MITSUBISHI ELECTRIC

Programmable Controller

MELSEC iQ-R series

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

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

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. For the safety precautions of the programmable controller system, refer to the MELSEC iQ-R Module Configuration Manual.

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

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	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.
- When the programmable controller is turned off, 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 servo motor, 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 100mm 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 the remote RUN/STOP functions), select "Do Not Open by Program" for "Opening Method" of "Module Parameter". If "Open by Program" is selected, an execution of the remote STOP function causes the communication line to close. Consequently, the CPU module cannot reopen the line, and external devices cannot execute the remote RUN function.

[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 (IB-0800525). 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, and push in the module, until the hook(s) located at the top snaps into place. 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 and electronic components 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 before powering on the system for operation. Also, attach an extension connector protective cover[*1] to each unused extension cable connector as necessary. Directly touching any conductive parts of the connectors while power is on may result in electric shock.
  *1 For details, please consult your local Mitsubishi Electric representative.

[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 100mm 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 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.
- 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.
- When a protective film is attached to the top of the module, remove it before system operation. If not, inadequate heat dissipation of the module may cause a fire, failure, or malfunction.
- 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) 25cm or more 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.

[Startup and Maintenance Precautions]

⚠CAUTION

- 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.
- After unpacking, eliminate static electricity from the module to prevent electrostatic discharge from affecting the module. If an electrostatically charged module comes in contact with a grounded metal object, a sudden electrostatic discharge of the module may cause failure.
  For details on how to eliminate static electricity from the module, refer to the following.
  Antistatic Precautions Before Using MELSEC iQ-R Series Products (FA-A-0368)
- Use a clean and dry cloth to wipe off dirt on the module.
- 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 can 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 Electric 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 products 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

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 (SH-081262ENG)
📖Safety Guidelines (IB-0800525)
The CE mark on the side 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 (SH-081262ENG)
📖Safety Guidelines (IB-0800525)

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RELEVANT MANUALS

The following manuals are relevant to this product.

Manual name [manual number]	Description	Supported mode*1	
		PLCopen Motion control FB mode	Simple Motion mode
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	○	○
MELSEC iQ-R Motion Module User's Manual (Startup) [IB-0300406ENG]	Specifications, procedures before operation, system configuration, and wiring of the Motion module	○	○
MELSEC iQ-R Motion Module User's Manual (Application) [IB-0300411ENG]	Functions, I/O signals, variables, labels, programming, and troubleshooting of the Motion module	○	—
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	—	○
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	—	○
MELSEC iQ-R Programming Manual (Motion Module Instructions, Standard Functions/ Function Blocks) [IB-0300431ENG]	Instructions for the Motion module and standard functions/ function blocks	○	—
MELSEC iQ-R Programming Manual (Motion Control Function Blocks) [IB-0300533ENG]	Motion control function blocks, variables, and programming	○	—
Motion Module Quick Start Guide [L03191ENG]	Describes system startup, parameter settings, and programming methods for first-time users of the Motion module	○	—
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	○	—
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)	—	○

*1 For details of supported modes, 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)

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Buffer memory	A memory in an intelligent function module, where data (such as setting values and monitoring values) are stored.
CC-Link IE TSN	An open network that uses "TSN (Time-Sensitive Networking)", which is an extension of the Ethernet standard, to ensure real-time control and handle information from other open networks simultaneously.
CC-Link IE TSN Class[*1]	A group of devices and industrial switches compatible with CC-Link IE TSN, classified according to the functions and performance by the CC-Link Partner Association. For CC-Link IE TSN Class, refer to the CC-Link IE TSN Installation Manual (BAP-C3007ENG-001) published by the CC-Link Partner Association.
CC-Link IE TSN Protocol version 1.0	This protocol is used to perform communications by using the time sharing method defined by IEEE 802.1AS or IEEE 1588 for time synchronization.
CC-Link IE TSN Protocol version 2.0	This protocol is used to perform communications by using the time sharing method defined by IEEE 802.1AS and time-managed polling method for time synchronization. Supporting this protocol version mitigates restrictions when "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only" is set in the system configuration, and increases the number of connectable devices.
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. (www.cc-link.org)
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.
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.
Industrial switch (CC-Link IE TSN certified)	CC-Link IE TSN Class B and CC-Link IE TSN Class A industrial switches authorized by CC-Link Partner Association.
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 devices 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.
Local station	A station that performs cyclic transmission and transient transmission with the master station and other local stations.
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. From the module used, GX Works3 automatically generates this label, which can be used as a global label.
Motion area	A software that performs the motion control in the Motion module.
Motion control station	A device station that exchanges cyclic data by using slave labels and the motion control.
Motion module	Another term for RD78G(H).
Motion synchronization station	Another term for the motion control station.
MR-J5-G	Servo amplifier model MR-J5-_G_/MR-J5-_G_-RJ/MR-J5-_G_-LL.
MR-J5D-G	Servo amplifier model MR-J5D_-_G_.
MR-J5W-G	Servo amplifier model MR-J5W_-_G.
MR-JET-G	Servo amplifier model MR-JET-_G.

Term	Description
Multicast mode	A communication mode used to send cyclic data to multiple stations.
Object	Various data held by the CANopen-compatible device station.
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. A transient transmission is available.
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.
Reserved station	A station which is actually not connected to the network. It is included in the total station number in the network for future connection.
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 device station other than a motion control station.
Transient transmission	A function of non-periodic data communication 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.
Unicast mode	A communication mode used to send cyclic data to one station.

*1 The term has been changed for standardization among manuals and software applications related to CC-Link IE TSN. However, the term used in some CC-Link IE TSN related software windows may remain unchanged and may be different from the term used in this manual.
In case of inconsistency, refer to the following.

Term used in software window	Term after change
Authentication Class	CC-Link IE TSN Class

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: • CC-Link IE TSN • CC-Link IE Controller Network (MELSEC iQ-R CC-Link IE Controller Network User's Manual (Application)) • CC-Link IE Field Network (MELSEC iQ-R CC-Link IE Field Network User's Manual (Application))
CPU module	An abbreviation for the MELSEC iQ-R series CPU module.
Data link	A generic term for a cyclic transmission and a transient transmission.
Device station	• A generic term for a local station and remote station on CC-Link IE TSN • A generic term for a local station, remote I/O station, remote device station, and intelligent device station on CC-Link IE Field Network
Drive unit	A generic term for motor drive devices, such as servo amplifiers.
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: • RJ71EN71 • CPU module
GOT	A generic term for the Mitsubishi Electric GOTs (GOT1000, GOT2000 series).
LB	An abbreviation for a link relay of the link device. Bit data sent from each station of the network.
LW	An abbreviation for a link register of the link device. 16-bit (1-word) data sent from each station of the network.
MR-J5(W)-G	A generic term for MR-J5-_G_/MR-J5-_G_-RJ/MR-J5-_G_-LL/MR-J5W_-_G/MR-J5D-_G_ model servo amplifiers.
Network module	A generic term for the following modules: • Ethernet interface module • Module on CC-Link IE TSN (the Motion module, a CC-Link IE TSN master/local module, a CC-Link IE TSN Plus master/local module, and a module on a remote station) • CC-Link IE Controller Network module • 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) • MELSECNET/H network module • MELSECNET/10 network module • RnENCPU (network part)
PDO	An abbreviation for Process Data Object. A collection of the application objects transmitted periodically between multiple CANopen nodes.
Protocol version	An abbreviation for CC-Link IE TSN Protocol version.
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 16-bit (1-word) data input from a device station to the master station. (Not applicable for some local stations.)
RWw	An abbreviation for a remote register of the link device. This refers to 16-bit (1-word) data output from the master station to a device station. (Not applicable for some local stations.)
RX	An abbreviation for remote input of the link device. This refers to bit data input from a device station to the master station. (Not applicable for some local stations.)
RY	An abbreviation for remote output of the link device. This refers to bit data output from the master station to a device station. (Not applicable for some local stations.)
Safety CPU	A generic term for 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. A message used to access the object entries inside the object dictionary of an optional CANopen node. Used for non-periodic transmission between stations.
SLMPSND	A generic term for the J.SLMPSND, JP.SLMPSND, G.SLMPSND, and GP.SLMPSND.
SW	An abbreviation for a link special register. 16-bit (1-word) data that indicates the operating status and data link status of a module on CC-Link IE.

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 on the "CC-Link IE TSN Configuration" window. (☞ Page 122 "CC-Link IE TSN Configuration" Window)
- The link refresh is assigned in "Refresh Settings" under "Basic Settings". (☞ Page 109 Refresh Settings)

Unicast mode and multicast mode

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

Communication mode	Description
Unicast mode	• Cyclic data is sent to one station. • When this communication mode is used, the local station cannot receive cyclic data from another station. Use this mode when there is no local station or when it is not required for the local station to receive cyclic data from another station. • The cyclic transmission time of this mode is shorter than the cyclic transmission time of multicast mode. (☞ Page 306 Communication cycle interval)
Multicast mode	• Cyclic data is sent to multiple stations. • When this mode is used, the local station can receive cyclic data from another station. Use this mode when it is required for the local station to receive cyclic data from another station. • The cyclic transmission time of this mode is longer than the cyclic transmission time of unicast mode. (☞ Page 306 Communication cycle interval)

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 20 Master station and remote stations (standard stations)

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

☞ Page 21 Master station and remote stations (motion control stations)

Point

- When cyclic transmission is performed in multicast mode, the local station cannot receive RX and RWr sent by the CC-Link IE TSN Class A remote station. (☞ Page 26 Multicast mode)
- To allow the local station to obtain RX and RWr sent by the CC-Link IE TSN Class A remote station, use the program to send RX and RWr from the master station to the local station.
- In multicast mode, set "Communication Period Setting" for the local station on the "CC-Link IE TSN Configuration" window to "Basic Period".
- If a data link error occurs in multicast mode, ERR LED at the local station flashes. However, even if a data link error occurs at the CC-Link IE TSN Class A remote station during data link, ERR LED at the local station does not flash. (The LED remains off.)
- In multicast mode, 'Data link error status of each station' (SB00B0) and 'Total number of device stations present value' (SW0059) at the local station can be checked by SB and SW. However, the information on the CC-Link IE TSN Class A remote station may not be checked by some SB and SW.

Precautions

The Motion module provides the following CPU operating status notifications for Motion control stations.

PLC ready status	Motion module stop (moderate/major) error detection status	CPU operating status notification for Motion control stations	
		For Add-on baseSystem version "1.22" or earlier	For Add-on baseSystem version "1.24" or later
ON	—	CPU RUN	CPU RUN
OFF	Error not detected		CPU STOP
	Error detected	CPU error stop (CPU RUN when not set to an axis)	CPU error stop

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 device station.

Restriction

- The remote station of the motion control station does not communicate data with the link device (RX, RY, RWw, RWr) of the master station, and the motion function of the Motion module controls output and acquires the input status.

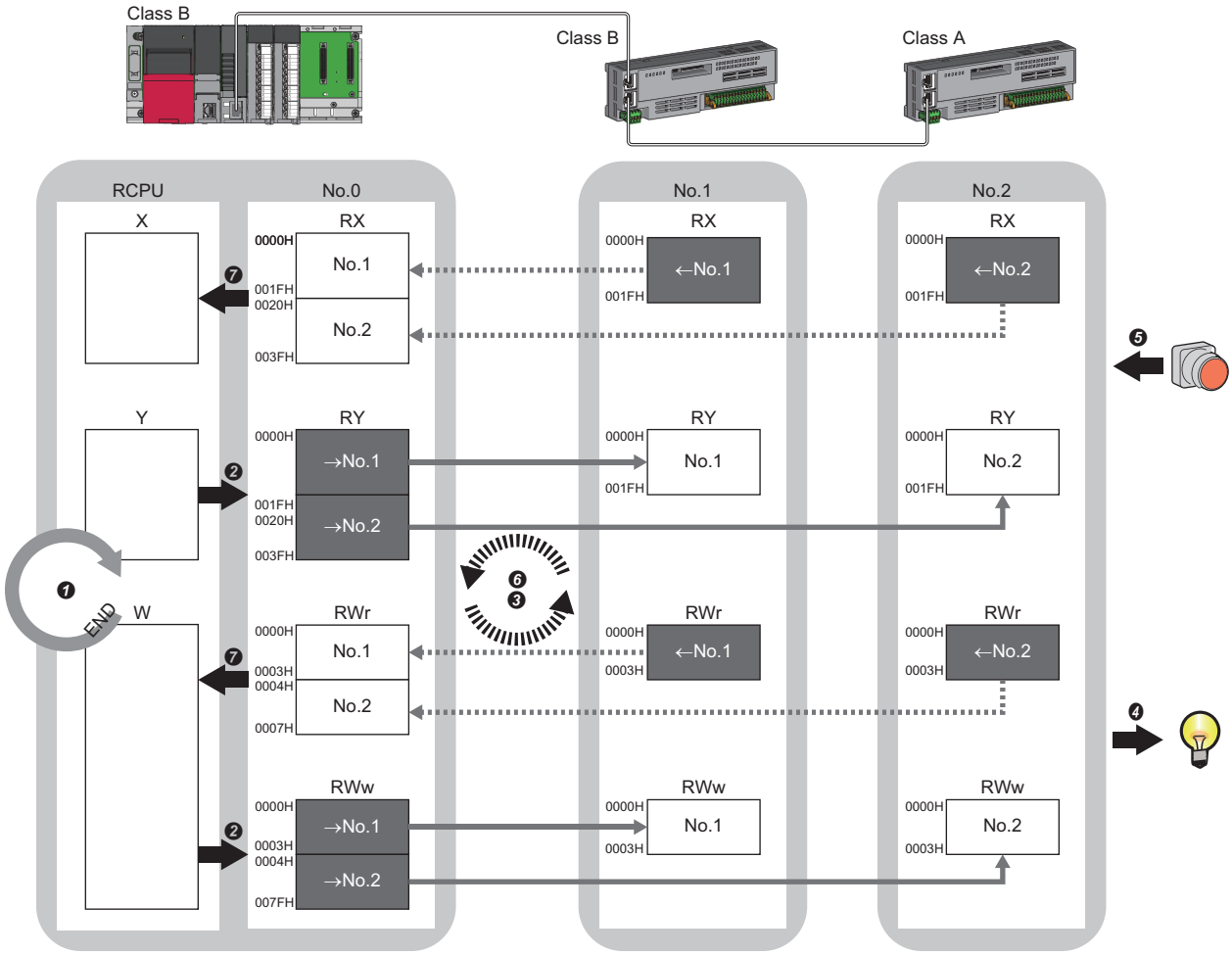
<When using the PLCopen Motion control FB mode>

- When the Add-on baseSystem version is "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, "Network parameter error" (error code: 2221H) occurs.
- The remote station of the motion control station can use the slave label to change output from ST programs in the Motion module and the CPU module (public label), and obtain input status.

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: CC-Link IE TSN Class A device
Class B: CC-Link IE TSN Class B device

- Output from the master station

❶ The device of the CPU module turns ON.
❷ The device status of the CPU module is stored in the link devices (RY, RWw) of the master station by link refresh.
❸ 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.
❹ The status of the link devices (RY, RWw) of the remote station is output to the external device.

- Input from the remote station

❺ The status of the external device is stored in the link devices (RX, RWr) of the remote station.
❻ 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.
❼ The status of the link devices (RX, RWr) of the master station is stored in the devices of the CPU module by link refresh.

■Multicast mode

- The master station and remote station send data on the line in multicast mode in each send range.
- The master station receives all data, but the remote station discards the data of another remote station. Therefore, communication at each station is performed in the same manner as unicast mode. (☞ Page 20 Unicast mode)

Master station and remote stations (motion control stations)

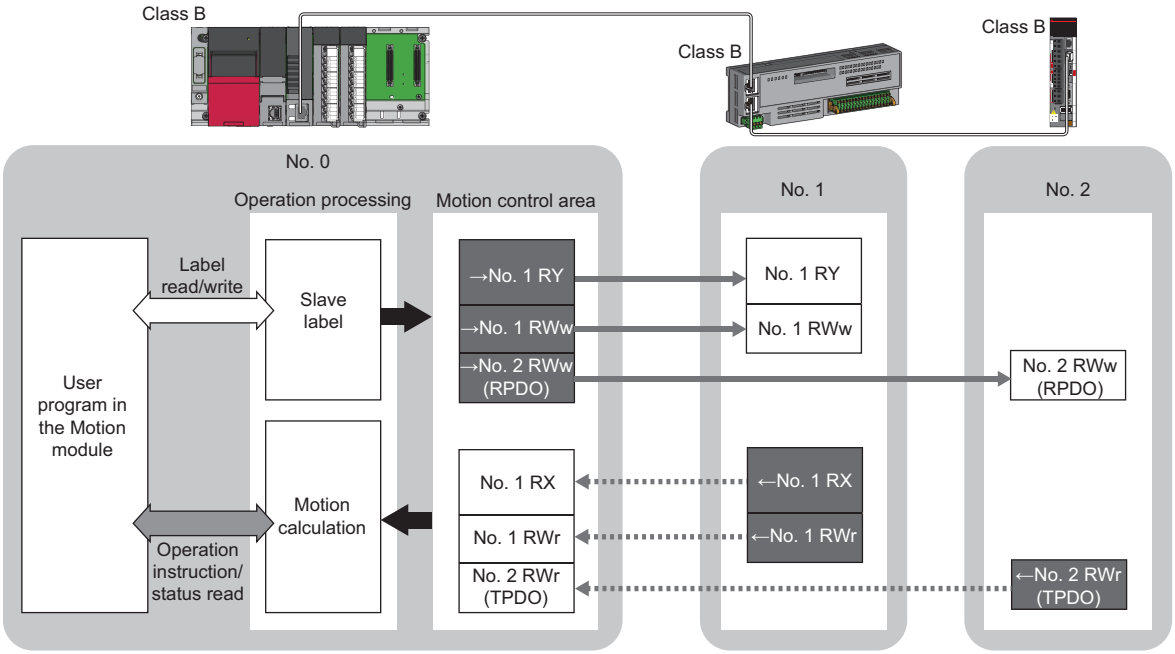
■Unicast mode

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 the motion control station. The motion control output status is output to the remote station of the motion control station, and the input status is not stored in the link device (RX, RWr) of the master station.

- When using the PLCopen Motion control FB mode

  The Motion module operates the cyclic data in the motion control area with the motion calculation or the 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.

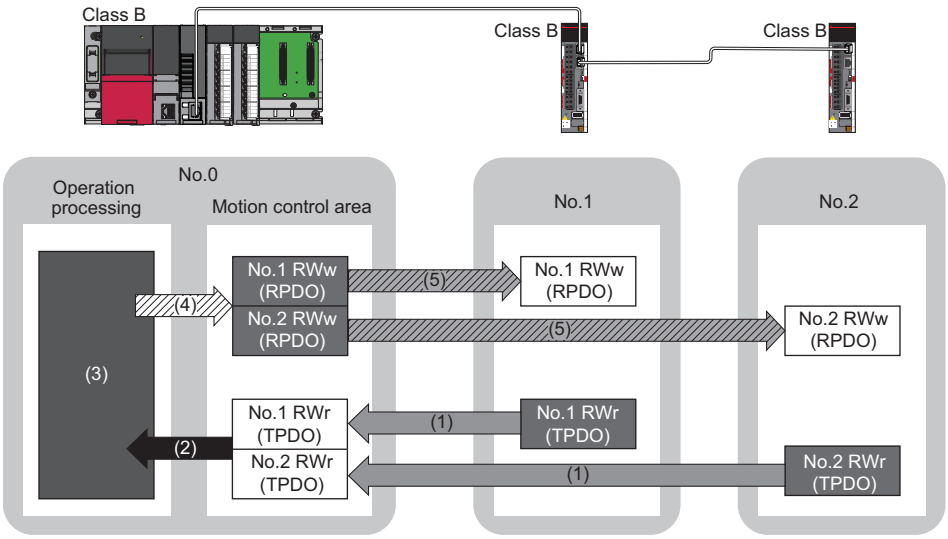
  MELSEC iQ-R Motion Module User's Manual (Application)



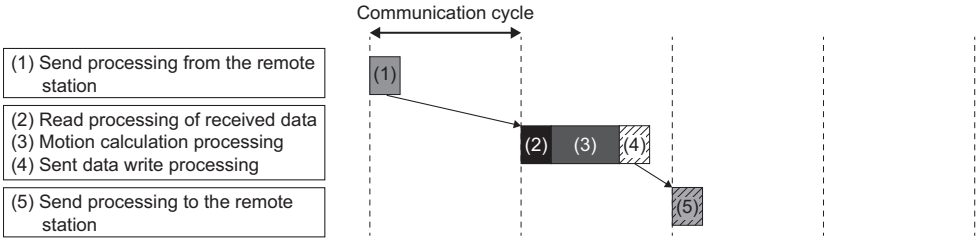
No. 0, No. 1, No. 2: Station No. 0 (master station), station No. 1, station No. 2
→No. 1, →No. 2: Send range: to station No. 1, send range: to station No. 2
←No. 1, ←No. 2: Send range: from station No. 1, send range: from station No. 2
➡: Data refresh by operation cycle

• When using Simple Motion mode

The Motion module performs cyclic data operations of the motion control area by the motion calculation. The feedback of the cyclic data sent by the motion control station takes at least 3 cycles.



No. 0, No. 1, No. 2: Station No. 0 (master station), station No. 1, station No. 2
(1) Transmission from remote station
(2) Read transmission data
(3) Motion calculation
(4) Write transmission data
(5) Transmission to remote station



■Multicast mode

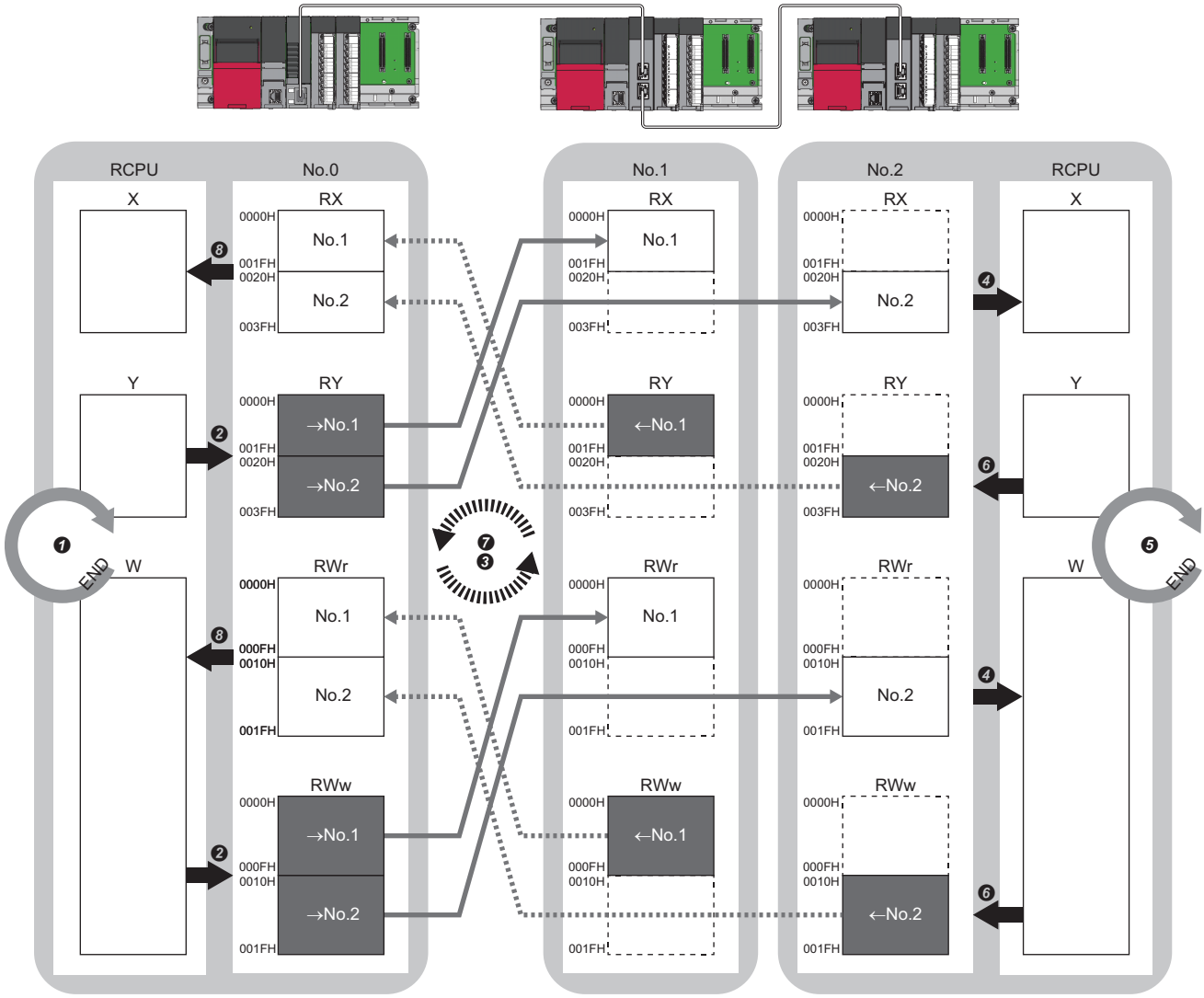
• The master station and remote station send data on the line in multicast mode in each send range.

• The master station receives all data, but the remote station discards the data of another remote station. Therefore, communication at each station is performed in the same manner as unicast mode. (☞ Page 20 Unicast mode)

Master station and local stations

■Unicast mode

1:1 communications between the master station and each local station. Local 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

- Output from the master station

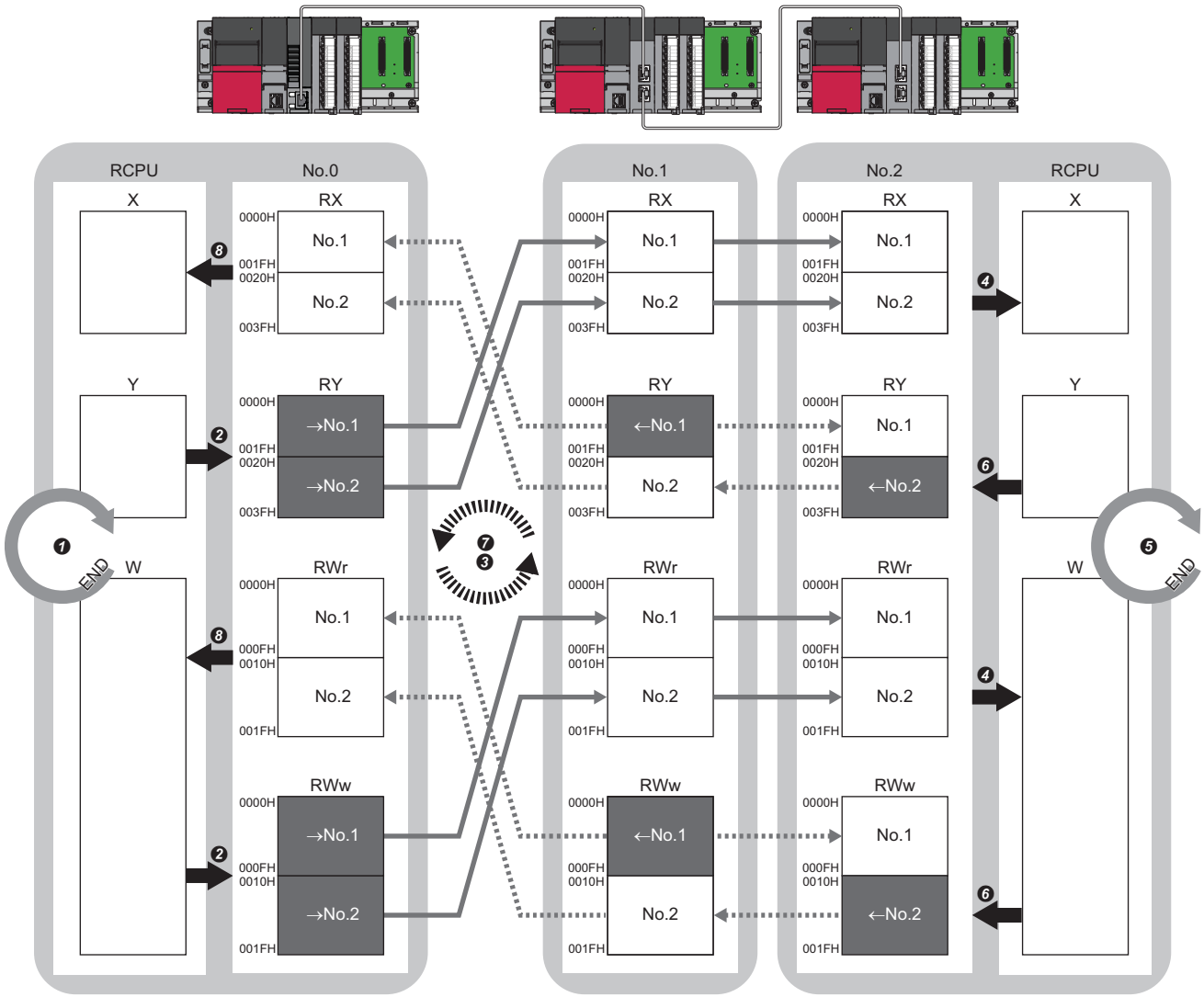
❶ The device is turned ON by the sequence scan of the CPU module in the master station, and END processing is performed.
❷ The device status of the CPU module is stored in the link devices (RY, RWw) of the master station by link refresh.
❸ The status of the link devices (RY, RWw) of the master station is stored in the link devices (RX, RWr) of the local station by cyclic data transfer processing.
❹ The status of the link devices (RX, RWr) of the local station is stored in the devices of the CPU module by link refresh.

- Input from the local station

❺ The device is turned ON by the sequence scan of the CPU module in the local station, and END processing is performed.
❻ The device status of the CPU module is stored in the link devices (RY, RWw) of the local station by link refresh.
❼ The status of the link devices (RY, RWw) of the local station is stored in the link devices (RX, RWr) of the master station by cyclic data transfer processing.
❽ The status of the link devices (RX, RWr) of the master station is stored in the devices of the CPU module by link refresh.

■Multicast mode

The master station and local station send data on the line in multicast mode in each send range.



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

- Output from the master station

❶ The device is turned ON by the sequence scan of the CPU module in the master station, and END processing is performed.
❷ The device status of the CPU module is stored in the link devices (RY, RWw) of the master station by link refresh.
❸ The status of the link devices (RY, RWw) of the master station is stored in the link devices (RX, RWr) of the local station on the same network by cyclic data transfer processing.
❹ The status of the link devices (RX, RWr) of the local station is stored in the devices of the CPU module by link refresh.

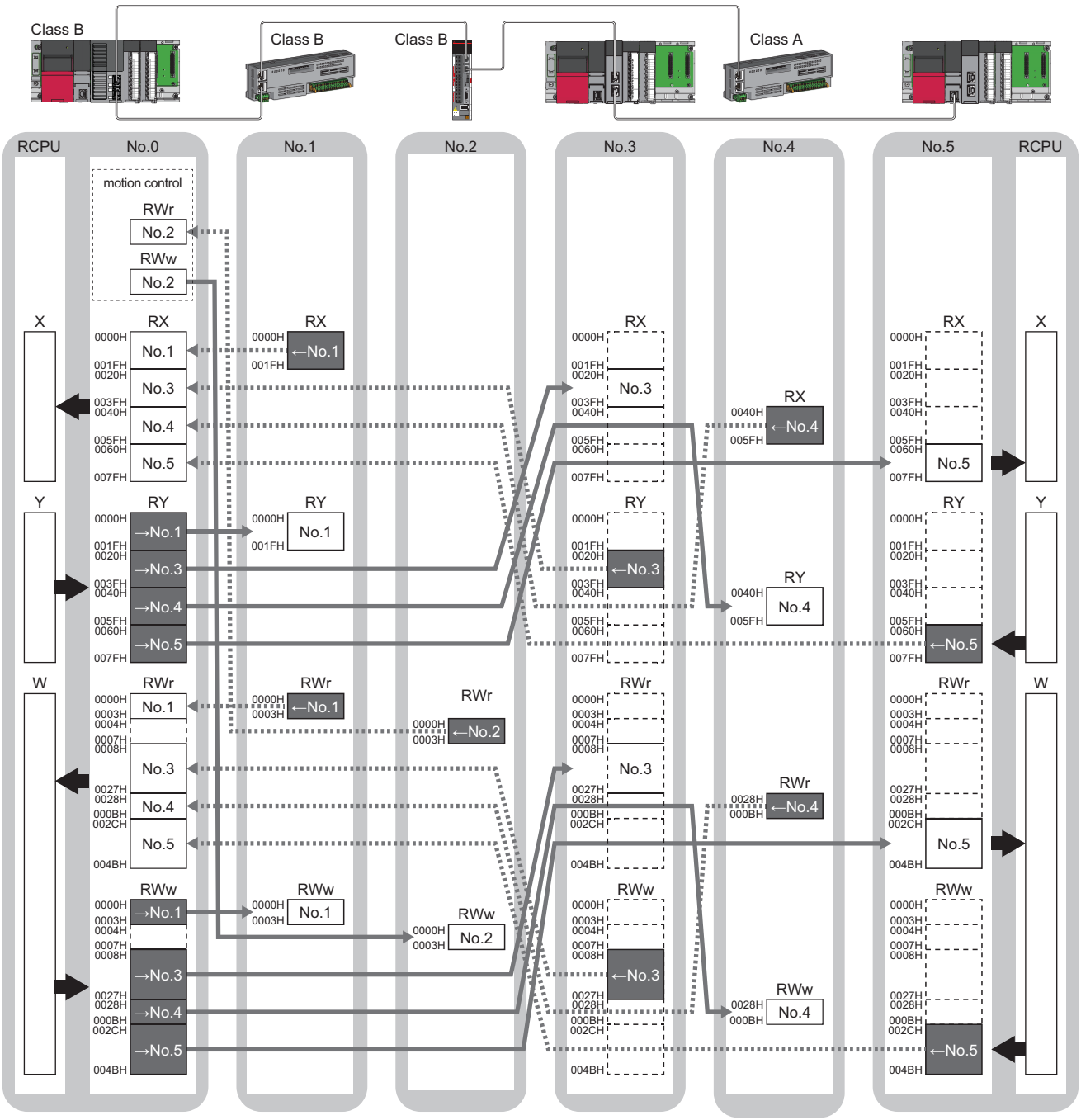
- Input from the local station

❺ The device is turned ON by the sequence scan of the CPU module in the local station, and END processing is performed.
❻ The status of the device of the CPU module is stored in the link devices (RY, RWw) of the local station by link refresh.
❼ The status of the link devices (RY, RWw) of the local station (station No.2) is stored in the link devices (RX, RWr) of the master station on the same network and the link devices (RY, RWw) of the local station (station No.1) by cyclic data transfer processing.
❽ The status of the link devices (RX, RWr) of the master station is stored in the devices of the CPU module by link refresh.

