setting during CPU STOP" is "Hold", the last output data set is sent to the slave station.
- If "Output Hold/Clear Setting during CPU STOP" is "Clear", cleared data is sent to the slave station.

### ■If a disconnection occurred

- If "Data Link Faulty Station Setting" is "Hold", input data before disconnection is held on the receiving side.
- If "Data Link Faulty Station Setting" is "Clear", input data on the receiving side is cleared.

## Devices where the hold/clear setting is enabled

The following table and figure show devices for which the hold/clear settings are enabled.

Setting items	Hold/clear settings are enabled	Hold regardless of setting	Clear regardless of setting
Output mode upon CPU error	RY	—	—
Output hold/clear setting during CPU STOP	RY (if the link refresh source device is other than Y)	RWw	RY (if the link refresh source device is Y)
Data link faulty station setting	RX	RWr	—

## Precautions

### ■When "Output Hold/Clear Setting during CPU STOP" is set to "Clear"

When the CPU module is in the STOP state, the forced output to slave stations cannot be executed using the engineering tool.

### ■When the direct access to link devices

The output of "Output Hold/Clear Setting during CPU STOP" is enabled.

### ■When the Safety CPU is used

When the safety operation mode is set to the safety mode, the data is cleared even when "Output Hold/Clear Setting during CPU STOP" is set to "Hold".

## Output data hold/clear operation during CPU STOP

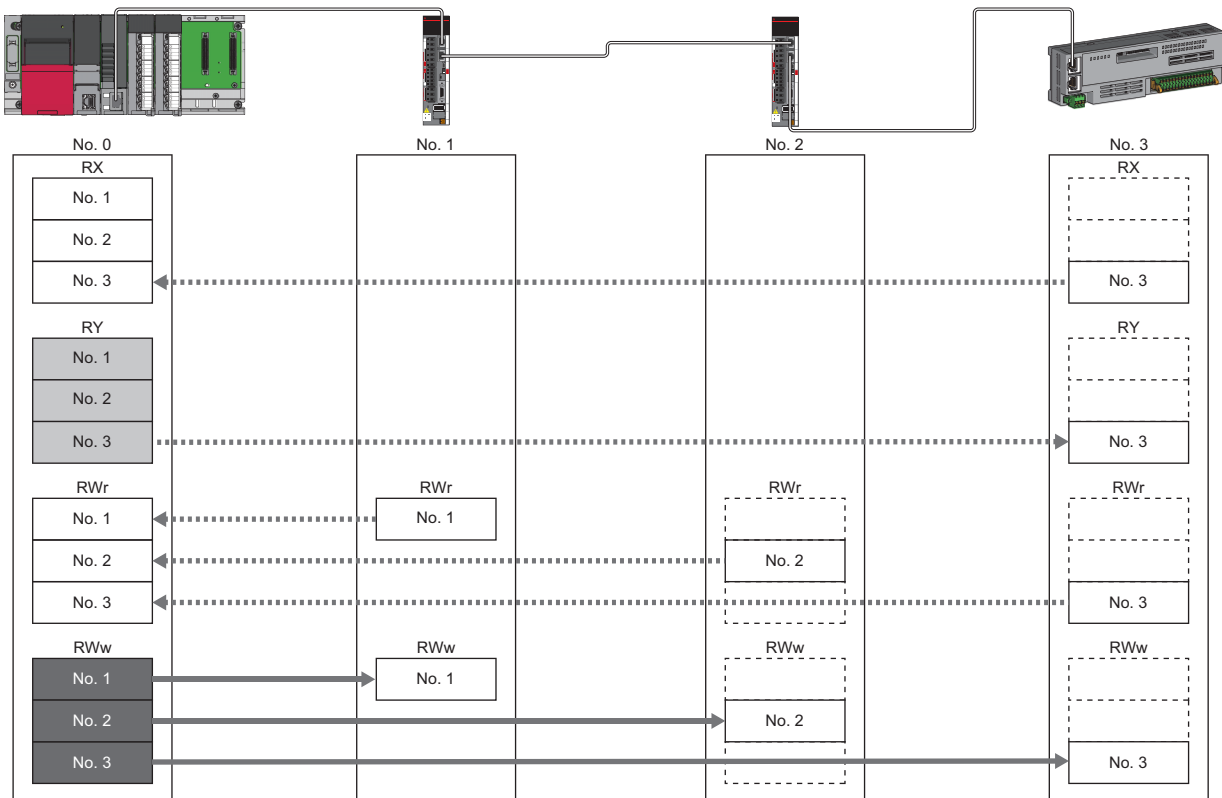
The following figure shows the devices where the setting of "Output Hold/Clear Setting during CPU STOP" is enabled when the CPU module changes from RUN to STOP.

### Point

Even if the Motion module is changed from RUN to STOP, it is not affected by this setting, and the output data does not change even if the Motion module is stopped.

The program is changed from STOP to ON when the PLC ready [Y0] is turned on.

### Unicast mode



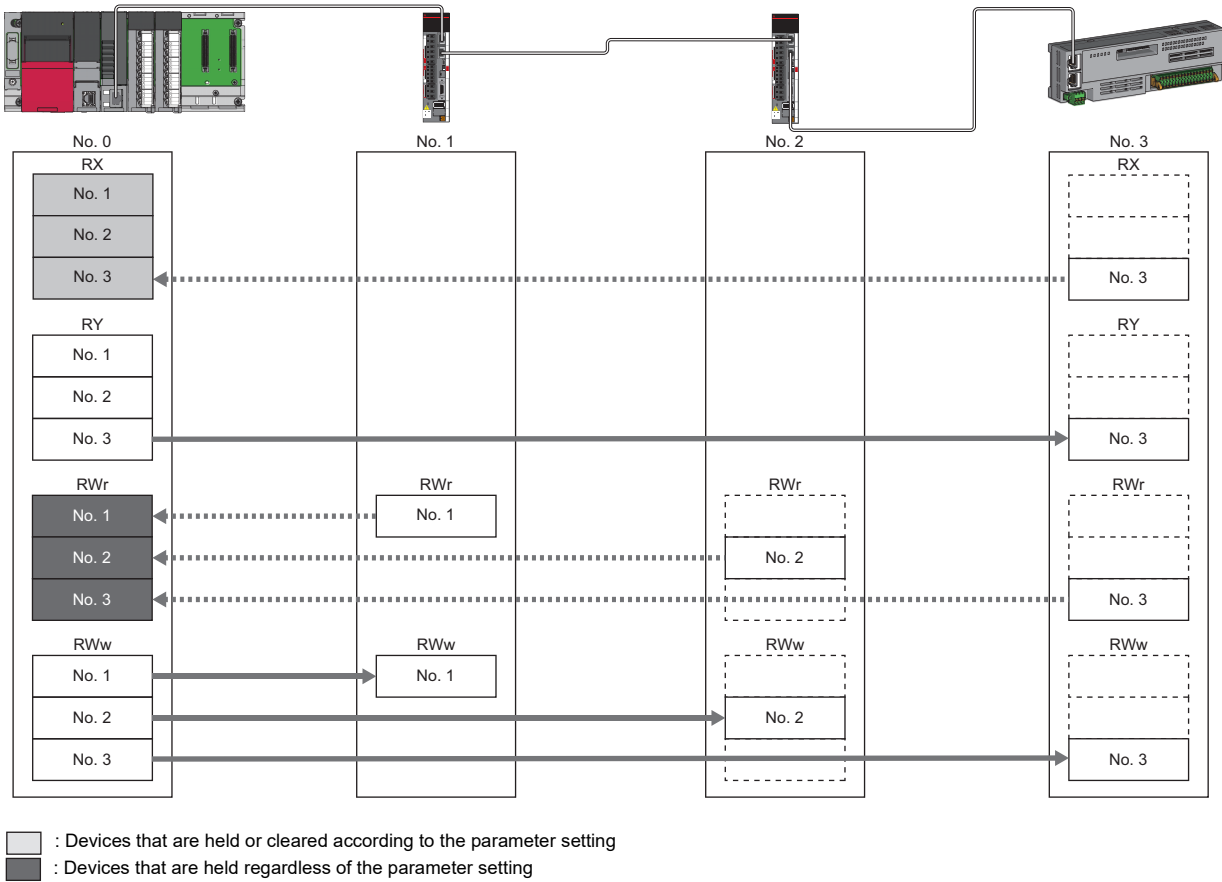
□ : When the link refresh source is set to other than Y, data is held or cleared according to the parameter setting. When the link refresh source is set to Y, data is cleared regardless of the parameter setting.

■ : Data is held regardless of the parameter setting.

## Input data hold/clear operation from the data link faulty station

The following figure shows the devices where "Data Link Faulty Station Setting" is enabled when each station becomes faulty.

### ■ Unicast mode






## Remote device test

The output of the standard remote station can be turned on or off when the CPU module is in STOP state.

Ordinarily, the output of the remote station with the output HOLD/CLEAR setting function cannot be turned on or off. In that case, use the remote device test function.

When checking the connection between the standard remote station and the external device by turning the remote output on or off, the connection can be checked during CPU STOP (without using a program) if the remote device test is used.

For the output HOLD/CLEAR setting function, refer to the following.

 Manual for the remote station used

### Restriction

Since a motion control station always operates as CPU RUN state regardless of the actual state of the CPU module, the output can be changed even during CPU STOP.

### Output hold/clear setting during CPU STOP

The following shows the current value of RY when "Output Hold/Clear Setting during CPU STOP" is set to "Clear".

- When the remote device test is disabled ('Remote device forced output request' (SB0016) is off): The current value of RY is cleared.
- When the remote device test is enabled ('Remote device forced output request' (SB0016) is on): The current value of RY is output and can be checked.

### Output value in the standard remote station when the remote device test is enabled

The following table lists outputs in the standard remote station according to the operating status of the CPU module.

Operating status of the CPU module on the master station	Output Hold/Clear Setting during CPU STOP of the CPU module on the master station	Setting of the output HOLD/CLEAR setting function on the standard remote station	Output of the standard remote station <sup>*1</sup>
RUN or PAUSE	Hold	Hold	Current value of RY
		Clear	
	Clear	Hold	
		Clear	
RUN→STOP	Hold	Hold	
		Clear	
	Clear	Hold	
		Clear	
When a stop error occurs	Hold	Hold	Fixed to the value prior to STOP
		Clear	Fixed to 0
	Clear	Hold	Fixed to the value prior to STOP
		Clear	Fixed to 0

\*1 The output of the remote station is RWW for the digital-analog converter module on CC-Link IE TSN.


### Setting method

Execute the remote device test according to the following procedure.

1. Set the RUN/STOP/RESET switch to the STOP position of the CPU module.
2. Turn off and on the 'Remote device forced output request' (SB0016) to start the remote device test.
3. Check that the 'Remote device forced output request accept' (SB0086) and 'Remote device forced output status' (SB0087) are on. (In addition, check that the 'Remote device forced output result' (SW025A) is 0 (no error).)
4. Check by turning on or off the output of the remote station.
5. Turn on and off the 'Remote device forced output request' (SB0016) to end the remote device test.

---

After starting the remote device test, errors can be checked by the 'Remote device forced output result' (SW025A).

If an error has occurred, the error code is stored. Take actions according to the error code. (  Page 238 List of Error Codes)

---

## Precautions

### ■ Conditions

- The remote device test does not start even if the 'Remote device forced output request' (SB0016) is turned off and on while the CPU module is in RUN or PAUSE state.
- Even if the CPU module is changed to STOP state after the 'Remote device forced output request' (SB0016) is turned off and on, the remote device test does not start.
- If the CPU module is changed to RUN or PAUSE state during the remote device test, the remote device test ends.

### ■ Output HOLD/CLEAR setting function

- During the remote device test, the output HOLD/CLEAR setting function of the remote station is disabled, and the output of the remote station is turned on or off by the master station. The output HOLD/CLEAR setting function is also disabled for all remote stations including the remote station whose output is to be turned on or off.
- If a stop error occurs in the CPU module during the remote device test, the test ends and the data is output from the remote station according to the output HOLD/CLEAR setting function.

# CANopen communications

CANopen communications are used for controlling a device that supports the CANopen profile.

The CANopen communication can control a device that supports the CANopen profile with the SDO communication by transient transmission and the PDO communication by cyclic transmission. The SDO communication reads/writes objects non-periodically by using the SLMPSND instruction to send a command for accessing the CAN application object to the target slave station.

For details of the commands for accessing the CAN application objects, refer to the following.

📖 Page 341 SLMP Command for Accessing the CAN Application Object

For details on the SLMPSND instruction, refer to the following.

📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

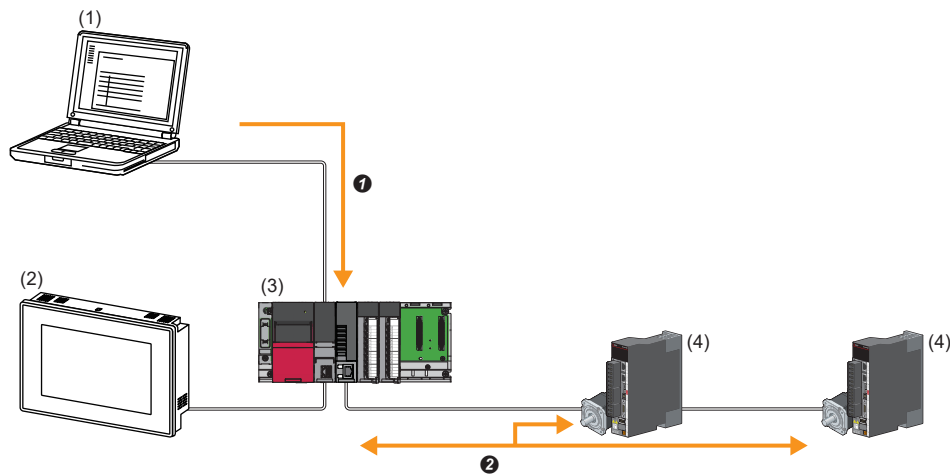
The PDO communication reads/writes objects defined with the PDO mapping by using the cyclic transmission.

The PDO mapping of the Motion control station is automatically set according to the device connected with the Motion module. For details of the PDO mapping of the Motion control station, refer to "Devices Compatible with CC-Link IE TSN" in the following manual.

📖 MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)

The PDO mapping of the standard station is set in "Batch Setting of PDO Mapping" or "PDO Mapping Setting".

The contents of the PDO mapping setting are sent to slave devices when the cyclic transmission with slave devices starts.

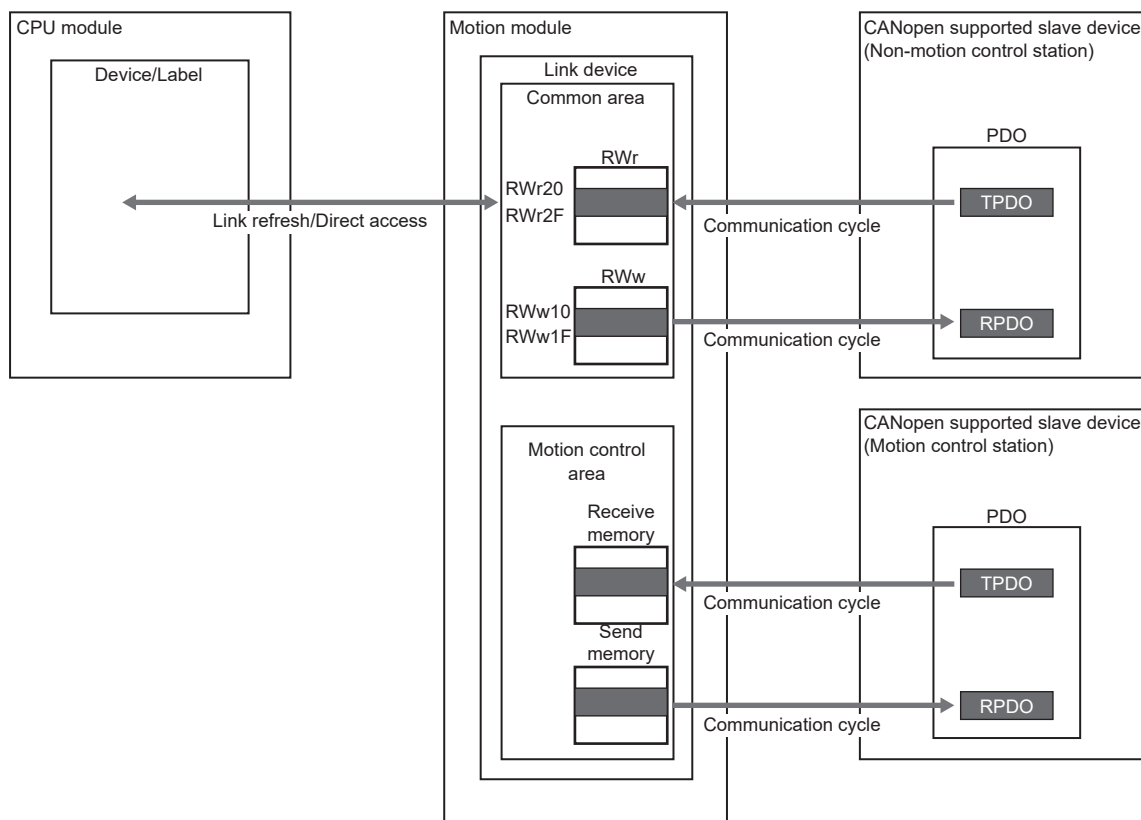


- (1) Engineering tool
- (2) HMI (Human Machine Interface)
- (3) Motion module
- (4) Drive unit
- ① Writing PDO mapping settings
- ② PDO communications

The PDO (RPDO) output from the master station and PDO (TPDO) input from the slave station are assigned as follows.

- Motion control station: Motion control area
- Standard station: RWr/RWw in common area

The PDO of the standard station can be controlled from link refresh (label/device) and direct access. The PDO of the Motion control station is controlled by the motion part, and cannot be controlled from the CPU module.



## Setting method

Set "Batch Setting of PDO Mapping" or "PDO Mapping Setting" in "Network Configuration Settings" under "Basic Settings".  
 (📖 Page 196 PDO mapping setting)

## Precautions

### ■PDO mapping setting

When a device that supports the CANopen profile is added as a standard station to "Network Configuration Settings" of the Motion module, configure "PDO Mapping Setting".

If PDO mapping setting is not configured, GX Works3 will detect the following errors.

#### When MR-J5-G is added as the slave station

- **\*\*Error\*\*** RPDO of module MR-J5-G PDO mapping setting is not set. Please set PDO mapping parameter in PDO mapping setting screen or batch setting of PDO mapping. MR-J5-G NV\_E02731
- **\*\*Error\*\*** TPDO of module MR-J5-G PDO mapping setting is not set. Please set PDO mapping parameter in PDO mapping setting screen or batch setting of PDO mapping. MR-J5-G NV\_E02732

### ■Multi-axis servo amplifier

When a multi-axis servo amplifier to the network configuration setting is added, a single slave station can use up to eight axes.

### ■Error code

If the PDO mapping settings are incorrect, the slave device responds "PDO mapping setting error" at the initial communication and the data link does not start.

For the error causes, check the response code (SDO Abort Code) (saved in the detail information of the event history) and take corrective actions. (📖 Response code (SDO Abort Code))

## 4.2 Transient Transmission

The transient transmission is used for communications at any timing and has the following three types.

☞ Page 139 Communications using a dedicated instruction

☞ Page 139 Communications using the SLMP

☞ Page 140 Communications using the engineering tool

### Communications using a dedicated instruction

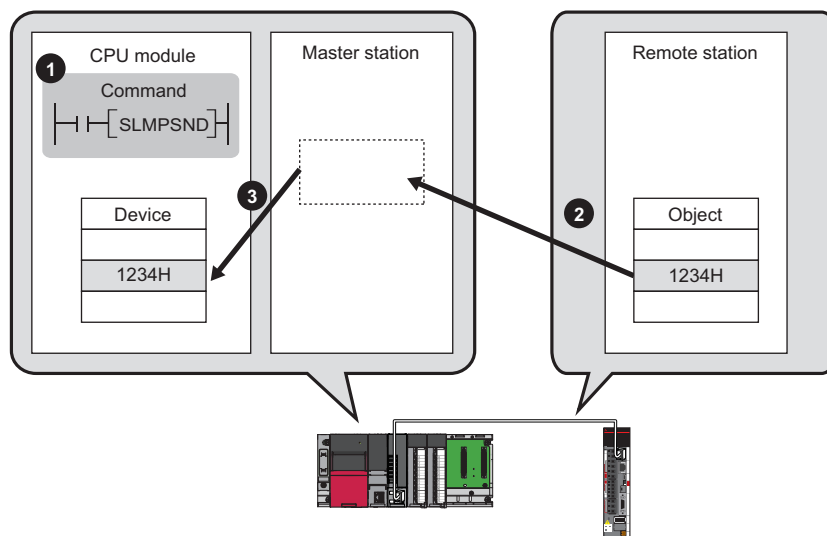
Data is read/written from the master station to a remote station using the dedicated instructions.

For dedicated instructions that can be used and details on dedicated instructions, refer to the following.

☞ Page 322 Dedicated Instruction

**Ex.**

Reading an object from the remote station using the dedicated instruction (SLMPSND instruction)

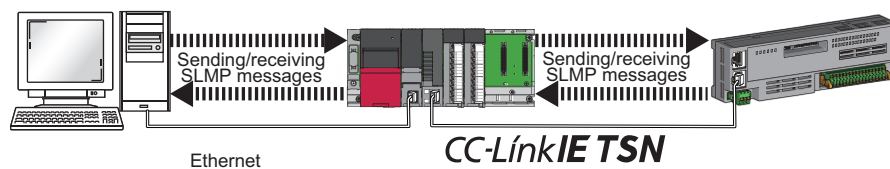


### Communications using the SLMP

By SLMP, data is read/written from the Motion module, the external device such as a personal computer or HMI (Human Machine Interface) to the master station and the remote station.

The Motion module sends and receives SLMP messages. For details on SLMP, refer to the following.

📖 SLMP Reference Manual




#### Precautions

For SLMP communications, set the same communication speed for the connected station and access destination. When different communication speeds are set for the connected station and access destination, SLMP communication may not be possible.

## Communications using the engineering tool

This type of communications are used to configure the settings of or monitor each station using the engineering tool. It allows seamless communications with stations on different types networks.

### Point

- Communications can be made with stations up to eight networks apart (number of relay stations: 7).
- There are restrictions in communication paths when communicating by the Simple Motion module setting function. For details, refer to "Communication with the engineering tool" in PART 2 of the following manual.  
 MELSEC iQ-R Motion Module User's Manual (Startup)

### When the networks consist of only MELSEC iQ-R series



Communication paths are automatically set for communications with the following networks of MELSEC iQ-R series.

- Ethernet
- CC-Link IE TSN
- CC-Link IE Controller Network
- CC-Link IE Field Network

#### ■Setting method

Check that "Dynamic Routing" in "Application Settings" is set to "Enable".

### Point


- Communication paths are automatically set, but they can also be manually set. ( Page 140 When the networks consist of MELSEC iQ-R series and other series)
- The communication path cannot be set automatically for Ethernet-equipped modules connected via a router. Set the communication path manually. ( Page 140 When the networks consist of MELSEC iQ-R series and other series)

### When the networks consist of MELSEC iQ-R series and other series


Setting communication paths allow communications with the following networks configured with modules other than MELSEC iQ-R series.

- Ethernet
- CC-Link IE Controller Network
- CC-Link IE Field Network
- MELSECNET/H
- MELSECNET/10

#### ■Setting method

Set communication paths in "Routing Setting" of "CPU Parameter". ( MELSEC iQ-R CPU Module User's Manual (Application))

### Communication test

This test checks if transient transmission data can be properly routed from the own station to the communication target. ( Page 226 Communication Test)

## 4.3 Ethernet Connection

This type of connection allows one module to be connected to an Ethernet device without interfering with CC-Link IE TSN.

### Connection with MELSOFT products and a GOT

Programming and monitoring of the programmable controller using the engineering tool, and monitoring and testing of the programmable controller from the GOT are performed via Ethernet. This function enables remote control using long-distance connectivity and high-speed communications via Ethernet.

This section describes the methods of connecting the Motion module, MELSOFT product (such as engineering tool and MX Component), and GOT.


○: Connection available, ×: Connection not available

Connection method	Purpose	Availability		Reference
		MELSOFT product	GOT	
Connection via HUB (Connection by specifying the IP address)	To connect multiple MELSOFT products	○	×	Page 141 Connection via HUB
Connection via HUB (Connection by specifying the network number and station number)	To connect multiple MELSOFT products and GOTs	○	○	

4

#### Point

For the procedures to connect the Motion module and a GOT, refer to the following.


 Manual for the GOT used

#### Restriction

- The station with a communication speed different from the station connected to the engineering tool cannot be connected by specifying other station. The online and debug function of the engineering tool may not be used.
- When connecting a MELSOFT product or GOT via the Motion module, if another Motion module set to the same network No. is mounted on the same base unit (basic base unit and extension base unit) of the Motion module to be passed through, connection cannot be performed.


### Connection via HUB

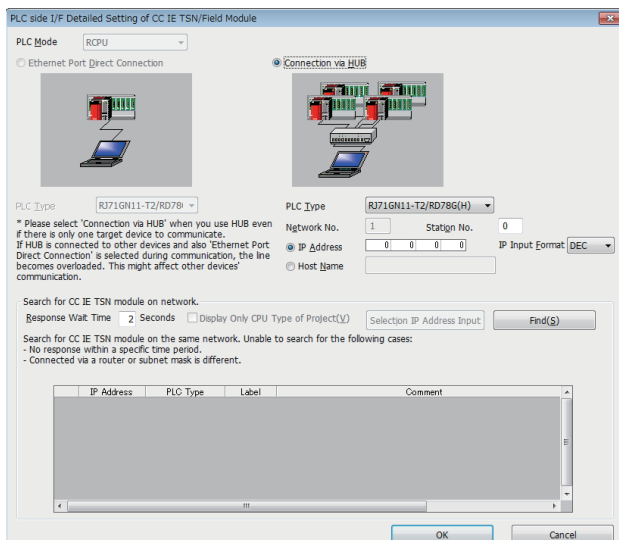
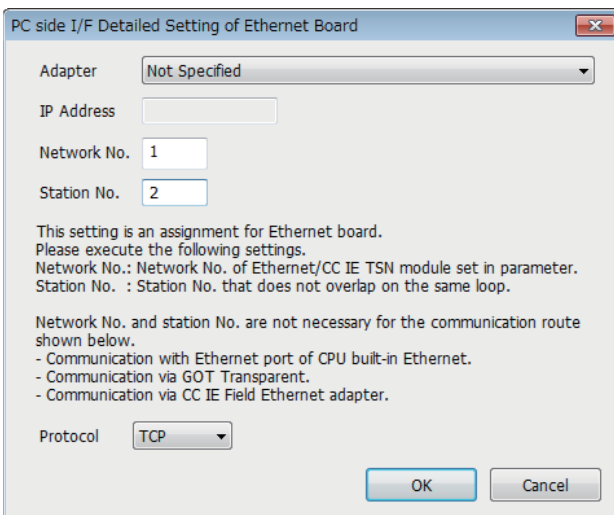
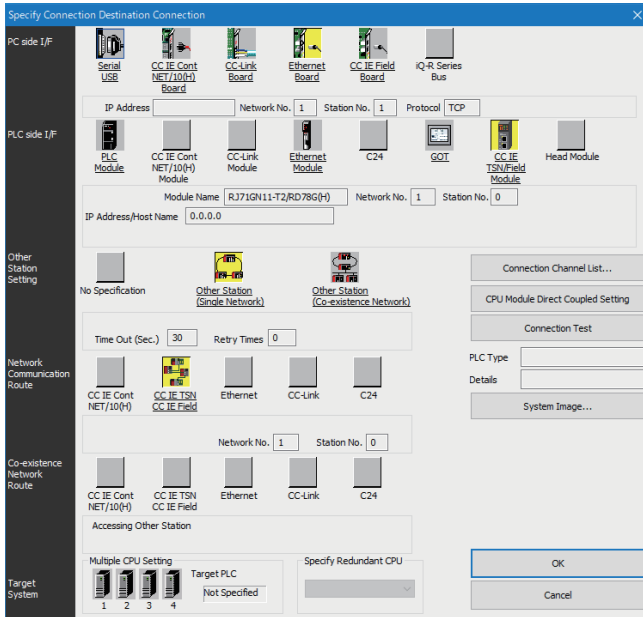
#### ■ Settings on the Motion module side

- For connection by specifying the IP address, set the IP address using "Required Settings". ( Page 171 Station No./IP Address Settings)
  - For connection by specifying the network No. and station No., set the network No. and station No. in "Required Settings".
- Neither of connections require "Network Configuration Settings" under "Basic Settings".

## ■ Settings on the engineering tool side

Set in the "Specify Connection Destination Connection" window.

 [Online] ⇄ [Current Connection Destination]



1. Set "PC side I/F" to "Ethernet Board".
2. Double-click "Ethernet Board", and open the "PC side I/F Detailed Setting of Ethernet Board" window.
3. Set the network No., station No., and protocol of the personal computer.

TCP: A connection is established during communication. Since data is exchanged while checking that the data has correctly reached the communication destination, the data reliability can be ensured. Note that the line load is larger than UDP/IP communications.

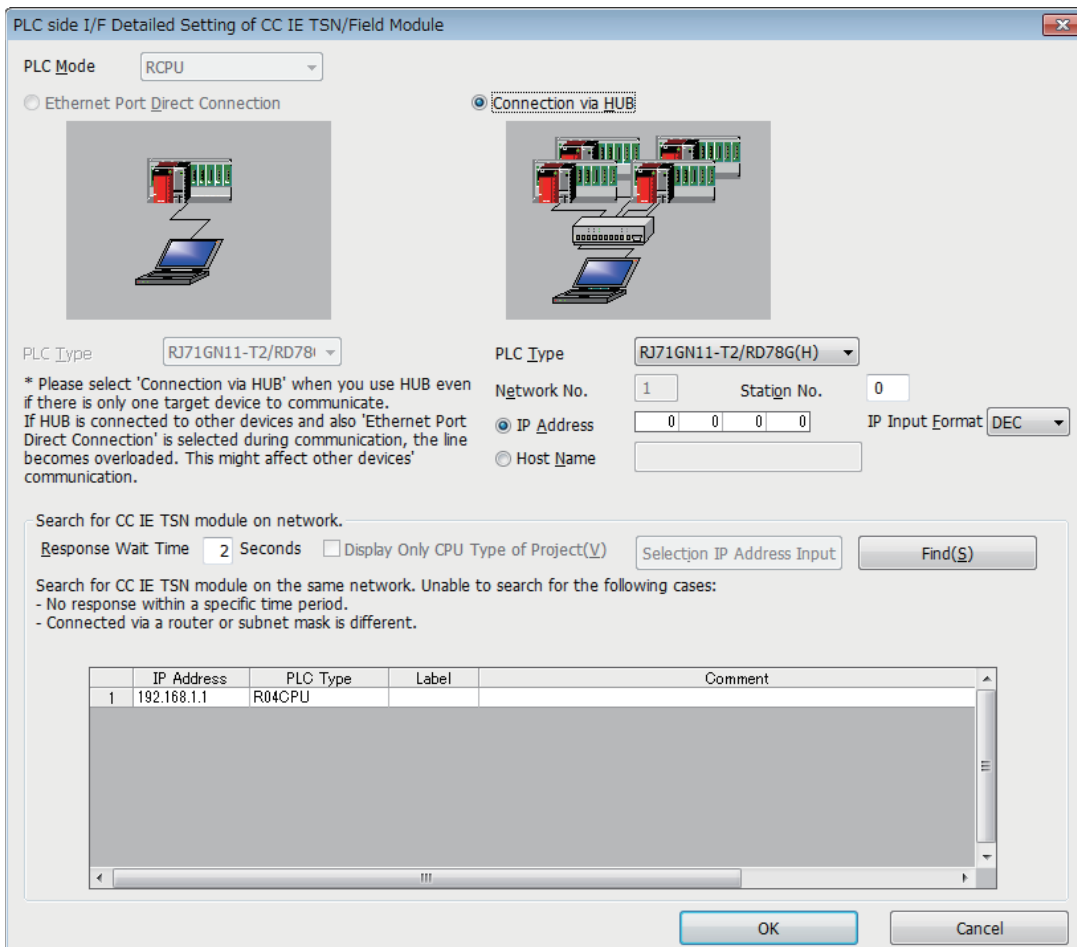
UDP: Since a connection is not established during communication and whether the communication destination has correctly received the data is not checked, the line load is lower. Note that the data reliability is lower than TCP/IP communications.

4. Set the "PLC side I/F" to the module to be connected.
5. Double-click the icon set in step 4, and open the detailed setting window.
6. Select "Connection via HUB" for the connection method, and enter the station No. and IP address or host name of the Motion module.
7. Specify "Other Station Setting" or "Network Communication Route" if necessary.



## ■ Searching modules on the network

For a connection using a switching hub, a list of modules that can be searched for will appear by clicking the [Find] button on the detailed setting window.



Search target modules are as follows.

- The control CPU of the Motion module connected to the same switching hub as the engineering tool
- The control CPU of the Motion module connected to the cascade-connected switching hub

If the connected Motion module does not appear in the list after searching the modules on the network, check the following items.


- Search cannot be performed if it is disabled with the IP filter.
- Modules connected via a router cannot be searched.
- If modules with the same IP address are listed, correct the setting of the IP address in "Network Configuration Settings" under "Basic Settings" of the master station.
- If the service processing load of the search-target CPU module is high, it may not be possible to search for the corresponding module. If the search cannot be performed, increase the response waiting time in the search dialog, and execute the search again.

## Connection with SLMP-compatible devices

---

This type of connection allows SLMP-compatible devices (such as a personal computer or a vision sensor) to be connected to the Motion module.

For details on an SLMP, refer to the following.

 SLMP Reference Manual

### **Restriction**

---

- For SLMP communication in the structure where communication speeds of 1Gbps and 100Mbps exist, set the same communication speed for the connected station and access destination. When different communication speeds are set for the connected station and access destination, SLMP communication may not be possible.
- When the system structure is mixed with an Ethernet device, there are restrictions for the network topology and connection destination of the Ethernet device. For details, refer to "SYSTEM CONFIGURATION" in PART 2 of the following manual.

 MELSEC iQ-R Motion Module User's Manual (Startup)

---

## 4.4 Security

This function ensures security according to the network environment by restricting access for each communication path to the CPU module. The following two access restriction methods can be used.

☞ Page 145 IP filter

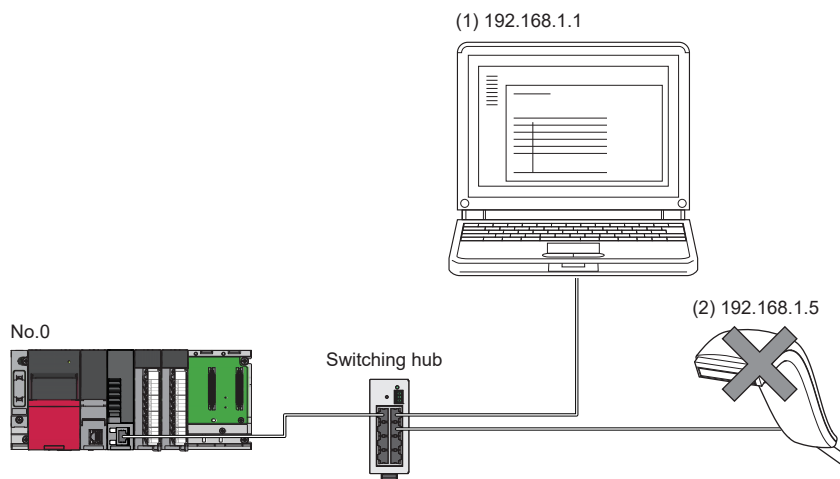
☞ Page 147 Remote password

### IP filter

This function identifies the IP address of the access source, and prevents unauthorized access.

By setting the IP address of the access source using the engineering tool, IP packets are allowed or blocked. (The IP packets received from the access source are allowed or blocked. IP packets sent from the own station are ignored.)

Use of this function is recommended when using in an environment connected to a LAN line.



When the "Allow" IP address is set to 192.168.1.1 using the IP filter of the master station No.0:  
Only the Ethernet device (1) can access the master station, and the Ethernet device (2) cannot access the master station.

#### Restriction

This function cannot be used when accessing via a network other than Ethernet or CC-Link IE TSN.

#### Point

The IP filter is one method of preventing unauthorized access (such as a program or data destruction) from an external device. It does not completely prevent unauthorized access. To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

Our company is not responsible for any problems that occur in the programmable controller and system due to a DoS attack, unauthorized access, computer virus, or other cyber attacks.

Examples of measures for unauthorized access are given below.

- Install a firewall or VPN.

## Setting method

1. Set the IP address to be allowed or blocked in the "IP Filter Settings" window of "Security" under "Application Settings".  
([Page 185 Security](#)) A warning is displayed in the following cases.
  - When blocking the IP address of the slave station set in "Network Configuration Settings" under "Basic Settings" was attempted
  - When a slave station is not set in "Network Configuration Settings" under "Basic Settings", and the "Allow" target IP address is not set in the "IP Filter Settings" window (because the IP filter blocks every IP address)
2. Write the module parameters to the CPU module.
3. The IP filter is enabled when power is turned off and on or the CPU module is reset.

### Point

Even if the connection was specified in "Network Configuration Settings" under "Basic Settings" or by a program, access from the external device is either allowed or blocked according to the setting in the "IP Filter Settings" window.

## Setting Target

Allow or block should be set to all IP addresses that connect to the same network. Also, set allow or block to the IP address of the slave station that is registered in "Network Configuration Settings" under "Basic Settings".

Register the setting details to the master station, and allow or block the IP packets received from the slave station of the registered IP address.

## Operation

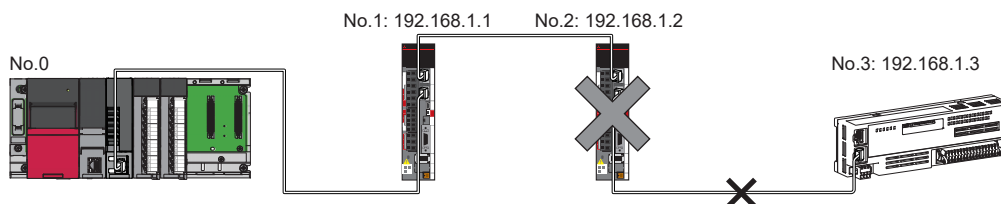
Even for the slave station registered in "Network Configuration Settings" under "Basic Settings", a station with an IP address set as blocked can become a disconnected station. As a result, cyclic transmission and transient transmission are not performed. Such a station is also displayed as a disconnected station on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window. However, Ethernet devices are not displayed on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window. ([Page 217 CC-Link IE TSN/CC-Link IE Field Diagnostics](#))

When an IP packet is received from an IP address that is set as blocked, the denial is registered in the event history of the master station.

([Page 269 Event List](#))

## Precautions

- Do not set the IP addresses of the master station or slave stations as blocked. When a slave station using line topology is set as blocked, cyclic and transient transmissions cannot be performed on the slave stations that are connected after the slave station set as blocked.



When the "Deny" IP address is set to 192.168.1.2 using the IP filter of the master station No.0:

Only the slave station No.1 can access the master station, and the slave station No.2 and slave station No.3 cannot access the master station.

- If there is a proxy server in the LAN line, block the IP address for the proxy server. If the IP address is allowed, it will not be possible to prevent access from personal computers that access the proxy server.
- To block access from an external device to another station, block access to the connected station (station connected directly to an external device) by using the IP filter.

## Remote password

---

Permits or prohibits access from the external device to the CPU module via Motion module. This function can prevent unauthorized access of the CPU module from a remote location.

### **Point**

The remote password is one method of preventing unauthorized access (such as program or data destruction) from an external device. It does not completely prevent unauthorized access. To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

Our company is not responsible for any problems that occur in the programmable controller and system due to a DoS attack, unauthorized access, computer virus, or other cyber attacks.

Examples of measures for unauthorized access are given below.

- Install a firewall or VPN.

---

### **Number of settable modules**

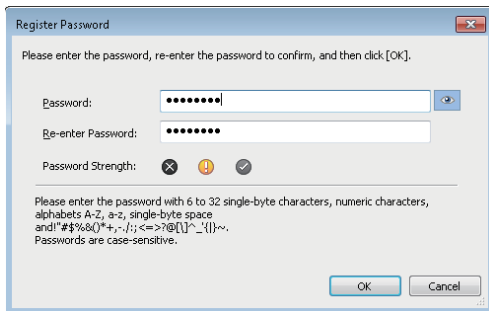
Up to eight modules can be set for remote passwords.

When using the multiple CPU system configuration, up to eight modules can be set for each CPU module.

## Setting method

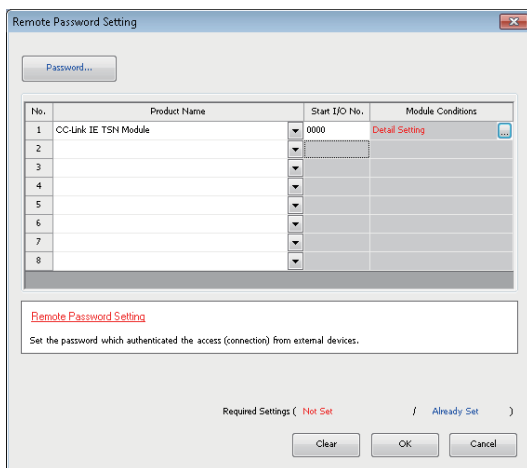
Set on the "Remote Password Setting" window.

Navigation window ⇒ "Parameter" ⇒ [Remote Password]

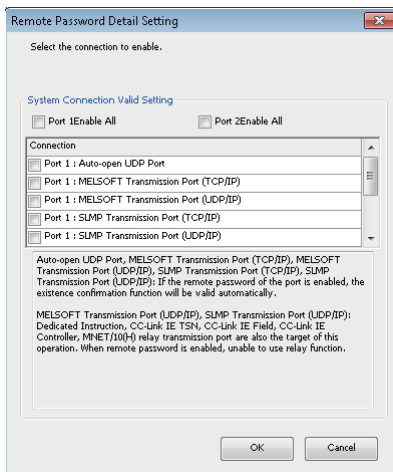


1. Click the [Password] button, and register the remote password on the "Register Password" window.

[Password] button



2. Select the module for which the remote password is to be applied, and set the start I/O number.



3. Set the target connection on the "Remote Password Detail Setting" window.

"Detail Setting" for the target module

4. Write the remote password to the CPU module.
5. The remote password is enabled when the CPU module is reset or powered off and on.

## ■PING

This function uses the PING command to perform an alive check of external devices whose access is permitted in UDP communications. Therefore, if external devices do not respond to PING, an alive check error (event code 00906) occurs. When this function is used for UDP communications, check if the security setting of external devices (such as a firewall) is set to respond to PING.

## Access permitted/prohibited processing operation

This section describes the processing for permitting or prohibiting access of the CPU module with remote password by the external device.

### ■Access permit processing (Unlock processing)

The external device trying to communicate unlocks the remote password set for the connected Motion module.

If the password is not unlocked, the Motion module to which the external device is connected prohibits access, so an error occurs in the external device.

The unlocking methods are shown below.

- SLMP dedicated command (Remote Password Unlock)
- Input password from engineering tool

### ■Access processing

Access to the specified station is possible when the remote password is correctly unlocked. Execute any access.

### ■Access prohibit processing (Lock processing)

When access to the specified station ends, lock the remote password from the external device to disable subsequent access.

The locking methods are shown below.

- SLMP dedicated command (Remote Password Lock)
- Lock with engineering tool (executed automatically)

## Precautions

The following section describes the precautions for using remote password.

### ■Set connection

Set the remote password for the connection used for data communication with an external device that can execute the unlock/lock processing.

### ■When remote password is set for UDP/IP connection

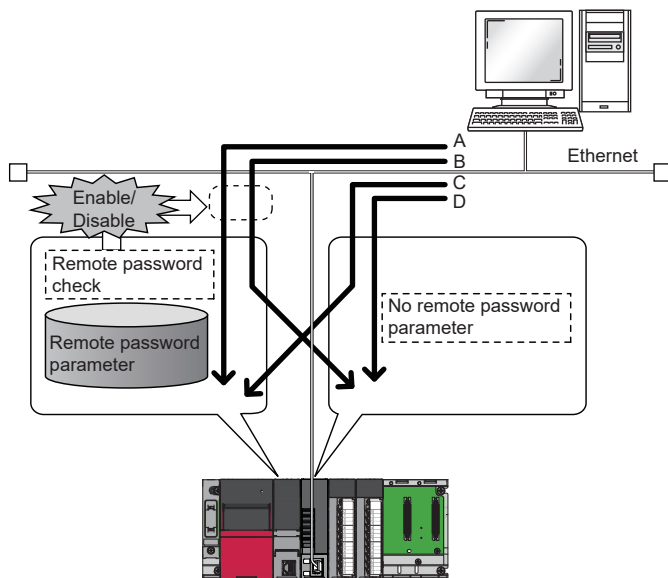
- Determine the external device to communicate with and perform data communication. (With UDP/IP, after the remote password is unlocked, data can be exchanged with devices other than the unlocked external device too. Determine the communication destination before starting use.)
- Always lock the remote password after data communication is finished. (If the remote password is not locked, the unlocked state is held until timeout occurs.)

### ■TCP/IP close processing

If the TCP/IP is closed before the TCP/IP is locked, the CPU module will automatically start the lock processing.

### ■Remote password valid range

The remote password is valid only for access from the Motion module for which the parameters are set. When using multiple CPU modules in a multiple CPU system, set a remote password for each CPU module for requiring a remote password.



The remote password is checked when accessing with path A or B.

The remote password is not checked when accessing with path C or D.

### ■Accessing the programmable controller of another station

When the external device is accessing the programmable controller of another station via the Motion module, accessing the programmable controller may not be possible if a remote password is set for the CPU module at the relay station or station to be accessed.



## 4.5 RAS

RAS stands for Reliability, Availability, and Serviceability. This function improves overall usability of automated equipment.

### Slave station disconnection

Data link of the station where an error occurred is stopped, and the data link continues only for stations that are operating normally.

### Automatic return

The data link is automatically restarted when the slave station that was disconnected due to an error becomes normal again.

4

#### Precautions

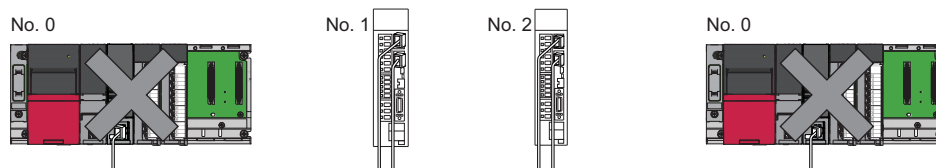
- When removing a slave station while the system is operating, check that the slave station is either performing cyclic transmission or is disconnected.
- When removing the Motion module, check that the D LINK LED is on or off.
- When a slave station with a model name different from the disconnected slave station is returned, the error "Configuration mismatch on return" (error code: 1C49H) occurs. For details, refer to "List of Error Codes" in the following manual.

📖 MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)

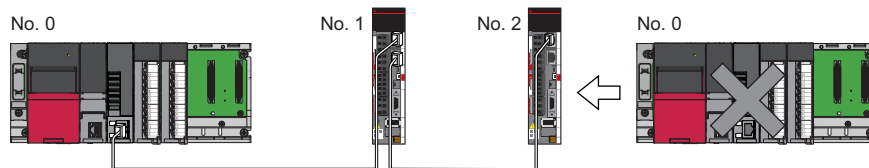
### Master station duplication detection

If one network has multiple master stations, an overlap is detected.

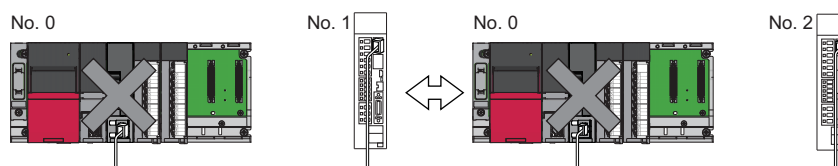
- When multiple master stations are simultaneously powered on, or when multiple master stations are simultaneously connected, an error "Master station duplication detection" (error code: 300FH) is detected in all master stations and cyclic transmission cannot be performed in all stations. (Transient transmission available)



- If another master station is added to the network during data link, an error "Master station duplication detection" (error code: 300FH) is detected in the added master station and cyclic transmission cannot be performed. (Transient transmission available) Other stations continue data link.



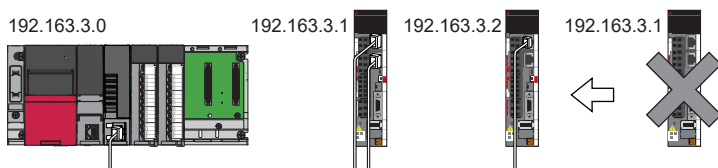
- If two networks are connected during data link, an error "Master station duplication detection" (error code: 300FH) is detected in master stations on both networks and cyclic transmission cannot be performed in all stations. (Transient transmission with IP address specification is available)



## IP address duplication detection

If one network has stations with the same IP address, an overlap is detected.

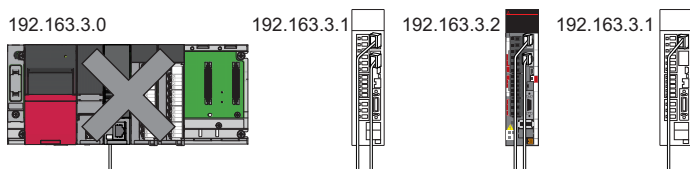
- When adding a slave station, if a station with the same IP address already exists, an error "IP address duplication detection" (error code: 2160H) is detected in a station to be added and data link cannot be performed. Other stations continue data link.



### Precautions

When adding a slave station, which has already been connected (linked up) with a TSN hub and the TSN hub is added to the network, an overlapping IP address is not detected in a station to be added. If an error "IP address duplication detection" (error code: 1802H) is detected in the master station, disconnect the relevant slave station from the network. Otherwise, multiple stations with the same IP address will exist on the same network, possibly leading to transient transmission being sent to an unintended station.

- If the startup processing of cyclic transmission is executed by powering off and on the master station, when a station with the same IP address is in the network, an error "Slave station IP address duplication" (error code: 3021H) is detected in the master station and data link cannot be performed.



- During cyclic transmission, an overlapping IP address is regularly checked in the master station. When there are overlapping IP addresses, an error "IP address duplication detection" (error code: 1802H) is detected in the master station and cyclic transmission cannot be performed with the relevant slave station. Other stations continue data link.

### Restriction

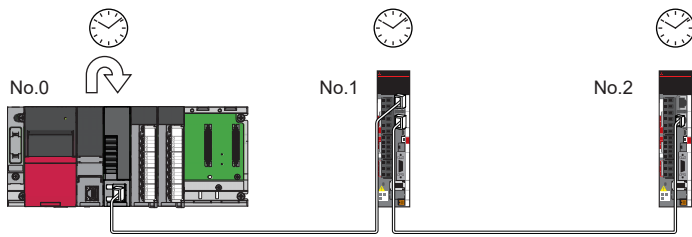
- An overlapping IP address between an Ethernet device and a CC-Link IE TSN device, and an overlapping IP address between Ethernet devices are not detected at cyclic transmission startup of the master station.
- Station number duplication is not detected.

### Methods of recovery from an overlapping IP address

If an error "IP address duplication detection" (error codes: 1802H) or "Slave station IP address duplication" (error code: 3021H) is detected in the master station, the Motion module changes the indication (such as LEDs) of the stations with overlapping IP addresses. Remove the corresponding station or change its IP address, and power off and on or reset the master station.

# Time synchronization

This function synchronizes the time of slave stations with the time synchronization source (CPU module of the master station).



## Setting method

The time synchronization is set with the buffer memory. (☞ Page 302 Time synchronization)

4

### Point

When setting the Motion module as the master station, do not connect time synchronization devices with time synchronization priority of 0 to 15.

A priority is a value that is assigned to a time synchronization device from the devices in a network to determine the grandmaster. The smaller the value, the higher the priority.

For the priority verification method and setting method, refer to the manual of the time synchronization device.

## Precautions

- If this function is used, the time setting function (SNTP client) of the Ethernet-equipped module cannot be used. (📖 MELSEC iQ-R Ethernet User's Manual (Application))
- If multiple Motion modules are mounted to a CPU module on the same base, set time synchronization for only one Motion module. If time synchronization is set for multiple modules, it is overwritten by the time that is synchronized later.
- When using the multiple CPU system configuration, the CPU module No.1 becomes the time synchronization source.

## 4.6 CC-Link IE TSN Network Synchronous Communication Function

---


This section describes the CC-Link IE TSN Network synchronous communication function.

For the inter-module synchronization function, refer to "INTER-MODULE SYNCHRONIZATION FUNCTION" in the following manual.

 MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)

### **Restriction**

---

- For the firmware versions of the CPU module compatible with the CC-Link IE TSN Network synchronous communication function of standard stations, refer to the following.
    -  MELSEC iQ-R CPU Module User's Manual (Application)
  - When the version of Add-on baseSystem is "Ver. 1.18 or earlier", the inter-module synchronization function is not supported. If the inter-module synchronization is enabled, an error occurs in the CPU module.
-

## Overview

### ■Standard station

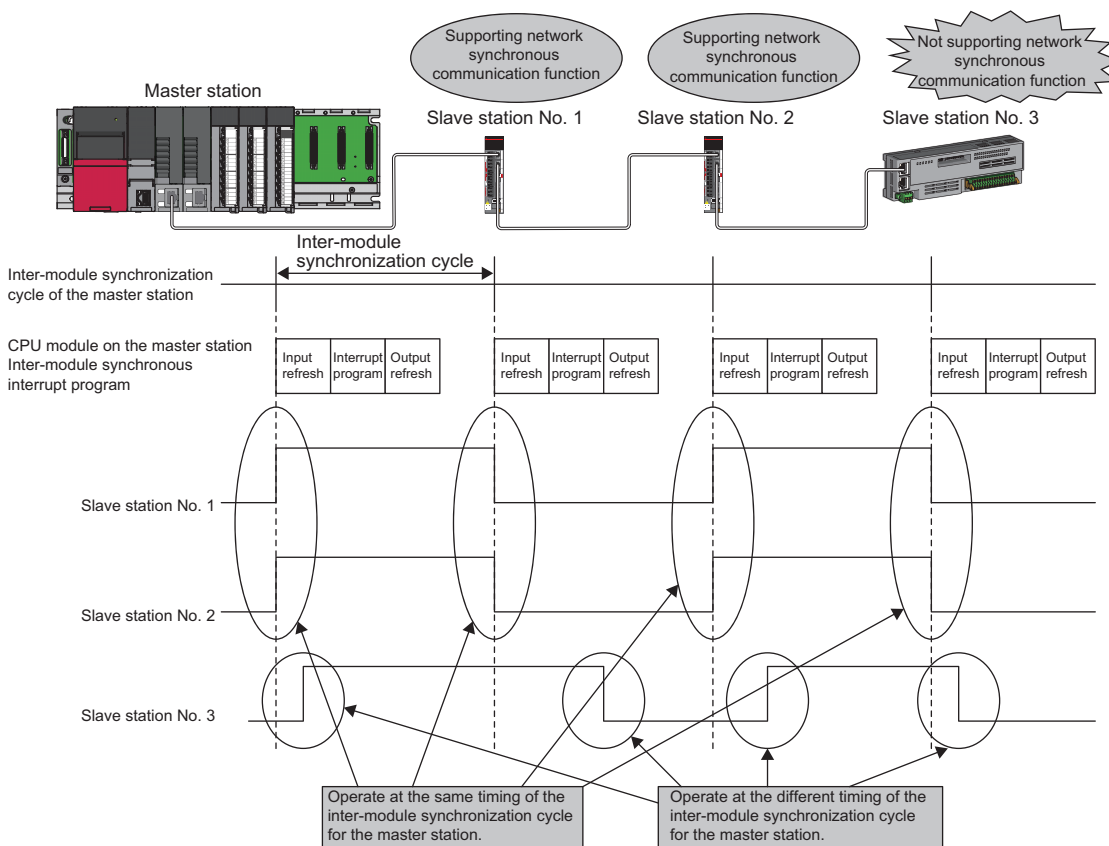
This function synchronizes the control cycle of slave devices of standard stations according to the inter-module synchronization cycle specified in the master station via CC-Link IE TSN. This adjusts the operation timing with those of the other slave stations connected to the same network.

For details, refer to the following.

📖 MELSEC iQ-R Inter-Module Synchronization Function Reference Manual

#### Point

- The following slave stations can be connected: slave stations not supporting the CC-Link IE TSN Network synchronous communication function and slave stations in which the network synchronous communication setting is not set. However, they cannot synchronize with the inter-module synchronization cycle.
- For the availability of the CC-Link IE TSN Network synchronous communication function for each slave device, refer to the manual of each slave device.

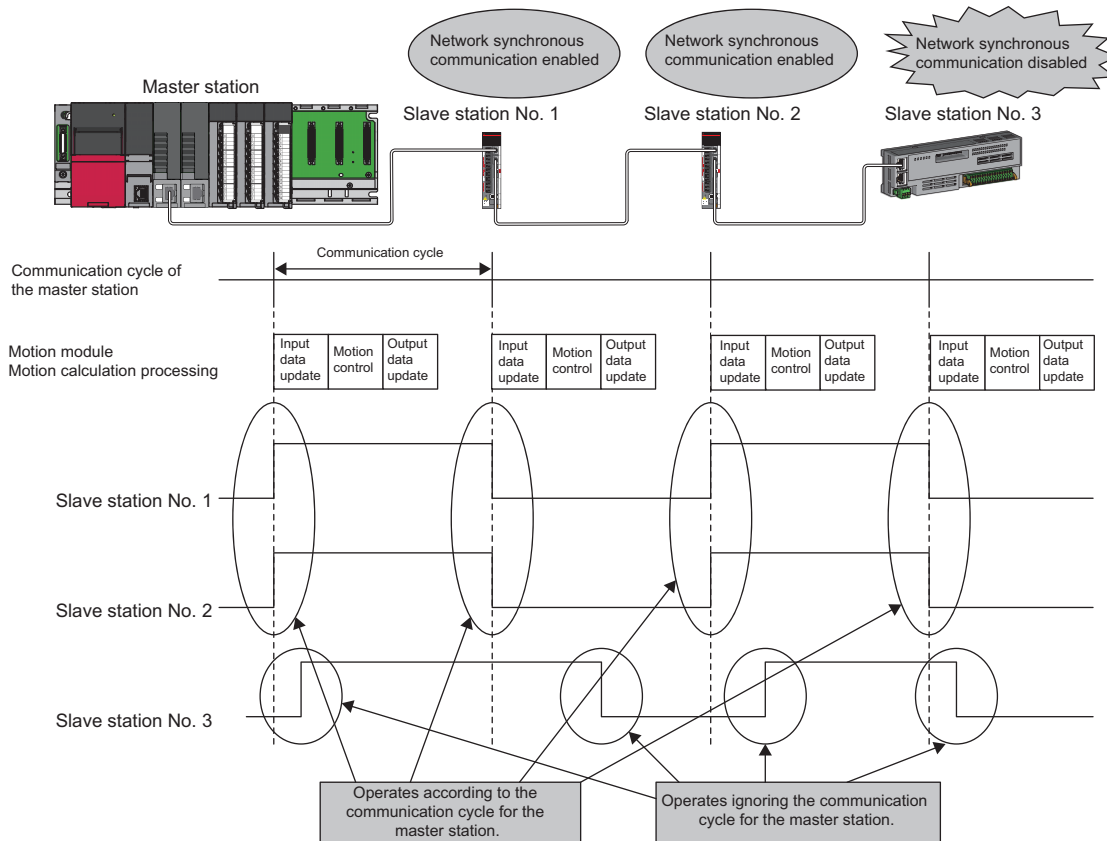


## ■ Motion control station

This function synchronizes the control cycle of a slave station according to the communication cycle of the master station. This adjusts the operation timing of the motion calculation of the Motion module with a slave station set as the motion control station.



The following slave stations can be connected: slave stations not supporting the CC-Link IE TSN Network synchronous communication function and slave stations in which the network synchronous communication setting is not set. However, they cannot synchronize with the motion calculation of the Motion module. For the availability of the CC-Link IE TSN Network synchronous communication function for each slave device, refer to the manual of each slave device.




## Setting method

In "Network Configuration Settings" under "Basic Settings" of the module parameter, set "Network Synchronous Communication" of the slave station to enable the network synchronous communication to "Synchronous".

In addition, when the network synchronous communication of a standard station is enabled, the inter-module synchronization function needs to be enabled as well.

For the setting method of the inter-module synchronization function, refer to the following manual.

 MELSEC iQ-R Inter-Module Synchronization Function Reference Manual

### ■Inter-module synchronization cycle

To use the inter-module synchronization function, set the same cycle for the following two items.

- "Fixed Scan Interval Setting" under "Inter-module Synchronization Setting" of the system parameter
- "Communication Period Interval Setting" under "Basic Settings" of the module parameter

Set the cycle in the following range.


0.25/0.50/1.00/2.00/4.00 ms


### ■How to calculate an inter-module synchronization cycle

For the cycle to be set, set a value greater than a value obtained by one of the following formulas.

Condition	Calculation formula*1
Execution time of the inter-module synchronous interrupt program (I44) > Cyclic transmission time	Execution time of the inter-module synchronous interrupt program (I44) + Cyclic processing time
Execution time of the inter-module synchronous interrupt program (I44) ≤ Cyclic transmission time	Cyclic transmission time + Cyclic processing time

\*1 For the values obtained by the calculation formulas, refer to the following.

Execution time of the inter-module synchronous interrupt program (I44) ( User's manual of the CPU module used)

Cyclic transmission time and cyclic processing time ( Page 328 Communication cycle interval)

## Precautions

To use the inter-module synchronization function, do not set "Not Set" for "0.05ms Unit Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" in "System Parameter".

None of the inter-module synchronization cycles 0.222 ms, 0.444 ms, 0.888 ms, 1.777 ms, 3.555 ms, and 7.111 ms can be used by the CC-Link IE TSN network synchronous communication function. Therefore, neither the SSCNET III/H supported Simple Motion module nor Motion CPU can synchronize with the inter-module synchronization cycle.

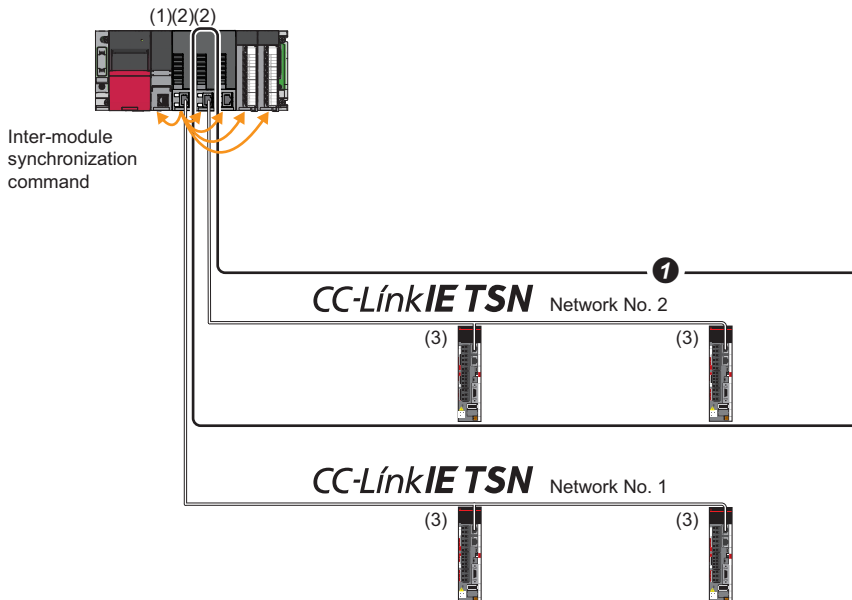
## Synchronizable range of the inter-module synchronization

To use this function, set the master station as the inter-module synchronous master.

The communication cycles match based on time synchronization between the master station and slave stations. This allows a device supporting the CC-Link IE TSN network synchronous communication function to operate in synchronization with the inter-module synchronization cycle of the programmable controllers of the master station.

The following shows the synchronizable ranges.

- Operation can be performed by synchronizing a module supporting the inter-module synchronization function on the same base unit as the master station with slave stations.



(1) CPU module

(2) Motion module

(3) Slave station of CC-Link IE TSN

- ① Multiple Motion modules on the same base unit can be synchronized with the inter-module synchronization cycle. At this time, set the Motion module at the left end to the inter-module synchronization master on the same base unit.

## Applicable device

The following table shows the devices that can be synchronized by the CC-Link IE TSN Network synchronous communication function.

○: Synchronizable, ×: Not synchronizable

CC-Link IE TSN Network synchronous communication function	Authentication Class	Communication speed	Communication cycle setting	Synchronization		
Not supported	—	—	—	×		
Supported	Authentication Class A device	—	—	×		
			Authentication Class B device	1 Gbps	Basic cycle	○
			Normal speed	○		
	Low speed	○				
	Authentication Class B device	100 Mbps	Basic cycle	○		
			Normal speed	○		
Low speed			○			

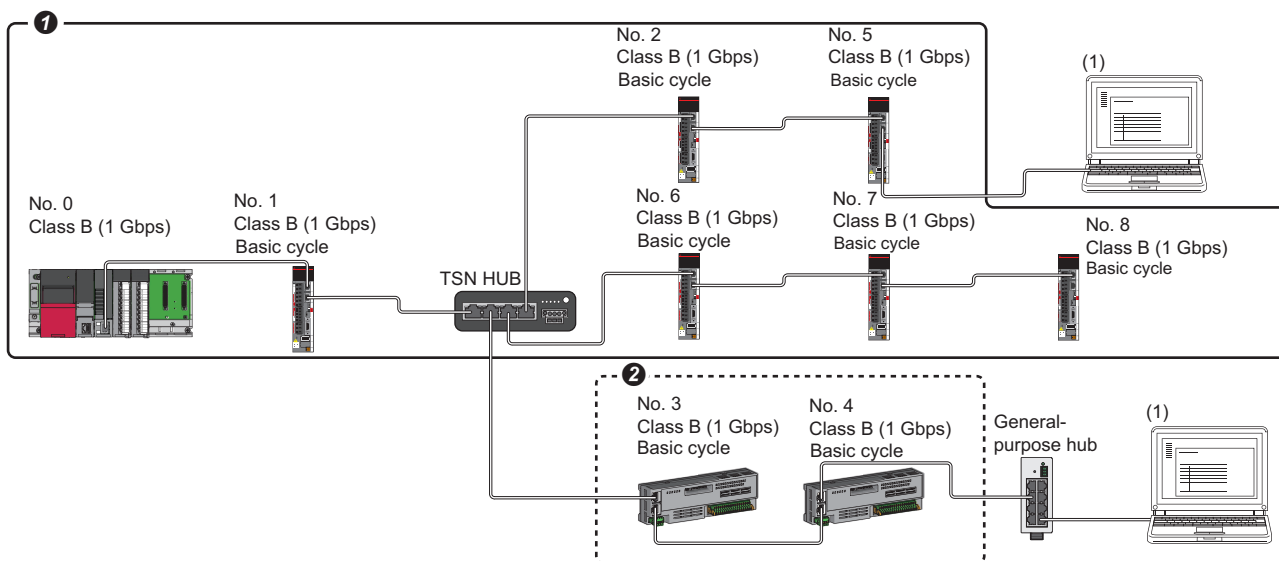
### ■Setting for a station not synchronizable

- When the network synchronous communication setting is set for a slave station that is not synchronizable, Initialization failure (parameter mismatch between master and slave stations) (event code: 00C71) is displayed in the event history in the master station. (Network synchronous communication and cyclic transmission with other slave stations are continued.)



## Available range of network synchronous communication

### ■ Configuration with authentication Class B only



Class B: Authentication Class B device

No. 0: Master station

No. 1, No. 2, No. 5, No. 6, No. 7, and No. 8: Remote station (device where the network synchronous communication setting is set to "Synchronous")

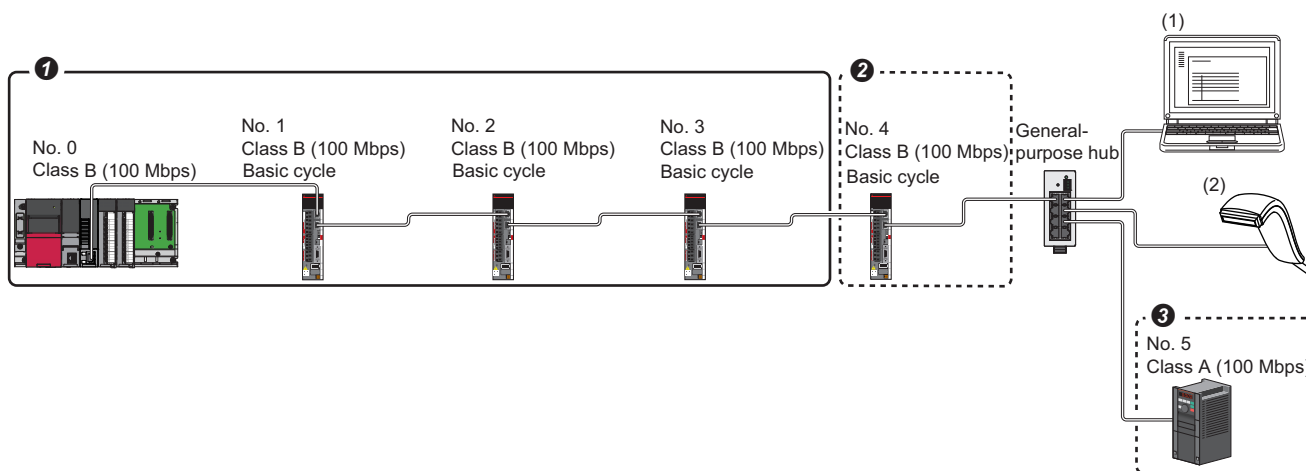
No. 3 and No. 4: Remote station (device where the network synchronous communication setting is set to "Asynchronous")

(1) Ethernet device (1 Gbps)

❶ The synchronization can be performed using network synchronous communication.

❷ Even for an authentication Class B device, synchronization is not possible if the network synchronous communication setting is set to "Asynchronous".

### ■ Configuration with mixture of authentication Class B/A



Class A: Authentication Class A device

Class B: Authentication Class B device

No. 0: Master station

No. 1, No. 2, and No. 3: Remote station (device where the network synchronous communication setting is set to "Synchronous")

No. 4: Remote station (device where the network synchronous communication setting is set to "Asynchronous")

No. 5: Remote station

(1) Ethernet device (100 Mbps)

(2) Ethernet device (100 Mbps)

❶ The synchronization can be performed using network synchronous communication.

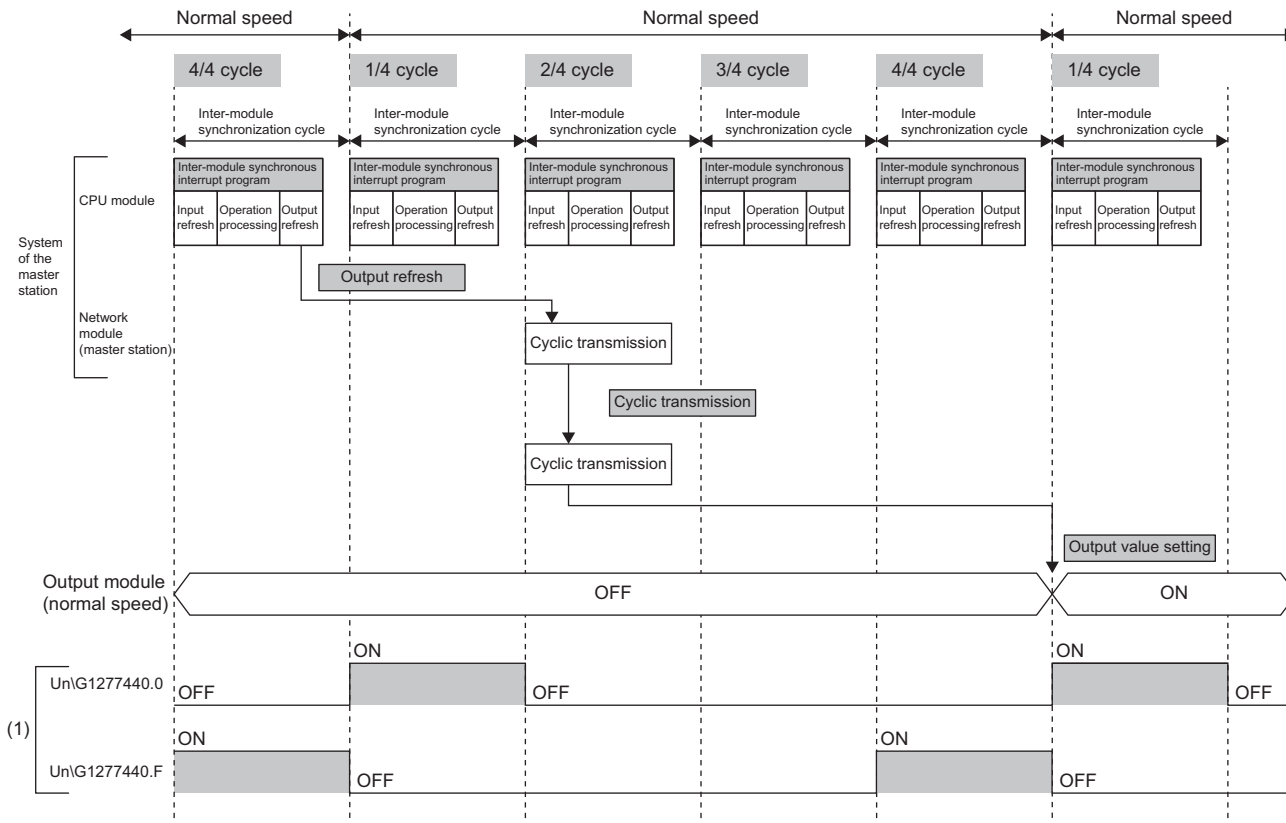
❷ Even for an authentication Class B device, synchronization is not possible if the network synchronous communication setting is set to "Asynchronous".

❸ Authentication Class A devices cannot synchronize using network synchronous communication.

## Network synchronous communication with multiple cycles

When slave stations with different communication cycles are included in the network, cyclic transmission between stations is performed according to the communication cycle. For the cyclic transmission of the master station and a remote station, data can be transmitted to other stations after two cycles.

The following figure shows the cyclic transmission timing when "Communication Period Setting" in "Network Configuration Settings" is set to "Normal-Speed".



- (1) The communication cycle timing can be checked with the communication cycle information of the buffer memory area (UnG2877440 to UnG2877441). The timing of data refreshed in the CPU module can also be checked with this buffer memory area. The 0th bit in this buffer memory area is turned on during the first (1/4) cycle for normal speed. In addition, the 15th bit in this buffer memory area is turned on during the last (4/4) cycle for normal speed. (Page 303 Communication cycle information)

## Cyclic transmission assurance by watchdog counter

The watchdog counter is a function used to assure normal cyclic transmission between stations on CC-Link IE TSN. Using the watchdog counter, the master station and a slave station mutually monitor the data to be updated every communication cycle; the master station monitors data received from a slave station and a slave station monitors data received from the master station.

If an error "Synchronous watch dog counter error" (error code: 1D20H) has occurred, data of that station will not be received even after the watchdog counter returns to normal. To restart, turn on the power supply of the Motion module again, reset the CPU module, or disconnect the slave station and return it.

### Point

- Whether the slave stations performing data link with the master station is using the watchdog counter can be checked from 'Watchdog counter operating status information for each station' (SW01D0 to SW01D7).
- An error "Synchronous watch dog counter error" (error code: 1D20H) will be detected for slave stations without axis setting with the Simple Motion module setting function. For slave stations with axis setting, an error "WDT error" (error code: 1C41H) will be detected instead.
- If an error "WDT error" (error code: 1C41H) has occurred, operation can be resumed by performing error reset.

### Restriction

Before using this function, check the add-on baseSystem version of the Motion module. For details, refer to "Restrictions by the version" in the following manual.


 MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)

## ■Operation

When the master station is powered off and on (when the CPU module is reset) or a slave station is disconnected and returned, the master station stores insufficient time for the transient transmission time in 'Transient transmission addition time (calculation value)' (SW007A).

If a value has been stored in 'Transient transmission addition time (calculation value)' (SW007A), add the value to the setting values for "Communication Period Interval Setting" and "Transient Transmission Time" of "Communication Period Setting" under "Basic Settings" of the module parameter of the master station.

## ■Setting method

The settings of the master station are not required to use the watchdog counter. However, the settings may be required depending on a slave station used. ( Manual for the slave station used)

## Precautions

When the Motion module with the add-on baseSystem version "Ver. 1.15 or earlier" is used or a slave station does not use the watchdog counter, 0 is stored in 'Transient transmission addition time (calculation value)' (SW007A).

## Program example

For program example using the inter-module synchronization function, refer to "INTER-MODULE SYNCHRONIZATION FUNCTION" in the following manual.

 MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)

## Precautions

- Authentication Class A devices cannot synchronize using network synchronous communication. (Page 158 Applicable device)
- For the number of connectable stations of CC-Link IE TSN-compatible devices and their connection order, refer to "Specifications of Interfaces with External Devices" and "SYSTEM CONFIGURATION" in PART 2 of the following manual.  
MELSEC iQ-R Motion Module User's Manual (Startup)
- When specifying a Motion module as the inter-module synchronization target, mount it on the main base unit.
- When multiple Motion modules are specified as the target modules for synchronization on the same base unit, set the slot number of the leftmost one for "Mounting Slot No." under "Inter-module Synchronization Master Setting" in "System Parameter".
- In a multiple CPU system configuration, only the Motion module controlled by the CPU No. 1 can be specified as the target for the inter-module synchronization.
- Set the same cycle for "Fixed Scan Interval Setting of Inter-module Synchronization" in "System Parameter" and "Communication Period Interval Setting" in "Basic Settings" of the module parameter.
- To use a switching hub, refer to the CC-Link Partner Association website ([www.cc-link.org](http://www.cc-link.org)) for the models and usage methods of supported switching hubs.
- Do not set "Not Set" for "0.05 ms Unit Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" in "System Parameter". Select "Set" for "0.05 ms Unit Setting", and select a value from 0.25/0.50/1.00/2.00/4.00 ms.
- Do not perform the online change in the CPU module. If the online change is used in the CPU module, there may be a delay in the start of the inter-module synchronous interrupt program (I44) in the interrupt program. In this case, the total value of the execution time of the inter-module synchronous interrupt program (I44) and the cyclic processing time exceeds the next inter-module synchronization cycle (next communication cycle), and the inter-module synchronous transmission omission occurs. The watchdog counter also detects an error because cyclic transmission cannot be performed within the communication cycle.

## Restriction of version

### ■Number of settable stations

The following table lists the number of settable stations in "Select Inter-module Synchronization Target Module" of the "Inter-module Synchronization Setting" tab under "System Parameter".

Add-on baseSystem version of the Motion module	Number of settable stations
Add-on baseSystem version of "Ver. 1.20 or later"	8

# 4.7 Safety Communications

This section describes the safety communication function.

### Restriction

The following modules are required to use the safety communications.

- Safety CPU and safety function module with a firmware version of "20" or later

## Communications with safety stations

This function establishes a safety connection and performs one-on-one safety communications periodically between safety stations in the same network.

Safety data is exchanged by using the safety device of the Safety CPU set in "Safety Communication Setting" under "Basic Settings" from a program.

Whether a safety connection is established or not can be checked in 'Safety refresh communication status of each safety connection (1st module)' (SA\SD1008 to SA\SD1015) of the Safety CPU.\*1

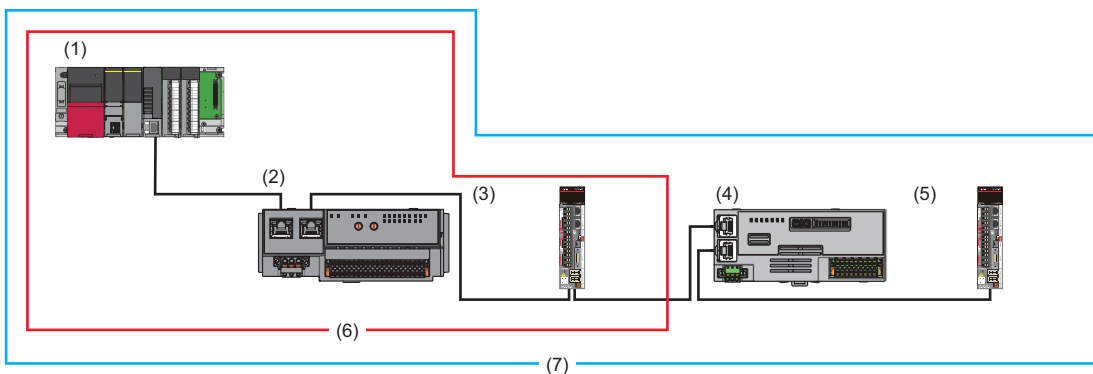
\*1 Safety special register areas for the first Motion module. For safety special register areas for the second or later Motion module, refer to the following.

📖 MELSEC iQ-R CPU Module User's Manual (Application)

## Stations supporting safety communications

Safety communications can be performed between the following stations (safety stations).

- Master station (safety station) (1) ↔ Remote station (safety station) (2) (3)



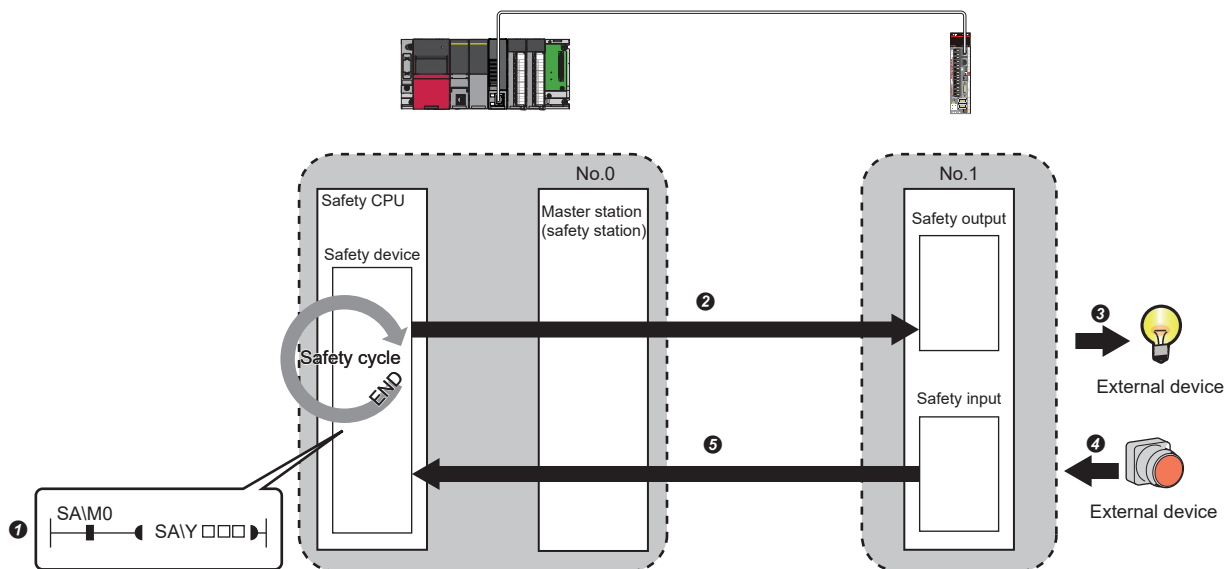
### Restriction

The system can be configured with safety communication unsupported stations (4) and (5) mixed in the same network. However, safety communication (6) cannot be performed with the safety communication unsupported stations (4) and (5). Only standard communication (7) can be performed.

## Safety communications flow

### ■ Master station (safety station) and remote station (safety station)

The safety device status of the Safety CPU on the master station (safety station) is reflected to the safety output of the remote station (safety station). The safety input status of the remote station (safety station) is stored in the Safety CPU on the master station (safety station).




Output from the master station (safety station)

- ❶ The safety device of the Safety CPU on the master station (safety station) turns on.
- ❷ The safety device status of the Safety CPU on the master station (safety station) is stored in the Safety output on the remote station (safety station) by safety data transfer.
- ❸ The safety output status of the remote station (safety station) is output to an external device.

Input from the remote station (safety station)

- ❹ The status of the external device is stored in the safety input of the remote station (safety station).
- ❺ The safety device status of the Safety input on the remote station (safety station) is stored in the Safety CPU on the master station (safety station) by safety data transfer.

## Setting method

Set safety communications in "Safety Communication Setting" under "Basic Settings". (  Page 178 Safety Communication Setting)

## Precautions

- If an error occurs in safety communications, safety data from the faulty station is cleared.
- A safety connection with the safety station can be established only while data link is performed after configuring "Safety Communication Setting" under "Basic Settings" of the master station. The data link status can be checked in 'Data link status of each station' (SW00B0 to SW00B7).
- Note that stations not set in "Network Configuration Settings" under "Basic Settings" of the master station (safety station) and reserved stations cannot perform safety communications.
- Safety communications cannot be performed among the Motion modules set in the same control CPU.
- This function may detect an error and stop safety communications if a parameter is written to the control CPU of the Motion module during safety communications.
- Safety communications cannot be performed among the safety stations when the IP address and model name of the communication destination set to the safety station are different from the actual system configuration.
- Safety communications cannot be performed with a remote station (safety station) if the safety approval code set in the master station (safety station) and it in the remote station (safety station) are not match.
- An error occurs when a parameter is written to the Safety CPU because the Safety CPU does not support the inter-module synchronization function.
- A remote device test cannot be used for a safety remote I/O module.

## Safety station interlock function

If a communication error has occurred between safety stations, communication is automatically disconnected to prevent incorrect input or output from the faulty station. Safety communications between the stations become safety station interlock state at this time, and the safety communications do not resume until the safety interlock is released.

Create a program which releases the interlock by using Interlock release request for each safety connection to release the safety station interlock state.


Note that standard communication automatically resumes if the communication error cause is eliminated even in the safety station interlock state.

The safety station interlock function prevents equipment stopped by a communication error from suddenly resuming its operation after it recovers from the error.

### ■Checking method

Check the status with the safety special register 'Interlock status of each safety connection (1st module)' (SA\SD1232 to SA\SD1239).


For the safety special register for the second or later modules and its operation details, refer to the following.

 MELSEC iQ-R CPU Module User's Manual (Application)

### ■Release method

Release the interlock using the safety special register 'Interlock release request for each safety connection (1st module)' (SA\SD1240 to SA\SD1247).

For the safety special register for the second or later modules and its operation details, refer to the following.

 MELSEC iQ-R CPU Module User's Manual (Application)

## 4.8 Others

---

### Reserved station setting

---

A reserved station is a slave station that is set in the parameters and included in the number of stations in the network for future expansion. This station is not actually connected to the network and not detected as a faulty station even though it is not connected. (☞ Page 186 "CC-Link IE TSN Configuration" window)

By setting a reserved station, link device assignment will not change even if the slave station is connected (or the reservation is cleared). Therefore, modification of the program is not required.

#### **Restriction**

When the version of Add-on baseSystem is "Ver. 1.18 or earlier", motion control stations do not support the reserved station setting. If a motion control station is set as a reserved station, an error "Network parameter error" (error code: 2221H) occurs.

---

#### Precautions

If a motion control station is set as a reserved station, the station cannot be controlled.

### Error invalid station setting

---

An error invalid station is a slave station that is set to be not detected as a faulty station by the master station. It is also set when a slave station is to be replaced during data link. (☞ Page 186 "CC-Link IE TSN Configuration" window)

Even if a slave station is set as an error invalid station, error events related to the station still occur.

#### **Restriction**

When the version of Add-on baseSystem is "Ver. 1.18 or earlier", motion control stations do not support the error invalid station setting. If a motion control station is set as an error invalid station, an error "Network parameter error" (error code: 2221H) occurs.

---



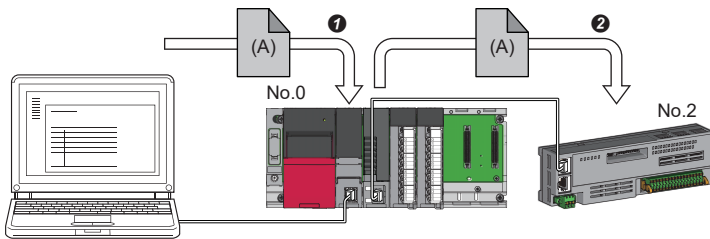
# Slave station parameter automatic setting

Parameters of the slave station are saved in the master station, and the parameters will be automatically set when the slave station is connected/returned.

In addition, when the parameters are changed from the slave station side, the saved parameters on the master station side are automatically updated.

## Slave station parameter automatic setting from the master station

1. Parameters of the slave station set using the engineering tool are saved in the memory of the CPU module in the master station or the SD memory card by writing.
2. When the slave station is connected/returned by power-on, saved parameters are automatically set from the master station to the slave station.



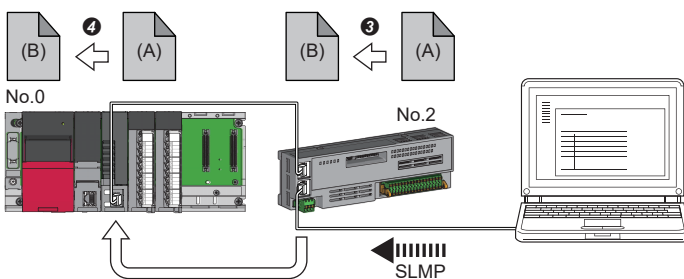
- 1 Save parameter (A) of the slave station to the CPU module on the master station.
- 2 When the slave station is returned/connected, saved parameter (A) is automatically set from the master station to the slave station.

### Point

- The master station starts data link with the slave station after parameters of the slave station are automatically set.
- The slave station parameter automatic setting is also executed for slave stations set as reserved stations.

## Automatic update of saved parameter

1. If parameters on the slave station side are changed by the engineering tool or SLMP, the parameters of the slave station that are saved in the memory of the CPU module or the SD memory card are automatically updated.
2. When the module of the slave station has been replaced, updated parameters are automatically set from the master station by resetting the master station or turning its power off and on.



- 3 The parameter (A) of the slave station is changed to (B) by the SLMP.
- 4 The saved parameter (A) of the CPU module in the master station is automatically updated to the parameter (B).

### Restriction

The slave station parameter automatic setting is executed in the following condition.

- The slave station is a CC-Link IE TSN module. (For checking if a module is compatible with automatic update of saved parameter, refer to the manual of the module being used for the slave station.)

## Setting method

Set in the "Parameter of Slave Station" window. (  Page 192 Parameter processing of a slave station)

### Precautions

- A slave station whose slave station parameter automatic setting abnormally ended does not start data link, and 'Execution result of slave station parameter automatic setting function' (SW0160 to SW0167) turns on. Check 'Detailed execution result of slave station parameter automatic setting' (SW0194) and the event history and perform corrective actions according to Action of the error codes list.
- Do not disconnect the slave station that is currently executing an automatic update of saved parameters. Update of parameter may fail.
- Do not turn off the master station that is currently executing an automatic update of saved parameters. Incorrect parameters are automatically set in the slave station at the next power-on.
- If saved parameters are not in the CPU module when executing an automatic update of saved parameters, slave station parameters are newly created.
- Check if the checkbox of "Parameter Automatic Setting" of the slave station is selected in "Network Configuration Settings" under "Basic Settings".
- Check if the IP address of the slave station in the "Network Configuration Settings" under "Basic Settings" matches the actual IP address of the slave station.
- When different communication speeds are set for the master station and the station where slave station parameter automatic setting is performed, the slave station parameter automatic setting may end abnormally. If the setting ends abnormally, check if the communication speed is matched.
- When the parameters of a slave station are stored in the SD memory card, set "Use" of "Slave Station Parameter" in "Setting of File/Data Use or Not in Memory Card" under "Memory Card Parameter" for the CPU module.
- In "Network Configuration Settings" under "Basic Settings" in all master stations controlled by the CPU module, set 1024 or smaller to the total number for the slave station parameter automatic setting including extension modules.

### Point

When changing (writing back) the slave station parameters of MR-J5(W)-G, set the servo parameter "Parameter automatic backup update interval (PN20)". By setting this parameter, parameters are written back at the set interval when there is a difference between the parameters stored in the CPU module and slave station. To apply the changed parameters to the project, perform the following procedure.

- Slave station parameter setting screen ⇒ "Read" ⇒ Read parameters directly from the servo amplifier ⇒ Apply the slave station parameters to the project

The number of times for writing data from the CPU module to the data memory is limited. For details, refer to the following manual.

 MR-J5-G/MR-J5W-G User's Manual (Parameters)




# 5 PARAMETER SETTINGS

---

This chapter describes the parameter settings required for communications between the Motion module and other stations.

## 5.1 Setting Parameters

---

1. Add the Motion module in the engineering tool.  
 Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Right-click ⇒ [Add New Module]
2. The required settings, basic settings, and application settings are included in the parameter settings. Select one of the settings from the tree on the window shown below.  
 Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Module Parameter (Network)"
3. After setting parameters, click the [Apply] button.
4. Write parameters to the CPU module using the engineering tool.  
 [Online] ⇒ [Write to PLC]
5. The parameters are reflected by resetting the CPU module or powering off and on the system.

5

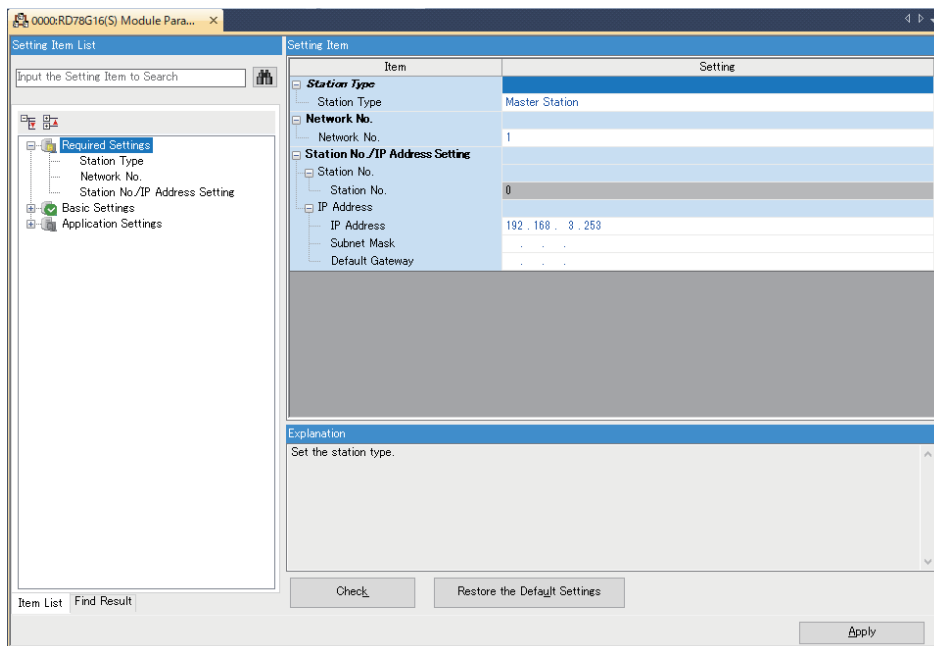
### Point

The settings displayed on the required settings, basic settings, and application settings pages (default: ) are the values that are displayed when the [Restore the Default Settings] button on each window of the engineering tool is clicked.

---

## 5.2 Required Settings

Set the station type or IP address of the Motion module.



Item	Description	Reference
Station Type	Set the station type of the Motion module.	Page 170 Station Type
Network No.	Set the network No. of the Motion module.	Page 171 Network No.
Station No./IP Address Settings	Set the station No. or IP address of the Motion module.	Page 171 Station No./IP Address Settings

### Station Type

Set the station type of the Motion module.

Item	Description	Setting range
Station Type	The Motion module is used as the master station. Only one master station can be set in a network.	—

## Network No.

Set the network No. of the own station of the Motion module.

Item	Description	Setting range
Network No.	Set the network No. of the Motion module.	1 to 239 (Default: 1)

### Precautions

Set a network number that does not overlap any other network numbers.

In particular, when an Ethernet-equipped module (CPU module) is used at default, the IP address is 192.168.3.39 and the network No. is the third octet of the IP address, thus 3. Because setting the network No. of the Motion module to 3 causes an overlap, set another network No.

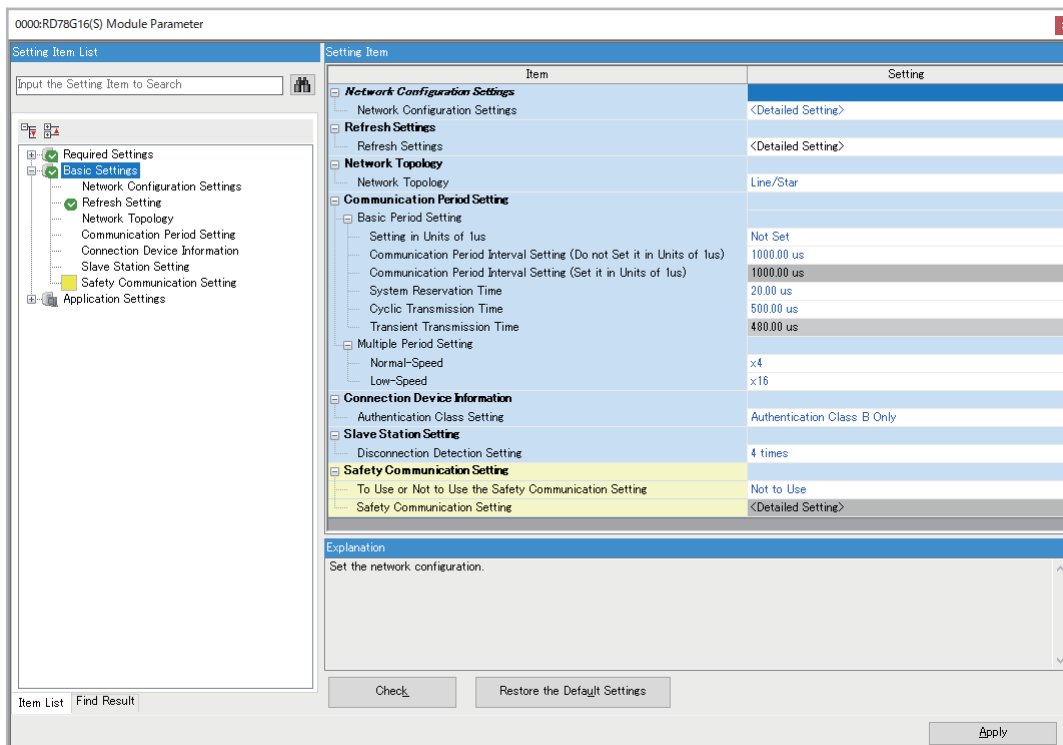
## Station No./IP Address Settings

Set the station No. and IP address of the own station of the Motion module.

Item	Description	Setting range
Station No.	The station No. of the master station is fixed to 0.	—
IP Address	Set the IP address of the own station. Set an IP address different from those used in other stations. (☞ Page 152 IP address duplication detection) Do not set the following values. <ul style="list-style-type: none"> <li>• The third and fourth octets are all 0 or all 1.</li> <li>• The host address bits are all 0 or all 1</li> <li>• Reserved address</li> </ul>	0.0.0.1 to 223.255.255.254 (Default: Master station 192.168.3.253)
Subnet Mask	Set the subnet mask. Set the same value for the master station and slave station. If the subnet mask is empty, the address class (class A, class B, class C) is determined from the setting of "IP Address", and operation is done with the subnet mask according to the address class. The subnet mask for each class is as follows. <ul style="list-style-type: none"> <li>• Class A: 255.0.0.0</li> <li>• Class B: 255.255.0.0</li> <li>• Class C: 255.255.255.0</li> </ul> The IP address for each class is as follows. <ul style="list-style-type: none"> <li>• Class A: 0.x.x.x to 127.x.x.x</li> <li>• Class B: 128.x.x.x to 191.x.x.x</li> <li>• Class C: 192.x.x.x to 223.x.x.x</li> </ul> The host address for each class is the 0 section shown below. <ul style="list-style-type: none"> <li>• Class A: 255.0.0.0</li> <li>• Class B: 255.255.0.0</li> <li>• Class C: 255.255.255.0</li> </ul>	<ul style="list-style-type: none"> <li>• Empty</li> <li>• 0.0.0.1 to 255.255.255.255</li> </ul> (Default: empty)
Default Gateway	Set the default gateway.	<ul style="list-style-type: none"> <li>• Empty</li> <li>• 0.0.0.1 to 223.255.255.254</li> </ul> (Default: empty)

## 5.3 Basic Settings

Set the network configurations, refresh setting, or other parameters for the Motion module.



○ : Can be set, × : Cannot be set

Item	Description	Reference
Network Configuration Settings	Set the CC-Link IE TSN configuration.	Page 186 "CC-Link IE TSN Configuration" window
Refresh Settings	Assign link refresh ranges between the devices described below. • SB, SW, link devices (RX, RY, RWr, RWw) of the Motion module ↔ Devices of the CPU module	Page 173 Refresh Settings
Network Topology	Select the network topology type according to the actual network configuration.	Page 177 Network Topology
Communication Period Setting	Set the basic cycle setting and multiple cycle setting.	Page 177 Communication Period Setting
Connection Device Information	Set the information of connected devices.	Page 178 Connection Device Information
Slave Station Setting	Set the number of consecutive communication failures until a slave station is considered disconnected.	Page 178 Slave Station Setting
Safety Communication Setting <sup>*1</sup>	Set whether to use the safety communication or not and set the safety connections and the transfer ranges of safety devices.	Page 178 Safety Communication Setting

\*1 This item can be set only in a project of the Safety CPU.

# Refresh Settings

Assign link refresh ranges between the devices described below.

- SB, SW, link devices (RX, RY, RWr, RWw) of the Motion module ↔ Devices of the CPU module

## Setting method

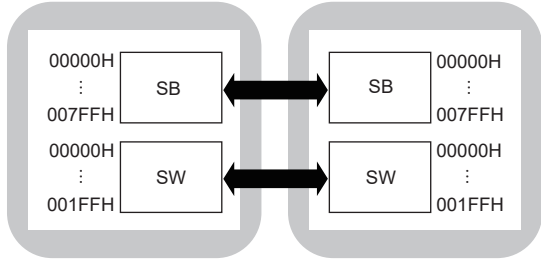
The procedure for the refresh settings is shown below.

1. Set the required items.

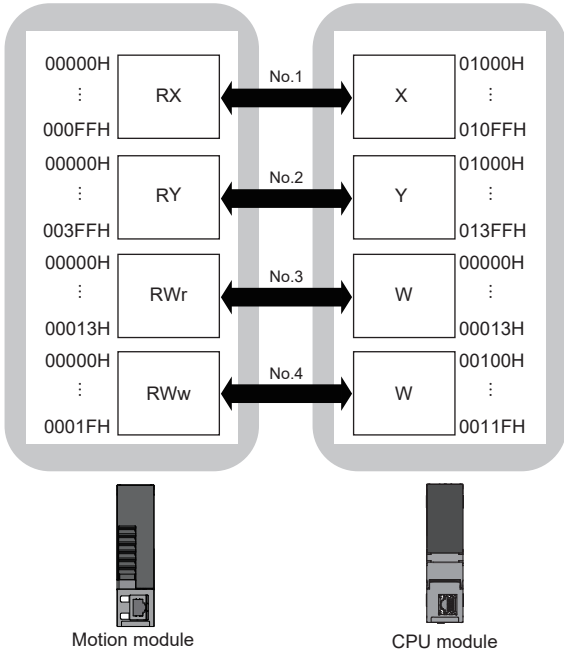
No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	4096	00000	00FFF	↔	Module Label				
-	SW	512	00000	001FF	↔	Specify Device	SW	512	00000	001FF
1	RX	256	00000	000FF	↔	Specify Device	X	256	01000	010FF
2	RY	1024	00000	003FF	↔	Specify Device	Y	1024	01000	013FF
3	RWr	20	00000	00013	↔	Specify Device	W	20	00000	00013
4	RWw	32	00000	0001F	↔	Specify Device	W	32	01000	0101F
5	LB	256	00100	001FF	↔	Specify Device	B	256	00000	000FF
6	LW	32	00100	0011F	↔	Specify Device	W	32	00200	0021F
7										

2. Click the [Apply] button to finish the refresh settings.

## Setting items

Item	Description	Setting range
Device Assignment Method	<p>Right-click the setting screen and select a link device assignment method in "Device Assignment Method".</p> <ul style="list-style-type: none"> <li>Start/End: Enter the start and end numbers of link devices.</li> <li>Points/Start: Enter the numbers of points and start numbers of link devices.</li> </ul>	<ul style="list-style-type: none"> <li>Start/End</li> <li>Points/Start</li> </ul> (Default: Start/End)
—	<p>Link Side</p> <p>Set the link refresh ranges of the link special relay (SB) and link special register (SW). One range can be set for each SB and SW. (Page 123 Link refresh)</p> <p><b>Ex.</b></p>  <p>Motion module</p> <p>CPU module</p>	<ul style="list-style-type: none"> <li>Device Name           <ul style="list-style-type: none"> <li>SB (fixed)</li> <li>SW (fixed)</li> </ul> </li> <li>Points           <ul style="list-style-type: none"> <li>SB: 16 to 4096</li> <li>SW: 1 to 4096</li> </ul>           (Default: Grayout)         </li> <li>Start           <ul style="list-style-type: none"> <li>SB: 0H to FF0H (set in increments of 16 points)</li> <li>SW: 0H to FFFH (set in increments of 1 point)</li> </ul>           (Default: empty)         </li> <li>End           <ul style="list-style-type: none"> <li>SB: FH to FFFH (set in increments of 16 points)</li> <li>SW: 0H to FFFH (set in increments of 1 point)</li> </ul>           (Default: empty)         </li> <li>Target           <ul style="list-style-type: none"> <li>Specify Device</li> </ul>           (Default: empty)         </li> <li>Device Name           <ul style="list-style-type: none"> <li>Specify Device (link side is SB): SB, M, L, B, D, R, ZR, RD</li> <li>Specify Device (link side is SW): SW, M, L, B, D, R, ZR, RD</li> </ul>           (Default: Grayout)         </li> <li>Points, End           <ul style="list-style-type: none"> <li>For a specified device: Displayed corresponding to the setting of "Start".</li> </ul>           (Default: Grayout)         </li> <li>Start           <ul style="list-style-type: none"> <li>Specify Device: Device range of CPU modules (Set bit devices in increments of 16 points and word devices in increments of 4 points.)</li> </ul>           (Default: Grayout)         </li> </ul>
	<p>CPU Side</p>	



Item	Description	Setting range
1 to 256	Link Side Set the link refresh ranges of link devices (RX, RY, RWr, RWw). Up to 256 ranges can be set. (☞ Page 123 Link refresh)  Ex. 	<ul style="list-style-type: none"> <li>■Device Name               <ul style="list-style-type: none"> <li>• RX, RY, RWr, RWw (Default: empty)</li> </ul> </li> <li>■Points               <ul style="list-style-type: none"> <li>• RX, RY: 16 to 16384</li> <li>• RWr, RWw: 4 to 8192 (Default: Grayout)</li> </ul> </li> <li>■Start               <ul style="list-style-type: none"> <li>• For RX, RY: 0000H to 3FF0H (increments of 16)</li> <li>• For RWr, RWw: 0000H to 1FFCH (increments of 4) (Default: Grayout)</li> </ul> </li> <li>■End               <ul style="list-style-type: none"> <li>• For RX, RY: 000FH to 3FFFH (increments of 16)</li> <li>• For RWr, RWw: 0003H to 1FFFH (increments of 4) (Default: Grayout)</li> </ul> </li> <li>■Target               <ul style="list-style-type: none"> <li>• Specify Device (Default: Grayout)</li> </ul> </li> <li>■Device Name               <ul style="list-style-type: none"> <li>• Specify Device (link side is RX): X, M, L, B, D, W, R, ZR, RD</li> <li>• Specify Device (link side is RY): Y, M, L, B, D, W, R, ZR, RD</li> <li>• Specify Device (link side is RWr, RWw): M, L, B, D, W, R, ZR, RD (Default: Grayout)</li> </ul> </li> <li>■Points, End               <ul style="list-style-type: none"> <li>• For a specified device: Displayed corresponding to the setting of "Start". (Default: Grayout)</li> </ul> </li> <li>■Start               <ul style="list-style-type: none"> <li>• Specify Device: Device range of CPU modules (Set bit devices in increments of 16 points and word devices in increments of 4 points.) (Default: Grayout)</li> </ul> </li> </ul>
	CPU Side	

**Point**

The link device of the Motion module can be accessed from the program as well. (☞ Page 125 Direct access to link devices)

## Precautions

### ■Devices to be set to "CPU Side"

Set a device range not to overlap the one used for the following:

- "Refresh Setting" of "Basic Settings" of other network modules
- "Refresh Setting" of "Basic Settings" of the CC-Link master/local module
- I/O numbers used for I/O modules and intelligent function modules
- "Refresh Setting" of the intelligent function module
- Module label used (When the refresh setting is configured in "Refresh Setting" of "Basic Settings")
- "Refresh Setting between Multiple CPUs" of "CPU Parameter" of the multiple CPU system

### ■Link refresh range

Set only link devices used in the CPU module for link refresh range. Doing so will reduce the number of excess points, resulting in a shorter link refresh time.

### ■When the assignment of the link device is changed in "Network Configuration Settings" of "Basic Settings"

Correct the setting range of "Refresh Setting" of "Basic Settings".



# Network Topology

Select the network topology type according to the actual network configuration.

Item	Description	Setting range
Network Topology	Select the network topology type according to the actual network configuration.	• Line/Star (Default: Line/Star)

## Communication Period Setting


Set the basic cycle setting and multiple cycle setting.

- Basic cycle setting requires calculation of the communication cycle interval and cyclic transmission time. (  Page 328 Communication cycle interval)
- Multiple cycle setting is used when communication cycles coexist. (  Page 131 Communication cycles coexistence)

Item	Description	Setting range
Basic Period Setting	Setting in Units of 1μs	Select whether to set the basic cycle in increments of 1μs.  • Set • Not set (Default: Not set)
	Communication Period Interval Setting (Do Not Set it in Units of 1μs)	Select the setting range of the communication cycle interval.  • 250.00μs • 500.00μs • 1000.00μs • 2000.00μs • 4000.00μs (Default: 1000.00μs)
	Communication Period Interval Setting (Set it in Units of 1μs)	Enter a value of the communication cycle interval.  250.00 μs to 4000.00 μs (in increments of 1 μs) (Default: 1000.00μs)
	System Reservation Time	Necessary time for the system to guarantee the communication cycle interval. When "Communication Speed" of the master is 100 Mbps, select 200 μs.  • 20.00μs • 200.00μs (Default: 20.00μs)
	Cyclic Transmission Time	Set the time to be allocated to cyclic transmission in communication cycle intervals.  5.00 μs to 3966.00 μs (in increments of 1 μs) (Default: 500.00μs)
	Transient Transmission Time	The value of "Communication Period Interval Setting" minus "Cyclic Transmission Time" and "System Reservation Time" is displayed.  14.00 μs to 3975.00 μs (in increments of 1 μs) (Default: 480.00μs)
Multiple Cycle Setting	Normal-Speed	Select the "Normal-Speed" cycle for a basic cycle. Setting is not required and can be left as "×4".  (Default: ×4)
	Low-Speed	Select the "Low-Speed" cycle for a basic cycle. Select a value larger than the one set for "Normal-Speed".  • ×16 • ×32*1 • ×64*1 • ×128*1 (Default: ×16)

\*1 When the version of Add-on baseSystem is "Ver. 1.18 or earlier", an error occurs if a value other than "×16" is set.

### Point

- When the TSN hub is used, set the timeslot information from the setting values in "Basic Period Setting". The timeslot information can be checked with the buffer memory. (  Page 299 Timeslot information)
- Set "Communication Period Setting" according to the communication cycle supported by the slave station.

### Precautions

- There are slave devices which do not correspond to some communication period. Check the specifications of each device.
- When the multiple cycle setting is used, set the cycle so that the calculated value of the communication cycle setting and the magnification of the multiple cycle setting does not exceed 16 ms. The following are the examples.
  - Basic communication cycle 1 ms × Low-speed, ×16: Setting allowed
  - Basic communication cycle 2 ms × Normal-speed, ×8: Setting allowed
  - Basic communication cycle 2 ms × Low-speed, ×16: Setting disallowed

## Connection Device Information

Set the information of the connected device.

Item	Description	Setting range
Authentication Class Setting* <sup>1</sup>	Set the authentication Class of connected devices.	<ul style="list-style-type: none"> <li>• Authentication Class B only</li> <li>• Mixture of Authentication Class B/A or Authentication Class A Only</li> </ul> (Default: Authentication Class B only)
TSN HUB Setting* <sup>2</sup>	Set whether to use a TSN hub.	<ul style="list-style-type: none"> <li>• Not to Use TSN HUB</li> <li>• Use TSN HUB</li> </ul> (Default: Not to Use TSN HUB)

\*1 When this setting is set to "Authentication Class B only", the engineering tool checks whether there is a setting for "Authentication Class A" in "Authentication Class Setting" of "Network Configuration Settings".

\*2 This can be set when "Authentication Class Setting" is set to "Mixture of Authentication Class B/A or Authentication Class A Only".

### Precautions

- In the case of "Authentication Class B Only" and "Mixture of Authentication Class B/A or Authentication Class A Only" system configuration, different restrictions apply. For details, refer to "SYSTEM CONFIGURATION" in PART 2 of the following manual.

 MELSEC iQ-R Motion Module User's Manual (Startup)

- To connect a TSN hub when "Authentication Class Setting" is set to "Mixture of Authentication Class B/A or Authentication Class A Only", set "TSN HUB Setting" to "Use TSN HUB".

## Slave Station Setting

Set items related to the slave station.

Item	Description	Setting range
Disconnection Detection Setting	Set the number of consecutive communication failures until a slave station is considered disconnected.	<ul style="list-style-type: none"> <li>• 2 times</li> <li>• 4 times</li> <li>• 8 times</li> </ul> (Default: 4 times)


## Safety Communication Setting

Set whether to use the safety communication or not and set safety connections.

Item	Description	Setting range
To Use or Not to Use the Safety Communication Setting	Set whether to use the safety communication or not.	<ul style="list-style-type: none"> <li>• Not Use</li> <li>• Use</li> </ul> (Default: Not Use)
Safety Communication Setting	Set the safety connections and transfer ranges of safety devices required for safety communications.	Page 179 Setting method

### Restriction

Set the following items before configuring the safety communication setting.

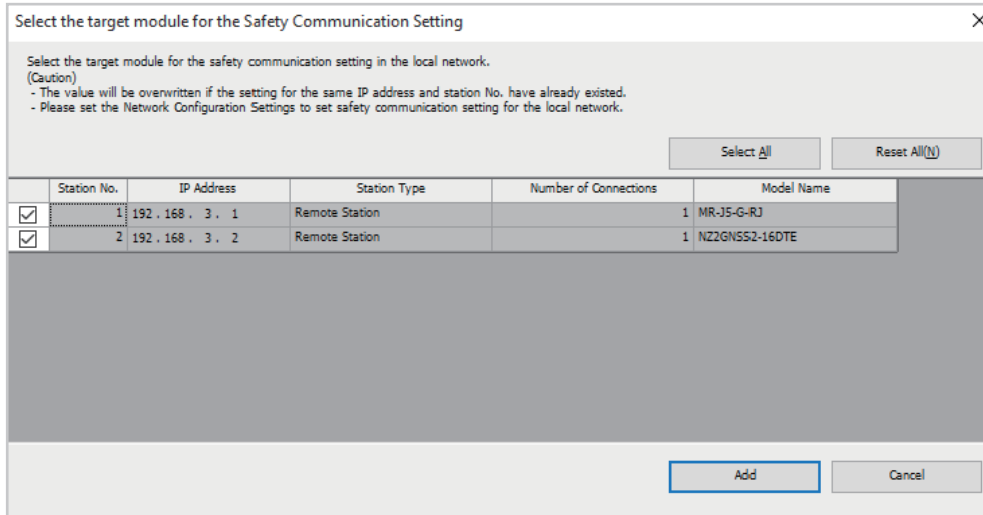
- "Network Configuration Settings" in "Basic Settings" ( Page 186 "CC-Link IE TSN Configuration" window)

If the above items are not set, the slave station is not displayed as the target module in the "Select the target module for the Safety Communication Setting" window and safety communications cannot be set.

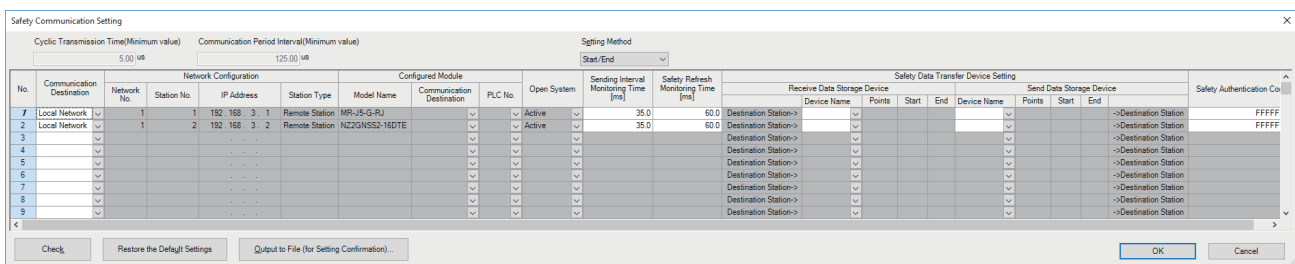
## Setting method

The procedure for the safety communication setting is shown below.

1. Set "Communication Destination" to "Local Network".
2. For the master station, select the target module of safety communications in the "Select the target module for the Safety Communication Setting" window and click the [Add] button.




3. Set the required items.



4. Click the [OK] button to finish the safety communication setting.

## Setting items

Item	Description	Setting range	
Cyclic Transmission Time (Minimum value)	<p>The cyclic transmission time that are calculated by the number of slave stations and the number of points of link devices, or the values set for standard communications and safety communications is displayed. Use the displayed value as a guide.<sup>*1</sup></p> <p>Even if the number of slave stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". For details, refer to the following.</p> <p>☞ Page 328 Communication cycle interval</p> <p>The displayed value can be used for "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" of the module parameter.</p> <p>If cyclic transmission is not performed by setting the displayed value, set a value obtained by adding 10% as follows.</p> <p>Calculation formula: <math>A+A \times 0.1</math></p> <p>A: Cyclic transmission time (minimum value)</p>	—	
Communication Period Interval (Minimum value)	<p>The communication cycle intervals that are calculated by the number of slave stations and the number of points of link devices by using the values set for standard communications and safety communications are displayed. Use the displayed value as a guide.<sup>*1</sup></p> <p>Even if the number of slave stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". For details, refer to the following.</p> <p>☞ Page 328 Communication cycle interval</p> <p>The displayed value can be used for "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the module parameter.</p> <p>If cyclic transmission is not performed by configuring the setting with the displayed value, set a value obtained by adding 10% as follows.</p> <p>Calculation formula: <math>B+A \times 0.1</math></p> <p>A: Cyclic transmission time (minimum value)</p> <p>B: Communication cycle interval (minimum value)</p>	—	
Setting Method	<p>Right-click in the "Safety Communication Setting" window and select an assignment method in "Safety Data Transfer Device Setting".</p> <ul style="list-style-type: none"> <li>• Start/End: Enter the start and end numbers of safety devices.</li> <li>• Points/Start: Enter the points and start numbers of safety devices.</li> </ul>	<ul style="list-style-type: none"> <li>• Start/End</li> <li>• Points/Start (Default: Start/End)</li> </ul>	
No.	Safety connection number for distinguishing settings for each safety connection.	1 to 120 <sup>*2</sup>	
Communication Destination	Set a network of the communication destination.	Local Network (Default: empty)	
Network Configuration	Network No.	The network number of the communication destination is displayed.	—
	Station No.	When the own station is the master station: The station number of communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	—
	IP Address <sup>*3</sup>	When the own station is the master station: The IP address of communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	0.0.0.1 to 223.255.255.254 (Default: empty)
	Station Type	When the own station is the master station: The station type of the communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	—

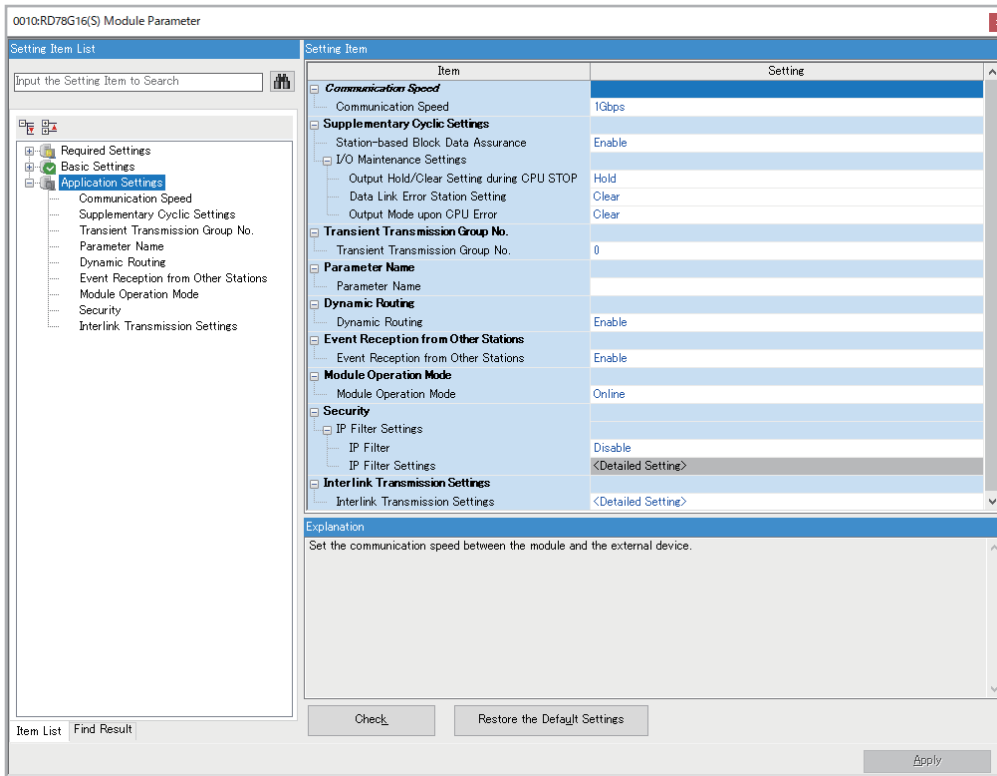
Item		Description	Setting range
Configured Module	Model Name	When the own station is the master station: The module model name of the communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	—
	Communication Destination <sup>*4</sup>	When the communication destination is a local station: The CPU model name of communication destination is displayed.	<ul style="list-style-type: none"> <li>• R08SF CPU</li> <li>• R16SF CPU</li> <li>• R32SF CPU</li> <li>• R120SF CPU</li> <li>• R16NCCPU</li> <li>• CR800-R</li> </ul> (Default: empty)
	PLC No. <sup>*4</sup>	When the own station is the master station: Set the CPU number of the communication destination when the CPU module of the communication destination is set to CPU module other than the Safety CPU.	2 to 4 (Default: empty)
Open System		Open system of the own station is displayed.	Active (Fixed) (Default: empty)
Sending Interval Monitoring Time [ms]		In each safety connection, set sending interval monitoring time for a receiving station to detect safety communication errors.	3.0 to 1000.0 (Default: empty)
Safety Refresh Monitoring Time [ms]		In each safety connection, set safety refresh monitoring time for a receiving station to detect safety communication errors.	4.0 to 2000.0 (Default: empty)
Safety Data Transfer Device Setting	Receive Data Storage Device	Set a safety device of the Safety CPU where safety data are received.	■Device name <ul style="list-style-type: none"> <li>• SA\X</li> <li>• SA\I</li> <li>• SA\B</li> <li>• SA\D</li> <li>• SA\W</li> </ul> (Default: empty) ■Points <ul style="list-style-type: none"> <li>• Bit device: 16 to 128 (set in increments of 16 points)<sup>*5</sup></li> <li>• Word device: 1 to 8 (set in increments of 1 point)</li> </ul> (Default: empty) ■Start/End Range of a safety device in the Safety CPU (Default: empty)
	Send Data Storage Device	Set a safety device of the Safety CPU where safety data are sent.	■Device name <ul style="list-style-type: none"> <li>• SA\Y</li> <li>• SA\I</li> <li>• SA\B</li> <li>• SA\D</li> <li>• SA\W</li> </ul> (Default: empty) ■Points <ul style="list-style-type: none"> <li>• Bit device: 16 to 128 (set in increments of 16 points)<sup>*5</sup></li> <li>• Word device: 1 to 8 (set in increments of 1 point)</li> </ul> (Default: empty) ■Start/End Range of a safety device in the Safety CPU (Default: empty)
Safety Authentication Code		This code is used to identify the communication destination when safety communications perform. Set the same value in the master station and slave station to perform the safety communications.	0 to FFFFFFFH (Default: empty)
[Output to File (for Setting Confirmation)] button		Outputs the contents of the safety communication setting to a CSV file. The file is used to check whether there is no discrepancy between the safety communication setting written to the Safety CPU and that of the project. (  GX Works3 Operating Manual)	—

- \*1 If the setting cannot be confirmed in the module parameters and "Network Configuration Settings", a hyphen may be displayed or the displayed calculation result may not be correct.
- \*2 Set the safety connection number starting with 1.  
Even if the safety connection is set in a random line, the unset line is deleted and the number is set starting with 1 when the [OK] button is clicked.
- \*3 When the setting of IP address and PLC No. is one of the following, an error is displayed on GX Works3.  
The same IP address is set and some PLC Nos. are empty.  
The same IP address is set and the PLC No. is set.
- \*4 Setting this item causes an error.
- \*5 Safety communications are sent/received in increments of 32 points, however a safety data transfer device setting can be set in increments of 16 points.



# 5.4 Application Settings

Set the supplementary cyclic settings, event reception from other stations, and other settings for the Motion module.



○: Can be set, ×: Cannot be set

Item	Description	Reference
Communication Speed	Set the communication speed.	Page 184 Communication speed setting
Supplementary Cyclic Settings	Set the station-based block data assurance and I/O maintenance settings.	Page 184 Supplementary Cyclic Settings
Transient Transmission Group No. Setting*1	Set the transient transmission group number.	—
Parameter Name	Set a name for the module parameter if desired.	Page 184 Parameter Name
Dynamic Routing*2	Select whether to enable the dynamic routing function.	—
Event Reception from Other Stations	Select whether to obtain the events occurring in the other stations.	Page 184 Event Reception from Other Stations
Module Operation Mode	Set the module operation mode.	Page 185 Module Operation Mode
Security	Set the security measures for access to the Ethernet device.	Page 185 Security
Interlink Transmission Settings*2	Set link device ranges when cyclic data are transferred from a station in the own network to a station in a different network.	—

\*1 An error will occur when a value other than 0 is set.

\*2 The setting is invalid.

## Communication speed setting

Set the communication speed.

Item	Description	Setting range
Communication Speed	Select the communication speed.	<ul style="list-style-type: none"> <li>• 1Gbps</li> <li>• 100Mbps</li> </ul> (Default: 1Gbps)

For details of the connection of a module or device in the communication speed setting, refer to "SYSTEM CONFIGURATION" in PART 2 of the following manual.





 MELSEC iQ-R Motion Module User's Manual (Startup)

### Precautions

When the speed is set to 100 Mbps, the module cannot be connected with the slave station (1 Gbps) which is not compatible with 100 Mbps.

## Supplementary Cyclic Settings

Set the station-based block data assurance and I/O maintenance settings.

Item	Description	Setting range
Station-based Block Data Assurance	Set whether to assure the data by station for link fresh between the CPU module and Motion module. Regardless of the setting, the Motion control station is operated with "Disable". (  Page 129 Cyclic data assurance)	<ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul> (Default: Enable)
I/O Maintenance Settings	Output Hold/Clear Setting during CPU STOP	Set whether to hold or clear the output when the CPU module is changed from RUN to STOP on the sending side. Regardless of the setting, the motion control station is operated with "Hold". (  Page 132 I/O maintenance settings)
	Data Link Error Station Setting	Set whether to hold or clear the input from a disconnected station on the receiving side. Regardless of the setting, the motion control station is operated with "Hold". (  Page 132 I/O maintenance settings)
	Output Mode upon CPU Error	Set whether to hold or clear the output when a stop error occurs in the CPU module on the sending side. Regardless of the setting, the motion control station is operated with "Hold". (  Page 132 I/O maintenance settings)

## Parameter Name

Set a name for the module parameter if desired.

Item	Description	Setting range
Parameter Name	Set a name for the module parameter if desired.	Up to 8 one-byte or two-byte characters (Default: empty)

## Event Reception from Other Stations

Select whether to obtain the events occurring in the other stations.

Item	Description	Setting range
Event Reception from Other Stations	Select whether to obtain the events occurring in the other stations.	<ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul> (Default: Enable)

# Module Operation Mode

Set the module operation mode of the Motion module.

Item	Description	Setting range
Module Operation Mode	Online • Select this mode to connect the Motion module to the network for performing data link with other stations.	—

# Security

Set the security measures for access to the Ethernet device.

Item	Description	Setting range
IP Filter Settings	IP Filter	Set whether to use the IP filter. • Not Use • Use (Default: Not Use)
	IP Filter Settings	Set the IP addresses to be allowed or denied. —

## IP Filter Settings

Up to 32 IP addresses can be set as an IP address to be allowed or denied by the IP filter.

Range specification and specification of the IP addresses to be excluded from the set range as a single setting are possible.