Coexistence of remote stations and local stations

■Unicast mode

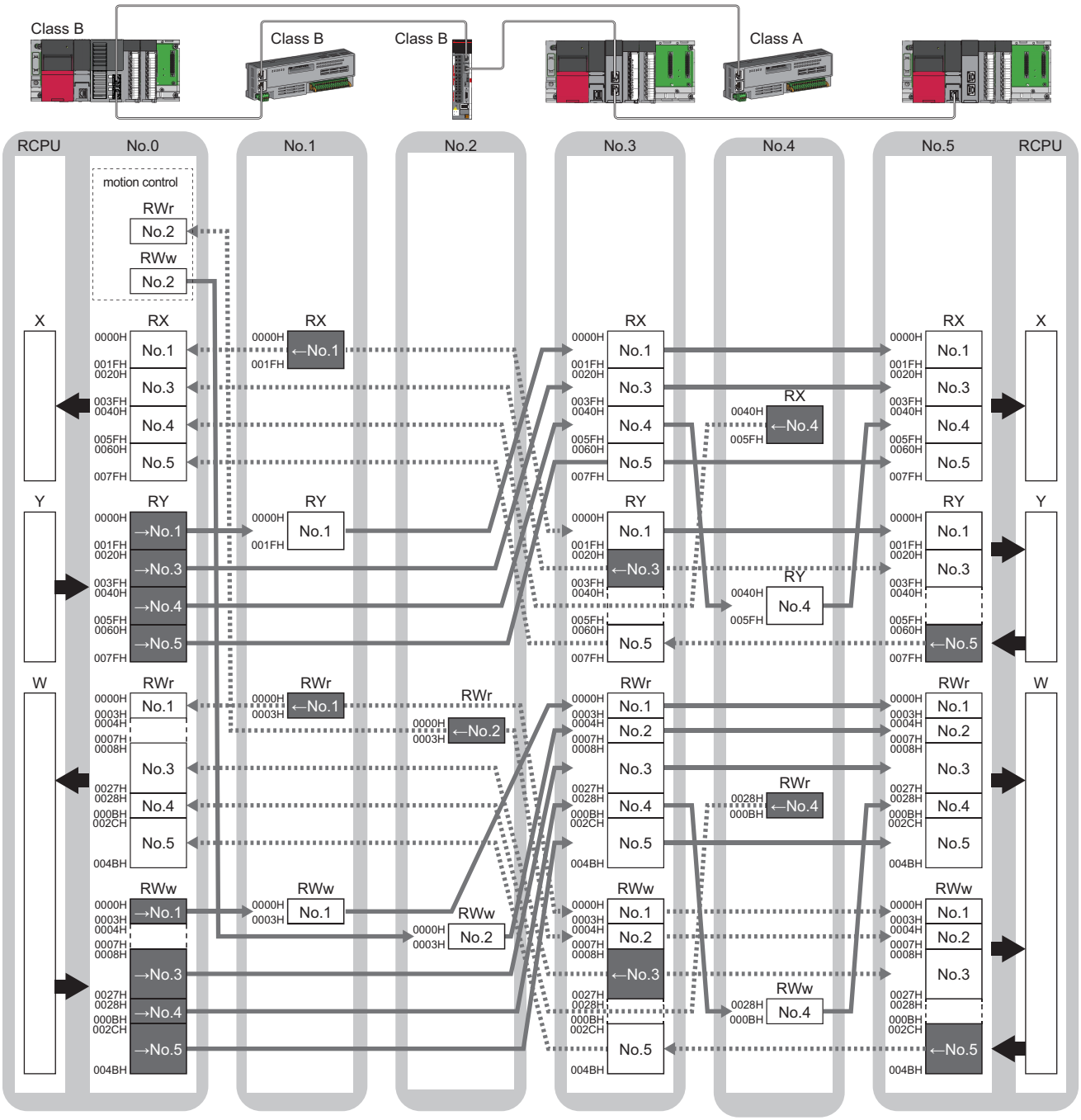
- 1:1 communications between the master station and each remote station, and between the master station and each local station.
- Communications are not performed between remote stations, between local stations, and between a remote station and a local station.



No.0, No.1, No.2, No.3, No.4, No.5: station No.0 (master station), station No.1, station No.2, station No.3, station No.4, station No.5
→No.1, →No.2, →No.3, →No.4, →No.5: Send range: to station No.1, send range: to station No.2, send range: to station No.3, send range: to station No.4, send range: to station No.5
←No.1, ←No.2, ←No.3, ←No.4, ←No.5: Send range: from station No.1, send range: from station No.2, send range: from station No.3, send range: from station No.4, send range: from station No.5
Class A: CC-Link IE TSN Class A device
Class B: CC-Link IE TSN Class B device

■Multicast mode

Each local station can obtain data of all device stations.



No.0, No.1, No.2, No.3, No.4: station No.0 (master station), station No.1, station No.2, station No.3, station No.4, station No.5

→No.1, →No.2, →No.3, →No.4, →No.5: Send range: to station No.1, send range: to station No.2, send range: to station No.3, send range: to station No.4, send range: to station No.5

←No.1, ←No.2, ←No.3, ←No.4, ←No.5: Send range: from station No.1, send range: from station No.2, send range: from station No.3, send range: from station No.4, send range: from station No.5

Class A: CC-Link IE TSN Class A device

Class B: CC-Link IE TSN Class B device

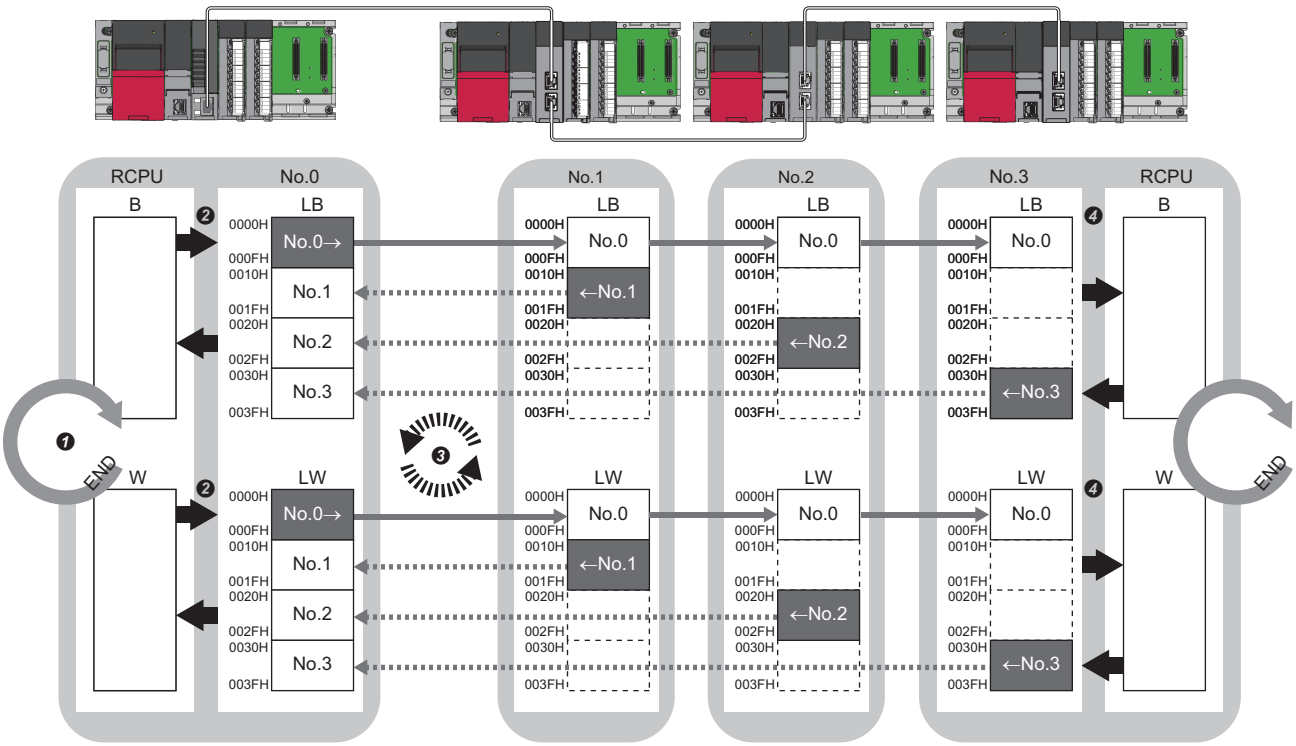
Communications using LB and LW

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

Master station and local stations, or between local stations

■Unicast mode

1:1 communications between the master station and each local station. Local stations do not communicate with each other.



No.0, No.1, No.2, No.3: Station No.0 (master station), station No.1, station No.2, station No.3

No.0→: Send range: to station No.1, station No.2, and station No.3

←No.1, ←No.2, ←No.3: Send range: from station No.1, send range: from station No.2, send range: from station No.3

❶ The device of the CPU module ON the sending side turns on.

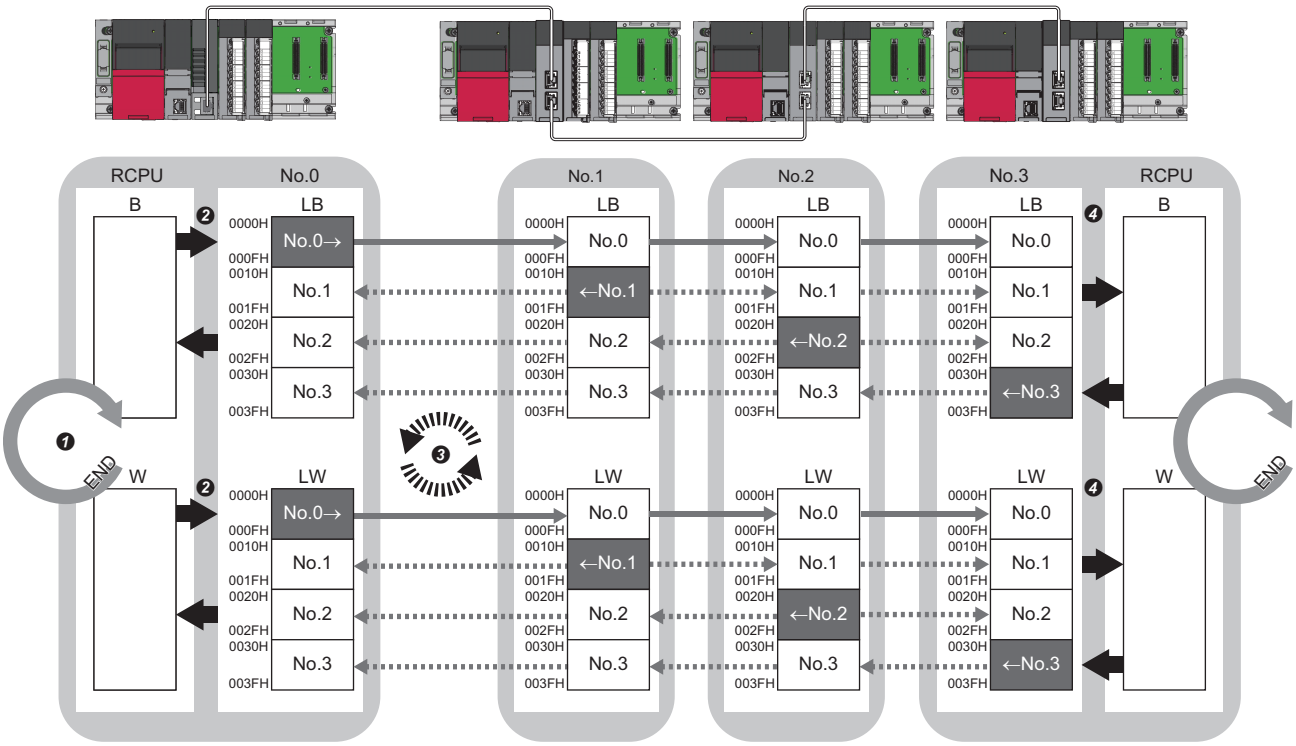
❷ The device status of the CPU module on the sending side is stored in the link devices (LB, LW) of the master station by link refresh.

❸ The status of the link devices (LB, LW) is stored in the link devices (LB, LW) of the local station on the receiving side by cyclic data transfer processing.

❹ The status of the link devices (LB, LW) is stored in the devices of the CPU module on the receiving side.

■Multicast mode

This allows link device data to be exchanged between local stations as well as between the master station and local stations.



No.0, No.1, No.2, No.3: Station No.0 (master station), station No.1, station No.2, station No.3

No.0→: Send range: to station No.1, station No.2, and station No.3

←No.1, ←No.2, ←No.3: Send range: from station No.1, send range: from station No.2, send range: from station No.3

❶ The device of the CPU module ON the sending side turns on.

❷ The device status of the CPU module on the sending side is stored in the link devices (LB, LW) of the master station by link refresh.

❸ The status of the link devices (LB, LW) is stored in the link devices (LB, LW) of each local station on the receiving side by cyclic data transfer processing.

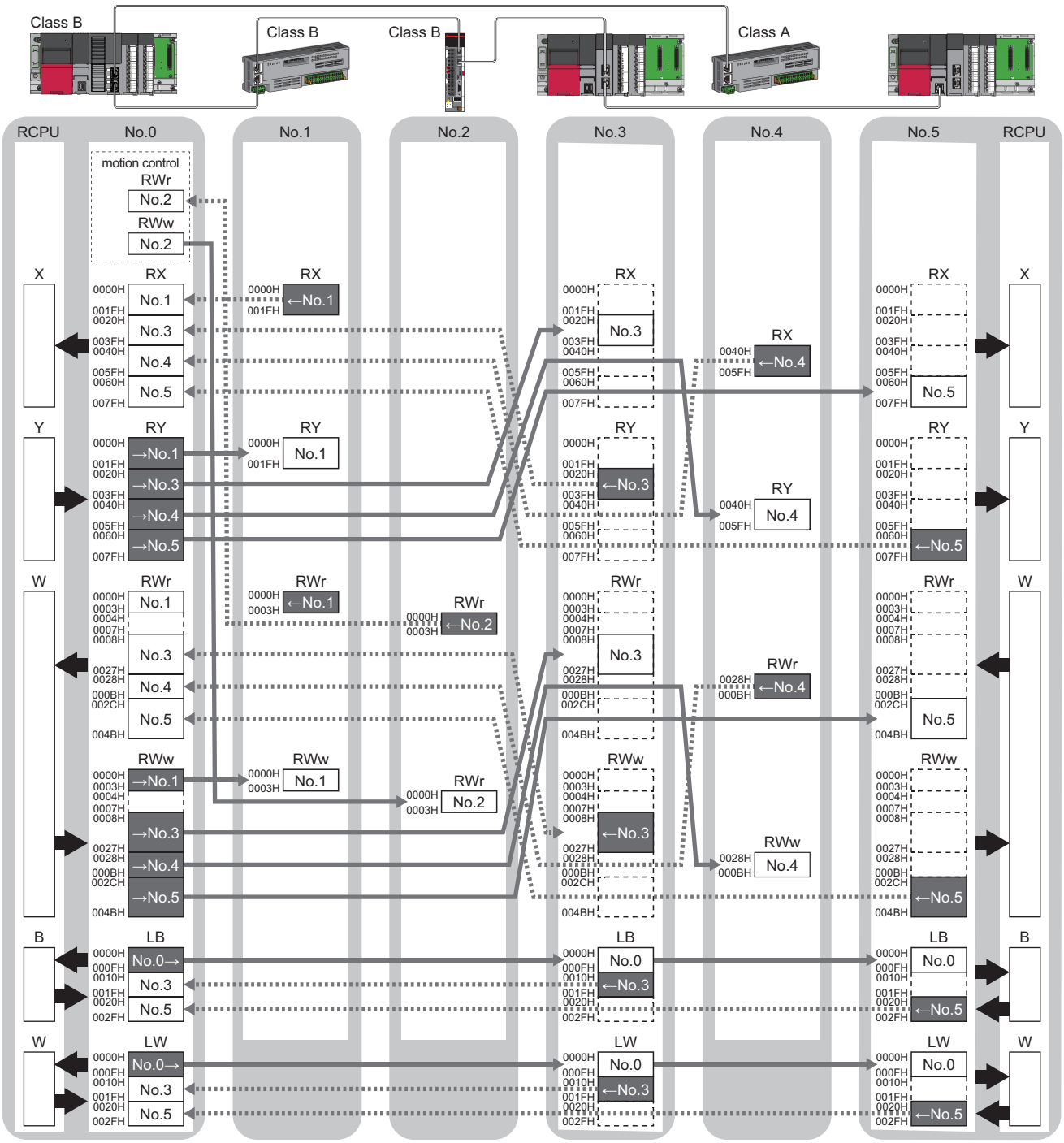
❹ The status of the link devices (LB, LW) is stored in the devices of the CPU module on the receiving side.

Communications using RX, RY, RWr, RWw, LB, and LW

The module on CC-Link IE TSN performs communications using RX, RY, RWr, and RWw and communications using LB and LW simultaneously.

Coexistence of the master station and device stations

■Unicast mode



No.0, No.1, No.2, No.3, No.4, No.5: station No.0 (master station), station No.1, station No.2, station No.3, station No.4, station No.5

→No.1, →No.2, →No.3, →No.4, →No.5: Send range: to station No.1, send range: to station No.2, send range: to station No.3, send range: to station No.4, send range: to station No.5

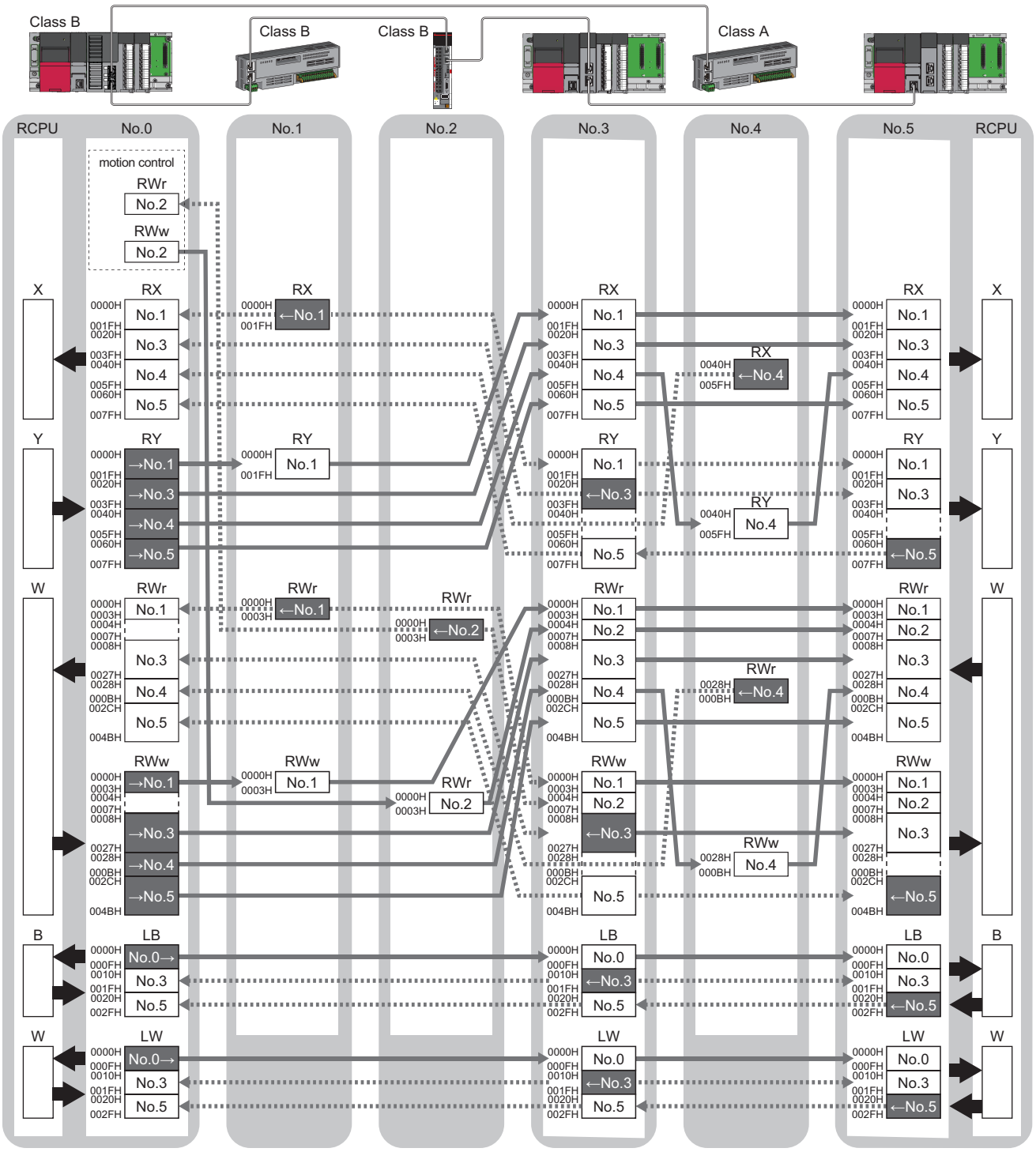
←No.1, ←No.2, ←No.3, ←No.4, ←No.5: Send range: from station No.1, send range: from station No.2, send range: from station No.3, send range: from station No.4, send range: from station No.5

No.0→: Send range: to station No.3 and station No.5

Class A: CC-Link IE TSN Class A device

Class B: CC-Link IE TSN Class B device

■Multicast mode



No.0, No.1, No.2, No.3, No.4: station No.0 (master station), station No.1, station No.2, station No.3, station No.4, station No.5

→No.1, →No.2, →No.3, →No.4, →No.5: Send range: to station No.1, send range: to station No.2, send range: to station No.3, send range: to station No.4, send range: to station No.5

←No.1, ←No.2, ←No.3, ←No.4, ←No.5: Send range: from station No.1, send range: from station No.2, send range: from station No.3, send range: from station No.4, send range: from station No.5

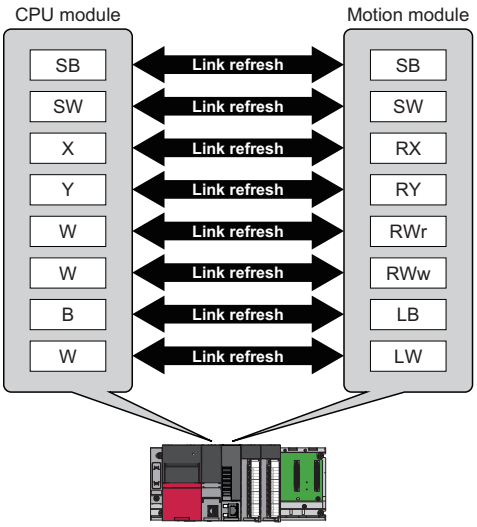
No.0→: Send range: to station No.3 and station No.5

Class A: CC-Link IE TSN Class A device

Class B: CC-Link IE TSN Class B device

Link refresh

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

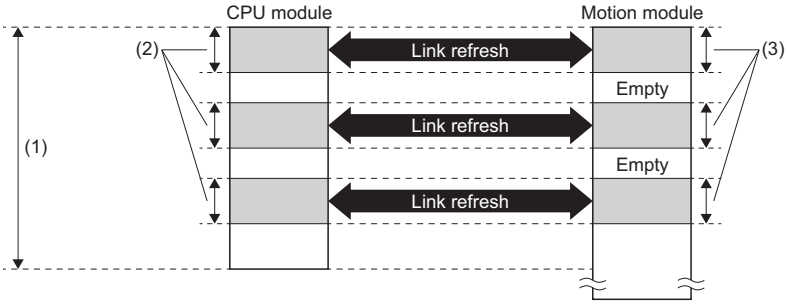


Restriction

When the version of Add-on baseSystem is "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 on the "CC-Link IE TSN Configuration" window.



(1) Range set in "Refresh Settings" under "Basic Settings"
(2) Actual link refresh range
(3) Range set on the "CC-Link IE TSN Configuration" window

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 306 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 109 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 33 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 109 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

■For link refresh to RX, RWw, RWr assigned to the Motion control station

- The refreshed value for RY/RWw assigned to the motion control station is not reflected in the output to the motion control station. Additionally, when operating in multicast mode, the value refreshed to RY/RWw assigned to the motion control station is not stored in the local station link device (RX/RWr).
- When refreshing RX and RWr, the value (initial value 0) written last by direct access, etc. of the link device is stored in the CPU side device for RX/RWr assigned to the motion control station.

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 "1.18" or earlier, the direct access to link devices is not supported.
- When the version of Add-on baseSystem is "1.22" or earlier, the direct access to link relay (LB)/link register (LW) is not supported.

Specification method

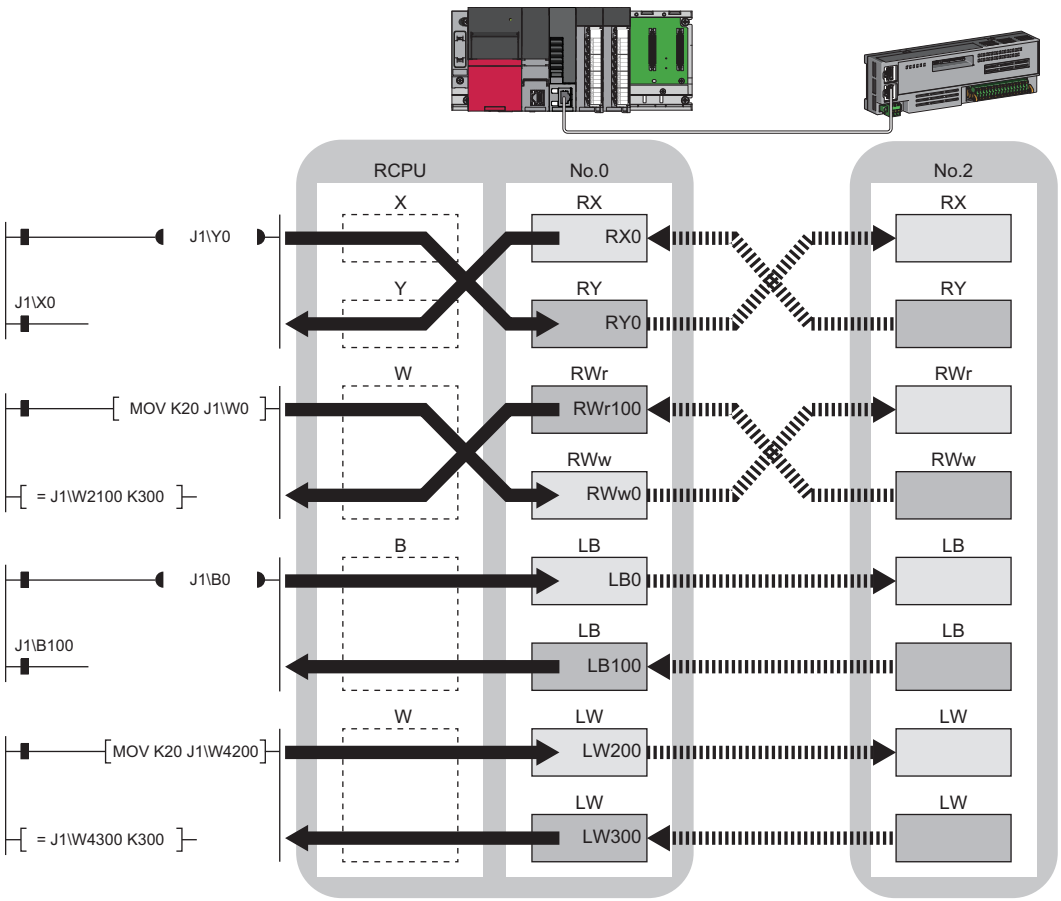
Specify the network No. and the link device of the Motion module for reading or writing.
The devices that can be specified and the device ranges are shown below.

J□\□
(1) (2)

(1) Network number: 1 to 239

(2) Link device
- 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 relay (LB): B0 to B7FFF
- Link register (LW): W4000 to W7FFF
- 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

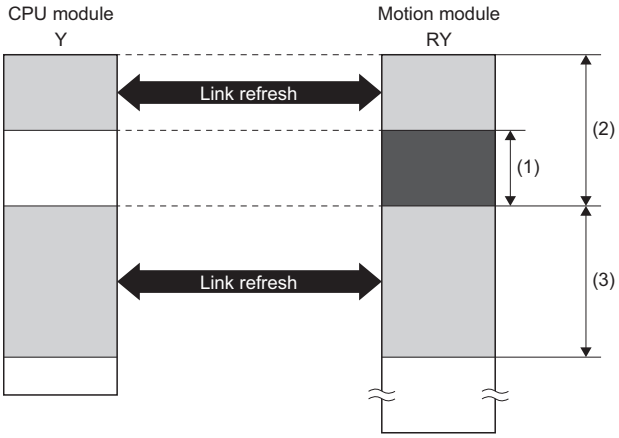
All link devices of the Motion module can be specified. (☞ Page 33 Specification method)

■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 20 Communications using RX, RY, RWr, and RWw)
- Within the link device range of the Motion module (☞ Page 33 Specification method)

Ex.



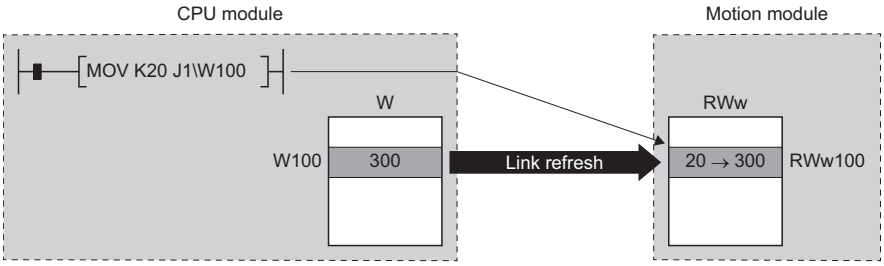
(1) Out of the link refresh range (Data can be written here.)
(2) Area where data is sent to other stations
(3) Area for receiving data from other stations

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.

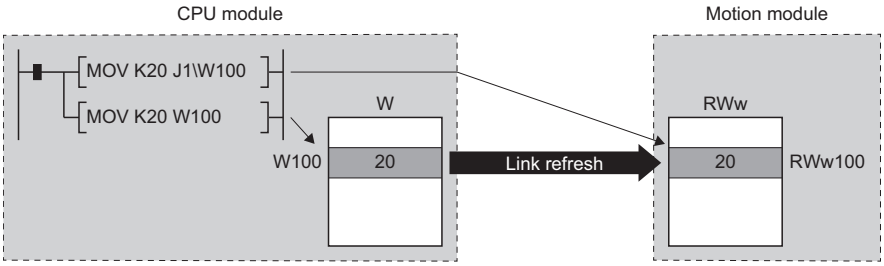
<Bad example (Directly accessing the link refresh target only)>

- 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 306 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 109 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. Use a 32-bit data assurance or if cyclic data of more than 32 bits needs to be assured, use interlock programs. (☞ Page 38 Cyclic data assurance)

■Mounting multiple modules of the same network number

When multiple modules of the same network number are mounted, the target of the direct access to link devices is the module that has the smallest slot number in the base unit.

■Link direct devices 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.

■When conducting a link direct access to a link device assigned to the Motion control station

- The value written to RY/RWw assigned to the motion control station is not reflected in the output to the motion control station. Additionally, when operating in multicast mode, the value written to RY/RWw assigned to the motion control station is not stored in the local station link device (RX/RWr).
- When reading RX/RWr assigned to the motion control station, the value (initial value 0) written last by direct access, etc. of the link device is read.

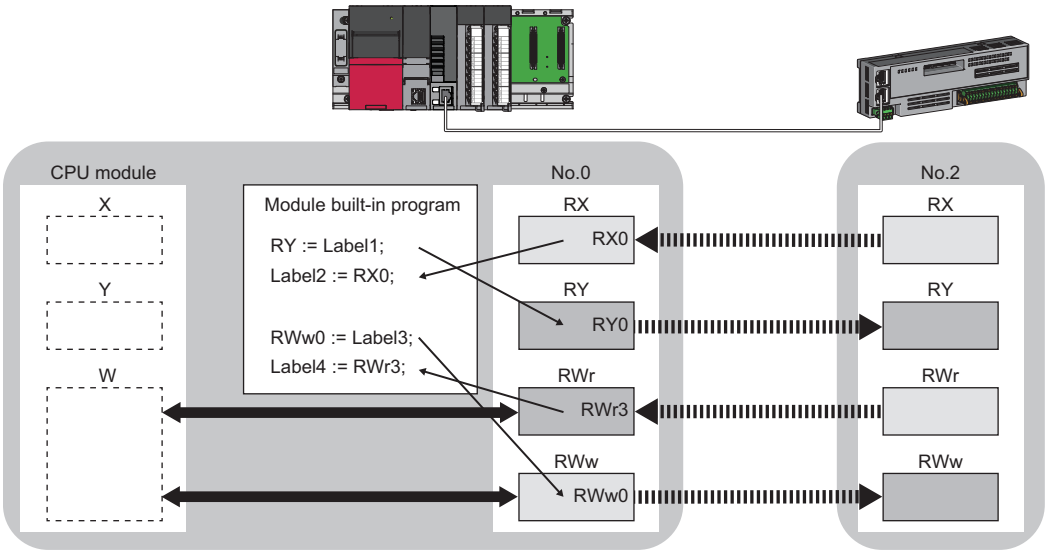
Direct access from motion built-in program to link devices

When using the PLCopen Motion control FB mode

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.

MELSEC iQ-R Programming Manual (Motion Control Function Blocks)

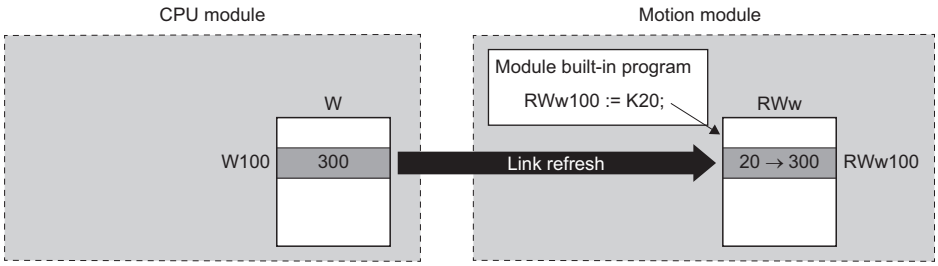


Point

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.

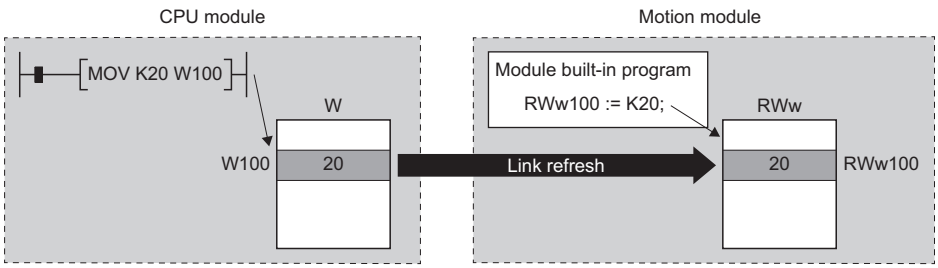
<Bad example (Directly accessing the link refresh target only)>

• Link refresh overwrites the value.



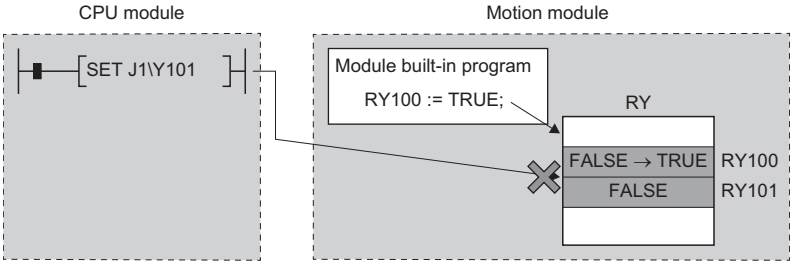
<Good example (Directly accessing the link device as well as writing the same data to the device of the CPU module)>

• 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.
- When conducting a link direct access to a motion control station link device, the next operation will occur. The values written to RX/RWr assigned to the motion control station are not reflected in the output to the motion control. Additionally, the values written to the motion control station RX/RWr are not stored in the local station link device (RX/RWr). When reading RX/RWr assigned to the motion control station, the value written last (initial value 0) by link device direct access, etc. of the link device is read.

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	Direct access to link devices from motion built-in program	Access to buffer memory
32-bit data assurance	Assures data in 32-bit units. Data is automatically assured by satisfying assignment conditions of link devices.	○	○	×*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	×
Interlock program	Assures data of more than 32 bits. Data is assured by configuring interlocks on programs.	○	○	○*1	○

*1 Simple Motion mode is not assured.

Point

- PLCopen Motion control FB mode
  When accessing the motion control station cyclic data using the slave label from a motion built-in program, data is assured in label units.

Restriction

- When the version of Add-on baseSystem is "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".