Item	Description	Setting range
Access from IP address below	Select whether to allow or deny the access from the specified IP addresses.	• Allow • Deny (Default: Allow)
Range Setting	Select this item when specifying the IP addresses by range.	(Default: Clear)
IP Address	Set the IP addresses to be allowed or denied. When "Range Setting" is selected, enter the start IP address (left field) and end IP address (right field) of the range.	0.0.0.1 to 223.255.255.254 (Default: empty)
IP Address Excluded from Range	When "Range Setting" is selected, set the IP address to be excluded from the set range of "IP Address". Up to 32 IP addresses can be set.	0.0.0.1 to 223.255.255.254 (Default: empty)

# 5.5 "CC-Link IE TSN Configuration" window

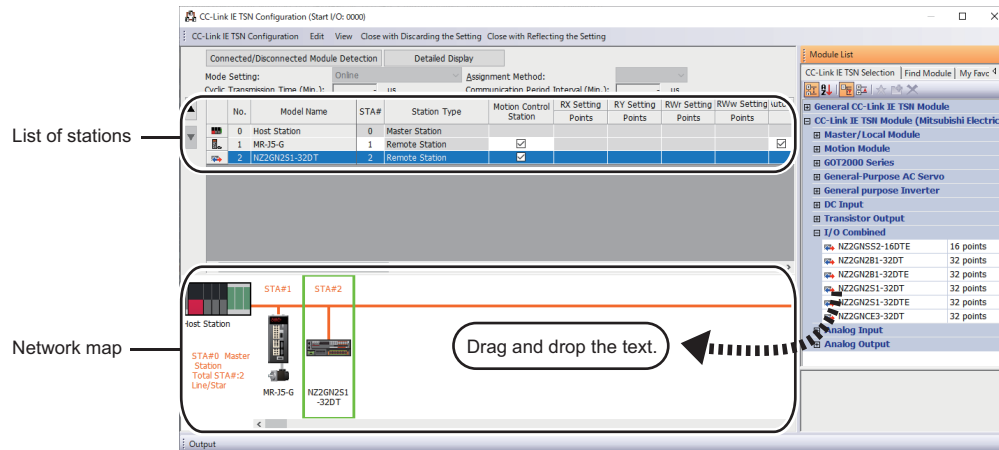
Perform the parameter setting of slave stations, the detection of connected/disconnected devices, or others.

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>

## Parameter setting of a slave station

Set parameters of slave stations (the number of points and assignment of link devices) in the master station.

1. Select the module in "Module List" and drag it to the list of stations or the network map.



2. Set the required items.
3. Check the system configuration.






[CC-Link IE TSN Configuration] ⇒ [Check] ⇒ [System Configuration]  
 When a warning or error is displayed on the "Output" window, refer to the following.  
 MELSOFT Navigator MessageNo.


4. Select [Close with Reflecting the Setting] and close the "CC-Link IE TSN Configuration" window.

### Setting items

- Simple Display: Click the [Simple Display] button to display a narrow portion of items. Use for operation with default settings or the minimum required settings. (Default)
- Detailed Display: Click the [Detailed display] button to display all items.

Simple display	Detailed display	Description	Setting range
Mode Setting		The setting of "Module Operation Mode" is displayed. For details on the settings, refer to the following. • Module Operation Mode: Page 185 Module Operation Mode	—
—	Assignment Method	Select a link device assignment method. Select "Points/Start" for the motion control station. • Points/Start: Enter the numbers of points and start numbers of link devices. • Start/End: Enter the start and end numbers of link devices.	• Points/Start • Start/End (Default: Points/Start)
Cyclic Transmission Time (Min.)		The cyclic transmission time that are calculated by the number of slave stations and the number of link device points is displayed. Use the displayed value as a guide. <sup>*1</sup> Even if the number of slave stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". For details, refer to the following. Page 328 Communication cycle interval The displayed value can be used for "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" of the module parameter. If cyclic transmission is not performed by setting the displayed value, set a value obtained by adding 10% as follows. Calculation formula: A+A×0.1 A: Cyclic transmission time (minimum value)	—

Simple display	Detailed display	Description	Setting range
Communication Period Interval (Min.)		<p>The communication cycle intervals that are calculated by the number of slave stations and the number of link device points are displayed. Use the displayed value as a guide.*<sup>1</sup></p> <p>Even if the number of slave stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". For details, refer to the following.</p> <p> Page 328 Communication cycle interval</p> <p>The displayed value can be used for "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the module parameter. If cyclic transmission is not performed by configuring the setting with the displayed value, set a value obtained by adding 10% as follows.</p> <p>Calculation formula: <math>B+A \times 0.1</math></p> <p>A: Cyclic transmission time (minimum value) B: Communication cycle interval (minimum value)</p>	—
No.		The total number of slave stations set in the "CC-Link IE TSN Configuration" window is displayed.	<ul style="list-style-type: none"> <li>• Master station: Fixed to "0"</li> <li>• Slave station: 1 to 256</li> </ul>
Model Name		<p>The module model name is displayed.</p> <p>To set a module where the profile is not registered, select it from the "General CC-Link IE TSN Module" list or register the profile before setting the model name. For how to register a profile, refer to the following.</p> <p> GX Works3 Operating Manual</p>	—
STA#		Enter the station number of each slave station connected to the network. Station numbers do not need to be set consecutively, but must be unique.	<ul style="list-style-type: none"> <li>• Master station: Fixed to "0"</li> <li>• Slave station: 1 to 120</li> </ul> (Default: Serial number of added stations)
Station Type* <sup>2</sup>		Set the station types. Select the station types same as those of the modules connected to the network.	<ul style="list-style-type: none"> <li>• Remote Station</li> </ul> (Default: Varies depending on the set module)
Motion Control Station		Use the profile to allow selection of target stations for motion control.	<ul style="list-style-type: none"> <li>• Checked: Motion control target</li> <li>• Not checked: Not motion control target</li> </ul> (Default: Checked)
RX Setting		Assign RX/Ry points in increments of 16. (  Page 121 Communications using RX, RY, RWr, and RWw) Modules with settings provided by the profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed) For the motion control station, the number of points cannot be set.	<ul style="list-style-type: none"> <li>• Number of points: 16 to 16384</li> <li>• Start: 0H to 3FF0H</li> <li>• End: FH to 3FFFH</li> </ul> (Default: Varies depending on the set module)
RY Setting			
RWw Setting		Assign RWw/RWr points in increments of 4. (  Page 121 Communications using RX, RY, RWr, and RWw) Modules with settings provided by the profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed) For the motion control station, the number of points cannot be set.	<ul style="list-style-type: none"> <li>• Number of points: 4 to 8192</li> <li>• Start: 0H to 1FFCH</li> <li>• End: 3H to 1FFFH</li> </ul> (Default: Varies depending on the set module)
RWr Setting			
—	LB Setting* <sup>3</sup>	Assign LB points in increments of 16 and LW points in increments of 1. Modules with settings provided by the profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed)	<ul style="list-style-type: none"> <li>• Number of points: 16 to 32768</li> <li>• Start: 0H to 7FF0H</li> <li>• End: FH to 7FFFH</li> </ul> (Default: Varies depending on the set module)
	LW Setting* <sup>3</sup>		<ul style="list-style-type: none"> <li>• Number of points: 1 to 16384</li> <li>• Start: 0H to 3FFFH</li> <li>• End: 0H to 3FFFH</li> </ul> (Default: Varies depending on the set module)
Parameter Automatic Setting		Set whether to set the parameters of each slave station automatically. This cannot be set for extension modules. However, the parameter automatic setting of extension modules is interlocked with the settings of the connected main module.	<ul style="list-style-type: none"> <li>• Checked: Distribute parameters</li> <li>• Not checked: Do not distribute parameters</li> </ul> (Default: Not checked)
PDO Mapping Setting		Set the PDO mapping to the station that supports CANopen communications. (  Page 196 PDO mapping setting) This cannot be set for Motion control modules.	—
IP Address		Set the IP address of a station that performs cyclic transmission.	0.0.0.1 to 223.255.255.254 (00.00.00.01 to DF.FF.FF.FE) (Default: The first to third octets have the same values as the master station, the fourth octet has a serial number from 1 to 254)

Simple display	Detailed display	Description	Setting range
Subnet Mask		Set a subnet mask to identify a network address. Set the same value for the master station and slave station. Even if a slave station has a different subnet mask from the master station, it does not result in an input error. If 255.255.255.255 is set, leave it empty.	0.0.0.1 to 255.255.255.255 (00.00.00.01 to FF.FF.FF.FF) (Default: The same value as the master station, or 255.255.255.0 if there is no master station)
Default Gateway		Set the default gateway address to connect to the external network. If 223.255.255.255 is set, leave it empty.	0.0.0.1 to 223.255.255.254 (00.00.00.01 to DF.FF.FF.FE) (Default: 0.0.0.0)
Reserved/Error Invalid Station <sup>*4</sup>		Set the slave station as a reserved station or error invalid station. <ul style="list-style-type: none"> <li>• No Setting: The slave station is connected to the network.</li> <li>• Reserved Station: The slave station is reserved for future expansion. By using a reserved station, link device assignment will not change even if the slave station is added (reservation is canceled). Therefore, modification of the program is not required. Physical connection of the slave station on the network is not required.</li> <li>• Error Invalid Station: Even if a slave station is disconnected during data link, the master station will not detect the slave station as a faulty station.</li> </ul>	<ul style="list-style-type: none"> <li>• No Setting</li> <li>• Reserved Station</li> <li>• Error Invalid Station</li> </ul> (Default: No setting, master station is fixed as empty)
Network Synchronous Communication <sup>*5</sup>		Set whether to synchronize each slave station with network synchronous communication.	<ul style="list-style-type: none"> <li>• Synchronous</li> <li>• Asynchronous</li> </ul> (Default: Asynchronous)
Communication Period Setting <sup>*6</sup>		When multiple communication cycles are set, set the cycle of each slave station. (  Page 131 Communication cycles coexistence)	<ul style="list-style-type: none"> <li>• Basic Period</li> <li>• Normal-Speed</li> <li>• Low-Speed</li> </ul> (Default: Basic Period)
Station Information	■Alias	Enter the name of a device if required. The entered device name is displayed in "Network Status" in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window. For the extension module of the remote station, the name is not displayed in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window, even if entered.	Up to 32 one-byte characters (one-byte or two-byte) (Default: empty)
	■Comment	Information entered in "Comment1" on the "Properties" window displayed by right-clicking the module in the list of stations or the network map is displayed.	Up to 32 one-byte characters (one-byte or two-byte) (Default: empty)
	■Station-specific mode setting	Set the station-specific mode of the slave station. (Only when the slave station supports the station-specific mode)	The setting varies depending on the set module.
Authentication Class Setting		For each slave station, select which authentication Class the device is.	<ul style="list-style-type: none"> <li>• Authentication Class B</li> <li>• Authentication Class A</li> </ul> (Default: Automatically determined by the profile )

\*1 If the setting cannot be confirmed in the module parameters and "Network Configuration Settings", a hyphen may be displayed or the displayed calculation result may not be correct.

\*2 An error will occur when a value outside the setting range is set.

\*3 An error will occur when the number of points are set.

\*4 For the motion control station, only "No Setting" can be set. Any other setting will result in an error.

\*5 When the version of Add-on baseSystem is "Ver. 1.18 or earlier", an error will occur when "Synchronous" is set for standard stations.

\*6 For the motion control station, only "Basic Period" can be set. Any other setting will result in an error.

- Because a portion of the setting items are not displayed in simple display, when there are deficiencies in setting items that are not displayed, the "Output" window may display a warning or error by selecting [Close with Reflecting the Setting].

If a warning is displayed, switch to the detailed display and correct the items.

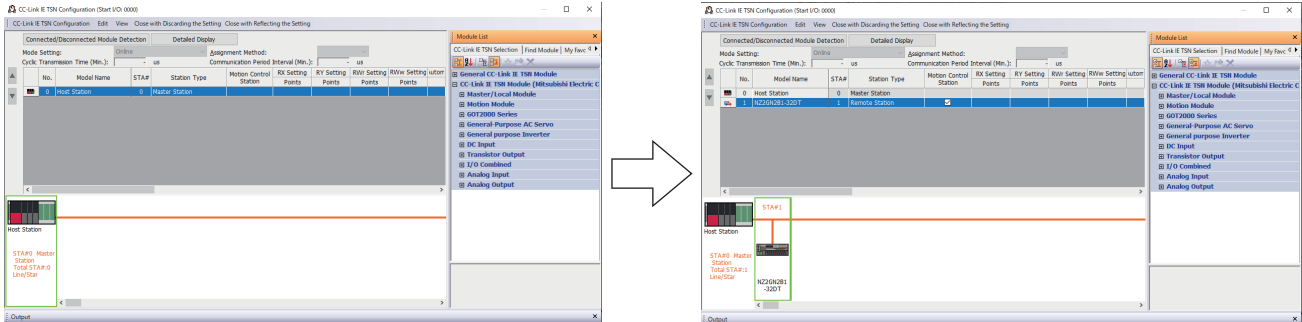
- Up to 120 stations with the station No. can be set up, and the network configuration setting can be set for up to 120256 stations. When extended modules supporting the CANopen communication is used, one module is counted as one station.
- A slave station to be controlled as a real axis needs to be set as a motion control station.
- If a slave station other than MR-J5(W)-G is set as a motion control station and connection is made, an error "Unsupported slave device connection" (error code: 1C4AH) occurs.
- The PDO mapping settings and number of I/O word points of the slave station set as the motion control station cannot be set freely from the engineering tool because the motion module sets them automatically according to the connected device. For details on PDO mapping for the motion control station, refer to "Devices Compatible with CC-Link IE TSN" in the following manual.

 MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)

# Connected/Disconnected Module Detection

Connected slave stations are detected and displayed on the "CC-Link IE TSN Configuration" window.

1. Click the [Connected/Disconnected Module Detection] button.
2. When the [Execute] button is clicked according to the instruction on the window, connected slave stations are detected and displayed on the "CC-Link IE TSN Configuration" window.



3. Check items in the list of stations and change them as necessary. (☞ Page 186 Setting items)
4. Select [Close with Reflecting the Setting] and close the "CC-Link IE TSN Configuration" window.

## Point

Detection of connected/disconnected devices cannot be executed in the following cases.

- "Link Direct Device Setting" of the CPU parameter is not "Extended Mode (iQ-R Series Mode)".
- The actual system configuration is incorrect. (An overlapping IP address or others)
- The master station does not perform data link.

## Connection/Disconnection/Replacement

When the [Connected/Disconnected Module Detection] button is clicked while the saved CC-Link IE TSN configuration is displayed, IP addresses of detected slave stations are compared with the saved IP addresses of slave stations and displayed as follows by connection/disconnection/replacement.

IP address verification result	Operation	Display	When station numbers of detected slave stations are not set
Detected slave stations are in the saved CC-Link IE TSN structure.	Replace	<p>When parameters between a detected slave station and a saved CC-Link IE TSN structure mismatch, the parameters are replaced with the parameters of the detected slave station.</p> <p>When the model name, model version, and station type are mismatched, the following settings are inherited.</p> <ul style="list-style-type: none"> <li>• "Motion Control Station"</li> <li>• "RX Setting", "RY Setting", "RWr Setting", "RWw Setting", "LB Setting", "LW Setting"</li> <li>• "IP Address" of the master station</li> <li>• "Subnet Mask"</li> <li>• "Default Gateway"</li> <li>• "Reserved/Error Invalid Station" (Note that if "Reserved Station" is set, the setting will change to the default.)</li> <li>• "Network Synchronous Communication"</li> <li>• "Communication Period Setting"</li> </ul> <p>If only the station number is mismatched, only the station number is reflected, and all the settings are inherited.</p> <p>(Note that if the station number of the detected device has not been set, the station number of the device before replacement is inherited.)</p>	The station number takes over the station number of the saved CC-Link IE TSN structure.
Slave stations in the saved CC-Link IE TSN structure are not detected.	Disconnect	<ul style="list-style-type: none"> <li>• Modules other than extension modules: Setting of "Reserved/Error Invalid Station" is changed to "Reserved Station".</li> <li>• Extension modules: Are deleted.</li> </ul>	—



IP address verification result	Operation	Display	When station numbers of detected slave stations are not set
Detected slave stations are not in the saved CC-Link IE TSN structure.	Connect	Detected slave stations are added. (Settings other than "IP Address", "STA#", and "Station Type" are default.) When adding a device, the defaults other than IP address, station number, and station type are set. (Note that if the station number of the detected device has not been set, the station number is also set to the default.) Added slave stations are displayed in the list of stations in the following order. <ul style="list-style-type: none"> <li>• Modules other than extension modules: In the order of IP addresses, following disconnected slave stations.</li> <li>• Extension modules: In the order of sub-IDs, following connected main modules and extension modules.</li> </ul>	A station number is automatically numbered as the youngest unused station number in the range from 1 to 120.*1 The order of automatic numbering is the same as the displayed order in the list of stations (see left).

\*1 If the automatically numbered station No. and the station No. set by the slave station do not match, one of the following actions is required.  
 In the network configuration settings of the master station, change the station No. to the same value as the one set by the slave station.  
 Change the station No. of the slave station to the same value as the one in the network configuration settings of the master station.

## Precautions

When the station number is set in the slave station using the CC-Link IE TSN structure and parameters are written in CPU modules, the station number of the slave station is held in the master station. When parameters are not to be written in CPU modules, they are saved in the CC-Link IE TSN structure as slave stations with the station number not set.


### Point

Register the profile of the target device to detect in advance.

If the profile is not registered, the following may be displayed.

- "Model Name" is "General Remote Station", "General Local Station", or "General Extension Module".
- "Station Type" is "Remote Station", "Local Station", or "Extension Module".

For how to register a profile, refer to the following.

 GX Works3 Operating Manual

### Restriction

- Even when the profile is registered, if modules that are not available for detection of connected/disconnected devices are used, "Model Name" and "Station Type" are not displayed correctly.
- Reserved stations or data link faulty stations cannot be detected by this function.

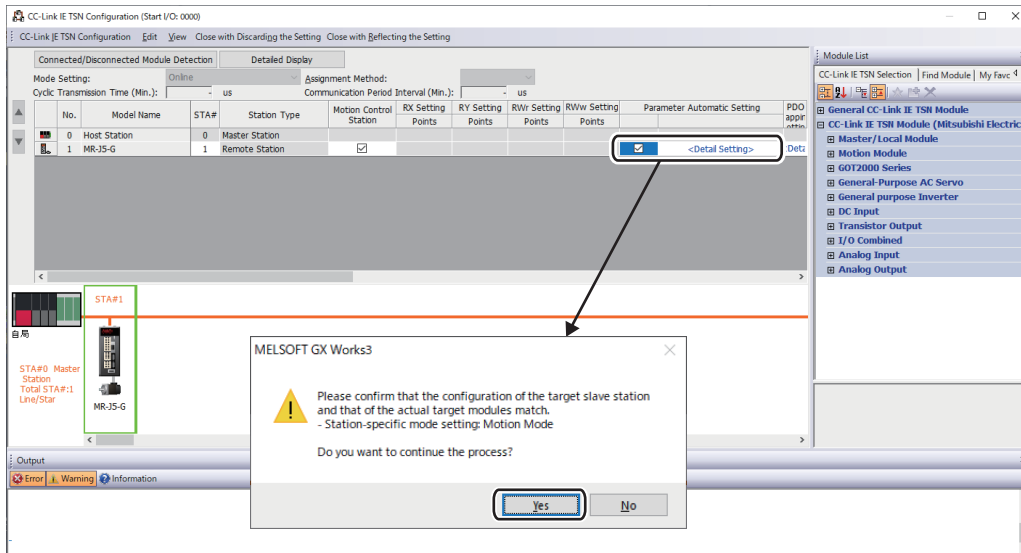
# Parameter processing of a slave station

The processing is to read and save the parameters from the slave station, and to write the saved parameters to the slave station.

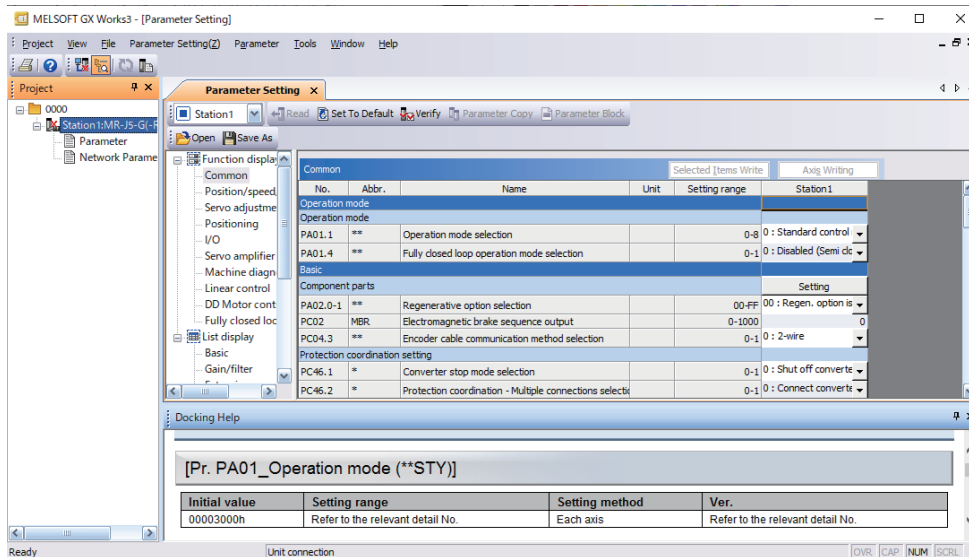
Also, it automatically sets parameters of the slave station from the master station. ( Page 167 Slave station parameter automatic setting)

## For MR-J5(W)-G

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>



Select "Parameter Automatic Setting" ⇒ <Detail Setting> to display the "Parameter Setting" window.



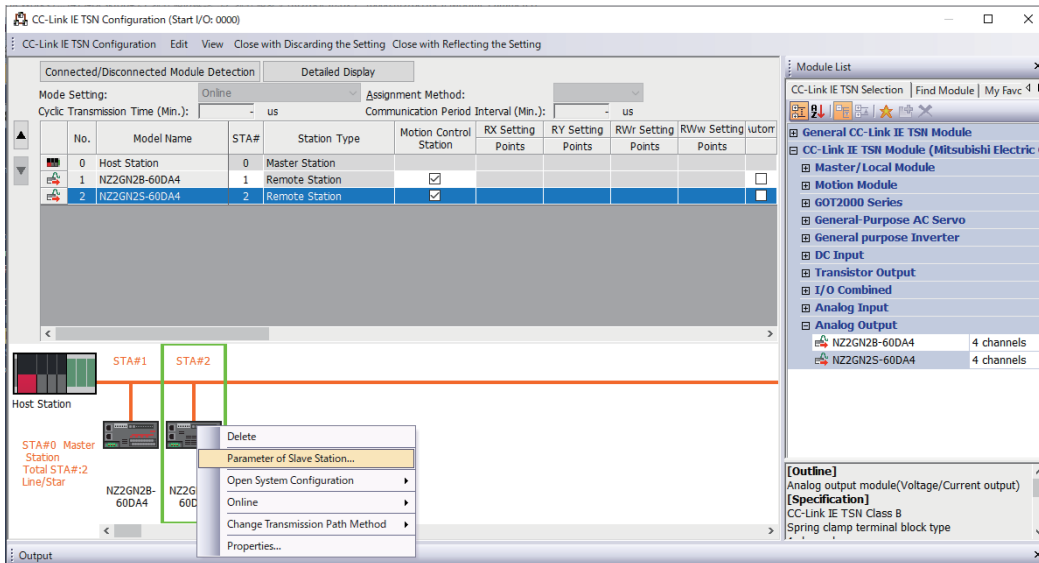
The following operations can be performed in addition to the slave station parameter setting. For the details of the window, click [Help].

- Reading and writing parameters from/to MR-J5(W)-G during data link (online)
- Saving parameters of MR-J5(W)-G in a separate file/reading them from the saved file

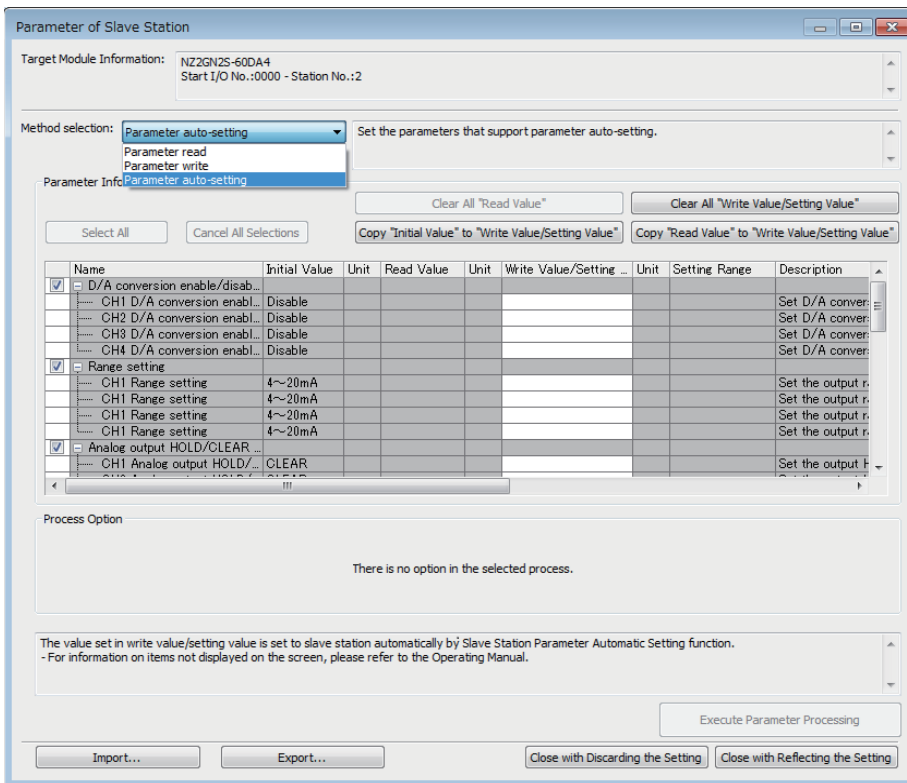
Once the setting is complete, click [Project] ⇒ [Exit MR Configurator2] or the close button on the top right to close the "Parameter Setting" window.

## For other than MR-J5(W)-G

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>



Select and right-click the slave station, and select "Parameter of Slave Station" to display the "Parameter of Slave Station" window.



Item	Description
Target Module Information	Information for the selected slave stations is displayed.
Method selection	Select processing to be executed for selected slave stations. <ul style="list-style-type: none"> <li>Parameter auto-setting: Automatically set contents of "Write Value/Setting Value" to the slave station. (Page 167 Slave station parameter automatic setting)</li> <li>Parameter read: Read parameters from the selected slave station.</li> <li>Parameter write: Write parameters to the selected slave station.</li> </ul>

Item		Description
Parameter Information	[Clear All "Read Value"] button	Click to clear all setting details that were read using "Parameter read".
	[Clear All "Write Value/Setting Value"] button	Click to clear all setting details that are written using "Parameter write".
Processing option		When there are options for processing selected by "Method Selection", setting items are displayed.
[Import] button		Read contents of parameter processing created in a CSV file.
[Export] button		Output contents of parameter processing set in this window to a CSV file.

## Procedure for clearing a saved parameter

When returning the saved parameters of a not-required slave station to the not-set status, perform the following procedure.

1. If the saved parameters are to be saved, output them in a CSV file using the [Export] button.
2. Delete not-required slave stations from the list of stations.
3. Select the same module as the deleted slave station in "Module List", and drag it to the list of stations or the network map.

## Conditions for clearing a saved parameter

Saved parameters of a slave station can be cleared under the following conditions.

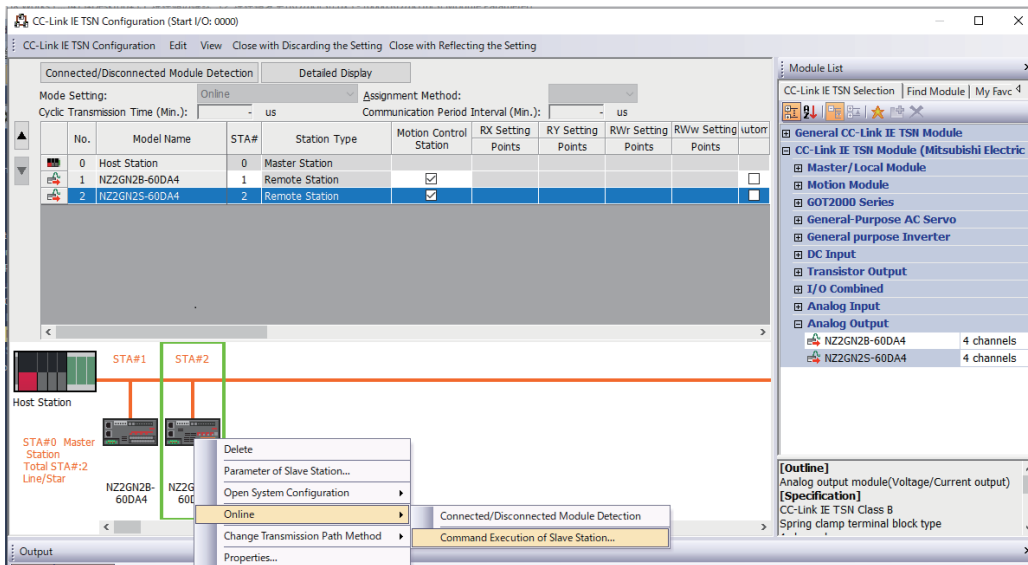
When saved parameters are cleared, execute "Parameter auto-setting" or "Parameter read" in the "Parameter of Slave Station" window and read the parameters of the slave station.

Item	Operation	Description
"CC-Link IE TSN Configuration" window	Open the "CC-Link IE TSN Configuration" window.	When there is not a slave station with the station No. that matches saved parameters in the "CC-Link IE TSN Configuration" window, saved parameters of the relevant slave station are skipped. Skipped parameters of the slave station are cleared.
	Reflect setting and close the window.	Saved parameters of a slave station that is not in the actual system configuration are cleared.
	Execute detection of connected/disconnected devices.	All saved parameters are cleared.
	Change the function version in the "Properties" window.	When the "Properties" window is closed, saved parameters are cleared.
"Parameter of Slave Station" window	Open the "Parameter of Slave Station" window.	Saved parameters that mismatch the relevant slave station are skipped. Clicking the [Close with Reflecting the Setting] button in the above state clears the skipped saved parameters.
Module Parameter	Manually delete "Network Configuration Settings" to apply.	Parameters of "Network Configuration Settings" return to default.
	Change "Station Type" or set parameters that do not exist.	
System Parameter	Divert system parameters from another project.	Parameters of the slave station are not diverted.
Module Configuration	Delete a module and check.	Parameters are deleted together with the module.
Navigation window	Delete a module.	
Read from PLC	Read module parameters that have a different network configuration and the same start I/O number.	Parameters are overwritten.
Navigation window	Import the data of the Motion module to take network settings.	
MELSOFT Navigator	Reflect the parameter.	Saved parameters are cleared.

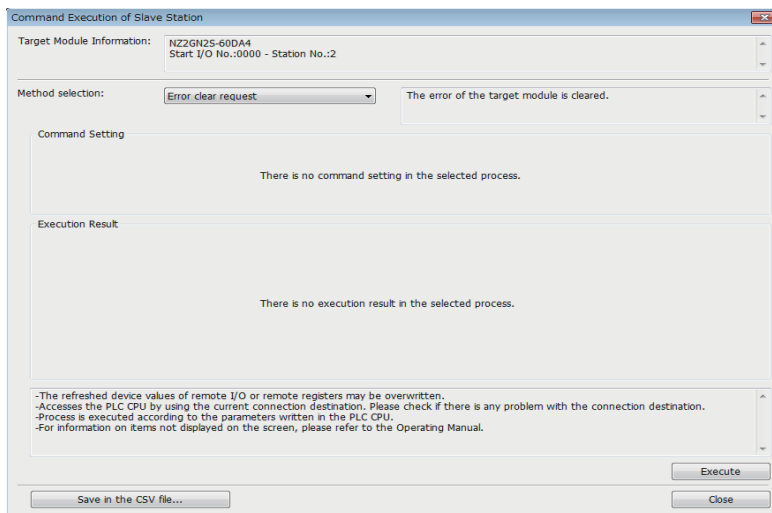
# Command execution to slave stations

Commands to a slave station (Error clear request, Error history clear request) are executed.

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ Target module ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>



Select and right-click the slave station, select "Command Execution of Slave Station" from "Online" to display the "Command Execution of Slave Station" window.



Item	Description
Target Module Information	Information for the selected slave stations is displayed.
Method selection	Select processing to be executed for selected slave stations. <ul style="list-style-type: none"> <li>• Error clear request</li> <li>• Error history clear request</li> </ul>
Command setting	When there are command settings for processing selected by "Method selection", setting items are displayed.
Execution Result	Execution results of the processing selected in "Method selection" are displayed.
[Save in the CSV file] button	Outputs the contents of this window to a CSV file.

# PDO mapping setting

Set the PDO mapping according to the station compatible with the CANopen communication.

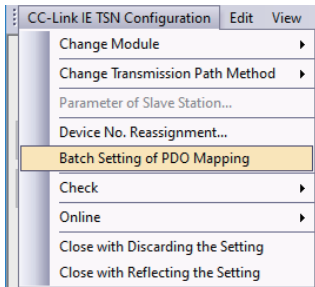
When an extension module such as the multi-axis servo amplifier having PDO mapping information is connected to the RJ71GN11-T2, the maximum number of connectable modules varies depending on the number of axes.

**Ex.**

When a multi-axis servo amplifier with three axes is connected, the RJ71GN11-T2 can connect up to 40 stations which is determined by divided 120 (the maximum number of connectable stations) by 3 (the number of axes).

## "Batch Setting of PDO Mapping"

Set the default PDO mapping to the target slave stations at once.



1. Click [Batch Setting of PDO Mapping].

① "Basic Settings" ⇒ "Network Configuration Settings" ⇒ [CC-Link IE TSN Configuration] ⇒ [Batch Setting of PDO Mapping]

2. Check the confirmation message appeared, then click the [OK] button.

3. When the completion window of [Batch Setting of PDO Mapping] is displayed, click the [OK] button.

## ■Cases where the PDO mapping is not set

The PDO mapping is not set to the target slave stations in the following cases:

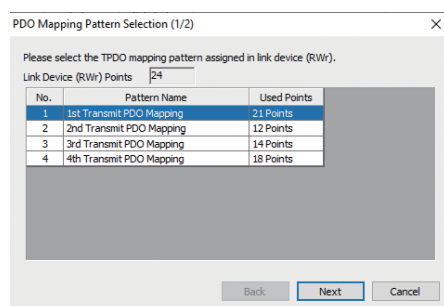
- A station that can be set the PDO mapping does not exist.
- The number of points of "RW<sub>r</sub> Setting" and "RW<sub>w</sub> Setting" is less than the number of points used of the default pattern.
- The setting is performed when "RW<sub>r</sub> Setting" and "RW<sub>w</sub> Setting" are blanks, and the checkbox of "Batch set default pattern only when PDO mapping is unset slave station." is not selected.

## "PDO Mapping Setting"

Set the PDO mapping of the target slave stations individually.

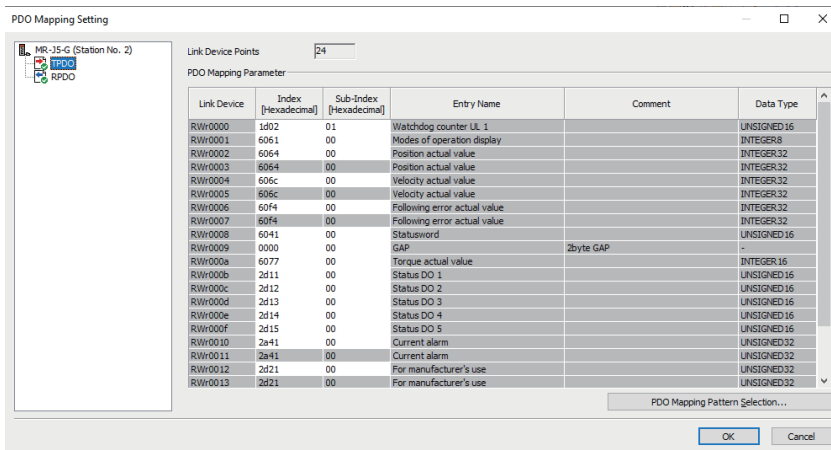
① "Basic Settings" ⇒ "Network Configuration Settings" ⇒ "PDO Mapping Setting" ⇒ Double-click <Detailed Setting> of the slave station

1. Select a PDO mapping pattern of TPDO assigned in the link device (RW<sub>r</sub>). Click the [Next] button.



2. Select a PDO mapping pattern of RPDO assigned in the link device (RW<sub>w</sub>). Click the [OK] button.

### 3. Check the selected PDO mapping pattern.



### 4. Click the [OK] button to close "PDO Mapping Setting".

#### ■Cases where the PDO mapping is not set

The PDO mapping is not set to the target slave stations in the following cases:

- The number of points of "RWr Setting" is 1 or larger and no entry is assigned to TPDO.
- The number of points of "RWw Setting" is 1 or larger and no entry is assigned to RPDO.
- "Index" has a value and there is a blank row in "Sub Index".
- Entries are assigned out of the link device range.
- The same entry is assigned to the multiple link devices.

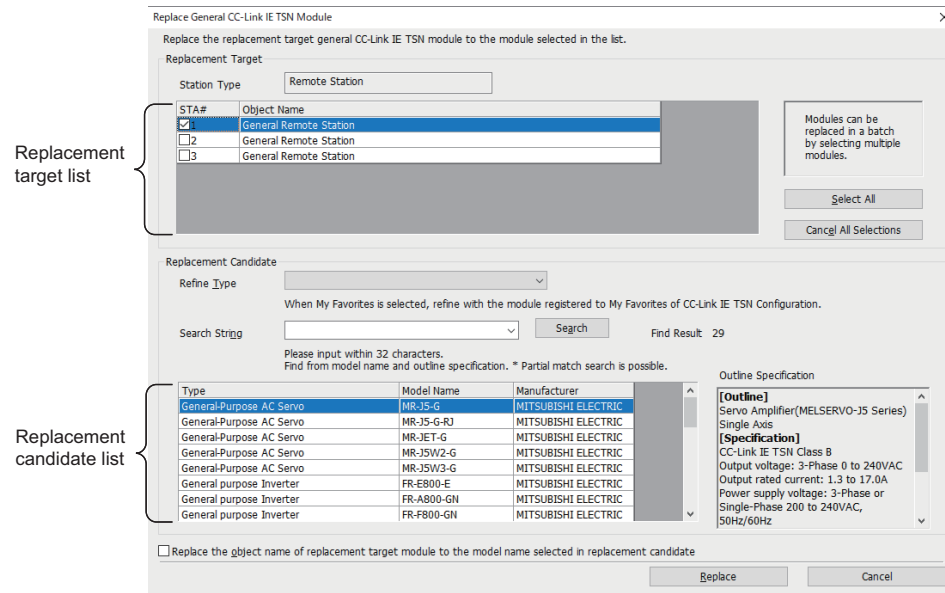
# Change of module

This section describes how to replace a general CC-Link IE TSN module with a module (slave station) and vice versa.

## Replacement of CC-Link IE TSN module

Replace a general CC-Link IE TSN module with a module (slave station).

- Right-click a general-purpose CC-Link IE TSN module in the station list on the "CC-Link IE TSN Configuration" window ⇒ click [Change Module] ⇒ [Replace General CC-Link IE TSN Module].



Item	Description	
Replacement Target	Station Type	The station type of the general-purpose CC-Link IE TSN module selected in the station list on the "CC-Link IE TSN Configuration" window is displayed.
	Replacement target list	The general-purpose CC-Link IE TSN modules whose station type is the same as the one selected in the station list on the "CC-Link IE TSN Configuration" window are displayed. By selecting the checkboxes, multiple general CC-Link IE TSN modules can be replaced.
	[Select All] button	Selects all checkboxes in the replacement target list.
	[Cancel All Selections] button	Deselects all checkboxes in the replacement target list.
Replacement Candidate	Refine Type	Narrows the replacement candidates in the list by types.
	Search String	Searches the input character string from models and outline specifications.
	[Search] button	Displays the replacement candidate list with the conditions set in "Refine Type" and "Search String".
	Replacement candidate list	The modules to be replaced are displayed.
	Outline Specification	The outline specifications of the module selected in the replacement candidate list are displayed.
	Replace the object name of replacement target module with the model name selected from replacement candidate	By selecting the checkbox, the object name of the replacement target module is replaced with the module model name selected from the replacement candidate.
	[Replace] button	Replaces the module selected in the replacement target list with the module selected in the replacement candidate list.
[Cancel] button	Cancels the replacement processing and close the window.	

## Change of arbitrary slave station

Replace a module (slave station) with a general CC-Link IE TSN module of the same station type.

- Right-click a slave station in the station list on the "CC-Link IE TSN Configuration" window ⇒ click [Change Module] ⇒ [Change to General CC-Link IE TSN Module].




# Device number reassignment

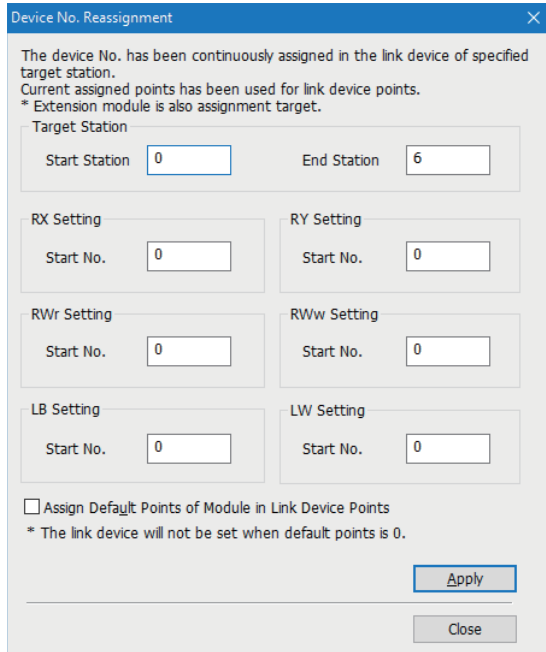
Assign the device numbers successively to the link device of the specified target station.

Use the points assigned in the station list on the "CC-Link IE TSN Configuration" window for the number of link device points.

## Standard station

1. Open the "Device No. Reassignment" window.

 [CC-Link IE TSN Configuration] ⇒ [Device No. Reassignment]



The device No. has been continuously assigned in the link device of specified target station.  
Current assigned points has been used for link device points.  
\* Extension module is also assignment target.

Target Station  
Start Station  End Station

RX Setting  
Start No.

RY Setting  
Start No.

RWr Setting  
Start No.

RWw Setting  
Start No.

LB Setting  
Start No.

LW Setting  
Start No.

Assign Default Points of Module in Link Device Points  
\* The link device will not be set when default points is 0.

2. Enter the items on the "Device No. Reassignment" window and click the [Apply] button.

### Point

Select the checkbox for "Assign Default Points of Module in Link Device Points" and click the [Apply] button to reassign the device Nos. to the number of default points of each module. When the number of default points is 0, the corresponding link device is not set.

# Object name display

The object names of the modules displayed in the station list on the "CC-Link IE TSN Configuration" window are displayed.

[View] ⇒ [Object Name Display]

No.	Object Name	Model Name	STA#	Station Type
0	Host Station	Host Station	0	Master Station
1	General Remote Station A	General Remote Station	1	Remote Station
2	General Remote Station B	General Remote Station	2	Remote Station
3	General Remote Station C	General Remote Station	3	Remote Station

Host Station

STA#0 Master Station  
Total STA#:3  
Line/Star

General Remote Station A  
General Remote Station B  
General Remote Station C

## Change of object name

Object names can be changed to any desired names.

By changing the object name to an arbitrary one, it becomes easier to distinguish each module on the "CC-Link IE TSN Configuration" window.

1. Right-click the module whose object name is to be changed in the network configuration on the "CC-Link IE TSN Configuration" window, and click "Properties".

Properties

Model Name: Host Station

Object Name: Host\_Station

Comment1:

Comment2:

Comment3:

Outline Specification

[Outline]  
Host Station

OK Cancel

2. Change "Object Name".
3. Click the [OK] button.

# 6 PROGRAMMING

---

This chapter describes programming and startup examples of CC-Link IE TSN.

## 6.1 Precautions for Programming

---

This section describes precautions to create CC-Link IE TSN programs.

### Program using safety communications

For a program using safety communications, interlock with the safety special register described below. (For the 1st master/local module)

- 'Safety refresh communication status of each safety connection (1st module)' (SA\SD1008 to SA\SD1015)

For a communication example using the safety communications, refer to the following.

- Communication Example of Safety Communications (  Page 202 Communication Example of Safety Communication)

## 6.2 Communication Example of Safety Communication

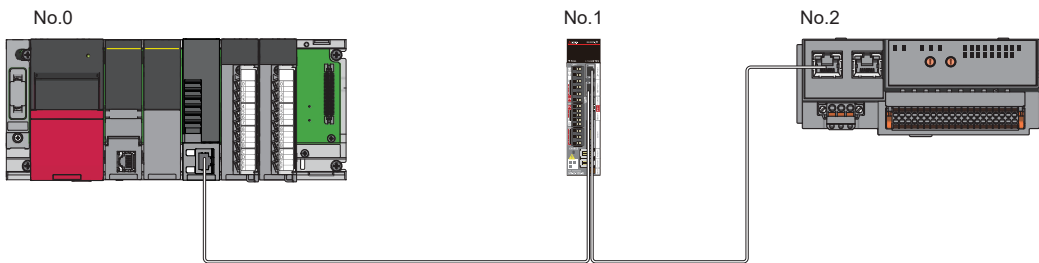
This section describes the communication example of the system using the Safety CPU.

### System configuration example

The following system configuration is used to explain communications using the Safety CPU.

#### System configuration

- Power supply module: R61P
- Safety CPU: R08SF CPU
- Safety function module: R6SFM
- Motion module: RD78G16
- Drive unit: MR-J5-G-RJ
- Remote I/O module with safety functions: NZ2GNSS2-16DTE

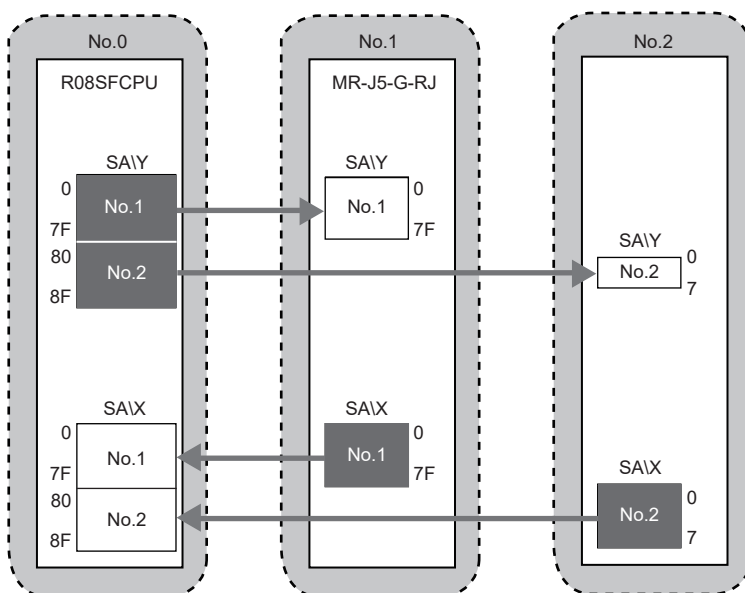


In this program example, I/O devices are connected to X0, X1 (double input) and Y0, Y1 (double output) of the remote station. For combination with connection devices, refer to "Related function" in "Devices Compatible with CC-Link IE TSN" in the following manual.

MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)

#### Safety device assignment

The following figure shows safety device assignment to be set in "Safety Communication Setting" under "Basic Settings".

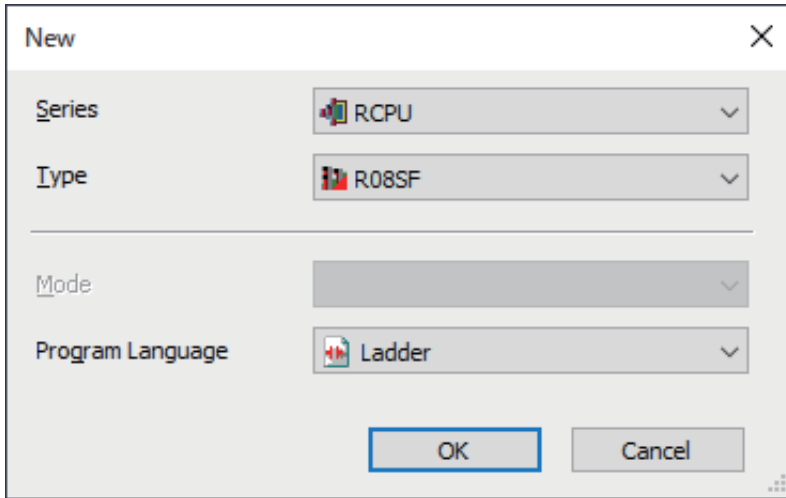


# Setting in the master station

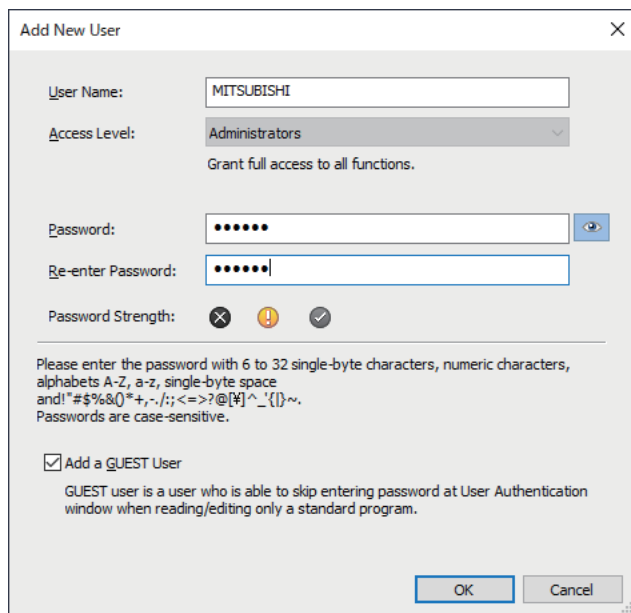
Connect the engineering tool to the Safety CPU of the master station and set parameters.

1. Set the Safety CPU as follows.

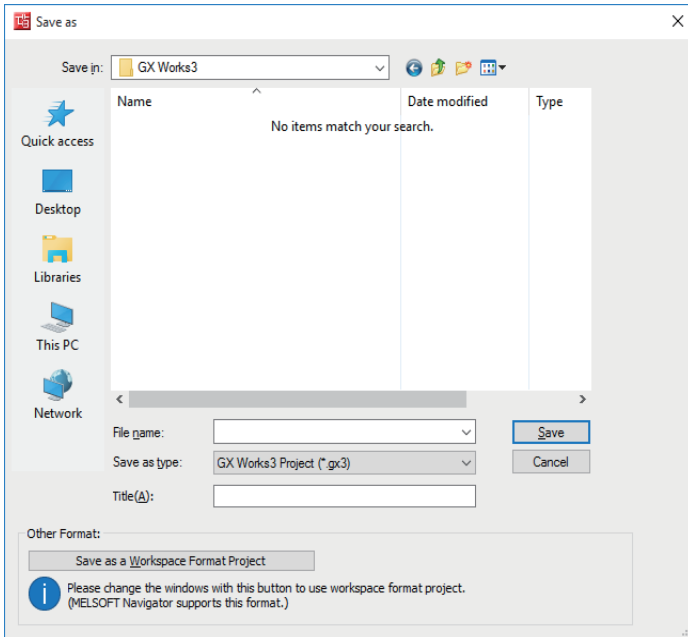
 [Project] ⇨ [New]



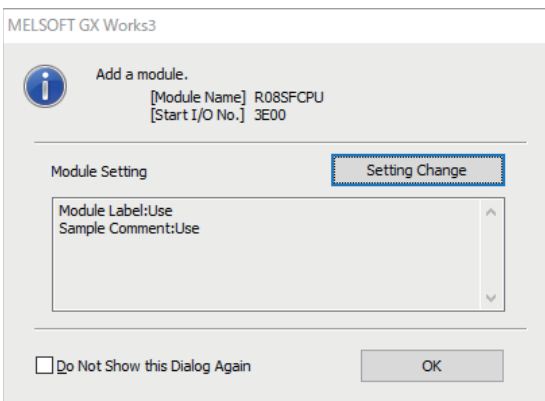
2. In the following window, enter a password and re-enter password, and click the [OK] button.



3. In the following window, enter a file name, and click the [Save] button.

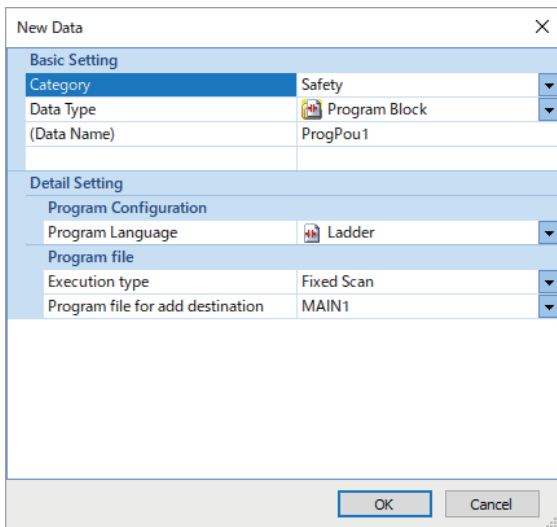


4. Click the [Setting Change] button to use the module labels of the CPU module.



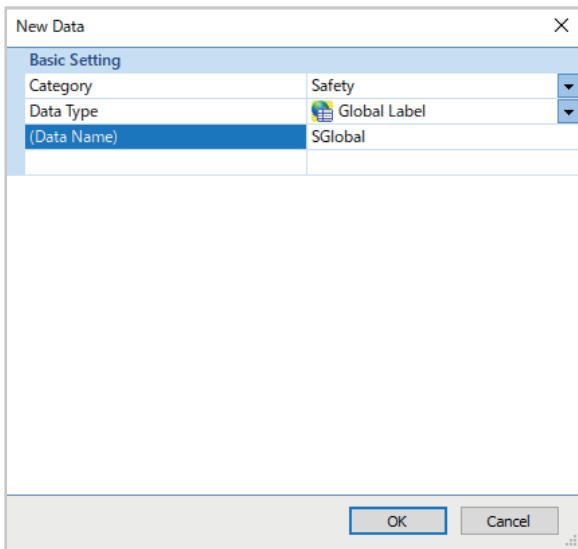
5. Add the safety program in the following.

Navigation window ⇒ "Program" ⇒ "Fixed Scan" ⇒ Right-click ⇒ [New Data]



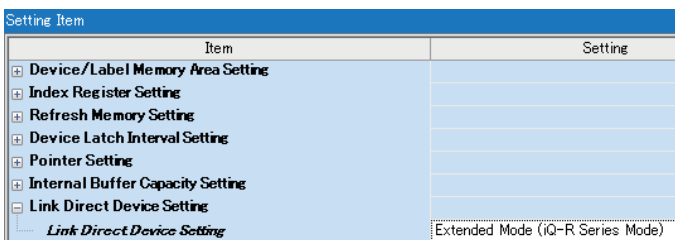
6. Add the safety global label in the following.

Navigation window ⇒ "Label" ⇒ "Global Label" ⇒ Right-click ⇒ [New Data]



7. Set "Link Direct Device Setting" in "CPU Parameter" to "Extended Mode (iQ-R Series Mode)".

Navigation window ⇒ "CPU Parameter" ⇒ "Memory/Device Setting" ⇒ "Link Direct Device Setting" ⇒ "Link Direct Device Setting"



**Point**

To write module parameters of the Motion module to a Safety CPU using an engineering tool, set "Link Direct Device Setting" to "Extended Mode (iQ-R Series Mode)".

If "Link Direct Device Setting" is "Q Series Compatible Mode", "Write to PLC" cannot be executed.

8. In the I/O assignment setting, set the safety function module for slot No.0.

Navigation window ⇒ "Parameter" ⇒ "System Parameter" ⇒ "I/O Assignment" tab ⇒ "I/O Assignment Setting"

**Add New Module**

FIND [FIND]

**Module Selection**

Module Type: CPU Extension  
 Module Name: R6PSFM  
 Station Type:

**Advanced Settings**

**Mounting Position**

Mounting Base: Main Base  
 Mounting Slot No.: 0  
 Start I/O No. Specification: Not Set  
 Start I/O No.: 0000 H  
 Number of Occupied Points per 1 Slot: 16 Points

**Module Type**  
 Select module type.

[OK] [Cancel]

9. Set the Motion module for slot No.1.

**Add New Module**

FIND [FIND]

**Module Selection**

Module Type: Motion Module  
 Module Name: RD78G16(S)  
 Station Type:

**Advanced Settings**

**Mounting Position**

Mounting Base: Main Base  
 Mounting Slot No.: 1  
 Start I/O No. Specification: Not Set  
 Start I/O No.: 0010 H  
 Number of Occupied Points per 1 Slot: 32Point

**Station Type**  
 Select station type.

[OK] [Cancel]

10. Click the [OK] button to use the module labels of the safety function module.

MELSOFT GX Works3

**Add a module.**

[Module Name] R6PSFM  
 [Start I/O No.] 0000

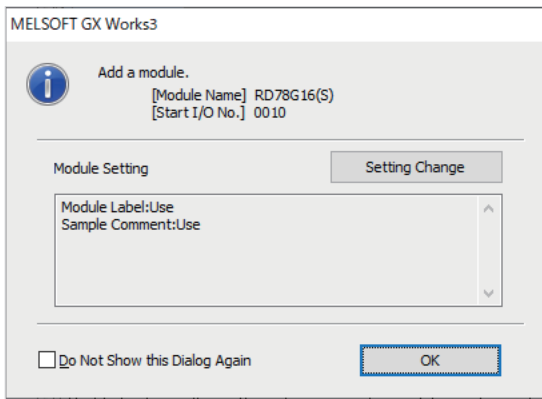
Module Setting [Setting Change]

Module Label:Use  
 Sample Comment:Use

Do Not Show this Dialog Again [OK]



11. Click the [OK] button with the setting to use the module labels of the Motion module.



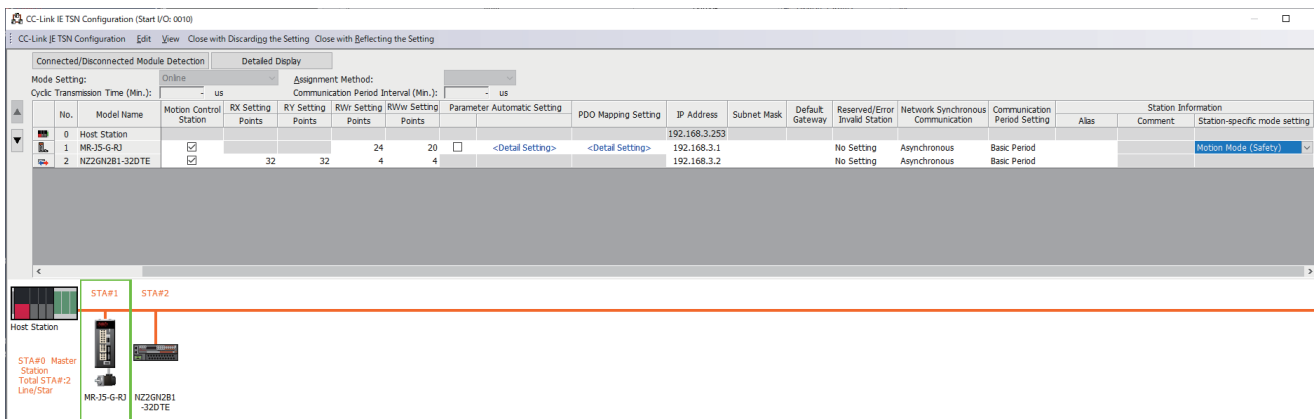
12. Set the items in "Required Settings" as follows.

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16(S)" ⇒ "Required Settings"

Setting Item	
Item	Setting
<b>Station Type</b>	
Station Type	Master Station
<b>Network No.</b>	
Network No.	1
<b>Station No./IP Address Setting</b>	
Station No.	
Station No.	0
IP Address	
IP Address	192.168.3.253
Subnet Mask	. . .
Default Gateway	. . .

13. Set the network configuration as follows.

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16(S)" ⇒ "Basic Settings" ⇒ "Network Configuration Settings" ⇒ <Detailed Setting>



- RX/RY setting of the remote station is used as a remote control and monitor input signal in standard communications.

### Point

When setting the safety communication, set "Station-specific mode setting" of the drive unit to "Motion Mode (Safety)".

14. Click the [Close with Reflecting the Setting] button to close the "CC-Link IE TSN Configuration" window.

**15.** Set the refresh settings as follows.

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16(S)" ⇒ "Basic Settings" ⇒ "Refresh Settings" ⇒ <Detailed Setting>

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	4096	00000	00FFF	↔	Module Label				
-	SW	512	00000	001FF	↔	Specify Device	SW	512	00000	001FF
1	RX	256	00000	000FF	↔	Specify Device	X	256	01000	010FF
2	RY	1024	00000	003FF	↔	Specify Device	Y	1024	01000	013FF
3	RWr	20	00000	00013	↔	Specify Device	W	20	00000	00013
4	RWw	32	00000	0001F	↔	Specify Device	W	32	01000	0101F

The refresh settings are for standard communications.

**16.** Log on to the programmable controller.

[Online] ⇒ [User Authentication] ⇒ [Log on to PLC]

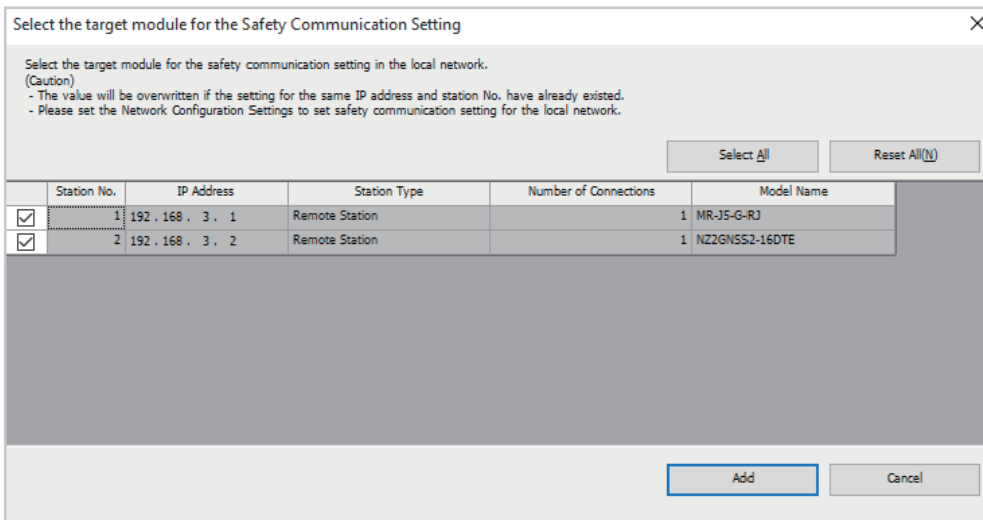
If logon fails, writing user information or initializing all information of the programmable controller is required. (GX Works3 Operating Manual)

**17.** Set "To Use or Not to Use the Safety Communication Setting" to "Use".

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16(S)" ⇒ "Basic Settings" ⇒ "Safety Communication Setting" ⇒ "To Use or Not to Use the Safety Communication Setting"

**18.** Select "Local Network" from "Communication Destination" in the "Safety Communication Setting" window and set the destination module in the "Select the target module for the Safety Communication Setting" window.

Navigation window ⇒ "Parameter" ⇒ "Module Information" ⇒ "RD78G16(S)" ⇒ "Basic Settings" ⇒ "Safety Communication Setting" ⇒ "Safety Communication Setting" ⇒ <Detailed Setting>



**19.** Set the safety communication setting as follows.

No.	Communication Destination	Network Configuration			Configured Module			Open System	Sending Interval Monitoring Time (ms)	Safety Refresh Monitoring Time (ms)	Safety Data Transfer Device Setting						Safety Authentication Co				
		Network No.	Station No.	IP Address	Station Type	Model Name	Communication Destination				PLC No.	Receive Data Storage Device			Send Data Storage Device						
1	Local Network	1	1	192.168.3.1	Remote Station	MR-J5-G-RJ		Active	35.0	60.0	Destination Station->	Device Name	Points	Start	End	Device Name	Points	Start	End	->Destination Station	FFFFF
2	Local Network	1	2	192.168.3.2	Remote Station	NZGNS52-1EDTE		Active	35.0	60.0	Destination Station->									->Destination Station	FFFFF
3											Destination Station->									->Destination Station	
4											Destination Station->									->Destination Station	
5											Destination Station->									->Destination Station	
6											Destination Station->									->Destination Station	
7											Destination Station->									->Destination Station	
8											Destination Station->									->Destination Station	
9											Destination Station->									->Destination Station	

**20.** Click the [Apply] button.

**21.** Write the set parameters to the Safety CPU on the master station.

[Online] ⇒ [Write to PLC]

**22.** Visually check if the safety communication setting is correctly written after writing parameters. For how to check the parameters, refer to the following.

GX Works3 Operating Manual

**23.** Reset the CPU modules or power off and on the system.

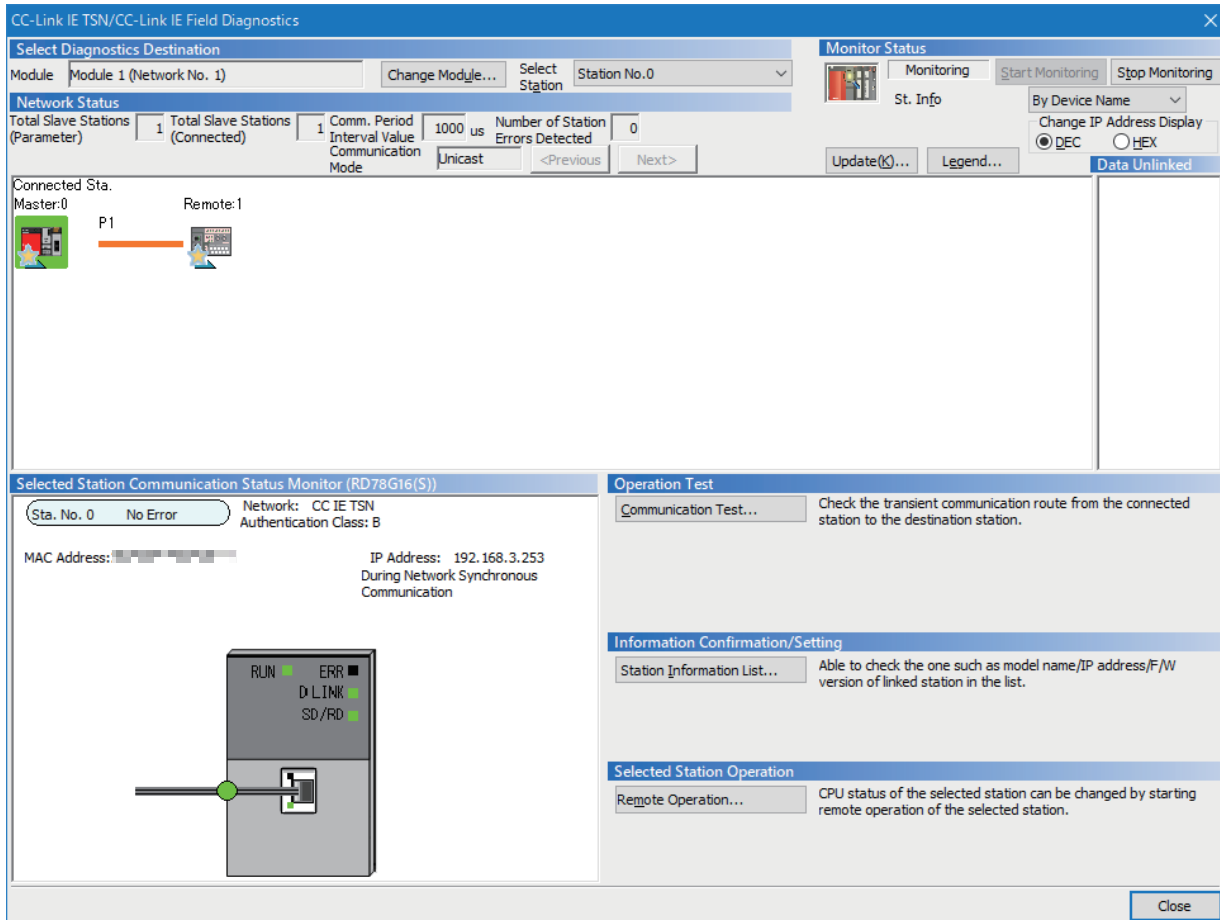
# Checking the network status


After starting up the system, check whether a data link can be normally performed. Use the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool to check the status.

1. Connect the engineering tool to the Safety CPU on the master station.
2. Start the CC-Link IE TSN/CC-Link IE Field diagnostics.

 [Diagnostics] ⇒ [CC-Link IE TSN/CC-Link IE Field Diagnostics]

If the following display appears, a data link is normal.



If an error icon appears in "Network Status" area in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window, use the CC-Link IE TSN/CC-Link IE Field diagnostics to identify the cause of the error and take corrective actions. ( Page 217 Checking the Network Status)

# PART 3

# COMMON TO ALL MODES

7 TROUBLESHOOTING

---

# 7 TROUBLESHOOTING

This chapter describes troubleshooting of CC-Link IE TSN.

## 7.1 Checking with LED

This section describes troubleshooting with the LEDs of the Motion module.

### When the RUN LED turns off

When the RUN LED turns off after powering on the Motion module, check the following.

Check item	Action
Is the Motion module mounted correctly?	Securely mount the Motion module on the base unit.

### When the ERR LED turns on or is flashing

When the ERR LED turns on or is flashing, check the following.

Check item	Action
Does any error occur in the module diagnostics?	Take the actions displayed on the window.
Is a data link faulty station displayed on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window?	<ul style="list-style-type: none"> <li>Correct "Network Configuration Settings" and "Communication Period Setting" under "Basic Settings" of the master station in accordance with the slave station actually connected.</li> <li>Perform troubleshooting for when the D LINK LED turns off or is flashing in the data link faulty station. (☞ Page 212 When the D LINK LED turns off or is flashing)</li> </ul>
Is an event "Initialization failed (parameter mismatch between the master station and slave station)" (event code: 00C71) registered in the event history of the master station? (A mismatch of the synchronization setting and inter-module synchronization cycle may occur between the master station and slave stations.)	Take the following actions for the slave station with the IP address displayed in the detailed information of the event. <ul style="list-style-type: none"> <li>Replace the device with a device supporting authentication Class B network synchronous communication.</li> <li>Match "Network Synchronous Communication" in "Network Configuration Settings" under "Basic Settings" of the master station to the synchronization setting of the slave station.</li> </ul>

### When the D LINK LED turns off or is flashing

When the D LINK LED turns off or is flashing, check the following.

Check item	Action
Is the master station operating normally?	<ul style="list-style-type: none"> <li>If an error has occurred in the CPU module on the master station, eliminate the cause of the CPU module error. (☞ MELSEC iQ-R CPU Module User's Manual (Application))</li> <li>If an error occurs in the Motion module, take action according to the module diagnosis procedure. (☞ Page 215 Checking the Module Status)</li> </ul>
Is the master station connected to the network?	Connect the master station to the network.
Does the IP address of each station match the "Network Configuration Settings" under "Basic Settings" of the master station?	Correct the setting of the IP address in "Network Configuration Settings" under "Basic Settings" of the master station. <ul style="list-style-type: none"> <li>Set IP addresses in a way that does not overlap the third to fourth octets of the IP address in all stations.</li> <li>Set the IP address and subnet mask to match the network addresses of all stations.</li> <li>Set the third and fourth octets of the IP address to values other than all 0 or all 1.</li> <li>Set the host address of the IP address to values other than all 0 or all 1.</li> <li>Set an IP address other than a reserved address.</li> </ul>
In the "Network Configuration Settings" under "Basic Settings", are the third and fourth octets of the IP address of the master station overlapped with those of any other stations?	
In the "Network Configuration Settings" under "Basic Settings", does the network address (subnet mask part) of the IP address of the master station match that of other stations?	
Are the third and fourth octets of the IP address set to all 0 or all 1?	
Is the host address of the IP address set to all 0 or all 1?	
Is a reserved address set to the IP address?	
Do the used Ethernet cables conform to the Ethernet standard?	Replace the cables with Ethernet cables which conform to the standard. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. (☞ MELSEC iQ-R Motion Module User's Manual (Startup))

Check item	Action
Is the switching hub used operating normally?	<ul style="list-style-type: none"> <li>Use a switching hub that conforms to the standard. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul> </li> <li>Power off and on the switching hub.</li> </ul>
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within range. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul>
Does the cabling condition (bending radius) meet the specifications?	Refer to the manual for the Ethernet cable, and correct the bending radius.
Is any Ethernet cable disconnected?	Replace the Ethernet cable.
Is the network topology different from the one set in "Network Topology" under "Basic Settings" of the master station used?	Correct the wiring according to "Network Topology" under "Basic Settings" of the master station. <ul style="list-style-type: none"> <li>(Page 82 Network Topology) [MODE: PLCopen]</li> <li>(Page 177 Network Topology) [MODE: Simple Motion]</li> </ul>
Has the time synchronization source station been reset?	<ul style="list-style-type: none"> <li>Since a station is temporarily disconnected after switching the time synchronization source, wait for it to return.</li> </ul>
Is the time synchronization source station turned off?	<ul style="list-style-type: none"> <li>Avoid unnecessary disconnections or returns in a station that is the time synchronization source.</li> </ul>
Is the time synchronization source station operating normally?	Check the manual of the module used for the time synchronization source station.
Has any other station been reset?	<ul style="list-style-type: none"> <li>Avoid unnecessary reset, since a station is disconnected while resetting.</li> <li>Start other stations.</li> </ul>
Are other stations turned off?	Power on other stations.
Are other stations connected to the Motion module operating normally?	<ul style="list-style-type: none"> <li>Check if the modules on the other stations are performing data link using CC-Link IE TSN/CC-Link IE Field diagnostics. (Page 217 Checking the Network Status)</li> <li>Check the operation status of modules on other stations. (User's manual for the module used)</li> </ul>
Is a network topology with restrictions used for connection?	Correct the wiring. For details, refer to "SYSTEM CONFIGURATION" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul>
Are station Nos. unique?	Change the overlapped station No..
Is the IP address overlapped with another station?	Change the IP address of the overlapped station.
Are more than the total number of slave stations connected?	Change the connection of the slave stations to the total number or less.
Are Ethernet devices properly connected to a network line?	Correct the mixed structure of the Ethernet device. For details, refer to "SYSTEM CONFIGURATION" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul>
Is the IP address of the slave station blocked by the IP filter setting of the master station?	Correct the "IP Filter Settings" under "Application Settings".
Is the IP address of the master station blocked by the IP filter setting of the slave station?	
Are time synchronization devices with time synchronization priority of 0 to 15 connected?	Remove time synchronization devices with time synchronization priority of 0 to 15, or change the priority setting to between 16 and 255. (Manual for the time synchronization devices used)

## When the L ER LED turns on

When the L ER LED turns on, check the following.

Check item	Action
Are the Ethernet cables used normally?	<ul style="list-style-type: none"> <li>Use an Ethernet cable that conforms to the standard. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul> </li> <li>Set the station-to-station distance within range. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul> </li> <li>If the Ethernet cable is disconnected, reconnect it.</li> </ul>
Is the switching hub used operating normally?	<ul style="list-style-type: none"> <li>Use a switching hub that conforms to the standard. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul> </li> <li>Power off and on the switching hub.</li> </ul>
Is there any source of noise near the module or cables?	Change the location of the module or cables.

## When the LINK LED turns off

When the LINK LED turns off, check the following.

Check item	Action
Do the used Ethernet cables conform to the Ethernet standard?	Use an Ethernet cable that conforms to the standard. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul>
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within range. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul>
Does the cabling condition (bending radius) meet the specifications?	Refer to the manual for the Ethernet cable, and correct the bending radius.
Is any Ethernet cable disconnected?	Replace the Ethernet cable.
Is the switching hub used operating normally?	<ul style="list-style-type: none"> <li>Use a switching hub that conforms to the standard. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <ul style="list-style-type: none"> <li>MELSEC iQ-R Motion Module User's Manual (Startup)</li> </ul> </li> <li>Power off and on the switching hub.</li> </ul>
Are other stations connected to the Motion module operating normally?	Check the manual of the module used for the other stations and take action accordingly. (User's manual for the module used)
Does the communication speed of the connected device match the communication speed set in "Communication Speed"?	Connect the device with the communication speed set in "Communication Speed".
If "Communication Speed" is set to 100 Mbps for the master station to connect a device with a communication speed of 100 Mbps, is the auto-negotiation of the device enabled?	Enable the auto-negotiation of the connected device. Or, connect a device with the auto-negotiation enabled.

## ■When the Motion module with the baseSystem version of "Ver. 1.7 or earlier" is used

When the Motion module with the baseSystem version of "Ver. 1.7 or earlier" is used, check the following.

Check item	Action
Is the communication speed of connected devices 1 Gbps?	Connect devices which support a communication speed of 1 Gbps.



# 7.2 Checking the Module Status

This section describes troubleshooting to check the status of the module by executing diagnostics and operation tests using the engineering tool.

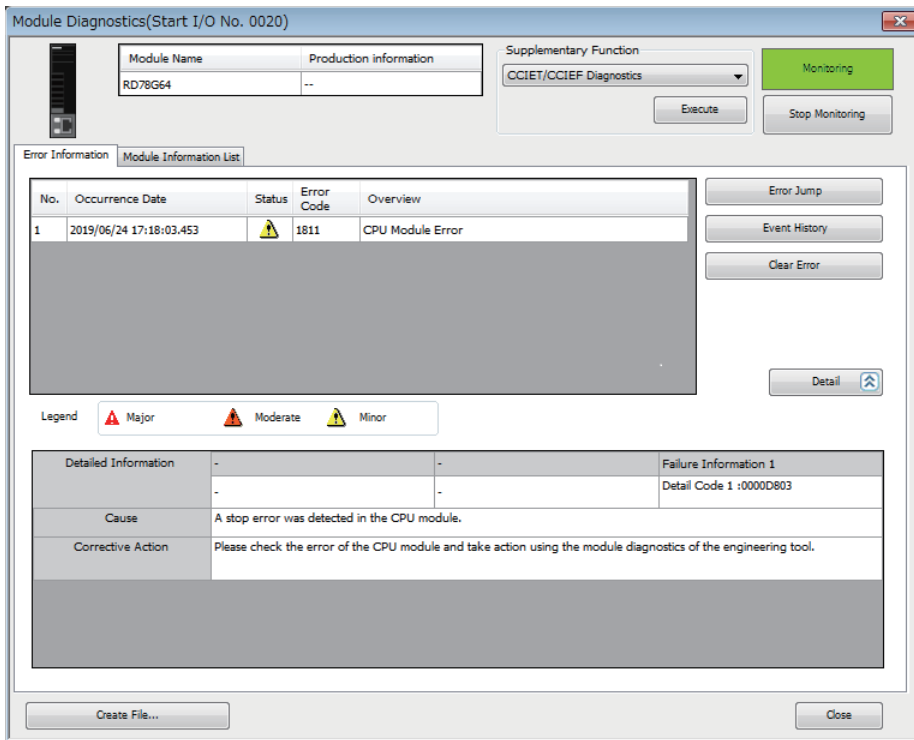
## Module Diagnostics

The following items can be checked in the "Module Diagnostics" window for the Motion module.

Item	Description
[Error Information] tab	Displays the details of the errors currently occurring and the corrective actions for these errors. "-" may be displayed in "Occurrence Data" of an error that occurred immediately after the power was turned on. To check the date and time of occurrence, click the [Event History] button and check the event history.
[Module Information List] tab	Displays the LED information and individual information of the Motion module.
Supplementary Function	CCIET/CCIEF diagnostics Enables checking the cause to resolve the problem when an error occurs in the CC-Link IE TSN. (Page 217 Checking the Network Status)

## Error Information

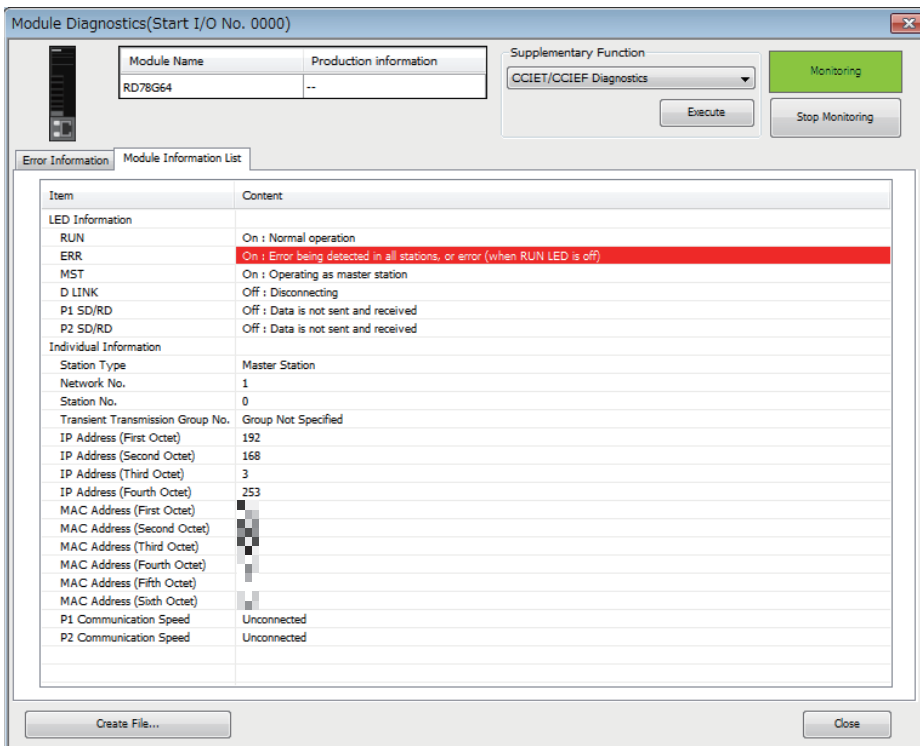
The details of the errors currently occurring and the corrective actions for these errors are displayed in the [Error Information] tab.



Item	Description
Status	Major: An error such as hardware failure or memory failure. The module stops operating. Moderate: An error, such as parameter error, which affects module operation. The module stops operating. Minor: An error such as communication failure. The module continues operating.
Error code	Page 238 List of Error Codes
[Event History] button	Click this button to check the history of errors that have occurred on the network, errors detected for each module, and operations that have been executed. (Page 269 Event List)
Detailed Information	Displays up to three information items for each error, such as parameter information, operation source information, and system configuration information. (Page 263 List of Parameter Nos.)
Cause	Displays the detailed error causes.
Corrective Action	Displays the actions to eliminate the error causes.

## Module Information List

The LED information and individual information of the Motion module are displayed in the [Module Information List] tab.



Item	Description	
LED information	Displays the LED status of the Motion module.	
Individual information	Station Type	Displays the station type set for the selected module.
	Network No.	Displays the network No. set for the selected module.
	Station No.	Displays the station No. set for the selected module.
	Transient transmission group No.	Displays the transient transmission group No. set for the selected module.
	IP address	Displays the IP address set for the selected module.
	MAC address	Displays the MAC address of the selected module.
	P1 Communication Speed	Displays the communication speed set using the auto-negotiation function.
P2 Communication Speed		

## 7.3 Checking the Network Status

This section describes troubleshooting to check the status of the network by executing diagnostics and operation tests using the engineering tool.

### CC-Link IE TSN/CC-Link IE Field Diagnostics

For CC-Link IE TSN, perform status monitoring, operation tests, or others.

#### Precautions

In the following cases, the CC-Link IE TSN/CC-Link IE Field diagnostics cannot start.

- The Motion module is not connected to CPU modules specified on the "Specify Connection Destination Connection" window.
- In CPU parameters of CPU modules specified on the "Specify Connection Destination Connection" window, "Link Direct Device Setting" of "Memory/Device Setting" is not "Extended Mode (iQ-R Series Mode)".
- An error "Module invalid" (error code: 20E0H) has occurred.
- The engineering tool is not connected to the station with the same communication speed as the master station.
- The version of the engineering tool or module does not support the network topology of the diagnostics destination.

#### Diagnostic items

When starting the CC-Link IE TSN/CC-Link IE Field diagnostics by specifying "No Specification" in "Other Station Setting" on the "Specify Connection Destination Connection" window, the following items can be used.

○: Diagnosed △: Diagnosed with restrictions

Item		Overview	Connection destination of engineering tool	Reference
			Master station	
Status monitor	Network map	Check if any errors are being caused by the devices and cables that configure the network. In addition, check the operating status of each station.	○	Page 221 "CC-Link IE TSN/CC-Link IE Field Diagnostics" window
	Data Unlinked	Check that there is no station that is set on an actual network.	○	
	Selected Station Communication Status Monitor	Check details of, or actions for, errors that occurred in a selected station.	○	
Operation Test	Communication Test	Check whether outgoing/incoming paths of transient transmission between the own station and the communication target are correct.	○	Page 226 Communication Test
Information Confirmation/Setting	Station Information List	Check information of the slave stations which are performing data link in a list form.	○	Page 227 Station Information List
Selected Station Operation	Remote Operation	Operate remotely from the engineering tool to slave stations.	△ <sup>*1</sup>	Page 228 Remote Operation

\*1 If the setting on the "Specify Connection Destination Connection" window of the engineering tool is as follows, remote operation cannot be executed with "All Stations Specified".  
 Connection via Ethernet with the selections "Ethernet Board" for the personal computer-side I/F and "CC IE TSN/Field Module" for the programmable controller-side I/F

---

The following restrictions are applied when starting the CC-Link IE TSN/CC-Link IE Field diagnostics with "Other Station (Single Network)" or "Other Station (Co-existence Network)" specified in "Other Station Setting" on the "Specify Connection Destination Connection" window.

- The communication test cannot be used.
- The station information list cannot be used.
- The diagnostics cannot be started when MELSECNET/H, multidrop connection of the serial communication module, interface board for personal computer, GOT (transparent function used), or MELSEC-Q/L series network module is on the communication path.

When specifying "Other Station (Co-existence Network)" in "Other Station Setting" on the "Specify Connection Destination Connection" window, the diagnostics cannot be started with "CC-Link" or "C24" specified in "Co-existence Network Route".

---

## Usage methods

The following describes how to use the CC-Link IE TSN/CC-Link IE Field diagnostics.

### ■When "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window

1. Connect the engineering tool to the CPU module.

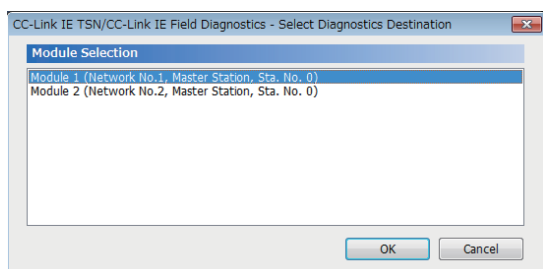
If a slave station cannot be monitored due to an error such as cable disconnection, directly connect the engineering tool to the slave station.

2. Start the CC-Link IE TSN/CC-Link IE Field diagnostics.

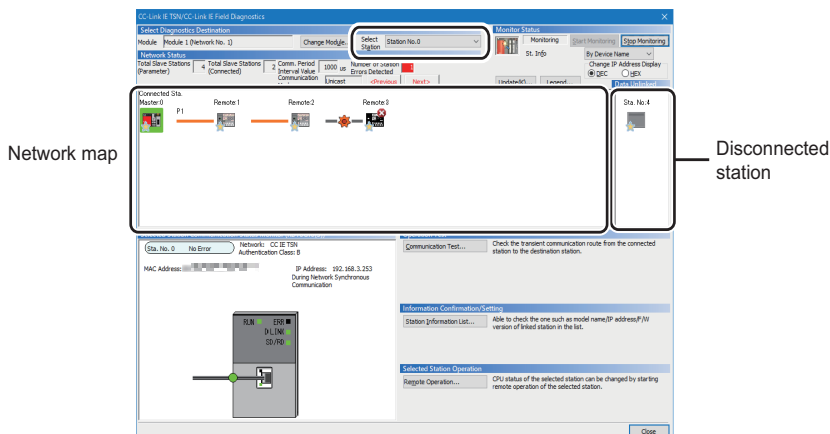
[Diagnostics] ⇒ [CC-Link IE TSN/CC-Link IE Field Diagnostics]

3. When the following window opens, select the Motion module to be diagnosed and click the [OK] button to start the CC-Link IE TSN/CC-Link IE Field diagnostics.

Modules are listed in the order configured in module information.



4. Select the station to be diagnosed from "Select Station" or in the network map.




- An icon indicating an error is displayed on the module icon of the station where an error occurs.
- A disconnected station that has performed data link is indicated with the "Disconnected Station" icon in the network map. However, a disconnected station in following case is displayed on the right end of the area.

#### Stations displayed on the right end of the area.

- A station that was reconnected to a network after disconnecting/inserting the cable or powering off and on the system, and remains disconnected
  - A disconnected station with the station icon deleted in the network map by clicking the [Update] button
- The "Error" icon is displayed on the icon of a cable where a communication error occurs. To check the details of the communication error, click the neighboring stations of the "Error" icon.


#### Point

When the station to be diagnosed cannot be selected, the status of network No. mismatch or overlap of master stations cannot be checked using the CC-Link TSN/CC-Link IE Field diagnostics. Check the error details by directly connecting the engineering tool to the station where an error occurs, and opening the "System Monitor" window.

5. The status of a station selected in "Network Status" is displayed in "Selected Station Communication Status Monitor".  
( Page 221 "CC-Link IE TSN/CC-Link IE Field Diagnostics" window)

The station status is displayed on the top of "Selected Station Communication Status Monitor".

If an error occurs, a button indicating the error such as [PORT2 Communication Error] is displayed in "Selected Station Communication Status Monitor". Click the button to check the error details and actions.

6. Various tests and operations can be performed by clicking the "Operation Test" or "Selected Station Operation" on the bottom left of the window. ( Page 226 Communication Test, Page 228 Remote Operation)

### ■When a setting other than "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window

1. Connect the engineering tool to the CPU module.
2. Start the CC-Link IE TSN/CC-Link IE Field diagnostics.


 [Diagnostics] ⇒ [CC-Link IE TSN/CC-Link IE Field Diagnostics]

#### Point

---

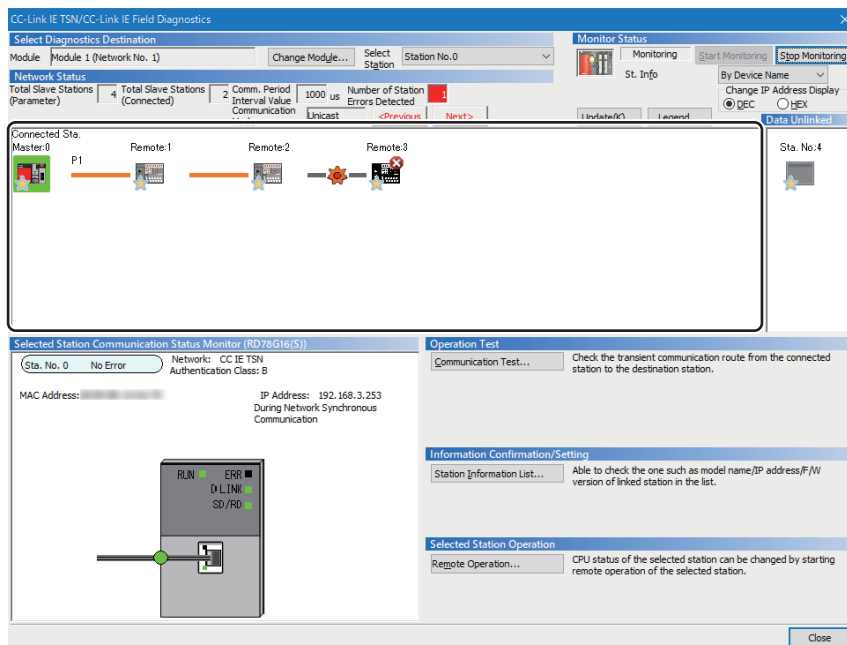
The CC-Link IE TSN/CC-Link IE Field diagnostics cannot be started when "Other Station (Co-existence Network)" has been specified in "Other Station Setting" on the "Specify Connection Destination Connection" window and "CC-Link" or "C24" has been specified in "Co-existence Network Route".

---






3. Select the Motion module of the network No. to be diagnosed and click the [OK] button to start the CC-Link IE TSN/CC-Link IE Field diagnostics.
4. Step 4 and later is the same procedure as when "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window. ( Page 219 When "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window)

## "CC-Link IE TSN/CC-Link IE Field Diagnostics" window

Network map



Item	Description	
Select Diagnostics Destination	Module	The Motion module under diagnostics is displayed.
	[Change Module] button	Allows to change the target Motion module when multiple Motion module are mounted.
	Select Station	Selects the station No. of the station to be diagnosed. A station to be diagnosed can also be selected by clicking the module icon displayed in the network map.
Monitor Status	[Start Monitoring] button	Starts monitoring the CC-Link IE TSN/CC-Link IE Field diagnostics.
	[Stop Monitoring] button	Stops monitoring the CC-Link IE TSN/CC-Link IE Field diagnostics.
[Update] button	If the actual network configuration and network map of the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window are inconsistent, the network map update is executed so they are matched. A data link error may momentarily occur in all the stations and outputs of the connected slave stations may turn off since all stations on the network will be reconnected when executing the network map update. Set output data if needed.	
[Legend] button	Displays the meaning of icons displayed in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window.	
St. Info	The display name of the slave station can be selected from "By Device Name", "By Station Type", "By Model Name", or "By IP Address". "By Device Name" displays the information entered in "Alias" of "Network Configuration Settings" under "Basic Settings". The station type is displayed when the "Alias" is not entered.	

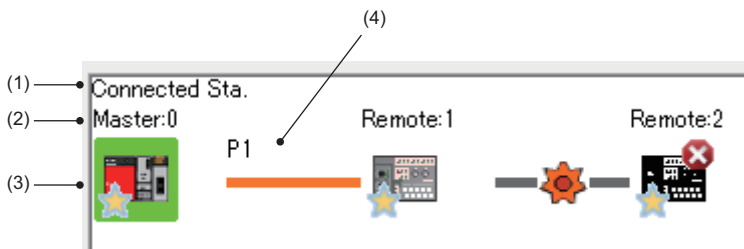
Item		Description
Network Status	Total Slave Stations (Parameter)	Displays the total number of slave stations set in "Network Configuration Settings" under "Basic Settings".
	Total Slave Stations (Connected)	Displays the total number of slave stations (number of slave stations) that are actually connected by data link in CC-Link IE TSN.
	Communication Cycle Interval Setting value	The communication cycle interval set in "Communication Period Setting" under "Basic Settings" of the master station is displayed. ( $\mu$ s unit)
	Number of Station Errors Detected	Indicates the number of error stations in the displayed network.
	Communication Mode	Indicates the communication mode set in "Communication Mode" under "Application Settings" of the master station.
	Change IP Address Display	Allows to select from "DEC" or "HEX" for IP address display on the selected communication status monitor and network map. (Default: Decimal)
	Network map	Indicates the CC-Link IE TSN structure and the status of each station. (  Page 223 Network map) If the status of each station is not displayed, check whether there are any overlaps of master stations.
	Data Unlinked	Displays a disconnected station that has been set in "Network Configuration Settings" under "Basic Settings" but has not yet performed data link. Reserved stations and error invalid stations are also included. However, even if a disconnected station had performed data link, disconnected stations in the following cases are displayed in this area. <ul style="list-style-type: none"> <li>• A station that was reconnected to a network after disconnecting/inserting the cable or powering off and on the system, and remains disconnected</li> <li>• A disconnected station with the station icon deleted in the network map by clicking the [Update] button</li> </ul> Displays the station No. on the station icon. The "Other Modules" icon indicates a station that has not yet performed data link. Icons other than the "Other Modules" icon indicate stations that had performed data link before disconnection. For details on the displayed icon, click the [Legend] button.
Selected Station Communication Status Monitor	Status of the station selected in "Network Status" is displayed. (  Page 225 Selected Station Communication Status Monitor)	
Operation Test	[Communication Test] button Performs a communication test. (  Page 226 Communication Test)	
Information Confirmation /Setting	[Station Information List] button Displays information of the slave stations which are performing data link in a list form. (  Page 227 Station Information List)	
Selected Station Operation	[Remote Operation] button Performs remote operation (such as RUN, STOP, or RESET operations) to the CPU module. (  Page 228 Remote Operation )	



## Network map

### Icon

The module type and station No. are displayed with an icon.



- Click: Selection
- Right-click: Executes tests or debugging.
- [F4] [F5] [F6] [F7] keys on the keyboard: Move the focus to the module to be diagnosed, and determine it with the [Space] key.

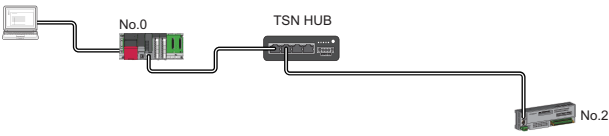
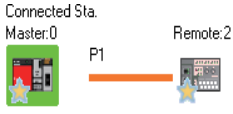
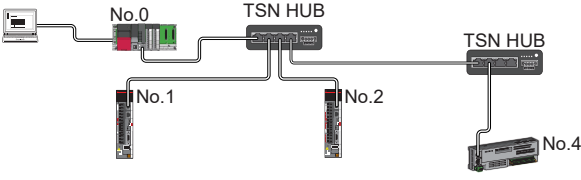
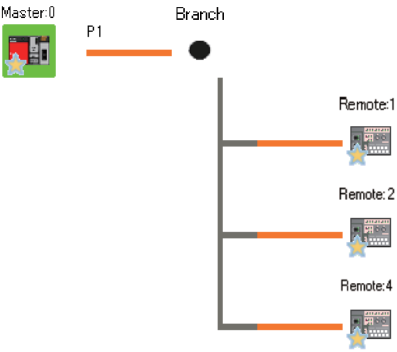
No.	Description
(1)	Displays the station (own station) where the engineering tool is connected.
(2)	Displays the station type and station No.. "?" is displayed when a station No. has not been set. When the background of the text if colored, the relevant station may have been set as a reserved station or an error invalid station. Click the [Legend] button to check the meaning of the background colors.
(3)	Module status is displayed. Click the [Legend] button to check the meaning of the icon. When the "Error (Illegal ring connection detected)" icon is displayed, take actions displayed in "Troubleshooting" of "Error details". (☞ Page 225 Selected Station Communication Status Monitor)
(4)	P1 or P2 to which an Ethernet cable is connected is displayed.

### Network map

A network map is displayed according to the connection status.

Connection status	Display of the network map
<p>Line topology</p>	
<p>Star topology</p>	
<p>Star topology and line topology</p>	

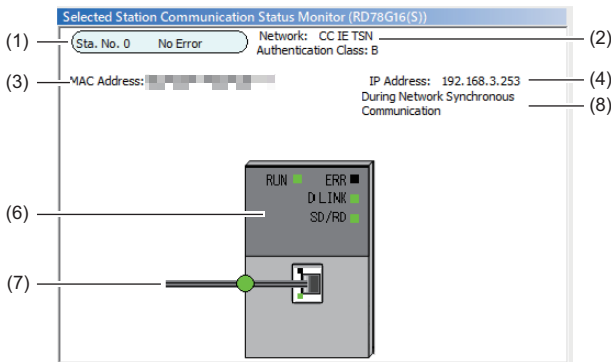
In the following cases, the network map is displayed differently from the actual connection status.

Connection status	Display of the network map
<p>Two stations are connected through a switching hub.</p> 	<p>Branches are not displayed in the network map.</p> <p>Connected Sta. Master:0</p> 
<p>Switching hubs are in the cascade connection.</p> 	<p>Only one branch is displayed.</p> <p>Connected Sta. Master:0</p> 

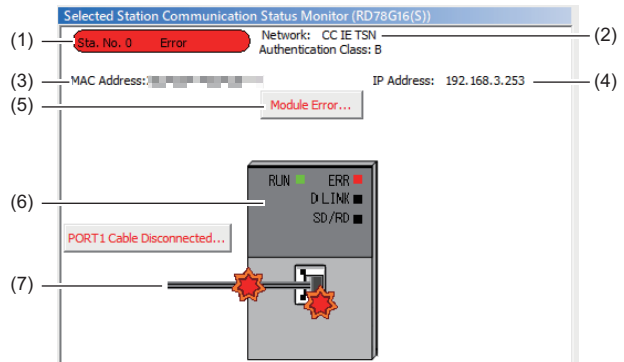
## Selected Station Communication Status Monitor

Displays status of the station selected in "Network Status".

■Normal



■Error



No.	Description
(1)	Indicates the station No. and operating status. ■Normal • Station No. No error (light blue): Normal operation ■Error • Station No. Error (yellow): Error (Data link is continued) • Station No. Error (red): Error (Data link is stopped)
(2)	Displays the network type.
(3)	Displays a MAC address.*1
(4)	Displays an IP address.
(5)	Click this button to check error details. Take actions following the description displayed in "Error Factor" and "Troubleshooting".
(6)	The LED status of a module and communication status of P1 and P2 are displayed. For details, refer to "LED Display Specifications" in PART 1 or PART 2 of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup)
(7)	Status of the Ethernet cables connected to P1 and P2 is displayed.
(8)	The operating status of the network synchronous communications is displayed.*2

\*1 When 00-00-00-00-00-00 is displayed as a MAC address, the status of the selected station cannot be checked with the selected station communication status monitor. Check the error details by directly connecting the engineering tool to the station where an error occurs, and opening the "System Monitor" window.

\*2 "During Network Synchronous Communication" displayed in "Selected Station Communications Status Monitor" indicates that the selected station is synchronizing through the network synchronous communications. Even when the master station is not performing the network synchronous communication, "During Network Synchronous Communication" is displayed on the slave station if the network synchronous communication is performed in the slave station.

### ■When a selected station is not available for communication status monitor

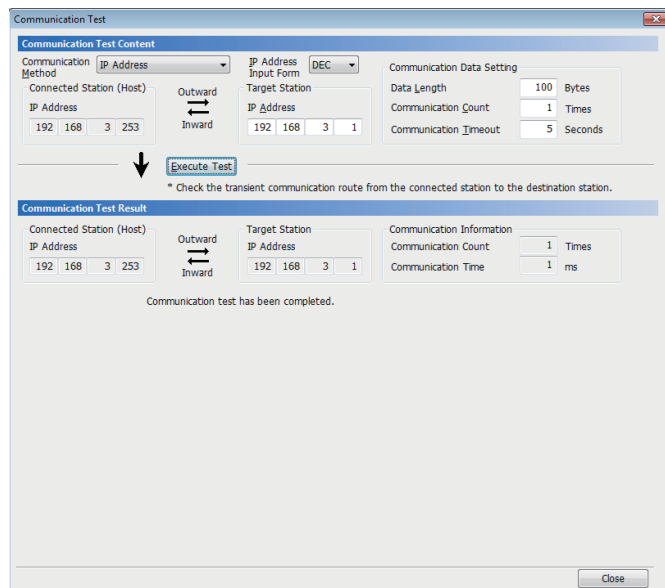
The information of devices are not displayed. The "Error details" window (detailed information, error factor, troubleshooting) is displayed.


# Communication Test

This function checks if transient transmission data can be properly routed from the own station to the communication target. Depending on selection for "Communication Method" ("Network No./Station No." or "IP Address"), the range that can be checked may vary.

Selection of "Communication Method"	Communication target of transient transmission
	Stations on the same network
Network No./Station No.	<input type="radio"/> Available for check (relay stations to be transmitted through can also be checked)
IP Address	<input type="radio"/> Available for check

Explain the procedure of the communication test.



1. Display the "Communication Test" window and select "Network No./Station No." or "IP Address" from "Communication Method".  
 [Diagnostics] ⇒ [CC-Link IE TSN/CC-Link IE Field Diagnostics] ⇒ [Communication Test] button
2. Enter values for "Target Station" and "Communication Data Setting".
3. Click the [Execute Test] button to execute the communication test. If an error occurs, take corrective actions according to the error message.

## Precautions

- When a relay sending station is set to "Target Station", the communication test ends with an error. Set a relay receiving station to "Target Station".
- When "Network No./Station No." is selected for "Communication Method" and a station mounted on the same base unit (main base unit and extension base unit) is set to "Target Station", the communication test ends with an error.
- Since this function uses PING, an error "a communication test target station communication error" (error code D919H) occurs if the communication target does not respond to PING. When executing this function, check if the security setting (such as firewall) of the communication target is set to respond to PING. Moreover, if the target is set not to respond to PING in the security settings (such as a firewall), it may take some time until a timeout error occurs on the engineering tool. For details on when communication using the engineering tool is not allowed in the settings of Windows Firewall, refer to the following.

 GX Works3 Operating Manual

# Station Information List

The station information list displays the information of the slave stations which are performing data link in a list.

Station Information List						
Number of Stations	<input type="text" value="3"/>	Change IP Address Display <input checked="" type="radio"/> DEC <input type="radio"/> HEX				
Station No.	Model Name	IP Address	MAC Address	F/W Version	Production Information	Module Inherent Information
1	NZ2GN251-32DT	192.168.3.1	■■■■■■■■■■	03	■■■■■■■■■■	0020
2	NZ2GN25-60AD4	192.168.3.2	■■■■■■■■■■	03	■■■■■■■■■■	0180
3	NZ2GN25-60DA4	192.168.3.3	■■■■■■■■■■	03	■■■■■■■■■■	0140

Item	Description
Number of Stations	Displays the number of slave stations to be displayed in the station information list.
Change IP Address Display	Select an IP address display format.
Station No.	Displays the station number of the slave station.
Model Name	Displays the model name of the slave station.
IP Address	Displays the IP address of the slave station.
MAC Address	Displays the MAC address of the slave station.
F/W Version	Displays the firmware version of the slave station.
Production Information	Displays the production information of the slave station.
Module Inherent Information	Displays the module-specific information of the slave station.

**Point** 

- Only the slave stations that are performing data link are displayed in the station information list.
- If the engineering tool does not have the information of the corresponding slave station, "-" is displayed in each item.
- If the relevant slave station is an unsupported module, "Other Modules" is displayed.

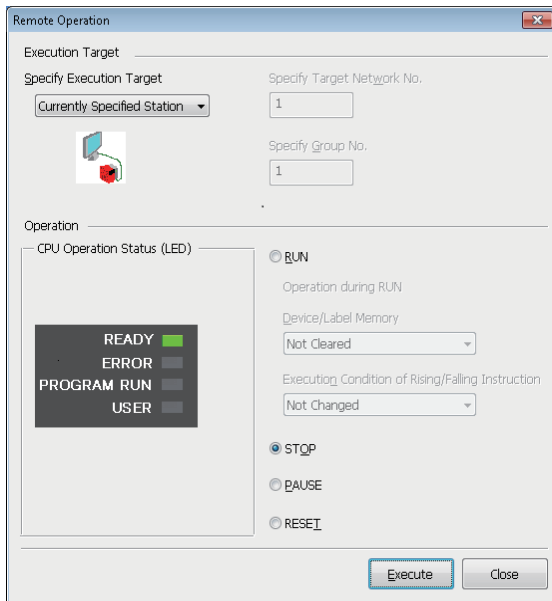
# Remote Operation

This function executes remote operations (such as RUN, STOP, and RESET operations) to the station selected on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window, from the engineering tool. (Remote operation for slave stations is available only for RESET)

The displayed window varies depending on the station selected. For the operations with a module other than the Motion module selected, refer to the manual for the module used.

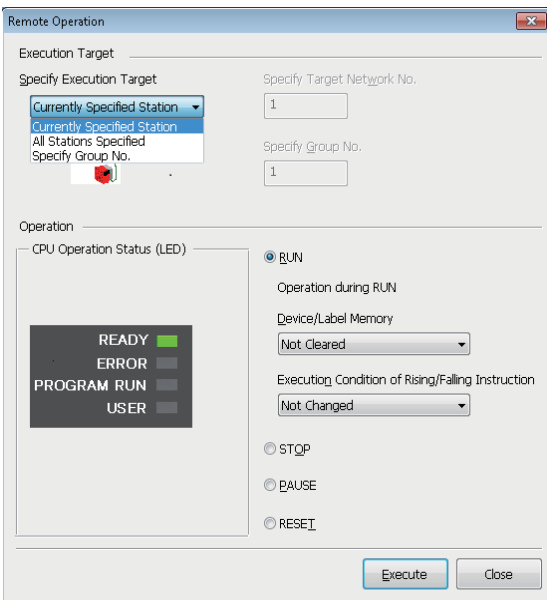
## Procedure

To perform remote operations, follow the steps below.



1. Select the module where the remote operations are performed in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window.
2. Click the [Remote Operation] button in the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window, or right-click a module icon in the "Network Status" and click [Remote Operation].

The "Remote Operation" window is displayed.



3. Specify the target station in "Specify Execution Target".
  - "Currently Specified Station": The remote operations are performed only to the CPU module on the station selected in the CC-Link IE TSN/CC-Link IE Field diagnostics.
  - "All Stations Specified": Remote operations are performed on all stations under "Specify Target Network No."
  - "Specify Group No.": Among the stations for which a transient transmission group No. has been set, remote operations are performed only on the stations that are selected in "Specify Group No."
4. Select a remote operation (RUN, STOP, PAUSE, or RESET) to the CPU module to be performed in "Operation".<sup>\*1</sup>
5. Click the [Execute] button to perform the remote operation.

\*1 To perform remote RESET, set "Remote Reset Setting" under "Operation Related Setting" of "CPU Parameter" to "Enable" in advance.



For details on the remote operations, refer to the user's manual for the CPU module used.

# 7.4 Troubleshooting by Symptom

This section describes troubleshooting when a data link cannot be performed with the target station regardless of no error occurring in the Motion module.

If an error has occurred in the Motion module, identify the error cause using the engineering tool. (☞ Page 217 Checking the Network Status)

## Cyclic transmission failed

The following lists the actions to be taken if cyclic transmission cannot be performed.

Check item	Action	
Is the D LINK LED of the Motion module turned on?	Perform troubleshooting for when the D LINK LED turns off or is flashing. (☞ Page 212 When the D LINK LED turns off or is flashing)	
Does the slave station support the link device set in "Network Configuration Settings" of the master station?	Correct the link device to be assigned to the slave station in "Network Configuration Settings" of the master station.	
Do the station types set in "Network Configuration Settings" under "Basic Settings" of the master station match those set for the connected slave stations?	Check 'Station type match status of each station' (SB00E8) and 'Station type match status' (SW00E8 to SW00EF) to correct the station type of stations in which the station type does not match.	
When "Connection Device Information" under "Basic Settings" is set to "Authentication Class B Only", is a dedicated TSN hub used?	<ul style="list-style-type: none"> <li>• Correct the used switching hub and the switching hub settings. For the setting method, refer to the manual for the switching hub used.</li> <li>• When using a TSN hub, check the precautions and restrictions for system configuration on the CC-Link Partner Association website (<a href="http://www.cc-link.org">www.cc-link.org</a>).</li> <li>• Correct the switching hub delay time according to the switching hub used. (☞ Page 328 Communication cycle interval) For the switching hub delay time, refer to the manual for the switching hub used.</li> </ul>	
When using an authentication Class B/A device with a communication speed of 100Mbps in the basic cycle, is "System Reservation Time" in "Communication Period Setting" under "Basic Settings" of the master station set to other than 200 μs?	Set "System Reservation Time" to 200μs.	
When "Connection Device Information" under "Basic Settings" of the master station is set to "Authentication Class B Only"	Are authentication Class A devices connected?	<ul style="list-style-type: none"> <li>• Check the connected device and disconnect the authentication Class A devices.</li> <li>• When connecting an authentication Class A device, set "Connection Device Information" of the master station to "Mixture of Authentication Class B/A or Authentication Class A Only".</li> </ul>
	Is a general-purpose hub connected between authentication Class B devices?	Check the connected device and disconnect the general-purpose hub or replace it with a TSN hub.
When "Connected Device Information" under "Basic Settings" of the master station is set to "Mixture of Authentication Class B/A or Authentication Class A Only"	Is the authentication Class B device other than the master station connected with a general-purpose hub in star topology?	Other than the master station, do not connect authentication Class B devices to a general-purpose hub in star topology. Connect authentication Class B devices to a TSN hub.
	Is the master station connected with authentication Class B devices via a general-purpose hub?	<ul style="list-style-type: none"> <li>• Check the connected device and connect the master station and authentication Class B devices in line topology without using a general-purpose hub.</li> <li>• Check the connected device and connect the master station and authentication Class B devices using a TSN hub.</li> </ul>
	Is an Ethernet device connected to places other than the end of the network?	Check the connected device and connect the Ethernet device at the end of the network.
	Does the connected switching hub support the authentication Class used?	Use the switching hubs that support "Authentication Class Setting" set to the master station. For the models and usage methods of the switching hubs, refer to the CC-Link Partner Association website ( <a href="http://www.cc-link.org">www.cc-link.org</a> ).
	Is the total cyclic data size of all slave stations on the authentication Class A device side at the boundary between authentication Class B devices other than the master station and authentication Class A devices exceeding 2K bytes?	<ul style="list-style-type: none"> <li>• Restrict the number of stations to be connected so that the total cyclic data size of authentication Class A devices does not exceed 2K bytes.</li> <li>• Connect authentication Class A devices to the master station.</li> </ul>
In the case of line topology, do the communication speed settings of each station match?	Check and correct the settings on the communication speed of each station. For the setting method of the communication speed, refer to the manual for each device.	
Is there any reason why cyclic transmission cannot be performed on the slave station side?	<ul style="list-style-type: none"> <li>• Check if an error has occurred on the slave station.</li> <li>• Check if the slave station settings and parameters are correct.</li> <li>• Refer to the manual of the slave station for troubleshooting.</li> </ul>	

Check item	Action
Is the event code 00C44 registered in the event history?	Match the communication speed of the master station to the communication speed of the station for which the slave station parameter automatic setting is to be configured.
Is the minimum value for communication cycle interval set to the "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the module parameter?	Set a value obtained by adding 10% to the minimum value for cyclic transmission time for each setting.
Is the minimum value for cyclic transmission time set to "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" of the module parameter?	
When the communication speed setting of the master station is set to 1 Gbps, is the total cyclic data size of all slave stations on the 100 Mbps device side at the boundary between authentication Class B 1 Gbps devices other than the master station and authentication Class B 100 Mbps devices exceeding 2K bytes?	<ul style="list-style-type: none"> <li>• Restrict the number of stations to be connected so that the total cyclic data size of 100 Mbps devices does not exceed 2K bytes.</li> <li>• Connect 100 Mbps devices to the master station.</li> </ul>

### ■When the Motion module with the baseSystem version of "Ver. 1.18 or earlier" is used

When the Motion module with the baseSystem version of "Ver. 1.18 or earlier" is used, check the following.

Check item	Action
When "Connected Device Information" under "Basic Settings" of the master station is set to "Mixture of Authentication Class B/A or Authentication Class A Only"	Are nine or more stations of authentication Class B devices and TSN hubs connected to the transmission path from the master station to the authentication Class B device at the end?
	Check the connected device and reduce the number of stations of authentication Class B devices and TSN hubs on the transmission path from the master station to the authentication Class B device at the end to eight or less in total.

### ■When the Motion module with the baseSystem version of "Ver. 1.7 or earlier" is used

When the Motion module with the baseSystem version of "Ver. 1.7 or earlier" is used, check the following.

Check item	Action	
When "Connected Device Information" under "Basic Settings" of the master station is set to "Mixture of Authentication Class B/A or Authentication Class A Only"	Are 32 stations or more in total connected?	Check the connected device and reduce the maximum number of connectable stations to 31 stations (master station: 1, slave station: 30) or less.
	Are authentication Class A devices in line topology?	<ul style="list-style-type: none"> <li>• Check the connected device and do not connect the authentication Class A device in line topology.</li> <li>• When connecting the authentication Class B device and authentication Class A device, connect them via a general-purpose hub.</li> </ul>
	In line topology plus star topology, are authentication Class A devices connected in the device that is connected to the master station in line topology?	Check the connected device, and if the master station is connected in line topology, only connect authentication Class B devices.
	Are the master station and authentication Class A devices in line topology?	Check the connected device, and if connecting the master station and an authentication Class A device, connect them with a general-purpose hub.
	Are authentication Class A devices connected to each other?	Check the connected device, and connect only one authentication Class A device to each port of a general-purpose hub.
	Are an authentication Class A device and an Ethernet device in line topology?	Check the connected device and do not connect an authentication Class A device and an Ethernet device.
	Is a general-purpose hub in cascade connection?	Check the connected device and do not connect it in cascade connection.



## Transient transmission failed

The following lists the actions to be taken if transient transmission cannot be performed with the target station, and the engineering tool cannot perform monitoring.

Check item	Action	
Is the D LINK LED of the Motion module turned off?	If turned off, perform troubleshooting for when the D LINK LED turns off or is flashing. (☞ Page 212 When the D LINK LED turns off or is flashing)	
Is the data link status of the target station normal?	In the CC-Link IE TSN/CC-Link IE Field diagnostics, identify the cause of the error and take action. (☞ Page 217 Checking the Network Status)	
Is the network No. overlapped on the network?	Change the overlapped network No.	
When "Connected Device Information" under "Basic Settings" of the master station is set to "Authentication Class B Only"	Are authentication Class A devices connected?	<ul style="list-style-type: none"> <li>• Check the connected device and disconnect the authentication Class A devices.</li> <li>• When connecting an authentication Class A device, set "Connection Device Information" of the master station to "Mixture of Authentication Class B/A or Authentication Class A Only"</li> </ul>
	Is a general-purpose hub connected between authentication Class B devices?	Check the connected device and disconnect the general-purpose hub or replace it with a TSN hub.
When "Connected Device Information" under "Basic Settings" of the master station is set to "Mixture of Authentication Class B/A or Authentication Class A Only"	Is the authentication Class B device other than the master station connected with a general-purpose hub in star topology?	Other than the master station, do not connect authentication Class B devices to a general-purpose hub in star topology. Connect authentication Class B devices to a TSN hub.
	Is the master station connected with authentication Class B devices via a general-purpose hub?	<ul style="list-style-type: none"> <li>• Check the connected device and connect the master station to authentication Class B devices in line topology instead of using a general-purpose hub.</li> <li>• Check the connected device and connect the master station and authentication Class B devices using a TSN hub.</li> </ul>
	Is an Ethernet device connected to places other than the end of the network?	Check the connected device and connect the Ethernet device at the end of the network.
	Does the connected switching hub support the authentication Class used?	Use the switching hubs that support "Authentication Class Setting" set to the master station. For the models and usage methods of the switching hubs, refer to the CC-Link Partner Association website ( <a href="http://www.cc-link.org">www.cc-link.org</a> ).
In the case of line topology, do the communication speed settings of each station match?	Check and correct the settings on the communication speed of each station. For the setting method of the communication speed, refer to the manual for each device.	
Is there any reason why cyclic transmission cannot be performed on the slave station side?	<ul style="list-style-type: none"> <li>• Check if an error has occurred on the slave station.</li> <li>• Check if the slave station settings and parameters are correct.</li> <li>• Refer to the manual of the slave station for troubleshooting.</li> </ul>	
Is the event code 00C44 registered in the event history?	Match the communication speed of the master station to the communication speed of the station for which the slave station parameter automatic setting is to be configured.	
Is the minimum value for communication cycle interval set to the "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the module parameter?	Set a value obtained by adding 10% to the minimum value for cyclic transmission time for each setting.	
When the communication speed setting of the master station is set to 1 Gbps, is the total cyclic data size of all slave stations on the 100 Mbps device side at the boundary between authentication Class B 1 Gbps devices other than the master station and authentication Class B 100 Mbps devices exceeding 2K bytes?	<ul style="list-style-type: none"> <li>• Restrict the number of stations to be connected so that the total cyclic data size of 100 Mbps devices does not exceed 2K bytes.</li> <li>• Connect 100 Mbps devices to the master station.</li> </ul>	

If the above actions do not solve the problem, perform the following tests to check for an error.

- Communication test (☞ Page 226 Communication Test)

## ■When the Motion module with the baseSystem version of "Ver. 1.18 or earlier" is used

When the Motion module with the baseSystem version of "Ver. 1.18 or earlier" is used, check the following.

Check item	Action
When "Connected Device Information" under "Basic Settings" of the master station is set to "Mixture of Authentication Class B/A or Authentication Class A Only"	Are nine or more stations of authentication Class B devices and TSN hubs connected to the transmission path from the master station to the authentication Class B device at the end?  Check the connected device and reduce the number of authentication Class B devices to be connected to each port of the master station to eight or less.

## ■When the Motion module with the baseSystem version of "Ver. 1.7 or earlier" is used

When the Motion module with the baseSystem version of "Ver. 1.7 or earlier" is used, check the following.

Check item	Action
When "Connected Device Information" under "Basic Settings" of the master station is set to "Mixture of Authentication Class B/A or Authentication Class A Only"	Are 32 stations or more in total connected?  Check the connected device and reduce the maximum number of connectable stations to 31 stations (master station: 1, slave station: 30) or less.
	Are authentication Class A devices in line topology?  <ul style="list-style-type: none"> <li>• Check the connected device and do not connect the authentication Class A devices in line topology.</li> <li>• When connecting the authentication Class B device and authentication Class A device, connect them via a general-purpose hub.</li> </ul>
	In line topology plus star topology, are authentication Class A devices connected in the device that is connected to the master station in line topology?  Check the connected device, and, if the master station is connected in line topology, only connect authentication Class B devices.
	Is an authentication Class A device connected between the master station and authentication Class B devices?  <ul style="list-style-type: none"> <li>• Check the connected device, and connect the master station and an authentication Class B device without a general-purpose hub.</li> <li>• When connecting authentication Class A devices, connect them via a general-purpose hub.</li> </ul>
Are the master station and authentication Class A devices in line topology?	Check the connected device, and if connecting the master station and an authentication Class A device, connect them with a general-purpose hub.

## Station is disconnected from the network

The following is the action to be taken when a station in data link is disconnected.

Check item	Action
Is the ambient temperature for the module outside the specified range?	Keep the ambient temperature within the specified range by taking action such as removing heat source.

## Station repeats disconnection and return

The following lists the actions to be taken when a station in data link repeats disconnection and return.

Check item	Action
Do the used Ethernet cables conform to the Ethernet standard?	Replace the cables with Ethernet cables which conform to the standard. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual. <a href="#">MELSEC iQ-R Motion Module User's Manual (Startup)</a>
Is the station-to-station distance 100m or less?	Change the station-to-station distance to 100m or less.
Does the cabling condition (bending radius) meet the specifications?	Refer to the manual for the Ethernet cable, and if the bending radius exceeds the specified range, correct the bending radius.
Is any Ethernet cable disconnected?	If an Ethernet cable is disconnected, replace the Ethernet cable.
Is the switching hub used operating normally?	<ul style="list-style-type: none"> <li>Use a switching hub that conforms to the standard. For details, refer to "Wiring" in PART 1 or PART 2 of the following manual.  <a href="#">MELSEC iQ-R Motion Module User's Manual (Startup)</a></li> <li>Power off and on the switching hub.</li> </ul>
Is the station that is the time synchronization source normal?	Check the manual of the module used for the time synchronization source station.
Are resets of other stations repeated?	Avoid unnecessary reset since a station is disconnected while resetting.
Are other stations repeatedly powering on/off?	Avoid unnecessary power-off, since a station is disconnected while turned off.
When "Communication Speed" of the master station is set to "100 Mbps", is "System Reservation Time" in "Communication Period Setting" under "Basic Settings" of the master station set to other than 200 μs?	Set "System Reservation Time" to 200 μs.
When "Communication Speed" of the master station is set to "1 Gbps" and an authentication Class B/A device with a communication speed of 100 Mbps is used, is "Communication Period Setting" set to "Basic Period" or "Normal-Speed"?	For an authentication Class B/A device with a communication speed of 100 Mbps, set "Communication Period Setting" to "Low-Speed".
Are the TSN hub restrictions violated?	Observe the TSN hub restrictions. For the restrictions, refer to the manual of the TSN hub to be used.
When the communication speed setting of the master station is set to 1 Gbps, is the total cyclic data size of all slave stations on the 100 Mbps device side at the boundary between authentication Class B 1 Gbps devices other than the master station and authentication Class B 100 Mbps devices exceeding 2K bytes?	<ul style="list-style-type: none"> <li>Restrict the number of stations to be connected so that the total cyclic data size of 100 Mbps devices does not exceed 2K bytes.</li> <li>Connect 100 Mbps devices to the master station.</li> </ul>
Is the total cyclic data size of all slave stations on the authentication Class A device side at the boundary between authentication Class B devices other than the master station and authentication Class A devices exceeding 2K bytes?	<ul style="list-style-type: none"> <li>Restrict the number of stations to be connected so that the total cyclic data size of authentication Class A devices does not exceed 2K bytes.</li> <li>Connect authentication Class A devices to the master station.</li> </ul>

### ■When the Motion module with the baseSystem version of "Ver. 1.15 or earlier" is used

When the Motion module with the baseSystem version of "Ver. 1.15 or earlier" is used, check the following.

Check item	Action
When "Communication Speed" of the master station is set to "1 Gbps" and an authentication Class B/A device with a communication speed of 100 Mbps is used, does the station repeat disconnection and return even if "Communication Period Setting" is set to "Low-Speed"?	Use the following wiring and setting. <ul style="list-style-type: none"> <li>Use only either P1 or P2 of the master station.</li> </ul>

## Communications are unstable

When cyclic data transfer processing time or transmission delay time is long or when a transient transmission timeout occurred, check the following items.

Check item	Action
Is the L ER LED of the Motion module turned on?	If turned on, perform troubleshooting for a case when the L ER LED is turned on. (📖 Page 214 When the L ER LED turns on)
Is the ambient temperature for the module outside the specified range?	Keep the ambient temperature within the specified range by taking action such as removing heat source.
Is any error shown in "Selected Station Communications Status Monitor" of CC-Link IE TSN/CC-Link IE Field diagnostics?	If an error is identified at P1 or P2, perform a cable test.
Is there any noise affecting the system?	Change the placement and/or wiring of the modules so that the system is not affected by noise.

## SLMP communications failed

When communications using the SLMP cannot be performed, check the following items.

Check item	Action
Has the connection with the external device been opened?	<ul style="list-style-type: none"> <li>If the connection with the external device is not opened, perform the open processing.*1</li> <li>If an error occurs, check and eliminate the error cause.</li> </ul>
Is the correct command format used for the command type, device specification, address specification, and others?	Correct the command format. (📖 SLMP Reference Manual)
Did the external device send a command?	If the external device did not send a command, send a command to the Motion module.
Was a response returned to the device that had sent the command?	<ul style="list-style-type: none"> <li>If no response was returned, check if the correct IP address was specified in the command. If not, correct the IP address and send the command again.</li> <li>If a response was returned, check the end and error codes to correct the faulty area.</li> </ul>
Is the same communication speed set for the connected device and access destination?	Change the connection destination so that the connected device and access destination have the same communication speed.

\*1 If the connection of only the external device is closed due to communication cable disconnection, personal computer restart, or other reasons, reopen the connection using the same port used before the error occurred. A connection is not closed if another Active open request is received from the external device with a different IP address or a port No.

## Communications with Ethernet devices failed

When communications with Ethernet devices cannot be performed, check the following items.

Check item	Action
Is the firewall or proxy server setting enabled on the Ethernet device?	Check and correct the settings on the Ethernet device. Is a response to the PING command (ICMP echo request) disabled?
Is the antivirus software on the Ethernet device blocking the communication?	Check and correct the antivirus software settings on the Ethernet device. <ul style="list-style-type: none"> <li>Is the security setting level of the antivirus software low?</li> <li>Is a response to the PING command (ICMP echo request) disabled in the firewall settings?</li> </ul>

For details on when communication using the engineering tool is not allowed in the settings of Windows Firewall, refer to the following.

📖 GX Works3 Operating Manual

## Data link is normal but link device communications fail

When the data link is normal (D LINK LED: On) but the link device communications fail, check the following items.

Check item	Action
Is "Reserved/Error Invalid Station" of the slave station set to "Reserved Station" in "Network Configuration Settings" of the master station?	Set "Reserved/Error Invalid Station" of the slave station to "No Setting".
Is the input/output bit setting or input/output word setting of the slave station set in "Network Configuration Settings" of the master station? (Simple display)	Set a link device used in the slave station correctly.
Are "RX Setting", "RY Setting", "RWw Setting", and "RWr Setting" of the slave station set in "Network Configuration Settings" of the master station? (Detailed display)	Set a link device used in the slave station correctly.
Does the slave station support the link devices set in "Network Configuration Settings" of the master station?	Correct the link devices to be assigned to the slave station in "Network Configuration Settings" of the master station.
Is the link refresh setting range correct?	Correct the setting in "Refresh Settings" of "Basic Settings".
Is the refresh range of "CPU Side" in "Refresh Settings" duplicated with that of "CPU Side" of another network module?	Correct the setting in "Refresh Settings" of "Basic Settings".

## Synchronization cannot be performed with the CC-Link IE TSN Network synchronous communication function

When the synchronization cannot be performed with the CC-Link IE TSN Network synchronous communication function, check the following items.

Check item	Action
Is an inter-module synchronization target module selected?	Set "Select Inter-module Synchronization Target Module" under "Inter-module Synchronization Setting" in the "System Parameter" window to "Synchronous".
Is an inter-module synchronous master set?	For "Synchronization Master Setting of CC IE TSN/CC IE Field" in "Inter-module Synchronization Master Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" in "System Parameter", set "Mounting Slot No." for the inter-module synchronous master. For details on the inter-module synchronous master, refer to the following. <a href="#">MELSEC iQ-R Inter-Module Synchronization Function Reference Manual</a>
Is the network synchronous communication set to the standard slave station in the network configuration setting of the master station?	Set "Network Synchronous Communication" to "Synchronous" for the standard slave station under "Network Configuration Settings" in the module parameters.
Is the network synchronous communication set in the parameter settings of the slave station?	Set "Network Synchronous Communication" in the parameter settings of the slave station to "Synchronous". ( <a href="#">L1 Manual</a> for the module used)
Does the firmware version of the CPU module support the CC-Link IE TSN Network synchronous communication function?	Check the firmware version of the CPU module in "Product Information List" of "System Monitor". If the firmware version of the CPU module does not support the CC-Link IE TSN Network synchronous communication function, update the firmware of the CPU module or change the CPU module to a CPU module supporting that function.

## Safety communications failed

The following lists the actions to be taken if safety communications cannot be performed.