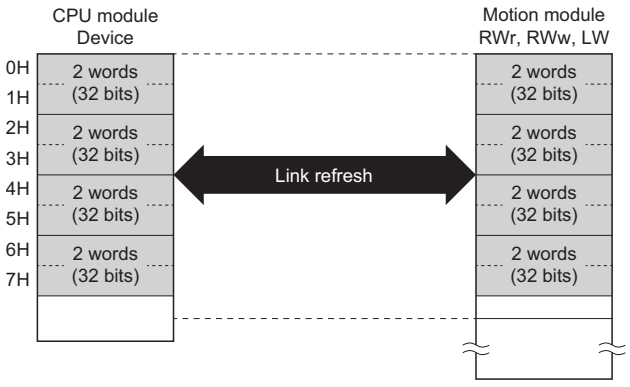
32-bit data assurance

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:

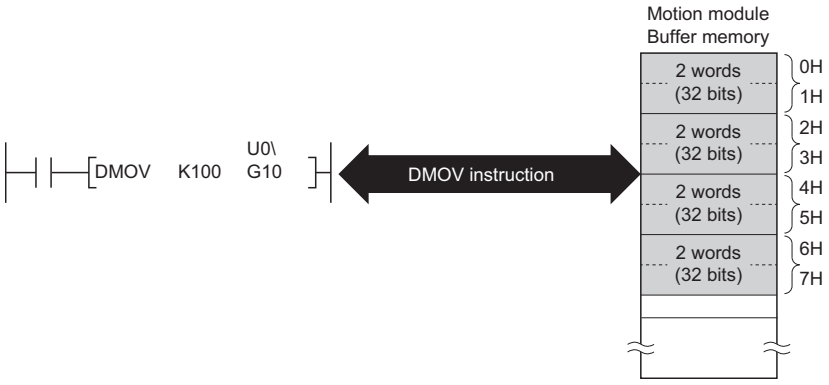
- The start device No. of RWr, RWw, and LW is multiples of 2.
- The number of points assigned to RWr, RWw, and LW is multiples of 2.



■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. The link device is assured as follows.

- RX, RY, RWw, and RWr data are assured for each station
- LB and LW data are assured for each station

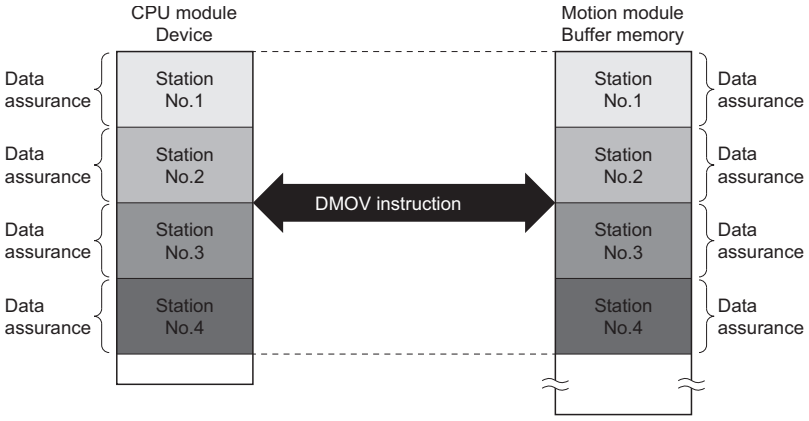
■Setting

Set station-based block data assurance in "Supplementary Cyclic Settings" under "Application Settings" of the master station.
(☞ Page 118 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.



■Precautions

RX, RY, RWw, and RWr data cannot be assured for each station with LB and LW data.

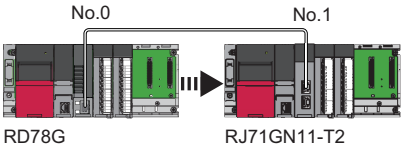
Interlock program

Data of more than 32 bits can be assured without using the station-based block data assurance setting. Use either of the following methods:

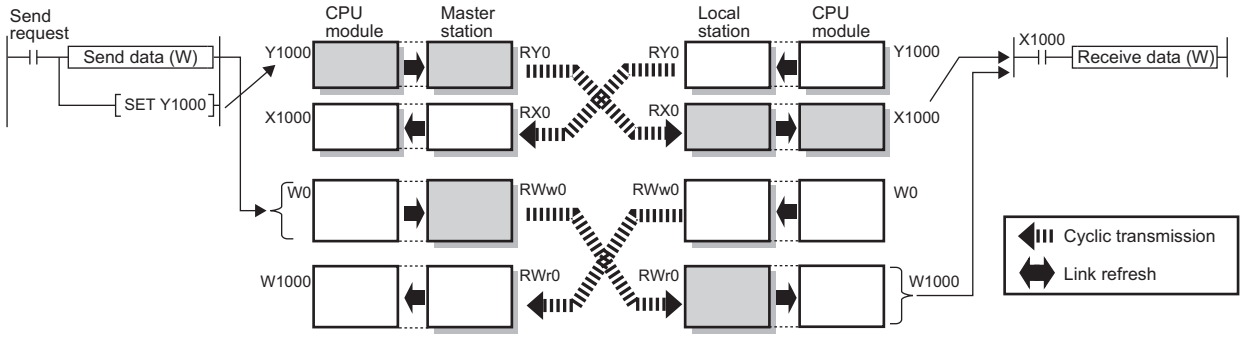
- Data assurance by handshake of the remote I/O
- Data assurance by handshake of the remote register
- Data assurance by handshake of the link relay

■Data assurance by handshake of the remote I/O

An example of sending data in W0 to W3 of the master station (station No.0) to W1000 to W1003 of the local station (station No.1) is shown below. (X1000 and Y1000 are used for a handshake to the CPU module.)



- Data flow

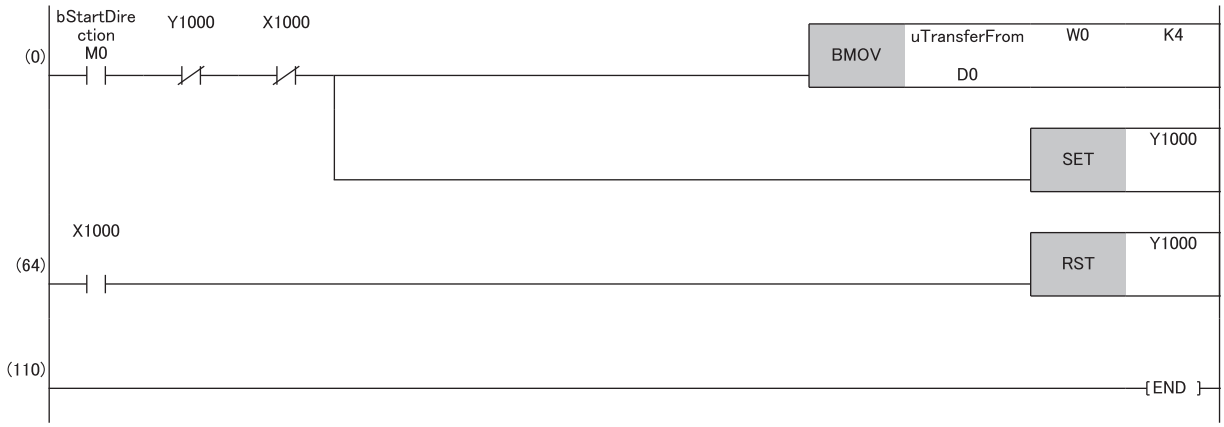


- Program

Sending station: Master station (station No.0)

Classification	Setting details
Label to be defined	Define global labels as shown below:

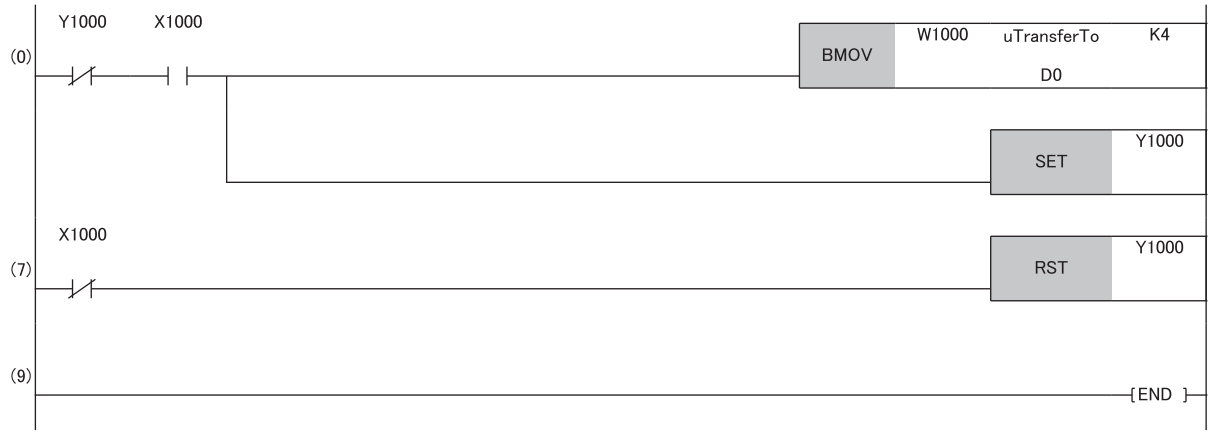
	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartDirection	Bit	...	VAR_GLOBAL	M0
2	uTransferFrom	Word [Signed]	...	VAR_GLOBAL	D0



Receiving station: Local station (station No.1)

Classification	Setting details
Label to be defined	Define global labels as shown below:

	Label Name	Data Type		Class	Assign (Device/Label)
1	uTransferTo	Word [Signed]	...	VAR_GLOBAL	D0

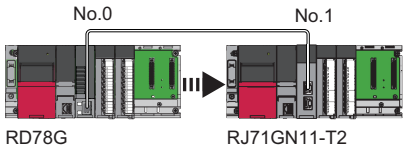


- Program flow

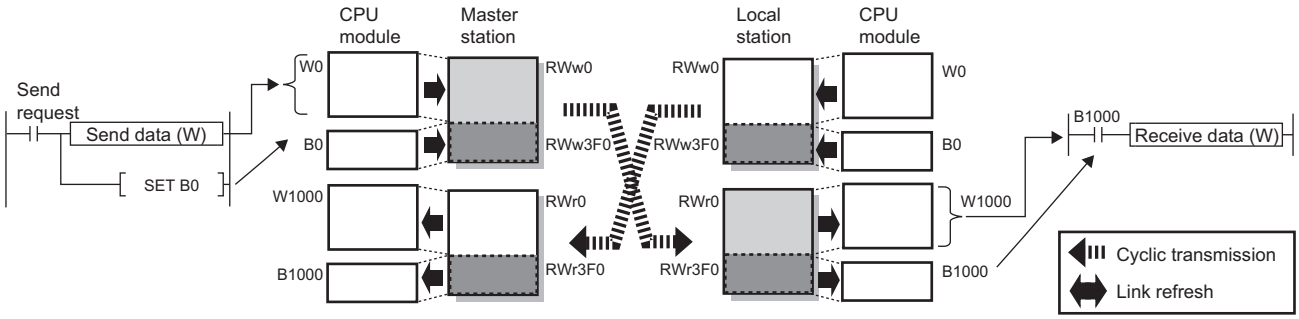
❶ The master station checks that the send request bStartDirection (M0) is turned ON, and transfers contents of uTransferFrom [0] to [3] (D0 to D3) to the send data W0 to W3.
❷ When the transfer is completed, the master station turns ON Y1000.
❸ The local station checks that X1000 is turned ON, and transfers contents of the receive data W1000 to W1003 to uTransferTo [0] to [3] (D0 to D3).
❹ When the transfer is completed, the local station turns ON Y1000.
❺ The master station checks that X1000 is turned ON, and turns OFF Y1000.
❻ The local station checks that X1000 is turned off, and turns OFF the reception complete signal Y1000.

■Data assurance by handshake of the remote register

An example of sending data in W0 to W3 of the master station (station No.0) to W1000 to W1003 of the local station (station No.1) is shown below. (B0 and B1000 are used for a handshake to the CPU module.)



• Data flow

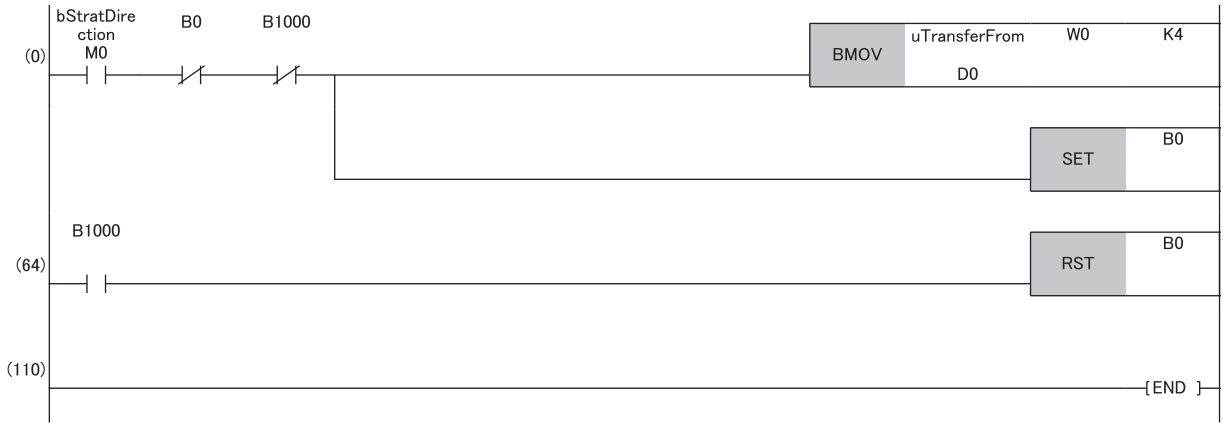


• Program

Sending station: Master station (station No.0)

Classification	Setting details
Label to be defined	Define global labels as shown below:

	Label Name	Data Type		Class	Assign (Device/Label)
1	bStratDirection	Bit	...	VAR_GLOBAL	M0
2	uTransferFrom	Word [Signed]	...	VAR_GLOBAL	D0



Receiving station: Local station (station No.1)

Classification	Setting details
Label to be defined	Define global labels as shown below:

	Label Name	Data Type		Class	Assign (Device/Label)
1	uTransferTo	Word [Signed]	...	VAR_GLOBAL	D0



- Program flow

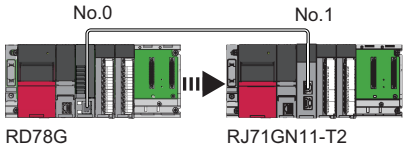
❶ The master station checks that the send request bStartDirection (M0) is turned ON, and transfers contents of uTransferFrom [0] to [3] to the send data W0 to W3.
❷ When the transfer is completed, the master station turns ON B0.
❸ The local station checks that B1000 is turned ON, and transfers contents of the receive data W1000 to W1003 to uTransferTo [0] to [3] (D0 to D3).
❹ When the transfer is completed, the local station turns ON B0.
❺ The master station checks that B1000 is turned ON, and turns OFF B0.
❻ The local station checks that B1000 is turned OFF, and turns OFF B0.

■Data assurance by handshake of the link relay

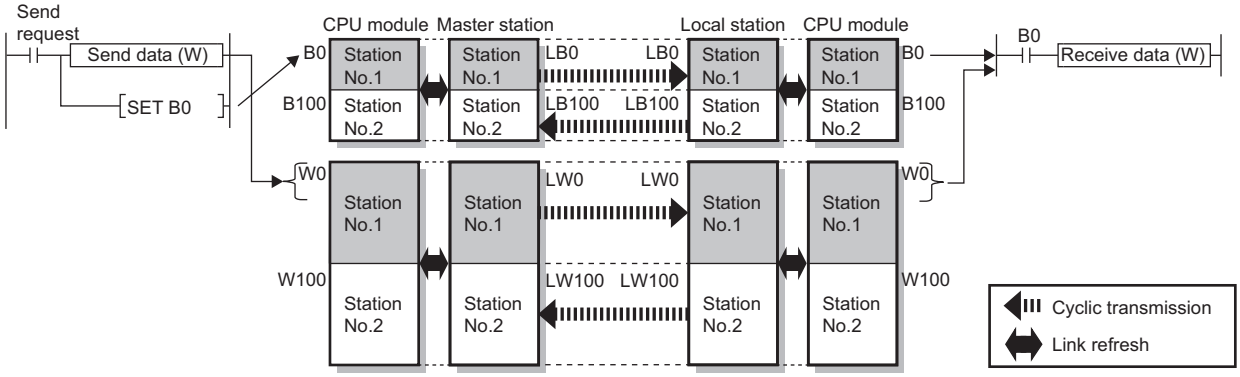
In communications using LB and LW, the link relay (LB) is sent after the link register (LW). Therefore, data inconsistency of the link register (LW) can be prevented by handshake in the data of the link relay (LB).

The following shows the program example when 'Cyclic data (station No.0)' (W0 to W3) of the master station is sent to 'Cyclic data (station No.1)' (W0 to W3) of the local station.

A handshake is established by turning on 'Handshake (station No.0)' (B0) of the master station and turning on 'Handshake (station No.1)' (B100) of the local station after the send data has been stored.



• Data flow



• Program

Sending station: Master station (station No.0)

Classification	Setting details
Label to be defined	Define global labels as shown below:

	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartDirection	Bit	...	VAR_GLOBAL	M0
2	uOutputData	Word [Signed]	...	VAR_GLOBAL	D0



Receiving station: Local station (station No.1)

Classification	Setting details
Label to be defined	Define global labels as shown below:

	Label Name	Data Type		Class	Assign (Device/Label)
1	uInputData	Word [Signed]	...	VAR_GLOBAL	D100



- Program flow

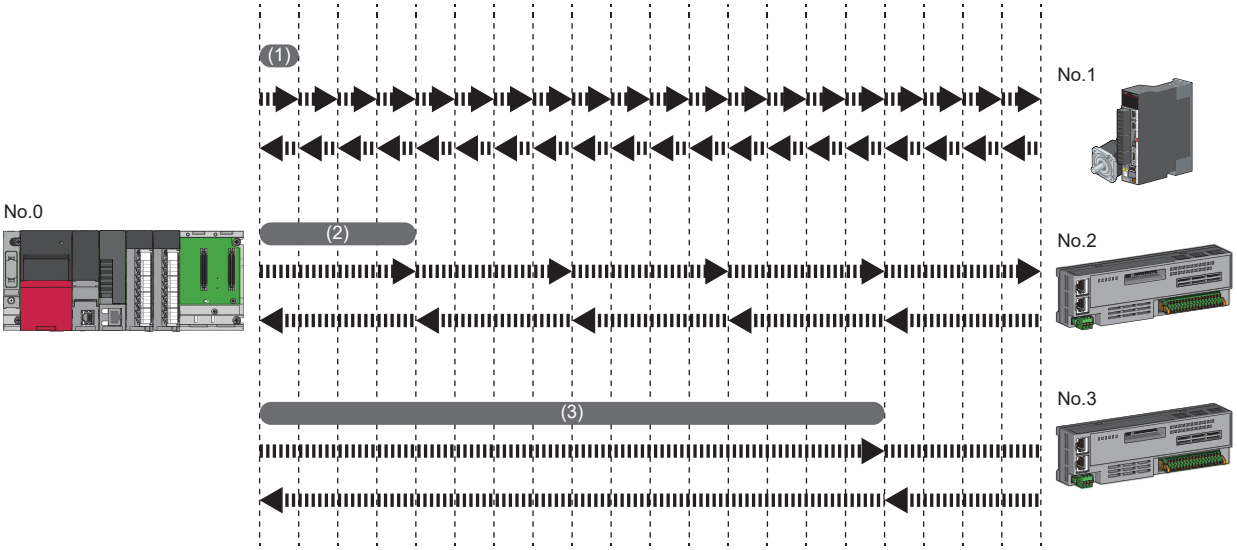
❶ The master station checks that the send request bStartDirection (M0) is turned ON, and transfers contents of uOutputData [0] to [3] to the send data W0 to W3.
❷ When the transfer is completed, the master station turns ON B0.
❸ The local station checks that B0 is turned ON, and transfers contents of the receive data W0 to W3 to uInputData [0] to [3] (D100 to D103).
❹ When the transfer is completed, the local station turns ON B100.
❺ The master station checks that B100 is turned ON, and turns OFF B0.
❻ The local station checks that B0 is turned OFF, and turns OFF B100.

Communication cycles coexistence

When device stations with different communication cycles are included in the network, multiple communication cycles according to each device 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 device stations with different communication cycles are connected to a network, a device station with a high-speed communication cycle is not affected by a device station with a low speed.



(1) Basic cycle
(2) Normal speed
(3) Low speed (for "×16")

Restriction

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

Setting method

The master station communicates with device 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 306 Communication cycle interval)

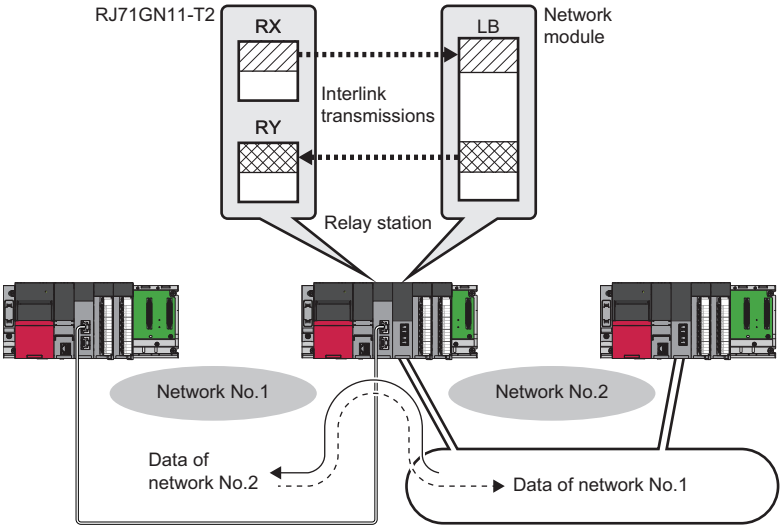
The communication cycle of each device station can be selected from "Basic Period", "Normal-Speed", or "Low-Speed" in "Communication Period Setting" on the "CC-Link IE TSN Configuration" window.

Precautions

- When "Communication Mode" under "Application Settings" is set to "Multicast", set "Communication Period Setting" for the local station in "Network Configuration Settings" to "Basic Period".
- If a motion control station is set to normal or low speed cycle, "Network parameter error" (error code: 2221H) occurs.

Interlink transmission

This function transfers data in the link devices of the master station to another network module on a relay station.



Setting method

Set interlink transmission in "Interlink Transmission Settings" in "Application Settings". (☞ Page 121 Interlink Transmission Settings)

Precautions

☞ Page 121 Interlink Transmission Settings

I/O maintenance settings

When using cyclic transmission, set whether to hold or clear output or input by using the following settings. (☞ Page 119 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"

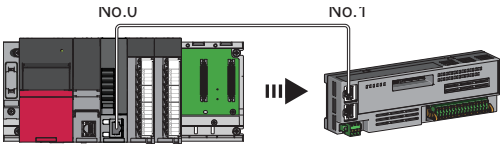
Restriction

- PLCopen Motion control FB mode
  When the version of Add-on baseSystem is "1.18" or earlier is used, the operation is performed with the setting of "Hold" regardless of the parameter setting.

Precautions

When 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 device station.
- If "Output Mode upon CPU Error" is "Hold" and "Output Hold/Clear Setting during CPU STOP" is "Clear", cleared output data is sent to the device station.
- If "Output Mode upon CPU Error" is "Clear", cleared output data is sent to the device 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 device station.
- If "Output Hold/Clear Setting during CPU STOP" is "Clear", cleared data is sent to the device station.

■If the device station disconnected

- If "Data Link Faulty Station Setting" is "Hold", input data from device station is held.
- If "Data Link Faulty Station Setting" is "Clear", input data from device station is cleared.

Devices where the hold/clear setting is enabled

The following table shows devices where 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	• Master station RY • Local station RY (only the output data from the own station)	—	—
Output hold/clear setting during CPU STOP	• Master station RY (if the link refresh source device is other than Y) • Local station RY (only the output data from the own station, and if the link refresh source device is other than Y)	• Master station RWw • Local station RWw (only the output data from the own station) • LB (only the output data from the own station) • LW (only the output data from the own station)	• Master station RY (if the link refresh source device is Y) • Local station RY (only the output data from the own station, and if the link refresh source device is Y)
Data link faulty station setting	• Master station RX • Local station RX • Local station RY (only the input data from other stations)	• Master station RWr • Local station RWr • Local station RWw (only the input data from other stations) • LB (only the input data from other stations) • LW (only the input data from other stations)	—

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 device 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 safety output is cleared even when "Output Hold/Clear Setting during CPU STOP" is set to "Hold".

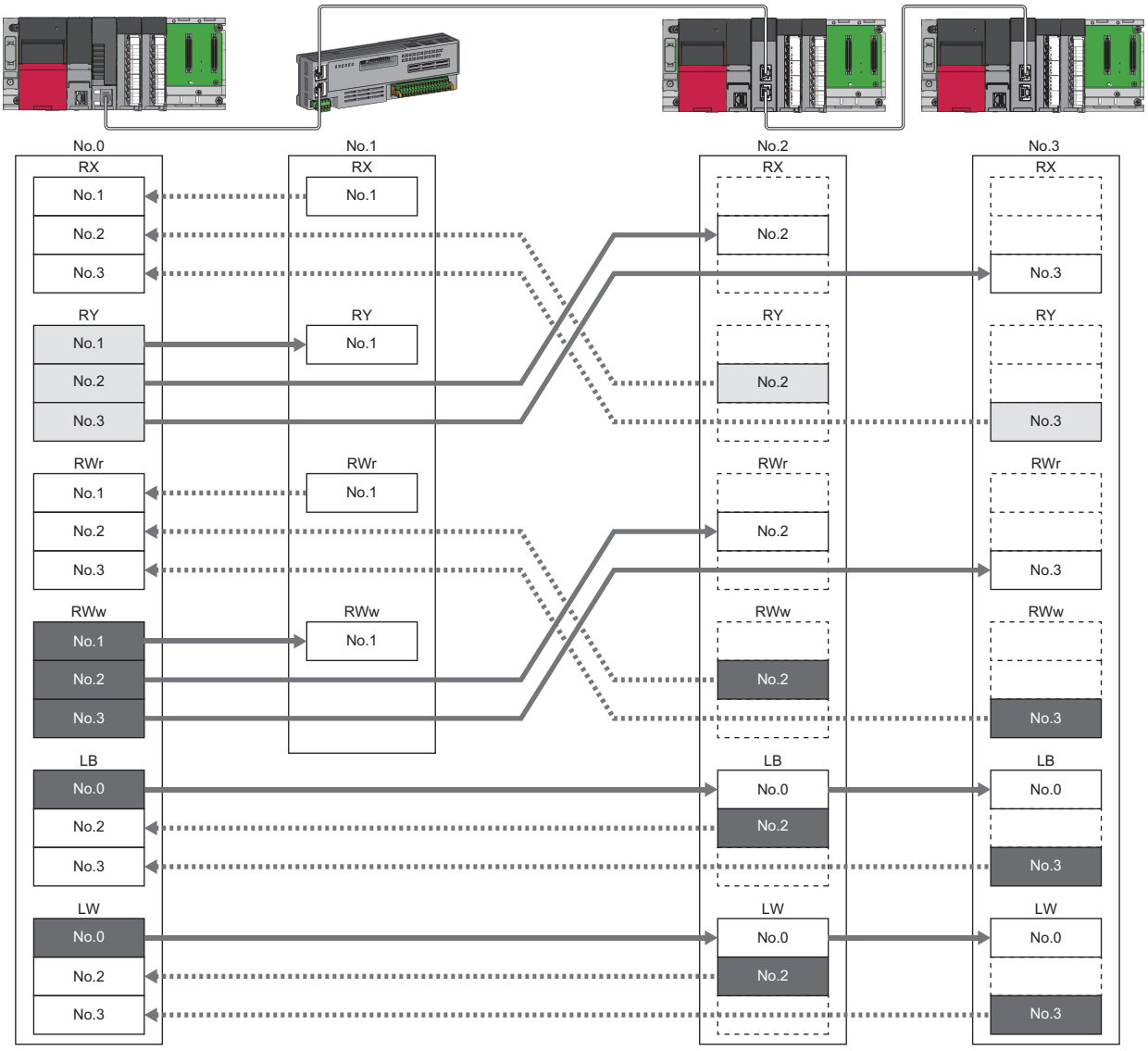
Output data hold/clear operation during CPU STOP

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

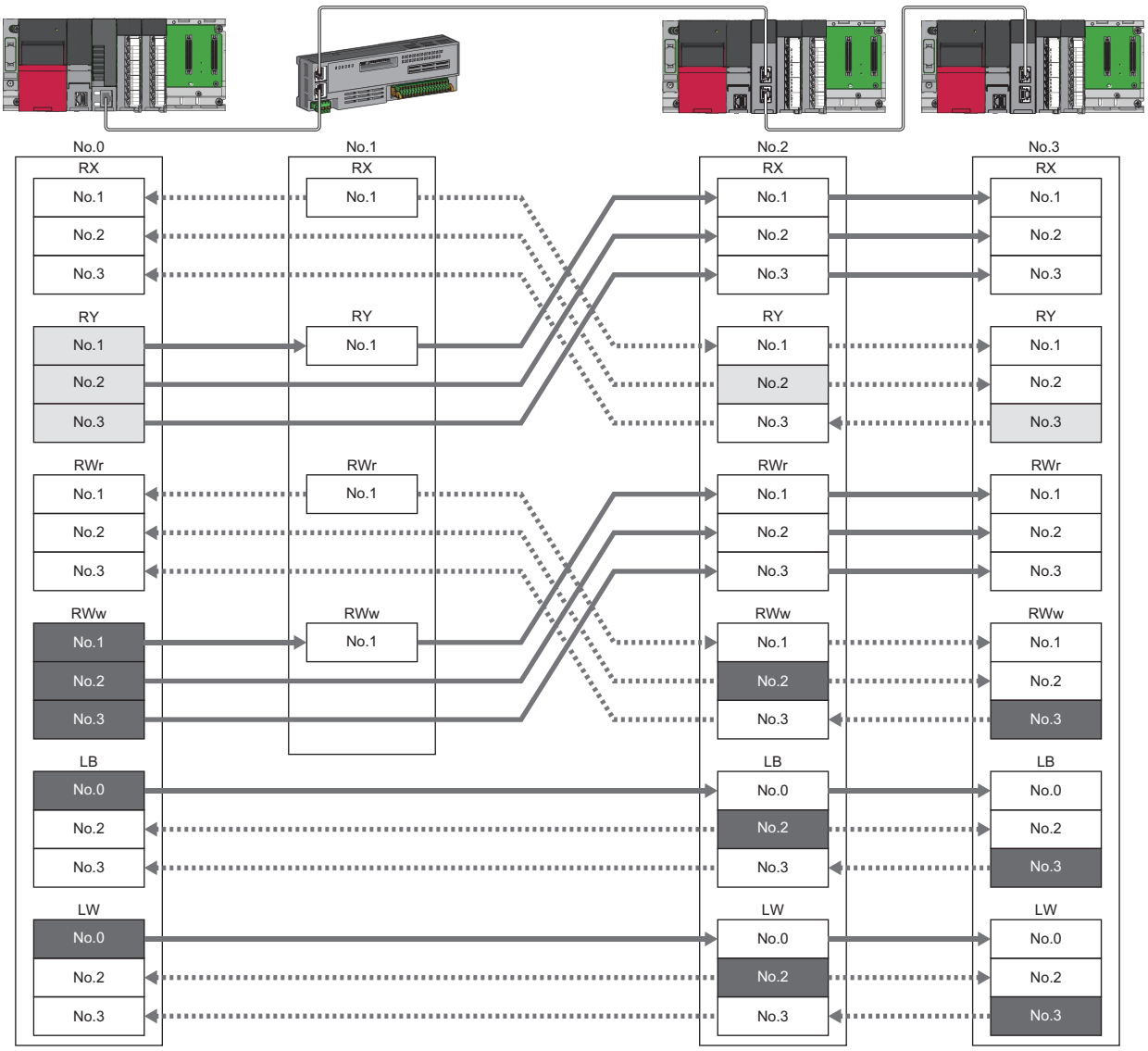
Even if the Motion module is changed from RUN to STOP, it is not affected by this setting, and the output data does not change even if the Motion module is stopped.
The program is changed from STOP to ON when the PLC ready is turned ON.

■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.

■Multicast mode

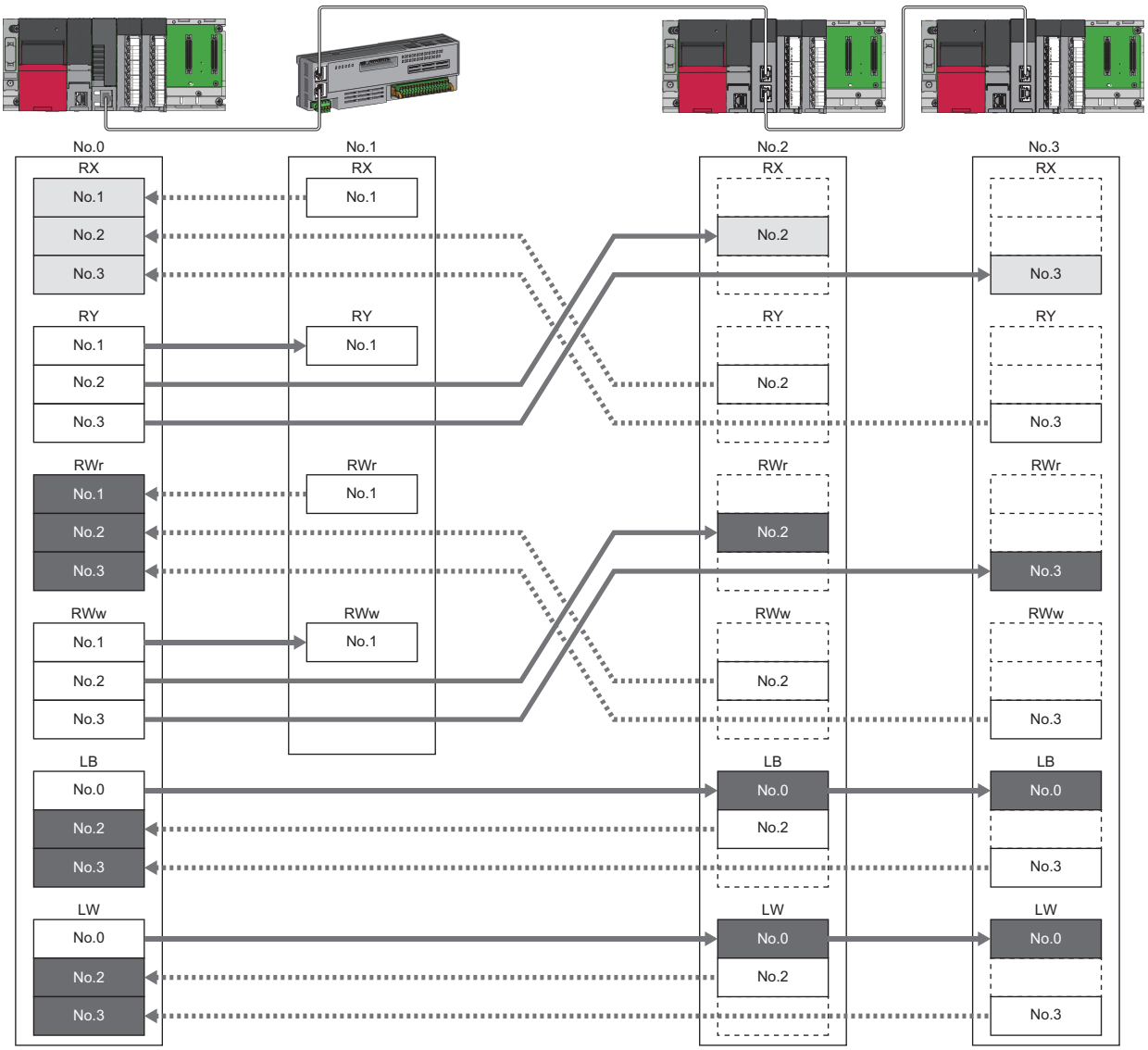


: Devices that are held or cleared according to the parameter setting.
: Devices that are held regardless of the parameter setting.