Check item	Action
Is a safety station specified as a reserved station in "Network Configuration Settings" of "Basic Settings" of the master station?	Set "No Setting" for "Reserved/Error Invalid Station" in "Network Configuration Settings" under "Basic Settings" of the master station. (☞ Page 92 "CC-Link IE TSN Configuration" Window)[MODE: PLCopen] (☞ Page 186 "CC-Link IE TSN Configuration" window)[MODE: Simple Motion]
Is safety connection set among safety stations that perform safety communications?	Set safety connection among safety stations that perform safety communications in "Safety Communication Setting" under "Basic Settings".
Is the setting value of "Sending Interval Monitoring Time" in "Safety Communication Setting" under "Basic Settings" correct?	Correct the setting value of "Sending Interval Monitoring Time" in "Safety Communication Setting" under "Basic Settings". (☞ Page 337 Transmission interval monitoring time)
Is the setting value of "Safety Refresh Monitoring Time" in "Safety Communication Setting" under "Basic Settings" correct?	Correct the setting value of "Safety Refresh Monitoring Time" in "Safety Communication Setting" under "Basic Settings". (☞ Page 338 Safety refresh monitoring time)
Does safety station interlock status indicate interlock state?	<ul style="list-style-type: none"> <li>• Correct the setting value of "Sending Interval Monitoring Time" in "Safety Communication Setting" under "Basic Settings". (☞ Page 337 Transmission interval monitoring time)</li> <li>• Correct the setting value of "Safety Refresh Monitoring Time" in "Safety Communication Setting" under "Basic Settings". (☞ Page 338 Safety refresh monitoring time)</li> <li>• Release the interlock state by using Interlock release request for each safety connection. (☞ MELSEC iQ-R CPU Module User's Manual (Application))</li> </ul>
Is a standard station set for the IP address of the communication destination in "Safety Communication Setting" under "Basic Settings" in the local station?	Set a safety station for the IP address of the communication destination in "Safety Communication Setting" under "Basic Settings".
Is "Safety Data Transfer Device Setting" in "Safety Communication Setting" under "Basic Settings" correctly set?	Correct "Safety Data Transfer Device Setting" set in "Safety Communication Setting" under "Basic Settings" among safety stations that perform safety communications.
When safety communications are performed with the remote station (safety station), has the safety module validation been performed?	Perform the safety module validation. (☞ Manual for the remote station used)

## Network map is not displayed correctly

When the network map of "CC-Link IE TSN/CC-Link IE Field Diagnostics" is not displayed correctly, check the following.

Check item	Action
Is the PLCopen motion control FB mode set and a value less than 125 μs set in the communication period interval setting?	<ul style="list-style-type: none"> <li>• Reduce the number of slave stations set in the network configuration.</li> <li>• Increase the setting value of the communication period interval setting.</li> </ul>

\*1 For details, refer to "Operation Cycle" in the following manual.  
☞ MELSEC iQ-R Motion Module User's Manual (Application)

## No error is occurring but motion control cannot be started

When there is no error occurring but motion control cannot be started, check the following.


Check item	Action
Is the PLCopen motion control FB mode set and a value less than 125 μs set in the communication period interval setting?	<ul style="list-style-type: none"> <li>• Reduce the number of slave stations set in the network configuration.</li> <li>• Increase the setting value of the communication period interval setting.</li> </ul>

\*1 For details, refer to "Operation Cycle" in the following manual.  
☞ MELSEC iQ-R Motion Module User's Manual (Application)

## Motion control setting and Motion module cannot communicate [MODE: PLCopen]

When the motion control setting and Motion module cannot communicate in the PLCopen motion control FB mode, check the following.

Check item		Action
Is a value less than 125 $\mu$ s set in the communication period interval setting?	Is the number of slave stations in the network configuration settings exceeding the referential number of axes <sup>*1</sup> ?	<ul style="list-style-type: none"><li>• Reduce the number of slave stations set in the network configuration.</li><li>• Increase the setting value of the communication period interval setting.</li></ul>

\*1 For details, refer to "Operation Cycle" in the following manual.  
 MELSEC iQ-R Motion Module User's Manual (Application)

## 7.5 List of Error Codes

This section lists the error codes, error definitions and causes, and actions for the errors that occur in the processing for data communication between the Motion module and external devices or occur by processing requests from the CPU module on the own station.

Error codes are displayed in the [Error Information] tab in the "Module Diagnostics" window of the Motion module. (Page 215 Error Information)

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
1124H	<ul style="list-style-type: none"> <li>The default gateway is not set correctly.</li> <li>The gateway IP address is not set correctly.</li> <li>The default gateway/gateway IP address (network address after the subnet mask) is different from that of the IP address of the own node.</li> </ul>	<ul style="list-style-type: none"> <li>Correct the default gateway IP address.</li> <li>Set the same network address as that of the IP address.</li> </ul>	■Parameter information <ul style="list-style-type: none"> <li>Parameter type</li> <li>I/O No.</li> <li>Parameter No.</li> <li>Network No.</li> <li>Station No.</li> </ul> ■—
1128H	The port No. is incorrect.	Correct the port No..	—
1129H	The port No. of the external device is not set correctly.	Correct the port No. of the external device.	—
112DH	The data was sent to the connected device while the IP address setting of the device set in the network configuration setting was incorrect.	<ul style="list-style-type: none"> <li>Correct the IP address of the connected device in the network configuration setting.</li> <li>Check that the IP address class of the connected device is set to A, B, or C in the network configuration setting.</li> </ul>	—
112EH	A connection could not be established in the open processing.	<ul style="list-style-type: none"> <li>Check the operation of the external device.</li> <li>Check if the open processing has been performed in the external device.</li> <li>Correct the port No. of the Ethernet-equipped module, IP address/port No. of the external device, and opening method.</li> <li>When a firewall is set in the external device, check if access is permitted.</li> <li>Check if the Ethernet cable is connected properly.</li> </ul>	—
1134H	The external device does not send an ACK response in the TCP/IP communications.	<ul style="list-style-type: none"> <li>Since there may be congestion of packets on the line, send data after a certain period of time.</li> <li>Check if the cable is connected properly.</li> </ul>	—
1152H	The IP address is not set correctly.	Correct the IP addresses.	■Parameter information <ul style="list-style-type: none"> <li>Parameter type</li> <li>I/O No.</li> <li>Parameter No.</li> <li>Network No.</li> <li>Station No.</li> </ul> ■—
1155H	<ul style="list-style-type: none"> <li>The specified connection was already closed in TCP/IP communications.</li> <li>Open processing is not performed.</li> </ul>	<ul style="list-style-type: none"> <li>Perform the open processing for the specified connection.</li> <li>Check if the open processing has been performed in the external device.</li> </ul>	—
1157H	<ul style="list-style-type: none"> <li>The specified connection was already closed in UDP/IP communications.</li> <li>Open processing is not performed.</li> </ul>	<ul style="list-style-type: none"> <li>Perform the open processing for the specified connection.</li> <li>Check if the open processing has been performed in the external device.</li> </ul>	—
1158H	[MODE: PLCopen]	[MODE: PLCopen]	—
	<ul style="list-style-type: none"> <li>The receive buffer or send buffer is not sufficient.</li> <li>The window size of the external device is not sufficient.</li> </ul>	<ul style="list-style-type: none"> <li>Check the operation of the external device or switching hub.</li> <li>When the value of the 'Receive buffer status storage area' (Un\G6291486) is 0001H, reduce the frequency of data received from the external device.</li> </ul>	—
1158H	[MODE: Simple Motion]	[MODE: Simple Motion]	—
	<ul style="list-style-type: none"> <li>The receive buffer or send buffer is not sufficient.</li> <li>The window size of the external device is not sufficient.</li> </ul>	<ul style="list-style-type: none"> <li>Check the operation of the external device or switching hub.</li> <li>When the value of the 'Receive buffer status storage area' (Un\G7891486) is 0001H, reduce the frequency of data received from the external device.</li> </ul>	—



Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
1166H	Data was not sent correctly via TCP/IP.	<ul style="list-style-type: none"> <li>• Check the settings for connection with the external device.</li> <li>• Check the operation of the external device or switching hub.</li> <li>• Since there may be congestion of packets on the line, send data after a certain period of time.</li> <li>• Check if the cable is connected properly.</li> <li>• Check that there is no connection failure with the switching hub.</li> <li>• Execute the communication test, and if the test was completed with an error, take corrective action.</li> </ul>	—
1167H	Unsent data found, but could not be sent.	<ul style="list-style-type: none"> <li>• Check the settings for connection with the external device.</li> <li>• Check the operation of the external device or switching hub.</li> <li>• Since there may be congestion of packets on the line, send data after a certain period of time.</li> <li>• Check if the cable is connected properly.</li> <li>• Check that there is no connection failure with the switching hub.</li> <li>• Execute the communication test, and if the test was completed with an error, take corrective action.</li> </ul>	—
1802H	During data link, overlapping IP addresses have been detected.	Change the IP address of devices with an overlapped IP address.	<ul style="list-style-type: none"> <li>■ Operation source information <ul style="list-style-type: none"> <li>• IP address</li> </ul> </li> <li>■ IP address duplication information <ul style="list-style-type: none"> <li>• Duplication station 1 MAC address (1st octet, 2nd octet)</li> <li>• Duplication station 1 MAC address (3rd octet, 4th octet)</li> <li>• Duplication station 1 MAC address (5th octet, 6th octet)</li> <li>• Duplication station 2 MAC address (1st octet, 2nd octet)</li> <li>• Duplication station 2 MAC address (3rd octet, 4th octet)</li> <li>• Duplication station 2 MAC address (5th octet, 6th octet)</li> </ul> </li> </ul>
1803H	Over the number of stations that can be connected.	<ul style="list-style-type: none"> <li>■ When the version of Add-on baseSystem is "Ver. 1.8 or later" <ul style="list-style-type: none"> <li>• Reduce the number of stations of authentication Class B devices and TSN hubs on the transmission path from the master station to the authentication Class B device at the end to eight or less in total for each port of the master station.</li> </ul> </li> <li>■ When the version of Add-on baseSystem is "Ver. 1.7 or earlier" <ul style="list-style-type: none"> <li>• Reduce the total number of stations to 31 stations (master station: 1, slave station: 30) or less.</li> <li>• Reduce the number of stations of authentication Class B devices to eight or less for each port of the master station.</li> </ul> </li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
1804H	<p>During data link, invalid connection structure has been detected.</p> <ul style="list-style-type: none"> <li>An authentication Class B station is connected further on the end side than an authentication Class A station.</li> <li>With the master station with a communication speed of 1 Gbps, further on the end side than a station with a communication speed of 100 Mbps, a station with a communication speed of 1 Gbps is connected.</li> <li>With the master station with a communication speed of 1 Gbps, the communication cycle setting of the station with a communication speed of 100 Mbps is set to basic cycle or normal speed (×4).</li> <li>With the master station with a communication speed of 100 Mbps, a station with a communication speed of 1 Gbps is connected.</li> <li>With the master station with a communication speed of 100 Mbps, "Communication Period Setting" of the authentication Class B station with a communication speed of 100 Mbps is set to low-speed.</li> </ul>	<p>Check the connection and setting on the end side of the station shown in detailed information 2 and take the following actions.</p> <ul style="list-style-type: none"> <li>Connect an authentication Class A station further on the end side than an authentication Class B station.</li> <li>With the master station with a communication speed of 1 Gbps, connect the station with a communication speed of 1 Gbps on the master station side rather than the station with a communication speed of 100 Mbps.</li> <li>With the master station with a communication speed of 1 Gbps, set the communication cycle setting of the station with a communication speed of 100 Mbps to low-speed.</li> <li>If the master station has a communication speed of 100 Mbps, set the communication speed of the slave station to 100 Mbps.</li> <li>With the master station with a communication speed of 100 Mbps, set the communication cycle setting of the authentication Class B station with a communication speed of 100 Mbps to basic period or normal speed (×4).</li> </ul>	<p>■Own station information</p> <ul style="list-style-type: none"> <li>I/O No.</li> <li>Network No.</li> <li>Station No.</li> <li>IP address</li> </ul> <p>■Target station information</p> <ul style="list-style-type: none"> <li>Network No.</li> <li>Station No.</li> <li>IP address</li> </ul>
1805H	<ul style="list-style-type: none"> <li>The total cyclic data size of all slave stations on the authentication Class A device side at the boundary between authentication Class B and authentication Class A exceeds 2K bytes.</li> <li>The total cyclic data size of all slave stations on the side of the station with a communication speed of 100 Mbps at the boundary between the station with a communication speed of 1 Gbps and the station with a communication speed of 100 Mbps exceeds 2K bytes.</li> </ul>	<p>Check the connection and setting on the end side of the station shown in detailed information 2 based on the error definition and cause and take the following actions.</p> <ul style="list-style-type: none"> <li>Do not set the total cyclic data size of all slave stations on the authentication Class A device side at the boundary between authentication Class B and authentication Class A to exceed 2K bytes.</li> <li>Do not set the total cyclic data size of all slave stations on the side of the station with a communication speed of 100 Mbps at the boundary between the station with a communication speed of 1 Gbps and the station with a communication speed of 100 Mbps to exceed 2K bytes.</li> </ul>	<p>■Own station information</p> <ul style="list-style-type: none"> <li>I/O No.</li> <li>Network No.</li> <li>Station No.</li> <li>IP address</li> </ul> <p>■Target station information</p> <ul style="list-style-type: none"> <li>Network No.</li> <li>Station No.</li> <li>IP address</li> </ul>
1806H	<ul style="list-style-type: none"> <li>A connection with a TSN hub was detected when "TSN HUB Setting" was set to "Not to Use TSN HUB".</li> <li>An authentication Class B station is connected closer to the end than authentication Class A stations.</li> </ul>	<ul style="list-style-type: none"> <li>Disconnect the TSN hub.</li> <li>Set "TSN HUB Setting" to "Use TSN HUB".</li> <li>Connect authentication Class A stations closer to the end than authentication Class B stations.</li> </ul>	<p>■Own station information</p> <ul style="list-style-type: none"> <li>I/O No.</li> <li>Network No.</li> <li>Station No.</li> <li>IP address</li> </ul>
1810H	A connection failure was detected in the network.	Correct the wiring status.	—
1811H	A stop error has been detected in the CPU module.	Check the error of the CPU module and take action using the module diagnostics of the engineering tool.	—
1830H	Number of reception requests of transient transmission (link dedicated instruction) exceeded the upper limit of simultaneously processable requests.	Execute the instruction again after lowering the transient transmission usage frequency.	—
1845H	The amount of processing of transient transmission (link dedicated instruction) is too much and transient transmission cannot be performed.	Correct the transient transmission (link dedicated instruction) execution count.	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
1C48H	[MODE: Simple Motion] Abnormal response for PDO mapping setting was received from a slave station.	[MODE: Simple Motion] <ul style="list-style-type: none"> <li>Check the error details according to the error code (SDO Abort Code) and review the PDO mapping setting.</li> <li>Check if the CiA402 objects that can be monitored have been set in "[Pr.91] Optional data monitor: Data type setting 1" to "[Pr.94] Optional data monitor: Data type setting 4" and "[Pr.591] Optional data monitor: Data type expansion setting 1" to "[Pr.594] Optional data monitor: Data type expansion setting 4".</li> </ul>	<ul style="list-style-type: none"> <li>—</li> <li>■ Target station information <ul style="list-style-type: none"> <li>Network No.</li> <li>Station No.</li> <li>IP address</li> </ul> </li> </ul>
1C4AH	Connection with a slave device that does not support the motion control station was detected.	Connect a slave device that supports the motion control station. For the connectable slave devices, refer to "Connectable device to CC-Link IE TSN" or "Devices Compatible with CC-Link IE TSN" in the following manuals. [MODE: PLCopen] <ul style="list-style-type: none"> <li>IMELSEC iQ-R Motion Module User's Manual (Application)</li> </ul> [MODE: Simple Motion] <ul style="list-style-type: none"> <li>IMELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)</li> </ul>	—
1C4BH	A motion control station setting error was detected.	<ul style="list-style-type: none"> <li>Check that the motion control station has been set in "[Pr.141] IP address".</li> <li>Check if "[Pr.141] IP address" has been set for the axis that exceeds "[Pr.152] Maximum number of control axes".</li> </ul>	—
1D10H	Cyclic transmission skip occurred.	<ul style="list-style-type: none"> <li>Increase the value for the inter-module synchronization cycle set in "Fixed Scan Interval Setting of Inter-module Synchronization" under "Inter-module Synchronization Setting" in "System Parameter" so that the execution time of synchronization interrupt program does not exceed the inter-module synchronization cycle.</li> <li>Increase the value for "Communication Period Interval Setting" and "Transient Transmission Time" in "Communication Period Setting" of the module parameter.</li> <li>If the value in "Transient transmission addition time (calculation value)" (SW007A) is not 0, add the value (μs unit) to "Communication Period Interval Setting" and "Transient Transmission Time".</li> <li>Reduce the program processing time by reducing the program volume so that the execution time of synchronization interrupt program does not exceed the inter-module synchronization cycle.</li> <li>Reduce the refresh processing time by reducing the data targeted for synchronization refreshing so that the execution time of synchronization interrupt program does not exceed the inter-module synchronization cycle.</li> <li>Set modules not requiring synchronization to asynchronous so that the execution time of synchronization interrupt program does not exceed the inter-module synchronization cycle.</li> <li>Do not perform the online change in the CPU module.</li> </ul>	—
1D11H	The correction value of time counter calculated by the inter-module synchronization function exceeds allowable range.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>If the same error occurs multiple times even after taking the above, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.</li> </ul>	—
1D20H	The module cannot normally communicate with the slave station on CC-Link IE TSN.	<ul style="list-style-type: none"> <li>To use the inter-module synchronization function, set the setting value for the inter-module synchronization cycle longer than the current setting in "Fixed Scan Interval Setting of Inter-module Synchronization" under "Inter-module Synchronization Setting" in "System Parameter".</li> <li>Make the setting value greater than the current setting for "Communication Period Interval Setting" and "Transient Transmission Time" in "Communication Period Setting" of the module parameter.</li> <li>If the value in "Transient transmission addition time (calculation value)" (SW007A) is not 0, add the value (μs unit) to "Communication Period Interval Setting" and "Transient Transmission Time".</li> <li>Refer to the manual of the slave station in use, and if the slave station does not support the communication periods of "Normal-Speed" and "Low-Speed", set "Network Configuration Settings" under "Basic Settings" of the master station to "Basic Period".</li> <li>Do not perform the online change in the CPU module.</li> <li>Check if the switching hub and the cables are connected properly.</li> <li>After taking the above actions, power on the system again or reset the CPU module.</li> </ul>	<ul style="list-style-type: none"> <li>—</li> <li>■ Target station information <ul style="list-style-type: none"> <li>Network No.</li> <li>Station No.</li> <li>IP address</li> </ul> </li> </ul>

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
1D21H	Initialization processing with the slave station on CC-Link IE TSN cannot be performed correctly.	<ul style="list-style-type: none"> <li>Update the version of the station shown in detailed information 2 to the one that supports the CC-Link IE TSN Network synchronous communication function.</li> <li>Take measures to reduce noise.</li> <li>After taking the above actions, power on the system again or reset the CPU module.</li> </ul>	<ul style="list-style-type: none"> <li>—</li> <li>■Target station information <ul style="list-style-type: none"> <li>• Network No.</li> <li>• Station No.</li> <li>• IP address</li> </ul> </li> </ul>
20E0H	The module cannot communicate with the CPU module.	The hardware failure of the CPU module may have been occurred. Please consult your local Mitsubishi representative.	—
2160H	IP address duplication was detected.	Check and correct the IP addresses.	—
2220H	The parameter setting is corrupted.	Check the detailed information of the error by executing module diagnostics using the engineering tool, and write the displayed parameter. If the same error occurs again, the possible cause is a hardware failure of the module. Please consult your local Mitsubishi representative.	<ul style="list-style-type: none"> <li>■Parameter information <ul style="list-style-type: none"> <li>• Parameter type</li> </ul> </li> <li>■—</li> </ul>
2221H	<ul style="list-style-type: none"> <li>The set value is out of the range.</li> <li>Parameters that are not supported by the software version of the Motion module have been set.</li> <li>The engineering tool does not support the parameters required for executing the set functions.</li> </ul>	<ul style="list-style-type: none"> <li>Check the detailed information of the error by executing module diagnostics using the engineering tool, and correct the parameter setting corresponding to the displayed parameter No..</li> <li>Check the software version of the Motion module. If parameters that are not supported are set, update the software version or correct the parameters.</li> <li>Update the engineering tool to the latest version, and retry the operation.</li> </ul>	<ul style="list-style-type: none"> <li>■Parameter information <ul style="list-style-type: none"> <li>• Parameter type</li> <li>• I/O No.</li> <li>• Parameter No.</li> <li>• Network No.</li> <li>• Station No.</li> </ul> </li> <li>■—</li> </ul>
24C0H	An error was detected on the system bus.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	<ul style="list-style-type: none"> <li>■System configuration information <ul style="list-style-type: none"> <li>• I/O No.</li> <li>• Base No.</li> <li>• Slot No.</li> <li>• CPU No.</li> </ul> </li> <li>■—</li> </ul>
24C1H	An error was detected on the system bus.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	<ul style="list-style-type: none"> <li>■System configuration information <ul style="list-style-type: none"> <li>• I/O No.</li> <li>• Base No.</li> <li>• Slot No.</li> <li>• CPU No.</li> </ul> </li> <li>■—</li> </ul>
24C2H	An error was detected on the system bus.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	<ul style="list-style-type: none"> <li>■System configuration information <ul style="list-style-type: none"> <li>• I/O No.</li> <li>• Base No.</li> <li>• Slot No.</li> <li>• CPU No.</li> </ul> </li> <li>■—</li> </ul>
24C3H	An error was detected on the system bus.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	<ul style="list-style-type: none"> <li>■System configuration information <ul style="list-style-type: none"> <li>• I/O No.</li> <li>• Base No.</li> <li>• Slot No.</li> <li>• CPU No.</li> </ul> </li> <li>■—</li> </ul>
24C6H	An error was detected on the system bus.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
2600H	The cyclic processing does not finish before the start timing for the next inter-module synchronization cycle.	<ul style="list-style-type: none"> <li>• Check that the inter-module synchronous interrupt program (I44) was written to the CPU module.</li> <li>• Set the inter-module synchronization cycle to be longer than the current value in "Fixed Scan Interval Setting of Inter-module Synchronization" under "Inter-module Synchronization Setting" in "System Parameter".</li> <li>• Make the setting value greater than the current setting for "Communication Period Interval Setting" and "Transient Transmission Time" in "Communication Period Setting" of the module parameter.</li> <li>• If the value in "Transient transmission additional time (calculation value)" (SW007A) is not 0, add the value (<math>\mu\text{s}</math> unit) to "Communication Period Interval Setting" and "Transient Transmission Time".</li> <li>• Reduce the number of cyclic assignment points and the number of connected slave stations, and correct the settings so that a shorter value can be set for the communication period interval setting.</li> <li>• Do not perform the online change in the CPU module.</li> </ul>	—
2610H	An inter-module synchronization signal error (synchronization loss) was detected.	<ul style="list-style-type: none"> <li>• Take measures to reduce noise.</li> <li>• Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
3000H	<p>[MODE: PLCopen]</p> <p>Any of the items in the module which is set as a synchronization target in "Inter-module Synchronization Setting" in "System Parameter" are set as follows.</p> <ul style="list-style-type: none"> <li>The CPU module which cannot use the inter-module synchronization function is set as the control CPU of the Motion module.</li> </ul> <p>■When the version of Add-on baseSystem is "Ver. 1.20 or later"</p> <ul style="list-style-type: none"> <li>There is a station which is not a motion control station and set to "Synchronous" in "Network Synchronous Communication" under "Network Configuration Settings" in "Basic Settings", but the Motion module is not set as a synchronization target module in "Inter-module Synchronization Setting" in "System Parameter".</li> </ul>	<p>[MODE: PLCopen]</p> <ul style="list-style-type: none"> <li>Correct the parameters shown in the cause.</li> <li>Check that the control CPU is CPU No.1. Update the firmware version of the CPU to a version supporting the inter-module synchronization function with CC-Link IE TSN, or replace the CPU with a CPU that supports the function.</li> </ul>	<p>■Parameter information</p> <ul style="list-style-type: none"> <li>Parameter type</li> <li>I/O No.</li> <li>Parameter No.</li> </ul> <p>■—</p>
	<p>[MODE: Simple Motion]</p> <p>Any of the items in the module which is set as a synchronization target in "Inter-module Synchronization Setting" in "System Parameter" are set as follows.</p> <p>■When the version of Add-on baseSystem is "Ver. 1.18 or earlier"</p> <ul style="list-style-type: none"> <li>In "Network Configuration Settings" under "Basic Settings", "Network Synchronous Communication" of the non-motion control station is set to "Synchronous".</li> </ul> <p>■When the version of Add-on baseSystem is "Ver. 1.20 or later"</p> <ul style="list-style-type: none"> <li>There is a station which is not a motion control station and set to "Synchronous" in "Network Synchronous Communication" under "Network Configuration Settings" in "Basic Settings", but the Motion module is not set as a synchronization target module in "Inter-module Synchronization Setting" in "System Parameter".</li> <li>The CPU module which cannot use the inter-module synchronization function is set as the control CPU of the Motion module.</li> </ul>	<p>[MODE: Simple Motion]</p> <p>Correct the parameters shown in the cause.</p> <p>■When the version of Add-on baseSystem is "Ver. 1.20 or later"</p> <ul style="list-style-type: none"> <li>Check that the control CPU is CPU No. 1. Update the firmware version of the CPU to a version supporting the inter-module synchronization function with CC-Link IE TSN, or replace the CPU with a CPU that supports the function.</li> </ul>	<p>■Parameter information</p> <ul style="list-style-type: none"> <li>Parameter type</li> <li>I/O No.</li> <li>Parameter No.</li> </ul> <p>■—</p>
3009H	<p>The result when the value set in "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the master station is multiplied by "Communication Period Setting" of the slave station set in "Network Configuration Settings" under "Basic Settings" is out of the range.</p>	<p>Check the detailed information on module diagnostics of the engineering tool and review the parameter settings so that the result obtained by multiplying the value set in "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the master station by "Communication Period Setting" of the slave station set in "Network Configuration Settings" under "Basic Settings" is within 16 ms.</p> <ul style="list-style-type: none"> <li>"Communication Period Interval Setting" under "Basic Settings"</li> <li>"Communication Period Setting" for the slave station in "Network Configuration Settings" For "Communication Period Setting" to be set for the slave station, specify a multiple in "Multiple Period Setting" under "Communication Period Setting" of "Basic Settings".</li> </ul>	<p>■—</p> <p>■Target station information</p> <ul style="list-style-type: none"> <li>Station No.</li> <li>IP address</li> </ul>
300AH	<ul style="list-style-type: none"> <li>The combination of the firmware version of the local station and the software version of the master station is not available.</li> <li>The parameter setting value is out of the range. Or, the setting values of the master station and local station are inconsistent.</li> </ul>	<ul style="list-style-type: none"> <li>Check the software version of the master station and the firmware version of the local station, and update either of them if the combination is not available.</li> <li>Check the detailed information on module diagnostics of the engineering tool and review the parameter setting of the master station corresponding to the parameter No. If the same error occurs again, the possible cause is a hardware failure of the module. Please consult your local Mitsubishi representative.</li> </ul>	<p>■Parameter information</p> <ul style="list-style-type: none"> <li>Parameter type</li> <li>I/O No.</li> <li>Parameter No.</li> <li>Network No.</li> <li>Station No.</li> </ul> <p>■—</p>

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
300BH	The Announce frame send cycle parameter error was detected.	<ul style="list-style-type: none"> <li>Check the Announce frame send cycle parameter setting value of the device operating as the grandmaster. When the Motion module is operating as the grandmaster, reset the CPU module, and run it again.</li> <li>If the same error occurs again even after taking the above measure, the possible cause is a hardware failure of the module. Please consult your local Mitsubishi representative.</li> </ul>	—
300CH	A propagation delay send cycle parameter error was detected.	<ul style="list-style-type: none"> <li>Check the propagation delay send cycle parameter setting value of the device operating as the grandmaster. When the Motion module is operating as the grandmaster, reset the CPU module, and run it again.</li> <li>If the same error occurs again even after taking the above measure, the possible cause is a hardware failure of the module. Please consult your local Mitsubishi representative.</li> </ul>	—
300DH	The Sync frame send cycle parameter error was detected.	<ul style="list-style-type: none"> <li>Check the Sync frame send cycle parameter setting value of the device operating as the grandmaster. When the Motion module is operating as the grandmaster, reset the CPU module, and run it again.</li> <li>If the same error occurs again even after taking the above measure, the possible cause is a hardware failure of the module. Please consult your local Mitsubishi representative.</li> </ul>	—
300EH	The set values of the master station and local station do not match.	For "Network No." and "Station No." of the local station, set the same values as the ones set in the master station.	<ul style="list-style-type: none"> <li>Parameter information <ul style="list-style-type: none"> <li>Parameter type</li> <li>I/O No.</li> <li>Parameter No.</li> <li>Network No.</li> <li>Station No.</li> </ul> </li> <li>—</li> </ul>
300FH	Multiple master stations were detected in the network.	<ul style="list-style-type: none"> <li>Connect only one master station on the same network.</li> <li>After taking the above action, power off and on or reset all stations where the error was detected.</li> </ul>	<ul style="list-style-type: none"> <li>Parameter information <ul style="list-style-type: none"> <li>Parameter type</li> <li>I/O No.</li> <li>Parameter No.</li> </ul> </li> <li>Overlapped type information <ul style="list-style-type: none"> <li>5: Master station duplication</li> </ul> </li> </ul>
3010H	The value set in "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings" of the master station is smaller than the communication cycle interval calculated by the number of stations and points of slave stations that was set in "Network Configuration Settings" under "Basic Settings".	Set the value of "Communication Period Interval Setting" over the value in the detailed information displayed by module diagnostics using "Communication Period Setting" under "Basic Settings" of the master station.	<ul style="list-style-type: none"> <li>—</li> <li>Communication Period Interval Information <ul style="list-style-type: none"> <li>Communication Period Interval (Calculation value: <math>\mu</math>s)</li> </ul> </li> </ul>
3011H	The value set in "Cyclic transmission time" in "Communication Period Setting" under "Basic Settings" of the master station is smaller than the cyclic transmission time calculated by the number of stations and points of slave stations set in "Network Configuration Settings" under "Basic Settings".	Set the value of "Cyclic Transmission Time" over the value in the detailed information displayed by module diagnostics using "Communication Period Setting" under "Basic Settings" of the master station.	<ul style="list-style-type: none"> <li>—</li> <li>Communication Period Interval Information <ul style="list-style-type: none"> <li>Cyclic Transmission Time (Calculation value: <math>\mu</math>s)</li> </ul> </li> </ul>
3012H	The Motion module not compatible with network synchronous communication is set as the master station, and "Network Synchronous Communication" in the slave station in "Network Configuration Settings" under "Basic Settings" of the master station is set to "Synchronous".	<ul style="list-style-type: none"> <li>Update the Add-on baseSystem version to "Ver. 1.16 or later".</li> <li>In "Network Configuration Settings" under "Basic Settings" of the master station, set "Network Synchronous Communication" of the slave station to "Asynchronous".</li> </ul>	<ul style="list-style-type: none"> <li>Parameter information <ul style="list-style-type: none"> <li>Parameter type</li> <li>I/O No.</li> <li>Parameter No.</li> </ul> </li> <li>—</li> </ul>

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
3013H	The value set in "Transient Transmission Time" in "Communication Period Setting" under "Basic Settings" of the master station is smaller than the transient transmission time calculated using the number of slave stations and the points of slave stations set in "Network Configuration Settings" under "Basic Settings".	Set "Communication Period Interval Setting" and "Cyclic Transmission Time" so that the value of "Transient Transmission Time" in "Communication Period Setting" under "Basic Settings" of the master station is equal to or larger than the value shown in the detailed information of module diagnostics.	<ul style="list-style-type: none"> <li>■—</li> <li>■Communication Period Interval Information</li> <li>• Transient Transmission Time (Calculation value: <math>\mu</math>s)</li> </ul>
3014H	When "Communication Mode" under "Application Settings" of the master station is set to "Multicast", "Communication Period Setting" of the local station is set to "Normal-Speed" or "Low-Speed" in the "Network Configuration Settings" under "Basic Settings".	<ul style="list-style-type: none"> <li>• Set "Communication Mode" in "Application Settings" of the master station to "Unicast".</li> <li>• In "Network Configuration Settings" under "Basic Settings" of the master station, set "Communication Period Setting" of the local station to "Basic Period".</li> </ul>	<ul style="list-style-type: none"> <li>■Parameter information</li> <li>• Parameter type</li> <li>• I/O No.</li> <li>• Parameter No.</li> <li>■Target station information</li> <li>• Station No.</li> <li>• IP address</li> </ul>
3015H	Any of the items in the module which is set as a synchronization target in "Inter-module Synchronization Setting" in "System Parameter" are set as follows. <ul style="list-style-type: none"> <li>• For the synchronization setting in "System Parameter", a Motion module mounted to an extension base unit is set as a synchronization target module.</li> </ul>	Correct the parameters shown in the cause.	<ul style="list-style-type: none"> <li>■Parameter information</li> <li>• Parameter type</li> <li>• I/O No.</li> <li>• Parameter No.</li> <li>■—</li> </ul>
3016H	When "Network Topology" of "Basic Settings" of the master station is set to "Ring", for "Connection Device Information" under "Basic Settings", "Authentication Class Setting" is set to "Mixture of Authentication Class B/A or Authentication Class A Only".	<ul style="list-style-type: none"> <li>• Set "Network Topology" of "Basic Settings" of the master station to "Line/Star".</li> <li>• For "Connection Device Information" under "Basic Settings" of the master station, set "Authentication Class Setting" to "Authentication Class B Only".</li> </ul>	<ul style="list-style-type: none"> <li>■Parameter information</li> <li>• Parameter type</li> <li>• I/O No.</li> <li>• Parameter No.</li> <li>■—</li> </ul>
3017H	"0.05ms Unit Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" under "Inter-module Synchronization Setting" in "System Parameter" is set to "Not Set".	Set "0.05ms Unit Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" under "Inter-module Synchronization Setting" in "System Parameter" to "Set".	<ul style="list-style-type: none"> <li>■Parameter information</li> <li>• Parameter type</li> <li>• I/O No.</li> <li>• Parameter No.</li> <li>■—</li> </ul>
3018H	<ul style="list-style-type: none"> <li>• A Motion module with the software version in which multiple modules cannot be set as the inter-module synchronization target is used.</li> <li>• A module which is set as a synchronization target in "Inter-module Synchronization Setting" in "System Parameter" is not set as an inter-module synchronous master.</li> <li>• Two Motion modules or more are set for "Select Inter-module Synchronization Target Module" under "Inter-module Synchronization Setting" in "System Parameter".</li> </ul>	<ul style="list-style-type: none"> <li>• Update the Add-on baseSystem version to "Ver. 1.16 or later".</li> <li>• Set the module which is set as the synchronization target in "Inter-module Synchronization Setting" in "System Parameter" as the inter-module synchronous master.</li> <li>• Set only one Motion module for "Select Inter-module Synchronization Target Module" under "Inter-module Synchronization Setting" in "System Parameter".</li> </ul>	<ul style="list-style-type: none"> <li>■Parameter information</li> <li>• Parameter type</li> <li>• I/O No.</li> <li>• Parameter No.</li> <li>■—</li> </ul>



Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
3021H	At startup of data link, an overlapping IP address among slave stations has been detected.	Correct the IP addresses of the slave stations.	<ul style="list-style-type: none"> <li>■ Operation source information</li> <li>• IP address</li> <li>■ IP address duplication information</li> <li>• Duplication station 1 MAC address (1st octet, 2nd octet)</li> <li>• Duplication station 1 MAC address (3rd octet, 4th octet)</li> <li>• Duplication station 1 MAC address (5th octet, 6th octet)</li> <li>• Duplication station 2 MAC address (1st octet, 2nd octet)</li> <li>• Duplication station 2 MAC address (3rd octet, 4th octet)</li> <li>• Duplication station 2 MAC address (5th octet, 6th octet)</li> </ul>
3040H	Response data of the dedicated instruction cannot be created.	<ul style="list-style-type: none"> <li>• Increase the request interval.</li> <li>• Decrease the number of request nodes.</li> <li>• Wait for a response to the previous request before sending the next request.</li> <li>• Correct the timeout value.</li> </ul>	—
3060H	The send/receive data size exceeds the allowable range.	<ul style="list-style-type: none"> <li>• Check and change the send data size of the Ethernet-equipped module or the external device.</li> <li>• If the same error occurs again even after taking the above, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.</li> </ul>	—
3110H	An instruction was received to enable network synchronization for a station not supporting network synchronization.	Set "Network Synchronous Communication" for the corresponding local station to "Asynchronous" in "Network Configuration Settings" under "Basic Settings" of the master station.	—
3111H	An instruction was received to enable network synchronization for a station not supporting network synchronization.	<ul style="list-style-type: none"> <li>• Update the Add-on baseSystem version to "Ver. 1.16 or later".</li> <li>• Set "Network Synchronous Communication" for the corresponding local station to "Asynchronous" in "Network Configuration Settings" under "Basic Settings" of the master station.</li> </ul>	—
3121H	The cyclic transmission setting information received from the master station exceeds the setting range.	Write the module parameter to the CPU module again. If the same error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
3130H	Devices with time synchronization priority of 0 to 15 have been connected.	Remove devices with time synchronization priority of 0 to 15, or change the priority to between 16 and 255.	<ul style="list-style-type: none"> <li>■ Grandmaster MAC address information</li> <li>• MAC address (1st, 2nd octet)</li> <li>• MAC address (3rd, 4th octet)</li> <li>• MAC address (5th, 6th octet)</li> <li>■ —</li> </ul>
3135H	Over the number of stations that can be connected.	<ul style="list-style-type: none"> <li>• Reduce the total number of stations to 31 stations (master station: 1, slave station: 30) or less.</li> <li>• Reduce the number of stations of authentication Class B devices to eight or less for each port of the master station.</li> </ul>	—
3136H	An illegal ring topology was detected.	Set a line topology or star topology, and turn off and on or reset all stations.	—
31A0H	In "Network Configuration Settings" under "Basic Settings", "Communication Period Setting" of the slave station is set to "Normal-Speed" or "Low-Speed".	Correct the parameters shown in the cause.	<ul style="list-style-type: none"> <li>■ Parameter information</li> <li>• Parameter type</li> <li>■ —</li> </ul>

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
31A1H	In "Network Configuration Settings" under "Basic Settings", an extension module is specified.	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31A2H	In "Network Configuration Settings" under "Basic Settings", two or more local stations are specified.	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31A3H	In "Network Configuration Settings" under "Basic Settings", "Network Synchronous Communication" is set to "Synchronous".	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31A4H	<ul style="list-style-type: none"> <li>• In "Network Configuration Settings" under "Basic Settings", LB and LW of the master station are not completely blank.</li> <li>• In "Network Configuration Settings" under "Basic Settings", RX/RY/RWr/RWw/LB/LW of the local station are not completely blank.</li> <li>• In "Network Configuration Settings" under "Basic Settings", RX of the remote station exceeds 32 points. Or, RY/RWr/RWw/LB/LW are not completely blank.</li> </ul>	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31A5H	"Network Topology" under "Basic Settings" is set to "Line/Star".	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31A6H	"Authentication Class Setting" under "Basic Settings" is set to "Mixture of Authentication Class B/A or Authentication Class A Only".	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31A7H	"To Use or Not to Use the Safety Communication Setting" under "Basic Settings" is set to "Use".	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31A8H	"Communication Speed" under "Application Settings" is set to "100 Mbps".	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31A9H	In "Supplementary Cyclic Settings" under "Application Settings", "Station-based Block Data Assurance" is set to "Enable".	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31AAH	"Communication Mode" under "Application Settings" is set to "Unicast".	Correct the parameters shown in the cause.	■Parameter information • Parameter type ■—
31ACH	"Authentication Class Setting" of the slave station set in "Network Configuration Settings" does not match "Authentication Class Setting" in "Connected Device Information" under "Basic Settings".	Set "Authentication Class Setting" of the slave station set in "Network Configuration Settings" to "Authentication Class B". Or, set "Authentication Class Setting" in "Connected Device Information" under "Basic Settings" to "Mixture of Authentication Class B/A or Authentication Class A Only".	■Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
3600H	<ul style="list-style-type: none"> <li>"Fixed Scan Interval Setting" of "Inter-module Synchronization Setting" in "System Parameter" does not match "Communication Period Interval Setting" under "Communication Period Setting" in "Basic Settings" of the module parameter.</li> <li>The values out of communication cycle setting range of the Motion module is set in "Fixed Scan Interval Setting" under "Inter-module Synchronization Setting" in "System Parameter".</li> </ul>	<ul style="list-style-type: none"> <li>Correct the parameter so that all modules performing inter-module synchronization have the same cycle setting.</li> <li>Check that the setting of "Fixed Scan Interval Setting" of "Inter-module Synchronization Setting" in "System Parameter" is consistent with the one of the communication cycle of the Motion module.</li> </ul>	<ul style="list-style-type: none"> <li>■Parameter information</li> <li>• Parameter storage location</li> <li>• Parameter type</li> <li>• I/O No.</li> <li>• Parameter No.</li> <li>■—</li> </ul>
3601H	A mismatch occurs between the network synchronous communication setting in the network configuration settings of the master station and the inter-module synchronization target module selection of the own station.	Change the parameter so that the setting of "Select Inter-module Synchronization Target Module" under "Inter-module Synchronization Setting" in "System Parameter" is the same as the setting of "Network Synchronous Communication" under "Network Configuration Settings" in "Basic Settings".	<ul style="list-style-type: none"> <li>■Parameter information</li> <li>• Parameter storage location</li> <li>• Parameter type</li> <li>• I/O No.</li> <li>• Parameter No.</li> <li>• Parameter item No.</li> <li>■—</li> </ul>
3602H	Inter-module synchronization cycle failure occurred between networks.	<ul style="list-style-type: none"> <li>Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action.</li> <li>Check if the switching hub and the cables are connected properly.</li> <li>After taking the above action, power off and on or reset all the stations where the error was detected.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
3603H	The number of the slot on which a module that cannot be set as the synchronization master is mounted is set in "Mounting Slot No." of the synchronization master in "System Parameter".	Correct the setting of "Mounting Slot No." of the synchronization master in "System Parameter".	—
3604H	A module to operate as an inter-module synchronous master could not output an inter-module synchronization signal.	<ul style="list-style-type: none"> <li>Check if the switching hub and the cables are connected properly.</li> <li>Power off and on or reset the own station.</li> </ul>	<ul style="list-style-type: none"> <li>■—</li> <li>■Synchronous master setting information</li> <li>• Synchronous master mounted slot number</li> </ul>
3605H	A module to operate as an inter-module synchronous master could not output an inter-module synchronization signal.	<ul style="list-style-type: none"> <li>Check the master station condition.</li> <li>Check the error of the master station and take action using the module diagnostics of the engineering tool.</li> <li>Check that the settings of the master station are consistent with the one of the slave station in "Network Configuration Settings" under "Basic Settings" of the master station.</li> <li>Correct "IP Filter Settings" under "Application Settings".</li> <li>Check if the switching hub and the cables are connected properly.</li> <li>Power off and on or reset the own station.</li> </ul>	<ul style="list-style-type: none"> <li>■—</li> <li>■Synchronous master setting information</li> <li>• Synchronous master mounted slot number</li> </ul>
3607H	The correction value of time counter calculated by the inter-module synchronization function exceeds allowable range successively.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.</li> </ul>	—
3608H	Inter-module synchronization signals have not been input for a certain period of time.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.</li> </ul>	—
3609H	An error has been detected in the inter-module synchronization function.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.</li> </ul>	—
360AH	An error has been detected in the inter-module synchronization function.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
360BH	An error has been detected in the inter-module synchronization function.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.</li> </ul>	—
360CH	An error has been detected in the inter-module synchronization function.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.</li> </ul>	—
360DH	<ul style="list-style-type: none"> <li>When multiple Motion modules are set as the inter-module synchronization targets, a Motion module with the software version that cannot be set for the inter-module synchronization master is set.</li> <li>An error has been detected in the inter-module synchronization function.</li> </ul>	<ul style="list-style-type: none"> <li>Update the Add-on baseSystem version to "Ver. 1.16 or later" for the Motion module set as the inter-module synchronization master.</li> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.</li> </ul>	—
3C00H	A hardware failure has been detected.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	—
3C01H	A hardware failure has been detected.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	—
3C02H	A hardware failure has been detected.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	—
3C0FH	A hardware failure has been detected.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	—
3C10H	A hardware failure has been detected.	<ul style="list-style-type: none"> <li>Take measures to reduce noise.</li> <li>Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.</li> </ul>	—
3C11H	A hardware failure has been detected.	Reset the CPU module, and run it again. If the same error occurs again even after doing so, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.	—
3C14H	A hardware failure has been detected.	Reset the CPU module, and run it again. If the same error occurs again even after doing so, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.	—
3C2FH	An error was detected in the memory.	Reset the CPU module, and run it again. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
3E01H	Network type of the own station is unexpected setting.	Rewrite the module parameter using the engineering tool. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
3E02H	A time synchronization error was detected.	Reset the CPU module, and run it again. If the same error occurs again even after doing so, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.	—
3E03H	An error was detected in the memory.	Reset the CPU module, and run it again. If the same error occurs again even after doing so, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.	—
3E04H	A hardware failure has been detected.	Reset the CPU module, and run it again. If the same error occurs again even after doing so, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
4000H to 4FFFH	Errors detected by the CPU module (MELSEC iQ-R CPU Module User's Manual (Application))		
C011H	The port No. of the external device is not set correctly.	Correct the port No. of the external device.	—
C012H	The port No. used in a connection already opened is set. (For TCP/IP)	Correct the port Nos. of the Ethernet-equipped module and the external device.	—
C013H	The port No. used in a connection already opened is set. (For UDP/IP)	Correct the port Nos. of the Ethernet-equipped module and the external device.	—
C015H	The data was sent to the connected device while the IP address setting of the device set in the network configuration setting was incorrect.	<ul style="list-style-type: none"> <li>• Correct the IP address of the connected device in the network configuration setting.</li> <li>• Check that the IP address class of the connected device is set to A, B, or C in the network configuration setting.</li> </ul>	—
C017H	A connection could not be established in the open processing.	<ul style="list-style-type: none"> <li>• Check the operation of the external device.</li> <li>• Check if the open processing has been performed in the external device.</li> <li>• When a firewall is set in the external device, check if access is permitted.</li> <li>• Check if the Ethernet cable is connected properly.</li> </ul>	—
C018H	The specified IP address of the external device is incorrect.	Correct the specified IP address of the external device.	—
C032H	The external device does not send an ACK response in the TCP/IP communications.	<ul style="list-style-type: none"> <li>• Since there may be congestion of packets on the line, send data after a certain period of time.</li> <li>• Check if the Ethernet cable is connected properly.</li> </ul>	—
C035H	The alive status of an external device could not be checked.	<ul style="list-style-type: none"> <li>• Check the operation of the external device.</li> <li>• Check if the Ethernet cable is connected properly.</li> </ul>	—
C037H	[MODE: PLCopen] <ul style="list-style-type: none"> <li>• The receive buffer or send buffer is not sufficient.</li> <li>• The window size of the external device is not sufficient.</li> </ul>	[MODE: PLCopen] <ul style="list-style-type: none"> <li>• Check the operation of the external device or switching hub.</li> <li>• When the value of the 'Receive buffer status storage area' (Un\G6291486) is 0001H, reduce the frequency of data received from the external device.</li> </ul>	—
	[MODE: Simple Motion] <ul style="list-style-type: none"> <li>• The receive buffer or send buffer is not sufficient.</li> <li>• The window size of the external device is not sufficient.</li> </ul>	[MODE: Simple Motion] <ul style="list-style-type: none"> <li>• Check the operation of the external device or switching hub.</li> <li>• When the value of the 'Receive buffer status storage area' (Un\7891486) is 0001H, reduce the frequency of data received from the external device.</li> </ul>	—
C038H	Data was not sent correctly with UDP/IP.	<ul style="list-style-type: none"> <li>• Check the connection settings and operations (whether an error has occurred or it is being reset) of the external devices (including the switching hub), and connection failure (whether the cable is disconnected).</li> <li>• Since there may be congestion of packets on the line, send data after a certain period of time.</li> <li>• Execute the PING test and communication status test, and if the test was completed with an error, take the corrective action.</li> <li>• Correct the network No. and station No./IP address of the target station of the dedicated instruction.</li> </ul>	—
C039H	Data was not sent correctly with TCP/IP.	<ul style="list-style-type: none"> <li>• Check the connection settings and operations (whether an error has occurred or it is being reset) of the external devices (including the switching hub), and connection failure (whether the cable is disconnected).</li> <li>• Since there may be congestion of packets on the line, send data after a certain period of time.</li> <li>• Execute the PING test and communication status test, and if the test was completed with an error, take the corrective action.</li> </ul>	—
C040H	<ul style="list-style-type: none"> <li>• Sufficient data for the data length could not be received.</li> <li>• The remaining part of the message divided at the TCP/IP level could not be received.</li> </ul>	<ul style="list-style-type: none"> <li>• Correct the data length of the communication data.</li> <li>• Since there may be congestion of packets on the line, send the data again from the external device after a random amount of time has passed.</li> </ul>	—
C050H	ASCII code data that cannot be converted to binary code was received.	Check if the ASCII code data that cannot be converted into binary code data was sent from the external device.	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
C051H	<ul style="list-style-type: none"> <li>The number of read/write points from/to the device of SLMP message is out of the allowable range in the CPU module (in units of words).</li> <li>The number of write points for the long counter of SLMP message is not in two-word units.</li> </ul>	Correct the number of read/write points and send the SLMP message to the Ethernet-equipped module again.	—
C052H	The number of read/write points from/to the device of SLMP message is out of the allowable range in the CPU module (in units of bits).	Correct the number of read/write points and send the SLMP message to the Ethernet-equipped module again.	—
C053H	The number of read/write points from/to the random device of SLMP message is out of the allowable range in the CPU module (in units of bits).	Correct the number of read/write points and send the SLMP message to the Ethernet-equipped module again.	—
C054H	The number of read/write points from/to the random device of SLMP message is out of the allowable range in the CPU module (in units of words, double words).	Correct the number of read/write points and send the SLMP message to the Ethernet-equipped module again.	—
C055H	The read/write size from/to the file data of SLMP message is out of the allowable range.	Correct the read/write size and send the SLMP message to the Ethernet-equipped module again.	—
C056H	The read/write request exceeds the largest address.	<ul style="list-style-type: none"> <li>Correct the start address or the number of read/write points so that the request does not exceed the largest address and send the data to the Ethernet-equipped module again.</li> <li>If the access target and connection stations are modules of the MELSEC iQ-R series, send the SLMP message again to the Ethernet-equipped module using 00□3 and 00□2 of subcommands.</li> </ul>	—
C057H	The request data length of the SLMP message does not match the number of data in the character (a part of text).	Check and correct the text or request data length, and send the SLMP message to the Ethernet-equipped module again.	—
C058H	The request data length of the SLMP message after the ASCII/binary conversion does not match with the number of data in the character (a part of text).	Check and correct the text or request data length, and send the SLMP message to the Ethernet-equipped module again.	—
C059H	<ul style="list-style-type: none"> <li>The specified command and subcommand of the SLMP message are incorrect</li> <li>A function that is not supported by the target device was executed.</li> </ul>	<ul style="list-style-type: none"> <li>Check that there are no errors in the specification of the command and subcommand of the SLMP message.</li> <li>Check whether the function executed is supported by the target device.</li> <li>Check the version of the target device.</li> </ul>	—
C05AH	The Ethernet-equipped module cannot read/write data from/to the device specified by the SLMP message.	Correct the specification of the device to be read/written and send the SLMP message to the Ethernet-equipped module again.	—
C05BH	The Ethernet-equipped module cannot read/write data from/to the device specified by the SLMP message.	Correct the specification of the device to be read/written and send the SLMP message to the Ethernet-equipped module again.	—
C05CH	The received request data of the SLMP message is incorrect.	Correct the request data and send the SLMP message to the Ethernet-equipped module again.	—
C05DH	The "Monitor Request" command is received before the monitor registration is performed by the "Monitor Registration/Clear" command of the SLMP message.	Register the monitoring data using "Monitor Registration/Clear" command and perform monitoring.	—
C05EH	<ul style="list-style-type: none"> <li>The time between reception of the SLMP request message by the Ethernet-equipped module and the returned response from the access destination exceeded the monitoring timer value set in the command.</li> <li>An unresponsive command was sent to another network station as the access destination. (If this error does not cause any problems, it can be ignored.)</li> </ul>	<ul style="list-style-type: none"> <li>Increase the monitoring timer value.</li> <li>Check if the access destination is operating normally.</li> <li>Correct the network No. or request destination station No..</li> <li>If the access destination is a module with a different network No., correct the routing parameter setting.</li> <li>If the access destination is a module with a different network No., check if the network No. is not in use.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
C05FH	This request cannot be executed to the access destination specified by the SLMP message.	Correct the access destination.	—
C060H	The request details for bit devices of the SLMP message is incorrect.	Correct the request details and send the SLMP message to the Ethernet-equipped module again.	—
C061H	<ul style="list-style-type: none"> <li>The request data length of the SLMP message does not match the No. of data in the character (a part of text).</li> <li>The write data length specified by the label write command is not even byte.</li> </ul>	<ul style="list-style-type: none"> <li>Check and correct the text or request data length, and send the SLMP message to the Ethernet-equipped module again.</li> <li>Add one byte of dummy data, and specify the length as an even number of bytes.</li> </ul>	—
C06FH	The network No. of request destination specified by the SLMP request message is not available for communications with the station No.121 or later.	<ul style="list-style-type: none"> <li>If a 3E frame, 4E frame, or a station No. extension frame is used for the SLMP, check that there is no error for the network No. of request destination and station No..</li> <li>If a station No. extension frame is used for the SLMP, check that there is no error for the network No. of the request destination and station No.</li> </ul>	—
C070H	The device memory cannot be extended for the access destination specified by the SLMP message.	<ul style="list-style-type: none"> <li>Correct the SLMP message to read/write data without the device memory set for extension.</li> <li>Specify the extension of the device memory only for an Ethernet-equipped module mounted station and a MELSEC iQ-R/Q/QnACPU via CC-Link IE Controller Network, MELSECNET/H, or MELSECNET/10.</li> </ul>	—
C071H	The number of device points for data read/write set for modules other than a MELSEC iQ-R/Q/QnACPU with the SLMP message is out of the range.	Correct the number of read/write points and send the SLMP message to the Ethernet-equipped module again.	—
C072H	The request details of the SLMP message are incorrect. (For example, a request for data read/write in bit units has been issued to a word device.)	<ul style="list-style-type: none"> <li>Check if the data can be requested to the access destination.</li> <li>Correct the request details and send the SLMP message to the Ethernet-equipped module again.</li> </ul>	—
C073H	The access destination of the SLMP message cannot issue this request. (For example, the number of double word access points cannot be specified for modules other than a MELSEC iQ-R/Q/QnACPU.)	Correct the request details of the SLMP message.	—
C075H	The request data length for the label access is out of range.	<ul style="list-style-type: none"> <li>Correct the number of read/write points and send the SLMP message to the Ethernet-equipped module again.</li> <li>Correct the label to shorten the label name and send the SLMP message to the Ethernet-equipped module again.</li> </ul>	—
C081H	The termination processing for the Ethernet-equipped module that is involved with the reinitialization processing is being performed, and arrival of link dedicated instructions cannot be checked.	Finish all the communications to perform the reinitialization processing of the Ethernet-equipped module.	—
C087H	IP address of the destination external device could not be acquired.	<ul style="list-style-type: none"> <li>Correct the IP address in the network station No. ↔ IP information setting.</li> <li>Check if the network or station No. of the external device is correctly specified by using control data of the dedicated instruction.</li> <li>Check if the Ethernet cable is connected properly.</li> </ul>	—
C0B2H	There is insufficient space in the receive buffer or send buffer of the relay station or external station for the MELSOFT connection, link dedicated instructions, or SLMP. (Send/receive buffer full error)	<ul style="list-style-type: none"> <li>Increase the request interval (execution interval) and execute the operation.</li> <li>Do not access through one station using the MELSOFT connection, link dedicated instruction, or SLMP.</li> <li>Wait for a response to the previous request before sending the next request.</li> <li>Correct the timer setting value for data communication of the Ethernet-equipped module.</li> </ul>	—
C0B3H	A request that cannot be processed was issued from the CPU module.	<ul style="list-style-type: none"> <li>Correct the request details.</li> <li>Correct the network No. or request destination station No..</li> </ul>	—
C0D4H	The number of relay stations to communicate with other networks exceeds the allowable range.	<ul style="list-style-type: none"> <li>Check if the specification (network No./station No.) for the communication destination is correct.</li> <li>Check that the number of relay stations accessing the communication destination is 7 or less.</li> <li>Correct the settings in the network station No. ↔ IP information setting for the stations between the own station and the communication destination.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
C0D8H	The number of specified blocks exceeded the range.	Correct the number of blocks.	—
C0D9H	The specified subcommand of the SLMP message is incorrect.	Correct the subcommand.	—
C1A4H	<ul style="list-style-type: none"> <li>• There is an error with the command, subcommand, or request destination module I/O No. specified by the SLMP message.</li> <li>• A function that is not supported by the target device was executed.</li> </ul>	<ul style="list-style-type: none"> <li>• Correct the command, subcommand, or request destination module I/O No. specified by SLMP message.</li> <li>• Check the version of the target device.</li> </ul>	—
C1A7H	The specified network No. is incorrect.	Correct the specified network No..	—
C1A9H	The specified device No. is incorrect.	Correct the specified device No..	—
C1ADH	The specified data length is incorrect.	Correct the specified data length.	—
C1CCH	A response with a data length that exceeds the allowable range was received by the SLMPSND.	<ul style="list-style-type: none"> <li>• Execute again after correcting the request data to be within the range.</li> <li>• If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
C200H	The remote password is incorrect.	Correct the remote password, and unlock/lock the remote password again.	—
C201H	The remote password status of the port used for communications is in the lock status.	After unlocking the remote password, perform communications.	—
C202H	When another station was accessed, the remote password could not be unlocked.	When accessing another station, do not set the remote password on the relay station or access station, or do not execute the remote password check on them.	—
C203H	An error has occurred when checking the remote password.	Correct the remote password, and unlock/lock the remote password again.	—
C204H	The device is different from the one requesting the remote password unlock processing.	Request the lock processing of the remote password from the external device that requested the unlock processing of the remote password.	—
C207H	The file name has too many characters.	Name the file with 255 characters or less.	—
C208H	The password length is out of range.	Set the password within 6 to 32 characters.	—
C612H	The module processing was completed with an error.	<ul style="list-style-type: none"> <li>• Execute the communication status test, and if the test was completed with an error, take the corrective action.</li> <li>• Perform the module communication test to check for module errors.</li> </ul>	—
C613H	The module processing was completed with an error.	<ul style="list-style-type: none"> <li>• Execute the communication status test, and if the test was completed with an error, take the corrective action.</li> <li>• Perform the module communication test to check for module errors.</li> </ul>	—
C615H	The module processing was completed with an error.	<ul style="list-style-type: none"> <li>• Execute the communication status test, and if the test was completed with an error, take the corrective action.</li> <li>• Perform the module communication test to check for module errors.</li> </ul>	—
C810H	Remote password authentication has failed when required.	Set a correct password and perform password authentication again.	—
C811H	Remote password authentication has failed when required.	Set a correct password and perform password authentication again one minute later.	—
C812H	Remote password authentication has failed when required.	Set a correct password and perform password authentication again 5 minutes later.	—
C813H	Remote password authentication has failed when required.	Set a correct password and perform password authentication again 15 minutes later.	—
C814H	Remote password authentication has failed when required.	Set a correct password and perform password authentication again 60 minutes later.	—
C815H	Remote password authentication has failed when required.	Set a correct password and perform password authentication again 60 minutes later.	—
C816H	The security function was activated and remote password authentication cannot be performed.	Set a correct password and perform password authentication again after a certain period of time.	—



Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
C842H	The routing setting is not set to reach to the destination network No..	<ul style="list-style-type: none"> <li>Execute the link dedicated instruction again after correcting the target network No./station No..</li> <li>When the dynamic routing is used, check that the communication path to the destination network No. is confirmed.</li> <li>When the dynamic routing is not used, or the module of the series other than MELSEC iQ-R is included, retry the link dedicated instruction after correcting the routing setting.</li> </ul>	—
C844H	Incorrect frame was received. <ul style="list-style-type: none"> <li>Unsupported command</li> </ul>	<ul style="list-style-type: none"> <li>Replace the network module with a module of the version supporting the function that has been executed.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
C900H	Communication failed.	Do not execute communication from multiple engineering tools to the same master station simultaneously.	—
C901H	The size of the request data to the external device or response data from the external device exceeds the range supported for communications.	Correct the size of the request data or response data to within 1500 bytes.	—
C902H	Communication was interrupted because no response was returned from the external device.	Execute the communication test, and if the test was completed with an error, take corrective action.	—
C903H	Failed to send request to the external device.	<ul style="list-style-type: none"> <li>Correct the IP address of the external device.</li> <li>Check if the subnet mask of the external device matches the master station.</li> <li>Check if the communication speed matches the external device.</li> <li>Check that the cable is connected properly, and there is no error.</li> </ul>	—
CF40H	Incorrect frame was received.	<ul style="list-style-type: none"> <li>Check the operating status and connection status of the target device.</li> <li>Check the connection of the Ethernet cable and switching hub.</li> <li>Check the line status of Ethernet.</li> <li>Reset the CPU module and target device, and retry the operation.</li> </ul> If the above actions do not solve the problem, contact the manufacturer of the target device.	—
CF41H	Incorrect frame was received.	<ul style="list-style-type: none"> <li>Check the operating status and connection status of the target device.</li> <li>Check the connection of the Ethernet cable and switching hub.</li> <li>Check the line status of Ethernet.</li> <li>Reset the CPU module and target device, and retry the operation.</li> </ul> If the above actions do not solve the problem, contact the manufacturer of the target device.	—
CF42H	Incorrect frame was received.	<ul style="list-style-type: none"> <li>Check the operating status and connection status of the target device.</li> <li>Check the connection of the Ethernet cable and switching hub.</li> <li>Check the line status of Ethernet.</li> <li>Reset the CPU module and target device, and retry the operation.</li> </ul> If the above actions do not solve the problem, contact the manufacturer of the target device.	—
CF43H	An error has occurred.	<ul style="list-style-type: none"> <li>Check the operating status of the external device.</li> <li>Check if there is any error in the line status.</li> </ul> If the above actions do not solve the problem, contact the manufacturer of the target device.	—
CF44H	Incorrect frame was received.	<ul style="list-style-type: none"> <li>Check the operating status and connection status of the target device.</li> <li>Check the connection of the Ethernet cable and switching hub.</li> <li>Check the line status of Ethernet.</li> <li>Reset the CPU module and target device, and retry the operation.</li> </ul> If the above actions do not solve the problem, contact the manufacturer of the target device.	—
D03BH	The operating status of the PLC CPU is not in the STOP state (excluding a stop error), and enabling remote device test function failed.	Switch the operating status of the PLC CPU to the STOP state (excluding a stop error), and enable the remote device test function.	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
D0A3H	Send processing of the transient transmission has failed.	<ul style="list-style-type: none"> <li>Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action.</li> <li>When the own station, target station, or relay station detected an error, identify the cause of the error and take action.</li> <li>Correct the target station No. of transient data, and retry the operation.</li> <li>When the access destination is a module with a different network No., check if "Routing Setting" of "CPU Parameter" is correctly set.</li> </ul>	—
D203H	The read data or write address of the transient transmission is incorrect.	Execute the instruction again after correcting the read data or write address at the transient request source.	—
D205H	The target station No. of transient transmission is incorrect.	Execute the instruction again after correcting the target station No. at the transient request source.	—
D20AH	The target station No. of transient transmission is incorrect.	Execute the instruction again after correcting the target station No. at the transient request source.	—
D20BH	There was no master station when the specified master station was specified for transient transmission.	Execute the instruction again after correcting the target station No. at the transient request source.	—
D20CH	There was no master station when the current master station was specified for transient transmission.	Execute the instruction again after correcting the target station No. at the transient request source.	—
D20DH	Transmission completion wait timeout has occurred in transient data transmission.	<ul style="list-style-type: none"> <li>Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action.</li> <li>When the own station, target station, or relay station detected an error, identify the cause of the error and take action.</li> <li>Execute the instruction again after lower the transient transmission usage frequency.</li> <li>Check if the switching hub and the Ethernet cables at the request source are connected properly.</li> </ul>	—
D20EH	The header information of transient transmission is incorrect.	Execute the instruction again after correcting the header information at the transient request source, and retry the operation.	—
D20FH	In transient transmission, the command which cannot be requested to all or a group of stations was executed with all stations specification or group specification.	Execute the instruction again after checking that the command can be requested to all or a group of stations at the transient request source.	—
D213H	<ul style="list-style-type: none"> <li>The command of transient transmission is incorrect.</li> <li>The CC-Link IE TSN/CC-Link IE Field diagnostics was used for the network to which the relay receiving station belongs.</li> <li>The connection destination module does not support this function.</li> </ul>	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the request command at the transient request source, and retry the operation.</li> <li>Review the connection destination so that the CC-Link IE TSN/CC-Link IE Field diagnostics is used for the network to which the relay sending station belongs.</li> <li>Check the manual of the connection destination module to check the availability of this function. If this function is not supported, update the software to the version supported by this function.</li> </ul>	—
D214H	The data length of transient transmission is incorrect.	Execute the instruction again after correcting the data length at the transient request source, and retry the operation.	—
D239H	SLMP transmission failed.	<ul style="list-style-type: none"> <li>Retry the operation after a while.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D240H	The network number specification of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the network number at the request source of the dedicated instruction.</li> <li>When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.</li> </ul>	—
D241H	The target station number of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the target station number at the request source of the dedicated instruction.</li> <li>When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.</li> </ul>	—
D242H	The command code of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the command code at the request source of the dedicated instruction.</li> <li>When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
D243H	The channel specified in the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the used channel within the allowable range at the request source of the dedicated instruction.</li> <li>When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.</li> </ul>	—
D244H	The transient data is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the transient data at the transient request source.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D245H	The target station number of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the target station number at the request source of the dedicated instruction.</li> <li>When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.</li> </ul>	—
D247H	When the dedicated instruction was executed, response from the target station was received twice.	<ul style="list-style-type: none"> <li>Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action.</li> <li>Check if the switching hub and the Ethernet cables at the request source are connected properly.</li> <li>When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.</li> </ul>	—
D249H	The target station CPU type of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the CPU type of the target station at the request source of the dedicated instruction.</li> <li>When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.</li> </ul>	—
D24AH	The arrival monitoring time specification of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the arrival monitoring time at the request source of the dedicated instruction.</li> <li>When the own station, target station, or relay station detected an error, identify the cause of the error and take action.</li> <li>Execute the instruction again after lowering the transient transmission usage frequency.</li> <li>Check if the switching hub and the Ethernet cables at the request source are connected properly.</li> </ul>	—
D24BH	The number of resends specified in the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the number of resends at the request source of the dedicated instruction.</li> <li>When the own station, target station, or relay station detected an error, identify the cause of the error and take action.</li> <li>Execute the instruction again after lowering the transient transmission usage frequency.</li> <li>Check if the switching hub and the Ethernet cables at the request source are connected properly.</li> </ul>	—
D24CH	The network number specification of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the network number at the request source of the dedicated instruction.</li> <li>When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.</li> </ul>	—
D24DH	The channel specified in the dedicated instruction is incorrect.	Execute the instruction again after correcting the channel number used by the own station in the control data.	—
D251H	At execution of a dedicated instruction, or group specification or all stations specification of the target station, the execution type is set with arrival check.	<ul style="list-style-type: none"> <li>Execute it again after changing the execution type in the control data to no arrival check.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
D253H	[MODE: PLCopen] A response timeout has occurred when the dedicated instruction was executed.	[MODE: PLCopen] <ul style="list-style-type: none"> <li>• Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action.</li> <li>• For IP address specification, it is not possible to target stations beyond a relay station. Execute the dedicated instruction by specifying the network number/station number.</li> <li>• Execute the instruction again after increasing the number of resends at the request source of the dedicated instruction.</li> <li>• Execute the instruction again after lower the transient transmission usage frequency.</li> <li>• When "Dynamic Routing" under "Application Settings" is set to "Enable", check the 'Communication path determination status' (Un\G1260544 to Un\G1260559) and check whether the communication to the target station network No. can be performed.</li> <li>• Execute the dedicated instruction to the target station that supports the executed dedicated instruction.</li> <li>• For the SLMPSEND instruction, execute it again after checking if the destination port number set in the control data is the available port number using the manual of the external device.</li> <li>• Correct the network number and station number/IP address of the target station of the dedicated instruction.</li> <li>• Check if the Ethernet cable is connected properly.</li> <li>• If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
	[MODE: Simple Motion] A response timeout has occurred when the dedicated instruction was executed.	[MODE: Simple Motion] <ul style="list-style-type: none"> <li>• Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action.</li> <li>• For the IP address specification, it is not possible to target stations beyond a relay station. Execute the dedicated instruction by specifying the network number/station number.</li> <li>• Execute the instruction again after increasing the number of resends at the request source of the dedicated instruction.</li> <li>• Execute the instruction again after lowering the transient transmission usage frequency.</li> <li>• When "Dynamic Routing" in "Application Settings" is set to "Enable", check the 'Communication path determination status' (Un\G2860544 to Un\G2860559) and check if communication to the target network number is possible. Execute the dedicated instruction for a target station that supports the executed dedicated instruction.</li> <li>• Execute the dedicated instruction for a target station that supports the executed dedicated instruction.</li> <li>• For the SLMPSEND instruction, execute it again after checking if the destination port number set in the control data is the available port number using the manual of the external device.</li> <li>• Correct the network number and station number/IP address of the target station of the dedicated instruction.</li> <li>• Check if the Ethernet cable is connected properly.</li> <li>• If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D255H	The target station number of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>• Execute the instruction again after correcting the target station number in the control data.</li> <li>• If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D256H	The execution or error completion type of the dedicated instruction is incorrect.	<ul style="list-style-type: none"> <li>• Execute the instruction again after correcting the execution or error completion type in the control data.</li> <li>• If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D258H	The control station did not exist when the dedicated instruction was executed to the specified control station or current control station.	<ul style="list-style-type: none"> <li>• Execute the instruction again after correcting the target station number in the control data.</li> <li>• If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D25AH	The dedicated instruction was executed with a channel in use specified.	<ul style="list-style-type: none"> <li>• Retry the operation after a while.</li> <li>• Change the channels used by the own station or the target station storage channel in the control data.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
D25BH	The dedicated instruction was executed with a channel in use specified.	Change the channels used by the own station or the target station storage channel in the control data.	—
D25DH	The transient data is incorrect.	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the transient data at the transient request source.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D273H	The request data size of transient transmission is incorrect.	<ul style="list-style-type: none"> <li>Correct the request command at the transient request source, and retry the operation.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D275H	Another dedicated instruction is in execution, and the executed instruction cannot be processed.	<ul style="list-style-type: none"> <li>Another dedicated instruction is in execution. Execute it again after a while.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D2D2H	The IP address/port No. of the target station is incorrect.	<ul style="list-style-type: none"> <li>Execute again after correcting the port No. of the target station in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D2D3H	Send processing of the transient transmission has failed.	<ul style="list-style-type: none"> <li>Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action.</li> <li>When the own station, target station, or relay station detected an error, identify the cause of the error and take action.</li> <li>Execute the instruction again after correcting the target IP address of transient data.</li> <li>If the access destination is a module with a different network No., correct the routing parameter setting.</li> </ul>	—
D602H	Parameter error	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D605H	Parameter error	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D621H	Parameter error	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D628H	Parameter error (station type error)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the station type in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D629H	Parameter error (station No. range error)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the station No. in the setting data so it is within 1 to 120.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D641H	Parameter error (IP address error)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the IP address in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D642H	Parameter error (gateway address setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the gateway address setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D643H	Parameter error (communication cycle setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the communication cycle setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
D644H	Parameter error (cyclic transmission time setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the cyclic transmission time in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D645H	Parameter error (transient transmission time setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the communication cycle setting or cyclic transmission time in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D646H	Parameter error (transmission path setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the transmission path setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D647H	Parameter error (time synchronization setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the time synchronization setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D649H	Parameter error (send timeslot setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the send timeslot setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D64AH	Parameter error (number of data link error detection)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the number of data link error detection in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D64BH	Parameter error (number of occupied stations)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the number of occupied stations in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D64DH	Parameter error (parameter automatic setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the parameter automatic setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D64EH	Parameter error (motion control station setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the motion control station setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D64FH	Parameter error (cyclic frame cycle setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the cyclic frame cycle setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D651H	Parameter error (number of modules)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the number of modules in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D652H	Parameter error (communication mode setting)	<ul style="list-style-type: none"> <li>Write the network parameter to the CPU module again.</li> <li>Execute the instruction again after correcting the communication mode setting in the setting data.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D655H	Network addresses of the master station and slave stations are incorrect.	Correct the IP address setting of the master station or slave stations.	—

Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
D840H	Number of transient requests exceeded the upper limit of simultaneously processable requests.	<ul style="list-style-type: none"> <li>Execute the instruction again after pausing the transient transmission temporarily.</li> <li>Execute the instruction again after lower the transient transmission usage frequency.</li> </ul>	—
D841H	The request data size of memory read/write command is out of range.	Execute the instruction again after correcting the read or write size specification at the transient request source.	—
D842H	<ul style="list-style-type: none"> <li>Routing information to the destination network No. is not registered.</li> <li>In transient transmission, the number of relays to other networks exceeded seven.</li> <li>The communication path is being updated.</li> </ul>	<ul style="list-style-type: none"> <li>Execute the instruction again after correcting the target network No. at the transient request source.</li> <li>Execute the instruction again after correcting the communication path from the transient request source to the destination.</li> <li>When the dynamic routing is not used, or the module of the series other than MELSEC iQ-R is included, retry the operation after correcting the routing setting.</li> <li>Change the system configuration so that the number of relay stations is seven or less.</li> <li>Transient transmission cannot be performed while the communication path is being updated. Retry the operation.</li> </ul>	—
D844H	Incorrect frame was received. <ul style="list-style-type: none"> <li>Unsupported pre-conversion protocol</li> <li>Unsupported frame type</li> <li>Application header variable part</li> <li>Application header HDS</li> <li>Application header RTP</li> <li>Read command not requiring response</li> </ul>	Execute the instruction again after correcting the request data at the transient request source.	—
D850H	Startup of the Motion module is in progress, and the communication failed.	Retry the operation after a while.	—
D902H	The online test data is incorrect.	<ul style="list-style-type: none"> <li>Correct the data at the station that started the online test, and retry the operation.</li> <li>If the error occurs again even after taking the above, please consult your local Mitsubishi representative.</li> </ul>	—
D903H	During execution of the communication test, the test was retried.	After completion of the communication test, retry the operation.	—
D905H	A communication monitoring timeout has occurred in communication test.	<ul style="list-style-type: none"> <li>Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. Then, retry the operation.</li> <li>Check if "Routing Setting" of "CPU Parameter" is correctly set, and take action.</li> </ul>	—
D906H	Transmission completion wait timeout has occurred in communication test.	<ul style="list-style-type: none"> <li>Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. Then, retry the operation.</li> <li>Execute the instruction again after lower the transient transmission usage frequency.</li> <li>Check if "Routing Setting" of "CPU Parameter" is correctly set, and take action.</li> </ul>	—
D909H	The header information of transient transmission is incorrect.	Execute the instruction again after correcting the header information at the transient request source.	—
D90AH	During execution of the communication test, the test was retried.	Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. Then, retry the operation.	—
D90BH	The number of stations that communicate in the network is out of the specification range.	<ul style="list-style-type: none"> <li>Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action.</li> <li>If the number of slave stations per network exceeds 120, reduce it to 120 or less.</li> </ul>	—
D90CH	The communication destination specified for the communication test is incorrect.	<ul style="list-style-type: none"> <li>Correct "Target Station" of communication test, and retry the operation.</li> <li>"Communication Test" cannot be executed for own station and relay sending station. Set "Target Station" to other than own station and relay transmission station.</li> <li>The target station is mounted on the same base unit (main base unit and extension base unit) as the connected station (own station). Do not execute the communication test for station on the same base unit (main base unit and extension base unit) as the connected station (own station).</li> </ul>	—
D90DH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—


Error code	Error definition and causes	Action	Detailed information 1
			Detailed information 2
D912H	Transient transmission sending failed.	<ul style="list-style-type: none"> <li>Execute the instruction again after lower the transient transmission usage frequency.</li> <li>Check if the switching hub and the Ethernet cables are connected properly.</li> </ul>	—
D913H to D917H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
D919H	No response from the target station of the communication test.	<ul style="list-style-type: none"> <li>Correct the network No., station No., or IP address for the target station of the communication test.</li> <li>Check if the network configuration setting is correctly set in the master station within the same network as the target station of the communication test.</li> <li>When "IP Address" is selected for "Communication Method", "Communication Test" cannot be executed for stations on networks different from that of the connected station (own station). Change "Communication Method" to "Network No./Station No.".</li> </ul>	—
DA00H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
DA10H to DA17H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
DA19H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
DB00H	Station No.121 or later is specified.	Check station Nos..	—



## 7.6 List of Parameter Nos.

If there is an error in the parameter settings and the parameter No. is displayed, the corresponding parameter can be identified.

It is displayed in "Detailed information" in the [Error Information] tab in the "Module Diagnostics" window of the Motion module.

( Page 215 Error Information)

### PLCopen motion control FB mode [MODE: PLCopen]

Item			Parameter No.
System Parameter	Inter-module Synchronization Setting	Select Inter-module Synchronization Target Module	0101H
		Fixed Scan Interval Setting of Inter-module Synchronization	0101H
Required Settings	Station Type		Station Type 7100H, 7700H
	Network No.		Network No. 7100H
	Station No./IP Address Setting	Station No.	Station No. 7100H
		IP Address	IP Address A012H
			Subnet Mask A012H
Default Gateway		A013H	

Item		Parameter No.		
Basic Settings	Network Configuration Settings	Total number of stations		A100H
		Simple Display, Detailed Display	STA#	A104H
			Station Type	A104H
			RX Setting	A101H A10BH
			RY Setting	A101H A10BH
			RWr Setting	A101H A10BH
			RWw Setting	A101H A10BH
			LB Setting	A101H A10BH
			LW Setting	A101H A10BH
			Parameter Automatic Setting	A104H
			PDO Mapping Setting	A109H
			IP Address	A105H
			Subnet Mask	A105H
			Default Gateway	A105H
			Reserved/Error Invalid Station	A001H: Reserved Station A002H: Error Invalid Station
		Network Synchronous Communication	A045H	
		Communication Period Setting	A108H	
		Station Information	Alias	A011H
			Comment	A011H
			Station-specific mode setting	A106H
	Detailed Display	Motion Control Station	A104H	
	Refresh Settings		Refresh Settings	7401H
	Network Topology		Network Topology	A100H
	Communication Period Setting	Basic Period Setting	Setting in Units of 1 $\mu$ s	A100H
			Communication Period Interval Setting (Do Not Set it in Units of 1 $\mu$ s)	A100H
			Communication Period Interval Setting (Set it in Units of 1 $\mu$ s)	A100H
			Cyclic Transmission Time	A100H
			Transient Transmission Time	A100H
		Multiple Cycle Setting	Normal-Speed	A108H
			Low-Speed	A108H
	Connection Device Information		Authentication Class Setting	A100H
			TSN HUB Setting	A100H
	Slave Station Setting		Disconnection Detection Setting	A100H
Safety Communication Setting		To Use of Not to Use the Safety Communication Setting	7100H	
		Safety Communication Setting	A01BH	

Item			Parameter No.		
Application Settings	Communication Speed	Communication Speed	7100H		
	Supplementary Cyclic Settings	Station-based Block Data Assurance		A100H	
		I/O Maintenance Settings	Output Hold/Clear Setting during CPU STOP	A110H	
			Data Link Error Station Setting	A110H	
			Output Mode upon CPU Error	7101H	
	Parameter Name		Parameter Name	7310H, 7311H	
	Event Reception from Other Stations		Event Reception from Other Stations	A016H	
	Module Operation Mode		Module Operation Mode	7100H	
	Security	IP Filter Settings	IP Filter		A03AH
			IP Filter Settings	Deny/Allow	A03AH
				Range Setting	A03AH
				IP Address	A03AH
				IP Address Excluded from Range	A03AH

## Simple Motion mode [MODE: Simple Motion]

Item			Parameter No.
System Parameter	Inter-module Synchronization Setting	Select Inter-module Synchronization Target Module	0101H
		Fixed Scan Interval Setting of Inter-module Synchronization	0101H
Required Settings	Station Type		Station Type
			7100H, 7700H
	Network No.		Network No.
			7100H
	Station No./IP Address Setting	Station No.	Station No.
IP Address		IP Address	A012H
		Subnet Mask	A012H
	Default Gateway	A013H	

Item		Parameter No.		
Basic Settings	Network Configuration Settings	Total number of stations		A100H
		Simple Display, Detailed Display	Station No.	A104H
			Station Type	A104H
			RX Setting	A101H A10BH
			RY Setting	A101H A10BH
			RWr Setting	A101H A10BH
			RWw Setting	A101H A10BH
			LB Setting	A101H A10BH
			LW Setting	A101H A10BH
			Parameter Automatic Setting	A104H
			PDO Mapping Setting	A109H
			IP Address	A105H
			Subnet Mask	A105H
			Default Gateway	A105H
			Reserved/Error Invalid Station	A001H: Reserved Station A002H: Error Invalid Station
		Network Synchronous Communication	A045H	
		Communication Period Setting	A108H	
		Station Information	Alias	A011H
			Comment	A011H
			Station-specific mode setting	A106H
	Detailed Display	Motion Control Station	A104H	
	Refresh Settings		Refresh Settings	7401H
	Network Topology		Network Topology	A100H
	Communication Period Setting	Basic Period Setting	Setting in Units of 1 $\mu$ s	A100H
			Communication Period Interval Setting (Do Not Set it in Units of 1 $\mu$ s)	A100H
			Communication Period Interval Setting (Set it in Units of 1 $\mu$ s)	A100H
			Cyclic Transmission Time	A100H
Transient Transmission Time			A100H	
Multiple Cycle Setting		Normal-Speed	A108H	
		Low-Speed	A108H	
Connection Device Information		Authentication Class Setting	A100H	
		TSN HUB Setting	A100H	
Slave Station Setting		Disconnection Detection Setting	A100H	
Safety Communication Setting		To Use of Not to Use the Safety Communication Setting	7100H	
		Safety Communication Setting	A01BH	

Item			Parameter No.		
Application Settings	Communication Speed	Communication Speed	7100H		
	Supplementary Cyclic Settings	Station-based Block Data Assurance		A100H	
		I/O Maintenance Settings	Output Hold/Clear Setting during CPU STOP	A110H	
			Data Link Error Station Setting	A110H	
		Output Mode upon CPU Error	7101H		
	Parameter Name		Parameter Name	7310H, 7311H	
	Event Reception from Other Stations		Event Reception from Other Stations	A016H	
	Module Operation Mode		Module Operation Mode	7100H	
	Security	IP Filter Settings	IP Filter		A03AH
			IP Filter Settings	Deny/Allow	A03AH
				Range Setting	A03AH
IP Address Excluded from Range				A03AH	
	IP Address	A03AH			

# 7.7 Event List

This section lists the events which occur in CC-Link IE TSN. The three event types are system, security, and operation. The event type is displayed when the [Event History] button in the [Error Information] tab in the "Module Diagnostics" window of the Motion module is clicked. (☞ Page 215 Error Information)

System		
Event code	Overview	Cause
00100	Link-up	The system was linked up by connecting a device (such as an external device).
00141	CPU module time setting failure	Setting of the time to the CPU module failed.
00403	Time synchronization completion	The time synchronization has completed.
00404	Grandmaster selection (CC-Link IE TSN device)	The CC-Link IE TSN device was selected as the grandmaster.
00405	Grandmaster selection (general-purpose device)	The general-purpose device was selected as the grandmaster.
00406	Slave station time synchronization completion	The slave station time synchronization has completed.
00407	Grandmaster selection (CC-Link IE TSN device)	The CC-Link IE TSN device was selected as the grandmaster.
00408	Grandmaster selection (general-purpose device)	The general-purpose device was selected as the grandmaster.
00409	Own station time synchronization completion	The own station time synchronization has completed.
00500	Own station: Network entry	Own station enters the network.
00501	Another station: Network entry	Another station enters the network.
00502	Network entry in all stations	All stations enter the network.
00510	Own station: Data link restart (cyclic transmission start)	Own station data link restarted.
00511	Another station: Data link restart (cyclic transmission start)	Data link of another station restarted.
00512	All stations data link normalization (all-station cyclic transmission start)	Data link returned to normal status at all stations.
00535	Another station: Reserved station enable setting instruction execution	Reserved station enable setting was executed at another station.
00542	Own station: Receive frame error line status caution level	A receive frame error (line status: caution level) has occurred.
00546	Slave station parameter match	Parameters which backed up in the master station and parameters in a slave station are matched by the slave station parameter management function.
00547	Slave station parameter mismatch	Parameters which backed up in the master station and parameters in a slave station are not matched by the slave station parameter management function.
00800	Link-down	The system was linked down by removing a device (such as an external device).
00906	Alive check error	The alive status of an external device could not be checked.
00907	Divided messages receive timeout error	<ul style="list-style-type: none"> <li>• Sufficient data for the data length could not be received.</li> <li>• The remaining part of the divided message could not be received.</li> </ul>
00908	IP assembly timeout error	Due to high transient transmission load or insufficient transmission time, an IP assembly timeout error has occurred. (The remaining part of the divided data could not be received and a timeout has occurred.)
00909	TCP specification port No. error	The port No. used in a connection already opened is set. (For TCP/IP)
0090A	UDP specification port No. error	The port No. used in a connection already opened is set. (For UDP/IP)
00C00	Own station: Disconnection from network	Own station was disconnected from the network.
00C01	Another station: Disconnection from network	Another station was disconnected from the network.
00C02	Abnormal access response of another station	<ul style="list-style-type: none"> <li>• Abnormal response was returned from another station when accessing another station.</li> <li>• Abnormal response was returned to another station when accessed from another station.</li> </ul>
00C10	Own station: Data link stop (cyclic transmission stop)	Own station data link was stopped.
00C11	Another station: Data link stop (cyclic transmission stop)	Data link of another station was stopped.
00C21	Another station: Error occurrence	An error has occurred in another station.
00C24	Another station: Receive frame error occurrence	A receive frame error has occurred at another station.

Event code	Overview	Cause
00C40	Slave station parameter automatic setting: Interruption	An abnormal response was received from the slave station, and slave station parameter automatic setting processing was interrupted. For details on slave station response codes, refer to the manual for the slave station used.
00C41	Slave station parameter automatic setting: Parameter update interruption	An abnormal response was received from the slave station, and parameter update processing of slave station parameter automatic setting was interrupted. For details on slave station response codes, refer to the manual for the slave station used.
00C42	Slave station parameter automatic setting: System error	An error occurred while the slave station parameter automatic setting was executing.
00C43	Slave station parameter automatic setting: Transmission timeout	Transmission timed out while communicating with the slave station parameter automatic setting.
00C44	Slave station parameter automatic setting: Receive timeout	The specified period of time expired without receiving while communicating with the slave station parameter automatic setting.
00C46	Slave station parameter automatic setting: SLMP transmission error	An error occurred while transmitting SLMP for the slave station parameter automatic setting.
00C47	Slave station parameter automatic setting: CPU module access failure	Access to the CPU module failed during slave station parameter automatic setting.
00C48	Slave station parameter automatic setting: No target station parameter	The slave station parameter file targeted during slave station parameter automatic setting was not stored in the CPU module. Or the writing destination of the slave station parameters differs from the setting of the memory card parameters.
00C50	Time synchronization loss	The time difference between the time notified from the grandmaster and the time of the own station exceeded the allowable value.
00C51	Time synchronization error	The time synchronization loss occurred more than a fixed number.
00C52	Grandmaster switching (CC-Link IE TSN device)	The device acting as the grandmaster station was disconnected, and then the CC-Link IE TSN device was newly selected as the grandmaster.
00C53	Grandmaster switching (general-purpose device)	The device acting as the grandmaster was disconnected, and then the general-purpose device was newly selected as the grandmaster.
00C54	Initialization failed	A communication error occurred in the initialization processing when control communications started.
00C55	Message disposal	The request was discarded because there were too many requests to be processed.
00C56	Response timeout	There was no response from the external device and timeout occurred.
00C57	Message disposal	After response timeout, the response data from the external device was received.
00C58	SLMP response frame disposal	The SLMP response frame was disposed of due to any of the following causes. <ul style="list-style-type: none"> <li>• The request source of the received SLMP response frame is not clear.</li> <li>• The received SLMP response frame has already returned an error response according to the monitoring timeout.</li> <li>• The SLMP communication load is high so that the received SLMP response frame cannot be transferred.</li> </ul>
00C59	Specified port No. error	There was a request for a port No. not open from the external device.
00C5A	Specification IP address error	Sending was performed to a device while the "IP Address" setting of the slave station set in "Network Configuration Settings" under "Basic Settings" of the master station was incorrect.
00C5B	Connection establishment failed	A connection could not be established in the open processing.
00C5C	TCP connection timeout	The external device does not send an ACK response in the TCP/IP communications.
00C5D	Send processing execution disabled	<ul style="list-style-type: none"> <li>• The receive buffer or send buffer is not sufficient.</li> <li>• The window size of the external device is not sufficient.</li> </ul>
00C5E	UDP/IP send failed	Data was not sent correctly with UDP/IP due to either of the following causes. <ul style="list-style-type: none"> <li>• An error occurs in the external device.</li> <li>• An error occurs in the switching hub and Ethernet cable.</li> <li>• Congestion of packets on the line</li> </ul>
00C5F	TCP/IP send failed	Data was not sent correctly via TCP/IP due to either of following causes. <ul style="list-style-type: none"> <li>• An error occurs in the external device.</li> <li>• An error occurs in the switching hub and Ethernet cable.</li> <li>• Congestion of packets on the line</li> </ul>
00C60	IP address of the external device acquisition error	Target IP address could not be acquired from the network No. and station No..
00C61	Time synchronization loss	The time difference between the time notified from the grandmaster and the time of the own station exceeded the allowable value.
00C62	Time synchronization error	The time synchronization loss occurred more than a fixed number.
00C63	Grandmaster switching (CC-Link IE TSN device)	The device acting as the grandmaster station was disconnected, and then the CC-Link IE TSN device was newly selected as the grandmaster.



Event code	Overview	Cause
00C64	Grandmaster switching (general-purpose device)	The device acting as the grandmaster was disconnected, and then the general-purpose device was newly selected as the grandmaster.
00C65	Time synchronization receive processing failure	The receive processing for time synchronization failed.
00C70	CANopen initialization failure	A communication error occurs in CANopen initialization processing.
00C71	Initialization failed (parameter mismatch between the master station and the slave station)	During initialization processing at the start of control communication, a parameter mismatch was detected between the master station and slave stations.
00C81	Authentication Class setting mismatch	A mismatch was detected between the master station parameter and the authentication Class of the slave station.

## Security

Event code	Overview	Cause
10200	Remote password lock	The lock processing of the remote password was performed.
10201	Remote password unlock successful	The unlock processing of the remote password was succeeded.
10202	Remote password unlock failed	The unlock processing of the remote password has failed.
10300	Access from IP restricted with IP filter setting	Accessed from IP address restricted with the IP filter setting.

## Operation

Event code	Overview	Cause
20300	SD memory card usable	An SD memory card became usable.
20301	SD memory card forced stop	An SD memory card became removable (use prohibited) with the SD memory card usage forced stop function.
24100	Own station: Parameter change/new parameter reception	Parameter was changed. Or new parameter was received at power-on.
24300	Own station: Enabling remote device test function	The remote device test function was enabled.
24301	Own station: Failure in enabling remote device test function (The PLC CPU is not in the STOP state (excluding a stop error).)	The operating status of the PLC CPU is not in the STOP state (excluding a stop error), and enabling remote device test function failed.
24302	Own station: Failure in enabling remote device test function (The own station is not set as the master station.)	The own station is not set as the master station and enabling the remote device test function failed.
24303	Own station: Disabling remote device test function (SB0016 is turned off.)	The remote device test function was disabled because SB0016 (Remote device forced output request) has been turned off.
24304	Own station: Disabling remote device test function (The PLC CPU is in the RUN or PAUSE state.)	The remote device test function was disabled because the operating status of the PLC CPU has been changed to the RUN or PAUSE state.
24305	Own station: Disabling remote device test function (The PLC CPU indicates a stop error.)	The remote device test function was disabled because a stop error has occurred in the PLC CPU.
24F00	Another station: CPU operating status change detection	Operating status of the CPU module on another station was changed.

## 7.8 Response Code (SDO Abort Code)

The following shows the response code when the send/receive error occurred in the object data using the PDO mapping and transient transmission function.

SDO Abort Code	Description	Remedy
0601 0000h	An unsupported object was accessed.	Revise the Index and subIndex.
0601 0001h	A write-only object was accessed for reading.	
0601 0002h	A read-only object was accessed for writing.	
0602 0000h	An object that is not defined in the object dictionary was accessed.	
0604 0041h	An object for which PDO mapping is not allowed was mapped.	Revise the data for PDO mapping.
0604 0042h	The number of data or data length total for PDO mapping exceeds the value defined in the application, etc.	
0607 0010h	The accessed object data size does not match the specified data size at request.	Revise the specified value for object size.
0607 0012h		
0607 0013h		
0609 0011h	A SubIndex that does not exist was specified.	Revise the Index and subIndex.
0609 0030h	An invalid parameter value was set.	Revise the data value.
0609 0031h	A value larger than the parameter range was set.	
0609 0032h	A value smaller than the parameter range was set.	
0800 0020h	The application cannot transmit or store the data.	Check the status of the target device.

# APPENDICES

## Appendix 1 Buffer Memory [MODE: PLCopen]

The buffer memory is used to exchange data between the Motion module and the CPU module. Buffer memory values are reset to default when the CPU module is reset or the system is powered off.

### List of buffer memory addresses

←: Same as the address of P1

P1		P2		Name	Initial value	Read, write	
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
0 to 57343	0 to DFFFH	←		System area			
57344 to 58367	E000H to E3FFH	←		Link device area	Remote input (RX)	0	Read
58368 to 59391	E400H to E7FFh	←			Remote output (RY)		Read, write
59392 to 67583	E800H to 107FFH	←			Remote register (RWw)		
67584 to 75775	10800H to 127FFH	←			Remote register (RWr)		Read
75776 to 92159	12800H to 167FFH	←		System area			
92160 to 94207	16800H to 16FFFH	←		System area			
94208 to 94463	17000H to 170FFH	←		Link special relay (SB)	0	Read, write	
94464 to 98559	17100H to 180FFH	←		Link special register (SW)			
98560 to 1245439	18100 to 1300FFH	←		System area			
1245440 to 1245441	130100H to 130101H	←		Timeslot 0 information	Cycle start offset (ns unit)	0	Read
1245442	130102H	←			Cycle start offset (s unit)		
1245443	130103H	←		System area			
1245444 to 1245445	130104H to 130105H	←		Timeslot 0 information	Cycle end offset (ns unit)	0	Read
1245446	130106H	←			Cycle end offset (s unit)		
1245447 to 1245455	130107H to 13010FH	←		System area			
1245456 to 1245567	130110H to 13017FH	←		Timeslot 1 to 7 information	Same as Timeslot 0 information	0	Read
1245568 to 1245695	130180H to 1301FFH	←		System area			
1245696 to 1245697	130200H to 130201H	←		RX offset/size information <sup>*1</sup>	Station No. 0 RX offset	0	Read
1245698 to 1245699	130202H to 130203H	←			Station No. 0 RX size	0	Read
⋮		←		⋮			
1246176 to 1246177	1303E0H to 1303E1H	←		RX offset/size information <sup>*1</sup>	Station No. 120 RX offset	0	Read
1246178 to 1246179	1303E2H to 1303E3H	←			Station No. 120 RX size	0	Read
1246180 to 1246719	1303E4H to 1305FFH	←		System area			



P1		P2		Name	Initial value	Read, write		
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)					
1246720 to 1246721	130600H to 130601H	←		RY offset/size information*1	Station No. 0 RY offset	0	Read	
1246722 to 1246723	130602H to 130603H	←			Station No. 0 RY size	0	Read	
⋮		←			⋮			
1247200 to 1247201	1307E0H to 1307E1H	←			Station No. 120 RY offset	0	Read	
1247202 to 1247203	1307E2H to 1307E3H	←			Station No. 120 RY size	0	Read	
1247204 to 1247743	1307E4H to 1309FFH	←			System area			
1247744 to 1247745	130A00H to 130A01H	←		RWw offset/size information*1	Station No. 0 RWw offset	0	Read	
1247746 to 1247747	130A02H to 130A03H	←			Station No. 0 RWw size	0	Read	
⋮		←			⋮			
1248224 to 1248225	130BE0H to 130BE1H	←			Station No. 120 RWw offset	0	Read	
1248226 to 1248227	130BE2H to 130BE3H	←			Station No. 120 RWw size	0	Read	
1248228 to 1248767	130BE4H to 130DFFH	←			System area			
1248768 to 1248769	130E00H to 130E01H	←		RWr offset/size information*1	Station No. 0 RWr offset	0	Read	
1248770 to 1248771	130E02H to 130E03H	←			Station No. 0 RWr size	0	Read	
⋮		←			⋮			
1249248 to 1249249	130FE0H to 130FE1H	←			Station No. 120 RWr offset	0	Read	
1249250 to 1249251	130FE2H to 130FE3H	←			Station No. 120 RWr size	0	Read	
1249252 to 1249791	130FE4H to 1311FFH	←			System area			
1249792 to 1252095	131200H to 131AFFH	←		System area				
1252096	131B00H	←		Own station (network card) information	Manufacturer code	0	Read	
1252097	131B01H	←			Model type			
1252098	131B02H	←			Model code (lower 2 bytes)	1		
1252099	131B03H	←			Model code (upper 2 bytes)	1		
1252100	131B04H	←			Version	1		
1252101 to 1252103	131B05H to 131B07H	←			MAC address	1		
1252104	131B08H	←			Own station (controller) information			
1252105	131B09H	←		Controller information valid/invalid flag	0	Read		
1252106	131B0AH	←		Manufacturer code				
1252107	131B0BH	←		Model type				
1252108	131B0CH	←		Model code (lower 2 bytes)				
1252109	131B0DH	←		Model code (upper 2 bytes)				
1252110 to 1252119	131B0EH to 131B17H	←		Version				
1252120 to 1252121	131B18H to 131B19H	←		Model name string				
1252122 to 1252127	131B1AH to 131B1FH	←		Vendor-specific device information				
				System area				

P1		P2		Name	Initial value	Read, write	
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1252128 to 1260543	131B20H to 133BFFH	←		System area			
1260544 to 1260559	133C00H to 133C0FH	←		Communication path determination status (network No.1 to 239)	0	Read	
1260560 to 1275135	133C10H to 1374FFH	←		System area			
1275136	137500H	←		Time distribution interval setting of the CPU module	0	Read, write	
1275137	137501H	←		System area			
1275138 to 1275903	137502H to 1377FFH	←		System area			
1275904	137800H	←		Grandmaster information	Grandmaster	0	Read
1275905 to 1275906	137801H to 137802H	←			System area		
1275907 to 1275909	137803H to 137805H	←			Grandmaster MAC address	0	Read
1275910 to 1275932	137806H to 13781CH	←		System area			
1275933	13781DH	←		Time synchronization setting	PTP frame send source check enable/disable	0	Read, write
1275934	13781EH	←			PTP frame send source check result (P1)	0	Read
1275935	13781FH	←			PTP frame send source check result (P2)	0	Read
1275936 to 1277439	137820H to 137DFFH	←		System area			
1277440	137E00H	←		Communication cycle information	Normal speed (first cycle/Nth cycle in N cycles)	0	Read
1277441	137E01H	←			Low speed (first cycle/Nth cycle in N cycles)	0	Read
1277442 to 1277455	137E02H to 137E09H	←			System area		
1277456 to 1277647	137E10H to 137ECFH	←		System area			
1277648 to 1277649	137ED0H to 137ED1H	←		PDO information*1 (Multidrop number 0 of station No. 1)	Start offset of link device used by RPDO	0	Read
1277650 to 1277651	137ED2H to 137ED3H	←			RPDO size	0	Read
1277652 to 1277653	137ED4H to 137ED5H	←			Start offset of link device used by TPDO	0	Read
1277654 to 1277655	137ED6H to 137ED7H	←			TPDO size	0	Read
1277656 to 1277703	137ED8H to 137F07H	←		:			
1277704 to 1277705	137F08H to 137F09H	←		PDO information*1 (Multidrop number 7 of station No. 1)	Start offset of link device used by RPDO	0	Read
1277706 to 1277707	137F0AH to 137F0BH	←			RPDO size	0	Read
1277708 to 1277709	137F0CH to 137F0DH	←			Start offset of link device used by TPDO	0	Read
1277710 to 1277711	137F0EH to 137F0FH	←			TPDO size	0	Read
1277712 to 1285263	137F10H to 139C8FH	←		:			
1285264 to 1285265	139C90H to 139C91H	←		PDO information*1 (Multidrop number 0 of station No. 120)	Start offset of link device used by RPDO	0	Read
1285266 to 1285267	139C92H to 139C93H	←			RPDO size	0	Read
1285268 to 1285269	139C94H to 139C95H	←			Start offset of link device used by TPDO	0	Read
1285270 to 1285271	139C96H to 139C97H	←			TPDO size	0	Read



P1		P2		Name	Initial value	Read, write		
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)					
1285272 to 1285319	139C98H to 139CC7H	←		⋮				
1285320 to 1285321	139CC8H to 139CC9H	←		PDO information*1 (Multidrop number 7 of station No. 120)	Start offset of link device used by RPDO	0	Read	
1285322 to 1285323	139CCA H to 139CCBH	←			RPDO size	0	Read	
1285324 to 1285325	139CCCH to 139CCDH	←			Start offset of link device used by TPDO	0	Read	
1285326 to 1285327	139CCEH to 139CCFH	←			TPDO size	0	Read	
1285328 to 1293967	139CD0H to 13BE8FH	←		System area				
1293968 to 2097151	13BE90H to 1FFFFFH	←		System area				
2097152 to 2097155	200000H to 200003H	4194304 to 4194307	400000H to 400003H	System area				
2097156 to 2097157	200004H to 200005H	4194308 to 4194309	400004H to 400005H	P1: Own node setting status storage area P2: System area	Own node IP address	0	Read	
2097158 to 2097165	200006H to 20000DH	4194310 to 4194317	400006H to 40000DH		System area			
2097166 to 2097167	20000EH to 20000FH	4194318 to 4194319	40000EH to 40000FH	Subnet mask			0	Read
2097168 to 2097169	200010H to 200011H	4194320 to 4194321	400010H to 400011H	System area				
2097170 to 2097171	200012H to 200013H	4194322 to 4194323	400012H to 400013H	Default gateway IP address			0	Read
2097172 to 2097179	200014H to 20001BH	4194324 to 4194331	400014H to 40001BH	System area				
2097180 to 2097182	20001CH to 20001EH	4194332 to 4194334	40001CH to 40001EH	Own node MAC address			0	Read
2097183	20001FH	4194335	40001FH	Own node network No.			0	Read
2097184	200020H	4194336	400020H	Station No.			0	Read
2097185	200021H	4194337	400021H	Transient transmission group No.			0	Read
2097186 to 2097188	200022H to 200024H	4194338 to 4194340	400022H to 400024H	System area				
2097189	200025H	4194341	400025H	Auto-open UDP port port number			1388H	Read
2097190	200026H	4194342	400026H	MELSOFT transmission port (TCP/IP) port number			138AH	Read
2097191	200027H	4194343	400027H	MELSOFT transmission port (UDP/IP) port number			1389H	Read
2097192	200028H	4194344	400028H	System area				
2097193	200029H	4194345	400029H	SLMP transmission port (TCP/IP) port number			1393H	Read
2097194	20002AH	4194346	40002AH	SLMP transmission port (UDP/IP) port number			1392H	Read
2097195 to 2098151	20002BH to 2003E7H	4194347 to 4195303	40002BH to 4003E7H	System area				

P1		P2		Name	Initial value	Read, write		
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)					
2098152 to 2098159	2003E8H to 2003EFH	4195304 to 4195311	4003E8H to 4003EFH	P1: Connection status storage area P2: System area	System area			
2097380 to 2097386	2000E4H to 2000EAH	4194532 to 4194538	4000E4H to 4000EAH		Latest error code after the 2nd connection of MELSOFT transmission port (TCP/IP)	0	Read	
2097387 to 2097507	2000EBH to 200163H	4194539 to 4194659	4000EBH to 400163H		System area			
2097508 to 2097514	200164H to 20016AH	4194660 to 4194666	400164H to 40016AH		Latest error code after the 2nd connection of SLMP transmission port (TCP/IP)	0	Read	
2097515 to 2098151	20016BH to 2003E7H	4194667 to 4195303	40016BH to 4003E7H	System area				
2098152 to 2098153	2003E8H to 2003E9H	4195304 to 4195305	4003E8H to 4003E9H	P1: System port latest error code storage area P2: System area	System area			
2098154	2003EAH	4195306	4003EAH		Auto-open UDP port latest error code	0	Read	
2098155	2003EBH	4195307	4003EBH		MELSOFT transmission port (UDP/IP) latest error code	0	Read	
2098156	2003ECH	4195308	4003ECH		MELSOFT transmission port (TCP/IP) latest error code	0	Read	
2098157	2003EDH	4195309	4003EDH		SLMP transmission port (UDP/IP) latest error code	0	Read	
2098158	2003EEH	4195310	4003EEH		SLMP transmission port (TCP/IP) latest error code	0	Read	
2098159	2003EFH	4195311	4003EFH		SLMPSND instruction latest error code	0	Read	
2102152 to 2102153	201388H to 201389H	4199304 to 4199305	401388H to 401389H		Status for each protocol (IP packet)	Received packet total count	0	Read
2102154 to 2102155	20138AH to 20138BH	4199306 to 4199307	40138AH to 40138BH			Received packet checksum error discard count	0	Read
2102156 to 2102157	20138CH to 20138DH	4199308 to 4199309	40138CH to 40138DH	Sent packet total count		0	Read	
2102158 to 2102173	20138EH to 20139DH	4199310 to 4199325	40138EH to 40139DH	System area				
2102174 to 2102175	20139EH to 20139FH	4199326 to 4199327	40139EH to 40139FH	Simultaneous transmission error detection count (receive buffer full count)		0	Read	
2102176 to 2102180	2013A0H to 2013A4H	4199328 to 4199332	4013A0H to 4013A4H	System area				
2102181	2013A5H	4199333	4013A5H	Receive abort count		0	Read	
2102182 to 2102191	2013A6H to 2013AFH	4199334 to 4199343	4013A6H to 4013AFH	System area				



P1		P2		Name	Initial value	Read, write	
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
2102192 to 2102193	2013B0H to 2013B1H	4199344 to 4199345	4013B0H to 4013B1H	Status for each protocol (ICMP packet)	Received packet total count	0	Read
2102194 to 2102195	2013B2H to 2013B3H	4199346 to 4199347	4013B2H to 4013B3H		Received packet checksum error discard count	0	Read
2102196 to 2102197	2013B4H to 2013B5H	4199348 to 4199349	4013B4H to 4013B5H		Sent packet total count	0	Read
2102198 to 2102199	2013B6H to 2013B7H	4199350 to 4199351	4013B6H to 4013B7H		Received echo request total count	0	Read
2102200 to 2102201	2013B8H to 2013B9H	4199352 to 4199353	4013B8H to 4013B9H		Sent echo reply total count	0	Read
2102202 to 2102203	2013BAH to 2013BBH	4199354 to 4199355	4013BAH to 4013BBH		Sent echo request total count	0	Read
2102204 to 2102205	2013BCH to 2013BDH	4199356 to 4199357	4013BCH to 4013BDH		Received echo reply total count	0	Read
2102206 to 2102231	2013BEH to 2013D7H	4199358 to 4199383	4013BEH to 4013D7H		System area		
2102232 to 2102233	2013D8H to 2013D9H	4199384 to 4199385	4013D8H to 4013D9H	Status for each protocol (TCP packet)	Received packet total count	0	Read
2102234 to 2102235	2013DAH to 2013DBH	4199386 to 4199387	4013DAH to 4013DBH		Received packet checksum error discard count	0	Read
2102236 to 2102237	2013DCH to 2013DDH	4199388 to 4199389	4013DCH to 4013DDH		Sent packet total count	0	Read
2102238 to 2102271	2013DEH to 2013FFH	4199390 to 4199423	4013DEH to 4013FFH		System area		
2102272 to 2102273	201400H to 201401H	4199424 to 4199425	401400H to 401401H	Status for each protocol (UDP packet)	Received packet total count	0	Read
2102274 to 2102275	201402H to 201403H	4199426 to 4199427	401402H to 401403H		Received packet checksum error discard count	0	Read
2102276 to 2102277	201404H to 201405H	4199428 to 4199429	401404H to 401405H		Sent packet total count	0	Read
2102278 to 2102340	201406H to 201444H	4199430 to 4199492	401406H to 401444H		System area		
2102341	201445H	4199493	401445H	P1: Own node operating status storage area (LED on/off status) P2: System area		0	Read
2102342	201446H	4199494	401446H	System area			
2102343	201447H	4199495	401447H	Own node operating status storage area (switching hub connection information area)	Communication mode	0	Read
2102344	201448H	4199496	401448H		Connection status	0	Read
2102345	201449H	4199497	401449H		Communication speed	0	Read
2102346	20144AH	4199498	40144AH		Disconnection count	0	Read
2102347 to 2102351	20144BH to 20144FH	4199499 to 4199503	40144BH to 40144FH	System area			
2102352	201450H	4199504	401450H	P1: Own node operating status storage area (IP address duplication status storage area) P2: System area	IP address duplication flag	0	Read
2102353 to 2102355	201451H to 201453H	4199505 to 4199507	401451H to 401453H		MAC address of the station already connected to the network	FFFF FFFF FFH	Read
2102356 to 2102358	201454H to 201456H	4199508 to 4199510	401454H to 401456H		MAC address of the station with the IP address already used	FFFF FFFF FFH	Read



P1		P2		Name	Initial value	Read, write	
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
2102359 to 2102451	201457H to 2014B3H	4199511 to 4199603	401457H to 4014B3H	System area			
2102452	2014B4H	4199604	4014B4H	P1: Area for sending/receiving instructions P2: System area	System area		
2102453	2014B5H	4199605	4014B5H		RECV instruction execution request	0	Read
2102454 to 2102479	2014B6H to 2014CFH	4199606 to 4199631	4014B6H to 4014CFH		System area		
2102480 to 2102777	2014D0H to 2015F9H	4199632 to 4199929	4014D0H to 4015F9H	System area			
2102778 to 2102781	2015FAH to 2015FDH	4199930 to 4199933	4015FAH to 4015FDH	Remote password lock status storage area	System area		
2102782	2015FEH	4199934	4015FEH		Remote password lock status system port Default value: Follows the remote password setting	Refer to the left column	Read
2102783 to 2108735	2015FFH to 202D3FH	4199935 to 4205887	4015FFH to 402D3FH	System area			
2108736 to 2108799	202D40H to 202D7FH	4205888 to 4205951	402D40H to 402D7FH	Remote password function monitoring area	System area		
2108800	202D80H	4205952	402D80H		Auto-open UDP port continuous unlock failure count	0	Read
2108801	202D81H	4205953	402D81H		MELSOFT transmission port (UDP/IP) continuous unlock failure count	0	Read
2108802	202D82H	4205954	402D82H		MELSOFT transmission port (TCP/IP) continuous unlock failure count	0	Read
2108803 to 2108804	202D83H to 202D84H	4205955 to 4205956	402D83H to 402D84H		System area		
2108805	202D85H	4205957	402D85H		SLMP transmission port (UDP/IP) continuous unlock failure count	0	Read
2108806	202D86H	4205958	402D86H		SLMP transmission port (TCP/IP) continuous unlock failure count	0	Read
2108807 to 2108821	202D87H to 202D95H	4205959 to 4205973	402D87H to 402D95H		System area		
2108822 to 2162686	202D96H to 20FFFEH	4205974 to 4259838	402D96H to 40FFFEH		System area		
2162687	20FFFFH	4259839	40FFFFH	P1: Network type information area (Network type information) P2: System area		0	Read
2162688 to 4194303	210000H to 3FFFFFFH	4259840 to 6291455	410000H to 5FFFFFFH	System area			
6291456 to 6291479	600000H to 600017H	←	←	System area			
6291480	600018H	←	←	Ethernet P1/2 common information	Initial status	0	Read
6291481	600019H	←	←		Initial error code	0	Read
6291482 to 6291485	60001AH to 60001DH	←	←	System area			



P1		P2		Name	Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)			
6291486	60001EH	←		Receive buffer status storage area (Receive buffer status)	0	Read
6291487 to 1147799	60001FH to AF23EFH	←		System area		
11478000 to 11997999	AF23F0H to B7132FH	←		User setting area		
11998000 to 16252848	B71330H to F7FFB0H	←		System area		
16252849	F7FFB1H	←		PLCopen motion control FB mode/Simple Motion mode		
16252850 to 16777215	F7FFB2H to FFFFFFFH	←		System area		

\*1 For the motion control station, store 0 in both the size and offset.

**Point** 

- Do not write data to the system areas. Doing so may cause malfunction of the programmable controller system.
- If the value in an area of one word becomes equal to or higher than 65536, the count stops at 65535 (FFFFH).

# Details of buffer memory addresses

## Link device area

The RX, RY, RWw, RWr, SB, and SW values are stored.

### Remote input (RX) (Un\G57344 to Un\G58367)

The RX value is stored. The start number and number of points of RX for each station number can be checked in the RX offset/size information (Un\G1245696 to Un\G1246179). (Page 282 RX offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G57344	RX F	RX E	RX D	RX C	RX B	RX A	RX 9	RX 8	RX 7	RX 6	RX 5	RX 4	RX 3	RX 2	RX 1	RX 0
⋮																
Un\G58367	RX 3FFF	RX 3FFE	RX 3FFD	RX 3FFC	RX 3FFB	RX 3FFA	RX 3FF9	RX 3FF8	RX 3FF7	RX 3FF6	RX 3FF5	RX 3FF4	RX 3FF3	RX 3FF2	RX 3FF1	RX 3FF0

Each bit corresponds to 1 bit of RX.

### Remote output (RY) (Un\G58368 to Un\G59391)

The RY value is stored. The start number and number of points of RY for each station number can be checked in the RY offset/size information (Un\G1246720 to Un\G1247203). (Page 283 RY offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G58368	RY F	RY E	RY D	RY C	RY B	RY A	RY 9	RY 8	RY 7	RY 6	RY 5	RY 4	RY 3	RY 2	RY 1	RY 0
⋮																
Un\G59391	RY 3FFF	RY 3FFE	RY 3FFD	RY 3FFC	RY 3FFB	RY 3FFA	RY 3FF9	RY 3FF8	RY 3FF7	RY 3FF6	RY 3FF5	RY 3FF4	RY 3FF3	RY 3FF2	RY 3FF1	RY 3FF0

Each bit corresponds to 1 bit of RY.

### Remote register (RWw) (Un\G59392 to Un\G67583)

The RWw value is stored. The start number and number of points of RWw for each station number can be checked in the RWw offset/size information (Un\G1247744 to Un\G1248227). (Page 283 RWw offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G59392	RWw0															
Un\G59393	RWw1															
⋮																
Un\G67583	RWw1FFF															

### Remote register (RWr) (Un\G67584 to Un\G75775)

The RWr value is stored. The start number and number of points of RWr for each station number can be checked in the RWr offset/size information (Un\G1248768 to Un\G1249251). (Page 283 RWr offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G67584	RWr0															
Un\G67585	RWr1															
⋮																
Un\G75775	RWr1FFF															

### Link special relay (SB) (Un\G94208 to Un\G94463)

The SB value is stored.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G94208	SBF	SBE	SBD	SBC	SBB	SBA	SB9	SB8	SB7	SB6	SB5	SB4	SB3	SB2	SB1	SB0
⋮																
Un\G94463	SB1F F	SB1F E	SB1F D	SB1F C	SB1F B	SB1F A	SB1F 9	SB1F 8	SB1F 7	SB1F 6	SB1F 5	SB1F 4	SB1F 3	SB1F 2	SB1F 1	SB1F 0

Each bit corresponds to 1 bit of SB.



## ■Link special register (SW) (Un\G94464 to Un\G98559)

The SW value is stored.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G94464	SW0															
Un\G94465	SW1															
⋮																
Un\G98559	SW0FFF															

## Timeslot information

### ■Timeslot 0 information (Un\G1245440 to Un\G1245455)

Cycle start offset (ns, s unit) of timeslot 0 and cycle end offset (ns, s unit) are stored.

Address	Name	Description
Un\G1245440 to Un\G1245441	Cycle start offset (ns unit)	The ns digits of cycle start offset are stored. Stored range: 0 to 999999999 (ns)
Un\G1245442	Cycle start offset (s unit)	The s digits of cycle start offset are stored. Stored range: 0 to 65535 (s)
Un\G1245443	System area	
Un\G1245444 to Un\G1245445	Cycle end offset (ns unit)	The ns digits of cycle end offset are stored. Stored range: 0 to 999999999 (ns)
Un\G1245446	Cycle end offset (s unit)	The s digits of cycle end offset are stored. Stored range: 0 to 65535 (s)
Un\G1245447 to Un\G1245455	System area	

### ■Timeslot 1 to 7 information (Un\G1245456 to Un\1245567)

Timeslot 1 to 7 information is stored in the same order as Timeslot 0 information.

## RX offset/size information

### ■RX offset/size information (Un\G1245696 to Un\G1246179)

The start number and number of points of RX for each station number are stored.

Address	Description
Un\G1245696 to Un\G1245697	Station No. 0 offset
Un\G1245698 to Un\G1245699	Station No. 0 size (word unit)
Un\G1245700 to Un\G1245701	Station No. 1 offset
Un\G1245702 to Un\G1245703	Station No. 1 size (word unit)
⋮	
Un\G1246176 to Un\G1246177	Station No. 120 offset
Un\G1246178 to Un\G1246179	Station No. 120 size (word unit)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset):  $1245696 + (\text{Station number}) \times 4$
- Buffer memory address (size):  $1245698 + (\text{Station number}) \times 4$

## RY offset/size information

### RY offset/size information (Un\G1246720 to Un\G1247203)

The start number and number of points of RY for each station number are stored.

Address	Description
Un\G1246720 to Un\G1246721	Station No. 0 offset
Un\G1246722 to Un\G1246723	Station No. 0 size (word unit)
Un\G1246724 to Un\G1246725	Station No. 1 offset
Un\G1246726 to Un\G1246727	Station No. 1 size (word unit)
⋮	
Un\G1247200 to Un\G1247201	Station No. 120 offset
Un\G1247202 to Un\G1247203	Station No. 120 size (word unit)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset):  $1246720 + (\text{Station number}) \times 4$
- Buffer memory address (size):  $1246722 + (\text{Station number}) \times 4$

## RWw offset/size information

### RWw offset/size information (Un\G1247744 to Un\G1248227)

The start number and number of points of RWw for each station number are stored.

Address	Description
Un\G1247744 to Un\G1247745	Station No. 0 offset
Un\G1247746 to Un\G1247747	Station No. 0 size (word unit)
Un\G1247748 to Un\G1247749	Station No. 1 offset
Un\G1247750 to Un\G1247751	Station No. 1 size (word unit)
⋮	
Un\G1248224 to Un\G1248225	Station No. 120 offset
Un\G1248226 to Un\G1248227	Station No. 120 size (word unit)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset):  $1247744 + (\text{Station number}) \times 4$
- Buffer memory address (size):  $1247746 + (\text{Station number}) \times 4$

## RWr offset/size information

### RWr offset/size information (Un\G1248768 to Un\G1249251)

The start number and number of points of RWr for each station number are stored.

Address	Description
Un\G1248768 to Un\G1248769	Station No. 0 offset
Un\G1248770 to Un\G1248771	Station No. 0 size (word unit)
Un\G1248772 to Un\G1248773	Station No. 1 offset
Un\G1248774 to Un\G1248775	Station No. 1 size (word unit)
⋮	
Un\G1249248 to Un\G1249249	Station No. 120 offset
Un\G1249250 to Un\G1249251	Station No. 120 size (word unit)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset):  $1248768 + (\text{Station number}) \times 4$
- Buffer memory address (size):  $1248770 + (\text{Station number}) \times 4$

## Own station information

The information of the own station on the network is stored.

### ■Own station (network card) information (Un\G1252096 to Un\G1252103)

Address	Name	Description
Un\G1252096	Manufacturer code	The information of the own station is stored. (Also used in the CLPA conformance test.)
Un\G1252097	Model type	
Un\G1252098	Model code (lower 2 bytes)	
Un\G1252099	Model code (upper 2 bytes)	
Un\G1252100	Version	
Un\G1252101 to Un\G1252103	MAC address	The own station MAC address is stored. Un\G1252101: 5th byte, 6th byte of the MAC address Un\G1252102: 3rd byte, 4th byte of the MAC address Un\G1252103: 1st byte, 2nd byte of the MAC address

### ■Own station (controller) information (Un\G1252104 to Un\G1252121)

Address	Name	Description
Un\G1252104	Controller information valid/invalid flag	Whether the value stored in the own station (controller) information is valid or invalid is stored. • 0: Invalid • 1: Valid
Un\G1252105	Manufacturer code	The information of the own station is stored.
Un\G1252106	Model type	
Un\G1252107	Model code (lower 2 bytes)	
Un\G1252108	Model code (upper 2 bytes)	
Un\G1252109	Version	
Un\G1252110 to Un\G1252119	Model name string	
Un\G1252120 to Un\G1252121	Vendor-specific device information	

## Communication path determination status

### ■Communication path determination status (Un\G1260544 to Un\G1260559)

The determination information on the communication path for each network No. of the destination station is stored.

- 0: Path undetermined
- 1: Path determined

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1260544	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
⋮																
Un\G1260558	Empty	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225
Un\G1260559	Empty															

The numbers in the table indicate network Nos..

## Time synchronization

### ■Time distribution interval setting of the CPU module (Un\G1275136)

The time distribution interval of the CPU module on the master station to slave stations is set (CPU No.1 when the multiple CPU system is used). This setting is set to the buffer memory of the master station.

When the setting is changed, the new setting value is enabled after the interval of the distribution operating with the old setting value has elapsed. The setting value is distributed once after the distribution interval elapses. If the new setting value needs to be enabled immediately, stop the distribution and set the value.

- 0000H: 10 s
- 0001H to FFFE H: (Send using the set time interval (second))
- FFFFH: (Distribution stop)

(Default: 0000H)

## Grandmaster information

The grandmaster status of the own station and MAC address are stored.

### ■Grandmaster (Un\G1275904)

When the own station is the grandmaster, "1" is stored.

- 1: Own station is the grandmaster
- 0: Another station is the grandmaster

### ■Grandmaster MAC address (Un\G1275907 to Un\G1275909)

The grandmaster MAC address is stored.

- Un\G1275907: 5th byte, 6th byte of the MAC address
- Un\G1275908: 3rd byte, 4th byte of the MAC address
- Un\G1275909: 1st byte, 2nd byte of the MAC address

## Time synchronization setting

### ■PTP frame send source check enable/disable (Un\G1275933)

- 1: Check
- 0: Do not check

### ■PTP frame send source check result (P1) (Un\G1275934)

- 1: Two or more send sources
- 0: One send source

### ■PTP frame send source check result (P2) (Un\G1275935)

- 1: Two or more send sources
- 0: One send source

## Communication cycle information

The timing of the communication cycle is stored.

This area can be used in the inter-module synchronous interruption program (I44).

### ■Normal speed (Un\G1277440)

"1" is stored at the timing of the start (first cycle in N cycles)/end (Nth cycle in N cycles) of the basic cycle interval during normal speed cycle.

[b0]

- 1: Start (first cycle in N cycles)
- 0: Other than start

[bF]

- 1: End (Nth cycle in N cycles)
- 0: Other than end

### ■Low speed (Un\G1277441)

"1" is stored at the timing of the start (first cycle in N cycles)/end (Nth cycle in N cycles) of the basic cycle interval during low speed cycle.

[b0]

- 1: Start (first cycle in N cycles)
- 0: Other than start

[bF]

- 1: End (Nth cycle in N cycles)
- 0: Other than end



## PDO information

### ■PDO information (Un\G1277648 to Un\G1293967)

Address	Name	Description
Un\G1277648 to Un\G1277649	Multidrop number 0 of station No. 1	Start offset of link device used by RPDO
Un\G1277650 to Un\G1277651		RPDO size
Un\G1277652 to Un\G1277653		Start offset of link device used by TPDO
Un\G1277654 to Un\G1277655		TPDO size
⋮		
Un\G1277704 to Un\G1277711	Multidrop number 7 of station No. 1	Same as the multidrop number 0 of station No. 1.
⋮		
Un\G1285264 to Un\G1285271	Multidrop number 0 of station No. 120	Same as the multidrop number 0 of station No. 1.
⋮		
Un\G1285320 to Un\G1285327	Multidrop number 7 of station No. 120	Same as the multidrop number 0 of station No. 1.
Un\G1285328 to Un\G1293967	System area	—

## Own node setting status storage area

### ■Own node IP address (Un\G2097156 to Un\G2097157)

The setting values of the IP address are stored.

Range: 1H to DFFFFFFEH

### ■Subnet mask (Un\G2097166 to Un\G2097167)

The setting values of the subnet mask are stored.

Range: 1H to FFFFFFFFH

0: No setting

### ■Default gateway IP address (Un\G2097170 to Un\G2097171)

The setting values of the default gateway are stored.

Range: 1H to DFFFFFFEH

0: No setting

### ■Own node MAC address (Un\G2097180 to Un\G2097182)

The own node MAC addresses are stored.

- Un\G2097180: 5th byte, 6th byte of the MAC address
- Un\G2097181: 3rd byte, 4th byte of the MAC address
- Un\G2097182: 1st byte, 2nd byte of the MAC address

### ■Own node network No. (Un\G2097183)

The setting value of the network No. is stored.

Range: 1 to 239

0: Network No. not set

### ■Station No. (Un\G2097184)

The setting value of the station No. is stored.

Range: 1 to 120

0: Station No. not set

### ■Transient transmission group No. (Un\G2097185)

The setting value of the transient transmission group No. is stored.

Range: 1 to 32

0: Group not specified

**■Auto-open UDP port port number (Un\G2097189)**

The port number used for the auto-open UDP port is stored.

**■MELSOFT transmission port (TCP/IP) port number (Un\G2097190)**

The port number used for the MELSOFT transmission port (TCP/IP) is stored.

**■MELSOFT transmission port (UDP/IP) port number (Un\G2097191)**

The port number for the MELSOFT transmission port (UDP/IP) is stored.

**■SLMP transmission port (TCP/IP) port number (Un\G2097193)**

The port number used for the SLMP transmission port (TCP/IP) is stored.

**■SLMP transmission port (UDP/IP) port number (Un\G2097194)**

The port number used for the SLMP transmission port (UDP/IP) is stored.

## Connection status storage area

**■Latest error code after the 2nd connection of MELSOFT transmission port (TCP/IP) (Un\G2097380 to Un\G2097386)**

The latest error code of the 2nd to 8th connection of the MELSOFT transmission port (TCP/IP) is stored.

**■Latest error code after the 2nd connection of SLMP transmission port (TCP/IP) (Un\G2097508 to Un\G2097514)**

The latest error code of the 2nd to 8th connection of the SLMP transmission port (TCP/IP) is stored.

## System port latest error code storage area

**■Auto-open UDP port latest error code (Un\G2098154)**

The latest error code of the auto-open UDP port is stored.

**■MELSOFT transmission port (UDP/IP) latest error code (Un\G2098155)**

The latest error code of the MELSOFT transmission port (UDP/IP) is stored.

**■MELSOFT transmission port (TCP/IP) latest error code (Un\G2098156)**

The latest error code of the MELSOFT transmission port (TCP/IP) is stored.

**■SLMP transmission port (UDP/IP) latest error code (Un\G2098157)**

The latest error code of the SLMP transmission port (UDP/IP) is stored.

**■SLMP transmission port (TCP/IP) latest error code (Un\G2098158)**

The latest error code of the SLMP transmission port (TCP/IP) is stored.

**■SLMPSND instruction latest error code (Un\G2098159)**

The latest error code of the SLMPSND instruction is stored.

## Status for each protocol (IP packet)

### ■Received packet total count (Un\G2102152 to Un\G2102153, Un\G4199304 to Un\G4199305)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received packet checksum error discard count (Un\G2102154 to Un\G2102155, Un\G4199306 to Un\G4199307)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent packet total count (Un\G2102156 to Un\G2102157, Un\G4199308 to Un\G4199309)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Simultaneous transmission error detection count (receive buffer full count) (Un\G2102174 to Un\G2102175, Un\G4199326 to Un\G4199327)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Receive abort count (Un\G2102181, Un\G4199333)

The status is counted from 0 to 65535 (FFFFH).

## Status for each protocol (ICMP packet)

### ■Received packet total count (Un\G2102192 to Un\G2102193, Un\G4199344 to Un\G4199345)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received packet checksum error discard count (Un\G2102194 to Un\G2102195, Un\G4199346 to Un\G4199347)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent packet total count (Un\G2102196 to Un\G2102197, Un\G4199348 to Un\G4199349)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received echo request total count (Un\G2102198 to Un\G2102199, Un\G4199350 to Un\G4199351)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent echo reply total count (Un\G2102200 to Un\G2102201, Un\G4199352 to Un\G4199353)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent echo request total count (Un\G2102202 to Un\G2102203, Un\G4199354 to Un\G4199355)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received echo reply total count (Un\G2102204 to Un\G2102205, Un\G4199356 to Un\G4199357)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

## Status for each protocol (TCP packet)

### ■Received packet total count (Un\G2102232 to Un\G2102233, Un\G4199384 to Un\G4199385)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received packet checksum error discard count (Un\G2102234 to Un\G2102235, Un\G4199386 to Un\G4199387)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent packet total count (Un\G2102236 to Un\G2102237, Un\G4199388 to Un\G4199389)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

## Status for each protocol (UDP packet)

### ■Received packet total count (Un\G2102272 to Un\G2102273, Un\G4199424 to Un\G4199425)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received packet checksum error discard count (Un\G2102274 to Un\G2102275, Un\G4199426 to Un\G4199427)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent packet total count (Un\G2102276 to Un\G2102277, Un\G4199428 to Un\G4199429)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

## Own node operating status storage area (LED on/off status)

### ■Own node operating status storage area (LED on/off status) (Un\G2102341)

ERR LED(b0)

- 1: On/flashing
- 0: Off

## Own node operating status storage area (switching hub connection information area)

### ■Communication mode (Un\G2102343, Un\G4199495)

- 0: Half-duplex
- 1: Full-duplex

### ■Connection status (Un\G2102344, Un\G4199496)

- 0: Switching hub not connected/disconnected
- 1: Switching hub connected

### ■Communication speed (Un\G2102345, Un\G4199497)

- 1: Operating at 100BASE-TX
- 2: Operating at 1000BASE-T

### ■Disconnection count (Un\G2102346, Un\G4199498)

The number of times the cable was disconnected is stored.