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

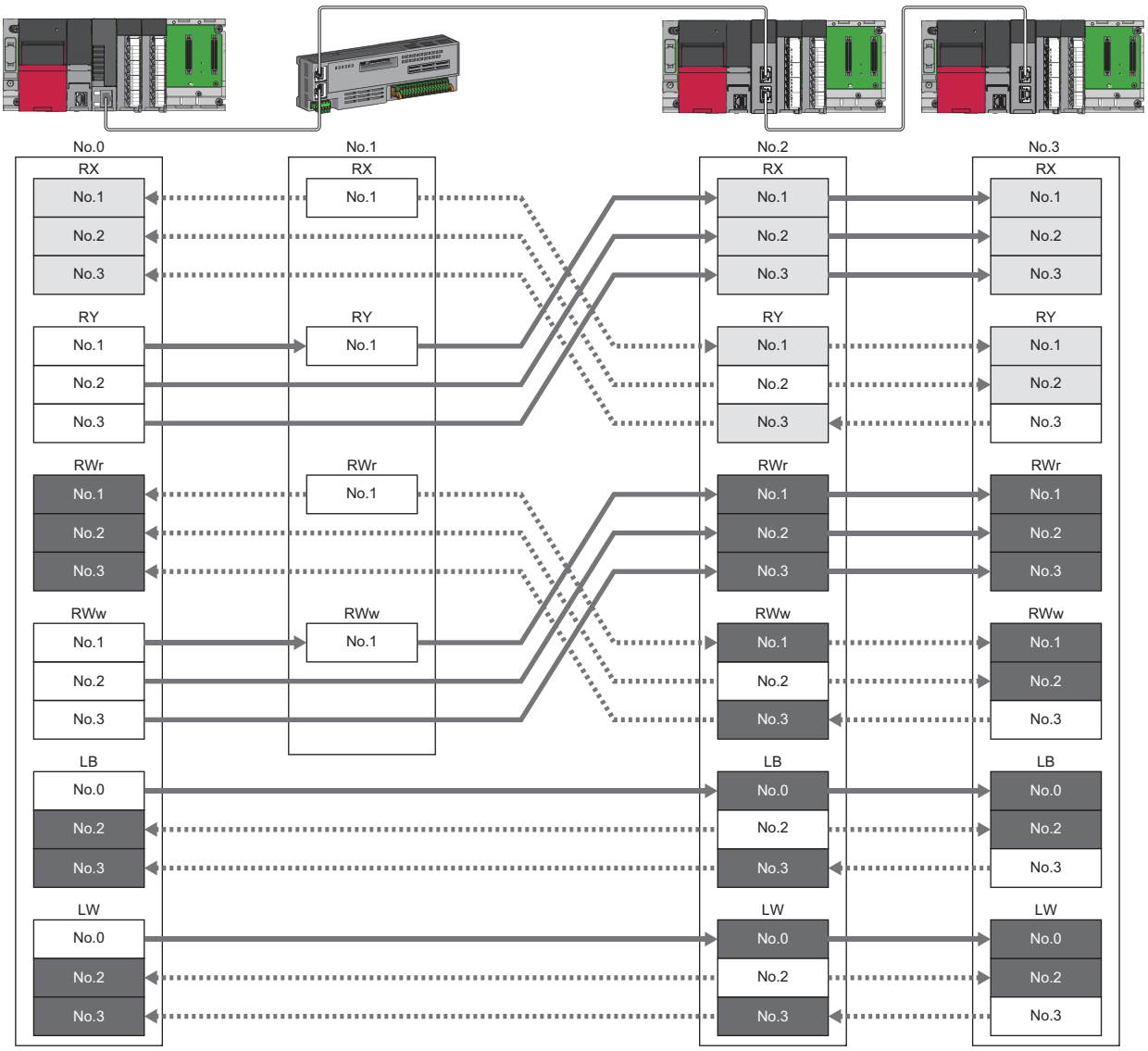
The following figure shows the devices where "Data Link Faulty Station Setting" is enabled when each station becomes faulty.

■Unicast mode



: Devices that are held or cleared according to the parameter setting.
: Devices that are held regardless of the parameter setting.

■Multicast mode



: Devices that are held or cleared according to the parameter setting.
: Devices that are held regardless of the parameter setting.

Remote device test

The output of the standard remote station can be turned ON/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/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/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 using following modes and versions of Add-on baseSystem, the remote device test is not supported.
  - When using the PLCopen Motion control FB mode: "1.18" or earlier
  - When using the Simple Motion mode: "1.14" or earlier
- 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

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

Execute this function while the CPU module is in a STOP state. Even if this function is executed while the CPU module is not in a STOP state, the remote device test will not start.
The following table lists remote station outputs for when the remote device test function is executed in each 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	
STOP (no stop error)	Hold	Hold	
		Clear	
	Clear	Hold	
		Clear	
Stop (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/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.

Point

- 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 191 List of Error Codes)
- When using the PLCopen Motion control FB mode, this function is used for the Motion module with the Add-on baseSystem version of "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/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/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.

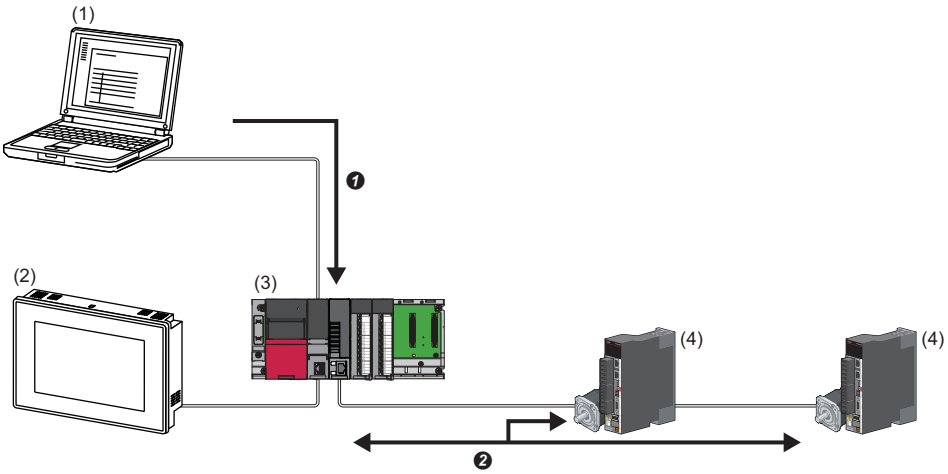
CANopen communication

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 device station.
For details of the commands for accessing the CAN application objects, refer to the following.
☞ Page 329 SLMP Command for Accessing the CAN Application Object

<When using the PLCopen Motion control FB mode>
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 device stations when the cyclic transmission with device stations starts.

Restriction

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

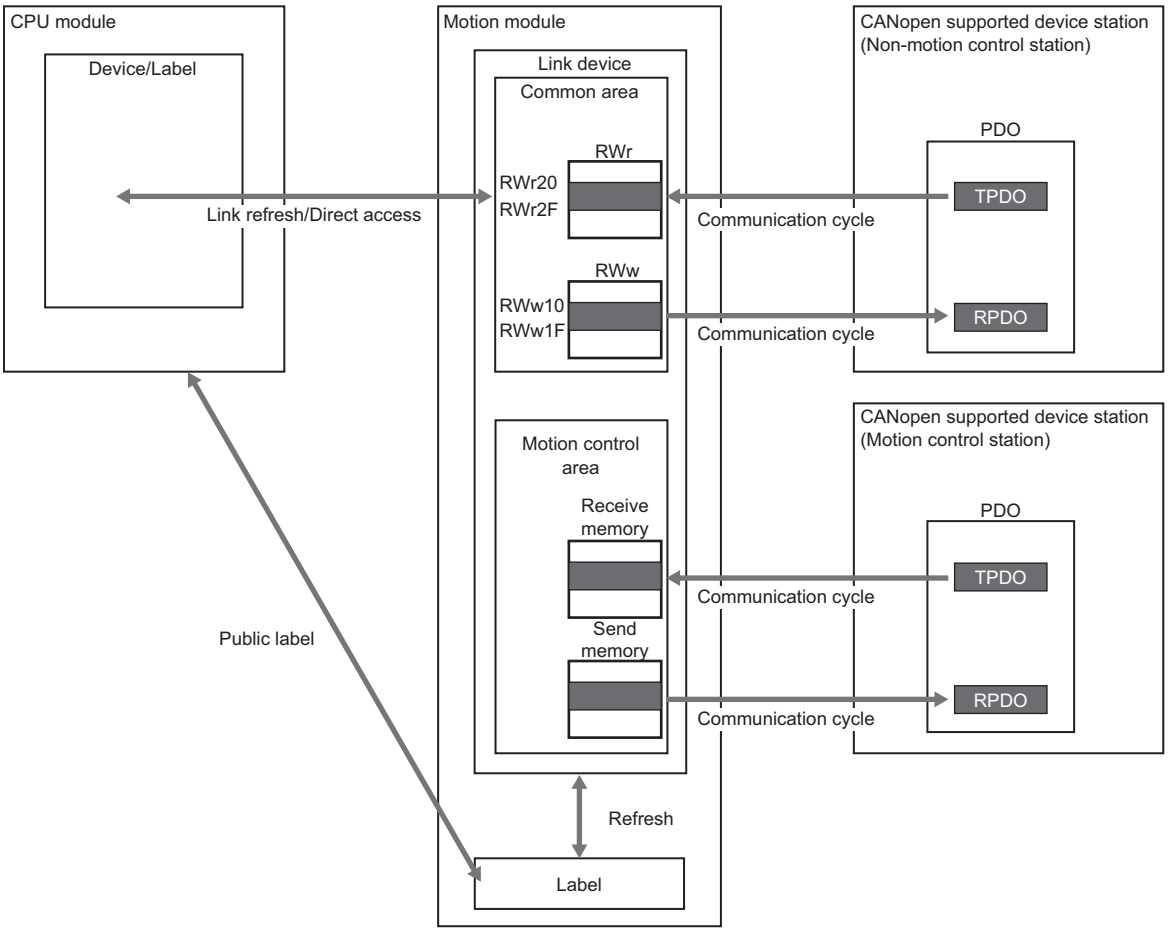


(1) Engineering tool
(2) HMI (Human Machine Interface)
(3) Motion module
(4) Servo amplifier
❶ Writing of the PDO mapping setting
❷ PDO communication

The PDO (RPDO) output from the master station and PDO (TPDO) input from the device 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 "1.18" or earlier or a motion control station is used, the communication cycles coexistence is not supported. If a device station is set to normal or low speed cycle, "Network parameter error" (error code: 2221H) occurs.

<When using the Simple Motion Mode>

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

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

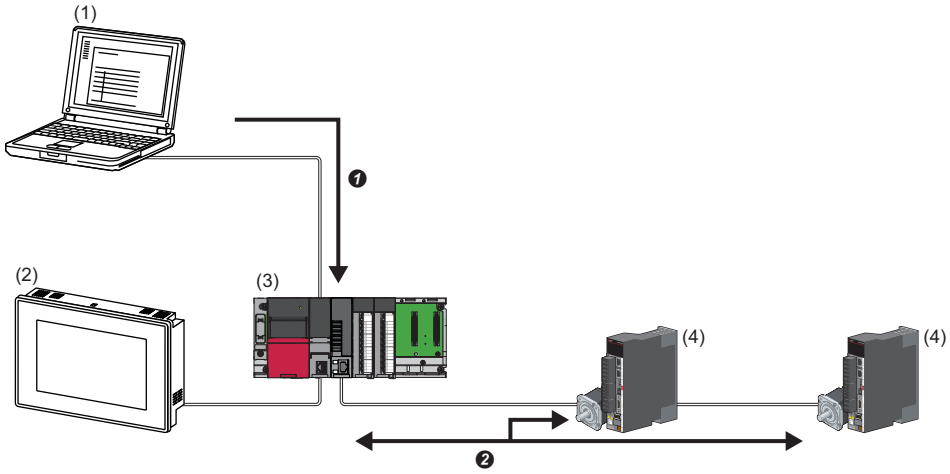
The PDO communication reads/writes objects defined with the PDO mapping by using the cyclic transmission.

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.

📖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 device stations when the cyclic transmission with device stations starts.

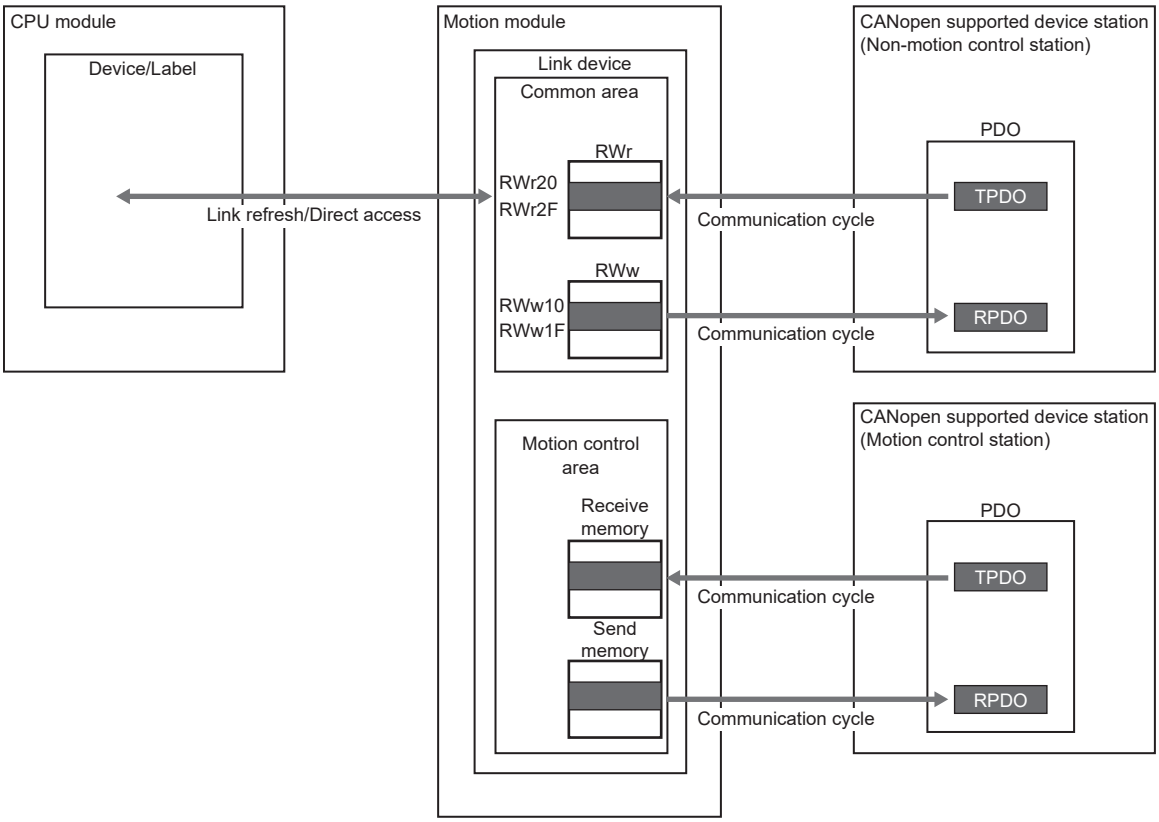


(1) Engineering tool
(2) HMI (Human Machine Interface)
(3) Motion module
(4) Servo amplifier
❶ Writing PDO mapping setting
❷ PDO communication

The PDO (RPDO) output from the master station and PDO (TPDO) input from the device 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. The Motion control station PDO is controlled by the Motion section, and cannot be controlled from the CPU module.



Setting method

Set "Batch Setting of PDO Mapping" or "PDO Mapping Setting" on the "CC-Link IE TSN Configuration" window. (☞ Page 140 PDO mapping setting)

Precautions

■PDO mapping setting

When a device that supports the CANopen profile is added on the "CC-Link IE TSN Configuration" window 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 device 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 is added on the "CC-Link IE TSN Configuration" window, a single device station can use up to eight axes.

■Error code

If the PDO mapping settings are incorrect, the device station 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 222 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 60 Communications using a dedicated instruction
☞ Page 61 Communications using the SLMP
☞ Page 62 Communications using the engineering tool

Communications using a dedicated instruction

Data is read/written from the master station or local station to devices in a CPU module of the local station or the buffer memory areas of a remote station using the dedicated instructions.

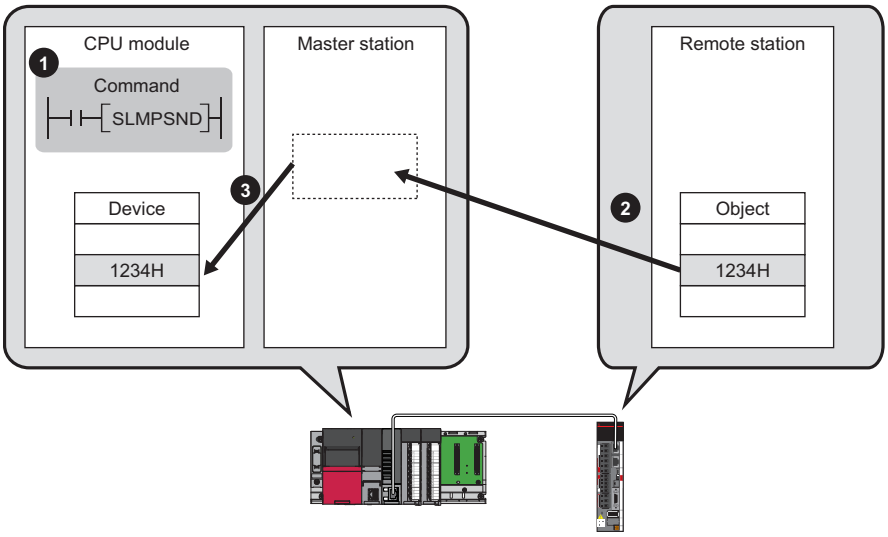
For dedicated instructions that can be used and details on dedicated instructions, refer to the following.

☞ Page 296 Dedicated Instruction

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

Ex.

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



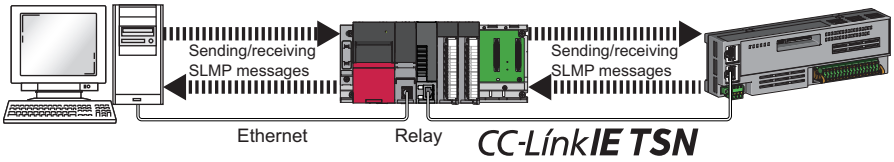
Communications using the SLMP

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

This function allows seamless communications with stations on different types networks.

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

SLMP Reference Manual



Restriction

When using a version of Add-on baseSystem "1.22" or earlier, the Motion module does not support the SLMP message relay operation.

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

Each station is set or monitored 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 the chapter of the control mode used) 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 62 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 62 When the networks consist of only MELSEC iQ-R 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 169 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 products (such as the 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 63 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 to use

The system dedicated connection used is a MELSOFT communications port (UDP/IP) or a MELSOFT communications port (TCP/IP).

For the port number used and the number of simultaneous open connections (maximum number of connections), refer to the following.

- Port number: ☞ Page 328 Port No.
- Number of simultaneous open connections (maximum number of connections): 📖MELSEC iQ-R Motion Module User's Manual (Startup)

Connection via HUB

■Settings on the Motion module side

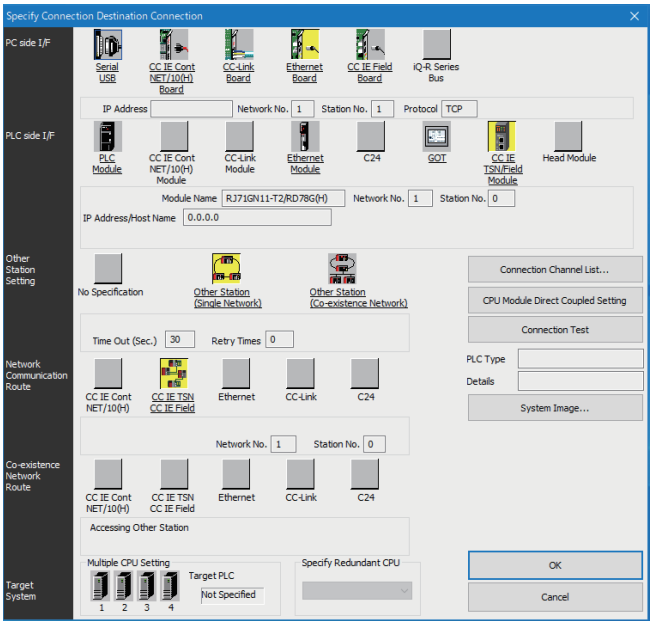
- For connection by specifying the IP address, set the IP address using "Required Settings". (☞ Page 107 Station No./IP Address Settings)
- When connecting by specifying the network No. and station No., set the network No. and station No. in "Required Settings".

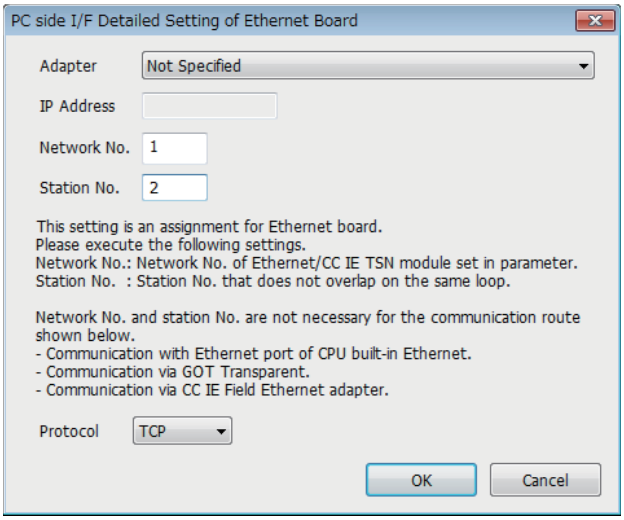
Neither of connections require setting on the "CC-Link IE TSN Configuration" window.

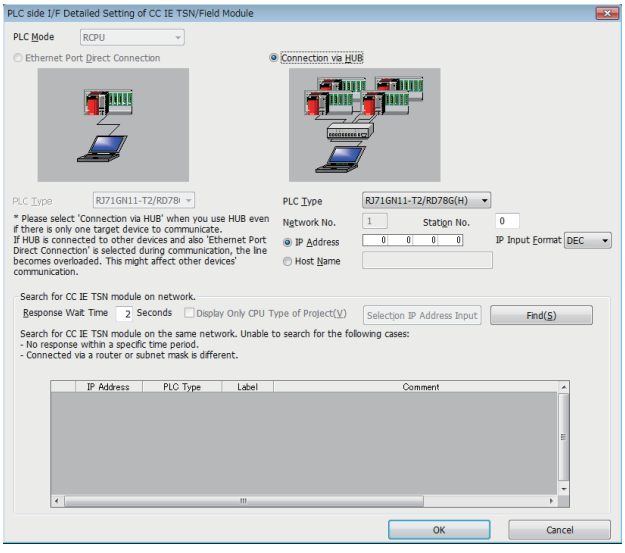
■Settings on the engineering tool side

Set in the "Specify Connection Destination Connection" window.

[Online] ⇨ [Current Connection Destination]





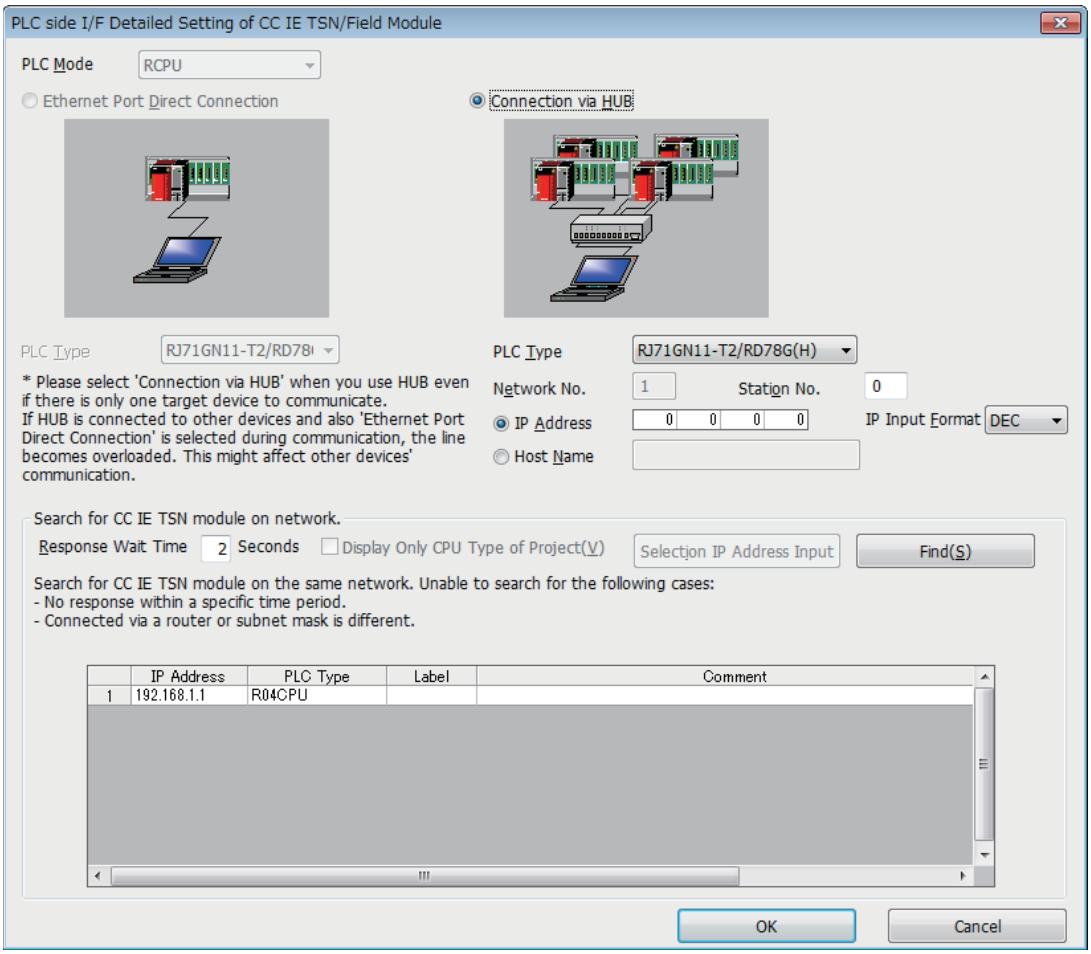


1. Set "PC side I/F" to "Ethernet Board".
2. Double-click "Ethernet Board", and open the "PC side I/F Detailed Setting of Ethernet Board" window.
3. Set the network No., station No., and protocol of the personal computer.
   TCP: A connection is established during communication. Since data is exchanged 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

Search for the control CPU of the Motion module on the same network.

For a connection using an industrial switch, 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 industrial switch as the engineering tool
- The control CPU of the Motion module connected to cascade-connected industrial switch

Precautions

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 on the "CC-Link IE TSN Configuration" window 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 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 the chapter of the control mode used) 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.

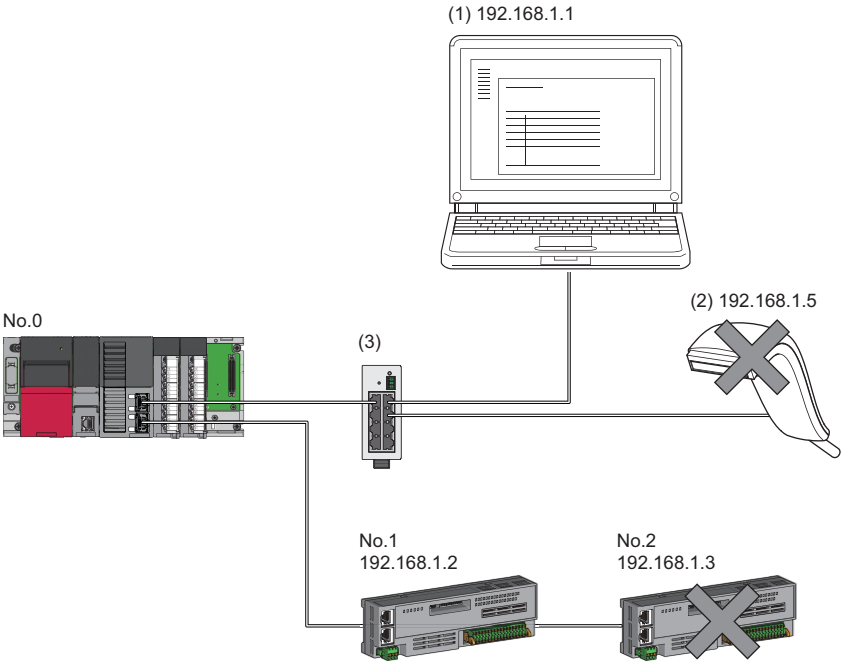
☞ Page 67 IP filter
☞ Page 70 Remote password

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 device station No.1 can access the master station, and the Ethernet device (2) and device station No.2 cannot access the master station.
(3) Industrial switch (CC-Link IE TSN certified)

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.
- Install a personal computer as a relay station, and control the relay of send/receive data with an application program
- Install an external device for which the access rights can be controlled as a relay station (Contact the network service provider or equipment dealer for details on the external devices for which access rights can be controlled.)

Setting method

1. Set the IP address to be allowed or blocked in the "IP Filter Settings" window of "Security" under "Application Settings". (☞ Page 121 Security) A warning is displayed in the following cases.

- When blocking the IP address of the device station set on the "CC-Link IE TSN Configuration" window was attempted
- When a device station is not set on the "CC-Link IE TSN Configuration" window, 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 on the "CC-Link IE TSN Configuration" window 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

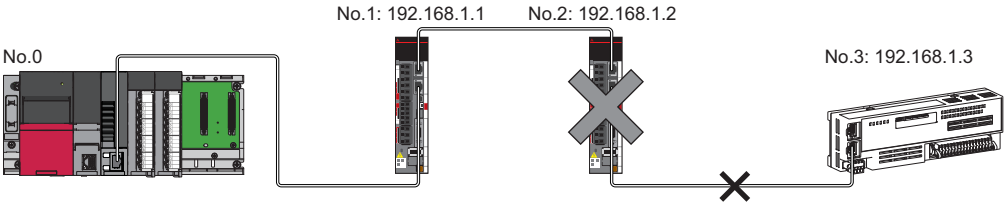
Allow or block should be set to all IP addresses that connect to the same network. Also, set allow or block to the IP address of the device station that is registered on the "CC-Link IE TSN Configuration" window.
The setting can be registered to the master station and local station, and the IP packets received from the device station of the registered IP address are allowed or blocked according to the setting details.

Operation

Even for the device station registered on the "CC-Link IE TSN Configuration" window, 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 161 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. (☞ Page 218 Event List)

Precautions

- Do not set the IP addresses of the master station or device stations as blocked. When a device station using line topology is set as blocked, cyclic and transient transmissions cannot be performed on the device stations that are connected after the device 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 device station No.1 can access the master station, and the device station No.2 and device 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.
- Install a personal computer as a relay station, and control the relay of send/receive data with an application program
- Install an external device for which the access rights can be controlled as a relay station (Contact the network service provider or equipment dealer for details on the external devices for which access rights can be controlled.)

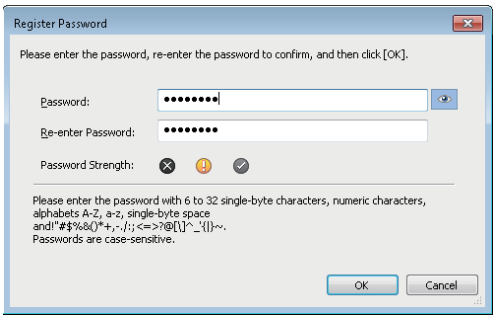
Number of settable modules

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

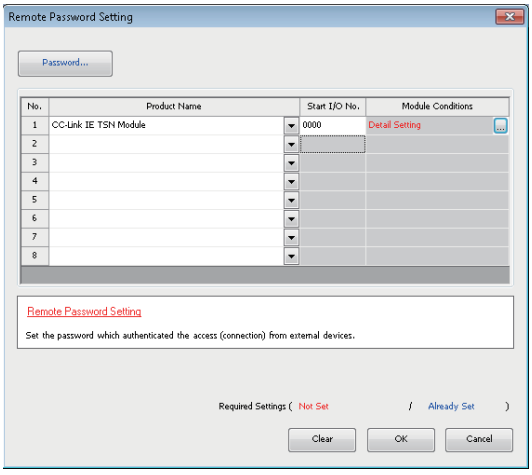
Set on the "Remote Password Setting" window.

[Navigation window] ⇨ [Parameter] ⇨ [Remote Password]

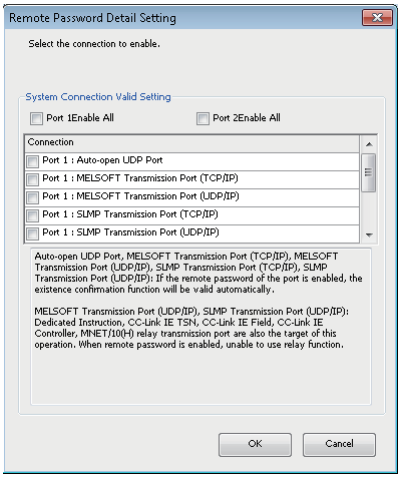


1. Click the [Password] button, and register the remote password on the "Register Password" window.

[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

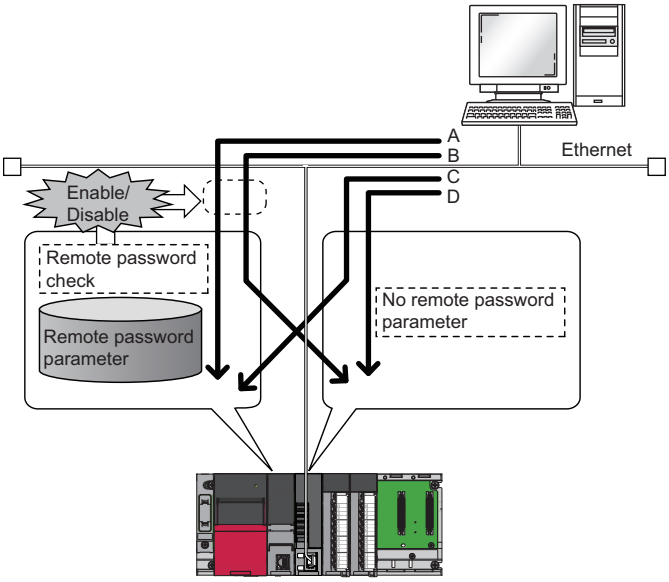
- Determine the external device to communicate with and perform data communication. (With UDP/IP, after the remote password is unlocked, data can be exchanged with devices other than the unlocked external device, too. Determine the communication destination before starting use.)
- Always lock the remote 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.

- A C controller, or a WinCPU module cannot use the remote password.

■Accessing the programmable controllers of other stations

When the external device is accessing the programmable controllers of other stations 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.

Device 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 device station recovers from an error, the data link is automatically resumed.

Precautions

- When removing a device station while the system is operating, check that the device station is performing cyclic transmission or has been disconnected.
- When removing the Motion module, check that the D LINK LED is on or off.
- The following are the operations depending on the version of the Add-on baseSystem when using the PLCopen Motion control FB mode.

Version of Add-on baseSystem	Description
"1.9" or earlier	Automatic return is not supported. If return is performed after disconnection, the slave label will not be updated.
"1.10" or later	When a device station with a model name different from the disconnected device station is returned, "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)

- When using the Simple Motion mode, when a device station with a model name different from the disconnected device station is returned, "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)

Loopback function

This function continues data link with normal stations even if a cable disconnection or faulty station occurs in a ring topology network configuration. All stations after the cable disconnection point or faulty station are disconnected in a line topology. By using this function with ring topology, data link continues with normal stations.

Point

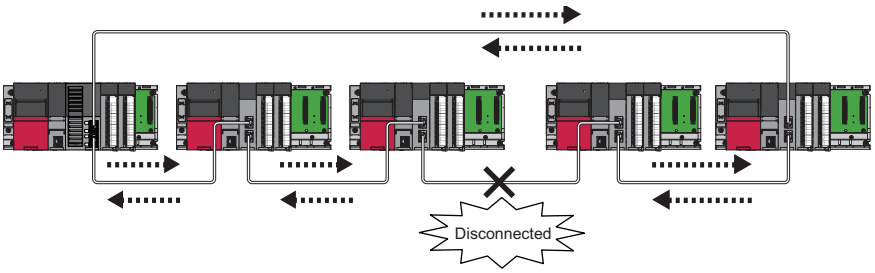
The loopback function is supported by RD78GH only.

Restriction

When the version of Add-on baseSystem is "1.29" or earlier, if the network topology is set to ring topology, "Network parameter error" (error code: 2221H) occurs in the Motion module.

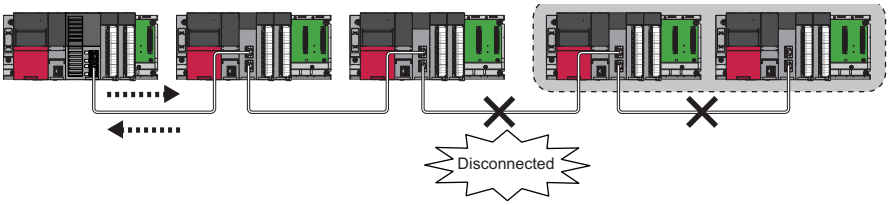
Cable disconnection

■Ring topology



Even if a cable disconnection occurs, the system automatically performs a loopback to continue the data link.

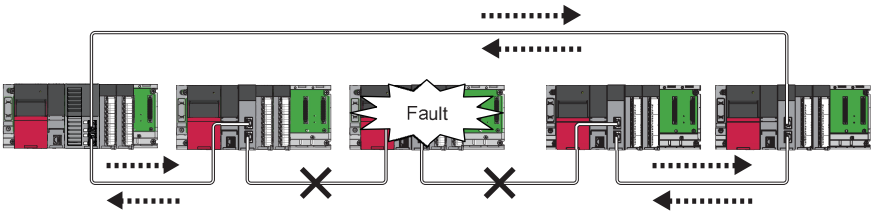
■Line topology



Stations connected after the cable disconnection point are disconnected.

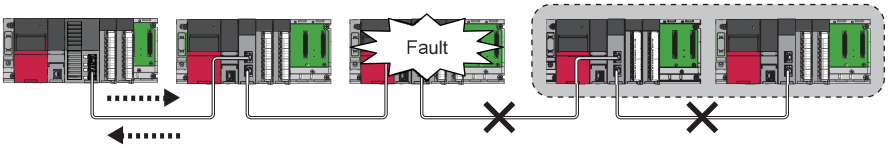
Occurrence of faulty stations

■Ring topology



The system disconnects faulty stations and automatically performs a loopback to continue the data link.

■Line topology



Stations connected after the faulty station are disconnected.

Setting method

1. Configure the network in ring topology.
2. Set "Network Topology" to "Ring" in "Basic Settings" of the master station.

Parameter setting and network configuration operation

Network topology setting (☞ Page 111 Network Topology)	Actual connection status		
	Ring topology	**Line topology**	**Star topology or coexistence of line and star topologies**
Ring topology	Normal operation	Start cyclic transmission. • The LED indication of the link-down port in the loopback station is as follows. · SD/RD LED: OFF · L ER LED: ON • 'Loopback status' (SB0065) turns on in the master station. • The station number of the loopback station is stored in 'Loopback station number 1' (SW0070) and 'Loopback station number 2' (SW0071). • In the network map of the CC-Link IE TSN/CC-Link IE Field diagnostics, the topology is displayed as line topology.	Data link error • The ERR LED on the master station turns ON. • "60H: Illegal ring connection (master station only)" is stored in 'Cause of data link stop' (SW0049).
Line topology, star topology, or coexistence of line and star topologies	Data link error • The ERR LED on the master station turns ON. • "60H: Illegal ring connection (master station only)" is stored in 'Cause of data link stop' (SW0049).	Normal operation	Normal operation

Point

If a station for which no parameters are set exists in a ring topology, the station does not perform a data link. In such a case, a loopback occurs at the adjacent station.

Program that detects loopback station numbers

By detecting loopback station numbers, a faulty station can be found. Whether loopback is being performed or not can be checked using 'Network topology setting' (SB0078) and 'Loopback status' (SB0065).

Ex.

A program that stores loopback station numbers to 'wLoopbackStationNumber_1' (D1000) and 'wLoopbackStationNumber_2' (D1001)

• Devices

Device	Description
SB0049	Data link error status of own station
SB0065	Loopback status
SB0078	Network topology setting
SW0070	Loopback station number 1
SW0071	Loopback station number 2

• Global labels

Classification	Setting details
Label to be defined	Define global labels as shown below.

	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartCheckLoopback	Bit	...	VAR_GLOBAL	M1000
2	wLoopbackStationNumber_1	Word [Signed]	...	VAR_GLOBAL	D1000
3	wLoopbackStationNumber_2	Word [Signed]	...	VAR_GLOBAL	D1001

• Refresh settings

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	1024	00000	003FF	⇔	Specify Device	SB	1024	00000	003FF
-	SW	1024	00000	003FF	⇔	Specify Device	SW	1024	00000	003FF
1					⇔					
2					⇔					
3					⇔					

• Program



(3) When 'Network topology setting' (SB0078) and 'Loopback status' (SB0065) are on, 'Loopback station number 1' (SW0070) and 'Loopback station number 2' (SW0071) are saved.

Precautions

■Supported version

To use the loopback function, check that all stations support ring topology. (☞ Page 331 Added and Enhanced Functions)

■Loopback function setting and network configuration

To use the loopback function, configure the network in ring topology and set "Network Topology" to "Ring" in "Basic Settings" of the master station. If "Network Topology" and the network configuration are inconsistent, an error may occur in all stations and data link cannot be performed.

■When a loopback occurs or a loopback is resolved

Due to the occurrence or resolution of a loopback, transient transmission may become temporarily impossible. The following shows the periods of time until transient transmission becomes possible again.

- A period of time until transient transmission becomes possible after the occurrence of a loopback: Maximum 1.1 seconds
- A period of time until transient transmission becomes possible after the resolution of a loopback: Maximum 1.3 seconds

Transient transmission executed at the time of the occurrence or resolution of a loopback may be completed with an error. In such a case, execute transient transmission again. For a dedicated instruction, set transient transmission so that it will not be completed with an error by increasing the number of resends or extending the monitoring time.

■Loopback detection

In any of the following cases, a loopback may not be detected correctly.

- The master station has detected an overlapping IP address.
- Ring topology is incorrectly configured.
- A device station is reset.
- A device station on another network is connected.
- A station that is not set in "Network Configuration Settings" under "Basic Settings" is connected.
- A device station detects Time synchronization error (event code: 00C62) or Grandmaster switching (CC-Link IE TSN device) (event code: 00C63).
- For the device station parameter automatic setting, the process is completed with an error (☞ Page 99 Device station parameter automatic setting).

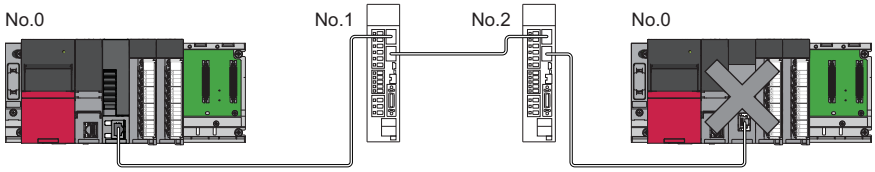
If a loopback cannot be detected correctly, any of the following information may not be correctly displayed or stored.

- Icon indication in the network map of "CC-Link IE TSN/CC-Link IE Field Diagnostics"
- Indication of Loopback occurrence (event code: 00C23)
- Values of 'Loopback status' (SB0065), 'Loopback station number 1' (SW0070), and 'Loopback station number 2' (SW0071)

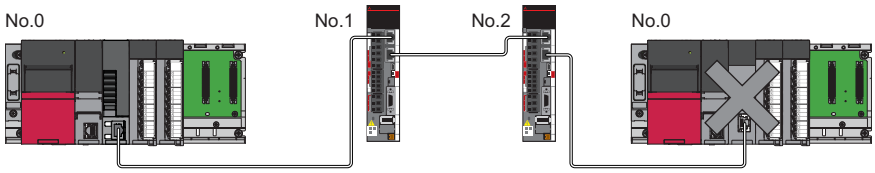
Master station duplication detection

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

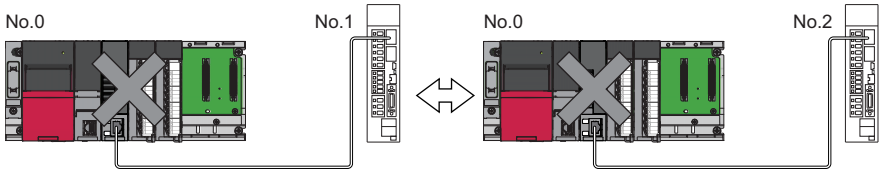
- When multiple master stations are simultaneously powered on, or when multiple master stations are simultaneously connected, "Master station duplication detection" (error code: 300FH) is detected in all master stations and cyclic transmission cannot be performed in all stations. (Transient transmission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



- If another master station is added to the network during data link, "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.



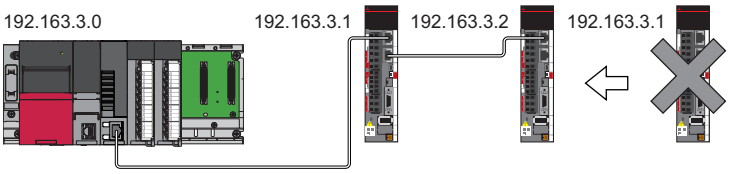
- If two networks are connected during data link, "Master station duplication detection" (error code: 300FH) is detected in master stations on both networks and cyclic transmission cannot be performed in all stations. (Transient transmission with IP address specification is available.)



IP address duplication detection

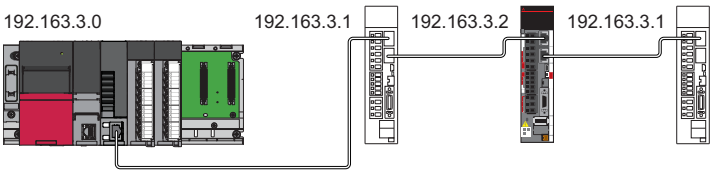
If one network has stations with the same IP address, an overlap is detected.

- When adding a device station, if a station with the same IP address already exists, "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 device station which has already been connected (linked up) with an industrial switch (CC-Link IE TSN certified) and the industrial switch (CC-Link IE TSN certified) is added to the network, an overlapping IP address is not detected in a station to be added. If "IP address duplication detection" (error code: 1802H) is detected in the master station, disconnect the relevant device 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, "IP address duplication detection" (error code: 1802H) is detected in the master station. The master station that detected the error performs cyclic transmission with the duplicated device station that entered the network.



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

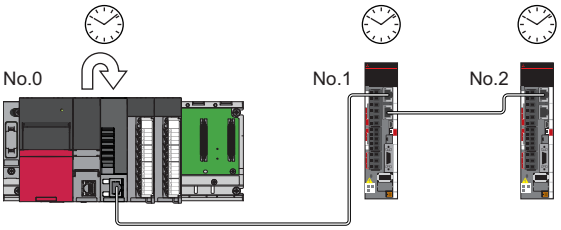
Methods of recovery from an overlapping IP address

If an error*1 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 device station.

*1 The following errors are detected depending on the Add-on baseSystem version.
· "1.32" or later: IP address duplication detection (error code: 1802H)
· "1.31" or earlier: Device station IP address duplication (error code: 3021H)

Time synchronization

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



Setting method

The time synchronization is set with the buffer memory for 'Time distribution interval setting of the CPU module'[*1].

Set the same time zone and daylight savings time to the CPU modules of the master and local stations.

*1 The buffer memory address for "Time distribution interval setting of the CPU module" varies depending on the operation mode used as follows.

· When using the PLCopen Motion control FB mode: Un\G1275136 (☞ Page 243 Time synchronization)

· When using the Simple Motion mode: Un\G2875136 (☞ Page 270 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 or RJ71GN11-T2s 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.
- The WinCPU module cannot use this function.

ERR LED control

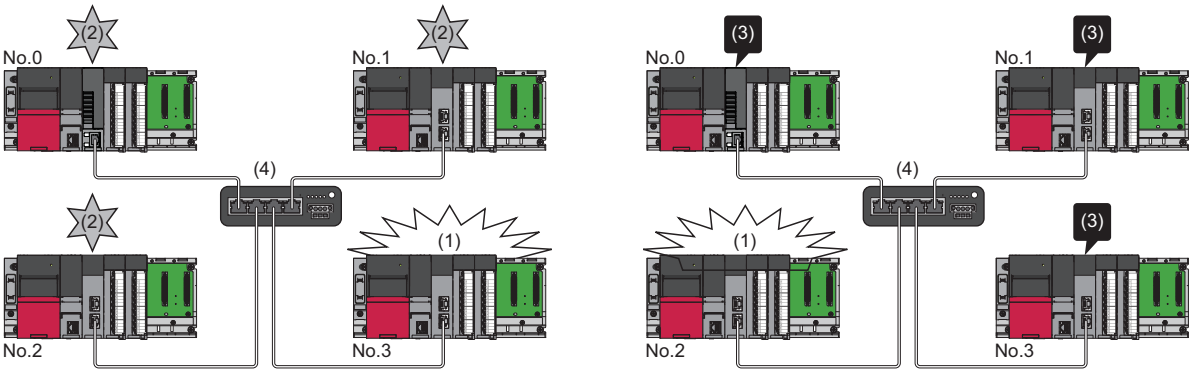
This function prevents the ERR LEDs of other normally-operating stations from flashing when a data link error occurs at a specified station.
ERR LED control information is sent from the station that is specified as the data link faulty station, which controls the flashing of ERR LEDs of the other stations.

Restriction

Before using this function, check the add-on baseSystem version. (☞ Page 331 Added and Enhanced Functions)

Ex.

The following figure shows a system configuration where only a local station with station number 2 is specified as the data link faulty station in multicast mode.
Left: When a data link error occurs on a local station with station number 3, all the ERR LEDs of the other stations flash.
Right: When a data link error occurs on a local station with station number 2, all the ERR LEDs of the other stations remain off.



No.0: Master station
No.1, No.3: Local station
No.2: Local station (specified as the data link faulty station)
(1) A data link error occurs.
(2) The ERR LEDs flash.
(3) The ERR LEDs remain off.
(4) Industrial switch (CC-Link IE TSN Class B certified)

Setting method

The setting procedure for the station that controls ERR LED differs depending on the "Communication Mode" setting in "Application Settings".

- Unicast mode: ERR LEDs are controlled only when a data link error occurs on the master station.
- Multicast mode: ERR LEDs are controlled when a data link error occurs on the master station or any local station.

Apply the following settings to the master station.

■Unicast mode

1. Power ON the system and then specify the data link faulty station with the buffer memory area*1.

*1 Use the following modes and buffer memory addresses.
- When using the PLCopen Motion control FB mode: ☞ Page 247 Data link faulty station specification (Un\G1294384 to Un\G1294399)
- When using the Simple Motion mode: ☞ Page 274 Data link faulty station specification (Un\G2894384 to Un\G2894399)

■Multicast mode

1. Power ON the system and then specify the data link faulty station with the buffer memory area*1.
2. In the buffer memory area*2, set the send request to "1: Send".
3. In the buffer memory area*3, check whether the send status is "Send completed".

*1 Use the following modes and buffer memory addresses.
- When using the PLCopen Motion control FB mode: ☞ Page 247 Data link faulty station specification (Un\G1294384 to Un\G1294399)
- When using the Simple Motion mode: ☞ Page 274 Data link faulty station specification (Un\G2894384 to Un\G2894399)

*2 Use the following modes and buffer memory addresses.
- When using the PLCopen Motion control FB mode: ☞ Page 247 Send request (Un\G1294368)
- When using the Simple Motion mode: ☞ Page 274 Send request (Un\G2894368)

*3 Use the following modes and buffer memory addresses.
- When using the PLCopen Motion control FB mode: ☞ Page 247 Send status (Un\G1294369)
- When using the Simple Motion mode: ☞ Page 274 Send status (Un\G2894369)

Precautions

- If connected devices are changed due to disconnection or return after ERR LED control, reset this function.

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 using the PLCopen Motion control FB mode>

- When the version of Add-on baseSystem is "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 "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 "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.

<When using the Simple Motion mode>

- When the version of Add-on baseSystem is "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

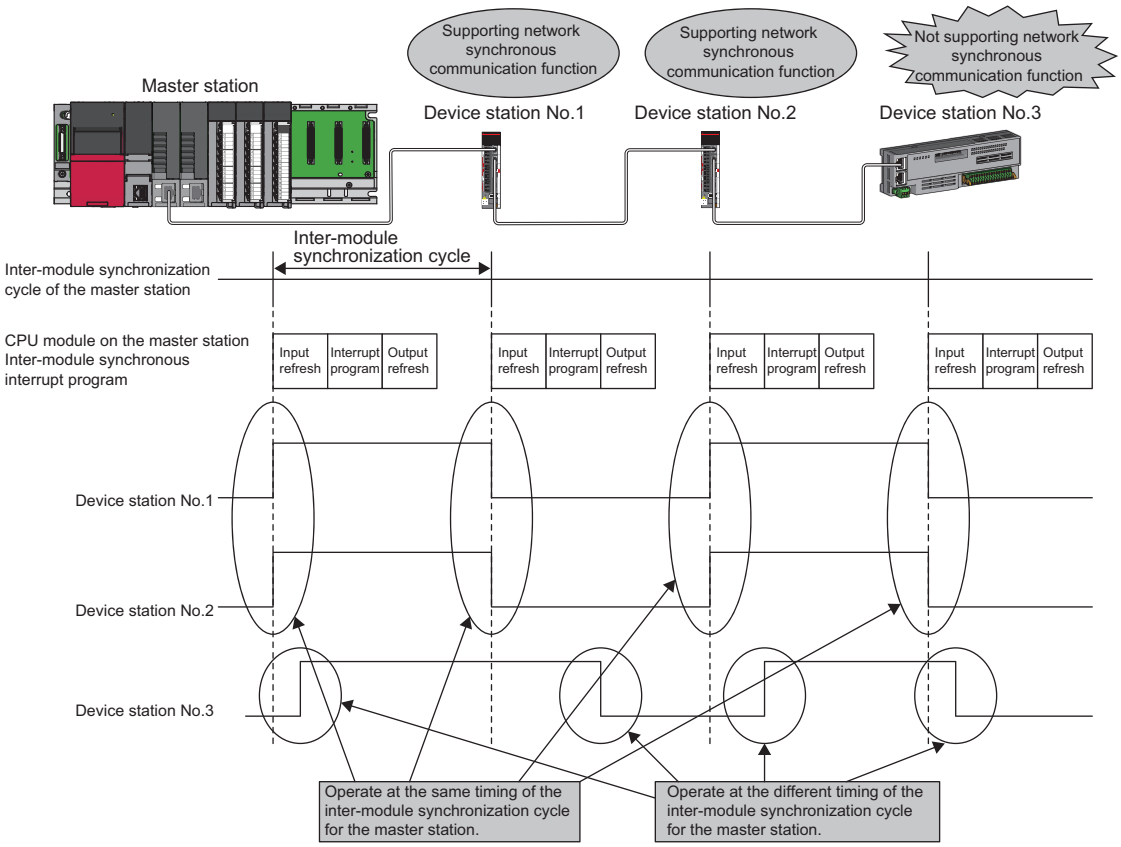
This function synchronizes the control cycle of device stations of standard stations according to the inter-module synchronization cycle specified in the master station via CC-Link IE TSN. This adjusts the operation timing with those of the other device stations connected to the same network.

For details, refer to the following.

MELSEC iQ-R Inter-Module Synchronization Function Reference Manual

Point

- The following device stations can be connected: device stations not supporting the CC-Link IE TSN Network synchronous communication function and device 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 device station, refer to the manual of each device station.

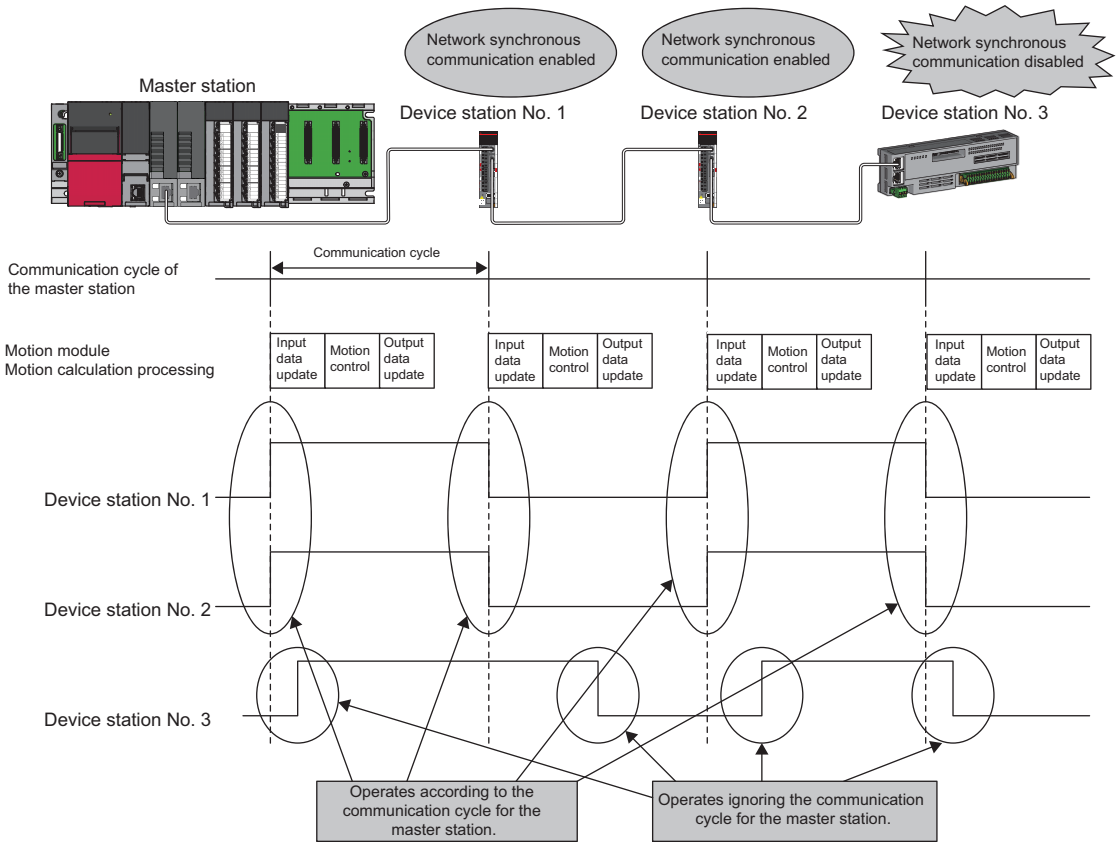


■Motion control station

This function synchronizes the control cycle of a device 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 device station set as the motion control station.

Point

The following device stations can be connected: device stations not supporting the CC-Link IE TSN Network synchronous communication function and device 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 device station, refer to the manual of each device station.



Setting method

In "Network Configuration Settings" under "Basic Settings" of the module parameter, set "Network Synchronous Communication" of the device 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.

Control mode	Fixed Scan Interval/Communication Period Interval
PLCopen Motion control FB mode	0.25/0.50/1.00/2.00/4.00/8.00ms
Simple Motion mode	0.25/0.50/1.00/2.00/4.00ms

■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 306 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 0.222ms, 0.444ms, 0.888ms, 1.777ms, 3.555ms, and 7.111ms 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.

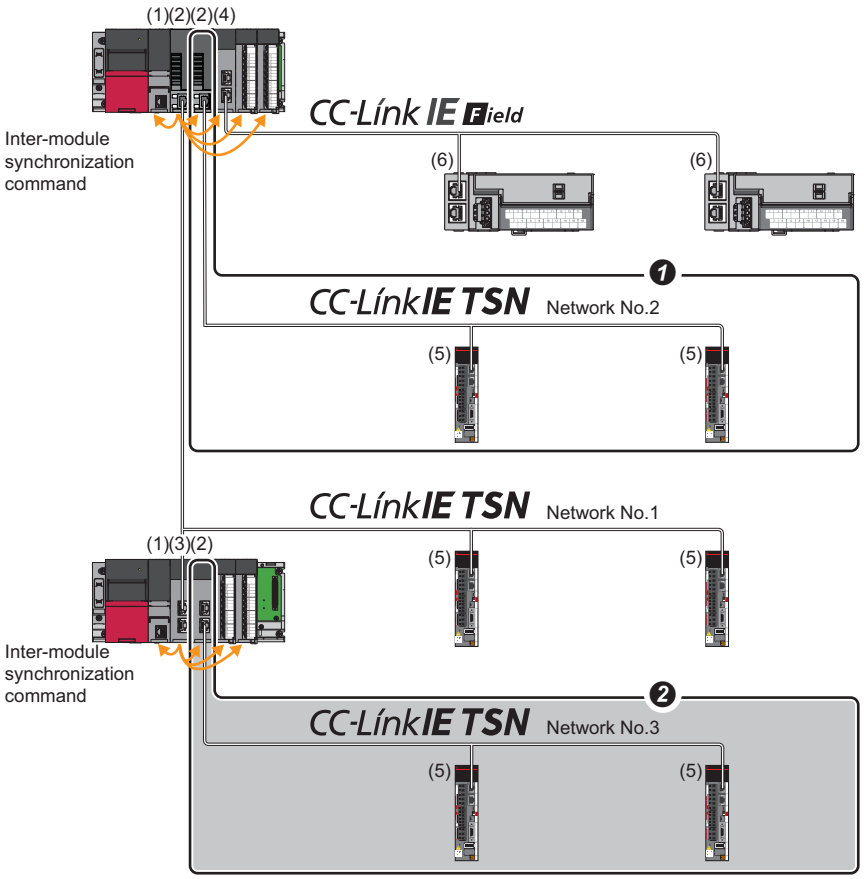
Synchronizable range of the inter-module synchronization

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 device 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 device stations.
- The local station sends an inter-module synchronization command to the module mounted on the base unit of the local station at the start timing of the communication cycle. Operation can be performed in synchronization with a module supporting the inter-module synchronization function mounted on the base unit of the local station.
- When a CC-Link IE Field Network-equipped master/local module (master station) exists on the same base unit as the master station, operation can be performed in synchronization with device stations supporting the CC-Link IE Field Network synchronous communication function.



(1) CPU module
(2) Motion module and CC-Link IE TSN master/local module (master station)
(3) CC-Link IE TSN master/local module (local station)
(4) CC-Link IE Field Network-equipped master/local module (master station)
(5) Device station on CC-Link IE TSN
(6) Device station on CC-Link IE Field Network
❶ When the firmware version "11" or later is used, multiple Motion modules and CC-Link IE TSN master/local modules (master stations) 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.
❷ Any other networks that are after the first local station cannot be synchronized.

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

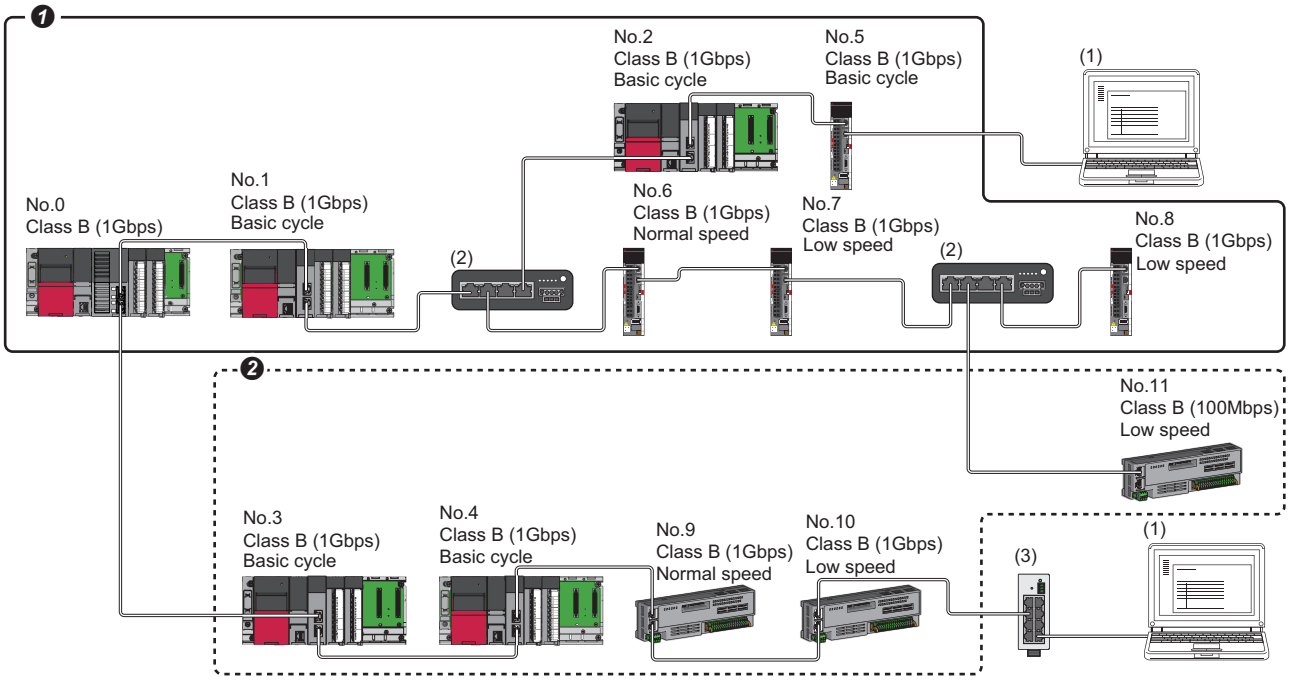
CC-Link IE TSN Network synchronous communication function	CC-Link IE TSN Class	Communication speed	Communication cycle setting	Synchronization
Not supported	—	—	—	×
Supported	CC-Link IE TSN Class A device	—	—	×
	CC-Link IE TSN Class B device	1Gbps	Basic cycle	○
			Normal-Speed	○
			Low-Speed	○
		100Mbps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

■Setting for a station not synchronizable

- When the network synchronous communication setting is set for a device station that is not synchronizable, Initialization failure (parameter mismatch between master and device stations) (event code: 00C71) is displayed in the event history in the master station. (Network synchronous communication and cyclic transmission with other device stations are continued.)
- In the local station for which "Network Synchronous Communication" on the "CC-Link IE TSN Configuration" window of the master station is set to "Synchronous", if "Select Inter-module Synchronization Target Module" in "System Parameter" on the local station side is set to "Asynchronous", "Inter-module synchronization target mismatch" (error code: 3601H) occurs.

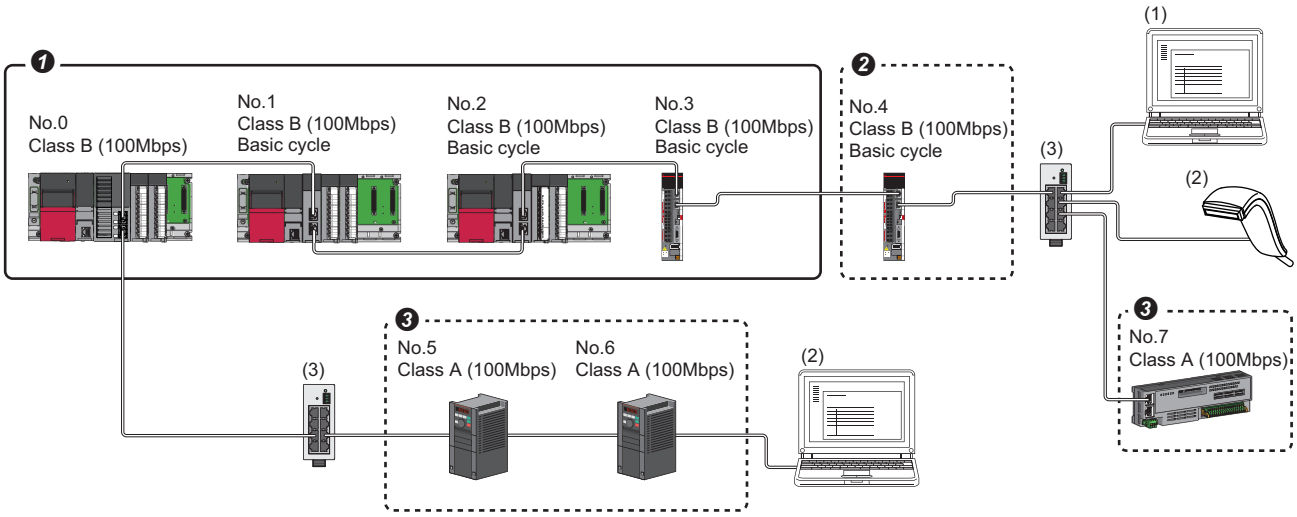
Available range of network synchronous communication

■Structure with CC-Link IE TSN Class B only



Class B: CC-Link IE TSN 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 (1Gbps)
(2) Industrial switch (CC-Link IE TSN Class B certified)
(3) Ethernet switch
❶ Synchronization is possible using the network synchronous communication.
❷ Even for a CC-Link IE TSN Class B device, synchronization is not possible if the network synchronous communication setting is set to "Asynchronous".