## Own node operating status storage area (IP address duplication status storage area)

### ■IP address duplication flag (Un\G2102352)

- 0: IP address not duplicated
- 1: IP address duplicated

### ■MAC address of the station already connected to the network (Un\G2102353 to Un\G2102355)

It is stored in the station with duplicated IP address.

### ■MAC address of the station with the IP address already used (Un\G2102356 to Un\G2102358)

It is stored in the station that has been already connected to the network.

## Area for sending/receiving instructions (RECV instruction execution request)

### ■Area for sending/receiving instructions (RECV instruction execution request) (Un\G2102453)

RECV instruction execution request

- 1: Requesting
- 0: No request

Channels 1 to 8 are displayed in units of bits.

## Remote password lock status storage area

### ■Remote password lock status system port (Un\G2102782, Un\G4199934)

[b0]: Auto-open UDP port

[b1]: MELSOFT transmission port (UDP/IP)

[b2]: MELSOFT transmission port (TCP/IP)

[b5]: SLMP transmission port (UDP/IP)

[b6]: SLMP transmission port (TCP/IP)

- 0: Unlocked/remote password not set
- 1: Lock status

## Remote password function monitoring area

### ■Auto-open UDP port continuous unlock failure count (Un\G2108800, Un\G4205952)

The mismatch count of remote password at unlock of the auto-open UDP port is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

### ■MELSOFT transmission port (UDP/IP) continuous unlock failure count (Un\G2108801, Un\G4205953)

The mismatch count of remote password at unlock of the MELSOFT transmission port (UDP/IP) is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

### ■MELSOFT transmission port (TCP/IP) continuous unlock failure count (Un\G2108802, Un\G4205954)

The mismatch count of remote password at unlock of the MELSOFT transmission port (TCP/IP) is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

### ■SLMP transmission port (UDP/IP) continuous unlock failure count (Un\G2108805, Un\G4205957)

The mismatch count of remote password at unlock of the SLMP transmission port (UDP/IP) is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

### ■SLMP transmission port (TCP/IP) continuous unlock failure count (Un\G2108806, Un\G4205958)

The mismatch count of remote password at unlock of the SLMP transmission port (TCP/IP) is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

## Network type information area (Network type information)

### ■Network type information area (Network type information) (Un\G2162687)

5: CC-Link IE TSN

## Ethernet P1/2 common information

### ■Initial status (Un\G6291480)

The initial processing status of the Ethernet connection of the Motion module is stored.

[b0]: Initial normal completion status

- 1: Initialization normal completion
- 0: —

[b1]: Initial abnormal completion status

- 1: Initialization abnormal completion
- 0: —

[b2 to b15]: Not used (Use prohibited)

### ■Initial error code (Un\G6291481)

The information when the initial processing is completed with an error is stored.

- 1 or more: Initialization abnormal code
- 0: In initial processing or initial normal completion

## Receive buffer status storage area (Receive buffer status)

### ■Receive buffer status storage area (Receive buffer status) (Un\G6291486)

The receive buffer status is stored.

- 1: Receive buffer full

## User setting area

### ■User setting area (Un\G1147800 to Un\G11997999)

This area can be used for data transmission between the CPU module and Motion module.

## PLCopen motion control FB mode/Simple Motion mode

### ■PLCopen motion control FB mode/Simple Motion mode (Un\G16252849)

The operation mode is stored.

- 0: PLCopen motion control FB mode
- 1: Simple Motion mode

# Appendix 2 Buffer Memory [MODE: Simple Motion]

The buffer memory is used to exchange data between the Motion module and the CPU module. Buffer memory values are reset to default when the CPU module is reset or the system is powered off.

## List of buffer memory addresses

P1		Name	Initial value	Read, write	
Address (decimal)	Address (hexadecimal)				
1600000 to 1657343	1A6A00H to 1949FFH	System area			
1657344 to 1658367	194A00H to 194DFFH	Link device area	0	Read	
1658368 to 1659391	194E00H to 1951FFH			Read, write	
1659392 to 1667583	195200H to 1971FFH				
1667584 to 1675775	197200H to 1991FFH			Read	
1675776 to 1692159	199200H to 19D1FFH		System area		
1692160 to 1694207	19D200H to 19D9FFH		System area		
1694208 to 1694463	19DA00H to 19DAFFH		Link special relay (SB)	0	Read, write
1694464 to 1698559	19DB00H to 19EAFH		Link special register (SW)		Read, write
1698560 to 2845183	19EB00H to 2B69FFH		System area		
2845184 to 2845327	2B6A00H to 2B6A8FH		System area		
2845328 to 2845439	2B6A90H to 2B6AFFH	System area			
2845440 to 2845441	2B6B00H to 2B6B01H	Timeslot 0 information	0	Read	
2845442	2B6B02H				
2845443	2B6B03H		System area		
2845444 to 2845445	2B6B04H to 2B6B05H		Cycle end offset (ns unit)	0	Read
2845446	2B6B06H		Cycle end offset (s unit)		
2845447 to 2845455	2B6B07H to 2B6B0FH		System area		
2845456 to 2845567	2B6B10H to 2B6B7FH	Timeslot 1 to 7 information	0	Read	
2845568 to 2845695	2B6B80H to 2B6BFFH	System area			
2845696 to 2845697	2B6C00H to 2B6C01H	RX offset/size information*1	0	Read	
2845698 to 2845699	2B6C02H to 2B6C03H		0	Read	
⋮			⋮		
2846176 to 2846177	2B6DE0H to 2B6DE1H		0	Read	
2846178 to 2846179	2B6DE2H to 2B6DE3H		0	Read	
2846180 to 2846719	2B6DE4H to 2B6FFFH		System area		
2846720 to 2846721	2B7000H to 2B7001H		RY offset/size information*1	0	Read
2846722 to 2846723	2B7002H to 2B7003H			0	Read
⋮				⋮	
2847200 to 2847201	2B71E0H to 2B71E1H			0	Read
2847202 to 2847203	2B71E2H to 2B71E3H	0		Read	
2847204 to 2847743	2B71E4H to 2B73FFH	System area			
2847744 to 2847745	2B7400H to 2B7401H	RWw offset/size information*1		0	Read
2847746 to 2847747	2B7402H to 2B7403H			0	Read
⋮				⋮	
2848224 to 2848225	2B75E0H to 2B75E1H			0	Read
2848226 to 2848227	2B75E2H to 2B75E3H		0	Read	
2848228 to 2848767	2B75E4H to 2B77FFH		System area		
2848768 to 2848769	2B7800H to 2B7801H		RWr offset/size information*1	0	Read
2848770 to 2848771	2B7802H to 2B7803H			0	Read
⋮				⋮	
2849248 to 2849249	2B79E0H to 2B79E1H			0	Read
2849250 to 2849251	2B79E2H to 2B79E3H	0		Read	
2849252 to 2849791	2B79E4H to 2B7BFFH	System area			



P1		Name	Initial value	Read, write	
Address (decimal)	Address (hexadecimal)				
2849792 to 2852095	2B7C00H to 2B84FFH	System area			
2852096	2B8500H	Own station (network card) information	Manufacturer code	0	Read
2852097	2B8501H		Model type		
2852098	2B8502H		Model code (lower 2 bytes)	1	
2852099	2B8503H		Model code (upper 2 bytes)		
2852100	2B8504H		Version		
2852101 to 2852103	2B8505H to 2B8507H		MAC address		
2852104	2B8508H	Own station (controller) information	Controller information valid/invalid flag	0	Read
2852105	2B8509H		Manufacturer code		
2852106	2B850AH		Model type		
2852107	2B850BH		Model code (lower 2 bytes)		
2852108	2B850CH		Model code (upper 2 bytes)		
2852109	2B850DH		Version		
2852110 to 2852119	2B850EH to 2B8517H		Model name string		
2852120 to 2852121	2B8518H to 2B8519H		Vendor-specific device information		
2852122 to 2852127	2B851AH to 2B851FH		System area		
2852128 to 2860543	2B8520H to 2BA5FFH	System area			
2860544 to 2860559	2BA600H to 2BA60FH	Communication path determination status (network No.1 to 239)	0	Read	
2860560 to 2875135	2BA610H to 2BDEFFH	System area			
2875136	2BDF00H	Time distribution interval setting of the CPU module	0	Read, write	
2875137	2BDF01H	System area			
2875138 to 2875903	2BDF02H to 2BE1FFH	System area			
2875904	2BE200H	Grandmaster information	Grandmaster	0	Read
2875905 to 2875906	2BE201H to 2BE202H		System area		
2875907 to 2875909	2BE203H to 2BE205H		Grandmaster MAC address	0	Read
2875910 to 2875932	2BE206H to 2BE21CH	System area			
2875933	2BE21DH	Time synchronization setting	PTP frame send source check enable/disable	0	Read, write
2875934	2BE21EH		PTP frame send source check result (P1)		Read
2875935	2BE21FH		System area		
2875936 to 2877439	2BE220H to 2BE7FFH	System area			
2877440	2BE800H	Communication cycle information	Normal speed (first cycle/Nth cycle in N cycles)	0	Read
2877441	2BE801H		Low speed (first cycle/Nth cycle in N cycles)	0	Read
2877442 to 2877455	2BE802H to 2BE80FH		System area		
2877456 to 2877647	2BE810H to 2BE8CFH	System area			
2877648 to 2877649	2BE8D0H to 2BE8D1H	PDO information*1 (Multidrop number 0 of station No. 1)	Start offset of link device used by RPDO	0	Read
2877650 to 2877651	2BE8D2H to 2BE8D3H		RPDO size	0	Read
2877652 to 2877653	2BE8D4H to 2BE8D5H		Start offset of link device used by TPDO	0	Read
2877654 to 2877655	2BE8D6H to 2BE8D7H		TPDO size	0	Read
2877656 to 2877703	2BE8D8H to 2BE907H	:			
2877704 to 2877705	2BE908H to 2BE909H	PDO information*1 (Multidrop number 7 of station No. 1)	Start offset of link device used by RPDO	0	Read
2877706 to 2877707	2BE90AH to 2BE90BH		RPDO size	0	Read
2877708 to 2877709	2BE90CH to 2BE90DH		Start offset of link device used by TPDO	0	Read
2877710 to 2877711	2BE90EH to 2BE90FH		TPDO size	0	Read
2877712 to 2885263	2BE910H to 2C068FH	:			
2885264 to 2885265	2BE910H to 2C0691H	PDO information*1 (Multidrop number 0 of station No. 120)	Start offset of link device used by RPDO	0	Read
2885266 to 2885267	2C0692H to 2C0693H		RPDO size	0	Read
2885268 to 2885269	2C0694H to 2C0695H		Start offset of link device used by TPDO	0	Read
2885270 to 2885271	2C0696H to 2C0697H		TPDO size	0	Read
2885272 to 2885319	2C0698H to 2C06C7H	:			



P1		Name	Initial value	Read, write			
Address (decimal)	Address (hexadecimal)						
2885320 to 2885321	2C06C8H to 2C06C9H	PDO information*1 (Multidrop number 7 of station No. 120)	Start offset of link device used by RPDO	0	Read		
2885322 to 2885323	2C06CAH to 2C06CBH		RPDO size	0	Read		
2885324 to 2885325	2C06CCH to 2C06CDH		Start offset of link device used by TPDO	0	Read		
2885326 to 2885327	2C06CEH to 2C06CFH		TPDO size	0	Read		
2885328 to 2893967	2C06D0H to 2C288FH	System area					
2893968 to 2894167	2C2890H to 2C2957H	System area					
2894168 to 3697155	2C2958H to 386A03H	System area					
3697156 to 3697157	386A04H to 386A05H	Own node setting status storage area	Own node IP address	0	Read		
3697158 to 3697165	386A06H to 386A0DH		System area				
3697166 to 3697167	386A0EH to 386A0FH		Subnet mask	0	Read		
3697168 to 3697169	386A10H to 386A11H		System area				
3697170 to 3697171	386A12H to 386A13H		Default gateway IP address	0	Read		
3697172 to 3697179	386A14H to 386A1BH		System area				
3697180 to 3697182	386A1CH to 386A1EH		Own node MAC address	0	Read		
3697183	386A1FH		Own node network No.				
3697184	386A20H		Station No.				
3697185	386A21H		Transient transmission group No.				
3697186 to 3697188	386A22H to 386A24H		System area				
3697189	386A25H		Auto-open UDP port port number	1388H	Read		
3697190	386A26H		MELSOFT transmission port (TCP/IP) port number	138AH			
3697191	386A27H		MELSOFT transmission port (UDP/IP) port number	1389H			
3697192	386A28H		System area				
3697193	386A29H		SLMP transmission port (TCP/IP) port number	1393H	Read		
3697194	386A2AH		SLMP transmission port (UDP/IP) port number	1392H			
3697195 to 3697251	386A2BH to 386A63H		System area				
3697252 to 3697379	386A64H to 386AE3H		Connection status storage area	System area			
3697380 to 3697386	386AE4H to 386AEAH			Latest error code after the 2nd connection of MELSOFT transmission port (TCP/IP)	0	Read	
3697387 to 3697507	386AEBH to 386B63H			System area			
3697508 to 3697514	386B64H to 386B6AH			Latest error code after the 2nd connection of SLMP transmission port (TCP/IP)	0	Read	
3697515 to 3698151	386B6BH to 386DE7H		System area				
3698152 to 3698153	386DE8H to 386DE9H	System port latest error code storage area	System area				
3698154	386DEAH		Auto-open UDP port latest error code	0	Read		
3698155	386DEBH		MELSOFT transmission port (UDP/IP) latest error code				
3698156	386DECH		MELSOFT transmission port (TCP/IP) latest error code				
3698157	386DEDH		SLMP transmission port (UDP/IP) latest error code				
3698158	386DEEH		SLMP transmission port (TCP/IP) latest error code				
3698159	386DEFH		SLMPSND instruction latest error code				
3698160 to 3702151	386DF0H to 387D87H	System area					

P1		Name		Initial value	Read, write	
Address (decimal)	Address (hexadecimal)					
3702152 to 3702153	387D88H to 387D89H	Status for each protocol (IP packet)	Received packet total count	0	Read	
3702154 to 3702155	387D8AH to 387D8BH		Received packet checksum error discard count			
3702156 to 3702157	387D8CH to 387D8DH		Sent packet total count			
3702158 to 3702173	387D8EH to 387D9DH		System area			
3702174 to 3702175	387D9EH to 387D9FH		Simultaneous transmission error detection count (receive buffer full count)	0	Read	
3702176 to 3702180	387DA0H to 387DA4H		System area			
3702181	387DA5H		Receive abort count	0	Read	
3702182 to 3702191	387DA6H to 387DAFH		System area			
3702192 to 3702193	387DB0H to 387DB1H	Status for each protocol (ICMP packet)	Received packet total count	0	Read	
3702194 to 3702195	387DB2H to 387DB3H		Received packet checksum error discard count			
3702196 to 3702197	387DB4H to 387DB5H		Sent packet total count			
3702198 to 3702199	387DB6H to 387DB7H		Received echo request total count			
3702200 to 3702201	387DB8H to 387DB9H		Sent echo reply total count			
3702202 to 3702203	387DBAH to 387DBBH		Sent echo request total count			
3702204 to 3702205	387DBCH to 387DBDH		Received echo reply total count			
3702206 to 3702231	387DBEH to 387DD7H		System area			
3702232 to 3702233	387DD8H to 387DD9H	Status for each protocol (TCP packet)	Received packet total count	0	Read	
3702234 to 3702235	387DDAH to 387DDBH		Received packet checksum error discard count			
3702236 to 3702237	387DDCH to 387DDDH		Sent packet total count			
3702238 to 3702271	387DDEH to 387DFFH		System area			
3702272 to 3702273	387E00H to 387E01H	Status for each protocol (UDP packet)	Received packet total count	0	Read	
3702274 to 3702275	387E02H to 387E03H		Received packet checksum error discard count			
3702276 to 3702277	387E04H to 387E05H		Sent packet total count			
3702278 to 3702340	387E06H to 387E44H		System area			
3702341	387E45H	Own node operating status storage area (LED on/off status)		0	Read	
3702342	387E46H	System area				
3702343	387E47H	Own node operating status storage area (switching hub connection information area)	Communication mode	0	Read	
3702344	387E48H		Connection status			
3702345	387E49H		Communication speed			
3702346	387E4AH		Disconnection count			
3702347 to 3702351	387E4BH to 387E4FH	System area				
3702352	387E50H	Own node operating status storage area (IP address duplication status storage area)	IP address duplication flag	0	Read	
3702353 to 3702355	387E51H to 387E53H		MAC address of the station already connected to the network	FFFFFFF FFFFFFH		
3702356 to 3702358	387E54H to 387E56H		MAC address of the station with the IP address already used	FFFFFFF FFFFFFH		
3702359 to 3702451	387E57H to 387EB3H	System area				
3702452	387EB4H	Area for sending/receiving instructions	System area			
3702453	387EB5H		RECV instruction execution request	0	Read	
3702454 to 3702479	387EB6H to 387ECFH		System area			
3702480 to 3702777	387ED0H to 387FF9H	System area				
3702778 to 3702781	387FFAH to 387FFDH	Remote password lock status storage area	System area			
3702782	387FFEH		Remote password lock status system port	Follows the remote password setting	Read	
3702783 to 3708735	387FFFH to 38973FH	System area				

P1		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)				
3708736 to 3708799	389740H to 38977FH	Remote password function monitoring area	System area	0	Read
3708800	389780H		Auto-open UDP port continuous unlock failure count		
3708801	389781H		MELSOFT transmission port (UDP/IP) continuous unlock failure count		
3708802	389782H		MELSOFT transmission port (TCP/IP) continuous unlock failure count		
3708803 to 3708804	389783H to 389784H		System area	0	Read
3708805	389785H		SLMP transmission port (UDP/IP) continuous unlock failure count		
3708806	389786H		SLMP transmission port (TCP/IP) continuous unlock failure count		
3708807 to 3708821	389787H to 389795H		System area		
3708822 to 3762686	389796H to 3969FEH	System area			
3762687	3969FFH	Network type information area (Network type information)		0	Read
3762688 to 5794303	369A00H to 5869FFH	System area			
7891456 to 7891479	786A00H to 786A17H	System area			
7891480	786A18H	Ethernet P1/2 common information	Initial status	0	Read
7891481	786A19H		Initial error code		
7891482 to 7891485	786A1AH to 786A1DH	System area			
7891486	786A1EH	Receive buffer status storage area (Receive buffer status)		0	Read
7891487 to 16252848	786A1FH to F7FFB0H	System area			
16252849	F7FFB1H	PLCopen motion control FB mode/Simple Motion mode			
16252850 to 16777215	F7FFB2H to FFFFFFFH	System area			

\*1 For the motion control station, store 0 in both the size and offset.

**Point** 

- Do not write data to the system areas. Doing so may cause malfunction of the programmable controller system.
- If the value stored in an area that consists of one word is equal to or higher than 65536, the count stops at 65535 (FFFFH).

**A**

# Details of buffer memory addresses

## Link device area

The RX, RY, RWw, RWr, SB, and SW values are stored.

### Remote input (RX) (Un\G1657344 to Un\G1658367)

The RX value is stored. The start number and number of points of RX for each station number can be checked in the RX offset/size information (Un\G2845696 to Un\G2846179). (Page 299 RX offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1657344	RX F	RX E	RX D	RX C	RX B	RX A	RX 9	RX 8	RX 7	RX 6	RX 5	RX 4	RX 3	RX 2	RX 1	RX 0
⋮																
Un\G1658367	RX 3FFF	RX 3FFE	RX 3FFD	RX 3FFC	RX 3FFB	RX 3FFA	RX 3FF9	RX 3FF8	RX 3FF7	RX 3FF6	RX 3FF5	RX 3FF4	RX 3FF3	RX 3FF2	RX 3FF1	RX 3FF0

Each bit corresponds to 1 bit of RX.

### Remote output (RY) (Un\G1658368 to Un\G1659391)

The RY value is stored. The start number and number of points of RY for each station number can be checked in the RY offset/size information (Un\G2846720 to Un\G2847203). (Page 300 RY offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1658368	RY F	RY E	RY D	RY C	RY B	RY A	RY 9	RY 8	RY 7	RY 6	RY 5	RY 4	RY 3	RY 2	RY 1	RY 0
⋮																
Un\G1659391	RY 3FFF	RY 3FFE	RY 3FFD	RY 3FFC	RY 3FFB	RY 3FFA	RY 3FF9	RY 3FF8	RY 3FF7	RY 3FF6	RY 3FF5	RY 3FF4	RY 3FF3	RY 3FF2	RY 3FF1	RY 3FF0

Each bit corresponds to 1 bit of RY.

### Remote register (RWw) (Un\G1659392 to Un\G1667583)

The RWw value is stored. The start number and number of points of RWw for each station number can be checked in the RWw offset/size information (Un\G2847744 to Un\G2848227). (Page 300 RWw offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1659392	RWw0															
Un\G1659393	RWw1															
⋮																
Un\G1667583	RWw1FFF															

### Remote register (RWr) (Un\G1667584 to Un\G1675775)

The RWr value is stored. The start number and number of points of RWr for each station number can be checked in the RWr offset/size information (Un\G2848768 to Un\G2849251). (Page 300 RWr offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1667584	RWr0															
Un\G1667585	RWr1															
⋮																
Un\G1675775	RWr1FFF															

### Link special relay (SB) (Un\G1694208 to Un\G1694463)

The SB value is stored.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1694208	SBF	SBE	SBD	SBC	SBB	SBA	SB9	SB8	SB7	SB6	SB5	SB4	SB3	SB2	SB1	SB0
⋮																
Un\G1694463	SB1F F	SB1F E	SB1F D	SB1F C	SB1F B	SB1F A	SB1F 9	SB1F 8	SB1F 7	SB1F 6	SB1F 5	SB1F 4	SB1F 3	SB1F 2	SB1F 1	SB1F 0

Each bit corresponds to 1 bit of SB.

## ■Link special register (SW) (Un\G1694464 to Un\G1698559)

The SW value is stored.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1694464	SW0															
Un\G1694465	SW1															
⋮																
Un\G1698559	SW0FFF															

## Timeslot information

### ■Timeslot 0 information (Un\G2845440 to Un\G2845455)

Cycle start offset (ns, s unit) of Timeslot 0 and cycle end offset (ns, s unit) are stored.

Address	Name	Description
Un\G2845440 to Un\G2845441	Cycle start offset (ns unit)	The ns digits of cycle start offset are stored. Stored range: 0 to 999999999 (ns)
Un\G2845442	Cycle start offset (s unit)	The s digits of cycle start offset are stored. Stored range: 0 to 65535 (s)
Un\G2845443	System area	
Un\G2845444 to Un\G2845445	Cycle end offset (ns unit)	The ns digits of cycle end offset are stored. Stored range: 0 to 999999999 (ns)
Un\G2845446	Cycle end offset (s unit)	The s digits of cycle end offset are stored. Stored range: 0 to 65535 (s)
Un\G2845447 to Un\G2845455	System area	

### ■Timeslot 1 to 7 information (Un\G2845456 to Un\G2845567)

Timeslot 1 to 7 information is stored in the same order as Timeslot 0 information.

## RX offset/size information

### ■RX offset/size information (Un\G2845696 to Un\G2846179)

The start number and number of points of RX for each station number are stored.

Address	Description
Un\G2845696 to Un\G2845697	Station No. 0 offset
Un\G2845698 to Un\G2845699	Station No. 0 size (word unit)
Un\G2845700 to Un\G2845701	Station No. 1 offset
Un\G2845702 to Un\G2845703	Station No. 1 size (word unit)
⋮	
Un\G2846176 to Un\G2846177	Station No. 120 offset
Un\G2846178 to Un\G2846179	Station No. 120 size (word unit)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset):  $2845696 + (\text{Station number}) \times 4$
- Buffer memory address (size):  $2845698 + (\text{Station number}) \times 4$

## RY offset/size information

### ■RY offset/size information (Un\G2846720 to Un\G2847203)

The start number and number of points of RY for each station number are stored.

Address	Description
Un\G2846720 to Un\G2846721	Station No. 0 offset
Un\G2846722 to Un\G2846723	Station No. 0 size (word unit)
Un\G2846724 to Un\G2846725	Station No. 1 offset
Un\G2846726 to Un\G2846727	Station No. 1 size (word unit)
⋮	
Un\G2847200 to Un\G2847201	Station No. 120 offset
Un\G2847202 to Un\G2847203	Station No. 120 size (word unit)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset):  $2846720 + (\text{Station number}) \times 4$
- Buffer memory address (size):  $2846722 + (\text{Station number}) \times 4$

## RWw offset/size information

### ■RWw offset/size information (Un\G2847744 to Un\G2848227)

The start number and number of points of RWw for each station number are stored.

Address	Description
Un\G2847744 to Un\G2847745	Station No. 0 offset
Un\G2847746 to Un\G2847747	Station No. 0 size (word unit)
Un\G2847748 to Un\G2847749	Station No. 1 offset
Un\G2847750 to Un\G2847751	Station No. 1 size (word unit)
⋮	
Un\G2848224 to Un\G2848225	Station No. 120 offset
Un\G2848226 to Un\G2848227	Station No. 120 size (word unit)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset):  $2847744 + (\text{Station number}) \times 4$
- Buffer memory address (size):  $2847746 + (\text{Station number}) \times 4$

## RWr offset/size information

### ■RWr offset/size information (Un\G2848768 to Un\G2849251)

The start number and number of points of RWr for each station number are stored.

Address	Description
Un\G2848768 to Un\G2848769	Station No. 0 offset
Un\G2848770 to Un\G2848771	Station No. 0 size (word unit)
Un\G2848772 to Un\G2848773	Station No. 1 offset
Un\G2848774 to Un\G2848775	Station No. 1 size (word unit)
⋮	
Un\G2849248 to Un\G2849249	Station No. 120 offset
Un\G2849250 to Un\G2849251	Station No. 120 size (word unit)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset):  $2848768 + (\text{Station number}) \times 4$
- Buffer memory address (size):  $2848770 + (\text{Station number}) \times 4$

## Own station information

The information of the own station on the network is stored.

### ■Own station (network card) information (Un\G2852096 to Un\G2852103)

Address	Name	Description
Un\G2852096	Manufacturer code	The information of the own station is stored. (Also used in the CLPA conformance test.) (Updated even when the station is set to the error invalid station.) (Updated even when the station is set to the reserved station.)
Un\G2852097	Model type	
Un\G2852098	Model code (lower 2 bytes)	
Un\G2852099	Model code (upper 2 bytes)	
Un\G2852100	Version	
Un\G2852101 to Un\G2852103	MAC address	The own station MAC address is stored. Un\G2852101: 5th byte, 6th byte of the MAC address Un\G2852102: 3rd byte, 4th byte of the MAC address Un\G2852103: 1st byte, 2nd byte of the MAC address

### ■Own station (controller) information (Un\G2852104 to Un\G2852121)

Address	Name	Description
Un\G2852104	Controller information valid/invalid flag	Whether the value stored in the own station (controller) information is valid or invalid is stored. • 0: Invalid • 1: Valid
Un\G2852105	Manufacturer code	The information of the own station is stored.
Un\G2852106	Model type	
Un\G2852107	Model code (lower 2 bytes)	
Un\G2852108	Model code (upper 2 bytes)	
Un\G2852109	Version	
Un\G2852110 to Un\G2852119	Model name string	
Un\G2852120 to Un\G2852121	Vendor-specific device information	

## Communication path determination status

### ■Communication path determination status (Un\G2860544 to Un\G2860559)

The determination information on the communication path for each network number of the destination station is stored.

- 0: Path undetermined
- 1: Path determined

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G2860544	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
⋮																
Un\G2860558	Empty	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225
Un\G2860559	Empty															

The numbers in the table indicate network Nos.

## Time synchronization

### ■Time distribution interval setting of the CPU module (Un\G2875136)

The time distribution interval of the CPU module on the master station to slave stations is set (CPU number 1 when the multiple CPU system is used). This setting is set to the buffer memory of the master station.

When the setting is changed, the new setting value is enabled after the interval of the distribution operating with the old setting value has elapsed. The setting value is distributed once after the distribution interval elapses. If the new setting value needs to be enabled immediately, stop the distribution and set the value.

- 0000H: 10 s
- 0001H to FFEH: (Send using the set time interval (second))
- FFFFH: (Distribution stop)

(Default: 0000H)

## Grandmaster information

The grandmaster status of the own station and MAC address are stored.

### ■Grandmaster (Un\G2875904)

When the own station is the grandmaster, "1" is stored.

- 1: Own station is the grandmaster
- 0: Another station is the grandmaster

### ■Grandmaster MAC address (Un\G2875907 to Un\G2875909)

The grandmaster MAC address is stored.

- Un\G2875907: 5th byte, 6th byte of the MAC address
- Un\G2875908: 3rd byte, 4th byte of the MAC address
- Un\G2875909: 1st byte, 2nd byte of the MAC address

## Time synchronization setting

### ■PTP frame send source check enable/disable (Un\G2875933)

- 1: Check
- 0: Do not check

### ■PTP frame send source check result (P1) (Un\G2875934)

- 1: Two or more send sources
- 0: One send source



## Communication cycle information

The timing of the communication cycle is stored.

This area can be used in the inter-module synchronous interruption program (I44).

### ■Normal speed (Un\G2877440)

"1" is stored at the timing of the start (first cycle in N cycles)/end (Nth cycle in N cycles) of the basic cycle interval during normal speed cycle.

[b0]

- 1: Start (first cycle in N cycles)
- 0: Other than start

[bF]

- 1: End (Nth cycle in N cycles)
- 0: Other than end

### ■Low speed (Un\G2877441)

"1" is stored at the timing of the start (first cycle in N cycles)/end (Nth cycle in N cycles) of the basic cycle interval during low speed cycle.

[b0]

- 1: Start (first cycle in N cycles)
- 0: Other than start

[bF]

- 1: End (Nth cycle in N cycles)
- 0: Other than end

## PDO information

### ■PDO information (Un\G2877648 to Un\G2893967)

Address	Name	Description
Un\G2877648 to Un\G2877649	Multidrop number 0 of station No. 1	Start offset of link device used by RPDO
Un\G2877650 to Un\G2877651		RPDO size
Un\G2877652 to Un\G2877653		Start offset of link device used by TPDO
Un\G2877654 to Un\G2877655		TPDO size
⋮		
Un\G2877704 to Un\G2877711	Multidrop number 7 of station No. 1	Same as the multidrop number 0 of station No. 1.
⋮		
Un\G2885264 to Un\G2885271	Multidrop number 0 of station No. 120	Same as the multidrop number 0 of station No. 1.
⋮		
Un\G2885320 to Un\G2885327	Multidrop number 7 of station No. 120	Same as the multidrop number 0 of station No. 1.
Un\G2885328 to Un\G2893967	System area	—

A

## Own node setting status storage area

### ■Own node IP address (Un\G3697156 to Un\G3697157)

The setting values of the IP address are stored.

Range: 1H to DFFFFFFEH

### ■Subnet mask (Un\G3697166 to Un\G3697167)

The setting values of the subnet mask are stored.

Range: 1H to FFFFFFFFH

0: No setting

### ■Default gateway IP address (Un\G3697170 to Un\G3697171)

The setting values of the default gateway are stored.

Range: 1H to DFFFFFFEH

0: No setting

### ■Own node MAC address (Un\G3697180 to Un\G3697182)

The own node MAC addresses are stored.

- Un\G3697180: 5th byte, 6th byte of the MAC address
- Un\G3697181: 3rd byte, 4th byte of the MAC address
- Un\G3697182: 1st byte, 2nd byte of the MAC address

### ■Own node network No. (Un\G3697183)

The setting value of the network No. is stored.

Range: 1 to 239

0: Network No. not set

### ■Station No. (Un\G3697184)

The setting value of the station No. is stored.

Range: 1 to 120

0: Station No. not set

### ■Transient transmission group No. (Un\G3697185)

The setting value of the transient transmission group No. is stored.

Range: 1 to 32

0: Group not specified

### ■Auto-open UDP port port No. (Un\G3697189)

The port No. used for the auto-open UDP port is stored.

### ■MELSOFT transmission port (TCP/IP) port No. (Un\G3697190)

The port No. used for the MELSOFT transmission port (TCP/IP) is stored.

### ■MELSOFT transmission port (UDP/IP) port No. (Un\G3697191)

The port No. used for the MELSOFT transmission port (UDP/IP) is stored.

### ■SLMP transmission port (TCP/IP) port No. (Un\G3697193)

The port No. used for the SLMP transmission port (TCP/IP) is stored.

### ■SLMP transmission port (UDP/IP) port No. (Un\G3697194)

The port No. used for the SLMP transmission port (UDP/IP) is stored.

## Connection status storage area

### ■Latest error code after the 2nd connection of MELSOFT transmission port (TCP/IP) (Un\G3697380 to Un\G3697386)

The latest error code of the 2nd to 8th connection of the MELSOFT transmission port (TCP/IP) is stored.

### ■Latest error code after the 2nd connection of SLMP transmission port (TCP/IP) (Un\G3697508 to Un\G3697514)

The latest error code of the 2nd to 8th connection of the SLMP transmission port (TCP/IP) is stored.

## System port latest error code storage area

### ■Auto-open UDP port latest error code (Un\G3698154)

The latest error code of the auto-open UDP port is stored.

### ■MELSOFT transmission port (UDP/IP) latest error code (Un\G3698155)

The latest error code of the MELSOFT transmission port (UDP/IP) is stored.

### ■MELSOFT transmission port (TCP/IP) latest error code (Un\G3698156)

The latest error code of the MELSOFT transmission port (TCP/IP) is stored.

### ■SLMP transmission port (UDP/IP) latest error code (Un\G3698157)

The latest error code of the SLMP transmission port (UDP/IP) is stored.

### ■SLMP transmission port (TCP/IP) latest error code (Un\G3698158)

The latest error code of the SLMP transmission port (TCP/IP) is stored.

### ■SLMPSND instruction latest error code (Un\G3698159)

The latest error code of the SLMPSND instruction is stored.

## Status for each protocol (IP packet)

### ■Received packet total count (Un\G3702152 to Un\G3702153)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received packet checksum error discard count (Un\G3702154 to Un\G3702155)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent packet total count (Un\G3702156 to Un\G3702157)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Simultaneous transmission error detection count (receive buffer full count) (Un\G3702174 to Un\G3702175)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Receive abort count (Un\G3702181)

The status is counted from 0 to 65535 (FFFFH).

## Status for each protocol (ICMP packet)

### ■Received packet total count (Un\G3702192 to Un\G3702193)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received packet checksum error discard count (Un\G3702194 to Un\G3702195)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent packet total count (Un\G3702196 to Un\G3702197)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received echo request total count (Un\G3702198 to Un\G3702199)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent echo reply total count (Un\G3702200 to Un\G3702201)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent echo request total count (Un\G3702202 to Un\G3702203)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received echo reply total count (Un\G3702204 to Un\G3702205)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

## Status for each protocol (TCP packet)

### ■Received packet total count (Un\G3702232 to Un\G3702233)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received packet checksum error discard count (Un\G3702234 to Un\G3702235)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent packet total count (Un\G3702236 to Un\G3702237)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

## Status for each protocol (UDP packet)

### ■Received packet total count (Un\G3702272 to Un\G3702273)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Received packet checksum error discard count (Un\G3702274 to Un\G3702275)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

### ■Sent packet total count (Un\G3702276 to Un\G3702277)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

## Own node operating status storage area (LED on/off status)

### ■Own node operating status storage area (LED on/off status) (Un\G3702341)

ERR LED(b0)

- 1: On/flashing
- 0: Off

## Own node operating status storage area (switching hub connection information area)

### ■Communication mode (Un\G3702343)

- 0: Half-duplex
- 1: Full-duplex

### ■Connection status (Un\G3702344)

- 0: Switching hub not connected/disconnected
- 1: Switching hub connected

### ■Communication speed (Un\G3702345)

- 1: Operating at 100BASE-TX
- 2: Operating at 1000BASE-T

### ■Disconnection count (Un\G3702346)

The number of times the cable was disconnected is stored.

## Own node operating status storage area (IP address duplication status storage area)

### ■IP address duplication flag (Un\G3702352)

- 0: IP address not duplicated
- 1: IP address duplicated

### ■MAC address of the station already connected to the network (Un\G3702353 to Un\G3702355)

It is stored in the station with duplicated IP address.

### ■MAC address of the station with the IP address already used (Un\G3702356 to Un\G3702358)

It is stored in the station that has been already connected to the network.

## Area for sending/receiving instructions (RECV instruction execution request)

### ■Area for sending/receiving instructions (RECV instruction execution request) (Un\G3702453)

RECV instruction execution request

- 1: Requesting
- 0: No request

Channels 1 to 8 are displayed in bit values.

## Remote password lock status storage area

### ■Remote password lock status system port (Un\G3702782)

[b0]: Auto-open UDP port

[b1]: MELSOFT transmission port (UDP/IP)

[b2]: MELSOFT transmission port (TCP/IP)

[b5]: SLMP transmission port (UDP/IP)

[b6]: SLMP transmission port (TCP/IP)

- 0: Unlocked/remote password not set
- 1: Lock status

## Remote password function monitoring area

### ■Auto-open UDP port continuous unlock failure count (Un\G3708800)

The mismatch count of remote password at unlock of the auto-open UDP port is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

### ■MELSOFT transmission port (UDP/IP) continuous unlock failure count (Un\G3708801)

The mismatch count of remote password at unlock of the MELSOFT transmission port (UDP/IP) is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

### ■MELSOFT transmission port (TCP/IP) continuous unlock failure count (Un\G3708802)

The mismatch count of remote password at unlock of the MELSOFT transmission port (TCP/IP) is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

### ■SLMP transmission port (UDP/IP) continuous unlock failure count (Un\G3708805)

The mismatch count of remote password at unlock of the SLMP transmission port (UDP/IP) is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

### ■SLMP transmission port (TCP/IP) continuous unlock failure count (Un\G3708806)

The mismatch count of remote password at unlock of the SLMP transmission port (TCP/IP) is stored. The count is cleared when the password matches.

Range: 0 to 65535 (Values of 65535 or more are not changed)

## Network type information area (Network type information)

### ■Network type information area (Network type information) (Un\G3762687)

5: CC-Link IE TSN

## Ethernet P1/2 common information

### ■Initial status (Un\G7891480)

The initial processing status of the Ethernet connection is stored.

[b0]: Initial normal completion status

- 1: Initialization normal completion
- 0: —

[b1]: Initial abnormal completion status

- 1: Initialization abnormal completion
- 0: —

[b2 to b15]: Not used (Use prohibited)

### ■Initial error code (Un\G7891481)

The information when the initial processing is completed with an error is stored.

- 1 or more: Initialization abnormal code
- 0: In initial processing or initial normal completion

## Receive buffer status storage area (Receive buffer status)

### ■Receive buffer status storage area (Receive buffer status) (Un\G7891486)

The receive buffer status is stored.

- 1: Receive buffer full
- 0: Receive buffer not full

## PLCopen motion control FB mode/Simple Motion mode

### ■PLCopen motion control FB mode/Simple Motion mode (Un\G16252849)

The operation mode is stored.

- 0: PLCopen motion control FB mode
- 1: Simple Motion mode

A

# Appendix 3 List of Link Special Relay (SB)

The link special relay (SB) is turned on/off depending on various factors during data link. Any error status of the data link can be checked by using or monitoring it in the program.

## Application of link special relay (SB)

By using link special relay (SB), the status of CC-Link IE TSN can be checked from HMI (Human Machine Interfaces) as well as the engineering tool.

## Ranges turned on/off by users and by the system

The following ranges correspond to when the link special relay areas (SB) are assigned from SB0000 to SB0FFF.

- Turned on/off by users: SB0000 to SB001F
- Turned on/off by the system: SB0020 to SB0FFF

## List of link special relay (SB)

The following table lists the link special relay areas (SB) when they are assigned from SB0000 to SB0FFF.



Do not turn on or off areas whose Nos. are not on the following list or ranges turned on/off by the system. Doing so may cause malfunction of the programmable controller system.

No.	Name	Description	Availability	
			PLCopen motion control FB mode	Simple Motion mode
SB0006	Clear communication error count	Clears the link special register areas (SW0074 to SW0077, SW007C to SW007F) related to communication errors to 0. Off: Clear not requested On: Clear requested (valid while on)	<input type="radio"/>	<input type="radio"/>
SB0014	Cyclic data receive status clear	Clears 'Cyclic data receive status' (SB0064). While SB0014 is on, 'Cyclic data receive status' (SB0064) does not turn on. Off: Clear not requested On: Clear requested (enabled while on)	<input type="radio"/>	<input type="radio"/>
SB0016	Remote device forced output request	Requests to enable the remote device test function. OFF: Not requested ON: Requested	<input type="radio"/>	<input type="radio"/>
SB0040	Network type of own station	Stores the network type of the own station. On: CC-Link IE TSN	<input type="radio"/>	<input type="radio"/>
SB0043	Module operation mode of own station	Stores the module operation mode of the own station. Off: Online mode On: Other than online mode	<input type="radio"/>	<input type="radio"/>
SB0044	Station setting 1 of own station	Stores the station type of the own station. Off: Slave station (other than the master station) On: Master station	<input type="radio"/>	<input type="radio"/>
SB0045	Station setting 2 of own station	Stores the communication mode of the own station. OFF: Unicast mode ON: Multicast mode	<input type="radio"/>	<input type="radio"/>
SB0046	Station No. setting status of own station	Stores the station No. setting status. Off: Station No. set On: Station No. not set (local station only) If parameters are set using the engineering tool, this relay is always off.	<input type="radio"/>	<input type="radio"/>
SB0049	Data link error status of own station	Stores the data link error status of the own station. Off: Normal On: Error When this relay is turned on, the cause of the error can be checked with 'Cause of data link stop' (SW0049). Depending on the link refresh timing, the update of 'Cause of data link stop' (SW0049) may be offset by one sequence scan. (Also used in the CLPA conformance test.) (Updated even when the station is set to the error invalid station.)	<input type="radio"/>	<input type="radio"/>



No.	Name	Description	Availability	
			PLCopen motion control FB mode	Simple Motion mode
SB004A	CPU minor error status of own station	Stores the minor error status of the CPU module on the own station. Off: No minor error On: Minor error	○	○
SB004B	CPU moderate/major error status of own station	Stores the moderate/major error status of the CPU module on the own station. Off: No moderate/major error On: Moderate/major error	○	○
SB004C	CPU operating status of own station	Stores the operating status of the CPU module on the own station. Off: RUN, PAUSE On: STOP or moderate/major error	○	○
SB004D	Received parameter error	Stores the status of received parameter. (For the master station, this relay stores the parameter status of the own station) Off: Normal On: Error	○	○
SB0064	Cyclic data receive status	Shows the receive status in the communication cycle in which the cyclic data from the slave station is set using "Disconnection Detection Setting" in the master station. Off: Cyclic data received On: Cyclic data not received consecutively (Conditions) • Turns on when the cyclic data of one or more slave stations is not received consecutively. • Reserved stations and stations that surpass the maximum station No. are ignored. (Also used in the CLPA conformance test) (Updated even when the station is set to the error invalid station.) (Updated even when the station is set to the reserved station.)	○	○
SB006A	PORT1 link-down status of own station	Stores the link down status of the own station at the PORT1 side. Off: Link-up On: Link-down The time until link-up starts after power-on or Ethernet cable connection may vary. Normally link-up takes several seconds. Depending on device status on the line, link-up processing is repeated and may increase the time. (Also used in the CLPA conformance test.) (Updated even when the station is set to the error invalid station.) (Updated even when the station is set to the reserved station.)	○	○
SB006B	PORT2 link-down status of own station	Stores the link-down status of the own station P2 side. Off: Link-up On: Link-down The time until link-up starts after power-on or Ethernet cable connection may vary. Normally link-up takes several seconds. Depending on device status on the line, link-up processing is repeated and may increase the time. (Also used in the CLPA conformance test.) (Updated even when the station is set to the error invalid station.) (Updated even when the station is set to the reserved station.)	○	×
SB0074	Reserved station specification status	Stores the status of reserved station specification by parameter. The station number of the station set as a reserved station can be checked with 'Reserved station setting status' (SW00C0 to SW00C7). OFF: Not specified ON: Specified	○	○
SB0075	Error invalid station setting status	Stores the status of error invalid station setting by parameter. The station number of the station set as an error invalid station can be checked with 'Error invalid station setting status' (SW00D0 to SW00D7). OFF: Not specified ON: Specified	○	○
SB0078	Network topology	Stores the setting status of "Network Topology" of the own station (master operating station). OFF: Line topology, star topology, or coexistence of star and line topologies ON: Ring topology	○	○
SB007B	Input data status of data link faulty station	Stores the setting status of "Data Link Error Station Setting" under "I/O Maintenance Settings" in "Supplementary Cyclic Settings" of "Application Settings" for the own station. OFF: Clear ON: Hold	○	○



No.	Name	Description	Availability	
			PLCopen motion control FB mode	Simple Motion mode
SB007D	Hold/clear status setting for CPU STOP	Stores the setting status of "Output Hold/Clear Setting during CPU STOP" under "I/O Maintenance Settings" in "Supplementary Cyclic Settings" of "Application Settings" for the own station. OFF: Hold ON: Clear	○	○
SB007E	Type of IP Address	Stores the type of IP address. Off: IPv4 On: IPv6	○	○
SB007F	IP address setting status	Stores the status of the IP address setting by parameter. Off: No setting On: Set	○	○
SB0086	Remote device forced output request accept	Stores the acceptance status of the remote device test function. OFF: Not accepted ON: Accepted	○	○
SB0087	Remote device forced output status	Stores the operating status of the remote device test function. OFF: Not completed ON: Completed	○	○
SB00B0	Data link error status of each station	Stores the data link status of each station. Off: All stations normal On: Faulty station exists When this relay is turned on, the status of each station can be checked with 'Data link status of each station' (SW00B0 to SW00B7). Depending on the link refresh timing, the update of 'Data link status of each station' (SW00B0 to SW00B7) may be offset by one sequence scan. (Condition) • Reserved stations and stations that surpass the maximum station No. are ignored.	○	○
SB00B1	Data link error status of master station	Stores the data link status of the master station. Off: Normal On: Error	○	○
SB00C0	Reserved station setting status	Stores whether a reserved station is set. OFF: No setting ON: Set When this relay is turned on, the status of each station can be checked with 'Reserved station setting status' (SW00C0 to SW00C7). Depending on the link refresh timing, the update of 'Reserved station setting status' (SW00C0 to SW00C7) may be offset by one sequence scan.	○	○
SB00D0	Error invalid station setting current status	Stores whether an error invalid station is set. OFF: No setting ON: Set When this relay is turned on, the status of each station can be checked with 'Error invalid station setting status' (SW00D0 to SW00D7). Depending on the link refresh timing, the update of 'Error invalid station setting status' (SW00D0 to SW00D7) may be offset by one sequence scan.	○	○
SB00E8	Station type match status of each station	Stores the station type match status of each station. Off: Station type match in all stations On: Station type mismatch exists When this relay is turned on, the status of each station can be checked with 'Station type match status' (SW00E8 to SW00EF). Depending on the link refresh timing, the update of 'Station type match status' (SW00E8 to SW00EF) may be offset by one sequence scan.	○	○
SB00F0	CPU operating status of each station	Stores the CPU operating status of each station. OFF: All stations in RUN or PAUSE state ON: Station in STOP state, or station with a moderate/major error exists When this relay is turned on, the status of each station can be checked with 'CPU operating status of each station' (SW00F0 to SW00F7). Depending on the link refresh timing, the update of 'CPU operating status of each station' (SW00F0 to SW00F7) may be offset by one sequence scan.	○	○
SB00F1	CPU operating status of master station	Stores the operating status of the CPU module on the master station. Off: RUN, PAUSE On: STOP or moderate/major error	○	○

No.	Name	Description	Availability	
			PLCopen motion control FB mode	Simple Motion mode
SB0100	CPU moderate/major error status of each station	Stores the moderate/major error occurrence status of each station. OFF: No station with a moderate/major error ON: Station with a moderate/major error exists When this relay is turned on, the status of each station can be checked with 'CPU moderate/major error status of each station' (SW0100 to SW0107). Depending on the link refresh timing, the update of 'CPU moderate/major error status of each station' (SW0100 to SW0107) may be offset by one sequence scan.	○	○
SB0101	CPU moderate/major error status of master station	Stores the moderate/major error occurrence status of the CPU module on the master station. Off: No moderate/major error On: Moderate/major error	○	○
SB0110	CPU minor error status of each station	Stores the minor error occurrence status of each station. OFF: All stations normal or station with a moderate/major error exists ON: Station with a minor error exists When this relay is turned on, the status of each station can be checked with 'CPU minor error status of each station' (SW0110 to SW0117). Depending on the link refresh timing, the update of 'CPU minor error status of each station' (SW0110 to SW0117) may be offset by one sequence scan.	○	○
SB0111	CPU minor error status of master station	Stores the minor error status of the CPU module on the master station. Off: No minor errors occurring, or a moderate/major error is occurring On: Minor error	○	○
SB01E1	Setting status of CC-Link IE TSN Network synchronous communication function	Stores the setting status of the CC-Link IE TSN Network synchronous communication function. OFF: No setting ON: Set	○	○
SB01E9	Inter-module synchronization cycle over flag	Stores the cycle over occurrence status of the inter-module synchronization. This relay is turned on if output preparation processing (cyclic data transfer processing for network modules) is not completed within the inter-module synchronization cycle. After that, it remains turned on even if the processing is operated within the specified inter-module synchronization cycle. The status is cleared by powering off and on the system or by resetting the CPU module. OFF: Processing time overflow has not occurred ON: Processing time overflow has occurred	○	○



# Appendix 4 List of Link Special Register (SW)

The link special register (SW) stores the information during data link as a numerical value. Faulty areas and causes can be checked by using or monitoring the link special register (SW) in programs.

## Application of link special register (SW)

By using link special register (SW), the status of CC-Link IE TSN can be checked from HMI (Human Machine Interfaces) as well as the engineering tool.

## Range where data is stored by users and range where data is stored by the system

The following ranges correspond to when the link special register areas (SW) are assigned from SW0000 to SW0FFF.

- Stored by users: SW0000 to SW001F
- Stored by the system: SW0020 to SW0FFF

## List of link special register (SW)

The following table lists the link special register areas (SW) when they are assigned from SW0000 to SW0FFF.



Do not write any data to an area whose No. is not on the following list or ranges where data is stored by the system. Doing so may cause malfunction of the programmable controller system.

No.	Name	Description	Availability											
			PLCopen motion control FB mode	Simple Motion mode										
SW0040	Network No.	Stores the network No. of the own station. Range: 1 to 239	<input type="radio"/>	<input type="radio"/>										
SW0042	Station No.	Stores the station No. of the own station. Range: • Master station: 125	<input type="radio"/>	<input type="radio"/>										
SW0043	Mode status of own station	Stores the module operation mode setting or communication mode of the own station. 0: Online mode	<input type="radio"/>	<input type="radio"/>										
SW0045	Module type	Stores the hardware status of the own station.  <div style="text-align: center;"> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">b15</td> <td style="text-align: center;">to</td> <td style="text-align: center;">b2</td> <td style="text-align: center;">b1</td> <td style="text-align: center;">b0</td> </tr> <tr> <td style="text-align: center;">SW0045</td> <td style="text-align: center;">0</td> <td style="text-align: center;">to</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> </table> </div> Model type 00: Module 01: Board 10: HMI (Human Machine Interface)	b15	to	b2	b1	b0	SW0045	0	to	0	0	<input type="radio"/>	<input type="radio"/>
b15	to	b2	b1	b0										
SW0045	0	to	0	0										
SW0046 to SW0047	IPv4 address	Indicates the IP address (IPv4) set in the own station.  <div style="text-align: center;"> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">SW0046</td> <td style="text-align: center;">(1)</td> <td style="text-align: center;">(2)</td> </tr> <tr> <td style="text-align: center;">SW0047</td> <td style="text-align: center;">(3)</td> <td style="text-align: center;">(4)</td> </tr> </table> </div> (1): Third octet (2): Fourth octet (3): First octet (4): Second octet	SW0046	(1)	(2)	SW0047	(3)	(4)	<input type="radio"/>	<input type="radio"/>				
SW0046	(1)	(2)												
SW0047	(3)	(4)												

No.	Name	Description	Availability	
			PLCopen motion control FB mode	Simple Motion mode
SW0049	Cause of data link stop	Stores the cause which stopped the data link of the own station. 00H: At normal communication or power-on 02H: Monitoring time timeout 05H: No slave station 11H: Outside station No. range of own station 14H: Master station duplication 18H: Parameter error 19H: Parameter communication in progress 20H: CPU module moderate error, major error 60H: Illegal ring connection (Also used in the CLPA conformance test.) (Updated even when the station is set to the error invalid station.) (Updated even when the station is set to the reserved station.)	○	○
SW004B	CPU status of own station	Stores the status of the CPU module on the own station. 00H: No CPU module mounted 01H: STOP (normal) 02H: STOP (moderate/major error) 03H: STOP (minor error) 04H: RUN (normal) 05H: RUN (minor error) 07H: PAUSE 0EH: Reset in progress 0FH: Initial processing in progress	○	○
SW004C	Parameter setting status	Stores the status of parameter settings. 0: Normal 1 or greater: Error definition (Error code is stored.) (Conditions) • This register is enabled when 'Received parameter error' (SB004D) is on.	○	○
SW0058	Total number of slave stations setting value	Stores the total number of slave stations that are set by the parameters. Range: 1 to 120 <sup>*1</sup>	○	○
SW0059	Total number of slave stations present value	Stores the total number of slave stations that are actually connected by data link. Range: 1 to 120 <sup>*1</sup> (0 when own station is disconnected)	○	○
SW005B	Maximum data link station No.	Stores the maximum station No. of the station where the data link is normally performed. Range: 1 to 120 (0 when own station is disconnected) (Conditions) • This register is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SW0060	Communication cycle intervals	Stores the setting value of the communication cycle intervals set with the module parameter of the master station. (Unit: μs)	○	○
SW0061	System reserved time	Stores the setting value of the system reserved time set with the module parameter of the master station. (Unit: μs)	○	○
SW0062	Cyclic transmission time	Stores the setting value of the cyclic transmission time set with the module parameter of the master station. (Unit: μs)	○	○
SW0063	Transient transmission time	Stores the setting value of the transient transmission time set with the module parameter of the master station. (Unit: μs)	○	○
SW0064	Multiple cycle setting (medium speed)	Stores the setting value of the multiple cycle setting (medium speed) set with the module parameter of the master station.	○	○
SW0065	Multiple cycle setting (low speed)	Stores the setting value of the multiple cycle setting (low speed) set with the module parameter of the master station.	○	○



No.	Name	Description	Availability	
			PLCopen motion control FB mode	Simple Motion mode
SW0066	Connection status of own station	Stores the connection status of the own station. [MODE: PLCopen] 00H: Normal (communication in progress on P1 and P2) 01H: Normal (communication in progress on P1, cable disconnected on P2) 10H: Normal (cable disconnected on P1, communication in progress on P2) 11H: Disconnected (cable disconnected on P1 and P2) 12H: Disconnected (cable disconnected on P1, establishing line on P2) 21H: Disconnected (establishing line on P1, cable disconnected on P2) 22H: Disconnected (establishing line on P1 and P2) [MODE: Simple Motion] 01H: Normal (communication in progress) 11H: Disconnected (cable disconnected) 21H: Disconnected (establishing line)	○	○
SW0072	Communication cycle intervals (Calculation value)	Stores the communication cycle intervals that were calculated by the number of slave stations and the points set in "Network Configuration Settings" of "Basic Settings". (Unit: μs)	○	○
SW0073	Cyclic transmission time (Calculation value)	Stores the cyclic transmission time that was calculated by the number of slave stations and the points set in "Network Configuration Settings" of "Basic Settings". (Unit: μs)	○	○
SW0074	PORT1 cable disconnection detection count	Stores the cumulative count of cable disconnections detected at the PORT1 side. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared. When FFFFH (maximum value 65535) is counted, the value returns to 0 and the module continues to count.	○	○
SW0075	PORT1 receive error detection count	Stores the cumulative count of error data receptions at the PORT1 side. The count stores only error data that is not transmitted to all stations. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared. When FFFFH (maximum value 65535) is counted, counting stops.	○	○
SW0076	PORT1 total number of received data (lower 1 word)	Stores the cumulative count of data receptions at the PORT1 side. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared.	○	○
SW0077	PORT1 total number of received data (upper 1 word)	When FFFFFFFFH (maximum value 4294967295) is counted, counting stops.	○	○
SW0078	Transient transmission time (Calculation value)	Stores the transient transmission time that are calculated by the number of slave stations and the number of link device points set in "Network Configuration Settings" of "Basic Settings". (Unit: μs)	○	○
SW0079	Watch dog counter processing time (calculation value)	Stores the processing time for checking the watch dog counter calculated from the slave stations which are actually connected. (Unit: μs)	○	○
SW007A	Transient transmission addition time (calculation value)	Stores the time which needs to be added to "Communication Period Interval Setting" and "Transient Transmission Time" set in "Communication Period Setting" under "Basic Settings". (Unit: μs)	○	○
SW007C	PORT2 cable disconnection detection count	Stores the cumulative count of cable disconnections detected at the PORT2 side. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared. When FFFFH (maximum value 65535) is counted, the value returns to 0 and the module continues to count.	○	×
SW007D	PORT2 receive error detection count	Stores the cumulative count of error data receptions at the PORT2 side. The count stores only error data that is not transmitted to all stations. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared. When FFFFH (maximum value 65535) is counted, counting stops.	○	×
SW007E	PORT2 total number of received data (lower 1 word)	Stores the cumulative count of data receptions at the PORT2 side. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared.	○	×
SW007F	PORT2 total number of received data (upper 1 word)	When FFFFFFFFH (maximum value 4294967295) is counted, counting stops.	○	×

No.	Name	Description	Availability																																																																																																																																																										
			PLCopen motion control FB mode	Simple Motion mode																																																																																																																																																									
SW00B0 to SW00B7	Data link status of each station	<p>Stores the data link status of each station.</p> <p>0: Data link normally operating station 1: Data link faulty station</p> <ul style="list-style-type: none"> <li>If multiple stations change from faulty to normal, because they are returned to the network one by one per communication cycle, the time until the status changes to "0: Data link normally operating station" may vary by several seconds.</li> <li>If no response is received for several communication cycles, the station is determined to be a data link faulty station.</li> </ul> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr><td>SW00B0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr> <tr><td>SW00B1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr> <tr><td>SW00B2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr> <tr><td>SW00B3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr> <tr><td>SW00B4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr> <tr><td>SW00B5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr> <tr><td>SW00B6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr> <tr><td>SW00B7</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0.</p> <p>(Conditions)</p> <ul style="list-style-type: none"> <li>Stations that surpass the maximum station No. are ignored.</li> </ul> <p>(Also used in the CLPA conformance test.)</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW00B0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW00B1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW00B2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW00B3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW00B4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW00B5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW00B6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW00B7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW00B0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW00B1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW00B2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW00B3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW00B4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW00B5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW00B6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW00B7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW00C0 to SW00C7	Reserved station setting status	<p>Stores the reserved station setting status of each station.</p> <p>0: Station other than a reserved station 1: Reserved station</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr><td>SW00C0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr> <tr><td>SW00C1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr> <tr><td>SW00C2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr> <tr><td>SW00C3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr> <tr><td>SW00C4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr> <tr><td>SW00C5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr> <tr><td>SW00C6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr> <tr><td>SW00C7</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0.</p> <p>(Condition)</p> <ul style="list-style-type: none"> <li>Stations that surpass the maximum station No. are ignored.</li> </ul> <p>(Also used in the CLPA conformance test.)</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW00C0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW00C1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW00C2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW00C3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW00C4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW00C5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW00C6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW00C7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW00C0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW00C1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW00C2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW00C3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW00C4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW00C5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW00C6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW00C7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW00C8 to SW00CF	Parameter setting status	<p>Stores the status of parameter settings.</p> <p>0: Station not set in the parameter 1: Station set in the parameter</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr><td>SW00C8</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr> <tr><td>SW00C9</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr> <tr><td>SW00CA</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr> <tr><td>SW00CB</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr> <tr><td>SW00CC</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr> <tr><td>SW00CD</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr> <tr><td>SW00CE</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr> <tr><td>SW00CF</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0.</p> <p>(Conditions)</p> <ul style="list-style-type: none"> <li>Stations that surpass the maximum station No. are ignored.</li> </ul>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW00C8	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW00C9	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW00CA	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW00CB	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW00CC	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW00CD	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW00CE	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW00CF	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW00C8	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW00C9	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW00CA	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW00CB	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW00CC	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW00CD	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW00CE	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW00CF	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													



No.	Name	Description	Availability																																																																																																																																																										
			PLCopen motion control FB mode	Simple Motion mode																																																																																																																																																									
SW00D0 to SW00D7	Error invalid station setting status	<p>Stores the error invalid station setting status of each station.</p> <p>0: Station other than an error invalid station 1: Error invalid station</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW00D0</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW00D1</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW00D2</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW00D3</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW00D4</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW00D5</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW00D6</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW00D7</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0. (Condition) • Stations that surpass the maximum station No. are ignored.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW00D0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW00D1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW00D2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW00D3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW00D4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW00D5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW00D6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW00D7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW00D0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW00D1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW00D2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW00D3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW00D4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW00D5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW00D6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW00D7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW00E8 to SW00EF	Station type match status	<p>Stores the match status between the station type set in the master station and that of the slave station.</p> <p>0: Station type match 1: Station type mismatch</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW00E8</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW00E9</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW00EA</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW00EB</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW00EC</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW00ED</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW00EE</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW00EF</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No.. — is fixed to 0.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW00E8	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW00E9	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW00EA	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW00EB	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW00EC	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW00ED	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW00EE	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW00EF	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW00E8	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW00E9	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW00EA	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW00EB	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW00EC	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW00ED	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW00EE	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW00EF	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW00F0 to SW00F7	CPU operating status of each station	<p>Stores the CPU operating status of each station.</p> <p>0: RUN, PAUSE 1: STOP or moderate/major error</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW00F0</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW00F1</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW00F2</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW00F3</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW00F4</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW00F5</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW00F6</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW00F7</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No.. — is fixed to 0. (Conditions) Reserved stations and stations that surpass the maximum station No. are ignored.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW00F0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW00F1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW00F2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW00F3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW00F4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW00F5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW00F6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW00F7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW00F0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW00F1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW00F2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW00F3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW00F4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW00F5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW00F6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW00F7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													



No.	Name	Description	Availability																																																																																																																																																										
			PLCopen motion control FB mode	Simple Motion mode																																																																																																																																																									
SW0100 to SW0107	CPU moderate/major error status of each station	<p>Stores the moderate/major error occurrence status of each station.</p> <p>0: No moderate/major error 1: Moderate/major error occurring</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW0100</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW0101</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW0102</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW0103</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW0104</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW0105</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW0106</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW0107</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0. (Condition) • If an error occurs, the data immediately before the error is held. • Reserved stations and stations that surpass the maximum station No. are ignored.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW0100	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW0101	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW0102	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW0103	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW0104	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW0105	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW0106	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW0107	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW0100	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW0101	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW0102	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW0103	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW0104	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW0105	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW0106	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW0107	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW0110 to SW0117	CPU minor error status of each station	<p>Stores the minor error occurrence status of each station.</p> <p>0: Normal, or a moderate or major error occurring 1: Minor error occurring</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW0110</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW0111</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW0112</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW0113</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW0114</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW0115</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW0116</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW0117</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0. (Condition) • Reserved stations and stations that surpass the maximum station No. are ignored.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW0110	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW0111	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW0112	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW0113	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW0114	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW0115	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW0116	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW0117	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW0110	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW0111	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW0112	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW0113	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW0114	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW0115	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW0116	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW0117	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW0160 to SW0167	Execution result of slave station parameter automatic setting function	<p>When the slave station parameter automatic setting is completed with an error, the bit of the target station is turned on.</p> <p>Off: Completed successfully On: Completed with an error</p> <p>When completed with an error, the error code is stored in the SW0194. When completed with an error caused by the master station, the bit is not turned on.</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW0160</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW0161</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW0162</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW0163</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW0164</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW0165</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW0166</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW0167</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW0160	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW0161	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW0162	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW0163	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW0164	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW0165	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW0166	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW0167	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW0160	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW0161	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW0162	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW0163	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW0164	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW0165	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW0166	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW0167	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW0194	Detailed execution result of slave station parameter automatic setting	<p>When the slave station parameter automatic setting is completed with an error, the error code is stored.</p> <p>When completed with an error caused by the slave station, the bit of the target station of 'Execution result of slave station parameter automatic setting function' (SW0160 to SW0167) is turned on.</p>	○	○																																																																																																																																																									



No.	Name	Description	Availability																																																																																																																																																										
			PLCopen motion control FB mode	Simple Motion mode																																																																																																																																																									
SW01C0 to SW01C7	Information of CC-Link IE TSN Network synchronous communication function of each station	<p>Stores whether each station supports the CC-Link IE TSN Network synchronous communication function.</p> <p>0: Not supported 1: Supported</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW01C0</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW01C1</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW01C2</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW01C3</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW01C4</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW01C5</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW01C6</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW01C7</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0. (Condition) • Stations that surpass the maximum station No. are ignored.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW01C0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW01C1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW01C2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW01C3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW01C4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW01C5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW01C6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW01C7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW01C0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW01C1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW01C2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW01C3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW01C4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW01C5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW01C6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW01C7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW01C8 to SW01CF	Synchronous/non-synchronous operating status information of each station	<p>Stores the operating status of the CC-Link IE TSN Network synchronous communication function of each station.</p> <p>0: Non-synchronous 1: Synchronous</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW01C8</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW01C9</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW01CA</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW01CB</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW01CC</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW01CD</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW01CE</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW01CF</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0. (Condition) • Stations that surpass the maximum station No. are ignored.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW01C8	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW01C9	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW01CA	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW01CB	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW01CC	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW01CD	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW01CE	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW01CF	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW01C8	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW01C9	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW01CA	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW01CB	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW01CC	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW01CD	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW01CE	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW01CF	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													
SW01D0 to SW01D7	Watchdog counter operating status information for each station	<p>Stores the watchdog counter operating status information for each station in CC-Link IE TSN communications. (Station No.1 to 120)</p> <p>0: Not operating 1: Operating</p> <p>Stations which are not performing data links are treated as "0: Not operating" because the information indicates that slave stations are communicating using the watchdog counter.</p> <table border="1"> <thead> <tr> <th></th> <th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th> </tr> </thead> <tbody> <tr> <td>SW01D0</td> <td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> </tr> <tr> <td>SW01D1</td> <td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td> </tr> <tr> <td>SW01D2</td> <td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td> </tr> <tr> <td>SW01D3</td> <td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td> </tr> <tr> <td>SW01D4</td> <td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td> </tr> <tr> <td>SW01D5</td> <td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td> </tr> <tr> <td>SW01D6</td> <td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td> </tr> <tr> <td>SW01D7</td> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td> </tr> </tbody> </table> <p>Each No. in the table represents a station No. — is fixed to 0. (Condition) • Stations that surpass the maximum station No. are ignored.</p>		b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	SW01D0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SW01D1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	SW01D2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	SW01D3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	SW01D4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	SW01D5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	SW01D6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	SW01D7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113	○	○
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																													
SW01D0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																													
SW01D1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17																																																																																																																																													
SW01D2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33																																																																																																																																													
SW01D3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49																																																																																																																																													
SW01D4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65																																																																																																																																													
SW01D5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81																																																																																																																																													
SW01D6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97																																																																																																																																													
SW01D7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113																																																																																																																																													

No.	Name	Description	Availability	
			PLCopen motion control FB mode	Simple Motion mode
SW01E9	Inter-module synchronization cycle over count	Indicates the number of times cyclic data transfer processing is not completed within the inter-module synchronization cycle. The status is cleared by powering off and on the system or by resetting the CPU module. 0: Cycle over not occurred 1 to 65535: Cumulative number of times When FFFFH (maximum value 65535) is counted, counting stops.	<input type="radio"/>	<input type="radio"/>
SW01EA to SW01EB	Inter-module synchronization cycle setting value	Stores the cycle setting value of the fixed interval synchronization of the inter-module synchronization. (Unit: $\mu$ s) "0" is stored when the inter-module synchronization function is not used.	<input type="radio"/>	<input type="radio"/>
SW025A	Remote device forced output request result	Stores the request result of 'Remote device forced output request' (SB0016). 0: Normal 1 or greater: Failed If failed, an error code is stored. When 'Remote device forced output request' (SB0016) is turned off, the stored error code is cleared.	<input type="radio"/>	<input type="radio"/>
SW02A0 to SW02A7	Motion control station setting status	Stores the motion control station setting status of each station. (Station No. 1 to 120) 0: Standard station 1: Motion control station	<input type="radio"/>	<input type="radio"/>
SW0470 to SW047F	NMT state machine	Stores the communication status of the slave station that supports CANopen communications. 0: In the CANopen function initialization sequence, the NMT state machine is not yet in the Operational state or the slave station is disconnected. 1: In the CANopen function initialization sequence, the NMT state machine is in the Operational state. The value of the slave station that does not support CANopen communications is fixed to 0. This value is stored by each module number of the slave stations set in the network configuration setting.	<input type="radio"/>	<input type="radio"/>

\*1 For the version of Add-on baseSystem, "Ver. 1.4 or earlier", the range is "1 to 64".