■Structure with mixed CC-Link IE TSN Class B/A

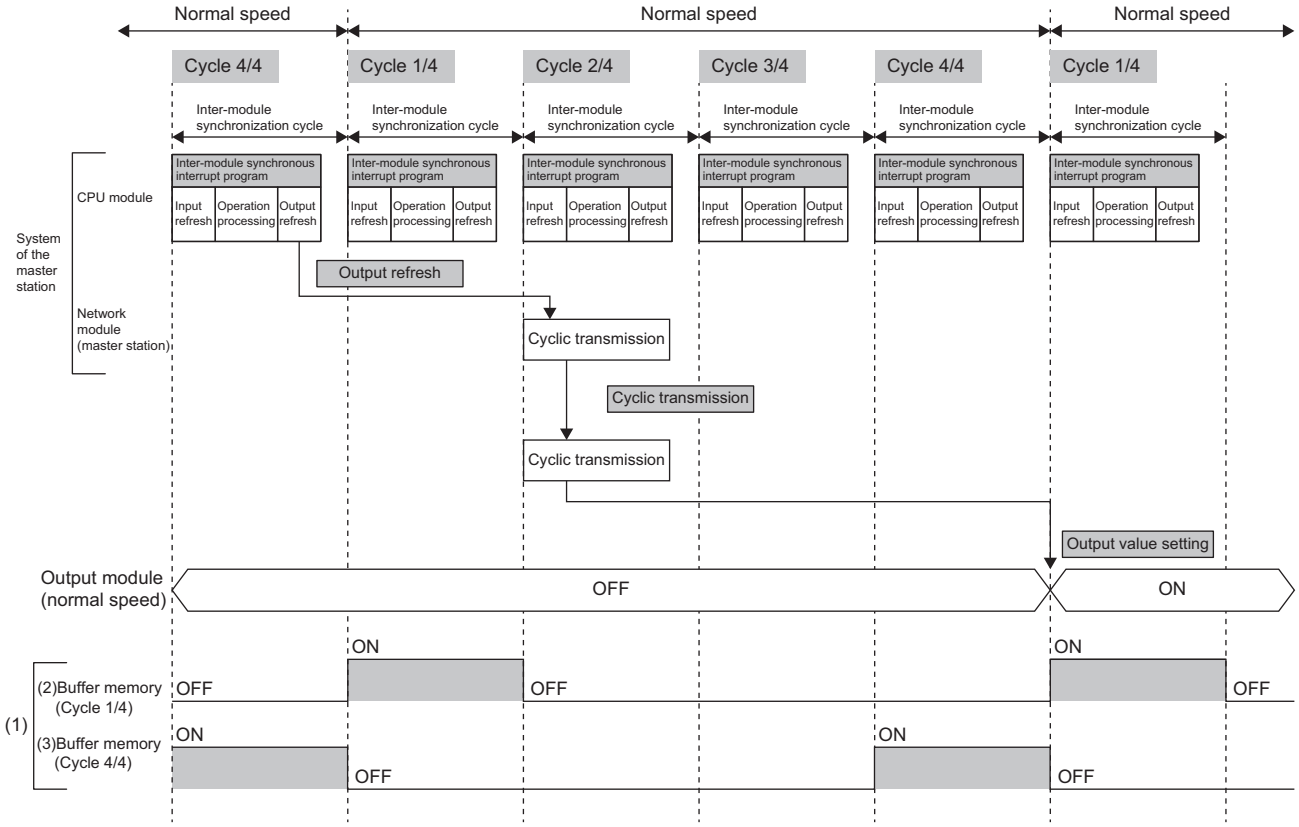


Class A: CC-Link IE TSN Class A device
Class B: CC-Link IE TSN Class B device
No. 0: Master station
No.1, No.2, and No.3: Remote station (device where the network synchronous communication setting is set to "Synchronous")
No.4: Remote station (device where the network synchronous communication setting is set to "Asynchronous")
No.5, No.6, and No.7: Remote station
(1) Ethernet device (100Mbps)
(2) Ethernet device (100Mbps)
(3) Industrial switch (CC-Link IE TSN certified)
❶ Synchronization is possible using the network synchronous communication.
❷ Even for a CC-Link IE TSN Class B device, synchronization is not possible if the network synchronous communication setting is set to "Asynchronous".
❸ For CC-Link IE TSN Class A device, synchronization is not possible using network synchronous communication.

Network synchronous communication with multiple cycles

When device 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 general station remote station, data can be transmitted to other stations after two cycles.

The following figure shows the cyclic transmission timing when "Communication Period Setting" on the "CC-Link IE TSN Configuration" window is set to "Normal-Speed".



(1) The communication cycle timing can be checked with the communication cycle information of following buffer memories.
- When using the PLCopen Motion control FB mode: Un\G1277440 to Un\G1277441
- When using the Simple Motion mode: Un\G2877440 to Un\G2877441

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 243 Communication cycle timing)

(2) First 1/4 cycle buffer memory is as follows.
- When using the PLCopen Motion control FB mode: Un\G1277440.0
- When using the Simple Motion mode: Un\G287740.0

(3) Final 4/4 cycle buffer memory is as follows.
- When using the PLCopen Motion control FB mode: Un\G1277440.F
- When using the Simple Motion mode: Un\G287740.F

Point

- To perform network synchronous communication when multiple cycles coexist, set the setting of the local station to "Basic Period" for "Communication Period Setting" on the "CC-Link IE TSN Configuration" window.
- For normal speed in the communication cycle, synchronization is possible only when "×4" is set. For low speed in the communication cycle, synchronization is possible only when "×16" is set. In "Communication Period Setting" in the "CC-Link IE TSN Configuration" window, set "Normal-Speed" to "×4" and "Low-Speed" to "×16".

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 device station mutually monitor the data to be updated every communication cycle; the master station monitors data received from a device station and a device station monitors data received from the master station.
If "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 device station and return it.

Point

- Whether the device 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).
- "Synchronous watch dog counter error" (error code: 1D20H) will be detected for device stations without axis setting with the motion control setting function. For device stations with axis setting, "WDT error" (error code: 1C41H) will be detected instead.
- If "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)

■Operation

When the master station is powered off and on (when the CPU module is reset) or a device 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 device station used. (Manual for the device station used)

Precautions

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

Network synchronous communication with a local station

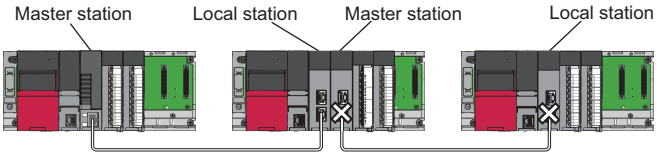
A local station can link network synchronous communication and the inter-module synchronization function, so the local station can operate in synchronization with the inter-module synchronization cycle of the master station. For details, refer to the following.
MELSEC iQ-R Inter-Module Synchronization Function Reference Manual

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

- CC-Link IE TSN Class A devices cannot synchronize using network synchronous communication. (☞ Page 88 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 the chapter of the control mode used) 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 a local station is specified as the target module for the inter-module synchronization, the master station cannot be set as the target module.
- 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.
- As shown in the figure below, any other networks that are after the first local station cannot be synchronized.



- To use an industrial switch (CC-Link IE TSN certified), refer to the CC-Link Partner Association website (www.cc-link.org) for the models and usage methods of supported industrial switches (CC-Link IE TSN certified).
- Network synchronous communication for standard stations and inter-module synchronization cannot be performed when "Network Topology" is set to "Ring". Select "Line/Star" (☞ Page 111 Network Topology), or disable network synchronous communication (asynchronous) (☞ Page 123 Setting items).
- 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 0.25/0.50/1.00/2.00/4.00/8.00ms.
- When an industrial switch (CC-Link IE TSN certified) is used, the local station may detect an error at the time of system start-up. In such a case, take corrective actions according to the error code.
- 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.
- When multiple cycles coexist, synchronization is possible only with "×16" at the low speed communication cycle and with "×4" at the normal speed communication cycle. In "Communication Period Setting" in the "CC-Link IE TSN Configuration" window, set "Normal-Speed" to "×4" and "Low-Speed" to "×16".

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
"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.
  (1) Safety CPU and safety function module with a firmware version of "20" or later
  (2) When using the PLCopen Motion control FB mode, the Motion module with the add-on baseSystem version of "1.8" or later
- When using the PLCopen Motion control FB mode, when the version of Add-on baseSystem is "1.18" or earlier, the safety communication with standard stations is not supported. If a standard station is set in the network configuration settings, "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.

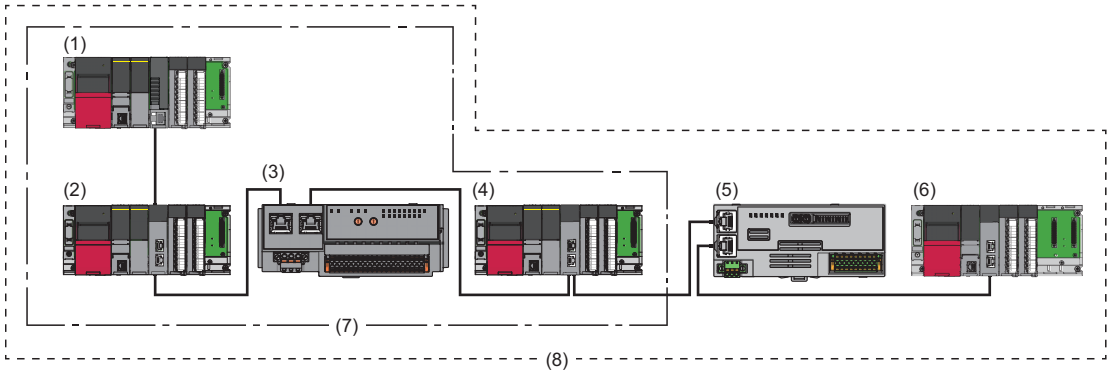
Whether a safety connection is established or not can be checked in 'Safety refresh communication status of each safety connection (1st module)' (SA\SD1008 to SA\SD1015) of the Safety CPU.*1

*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) ↔ local station (safety station) (2) (4)
- Master station (safety station) (1) ↔ remote station (safety station) (3)



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

- When using the PLCopen Motion control FB mode
  MELSEC iQ-R Motion Module User's Manual(Application)
- When using the Simple Motion mode
  MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)

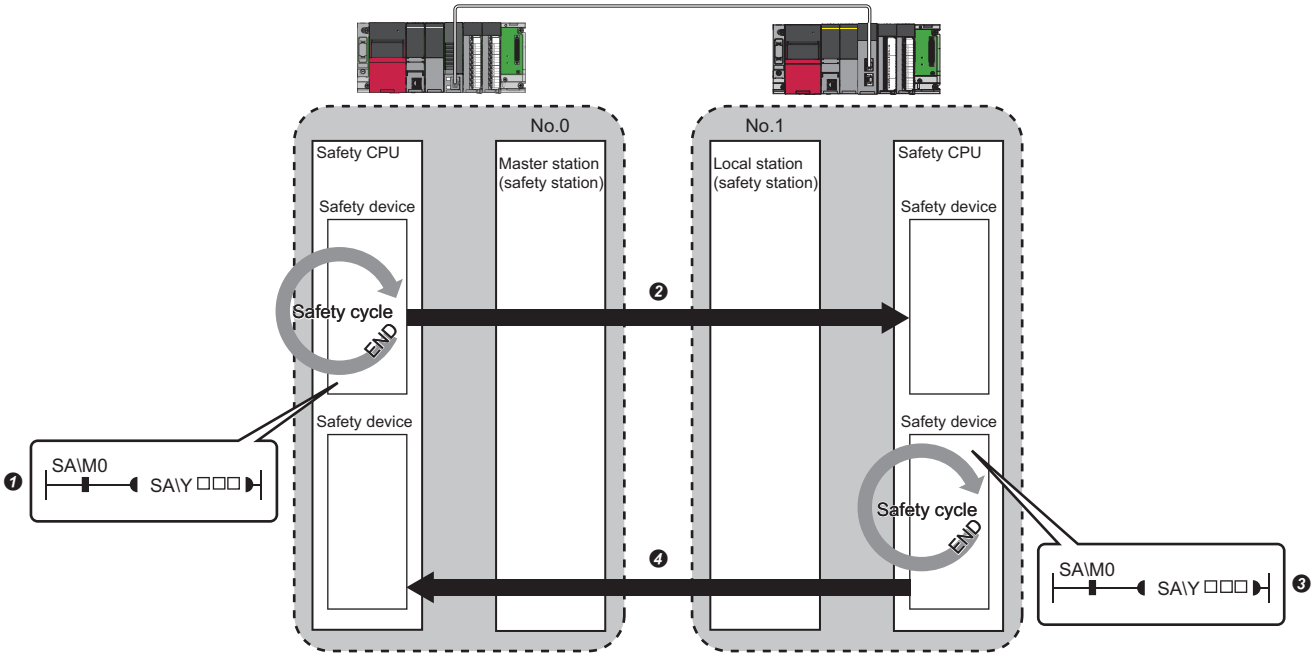
Restriction

The system can be configured with safety communication unsupported stations (5) and (6) mixed in the same network. However, safety communication (7) cannot be performed with the safety communication unsupported stations (5) and (6). Only standard communication (8) can be performed.

Safety communications flow

■Master station (safety station) and local station (safety station)

The safety device status of the sending station is stored in the safety device of the receiving 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 CPU on the local station (safety station) by safety data transfer.

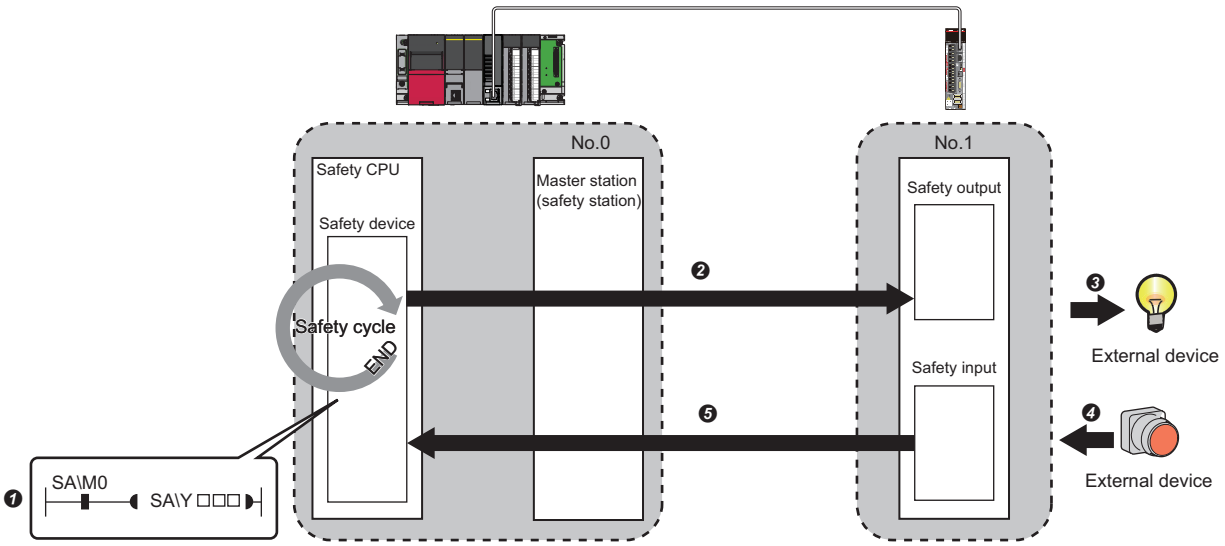
Output from the local station (safety station)

❸ The safety device of the Safety CPU on the local station (safety station) turns on.

❹ The data in a safety device of the Safety CPU on the local station (safety station) is stored in the Safety CPU on the master station (safety station) by safety data transfer.

■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 114 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 on the "CC-Link IE TSN Configuration" window 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.
- 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 device 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 122 "CC-Link IE TSN Configuration" Window)
By setting a reserved station, link device assignment will not change even if the device 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 "1.18" or earlier, the following restrictions apply.
<When using PLCopen Motion control FB mode>
- The reserved station is not supported. If a device station is set as a reserved station, "Network parameter error" (error code: 2221H) occurs.

<When using Simple Motion mode>
- The motion control reserved station is not supported. If a motion control station is set as a reserved station, "Network parameter error" (error code: 2221H) occurs.

Precautions

- Cyclic transmission cannot be performed for the device station set as a reserved station.
- When using the PLCopen Motion control FB mode, if parameters are read/written with the motion control FB from/to a motion control station set as a reserved station, "SDO communication error" (error code: 1800H) occurs.

Error invalid station setting

An error invalid station is a device station that is set to be not detected as a faulty station by the master station. It is also set when a device station is to be replaced during data link. (☞ Page 122 "CC-Link IE TSN Configuration" Window)
Even if a device 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 "1.18" or earlier, the following restrictions apply.
<When using PLCopen Motion control FB mode>
- The error invalid station setting is not supported. If a device station is set as an error invalid station, "Network parameter error" (error code: 2221H) occurs.

<When using Simple Motion mode>
- For motion control station, the error invalid station setting is not supported. If a motion control station is set as an error invalid station, "Network parameter error" (error code: 2221H) occurs.

Device station parameter automatic setting

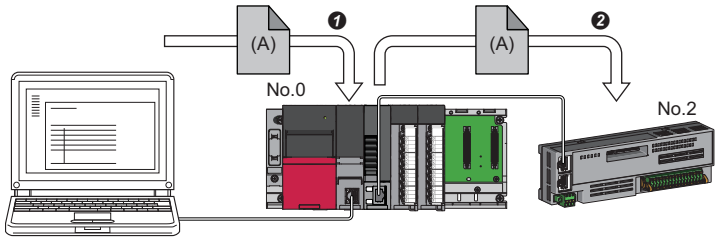
Parameters of the device station are saved in the master station, and the parameters will be automatically set when the device station is connected/returned.
If parameters are changed on the device station side, saved parameters on the master station side are automatically updated.

Restriction

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

Device station parameter automatic setting from the master station

1. Parameters of the device 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 device station is connected/returned by power-ON, saved parameters are automatically set from the master station.



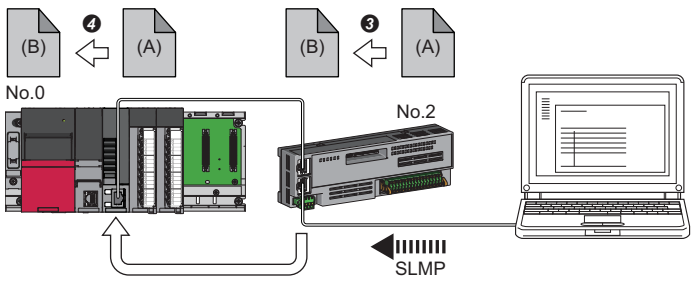
❶ Save parameter (A) of the device station to the CPU module on the master station.
❷ When the device station is returned/connected, saved parameter (A) is automatically set from the master station to the device station.

Point

- The master station automatically sets the parameters of the device station and then starts data link with the device station.
- The device station parameter automatic setting is also executed for device stations set as reserved stations.
- For the Add-on baseSystem version "1.32" or later, when parameters of the device station are automatically set , the device station parameter automatic setting completion (event code: 006FB) is registered in the event history. (For multi-axis servo amplifiers, events are registered for each axis. Depending on the specifications of the multi-axis servo amplifier, if a parameter is changed in only some of the axes of a multi-axis amplifier, the device station parameter automatic setting is executed even for an axis with no parameter changed, and the event is registered in the event history.)

Automatic update of saved parameter

1. If parameters on the device station side are changed by the engineering tool or SLMP, the parameters of the device 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 device 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.



❸ Parameter (A) of the device station is changed to (B) by SLMP.
❹ Saved parameter (A) of the CPU module on the master station is automatically updated to parameter (B).

Point

- For the Add-on baseSystem version "1.32" or later, when parameters saved in the CPU module are automatically updated, the device station parameter backup completion (event code: 006FC) is registered in the event history. (For multi-axis servo amplifiers, events are registered for each axis. Depending on the specifications of the multi-axis servo amplifier, if a parameter is changed in only some of the axes of a multi-axis amplifier, the automatic update for saved parameters is executed even for an axis with no parameter changed, and the event is registered in the event history.)

Restriction

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

- The device 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 in use for the device station.)

Setting method

Set in the "Parameter of Device Station" window. (☞ Page 130 Parameter processing of a device station)

Precautions

- A device station whose device station parameter automatic setting abnormally ended does not start data link, and 'Execution result of device station parameter automatic setting function' (SW0160 to SW0167) turns ON. Check 'Detailed execution result of device 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 device 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. Saved parameters will not be updated.
- The following are the operations depending on the version of the Add-on baseSystem when automatically updating saved parameters.

Version of Add-on baseSystem	Description
"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 device station.
"1.8" or later	If saved parameters are not in the CPU module when executing an automatic update of saved parameters, device station parameters are newly created.

- Check if the checkbox of "Parameter Automatic Setting" of the device station is selected on the "CC-Link IE TSN Configuration" window.
- Check if the IP address of the device station on the "CC-Link IE TSN Configuration" window matches the actual IP address of the device station.
- When different communication speeds are set for the master station and the station where device station parameter automatic setting is performed, the device station parameter automatic setting may end abnormally. If the setting ends abnormally, check if the communication speed is matched.
- When the parameters of a device station are stored in the SD memory card, set "Use" of "Device Station Parameter" in "Setting of File/Data Use or Not in Memory Card" under "Memory Card Parameter" for the CPU module.
- On the "CC-Link IE TSN Configuration" window in all master stations controlled by the CPU module, set 1024 or smaller to the total number for the device station parameter automatic setting including extension modules.

Point

When changing (writing back) the device 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 device station.

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

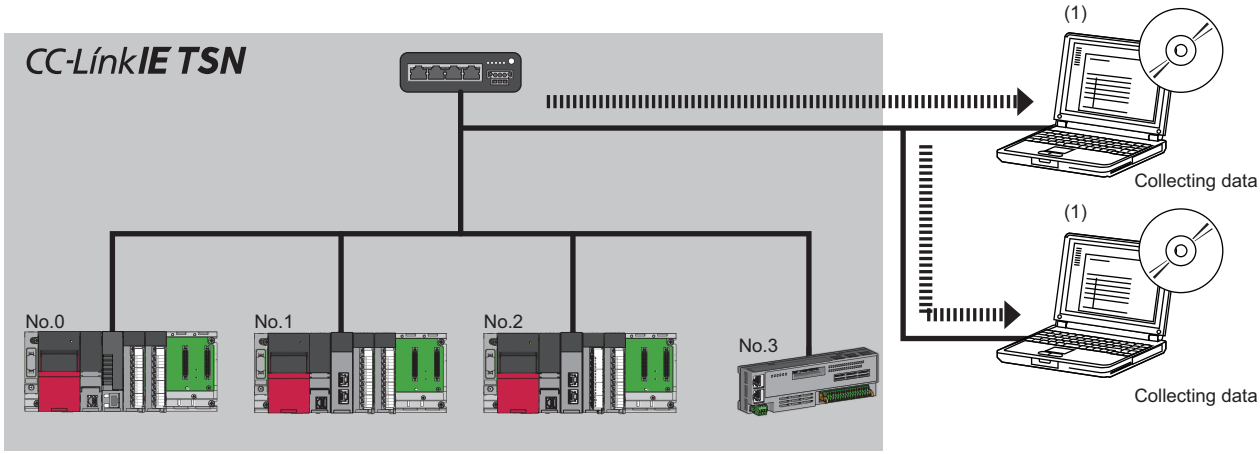
- Device station parameter setting screen ⇨ "Read" ⇨ Read parameters directly from the servo amplifier ⇨ Apply the device station parameters to the project

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)

Data collection using the CC-Link IE TSN Communication Software

The cyclic data of each CC-Link IE TSN station is received using the CC-Link IE TSN Communication Software.
For details on the CC-Link IE TSN Communication Software, refer to the following.
CC-Link IE TSN Communication Software for Windows User's Manual



No.0: Master station
No.1, No.2: Local station
No.3: Remote station
(1) CC-Link IE TSN Communication Software (number of connectable modules: 2)

Restriction

Before using this function, check the firmware version of the Motion module. (☞ Page 331 Added and Enhanced Functions)

System configuration

For details of the system configuration, refer to "SYSTEM CONFIGURATION" (in the chapter of the control mode used) of the following manual.
MELSEC iQ-R CC-Link IE TSN User's Manual (Startup)

Setting method

When connecting the CC-Link IE TSN Communication Software, set multicast mode.

[Module Parameter] ⇨ [Application Settings] ⇨ [Communication Mode] ⇨ [Multicast]

Precautions

- The CC-Link IE TSN Communication Software information cannot be displayed using the CC-Link IE TSN/CC-Link IE Field diagnostics.
- CC-Link IE TSN Communication Software is not detected using the "Connected/Disconnected Module Detection" function on the "CC-Link IE TSN Configuration" window.

Co-recording function

The co-recording function synchronizes data-saving trigger generation between devices supporting the co-recording function. The Motion module synchronizes the recording devices on the network system by relaying co-recording triggers between its own servo system recorder, recording devices on the base unit that its station is mounted, and recording devices of other stations. For details of the co-recording function, refer to the following.

MELSEC iQ-R System Recorder Co-recording Function Reference Manual

This section describes the co-recording trigger relay function of the Motion module.

The role of the Motion module

The following is the role of the Motion module in the co-recording trigger relay function.

Station type	Role	Description
Master station	Trigger relay device	• When a module mounted to the programmable controller system of the master station generates a recording trigger and sends a co-recording trigger, or a trigger is generated by the Motion module servo system recorder, the master station sends a co-recording trigger to device stations. • A master station that receives a co-recording trigger from a device station sends a co-recording trigger to other device stations. • A master station that receives a co-recording trigger from a device station sends a co-recording trigger to the CPU it manages.

Co-recording settings

For details on how to set the co-recording function, refer to "co-recording function" in the following manual.

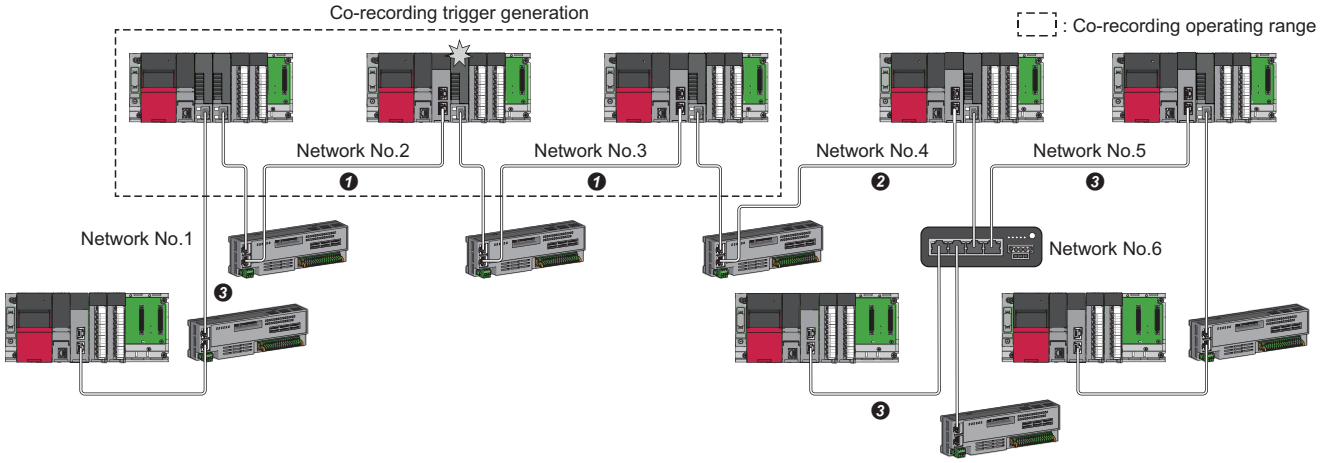
MELSEC iQ-R Motion Module User's Manual (Application)

Co-recording relay range

The Motion module can relay triggers for the number of different networks set. The number of networks for which triggers can be relayed are set in the trigger generating device.

The number of relay networks is fixed to "1".

When the number of relay networks is "1", the co-recording operating range is a follows.



❶ Network 1
❷ Network 2
❸ Network 3

Co-recording sending/receiving pause period

The Motion module does not have a sending/receiving pause period.

CPU module and Motion module combinations

The differences in operation depending on the CPU module and Motion module combinations are as follows.

○: Sends/receives co-recording triggers

×: Does not send/receive co-recording triggers

—: No combination

CPU module		Motion module		Motion module operation						
				When detecting triggers with the servo system recorder		When receiving co-recording triggers from a programmable controller system		When receiving co-recording triggers from a device station		
Firmware version	Co-recording setting	Firmware version	Co-recording setting	For a programmable controller system	For a device station	For a servo system recorder	For a device station	For a programmable controller system	For a servo system recorder	For another device station
Not supported	—	Not supported	—	—	—	—	—	×	×	×
		Supported	Not used	—	—	—	—	×	×	○
			Used	×	×	—	—	×	○	○
Supported	Not used	Not supported	—	—	—	—	—	×	×	×
		Supported	Not used	—	—	—	—	×	×	○
			Used	×	○	—	—	×	○	○
	Used	Not supported	—	—	—	×	×	×	×	×
		Supported	Not used	—	—	×	×	×	×	○
			Used	○	○	○	○	○	○	○

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]

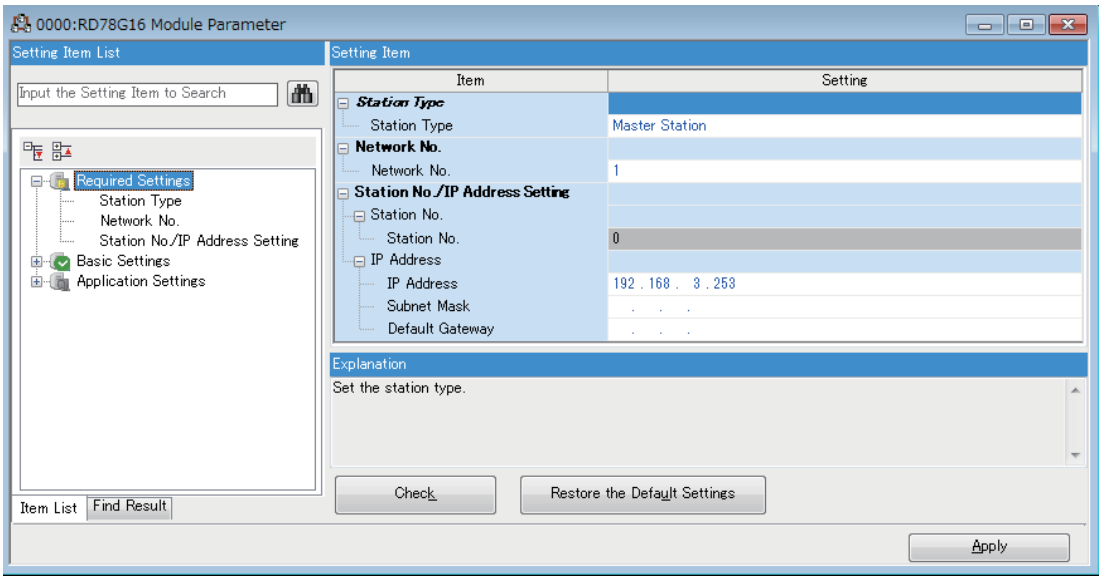
5. The parameters are reflected by resetting the CPU module or powering off and on the system.

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 106 Station Type
Network No.	Set the network No. of the Motion module.	☞ Page 106 Network No.
Station No./IP Address Settings	Set the IP address of the Motion module.	☞ Page 107 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.

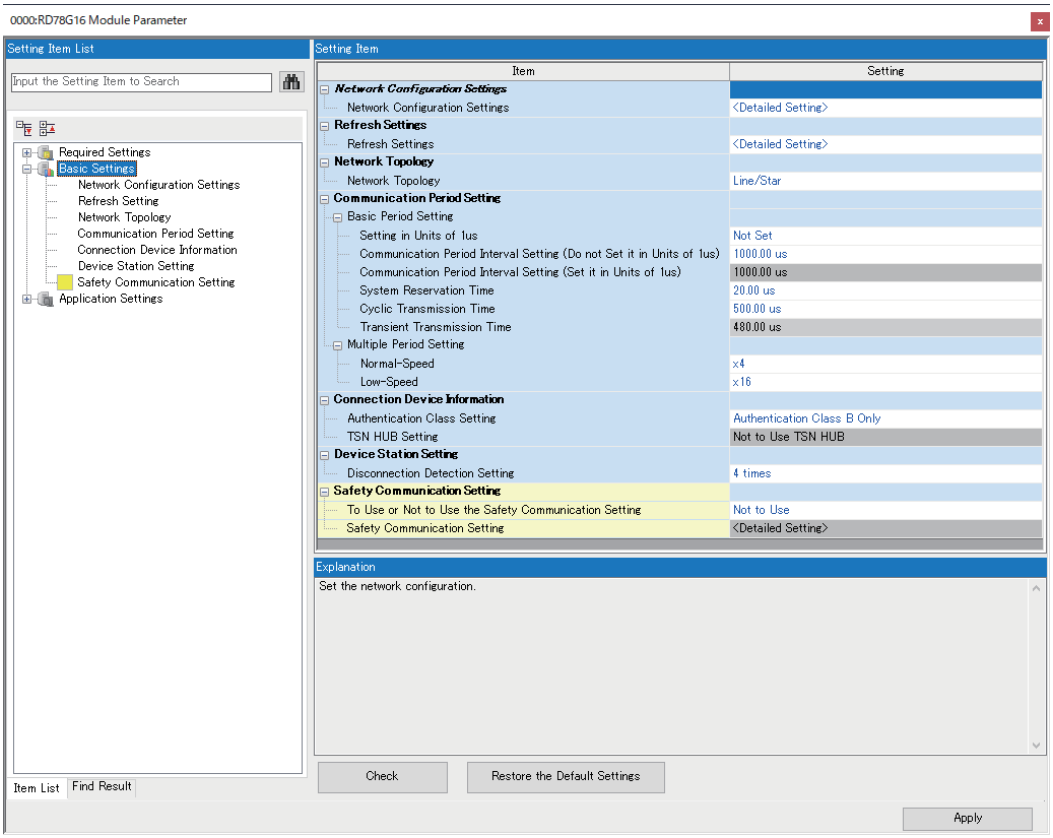
Station No./IP Address Settings

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 79 IP address duplication detection) Do not set the following values. • The third and fourth octets are all 0 or all 1. • The host address bits are all 0 or all 1 • Reserved address	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 device 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. • Class A: 255.0.0.0 • Class B: 255.255.0.0 • Class C: 255.255.255.0 The IP address for each class is as follows. • Class A: 0.x.x.x to 127.x.x.x • Class B: 128.x.x.x to 191.x.x.x • Class C: 192.x.x.x to 223.x.x.x The host address for each class is the 0 section shown below. • Class A: 255.0.0.0 • Class B: 255.255.0.0 • Class C: 255.255.255.0	• 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 network configuration.	☞ Page 122 "CC-Link IE TSN Configuration" Window
Refresh Settings*1	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 109 Refresh Settings
Network Topology	Select the network topology type according to the actual network configuration.	☞ Page 111 Network Topology
Communication Period Setting	Set the basic cycle setting and multiple cycle setting.	☞ Page 112 Communication Period Setting
Connection Device Information	Set the information of connected devices.	☞ Page 113 Connection Device Information
Device Station Setting	Set the number of consecutive communication failures until a device station is considered disconnected.	☞ Page 113 Device Station Setting
Safety Communication Setting*2	Set whether to use the safety communication or not and set the safety connections and the transfer ranges of safety devices.	☞ Page 114 Safety Communication Setting

*1 When using the PLCopen Motion control FB mode, and the version of Add-on baseSystem is "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, LB, LW) of the Motion module ↔ Devices of the CPU module

Setting method

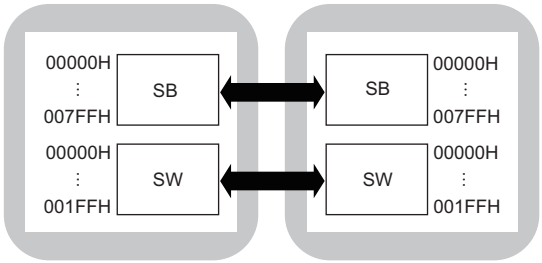
The procedure for the refresh settings is shown below.

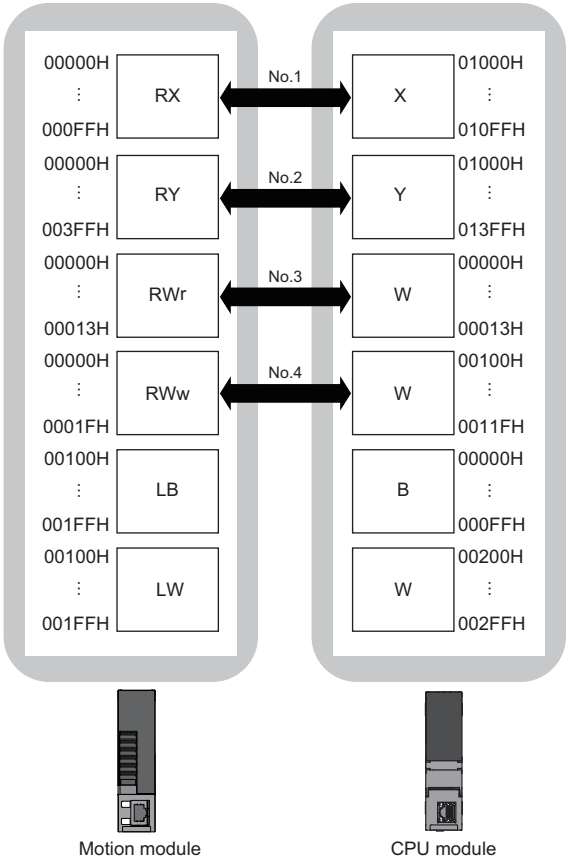
1. Set the required items.

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	2048	00000	007FF	⇔	Specify Devic	SB	2048	00000	007FF
-	SW	512	00000	001FF	⇔	Specify Devic	SW	512	00000	001FF
1	RX	256	00000	000FF	⇔	Specify Devic	X	256	01000	010FF
2	RY	1024	00000	003FF	⇔	Specify Devic	Y	1024	01000	013FF
3	RWr	20	00000	00013	⇔	Specify Devic	W	20	00000	00013
4	RWw	32	00000	0001F	⇔	Specify Devic	W	32	00100	0011F
5	LB	512	00000	001FF	⇔	Specify Devic	B	512	00000	001FF
6	LW	512	00000	001FF	⇔	Specify Devic	W	512	00200	003FF
7					⇔					

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". • Start/End: Enter the start and end numbers of link devices. • Points/Start: Enter the numbers of points and start numbers of link devices.	• Start/End • Points/Start (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 109 Refresh Settings) Ex.  	■Device Name • SB (fixed) • SW (fixed) ■Points • SB: 16 to 4096 • SW: 1 to 4096 (Default: Grayout) ■Start • SB: 0H to FF0H (increments of 16 points) • SW: 0H to FFFH (increments of 1 point) (Default: empty) ■End • SB: FH to FFFH (increments of 16 points) • SW: 0H to FFFH (increments of 1 point) (Default: empty)
	CPU Side		■Target • Specify Device (Default: empty) ■Device Name • Specify Device (link side is SB): SB, M, L, B, D, R, ZR, RD • Specify Device (link side is SW): SW, M, L, B, D, R, ZR, RD (Default: Grayout) ■Points, End • For a specified device: Displayed corresponding to the setting of "Start". (Default: Grayout) ■Start • 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)

Item		Description	Setting range
1 to 256	Link Side	Set the link refresh ranges of link devices (RX, RY, RWr, RWw, LB, LW). Up to 256 ranges can be set. (☞ Page 109 Refresh Settings) Ex.  	■Device Name • RX, RY, RWr, RWw, LB, LW (Default: empty) ■Points • RX, RY: 16 to 16384 • RWr, RWw: 4 to 8192 • LB: 16 to 32768 • LW: 1 to 16384 (Default: Grayout) ■Start • RX, RY: 0000H to 3FF0H (increments of 16 points) • RWr, RWw: 0000H to 1FFCH (increments of 4 points) • LB: 0000H to 7FF0H (increments of 16 points) • LW: 0000H to 3FFFH (increments of 1 point) (Default: Grayout) ■End • RX, RY: 000FH to 3FFFH (increments of 16 points) • RWr, RWw: 0003H to 1FFFH (increments of 4 points) • LB: 000FH to 7FFFH (increments of 16 points) • LW: 0000H to 3FFFH (increments of 1 point) (Default: Grayout)
	CPU Side		■Target • Specify Device (Default: Grayout) ■Device Name • Specify Device (link side is RX): X, M, L, B, D, W, R, ZR, RD • Specify Device (link side is RY): Y, M, L, B, D, W, R, ZR, RD • Specify Device (link side is RWr, RWw): M, L, B, D, W, R, ZR, RD • Specify Device (link side is LB, LW): X, Y, M, L, B, D, W, R, ZR, RD (Default: Grayout) ■Points, End • For a specified device: Displayed corresponding to the setting of "Start". (Default: Grayout) ■Start • For a specified device: Device range of CPU modules (bit devices in increments of 16 points and word devices in increments of 4 points.) (Default: Grayout)

Point

The link device of the Motion module can be accessed from the program as well. (☞ Page 33 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 "CC-Link IE TSN Configuration" window

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. ■For RD78GH To use the loopback function, select "Ring". (☞ Page 74 Loopback function)	• Line topology, star topology, or coexistence of star and line topologies • Ring topology (When using the RD78GH)*1 (Default: Line topology, star topology, or coexistence of star and line topologies)

*1 When the version of Add-on baseSystem is "1.29" or earlier, an error occurs in the Motion module.

Restriction

Network synchronous communication for standard stations and inter-module synchronization cannot be performed when "Network Topology" is set to "Ring". Select "Line/Star", or disable network synchronous communication (asynchronous).

Precautions

- For the communication period, 31.25μs/62.50μs, the network topology is compatible with line topology only. When connecting with star topology, coexistence of star and line topologies, or ring topology set the communication period to 125.00μs or more.
- When "Network Topology" is set to "Ring", and a device station that does not support ring topology is connected, "Ring topology unsupported station detection" (error code: 3234H) occurs.
- For details of the device stations that support ring topology, refer to the manual of the device station connected.

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 306 Communication cycle interval)
- Multiple cycle setting is used when communication cycles coexist. (☞ Page 46 Communication cycles coexistence)

Item		Description	Setting range	
			PLCopen Motion control FB mode	Simple Motion mode
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)*1*2	Communication Period Interval	• 31.25μs*3*4 • 62.50μs*3 • 125.00μs • 250.00μs • 500.00μs • 1000.00μs • 2000.00μs • 4000.00μs • 8000.00μs*3 (Default: 1000.00μs)	• 250.00μs • 500.00μs • 1000.00μs • 2000.00μs • 4000.00μs (Default: 1000.00μs)
	Communication Period Interval Setting (Set it in Units of 1μs)*2	Enter a value of the communication cycle interval.	125.00μs to 8000.00μs (in increments of 1μs)*3 (Default: 1000.00μs)	250.00μs to 4000.00μs (in increments of 1μs) (Default: 1000.00μs)
	System Reservation Time	Necessary time for the system to guarantee the communication cycle interval. When the master "communication speed"100Mbps, select 200μs.	• 7.00μs • 14.00μs • 20.00μs • 200.00μs (Default: 20.00μs)	• 20.00μs • 200.00μs (Default: 20.00μs)
	Cyclic Transmission Time	Set the time to be allocated to cyclic transmission in communication cycle intervals.	5.00μs to 7979.00μs (in increments of 1μs)*5 (Default: 500.00μs)	5.00μs to 3966.00μs (in increments of 1μs) (Default: 500.00μs)
	Transient Transmission Time	The value of "Communication Period Interval Setting" minus "Cyclic Transmission Time" and "System Reservation Time" is displayed.	14.00μs to 7988.00μs (in increments of 1μs)*6 (Default: 480.00μs)	14.00μs to 3975.00μs (in increments of 1μs) (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*7 • ×64*7 • ×128*7 (Default: ×16)	

*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, "1.4" or earlier, communication cycle is "125.00μs to 4000.00μs".

*4 Can be set only when using RD78GH.

*5 For the version of Add-on baseSystem, "1.4" or earlier, cyclic transmission time is "5.00μs to 3966.00μs".

*6 For the version of Add-on baseSystem, "1.4" or earlier, transient transmission time is "14.00μs to 3975.00μs".

*7 When the version of Add-on baseSystem is "1.18" or earlier, an error occurs if a value other than "×16" is set.

Point

- When using an industrial switch (CC-Link IE TSN Class B certified), set the timeslot information from the setting values in "Basic Period Setting".
  The timeslot information can be checked with the buffer memory. (☞ Page 262 Timeslot information)
- Set "Communication Period Setting" according to the communication cycle supported by the device station.

Precautions

- There are device stations 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 16ms. The following are the examples.
  - Basic communication cycle 1ms × Low-speed, ×16: Setting allowed
  - Basic communication cycle 2ms × Normal-speed, ×8: Setting allowed
  - Basic communication cycle 2ms × Low-speed, ×16: Setting disallowed
- When using the PLCopen Motion control FB mode, if there is a standard station in the network configuration setting and the communication cycle setting is set to less than 125μs, "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)
- When using the PLCopen Motion control FB mode and the version of Add-on baseSystem is "1.24" or later, when the communication mode is set to "multicast" while the communication cycle interval setting is less than 125μs, "Communication cycle interval setting combination error" (error code: 322AH) occurs.

Connection Device Information

Set the information of the connected device.

Item	Description	Setting range
CC-Link IE TSN Class Setting*1	Set the CC-Link IE TSN Class of connected devices.	• CC-Link IE TSN Class B only • Mixture of CC-Link IE TSN Class B/A or Authentication Class A Only (Default: CC-Link IE TSN Class B only)
TSN HUB Setting*2	Set whether to use an industrial switch (CC-Link IE TSN Class B certified) or not in a structure with mixed CC-Link IE TSN Class B devices and CC-Link IE TSN Class A devices.	• Not to Use TSN HUB • Use TSN HUB (Default: Not to Use TSN HUB)

*1 When this setting is set to "CC-Link IE TSN Class B only", the engineering tool checks whether there is a setting for "CC-Link IE TSN Class A" in "CC-Link IE TSN Class Setting" of "Network Configuration Settings".

*2 This can be set when "CC-Link IE TSN Class Setting" is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only".

Precautions

- For a structure with mixed CC-Link IE TSN Class B devices and CC-Link IE TSN Class A devices, set "TSN HUB Setting" to "Use TSN HUB" when connecting an industrial switch (CC-Link IE TSN Class B certified).
- When using RD78GH, and "Network Topology" is set to "Ring", set "CC-Link IE TSN Class Setting" in "Connection Device Information" to "CC-Link IE TSN Class B Only". If "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only" is set, "Ring connection parameter error" (error code: 3016H) occurs.
- In the case of "CC-Link IE TSN Class B Only" and "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only" system configuration, different restrictions apply. For details, refer to "SYSTEM CONFIGURATION" (in the chapter of the control mode used) of the following manual.
  MELSEC iQ-R Motion Module User's Manual (Startup)
- When connecting an industrial switch (CC-Link IE TSN Class B certified) with "Not to Use TSN HUB" set in "TSN HUB Setting", the device stations may not perform data link. (☞ Page 188 CC-Link IE TSN Class A device cannot perform data link)

Device Station Setting

Set items related to the device station.

Item	Description	Setting range
Disconnection Detection Setting	Set the number of consecutive communication failures until a device station is considered disconnected.	• 2 times • 4 times • 8 times (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.	• Not to Use • Use (Default: Not to Use)
Safety Communication Setting	Set the safety connections and transfer ranges of safety devices required for safety communications.	☞ Page 114 Setting method

Restriction

Set the following items before configuring the safety communication setting.

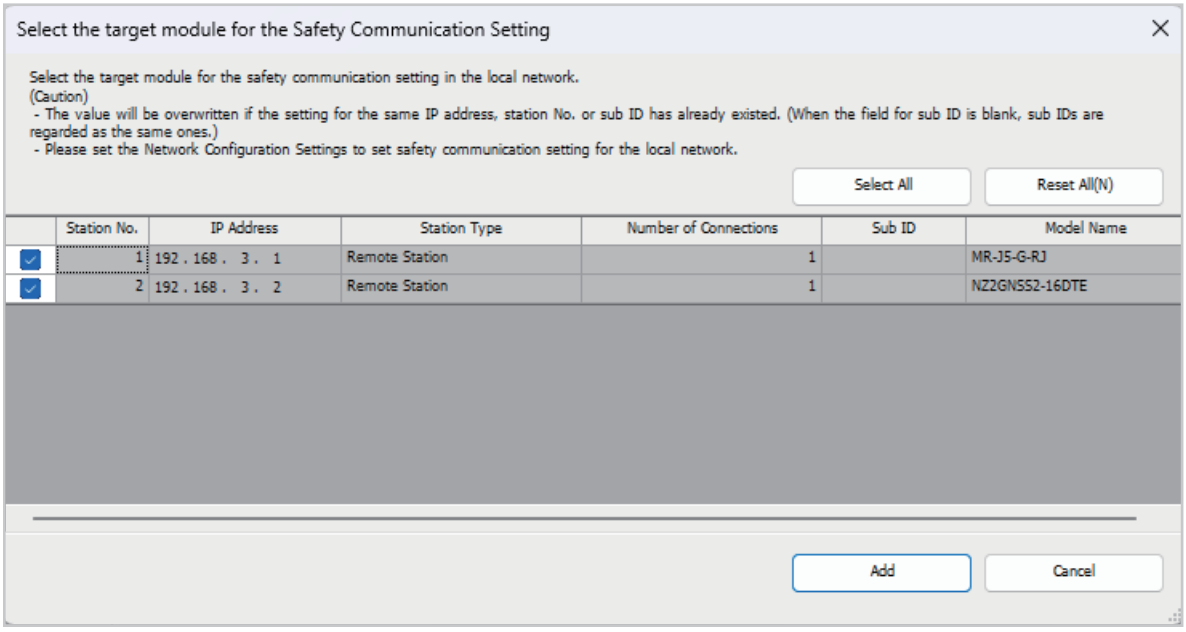
- "Network Configuration Settings" in "Basic Settings" (☞ Page 122 "CC-Link IE TSN Configuration" Window)

If the above items are not set, the device 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.

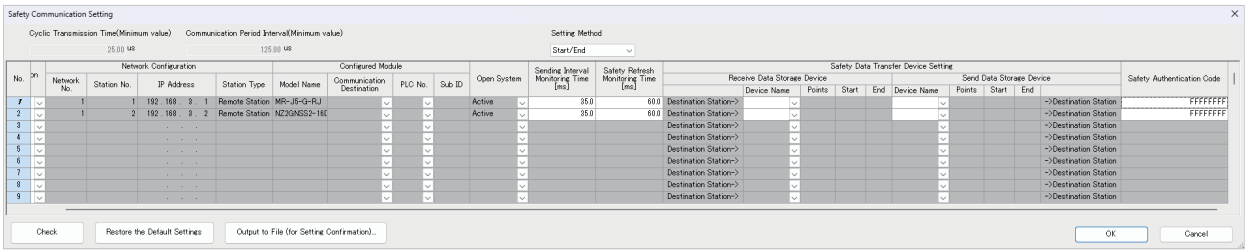
Setting method

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)		The cyclic transmission time that are calculated by the number of device 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.*1 Even if the number of device stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". (☞ Page 306 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 the largest value among the values shown below. • 10% of the minimum value of the calculated cyclic transmission time • When the communication speed for the master station is set to 1Gbps: The number of device stations × 2μs • When the communication speed for the master station is set to 100Mbps: The number of device stations × 20μs When the communication speed of the master station is 1Gbps with version 1.085P or earlier of the engineering tool if a device station with "Communication Period Setting" as "basic cycle" or "normal speed cycle" in a CC-Link IE TSN Class A device exists, the time cannot be checked. Check it with 'Cyclic transmission time (calculation value)' (SW0073). (☞ Page 285 List of Link Special Register (SW))	
Communication Period Interval (Minimum value)		The communication cycle intervals that are calculated by the number of device 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.*1 Even if the number of device stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". (☞ Page 306 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: Communication cycle interval (minimum value) + Cyclic transmission time (minimum value) × 0.1 When the communication speed of the master station is 1Gbps with version 1.085P or earlier of the engineering tool if a device station with "Communication Period Setting" as "basic cycle" or "normal speed cycle" in a CC-Link IE TSN Class A device exists, the interval cannot be checked. Check it with 'Communication cycle interval (calculation value)' (SW0072). (☞ Page 285 List of Link Special Register (SW))	
Setting Method		Right-click in the "Safety Communication Setting" window and select an assignment method in "Safety Data Transfer Device Setting". • Start/End: Enter the start and end numbers of safety devices. • Points/Start: Enter the points and start numbers of safety devices.	• Start/End • Points/Start (Default: Start/End)
No.		Safety connection number for distinguishing settings for each safety connection.	1 to 120*2
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*3	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.	• Local station • Remote station (Default: empty)
	Sub ID	The sub ID of the communication destination is displayed.	0 to 63

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. (Only device station other than the local station)	—
	Communication Destination	When the communication destination is a local station: Set the CPU model name of communication destination.	• R08SFCPU • R16SFCPU • R32SFCPU • R120SFCPU • R16NCCPU (Default: empty)
	PLC No.	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 • SA\X • SA\M • SA\B • SA\D • SA\W (Default: empty) ■Points • Bit device: 16 to 128 (set in increments of 16 points)*4 • Word device: 1 to 8 (set in increments of 1 point) (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 • SA\Y • SA\M • SA\B • SA\D • SA\W (Default: empty) ■Points • Bit device: 16 to 128 (set in increments of 16 points)*4 • Word device: 1 to 8 (set in increments of 1 point) (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 device 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 "CC-Link IE TSN Configuration" window, a hyphen may be displayed or the displayed calculation result may not be correct.

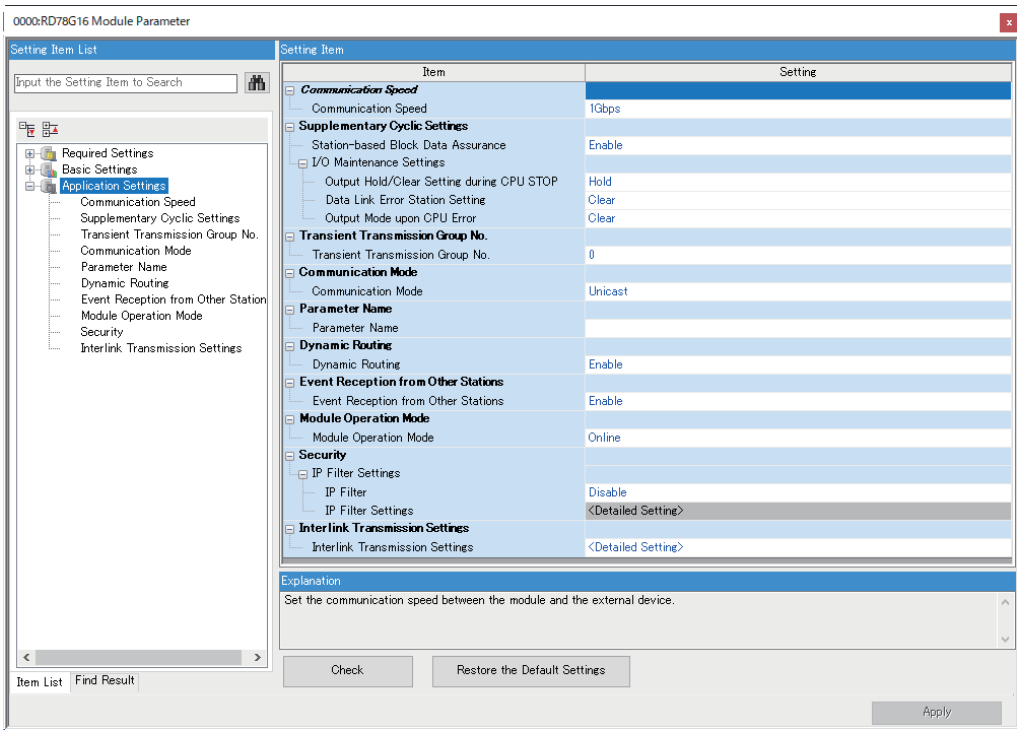
*2 Set the safety connection No. starting with 1.
Even if the safety connection is set in a random line, the unset line is deleted and the No. is set starting with 1 when the [OK] button is clicked.

*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 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 119 Communication Speed Setting
Supplementary Cyclic Settings	Set the station-based block data assurance and I/O maintenance settings.	☞ Page 119 Supplementary Cyclic Settings
Transient Transmission Group No. Setting*1	Set the transient transmission group No.	☞ Page 119 Transient Transmission Group No. Setting
Communication Mode	Set the communication mode.	☞ Page 119 Communication Mode
Parameter Name	Set a name for the module parameter if desired.	☞ Page 120 Parameter Name
Dynamic Routing	Select whether to enable the dynamic routing function.	☞ Page 120 Dynamic Routing
Event Reception from Other Stations	Select whether to obtain the events occurring in the other stations.	☞ Page 120 Event Reception from Other Stations
Module Operation Mode	Set the module operation mode of the Motion module.	☞ Page 120 Module Operation Mode
Security	Set the security measures for access to the Ethernet device.	☞ Page 121 Security
Interlink Transmission Settings	Set link device ranges when cyclic data are transferred from a station in the own network to a station in a different network.	☞ Page 121 Interlink Transmission Settings

*1 When the version of Add-on baseSystem is "1.22" or earlier, an error will occur when a value other than 0 is set.

Communication Speed Setting

Set the communication speed of the modules.

Item	Description	Setting range
Communication Speed	Select the communication speed of the modules.	• 1Gbps • 100Mbps*1 (Default: 1Gbps)

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

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

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

Precautions

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

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 33 Direct access to link devices)	• Enable • Disable (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 48 I/O maintenance settings)	• Hold • Clear (Default: Hold)
	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 48 I/O maintenance settings)	• Clear • Hold (Default: Clear)
	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 48 I/O maintenance settings)	• Clear • Hold (Default: Clear)

Transient Transmission Group No. Setting

Set the transient transmission group No.

Item	Description	Setting range*1
Transient Transmission Group No. Setting	Set the group No. to perform transient transmission using group specification.	0 to 32 (0: No group specification) (Default: 0)

*1 When the version of Add-on baseSystem is "1.22" or earlier, a Motion module error will occur when a value other than "0" is set.

Communication Mode

Set the communication mode.

Item	Description	Setting range
Communication Mode	Set the communication mode.	• Unicast • Multicast*1 (Default: Unicast)

*1 When the version of Add-on baseSystem is "1.22" or earlier, a Motion module error will occur.

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)

Dynamic Routing

Select whether to enable the dynamic routing function. (☞ Page 62 Communications using the engineering tool)

Item	Description	Setting range
Dynamic Routing	When communicating with different networks, select whether to enable the dynamic routing function.	• Enable • Disable (Default: Enable)

Point

When enabling dynamic routing, do not connect the CPU module (built-in Ethernet port part) and the Motion module on the same Ethernet using an Ethernet switch or other means.

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.	• Enable • Disable (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.	• Disable • Enable (Default: Disable)
	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 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)

Interlink Transmission Settings

Set link device ranges when cyclic data are transferred from a station in the own network to a station in a different network.

For details of interlink transmission settings, refer to "Parameter setting" in the following manual.

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

Precautions

- The value transferred for RY/RWw assigned to the motion control station is not reflected in the output to the motion control station. Additionally, when operating in multicast mode, the value transferred to RY/RWw assigned to the motion control station is not stored in the local station link device (RX/RWr).
- When setting the Motion module RX/RWr to the transfer origin, the value (initial value 0) written last is transferred to the RX/RWr assigned to the motion control station by direct access, etc. of the link device.

Restriction

When the version of Add-on baseSystem is "1.22" or earlier, the Motion module will operate without any setting when interlink transmission is set.

2.5 "CC-Link IE TSN Configuration" Window

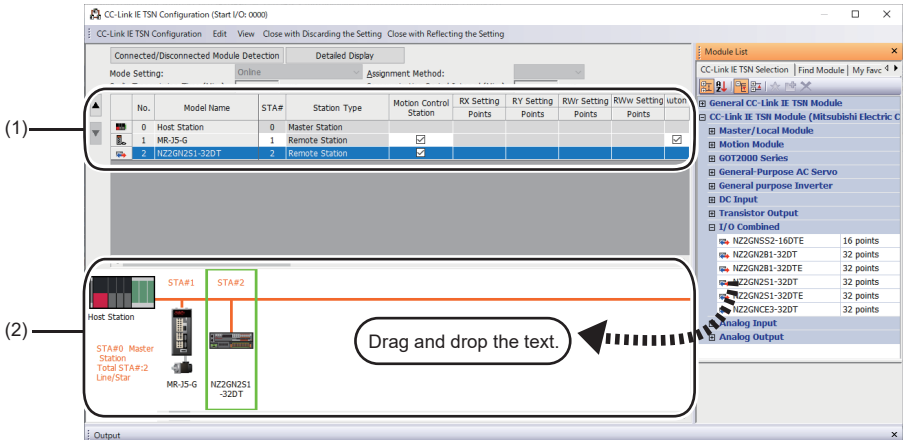
Perform the parameter setting of device stations, the detection of connected/disconnected devices, or others.

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

Parameter setting of a device station

Set parameters of device 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.



(1) List of stations
(2) 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" docking 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.

Precautions

Restrictions may not be checked by performing the system configuration check.
Set a network configuration diagram after checking the details of a system configuration in the following.
MELSEC iQ-R Motion Module User's Manual (Startup)

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.

Setting item (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 120 Module Operation Mode	
Assignment Method	Select a link device assignment method. • Points/Start: Enter the Nos. of points and start Nos. of link devices. • Start/End: Enter the start and end Nos. of link devices. ■When the GX Works3 version is "1.085P" or later • When selecting Points/Start, only points and start can be inputted, and end will be calculated automatically and displayed. • When selecting Start/End, only start and end can be inputted, and points will be calculated automatically and displayed. ■When the GX Works3 version is earlier than "1.085P". • Select "Points/Start" for the motion control station.	• Points/Start • Start/End (Default: Points/Start)
Cyclic Transmission Time (Min.)	The value that is calculated by the number of device stations and the number of link device points is displayed. Use the displayed value as a guide.*1*13 Even if the number of device stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". (☞ Page 306 Communication cycle interval) The displayed value can be used for "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings". If cyclic transmission is not performed by setting the displayed value, set a value obtained by adding the largest value among the values shown below. • 10% of the minimum value of the calculated cyclic transmission time • When the communication speed for the master station is set to 1Gbps: The number of device stations × 2μs • When the communication speed for the master station is set to 100Mbps: The number of device stations × 20μs When the communication speed of the master station is 1Gbps in unicast mode or multicast mode with version "1.085P" or earlier of the engineering tool, and a device station whose "Communication Period Setting" is set to "Basic Period" or "Normal-Speed" exists as a CC-Link IE TSN Class A device, the time cannot be checked. Check it with 'Cyclic transmission time (calculation value)' (SW0073). (☞ Page 285 List of link special register (SW))	
Communication Period Interval (Min.)*2	The value that is calculated by the number of device stations and the number of link device points are displayed. Use the displayed value as a guide.*1*13 Even if the number of device stations and link device points are the same, the displayed values differ depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings". (☞ Page 306 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: Communication cycle interval (minimum value) + Cyclic transmission time (minimum value) × 0.1 When the communication speed of the master station is 1Gbps in unicast mode or multicast mode with version "1.085P" or earlier of the engineering too, and a device station whose "Communication Period Setting" is set to "Basic Period" or "Normal-Speed" exists as a CC-Link IE TSN Class A device, the interval cannot be checked. Check it with 'Communication cycle interval (calculation value)' (SW0072). (☞ Page 285 List of link special register (SW))	
No.	The total number of device stations set in the "CC-Link IE TSN Configuration" window is displayed.	• Master station: Fixed to "0" • Device station: 1 to 256*6
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 device station connected to the network. Station numbers do not need to be set consecutively, but must be unique.*3	• Master station: Fixed to "0" • Device station: 1 to 120*6 (Default: Serial No. of added stations)
Station Type*4	Set the station types. Select the station types same as those of the modules connected to the network.	• Local station*14 • Remote Station (Default: Varies depending on the set module)
Motion Control Station*5	Use the profile to allow selection of target stations for motion control.	• Checked: Motion control target • Not checked: Not motion control target (Default: Checked)

Setting item (Detailed display)	Description	Setting range
RX Setting RY Setting	Assign RX/RY points in increments of 16. (☞ Page 20 Communications using RX, RY, RWr, and RWw) 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. ■When the GX Works3 is version "1.085P" or later <When using PLCopen Motion control FB mode> • For the motion control station, only the number of points is set. <When using Simple Motion mode> • For the motion control station, settings cannot be made.	• Number of points: No point, 16 to 16384 • Start: 0000H to 3FF0H • End: 000FH to 3FFFH (Default: Varies depending on the set module)
RWr Setting*16 RWw Setting*16	Assign RWr/RWw points in increments of 4. (☞ Page 20 Communications using RX, RY, RWr, and RWw) 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) ■When the GX Works3 version is earlier than "1.085P". <When using PLCopen Motion control FB mode> • For the motion control station, only the number of points is set. <When using Simple Motion mode> • For the motion control station, settings cannot be made.	• Number of points: No point, 4 to 8192 • Start: 0000H to 1FFCH • End: 0003H to 1FFFH (Default: Varies depending on the set module)
LB Setting*7	Assign LB points in increments of 16 and LW points in increments of 1. (☞ Page 27 Communications using LB and LW) 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)	• Number of points: No point, 16 to 32768 • Start: 0000H to 7FF0H • End: 000FH to 7FFFH (Default: Varies depending on the set module)
LW Setting*7		• Number of points: No point, 1 to 16384 • Start: 0000H to 3FFFH • End: 0000H to 3FFFH (Default: Varies depending on the set module)
Parameter Automatic Setting	Set whether to set the parameters of each device 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.	• Checked: Distribute parameters • Not checked: Do not distribute parameters (Default: Not checked)
PDO Mapping Setting	Set the PDO mapping to the station that supports CANopen communications. (☞ Page 140 PDO mapping setting) When using Simple Motion mode, settings cannot be made for the motion control station.	—
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 device station. Even if a device 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.	• 0.0.0.1 to 223.255.255.254 (When the address is inputted by decimal values) • Empty (0.0.0.0) (Default: 0.0.0.0)
Reserved/Error Invalid Station	Set the device station as a reserved station or error invalid station. • No Setting: The device station is connected to the network. • Reserved Station: The device station is reserved in the parameters for future expansion. By using a reserved station, link device assignment will not change even if the device station is added (reservation is canceled). Therefore, modification of the program is not required. Physical connection of the device station on the network is not required. • Error Invalid Station: Even if a device station is disconnected during data link, the master station will not detect the device station as a faulty station.	• No Setting • Reserved Station*8 • Error Invalid Station*9 (Default: No setting, master station is fixed as empty)
Network Synchronous Communication*10	Set whether to synchronize each device station with network synchronous communication.	• Synchronous • Asynchronous (Default: Asynchronous)
Communication Period Setting*11*12	When multiple communication cycles are set, set the cycle of each device station. (☞ Page 46 Communication cycles coexistence)	• Basic Period • Normal-Speed • Low-Speed (Default: Basic Period)

Setting item (Detailed display)	Description	Setting range
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 device station. (Only when the device station supports the station-specific mode)	The setting varies depending on the set device station.
CC-Link IE TSN Class Setting*15	Set whether each device station is a CC-Link IE TSN Class B device or a CC-Link IE TSN Class A device.	• CC-Link IE TSN Class B • CC-Link IE TSN Class A (Default: Varies depending on the device)

*1 If the setting cannot be confirmed in the module parameters and "CC-Link IE TSN Configuration" window, a hyphen may be displayed or the displayed calculation result may not be correct.

*2 When the communication cycle is set to 31.25μs or 62.50μs, 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 "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 "1.18" or earlier, an error occurs if "Not checked" is set.

*6 For the version of Add-on baseSystem, "1.4" or earlier, the station No. of the stations is "1 to 64".

*7 When the Add-on baseSystem version is "1.22" or earlier, 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 "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, "1.4" or earlier, an error will occur when "Synchronous" is set.

*11 When the version of Add-on baseSystem is "1.22" or earlier, a "Network parameter error" (error code: 2221H) occurs if any setting other than "Basic Period" is configured for any device station supporting CANopen communication.

*12 For the motion control station, only "Basic Period" can be set. Any other setting will result in an error.

*13 When the "CC-Link IE TSN Class" of the general CC-Link IE TSN module added to the list of stations under "CC-Link IE TSN Configuration" window is CC-Link IE TSN Class A, when the minimum value for the communication cycle interval and cyclic transmission time are set to "Communication Period Interval Setting" and "Cyclic Transmission Time", cyclic transmission may not be possible. In this case, select the actual devices to be used from "Module List" and add it to the list of stations, or check the maximum response time during time-managed polling using the manuals of the devices used, and calculate and set the communication cycle interval and cyclic transmission time.

*14 When the Add-on baseSystem version is "1.22" or earlier, an error occurs if "Local station" is set. If the add-on baseSystem version is "1.24" or later, "Local station setting combination error" (error code: 322BH) occurs if the local station is set to "Motion control station".

*15 If the number of link device points assigned to the CC-Link IE TSN Class A station exceeds the limit, "Number of link device points error" (error code: 3160H) occurs. For the number of points that can be assigned to CC-Link IE TSN Class A device stations, refer to the following.
☞ Page 126 Number of link device points that can be assigned to a CC-Link IE TSN Class A device station

*16 For Add-on baseSystem version "1.34" or later, when setting to a value exceeding 40 points in the case of the CANopen device station and the motion control station, "PDO Size Over" (error code: 3237H) occurs.

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.
- A device station to be controlled as a real axis needs to be set as a motion control station.
- Stations which have the station No. can be set up to 120 stations (For the version of Add-on baseSystem, "1.4" or earlier, the station No. is up to "64 stations".), and up to 256 stations (For the version of Add-on baseSystem, "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.
- The remote station performing controls using the motion function of the Motion module must be set to the motion control station (with Motion control station setting checked).
- When using the PLCopen Motion control FB mode, a device 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 device label, refer to "Connectable device to CC-Link IE TSN" in the following manual.
  MELSEC iQ-R Motion Module User's Manual (Application)
- When using the Simple Motion mode, if a device station other than MR-J5(W)-G is set as a motion control station and connection is made, "Unsupported device station connection" (error code: 1C4AH) occurs.
- When using the Simple Motion mode, the PDO mapping settings and number of I/O word points of the device 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)
- When adding a multi-axis servo amplifier to the network configuration, change the number of extension modules that are connected to the corresponding device station so that they match the number of axes not set to Axis Disabled minus "1". Also, the axis disabled setting of the multi-axis servo amplifier is set from the latter axis.

■Number of link device points that can be assigned to a CC-Link IE TSN Class A device station

The number of points of link devices assigned to a CC-Link IE TSN Class A device station must satisfy the following two conditional formulas.

- (Number of points of "RY Setting" ÷ 8) + (Number of points of "RWw Setting" × 2) ≤ 1912
- (Number of points of "RX Setting" ÷ 8) + (Number of points of "RWr Setting" × 2) ≤ 1872

Precautions

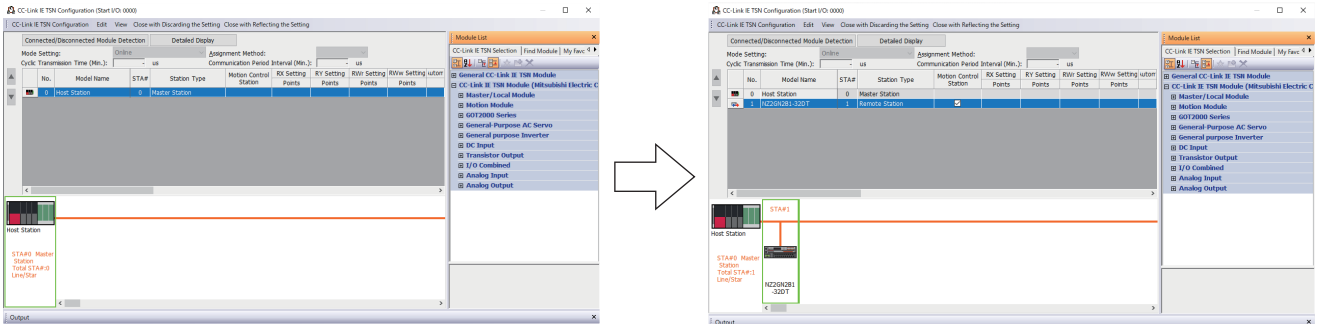
- Beware of the following when setting parameters in GX Works3 version "1.085P" or later.