# Appendix 5 Dedicated Instruction

This section describes dedicated instructions that can be used in the Motion module.

## Point

For details on dedicated instructions, refer to the following.

 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

## Precautions

### ■Data change

Do not change any data specified (such as control data) until execution of the dedicated instruction is completed.

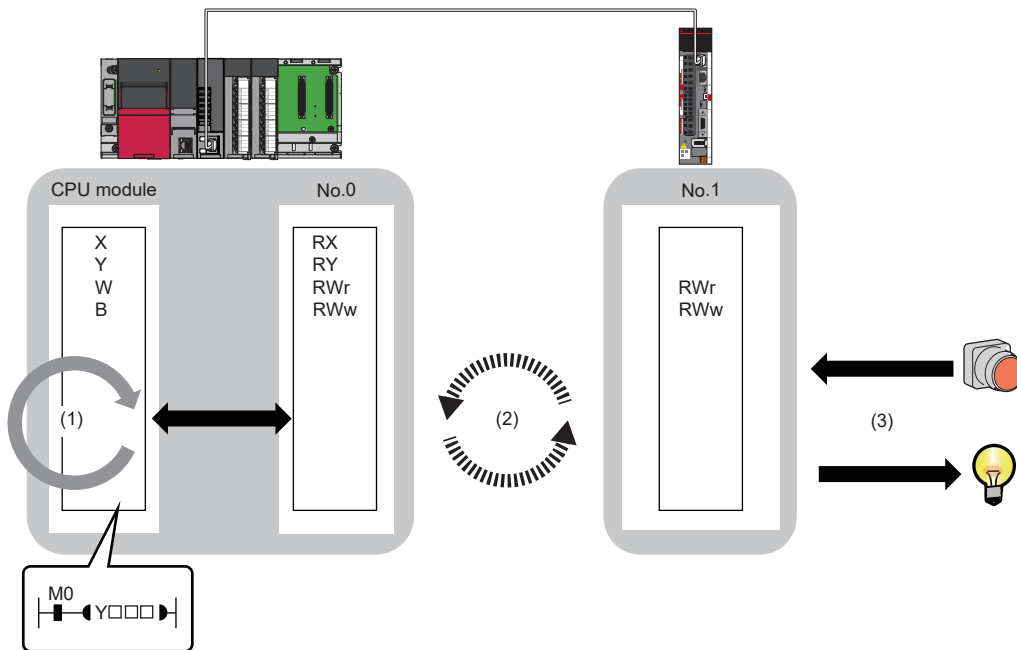
## SLMP communication instruction

The following table lists the dedicated instruction used to send an SLMP frame to an SLMP-compatible device in the same network.

Instruction	Description
SLMPSND	Send an SLMP message to the SLMP-compatible device in the same network.

# Appendix 6 Processing Time

This section describes the cyclic transmission delay time of CC-Link IE TSN.



- (1) Sequence scan time of the master station: [MELSEC iQ-R CPU Module User's Manual \(Application\)](#)
- (2) Communication cycle interval (cyclic data transfer processing time): [Page 328 Communication cycle interval](#)
- (3) Processing time of the slave station: [Manual of the slave station used](#)

## PLCopen motion control FB mode [MODE: PLCopen]

The cyclic transmission delay time in the PLCopen motion control FB mode consists of the following. ([Page 324 Cyclic transmission delay time \[MODE: PLCopen\]](#))

- (2) Communication cycle interval (cyclic data transfer processing time) + (3) Processing time of the slave station

## Simple Motion mode [MODE: Simple Motion]

The cyclic transmission delay time in the Simple Motion mode consists of the following. ([Page 326 Cyclic transmission delay time \[MODE: Simple Motion\]](#))

- (1) Sequence scan time of the master station + (2) Communication cycle interval (cyclic data transfer processing time) + (3) Processing time of the slave station

A

# Cyclic transmission delay time [MODE: PLCopen]

## Standard station

This section shows the formulas to calculate the following cyclic transmission delay time.

- The time between when the transmission source CPU module device turns on or off and when the transmission destination CPU module device turns on or off
- The time between when data is set in the transmission source CPU module device and when the data is stored in the transmission destination device

### Point

- When "Communication Period Setting" of the communication destination is set to any setting other than "Basic Period" in "Network Configuration Settings" under "Basic Settings" of the master station, multiply the multiplication specified in "Multiple Period Setting" under "Communication Period Setting" of "Basic Settings" by LS (communication cycle intervals) according to the setting.

## ■ Master station ← remote station

When data is transmitted from a remote station (input) to the master station (RX/RWr).

Calculation value	Station-based block data assurance	No station-based block data assurance
Normal value	$(SM \times 1) + (LS \times n1) + Rio$	$(SM \times 1) + (LS \times 1) + Rio$
Maximum value	$(SM \times 1) + (LS \times (n1 + 1)) + Rio$	$(SM \times 1) + (LS \times 2) + Rio$

- Variable

Name of variable	Description	Unit
SM	Sequence scan time of the master station	μs
LS	Communication cycle interval (can be checked with SW0060)	μs
Rio	Processing time of the remote station	μs
n1	Value rounded up to the nearest integer of $(SM \div LS)$	—

## ■ Master station → remote station

When data is transmitted from the master station (RY/RWw) to a remote station (output).

Calculation value	Station-based block data assurance	No station-based block data assurance
Normal value	$(SM \times n2) + (LS \times 1) + Rio$	$(SM \times 1) + (LS \times 1) + Rio$
Maximum value	$(SM \times n2) + (LS \times 2) + Rio$	$(SM \times 1) + (LS \times 2) + Rio$

- Variable

Name of variable	Description	Unit
SM	Sequence scan time of the master station	μs
LS	Communication cycle interval (can be checked with SW0060)	μs
Rio	Processing time of the remote station	μs
n2	Value rounded up to the nearest integer of $(LS \div SM)$	—

## Motion control station

This section shows the formulas to calculate the following cyclic transmission delay time.

- Time between when a device of the Motion module turns on or off and when a transmission destination device turns on or off
- Time between when data is set to a device of the Motion module and when the data is stored in a transmission destination device

The transmission delay time of the motion control station differs depending on the setting value of the motion synchronization station send/receive data refresh method. For the motion synchronization station send/receive data refresh method, refer to "Operation Cycle" in the following manual.

📖 MELSEC iQ-R Motion Module User's Manual (Application)

### ■ Master station ← remote station

When data is transmitted from a remote station (input) to the master station (RX/RWr).

Calculation value	Motion synchronization station send/receive data refresh method	
	Operation cycle preferred method	Response preferred method
Normal value	$(LS \times 2) + Rio$	$(LS \times 1) + Rio$
Maximum value	$(LS \times 3) + Rio$	$(LS \times 2) + Rio$

- Variable

Name of variable	Description	Unit
LS	Communication cycle interval (can be checked with SW0060)	μs
Rio	Processing time of the remote station	μs

### ■ Master station → remote station

When data is transmitted from the master station (RY/RWw) to a remote station (output).

Calculation value	Motion synchronization station send/receive data refresh method	
	Operation cycle preferred method	Response preferred method
Normal value	$(LS \times 3) + Rio$	$(LS \times 2) + Rio$
Maximum value	$(LS \times 4) + Rio$	$(LS \times 3) + Rio$

- Variable

Name of variable	Description	Unit
LS	Communication cycle interval (can be checked with SW0060)	μs
Rio	Processing time of the remote station	μs

# Cyclic transmission delay time [MODE: Simple Motion]

## Standard station

This section shows the formulas to calculate the following cyclic transmission delay time.

- The time between when the transmission source CPU module device turns on or off and when the transmission destination CPU module device turns on or off
- The time between when data is set in the transmission source CPU module device and when the data is stored in the transmission destination device

### Point

- When "Communication Period Setting" of the communication destination is set to any setting other than "Basic Period" in "Network Configuration Settings" under "Basic Settings" of the master station, multiply the multiplication specified in "Multiple Period Setting" under "Communication Period Setting" of "Basic Settings" by LS (communication cycle intervals) according to the setting.

## ■ Master station ← remote station

When data is transmitted from a remote station (input) to the master station (RX/RW<sub>r</sub>).

Calculation value	Station-based block data assurance	No station-based block data assurance
Normal value	$(SM \times 1) + (LS \times n1) + Rio$	$(SM \times 1) + (LS \times 1) + Rio$
Maximum value	$(SM \times 1) + (LS \times (n1 + 1)) + Rio$	$(SM \times 1) + (LS \times 2) + Rio$

- Variable

Name of variable	Description	Unit
SM	Sequence scan time of the master station	μs
LS	Communication cycle interval (can be checked with SW0060)	μs
Rio	Processing time of the remote station	μs
n1	Value rounded up to the nearest integer of $(SM \div LS)$	—

## ■ Master station → remote station

When data is transmitted from the master station (RY/RW<sub>w</sub>) to a remote station (output).

Calculation value	Station-based block data assurance	No station-based block data assurance
Normal value	$(SM \times n2) + (LS \times 1) + Rio$	$(SM \times 1) + (LS \times 1) + Rio$
Maximum value	$(SM \times n2) + (LS \times 2) + Rio$	$(SM \times 2) + (LS \times 2) + Rio$

- Variable

Name of variable	Description	Unit
SM	Sequence scan time of the master station	μs
LS	Communication cycle interval (can be checked with SW0060)	μs
Rio	Processing time of the remote station	μs
n2	Value rounded up to the nearest integer of $(LS \div SM)$	—



## Motion control station

This section shows the formulas to calculate the following cyclic transmission delay time.

- Time between when a device of the Motion module turns on or off and when a transmission destination device turns on or off
- Time between when data is set to a device of the Motion module and when the data is stored in a transmission destination device

### ■ Master station ← remote station

When data is transmitted from a remote station (input) to the master station (RX/RWr).

Calculation value	Transmission delay time
Normal value	$(LS \times 1) + Rio$
Maximum value	$(LS \times 2) + Rio$

- Variable

Name of variable	Description	Unit
LS	Communication cycle interval (can be checked with SW0060)	$\mu\text{s}$
Rio	Processing time of the remote station	$\mu\text{s}$

### ■ Master station → remote station

When data is transmitted from the master station (RY/RWw) to a remote station (output).

Calculation value	Transmission delay time
Normal value	$(LS \times 2) + Rio$
Maximum value	$(LS \times 3) + Rio$

- Variable

Name of variable	Description	Unit
LS	Communication cycle interval (can be checked with SW0060)	$\mu\text{s}$
Rio	Processing time of the remote station	$\mu\text{s}$

# Communication cycle interval

The minimum value of the communication cycle interval (cyclic data transfer processing time) is calculated by the following calculation formulas. The parts enclosed in double quotation marks (" ") in the table of variables are the values set for "Network Configuration Settings" under "Basic Settings".

Communication mode	Communication speed of the master station	Reference
Unicast mode	1 Gbps	Page 329 Unicast mode (1 Gbps)
	100 Mbps	Page 332 Unicast mode (100 Mbps)

## Point

The minimum values of the communication cycle interval and cyclic transmission time used in the formulas are referential values. If cyclic transmission is not performed by setting the calculation value as the setting value, set a value obtained by adding 10% as the minimum value of the cyclic transmission time.

Each calculation value obtained from the calculation formulas are stored in the following SWs.

- SW0072: Communication cycle interval (calculation value) [ $\mu$ s]
- SW0073: Cyclic transmission time (calculation value) [ $\mu$ s]
- SW0078: Transient transmission time (calculation value) [ $\mu$ s]

If each calculation result is larger than the set value of "Basic Period Setting" under "Basic Settings" as follows, an error occurs.

- 3010H: When the communication cycle interval (calculation value) [ $\mu$ s] is larger than the set value of "Communication Period Interval Setting"
- 3011H: When the cyclic transmission time (calculation value) [ $\mu$ s] is larger than the set value of "Cyclic Transmission Time"
- 3013H: When the transient transmission time (calculation value) [ $\mu$ s] is larger than the displayed value of "Transient Transmission Time"

When an error occurs, each calculation value is displayed in "Detailed Information" in the [Error Information] tab of the module diagnostics. Correct each set value referring to the calculation value displayed so that the set value is equal to or larger than the calculation value.

[MODE: Simple Motion]

For the motion control stations, set the numbers of points of RWw and RWr as follows.

- Extension remote station: 24 points for RWw, 27 points for RWr (assign a point to each module, including the start module)
- Non-extension remote station: 40 points for RWw, 40 points for RWr

## Condition

This section shows the calculation formulas for the communication cycle interval in the following conditions (If the main modules and extension modules are not specified in the descriptions of the variables in the calculation formulas for the communication cycle interval, the number of points to be set is the sum of main modules and extension modules).

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	RWr Setting Points	RWw Setting Points
0	Host Station	0	Master Station					
1	General Remote Station	1	Remote Station	<input type="checkbox"/>	16	16	8	8
2	General Extension Module	-	-	<input type="checkbox"/>			8	8
3	MR-J5W3-G	2	Remote Station	<input type="checkbox"/>			24	20
4	MR-J5W3-G_BC_Axis	-	-	<input type="checkbox"/>			24	20
5	MR-J5W3-G_BC_Axis	-	-	<input type="checkbox"/>			24	20

Item	Module No.	Number of modules
Main module	No.1, No.3	2
Extension module	No.2, No.4, No.5	3
Remote station <sup>*1</sup>	No.1, No.3	2
Slave station <sup>*1</sup>	No.1, No.3	2

\*1 Extension modules are not included.

## Unicast mode (1 Gbps)

### ■ Calculation formula

The communication cycle interval [ns] is calculated as follows. Round up less than 1 μs in  $\alpha_c$ ,  $\alpha_p$ ,  $\alpha_{sc}$ , and  $\alpha_{sp}$ .

[MODE: PLCopen]  $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$  or 125000, whichever the larger

[MODE: Simple Motion]  $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$  or 250000, whichever the larger

Cyclic transmission time [ns] =  $\alpha_c + \alpha_{sc}$

- $\alpha_c$ : A value obtained by adding No. 5 to the highest value among the following No. 1 to No. 4.

No.	Calculation formula*1
1	A1 + A2 A1: $\{(50 \times n1) + (16 \times n2) + ndm\} \times 8 + (Sn - 1) \times 830 + 14000 + nh + nrp$ A2: $\{(50 \times en1) + (16 \times en2) + endm\} \times 8$
2	B1 + B2 B1: $\{(30 \times n1) + (16 \times n2) + ndm\} \times 4 + (1661 \times n1) + (Sn - 1) \times 830 + 14300 + nh + nrp$ B2: $\{(30 \times en1) + (16 \times en2) + endm\} \times 4 + (1661 \times en1)$
3	C1 + C2 C1: $\{(50 \times n3) + (20 \times n4) + nds\} \times 8 + 14000 + nh + nrp$ C2: $\{(50 \times en3) + (20 \times en4) + ends\} \times 8$
4	D1 + D2 D1: $\{(50 \times n5) + (20 \times n6) + ndl\} \times 8 + (Sn - 1) \times 830 + 14000 + nh + nrp$ D2: $\{(50 \times en5) + (20 \times en6) + endl\} \times 8$
5	E × n7 E: $(Sn - 1) \times 830 + 39102$

\*1 Meanings of symbols used in the table are as follows.

A1, B1, C1, D1: Calculation formulas of main modules

A2, B2, C2, D2: Calculation formulas of extension modules

- $\alpha_{sc}$ : The following calculation formula.

### Calculation formula

$\{(30 \times sn1) + (16 \times sn2) + sndm\} \times 4 + (1661 \times sn1)$

Cyclic transmission time [ns] =  $\alpha_p + \alpha_{sp}$

- $\alpha_p$ :  $p1 + p3 + kp + kuu$

- $\alpha_{sp}$ :  $p4$

### ■ Variable

Round up the value after decimal point of each variable before assigning it to the calculation formula.

Name of variable	Description
n1	$(ndm + (16 \times n2)) / 1488$ or Sn, whichever is larger
n2	$Sn \times (RYb + RWwb)$ RYb: Value of (Total number of points of "RY Setting" of main modules) / $(11776 \times Sn)$ rounded up to the nearest integer RWwb: Value of (Total number of points of "RWw Setting" of main modules) / $(736 \times Sn)$ rounded up to the nearest integer
sn1	$(sndm + (16 \times sn2)) / 1488$ or SSn, whichever is larger
sn2	$SSn \times SRYb$ SRYb: Value of (Number of connections in "Safety Communication Setting" in "Basic Settings" of the master station) / $(18.4 \times SSn)$ rounded up to the nearest integer
ndm	$((\text{Total number of points of "RY Setting" of main modules}) / 8) + ((\text{Total number of points of "RWw Setting" of main modules}) \times 2)$
sndm	Number of connections in "Safety Communication Setting" in "Basic Settings" of the master station × 80
Sn	Number of slave stations
SSn	Number of slave stations in which safety communication is performed
nh	Switching hub delay time × Number of switching hubs connected to the network Switching hub delay time: 50000 <sup>*1</sup>
nrp	If "Network Topology" in "Basic Settings" is "Line/Star": 0
n3	$Sn \times nhs$ nhs: Value of $(nds + (20 \times n4)) / (1488 \times Sn)$ rounded up to the nearest integer
n4	$Sn \times (RXb + RWrb) + Sn$ RXb: Value of (Total number of points of "RX Setting" of main modules) / $(11744 \times Sn)$ rounded up to the nearest integer RWrb: Value of (Total number of points of "RWr Setting" of main modules) / $(734 \times Sn)$ rounded up to the nearest integer
nds	$((\text{Total number of points of "RX Setting" of main modules}) / 8) + ((\text{Total number of points of "RWr Setting" of main modules}) \times 2) + 8 \times Sn$
n5	$(ndl + 20 \times n6) / 1488$
n6	$(ndl - 8) / 1468 + 1$

Name of variable	Description
ndl	$(RXI / 8) + (RWrl \times 2) + 8$ RXI: Number of points of "RX Setting" of the slave station to be used as the maximum number of link points <sup>2</sup> RWrl: Number of points of "RWrl Setting" of the slave station to be used as the maximum number of link points <sup>2</sup>
n7	0 However, if "Authentication Class Setting" is "Mixture of Authentication Class B/A or Authentication Class A Only" and "TSN HUB Setting" is "Not to Use TSN HUB", n7 becomes 4.
en1	$\sum_{i=1}^{120} en1_i$ $en1_i = ((endm_i + en2_i \times 16) / 1488)^3 - k_i$ However, if $endm_i$ is 0, $en1_i$ becomes 0. $k_i = 1$ if $mf_i > 16$ , $k_i = 0$ if $mf_i \leq 16$ $mf_i = 1488 - \text{mod}$ mod: Remainder of $\{((mRy_i + (mRy_i / 1472)^3 \times 16) + (mRWw_i + (mRWw_i / 1472)^3 \times 16)) / 1488\}$ However, if the calculation result of $mf_i$ is 1488, this value becomes 0. i: Station number mRy <sub>i</sub> : Number of points of "RY Setting" of the main module of the station number i / 8 mRWw <sub>i</sub> : Number of points of "RWw Setting" of the main module of the station number i × 2
en2	$\sum_{i=1}^{120} en2_i$ $en2_i = eRyn_i + eRWwn_i + ((endm_i + (eRyn_i + eRWwn_i) \times 16) / 1488)^3 - 1$ However, if $endm_i$ is 0, $en2_i$ becomes 0. i: Station number eRyn <sub>i</sub> : 0 (fixed) eRWwn <sub>i</sub> : Total number of extension modules which have a number of points of "RWw Setting" of the station number i larger than 0
endm	$\sum_{i=1}^{120} endm_i$ $endm_i = eRyAll_i / 8 + eRWwAll_i \times 2$ i: Station number eRyAll <sub>i</sub> : 0 (fixed) eRWwAll <sub>i</sub> : Total number of points of "RWw Setting" of the extension modules of the station number i
en3	$\sum_{i=1}^{120} en3_i$ $en3_i = ((ends_i + en4_i \times 20) / 1488)^3 - k_i$ However, if $ends_i$ is 0, $en3_i$ becomes 0. $k_i = 1$ if $sf_i > 20$ , $k_i = 0$ if $sf_i \leq 20$ $sf_i = 1488 - \text{mod}$ mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^3 \times 20) + (mRWrl_i + (mRWrl_i / 1468)^3 \times 20)) / 1488\}$ However, if the calculation result of $sf_i$ is 1488, this value becomes 0. i: Station number mRx <sub>i</sub> : Number of points of "RX Setting" of the main module of the station number i / 8 mRWrl <sub>i</sub> : Number of points of "RWrl Setting" of the main module of the station number i × 2
en4	$\sum_{i=1}^{120} en4_i$ $en4_i = eRxn_i + eRWrn_i + ((ends_i + (eRxn_i + eRWrn_i) \times 20) / 1488)^3 - 1$ However, if $ends_i$ is 0, $en4_i$ becomes 0. i: Station number eRxn <sub>i</sub> : 0 (fixed) eRWrn <sub>i</sub> : Number of extension modules which have a number of points of "RWrl Setting" of the station number i larger than 0
ends	$\sum_{i=1}^{120} ends_i$ $ends_i = eRxAll_i / 8 + eRWrlAll_i \times 2$ i: Station number eRxAll <sub>i</sub> : 0 (fixed) eRWrlAll <sub>i</sub> : Total number of points of "RWrl Setting" of the extension modules of the station number i

Name of variable	Description
en5	$((\text{endl} + 20 \times \text{en6}) / 1488)^3 - k_i$ <p>However, if endl is 0, en5 becomes 0.  <math>k_i = 1</math> if <math>\text{sf}_i &gt; 20</math>, <math>k_i = 0</math> if <math>\text{sf}_i \leq 20</math>  <math>\text{sf}_i = 1488 - \text{mod}</math>  mod: Remainder of <math>\{((\text{mRx}_i + (\text{mRx}_i / 1468)^3 \times 20) + (\text{mRWr}_i + (\text{mRWr}_i / 1468)^3 \times 20)) / 1488\}</math>  However, if the calculation result of <math>\text{sf}_i</math> is 1488, this value becomes 0.  i: Station number of the slave station to be used as the maximum number of link points*2  <math>\text{mRx}_i</math>: Number of points of "RX Setting" of the main module of the station number i / 8  <math>\text{mRWr}_i</math>: Number of points of "RWr Setting" of the main module of the station number i <math>\times 2</math></p>
en6	$\text{eRxIn}_i + \text{eRWrln}_i + ((\text{endl} + (\text{eRxIn}_i + \text{eRWrln}_i) \times 20) / 1488)^3 - 1$ <p>However, if endl is 0, the value of en6 becomes 0.  i: Station number of the slave station to be used as the maximum number of link points*2  <math>\text{eRxIn}_i</math>: 0 (fixed)  <math>\text{eRWrln}_i</math>: Total number of extension modules which have a number of points of "RWr Setting" of the station number i larger than 0</p>
endl	$\text{eRxAll}_i / 8 + \text{eRWrlAll}_i \times 2$ <p>i: Station number of the slave station to be used as the maximum number of link points*2  <math>\text{eRxAll}_i</math>: 0 (fixed)  <math>\text{eRWrlAll}_i</math>: Total number of points of "RWr Setting" of the extension modules of the slave station to be used as the maximum number of link points*2</p>
p1: Processing time of RX/Ry/RWr/RWw	$\{((\text{Total number of points of "RX Setting"}) + (\text{Total number of points of "RY Setting"})) / 8 + ((\text{Total number of points of "RWr Setting"}) + (\text{Total number of points of "RWw Setting"})) \times 2\} \times 5 + (\text{SMn} \times 1300) + ((\text{Sn} - \text{SMn}) \times 3300)$ <p>However, if Total number of points of "RY Setting" = Total number of points of "RX Setting" = Total number of points of "RWr Setting" = Total number of points of "RWw Setting" = 0, p1 = 0</p>
p3: Diagnostic information processing time	$\text{Sn} \times 40$
p4: Safety I/O processing time	$7000 \times (\text{Number of connections in "Safety Communication Setting" under "Basic Settings" of the master station}) + 20000$ <p>However, if the number of connections in "Safety Communication Setting" under "Basic Settings" of the master station is 0, p4 = 0.</p>
SMn	Number of motion control stations
kp	35000 However, if there is a non-motion control station, the value becomes 78000
kuu: Inter-module synchronization processing time (unicast)	$1800 \times (\text{Number of slave stations}) + 10000$ <p>However, if the inter-module synchronization is not performed in the master station*4, kuu = 0.</p>

\*1 The switching hub delay time changes depending on the switching hub model and settings.

\*2 This is the slave station with the largest calculation value when  $(\text{"RX Setting"} / 8) + (\text{"RWr Setting"} \times 2)$  is calculated for each slave station (including extension modules).

\*3 Round up the values in the brackets.

\*4 In "Inter-module Synchronization Setting" under "System Parameter" of the master station, "Use Inter-module Synchronization Function in System" is set to "Not Use" or "Select Inter-module Synchronization Target Module" is set to "Do Not Synchronize".



## Unicast mode (100 Mbps)

### ■ Calculation formula

The communication cycle interval [ns] is calculated as follows:  $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$ . Round up less than 1  $\mu$ s in  $\alpha_c$ ,  $\alpha_p$ ,  $\alpha_{sc}$ , and  $\alpha_{sp}$ .

Cyclic transmission time [ns] =  $\alpha_c + \alpha_{sc}$

- $\alpha_c$ : A value obtained by adding No. 4 to the highest value among the following No. 1 to No. 3.

No.	Calculation formula*1
1	A1: $\{(42 \times n1) + (16 \times n2) + ndm\} \times 80 + (Sn - 1) \times 5150 + 14000 + nh + nrp$
	A2: $\{(42 \times en1) + (16 \times en2) + endm\} \times 80$
2	B1: $\{(42 \times n3) + (20 \times n4) + nds\} \times 80 + 14000 + nh + nrp$
	B2: $\{(42 \times en3) + (20 \times en4) + ends\} \times 80$
3	C1: $\{(42 \times n5) + (20 \times n6) + ndl\} \times 80 + (Sn - 1) \times 5150 + 14000 + nh + nrp$
	C2: $\{(42 \times en5) + (20 \times en6) + endl\} \times 80$
4	D: $(Sn - 1) \times 5150 + 187440$

\*1 Meanings of symbols used in the table are as follows.

A1, B1, C1: Calculation formulas of main modules

A2, B2, C2: Calculation formulas of extension modules

- $\alpha_{sc}$ : The following calculation formula.

#### Calculation formula

$$\{(42 \times sn3) + (20 \times sn4) + sndm\} \times 80$$

Cyclic transmission time [ns] =  $\alpha_p + \alpha_{sp}$  or 340000, whichever is larger.

- $\alpha_p$ :  $p1 + p3 + kp + kuu$
- $\alpha_{sp}$ :  $p4$

### ■ Calculation formula (when an authentication Class A slave station set to basic or normal speed cycle exists)

The communication cycle interval [ns] is calculated as follows:  $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$ . Round up less than 1  $\mu$ s in  $\alpha_c$ ,  $\alpha_p$ ,  $\alpha_{sc}$ , and  $\alpha_{sp}$ .

Cyclic transmission time [ns] =  $\alpha_c + \alpha_{sc}$

- $\alpha_c$ : A value obtained by the following formula: No. 1 + (The higher one of No. 2 or No. 3) + No. 4 + No. 5.

No.	Calculation formula*1
1	A1: $\{(42 \times n1) + (16 \times n2) + ndm\} \times 80 + (Sn - 1) \times 5150 + 14000 + nh + nrp$
	A2: $\{(42 \times en1) + (16 \times en2) + endm\} \times 80$
2	B1: $\{(42 \times n3) + (20 \times n4) + nds\} \times 80 + 14000 + nh + nrp$
	B2: $\{(42 \times en3) + (20 \times en4) + ends\} \times 80$
3	C1: $\{(42 \times n5) + (20 \times n6) + ndl\} \times 80 + (Sn - 1) \times 5150 + 14000 + nh + nrp$
	C2: $\{(42 \times en5) + (20 \times en6) + endl\} \times 80$
4	D: $(Sn - 1) \times 5150 + 187440$
5	1000

\*1 Meanings of symbols used in the table are as follows.

A1, B1, C1: Calculation formulas of main modules

A2, B2, C2: Calculation formulas of extension modules

- $\alpha_{sc}$ : The following calculation formula.

#### Calculation formula

$$\{(42 \times sn3) + (20 \times sn4) + sndm\} \times 80$$

Cyclic transmission time [ns] =  $\alpha_p + \alpha_{sp}$  or 340000, whichever is larger.

- $\alpha_p$ :  $p1 + p3 + kp + kuu$
- $\alpha_{sp}$ :  $p4$

## Variable

Round up the value after decimal point of each variable before assigning it to the calculation formula.

Name of variable	Description
n1	$(ndm + (16 \times n2)) / 1488$ or Sn, whichever is larger
n2	$S_n \times (RY_b + RW_{wb})$ RY <sub>b</sub> : Value of (Total number of points of "RY Setting" of main modules) / (11776 × S <sub>n</sub> ) rounded up to the nearest integer RW <sub>wb</sub> : Value of (Total number of points of "RWw Setting" of main modules) / (736 × S <sub>n</sub> ) rounded up to the nearest integer
ndm	$((\text{Total number of points of "RY Setting" of main modules} / 8) + ((\text{Total number of points of "RWw Setting" of main modules} \times 2))$
sndm	Number of connections in "Safety Communication Setting" in "Basic Settings" of the master station × 80
S <sub>n</sub>	Number of slave stations
SS <sub>n</sub>	Number of slave stations in which safety communication is performed
nh	Switching hub delay time × Number of switching hubs connected to the network Switching hub delay time: 160000 <sup>1</sup>
nrp	If "Network Topology" in "Basic Settings" is "Line/Star": 0
n3	$S_n \times n_{hs}$ n <sub>hs</sub> : Value of $(nds + (20 \times n4)) / (1488 \times S_n)$ rounded up to the nearest integer
n4	$S_n \times (RX_b + RW_{rb}) S_n$ RX <sub>b</sub> : Value of (Total number of points of "RX Setting" of main modules) / (11744 × S <sub>n</sub> ) rounded up to the nearest integer RW <sub>rb</sub> : Value of (Total number of points of "RW <sub>r</sub> Setting" of main modules) / (734 × S <sub>n</sub> ) rounded up to the nearest integer
sn3	$SS_n \times sn_{hs}$ sn <sub>hs</sub> : Value of $(sndm + (20 \times sn4)) / (1488 \times SS_n)$ rounded up to the nearest integer
sn4	$SS_n \times SRY_b$ SRY <sub>b</sub> : Value of (Number of connections in "Safety Communication Setting" in "Basic Settings" of the master station) / (18.35 × SS <sub>n</sub> ) rounded up to the nearest integer
nds	$((\text{Total number of points of "RX Setting" of main modules} / 8) + ((\text{Total number of points of "RWr Setting" of main modules} \times 2) + 8 \times S_n)$
n5	$(ndl + 20 \times n6) / 1488$
n6	$(ndl - 8) / 1468 + 1$
ndl	$(RXI / 8) + (RW_{rl} \times 2) + 8$ RXI: Number of points of "RX Setting" of the slave station to be used as the maximum number of link points <sup>*2</sup> RW <sub>rl</sub> : Number of points of "RW <sub>r</sub> Setting" of the slave station to be used as the maximum number of link points <sup>*2</sup>
n7	0 However, if "Authentication Class Setting" is "Mixture of Authentication Class B/A or Authentication Class A Only" and "TSN HUB Setting" is "Not to Use TSN HUB", n7 becomes 4.
en1	$\sum_{i=1}^{120} en1_i$ $en1_i = ((endm_i + en2_i \times 16) / 1488)^3 - k_i$ However, if end <sub>m<sub>i</sub></sub> is 0, en1 <sub>i</sub> becomes 0. $k_i = 1$ if mf <sub>i</sub> > 16, $k_i = 0$ if mf <sub>i</sub> ≤ 16 mf <sub>i</sub> = 1488 - mod mod: Remainder of $\{((mRy_i + (mRy_i / 1472)^3 \times 16) + (mRWw_i + (mRWw_i / 1472)^3 \times 16)) / 1488\}$ However, if the calculation result of mf <sub>i</sub> is 1488, this value becomes 0. i: Station number mRy <sub>i</sub> : Number of points of "RY Setting" of the main module of the station number i / 8 mRWw <sub>i</sub> : Number of points of "RWw Setting" of the main module of the station number i × 2
en2	$\sum_{i=1}^{120} en2_i$ $en2_i = eRyn_i + eRWwn_i + ((endm_i + (eRyn_i + eRWwn_i) \times 16) / 1488)^3 - 1$ However, if end <sub>m<sub>i</sub></sub> is 0, en2 <sub>i</sub> becomes 0. i: Station number eRyn <sub>i</sub> : 0 (fixed) eRWwn <sub>i</sub> : Total number of extension modules which have a number of points of "RWw Setting" of the station number i larger than 0
endm	$\sum_{i=1}^{120} endm_i$ $endm_i = eRyAll_i / 8 + eRWwAll_i \times 2$ i: Station number eRyAll <sub>i</sub> : 0 (fixed) eRWwAll <sub>i</sub> : Total number of points of "RWw Setting" of the extension modules of the station number i


Name of variable	Description
en3	$\sum_{i=1}^{120} en3_i$ <p> <math>en3_i = ((ends_i + en4_i \times 20) / 1488)^3 - k_i</math>            However, if <math>ends_i</math> is 0, <math>en3_i</math> becomes 0.  <math>k_i = 1</math> if <math>sf_i &gt; 20</math>, <math>k_i = 0</math> if <math>sf_i \leq 20</math>  <math>sf_i = 1488 - \text{mod}</math>            mod: Remainder of <math>\{((mRx_i + (mRx_i / 1468)^3 \times 20) + (mRWri + (mRWri / 1468)^3 \times 20)) / 1488\}</math>            However, if the calculation result of <math>sf_i</math> is 1488, this value becomes 0.            i: Station number  <math>mRx_i</math>: Number of points of "RX Setting" of the main module of the station number i / 8  <math>mRWri</math>: Number of points of "RWr Setting" of the main module of the station number i <math>\times 2</math> </p>
en4	$\sum_{i=1}^{120} en4_i$ <p> <math>en4_i = eRxn_i + eRWri + ((ends_i + (eRxn_i + eRWri) \times 20) / 1488)^3 - 1</math>            However, if <math>ends_i</math> is 0, <math>en4_i</math> becomes 0.            i: Station number  <math>eRxn_i</math>: 0 (fixed)  <math>eRWri</math>: Number of extension modules which have a number of points of "RWr Setting" of the station number i larger than 0         </p>
ends	$\sum_{i=1}^{120} ends_i$ <p> <math>ends_i = eRxAll_i / 8 + eRWriAll_i \times 2</math>            i: Station number  <math>eRxAll_i</math>: 0 (fixed)  <math>eRWriAll_i</math>: Total number of points of "RWr Setting" of the extension modules of the station number i         </p>
en5	$((endl + 20 \times en6) / 1488)^3 - k_i$ <p>           However, if <math>endl</math> is 0, <math>en5</math> becomes 0.  <math>k_i = 1</math> if <math>sf_i &gt; 20</math>, <math>k_i = 0</math> if <math>sf_i \leq 20</math>  <math>sf_i = 1488 - \text{mod}</math>            mod: Remainder of <math>\{((mRx_i + (mRx_i / 1468)^3 \times 20) + (mRWri + (mRWri / 1468)^3 \times 20)) / 1488\}</math>            However, if the calculation result of <math>sf_i</math> is 1488, this value becomes 0.            i: Station number of the slave station to be used as the maximum number of link points<sup>2</sup>  <math>mRx_i</math>: Number of points of "RX Setting" of the main module of the station number i / 8  <math>mRWri</math>: Number of points of "RWr Setting" of the main module of the station number i <math>\times 2</math> </p>
en6	$eRxn_i + eRWri + ((endl + (eRxn_i + eRWri) \times 20) / 1488)^3 - 1$ <p>           However, if <math>endl</math> is 0, the value of <math>en6</math> becomes 0.            i: Station number of the slave station to be used as the maximum number of link points<sup>2</sup>  <math>eRxn_i</math>: 0 (fixed)  <math>eRWri</math>: Total number of extension modules which have a number of points of "RWr Setting" of the station number i larger than 0         </p>
endl	$eRxAll_i / 8 + eRWriAll_i \times 2$ <p>           i: Station number of the slave station to be used as the maximum number of link points<sup>2</sup>  <math>eRxAll_i</math>: 0 (fixed)  <math>eRWriAll_i</math>: Total number of points of "RWr Setting" of the extension modules of the slave station to be used as the maximum number of link points<sup>2</sup> </p>
p1: Processing time of RX/Ry/RWr/RWw	$\{((\text{Total number of points of "RX Setting"}) + (\text{Total number of points of "RY Setting"})) / 8 + ((\text{Total number of points of "RWr Setting"}) + (\text{Total number of points of "RWw Setting"})) \times 2\} \times 5 + (SMn \times 1300) + ((Sn - SMn) \times 3300)$ <p>           However, if Total number of points of "RY Setting" = Total number of points of "RX Setting" = Total number of points of "RWr Setting" = Total number of points of "RWw Setting" = 0, <math>p1 = 0</math> </p>
p3: Diagnostic information processing time	$Sn \times 40$
p4: Safety I/O processing time	$7000 \times (\text{Number of connections in "Safety Communication Setting" under "Basic Settings" of the master station}) + 20000$ However, if the number of connections in "Safety Communication Setting" under "Basic Settings" of the master station is 0, $p4 = 0$ .
SMn	Number of motion control stations
kp	35000 However, if there is a non-motion control station, the value becomes 78000
kuu: Inter-module synchronization processing time (unicast)	$1800 \times (\text{Number of slave stations}) + 10000$ However, if the inter-module synchronization is not performed in the master station <sup>4</sup> , $kuu = 0$ .




- \*1 The switching hub delay time changes depending on the switching hub model and settings.
- \*2 This is the slave station with the largest calculation value when ("RX Setting" / 8) + ("RWr Setting" × 2) is calculated for each slave station (including extension modules).
- \*3 Round up the values in the brackets.
- \*4 In "Inter-module Synchronization Setting" under "System Parameter" of the master station, "Use Inter-module Synchronization Function in System" is set to "Not Use" or "Select Inter-module Synchronization Target Module" is set to "Do Not Synchronize".

## Precautions

[MODE: PLCopen]


- In addition to the communication cycle intervals, the operation cycle requires consideration as well. For each operation cycle and number of controllable axes, refer to "Operation Cycle" of the following manual.  
 MELSEC iQ-R Motion Module User's Manual (Application)
- The operation formulas support the communication cycle interval setting of 125.00 μs or longer. If it is set to 31.25 μs and 62.50 μs, the operation formulas cannot be applied. The following table lists the numbers of connectable slave stations when 31.25 μs or 62.50 μs is set.

Communication cycle interval	RD78G	RD78GH
31.25 μs	—	2
62.50 μs	1	4

- For the number of connectable axes with the communication cycle interval of 31.25 μs and 62.50 μs, refer to "Operation Cycle" of the following manual.  
 MELSEC iQ-R Motion Module User's Manual (Application)  
 For 31.25 μs and 62.50 μs, the referential values of cyclic transmission time, system reservation time, and transient transmission time are as follows. Adjustment may be required depending on the using environment.

Communication cycle interval	Cyclic transmission time	System reservation time	Transient transmission time
31.25 μs	10.00 μs	7.00 μs	14.25 μs
62.50 μs	20.00 μs	20.00 μs	22.50 μs

[MODE: Simple Motion]

- In addition to the communication cycle intervals, the operation cycle requires consideration as well. For each operation cycle and number of controllable axes, refer to "PROCEDURES BEFORE OPERATIONS" in PART 2 of the following manual.  
 MELSEC iQ-R Motion Module User's Manual (Startup)



# Transmission delay time of safety communications

The following are the formulas to calculate transmission delay time of safety communications.

## Point

- When "Communication Period Setting" of the communication destination sets to the setting other than "Basic Period" in "Network Configuration Settings" under "Basic Settings" of the master station, multiply the multiplication specified in "Multiple Period Setting" under "Communication Period Setting" of "Basic Settings" by LS (communication cycle intervals) as settings.
- When "Communication Destination" is set to "CR800-R" in "Safety Communication Setting" under "Basic Settings" of the master station, a different formula is used to calculate the transmission delay time of safety communications. In that case, refer to the manual of the communication destination.

## Transmission delay time

### ■ Master station (safety station) ← remote station (safety station)

The following table lists the time between a signal input to the remote station (safety station) and a safety device of the Safety CPU on the master station (safety station) turning on or off.

Calculation value	Formula
Normal value	$SCmst + LS + SRref + TMrmt + SRin$
Maximum value	$(SCmst \times 2) + (LS \times 2) + SRref + TMrmt + SRin$

SCmst: Safety cycle time of the master station (safety station) (📖 MELSEC iQ-R CPU Module User's Manual (Application))

LS: Communication cycle intervals (can be checked in the SW0060) (📖 Page 328 Communication cycle interval)

SRref: Safety remote station refresh response processing time (📖 Manual for the remote station used)

TMrmt: Transmission interval monitoring time of the remote station (safety station) (📖 Manual for the remote station used)

SRin: Safety remote station input response time (📖 Manual for the remote station used)

### ■ Master station (safety station) → remote station (safety station)

The following table lists the time between a safety device of the Safety CPU on the master station (safety station) turning on or off and the output of the remote station (safety station) turning on or off.

Calculation value	Formula
Normal value	$SCmst + LS + SRref + TMmst + SRout$
Maximum value	$SCmst + (LS \times 2) + (SRref \times 2) + TMmst + SRout$

SCmst: Safety cycle time of the master station (safety station) (📖 MELSEC iQ-R CPU Module User's Manual (Application))

LS: Communication cycle intervals (can be checked in the SW0060) (📖 Page 328 Communication cycle interval)

SRref: Safety remote station refresh response processing time (📖 Manual for the remote station used)

TMmst: Transmission interval monitoring time of the master station (safety station) (📖 Page 337 Transmission interval monitoring time)

SRout: Safety remote station output response time (📖 Manual for the remote station used)

## Safety response time

The safety response time is the maximum value of the time between a safety input of the remote station (safety station) turning off and a safety output of the remote station (safety station) turning off (including an error detection time).

For calculation method of the safety response time, refer to the following.

📖 Mitsubishi Safety Programmable Controller MELSEC iQ-R Series Machinery Directive (2006/42/EC) Compliance

## Point

When "Communication Destination" is set to "CR800-R" in "Safety Communication Setting" under "Basic Settings" of the master station, a different formula is used to calculate the safety response time. In that case, refer to the manual of the communication destination.

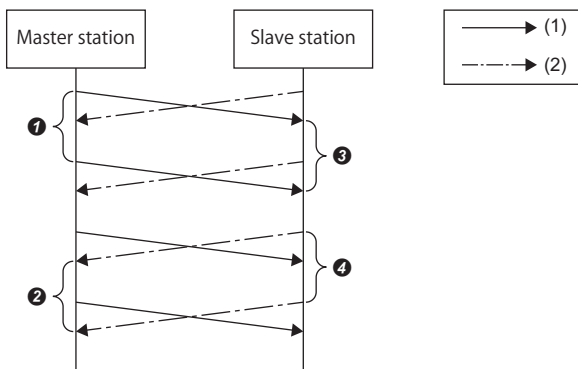
# Monitoring time for safety communications

The following shows the monitoring time for safety communications.

Set the monitoring time for each safety connection. If the time exceeds the monitoring time, a safety communication timeout will be detected, resulting in stop of the safety communication.

Station to be set	Item	Description	Station using the set time
Master station	Transmission interval monitoring time	<ul style="list-style-type: none"> <li>The slave station monitors the interval ❶ at which the master station sends safety data.</li> <li>The master station sends data to a slave station when the safety communication starts.</li> <li>The time information at the time of sending that is added to the safety data received by the slave station is compared with the previous value and monitored.</li> </ul>	Slave station
	Safety refresh monitoring time*1	<p>The master station monitors the interval ❷ at which safety data is received from the slave station.</p> <ul style="list-style-type: none"> <li>The slave station monitors the interval ❸ at which safety data is received from the slave station.</li> <li>The master station sends data to a slave station when the safety communication starts.</li> </ul>	Master station
Slave station	Transmission interval monitoring time	<ul style="list-style-type: none"> <li>The master station monitors the interval ❹ at which the slave station sends safety data.</li> <li>The slave station sends data to the master station when the safety communication starts.</li> <li>The time information at the time of sending that is added to the safety data received by the master station is compared with the previous value and monitored.</li> </ul>	Master station

\*1 The master station and slave station use a common value as the safety refresh monitoring time.



- (1) Safety data to be sent from the master station to a slave station
- (2) Safety data to be sent from a slave station to the master station
- ❶ to ❹: Intervals at which safety data is exchanged

## Transmission interval monitoring time

The value of transmission interval monitoring time set in the Motion module must satisfy all of the following conditions.

Communication destination	Condition
Master station (safety station)	<ul style="list-style-type: none"> <li><math>TM \geq SCown \times 3</math></li> <li><math>TM \geq SCoth \times 2 + LS \times 2</math></li> </ul>
Remote station (safety station)	<ul style="list-style-type: none"> <li><math>TM \geq SCown \times 3</math></li> <li><math>TM \geq SRref \times 2 + LS \times 2</math></li> </ul>

TM: Transmission interval monitoring time


SCown: Safety cycle time of the own station (MELSEC iQ-R CPU Module User's Manual (Application))

SCoth: Safety cycle time of the communication destination

LS: Communication cycle intervals (can be checked in the SW0060) (Page 328 Communication cycle interval)

SRref: Safety remote station refresh response processing time of the communication destination (Manual for the remote station used)



- If the Safety CPU detects a safety communication timeout, check that the transmission interval monitoring time satisfies the above formula.
- The Safety CPU may detect a safety communication timeout if the safety communications are affected by noise. If required, add an integral multiple of the safety cycle time on the own station to the transmission interval monitoring time.
- When the transmission interval monitoring time has changed, the safety refresh monitoring time must also be changed to meet the conditions specified for the safety refresh monitoring time. ( Page 338 Safety refresh monitoring time)
- When "Communication Period Setting" of the communication destination sets to the setting other than "Basic Period" in "Network Configuration Settings" under "Basic Settings" of the master station, multiply the multiplication specified in "Multiple Period Setting" under "Communication Period Setting" of "Basic Settings" by LS (Communication cycle intervals) as settings.

## Safety refresh monitoring time

Set the safety refresh monitoring time at the Active side station.


Set a value that satisfies all of the following conditions.


- Master station (safety station) ↔ remote station (safety station)


### Condition

- $RM \geq TMact + (TMpas \div 2) + (LS \times 2) - a$
- $RM \geq (TMact \div 2) + TMpas + (LS \times 2) - c$
- $RM > TMact$
- $RM > TMpas$

RM: Safety refresh monitoring time

TMact: Transmission interval monitoring time of the Active side ( Page 337 Transmission interval monitoring time)

TMpas: Transmission interval monitoring time of the Passive side ( Page 337 Transmission interval monitoring time)

LS: Communication cycle intervals (can be checked in the SW0060) ( Page 328 Communication cycle interval)

a: TMact-b (CC-Link IE TSN-compatible MELSEC products are on the Active side. Otherwise this value is 0.)

b: A smallest multiple of safety cycle time which is greater than  $TMact \div 2$

c: TMpas-d (CC-Link IE TSN-compatible MELSEC products are on the Passive side. Otherwise this value is 0.)

d: A smallest multiple of safety cycle time (safety remote station refresh response processing time for the safety remote I/O module) which is greater than the calculation result of  $TMpas \div 2$

### Ex.

Calculation example of b when the transmission interval monitoring time (TMact) is 24 ms and the safety cycle time is 10 ms.

$$24 \div 2 = 12$$

The safety refresh monitoring time is 20, the smallest multiple of safety cycle time (10 ms) which is greater than 12.

### Ex.

Calculation example of b when the transmission interval monitoring time (TMact) is 24 ms and the safety remote station refresh response processing time is 2 ms.

$$24 \div 2 = 12$$

The value is the multiple of safety remote station refresh response processing time (2 ms) so the safety refresh monitoring time is 12.

- Calculate the communication cycle interval used in the calculation of the safety refresh monitoring time in accordance with the conditions of the system used.
- When "Communication Destination" is set to "CR800-R" in "Safety Communication Setting" under "Basic Settings" of the master station, a different formula is used to calculate the safety refresh monitoring time. In that case, refer to the manual of the communication destination.
- The Safety CPU may detect a safety communication timeout if the safety communications are affected by noise. If required, add an integral multiple of  $((T_{Mact} \div 2) + (T_{Mpas} \div 2))$  to the safety refresh monitoring time.
- When "Communication Period Setting" of the communication destination sets to the setting other than "Basic Period" in "Network Configuration Settings" under "Basic Settings" of the master station, multiply the multiplication specified in "Multiple Period Setting" under "Communication Period Setting" of "Basic Settings" by LS (Communication cycle intervals) as settings.

### Setting example of monitoring time

The following shows a setting example of the transmission interval monitoring time and safety refresh monitoring time at each communication cycle interval when the safety cycle time of the master station is 10 ms and the safety remote station refresh response processing time of the safety remote I/O module is 2.3 ms.

Condition			Master station setting value		Slave station setting value
Master station safety cycle time	Safety remote station refresh response processing time of slave station (safety remote I/O module)	Actual communication cycle interval <sup>*1</sup>	Transmission interval monitoring time <sup>*2</sup>	Safety refresh monitoring time <sup>*2</sup>	Transmission interval monitoring time <sup>*3</sup>
10 ms	2.3 ms	4 ms	35 ms	60 ms	35 ms
		8 ms	50 ms	80 ms	50 ms
		16 ms	60 ms	100 ms	60 ms
		32 ms	100 ms	300 ms	100 ms

\*1 The actual cycle interval of the communication with the target slave station. It indicates the value obtained by multiplying "Communication Period Interval Setting" by a multiple of "Multiple Period Setting".

When "Communication Period Interval Setting" is set to 2 ms and the communication with the target slave station is performed at medium speed (four times)


$$\text{Actual communication cycle interval [ms]} = 2 \times 4 = 8 \text{ ms}$$

\*2 For calculation method of the monitoring time to be set for the master station, refer to the following.

Transmission interval monitoring time: Page 337 Transmission interval monitoring time

Safety refresh monitoring time: Page 338 Safety refresh monitoring time

\*3 For calculation method of the transmission interval monitoring time to be set for the safety remote I/O module, refer to the following.

 CC-Link IE TSN Remote I/O Module (With Safety Functions) User's Manual

- The setting values in the above list are guides. Set a value greater than or equal to the calculated value.
- The larger the set value is, the less likely it is that a safety communication timeout due to noise will occur.



# Appendix 7 Port No.

A port No. for the system cannot be specified.

Use the port No. according to the communication details and communication method with the communication destination.

Port No.		Applications
Decimal	Hexadecimal	
20 to 21	14H to 15H	For system
161 to 162	A1H to A2H	For system
5000	1388H	Auto-open UPD port (used for connecting to the SLMP compatible devices with UDP/IP)
5001	1389H	MELSOFT transmission port (UDP/IP) (used for connecting to the MELSOFT products and GOT with UDP/IP)
5002	138AH	MELSOFT transmission port (TCP/IP) (used for connecting to the MELSOFT products and GOT with TCP/IP)
5003 to 5009	138BH to 1391H	For system
5010	1392H	SLMP transmission port (UDP/IP) (used for connecting to the SLMP compatible devices with UDP/IP)
5011	1393H	SLMP transmission port (TCP/IP) (used for connecting to the SLMP compatible devices with TCP/IP)
45237 to 45239	B0B5H to B0B7H	For system
61440 to 61442	F000H to F002H	For system
61448	F008H	For system
61460 to 61464	F014H to F018H	For system
61500 to 61501	F03CH to F03DH	For system
62000 to 65534	F230H to FFFE H	For system

# Appendix 8 SLMP Command for Accessing the CAN Application Object

The following table lists the SLMP commands for accessing the CAN application object.

Operation	Command	Sub command	Description
ReadObject	4020h	0001h	Reads the values of the objects specified in Index and Sub Index.
WriteObject	4020h	0002h	Writes the values to the objects specified in Index and Sub Index.
ObjectSubIDReadBlock	4020h	0005h	Continuously reads the value of the object in the specified Index from the specified Sub Index.
ObjectSubIDWriteBlock	4020h	0006h	Continuously writes the value to the object in the specified Index from the specified Sub Index.

For the response data at the error response, refer to the following manual.

 SLMP Reference Manual

## ReadObject

### Request data

Command		Sub command		Index	Sub Index		Data read size (*1)
20H	40H	01H	00H			00H	

\*1 By specifying 0 for the data read size, objects are read with the default size.

### Response data (normal response)

Index	Sub Index		Read data size (in 1-byte units)	Read data
		00H		

A

## WriteObject

### Request data

Command		Sub command		Index	Sub Index		Written data size (in 1-byte units)	Written data
20H	40H	01H	00H			00H		

### Response data (normal response)

Index	Sub Index			
		00H	00H	00H

## ObjectSubIDReadBlock

### Request data

Command		Sub command		Index	Sub Index (*1)	00H	Data read size
20H	40H	01H	00H				

\*1 Only 0 or 1 can be specified in Sub Index.

### Response data (normal response)

Index	Sub Index	00H	Read data size (in 1-byte units)	Read data

## ObjectSubIDWriteBlock

### Request data

Command		Sub command		Index	Sub Index (*1)	00H	Written data size (in 1-byte units)	Written data
20H	40H	01H	00H					

\*1 Only 0 or 1 can be specified in Sub Index.

### Response data (normal response)

Index	Sub Index	00H	00H	00H



# MEMO

---

A

# INDEX

---

## 0 to 9

---

32-bit data assurance . . . . . 32,129

## C

---

CANopen communications . . . . . 137  
CC-Link IE TSN Network synchronous communication  
function . . . . . 154  
Communication test . . . . . 226  
Control CPU . . . . . 17  
Cyclic transmission assurance by watchdog counter  
. . . . . 161

## D

---

Data link . . . . . 19  
Data Link Error Station Setting . . . . . 90  
Data link error station setting . . . . . 184  
Dedicated instruction . . . . . 17  
Device . . . . . 17  
Diagnostic items . . . . . 217  
Diagnostics window . . . . . 221

## E

---

Engineering tool . . . . . 19  
Error information . . . . . 215

## G

---

Global label . . . . . 17

## I

---

IP filter function . . . . . 50,145  
IP filter settings . . . . . 91,185

## L

---

Link device . . . . . 17  
Link refresh . . . . . 17  
Lock processing . . . . . 54,149

## M

---

Master station . . . . . 17  
MELSOFT transmission port (UDP/IP) . . . . . 340  
Module information list . . . . . 215

## N

---

Network module . . . . . 19  
Network status . . . . . 222

## O

---

Output hold/clear setting during CPU STOP  
. . . . . 90,184

## P

---

PDO mapping setting . . . . . 196

## R

---

Relay station . . . . . 17  
Remote device test . . . . . 38,135  
Remote operation . . . . . 228  
Routing . . . . . 18

## S

---

Select diagnostics destination . . . . . 221  
Selected station communication status monitor  
. . . . . 222  
Slave station . . . . . 19  
Station-based block data assurance  
. . . . . 33,90,130,184  
Supplementary function . . . . . 215

## U

---

Unlock processing . . . . . 54,149

# MEMO

---

# REVISIONS

\*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Description
July 2019	IB(NA)-0300426ENG-A	First edition
January 2020	IB(NA)-0300426ENG-B	<p>■Added models RD78GHV, RD78GHW</p> <p>■Added or modified parts WHEN USING A HUB WITH CC-Link IE TSN, INTRODUCTION, RELEVANT MANUALS, TERMS, GENERIC TERMS AND ABBREVIATIONS, FUTURE SUPPORT PLANNED, Section 1.1, 1.2, 1.3, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.3, 3.4, 3.5, 3.6, 3.7, Appendix 1, 2, 3, INDEX, WARRANTY, TRADEMARKS</p>
August 2020	IB(NA)-0300426ENG-C	<p>■Added or modified parts WHEN USING A SWITCHING HUB WITH CC-Link IE TSN, SAFETY PRECAUTIONS, RELEVANT MANUALS, TERMS, GENERIC TERMS AND ABBREVIATIONS, FUTURE SUPPORT PLANNED, Chapter 3, Section 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 4.1, 4.3, 4.4, 4.5, 4.6, 4.7, Appendix 1, 2, 3, 5, 6, INDEX, TRADEMARKS</p>
August 2021	IB(NA)-0300426ENG-D	<p>■Added or modified parts WHEN USING A SWITCHING HUB WITH CC-Link IE TSN, SAFETY PRECAUTIONS, INTRODUCTION, COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES, RELEVANT MANUALS, TERMS, GENERIC TERMS AND ABBREVIATIONS, FUTURE SUPPORT PLANNED, Chapter 4, 5, 6, Section 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.2, 2.3, 2.4, 2.5, 3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 5.1, 5.2, 5.3, 5.4, 5.5, 6.1, 6.2, 7.1, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, Appendix 1, 2, 3, 4, 5, 6, 7, INDEX, WARRANTY, TRADEMARKS</p>
January 2022	IB(NA)-0300426ENG-E	<p>■Added or modified parts TERMS, GENERIC TERMS AND ABBREVIATIONS, FUTURE SUPPORT PLANNED, Section 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.3, 2.4, 2.5, 3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.8, 5.3, 5.5, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, Appendix 1, 2, 3, 4, 5, 6, 7, 8</p>

Japanese manual number: IB-0300425-F

This manual confers no industrial property rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

© 2019 MITSUBISHI ELECTRIC CORPORATION

# WARRANTY

---

## Warranty

### **1. Warranty period and coverage**

We will repair any failure or defect hereinafter referred to as "failure" in our FA equipment hereinafter referred to as the "Product" arisen during warranty period at no charge due to causes for which we are responsible through the distributor from which you purchased the Product or our service provider. However, we will charge the actual cost of dispatching our engineer for an on-site repair work on request by customer in Japan or overseas countries. We are not responsible for any on-site readjustment and/or trial run that may be required after a defective unit are repaired or replaced.

[Term]

For terms of warranty, please contact your original place of purchase.

[Limitations]

(1) You are requested to conduct an initial failure diagnosis by yourself, as a general rule.

It can also be carried out by us or our service company upon your request and the actual cost will be charged. However, it will not be charged if we are responsible for the cause of the failure.

(2) This limited warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are set forth in the instruction manual and user manual for the Product and the caution label affixed to the Product.

(3) Even during the term of warranty, the repair cost will be charged on you in the following cases;

1. a failure caused by your improper storing or handling, carelessness or negligence, etc., and a failure caused by your hardware or software problem
2. a failure caused by any alteration, etc. to the Product made on your side without our approval
3. a failure which may be regarded as avoidable, if your equipment in which the Product is incorporated is equipped with a safety device required by applicable laws and has any function or structure considered to be indispensable according to a common sense in the industry
4. a failure which may be regarded as avoidable if consumable parts designated in the instruction manual, etc. are duly maintained and replaced
5. any replacement of consumable parts (battery, fan, smoothing capacitor, etc.)
6. a failure caused by external factors such as inevitable accidents, including without limitation fire and abnormal fluctuation of voltage, and acts of God, including without limitation earthquake, lightning and natural disasters
7. a failure generated by an unforeseeable cause with a scientific technology that was not available at the time of the shipment of the Product from our company
8. any other failures which we are not responsible for or which you acknowledge we are not responsible for

### **2. Term of warranty after the stop of production**

(1) We may accept the repair at charge for another seven (7) years after the production of the product is discontinued. The announcement of the stop of production for each model can be seen in our Sales and Service, etc.

(2) Please note that the Product (including its spare parts) cannot be ordered after its stop of production.

### **3. Service in overseas countries**

Our regional FA Center in overseas countries will accept the repair work of the Product. However, the terms and conditions of the repair work may differ depending on each FA Center. Please ask your local FA center for details.

### **4. Exclusion of loss in opportunity and secondary loss from warranty liability**

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

- (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.
- (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
- (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
- (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

### **5. Change of Product specifications**

Specifications listed in our catalogs, manuals or technical documents may be changed without notice.

### **6. Application and use of the Product**

- (1) For the use of our Motion module, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in the Motion module, and a backup or fail-safe function should operate on an external system to the Motion module when any failure or malfunction occurs.
- (2) Our Motion module is designed and manufactured as a general purpose product for use at general industries. Therefore, applications substantially influential on the public interest for such as atomic power plants and other power plants of electric power companies, and also which require a special quality assurance system, including applications for railway companies and government or public offices are not recommended, and we assume no responsibility for any failure caused by these applications when used

In addition, applications which may be substantially influential to human lives or properties for such as airlines, medical treatments, railway service, incineration and fuel systems, man-operated material handling equipment, entertainment machines, safety machines, etc. are not recommended, and we assume no responsibility for any failure caused by these applications when used. We will review the acceptability of the abovementioned applications, if you agree not to require a specific quality for a specific application. Please contact us for consultation.

- (3) Mitsubishi shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

# TRADEMARKS

---

CANopen<sup>®</sup> is registered Community Trademarks of CAN in Automation e.V.

Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

PLCopen is a registered trademark owned by PLCopen<sup>®</sup>.

The company names, system names and product names mentioned in this manual are either registered trademarks or trademarks of their respective companies.

In some cases, trademark symbols such as <sup>™</sup> or <sup>®</sup> are not specified in this manual.



IB(NA)-0300426ENG-E(2201)MEE

MODEL: RD78-U-NET-E

## **mitsubishi electric corporation**

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN  
NAGOYA WORKS : 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA, JAPAN

When exported from Japan, this manual does not require application to the  
Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.