Control mode	Description
PLCopen Motion control FB mode	When updating the network configuration settings of a project made in GX Works3 version earlier than "1.085P", the network configuration settings screen will be displayed without the start and end set for the motion control station link devices. Set the start and end of the motion control station link devices manually or by using the device No. reassignment function, and then reflect the settings.
Simple Motion mode	For a motion control station, set the following for the RWr/RWw points. Also, set the start and end of the link devices manually or by using the device No. reassignment function, in a way that they do not overlap. ■Single axis servo amplifier • RWr: 40 points • RWw: 40 points ■Multi-axis servo amplifier • RWr: 28 points • RWw: 24 points

Connected/disconnected module detection

Connected device stations are detected and displayed on the "CC-Link IE TSN Configuration" window.
When the network system is started, it becomes easy to create parameters when changing the network system configuration.
If this function is executed immediately after a device station is connected, the information of the connected device may not be correctly read. When the information is not correctly read, retry the operation.

1. Click the [Connected/Disconnected Module Detection] button.
2. When the [Execute] button is clicked according to the instruction on the window, connected device 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 123 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 ⇨ "Memory/device Setting" is not "Extended Mode (iQ-R Series Mode)".
- The actual system configuration is incorrect. (An overlapping IP address or others)
- When a CANopen supported device station is detected, PDO mapping for the corresponding station will not be read.

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 device stations are compared with the saved IP addresses of device stations and displayed as follows by connection/disconnection/replacement.

IP address verification result	Operation	Display	When station Nos. of detected device stations are not set
Detected device stations are in the saved CC-Link IE TSN structure.	Replace	When parameters between a detected device station and a saved CC-Link IE TSN structure mismatch, the parameters are replaced with the parameters of the detected device station. When the model name, model version, and station type are mismatched, the following settings are inherited. • "Motion Control Station" • "RX Setting", "RY Setting", "RWr Setting", "RWw Setting", "LB Setting", "LW Setting" • "IP Address" of the master station • "Subnet Mask" • "Default Gateway" • "Reserved/Error Invalid Station" (Note that if "Reserved Station" is set, the setting will change to the default.) • "Network Synchronous Communication" • "Communication Period Setting" For the device with the following settings, when the model name and model version are matched, and the station type is mismatched, the configurations set in the device are also inherited in addition to "the settings inherited when the model name, model version, and station type are mismatched". • Extension modules configuration • AnyWireASLINK configuration under the bridge module • CC IE Field configuration under the bridge module The PDO mapping in the device before replacement is cleared. The parameter information in "device station parameter" in the device before replacement is cleared. If only the station No. is mismatched, only the station No. is reflected, and all the settings are inherited. (Note that if the station No. of the detected device has not been set, the station No. of the device before replacement is inherited.) The mode setting is changed to the detected mode. When a device station that has the following configuration is the replacement target, the configuration settings in the device before replacement is cleared. • Extension modules configuration • AnyWireASLINK configuration under the bridge module • CC IE Field configuration under the bridge module	The station No. takes over the station No. of the saved CC-Link IE TSN structure.
Device stations in the saved CC-Link IE TSN structure are not detected.	Disconnect	• Modules other than extension modules: Setting of "Reserved/Error Invalid Station" is changed to "Reserved Station". • Extension modules: Are deleted.	—
Detected device stations are not in the saved CC-Link IE TSN structure.	Connect	Detected device 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.*1) The mode setting is changed to the detected mode.	A station No. is automatically numbered as the youngest unused station No. in the range from 1 to 120. The order of automatic numbering is the same as the displayed order in the list of stations (see left).

*1 A station number is automatically numbered as the youngest unused station number in the range from 1 to 120. If the numbers do not match between the automatically numbered station and the station numbered by the detected device station, take either of the following actions.
· Change the station number in "CC-Link IE TSN Configuration" window of the master station to the same value as the station number set by the device station.
· Change the station number of the device station to the same value as the station number set in "CC-Link IE TSN Configuration" window of the master station.

Precautions

- When the station No. is set in the device station using the CC-Link IE TSN structure and parameters are written in CPU modules, the station No. of the device 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 device stations with the station No. not set.
- If the actual system configuration is incorrect, executing this function may not automatically set some or all device stations. Check that nothing is incorrect in the system configuration before executing.
- When an automatic detection is performed while a CPU module is running, the scan time may be extended depending on the system configuration.

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.

Restriction of version

If the version of GX Works3 is "1.101F" or earlier, or if the version of Add-on baseSystem is "1.22" or earlier, the following restrictions apply.

- This function cannot be executed unless the master station is data-linked.
- The device station that has connected → disconnected after the master station turns ON becomes a station without data link. In this case, when this function is executed, the "Reserved station/error-disabled station" setting does not become "Reserved station" but becomes "No setting".
- The device station that has connected → disconnected after the master station turns ON may be reflected in the network configuration settings, resulting in no match with the actual system configuration. In this case, reset the master station and execute this function again.
- Regardless of the actual system configuration, the network topology format is "line/star".

Parameter processing of a device station

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

Also, it automatically sets parameters of the device station from the master station. (☞ Page 99 Device station parameter automatic setting)

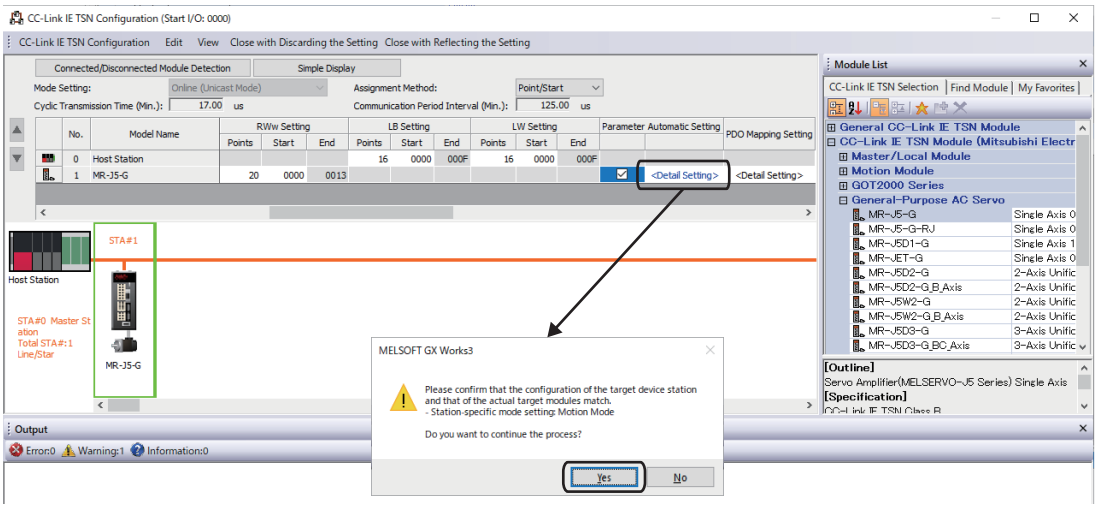
Restriction

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

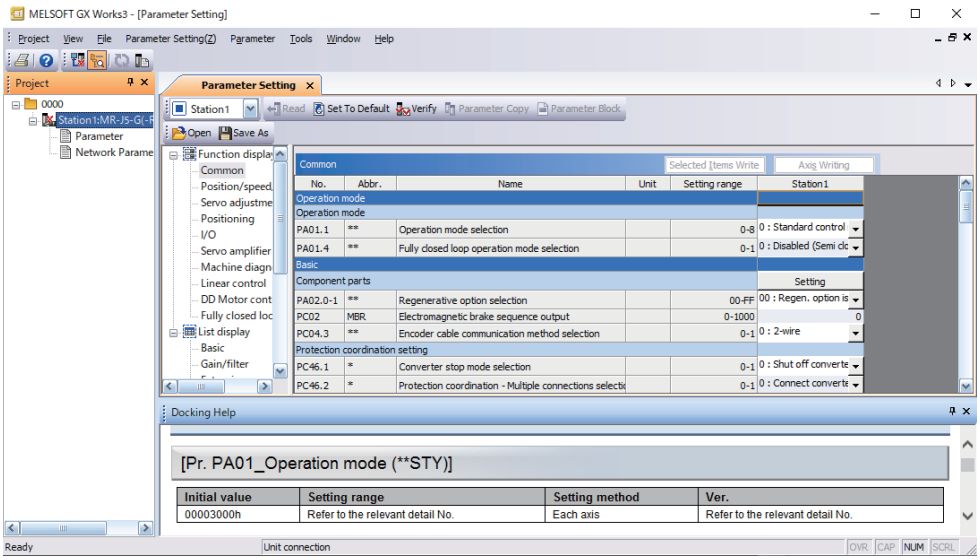
- Motion module whose Add-on baseSystem version is "1.16" or later

For MR-J5(W)-G

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



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



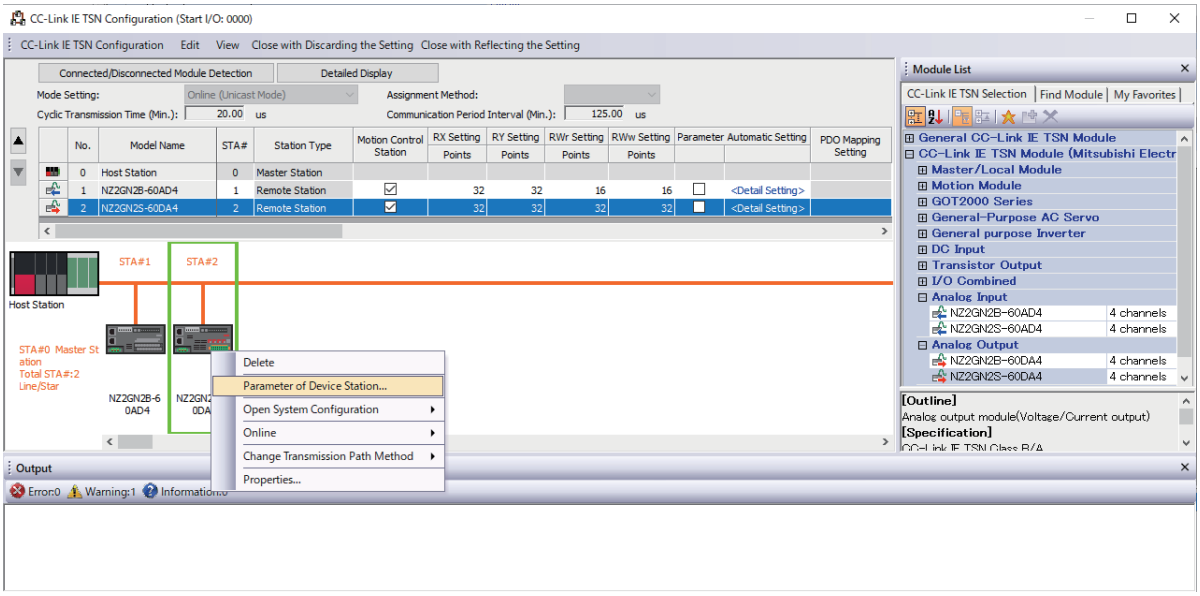
The following operations can be performed in addition to the device station parameter setting. For the details of the window, click [Help].

- 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

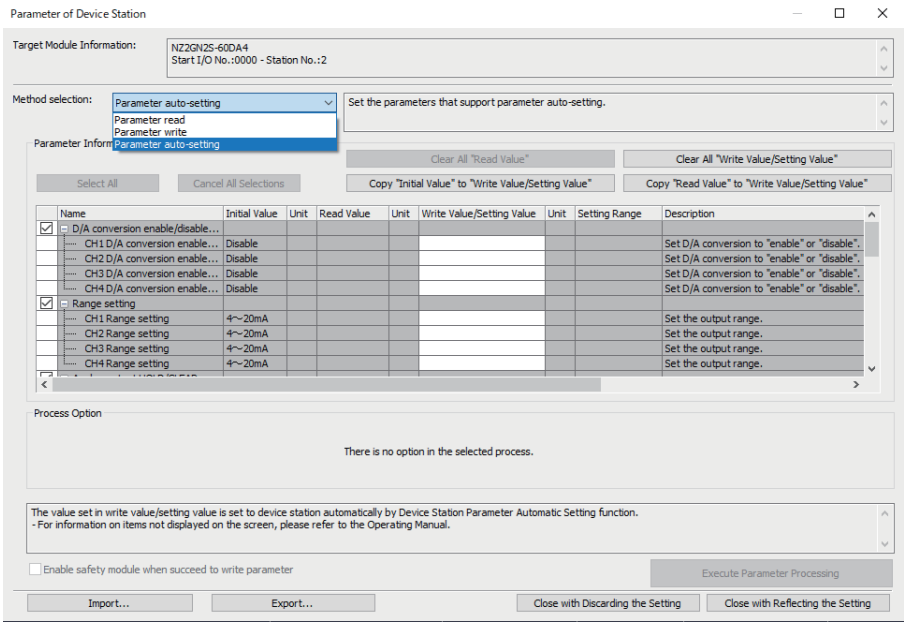
Once the setting is complete, click [Project] ⇨ [Exit MR Configurator2] or the close button on the top right to close the "Parameter Setting" window.

For other than MR-J5(W)-G

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



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



Item		Description
Target Module Information		Information for the selected device stations is displayed.
Method selection		Select processing to be executed for selected device stations. • Parameter auto-setting: Automatically set contents of "Write Value/Setting Value" to the device station. (☞ Page 99 Device station parameter automatic setting) • Parameter read: Read parameters from the selected device station. • Parameter write: Write parameters to the selected device station.
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 device 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 device stations from the list of stations.
3. Select the same module as the deleted device 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 device station can be cleared under the following conditions.

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

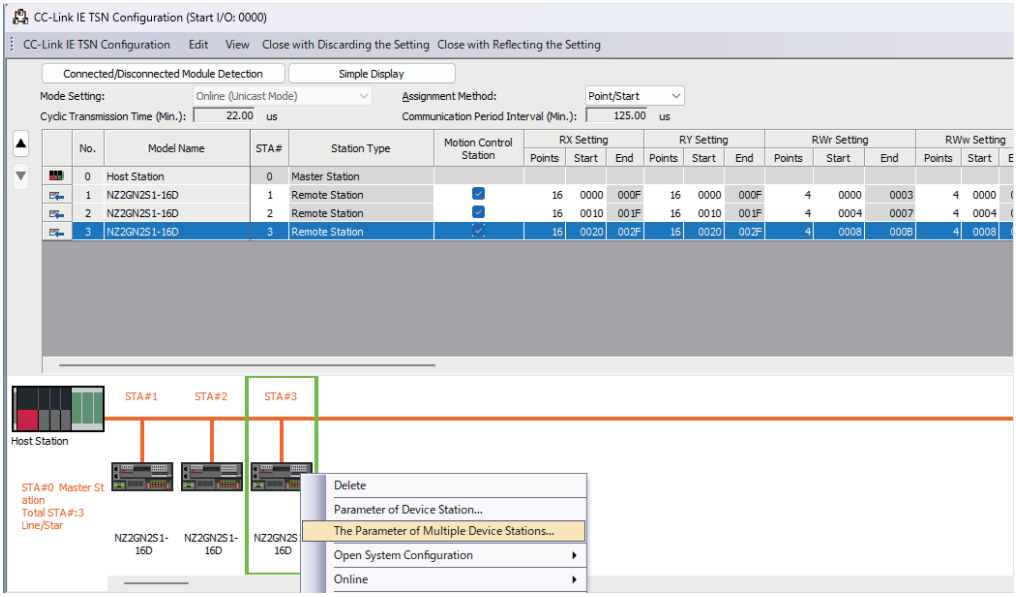
Item	Operation	Description
"CC-Link IE TSN Configuration" window	Open the "CC-Link IE TSN Configuration" window.	When there is no device station with a station No. that matches the saved parameter information in the "CC-Link IE TSN Configuration" window, saved parameters of the relevant device station are skipped. Skipped parameters of the device station are cleared.
	Reflect setting and close the window.	Saved parameters of a device 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 Device Station" window	Open the "Parameter of Device Station" window.	Saved parameters that mismatch the relevant device station are skipped. Clicking the [Close with Reflecting the Setting] button in the above state clears the skipped saved parameters.
Module Parameter	Manually delete the setting description to apply.	Parameters of "CC-Link IE TSN Configuration" window return to default.
	Change "Station Type" or set parameters that do not exist.	
System Parameter	Divert system parameters from another project.	Parameters of the device 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.

Parameter processing of multiple device stations

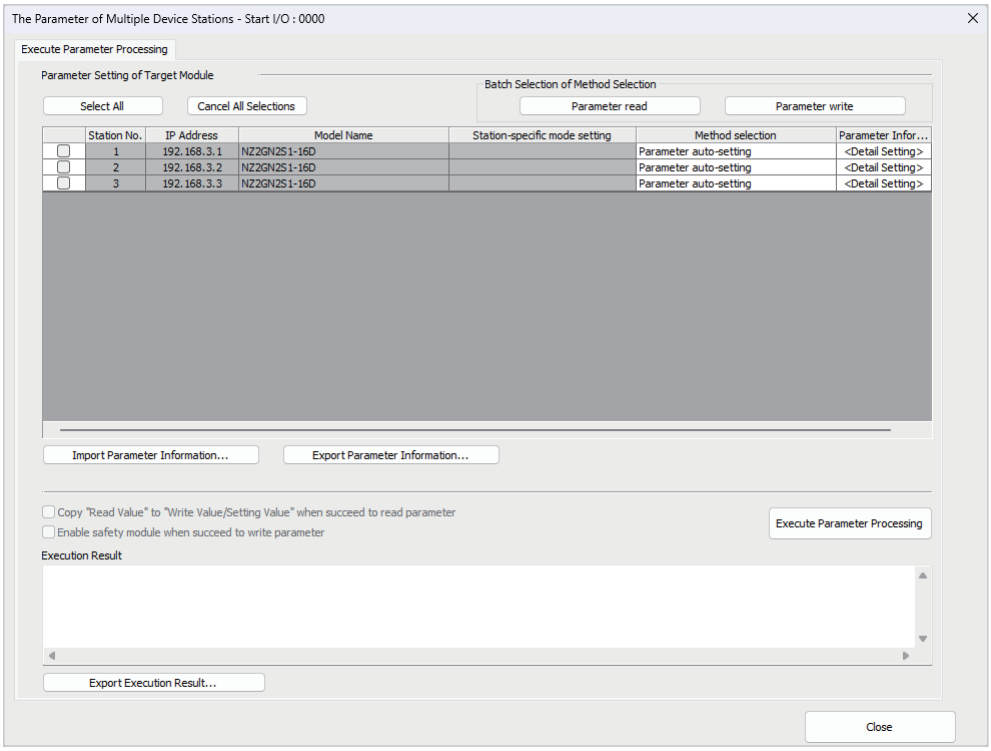
Read and save parameters from multiple device stations and write the saved parameters to multiple device stations.
Check the following for processing parameters to multiple device stations.

Engineering tool	Version
GX Works3	"1.115V" or later

[Navigation window] ⇨ [Parameter] ⇨ [Module Parameter] ⇨ Target module ⇨ [Basic Settings] ⇨ [Network Configuration Settings] ⇨ [Detailed Setting]



Select and right-click the device station, and select "The Parameter of Multiple Device Stations" to display the "The Parameter of Multiple Device Stations" window.



Item	Description
[Select All] button	Check all target modules.
[Cancel All Selections] button	Uncheck all target modules.

Item		Description
Batch selection of method selection	[Parameter read] button	Set "Method selection" to "Parameter read" for the device station that is checked in the checkbox in the list of target modules.
	[Parameter write] button	Set "Method selection" to "Parameter write" for the device station that is checked in the checkbox in the list of target modules.
List of target modules	Checkbox	Select the target device station for which to perform parameter processing and CSV import/export of parameter information.
	Station No.	Display information of device stations.
	IP address	
	Model name	
	Station-specific mode setting	
	Method selection	Select processing to be executed for selected device stations. • Parameter auto-setting: Automatically set contents of "Write Value/Setting Value" to the device station. (☞ Page 99 Device station parameter automatic setting) • Parameter read: Read parameters from the selected device station. • Parameter write: Write parameters to the selected device station.
	Parameter information	Open the "Parameter of Device Station" window of the device station to check the settings.
[Import Parameter Information] button		Import the CSV file output from "Parameter of Device Station" window and this screen to the checked device station.
[Export Parameter Information] button		Export the parameter information of the checked device station as a CSV file.
Copy "Read Value" to "Write Value/Setting Value" when succeed to parameter read*1		Copy the read value of the device station to write value/setting value when reading parameters.
Enable safety module when succeed to parameter write*2		Enable the safety module of the device station when writing parameters.
Execution Result		Displays execution results.
[Export Execution Result] button		Output the displayed "Execution Result" as a CSV file.

*1 This can be selected when "Method selection" for the checked device station is "Parameter read".

*2 This can be selected when the checked device station supports safety communication and "Method selection" is "Parameter write".

Procedure

1. Check the device stations for which to perform parameter processing, and select "Method selection".
2. Set each item.
3. Click "Execute Parameter Processing" to write the parameter information to the device station.

Command execution to device stations

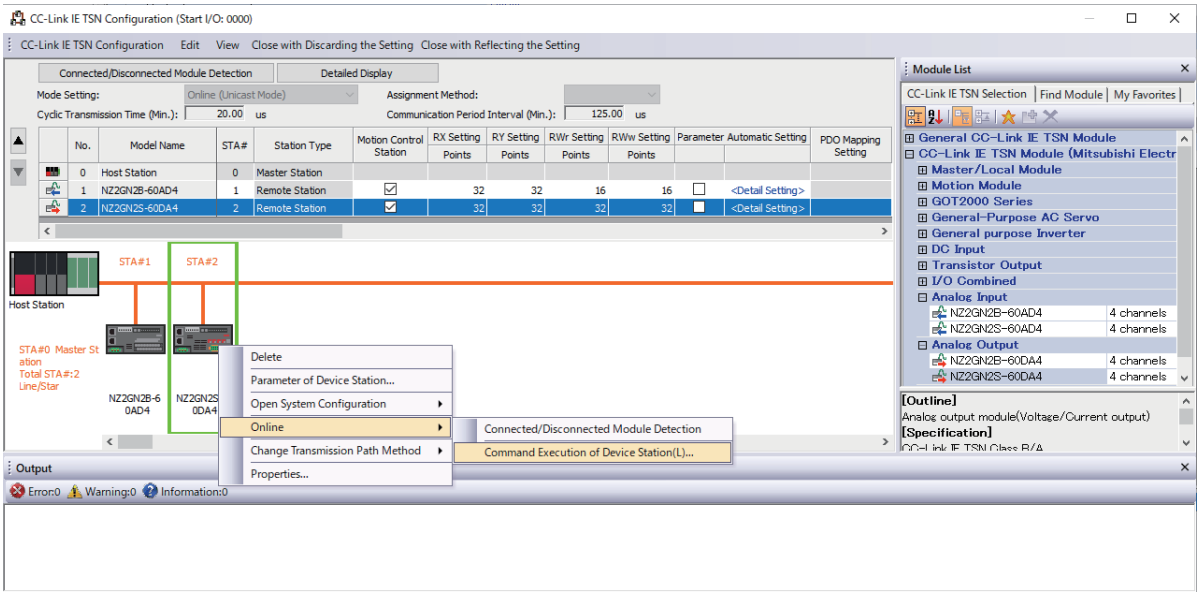
Commands to a device station (Error clear request, Error history clear request) are executed.

Restriction

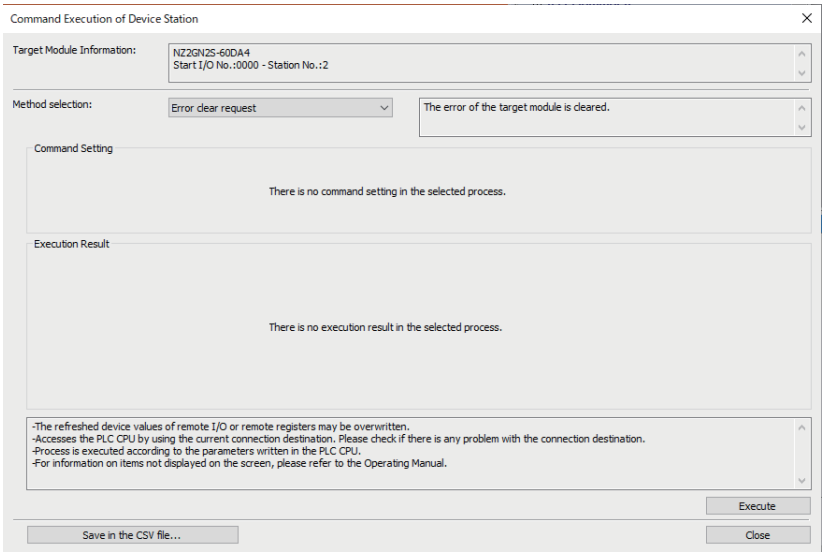
When performing the command execution to the main module to which the extended module is connected, use the following module.

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

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



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



Item	Description
Target Module Information	Information for the selected device stations is displayed.
Method selection	Select processing to be executed for selected device stations. • Error clear request • Error history clear request
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.

IP address setting of device stations

Set the IP addresses of the device stations that are connected to the master station.

Restriction

Check the following for the IP address setting and when performing indicator display for device stations.

- RD78G(H) (☞ Added and Enhanced Functions)
- Engineering tool: version "1.100E" or later
- Device stations (📖User's Manual of the device station to be used)

Point

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

When 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

Devices with no IP address settings on the extension side are not detected and therefore will not be displayed.

IP address setting

Set the IP addresses of the device stations that are connected to the master station.

Indicator display

The indicator display of device stations that are connected to the master station can be started or stopped.

The device stations whose indicator display has started can be confirmed with their LED display. For the LED display status, refer to User's Manual of the device station to be used.

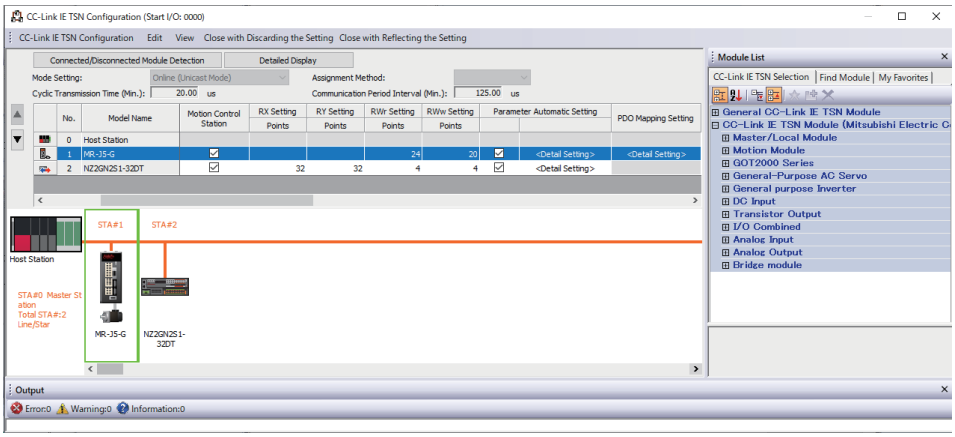
Identifying what device station a particular device is in the actual network configuration bis possible by using the display indicator.

Setting method

Operating procedure

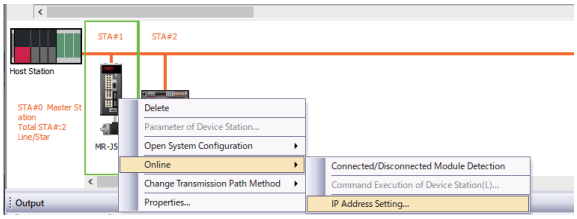
1. Open the "CC-Link IE TSN Configuration" window.

Navigation window ⇨ "Parameter" ⇨ "Module Information" ⇨ Target module ⇨ "Module Parameter (Network)" ⇨ "Basic Settings" ⇨ "Network Configuration Settings"



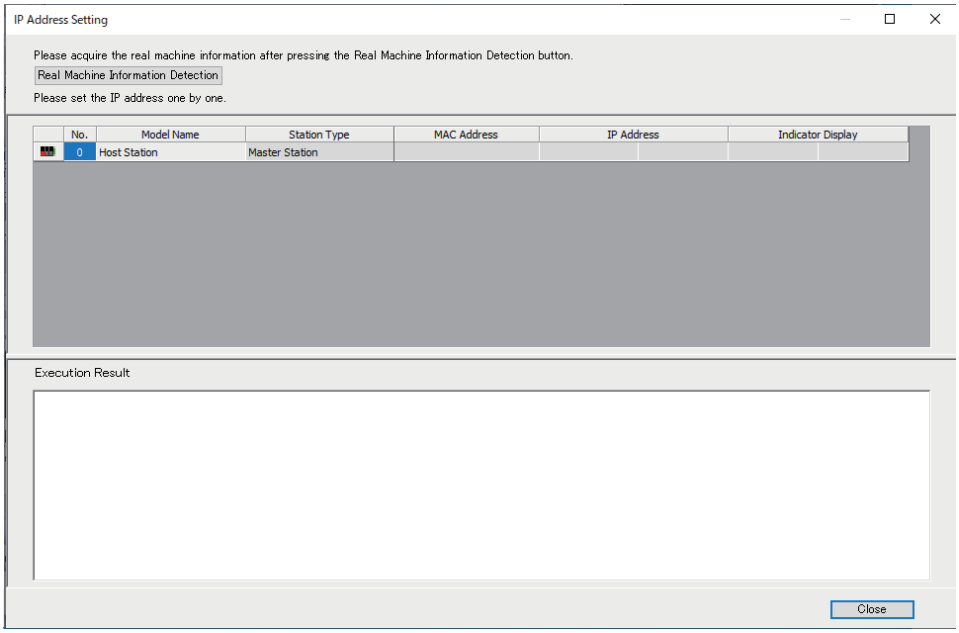
2. Open the "IP Address Setting" window.

Select and right-click the device station ⇨ [Online] ⇨ [IP Address Setting]



3. Click the [Real Machine Information Detection] button.

Check whether the IP address setting or the indicator display can be started for the device station.



4. Follow the messages displayed and click the [Execute] button.

Point

In the following cases, real machine information detection cannot be executed.

- The CPU parameters of CPU modules, "Link Direct Device Setting" of "Memory/Device Setting" is not "Extended Mode (iQ-R Series Mode)".
- When multiple Motion modules and master/local station compatible devices are installed in the base unit with a local station in the lowest slot No., and "Module Operation Mode" under "Application Settings" of the local station is not "Online mode" or the local station is in a data link error status.
- There are problems in the actual system configuration, such as a duplication of IP address between master and device stations.

5. Follow the messages displayed and click the [OK] button.

6. The real machine information of the device stations that are connected to the master station is displayed. The execution result is displayed in the bottom of the screen.

7. The IP address setting and the indicator display are performed.

Point

For the operating procedure of the IP address settings and the indicator display, refer to the following.

User's Manual of the device station to be used

Precautions

- If the system configuration is changed, and the IP address setting or the indicator display is performed for the device stations after the [Real Machine Information Detection] button is clicked, the operation may not be completed normally. If a system configuration is changed, click the [Real Machine Information Detection] button again, and then execute the IP address setting or the indicator display for the device stations.
- The IP address setting cannot be executed for local and submaster stations. If the IP address setting function is executed for an incompatible device, the IP address setting for other devices may not be executable within 30 seconds.
- When starting the indicator display, make sure to stop the indicator display or power OFF and ON the device station. Until the indicator display is stopped or the device station is powered OFF and ON, the LED display of the device station continues to indicate that it is during the execution of the indicator display.
- If data link is not performed in the master station, real machine information is not detected. Execute real machine information detection when data link is being performed by writing the data to the CPU module when there is more than one device station set on the "CC-Link IE TSN Configuration" window.

Station list export/import

The number or type of devices can easily be changed according to each system by exporting the list of stations in the "CC-Link IE TSN Configuration" window into a CSV format, editing the exported file, and importing it.

Point

Combined with parameter processing of multiple device stations, besides edition of the station list, parameter settings for each device station can be easier. (☞ Page 133 Parameter processing of multiple device stations)

Precautions

Modules whose profile could not be found are not imported.
Replace it with a module whose profile is present in the CSV file before or after export.

Export

1. Click the "Export Station List".

[Basic Settings] ⇨ [Network Configuration Settings] ⇨ [CC-Link IE TSN Configuration] ⇨ [Import/Export] ⇨ [Export Station List]

2. In the "Export" window, enter a file name, and click the [Save] button.
3. Edit the exported file as necessary. Contents displayed in the list of stations in the "CC-Link IE TSN Configuration" window can be edited.

Import

1. Click the "Import Station List".

[Basic Settings] ⇨ [Network Configuration Settings] ⇨ [CC-Link IE TSN Configuration] ⇨ [Import/Export] ⇨ [Import Station List]

2. When the confirmation message appears, click the [Yes] button.
3. In the "Import" window, enter a file name, and click the [Open] button.
4. Click the [OK] button.
5. The CSV file data is reflected to the list of stations.

PDO mapping setting

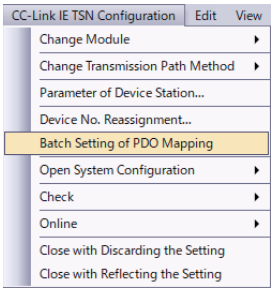
Set the PDO mapping to the station that supports CANopen communications.
When connecting extended modules such as a multi-axis servo amplifier that has the PDO mapping information, the maximum number of connectable stations changes depending on the number of axes.

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

*1 The maximum number of connectable stations depends on the add-on baseSystem version. (☞ Page 123 Setting items)

"Batch Setting of PDO Mapping"

Set the default PDO mapping for the device 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 device station.

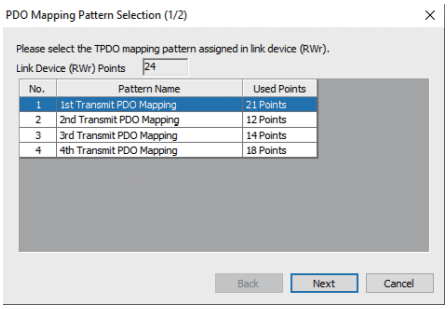
- There is no station for which the PDO mapping can be set.
- The number of points of "RWr Setting" and "RWw Setting" is less than the number of points used of the default pattern.
- The setting is performed when "RWr Setting" and "RWw Setting" are blanks, and the checkbox of "Batch set default pattern only when PDO mapping is unset device station." is not selected.

"PDO Mapping Setting"

Set the default PDO mapping to the device station individually.

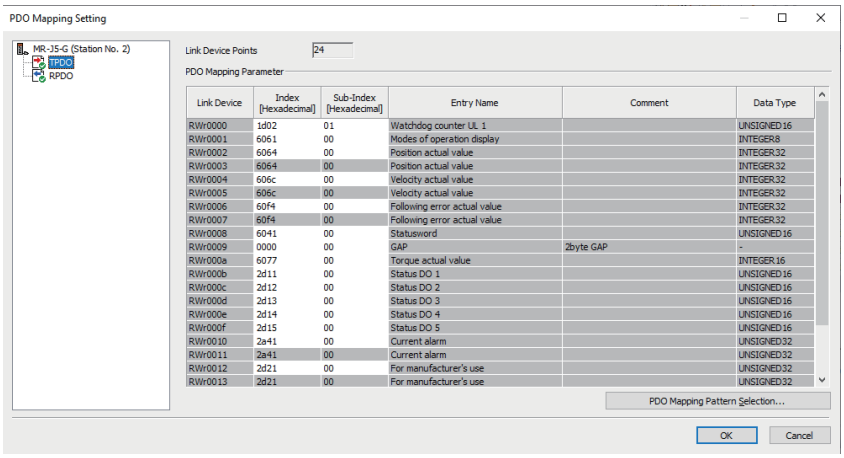
"Basic Settings" ⇨ "Network Configuration Settings" ⇨ "PDO Mapping Setting" ⇨ Double-click <Detailed Setting> of the device station ⇨ [PDO Mapping Pattern Selection] button

1. Select the PDO mapping pattern of TPDO to be assigned to the link device (RWr). Click the [Next] button.



2. Select the PDO mapping pattern of RPDO to be assigned to the link device (RWw). 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 device 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.

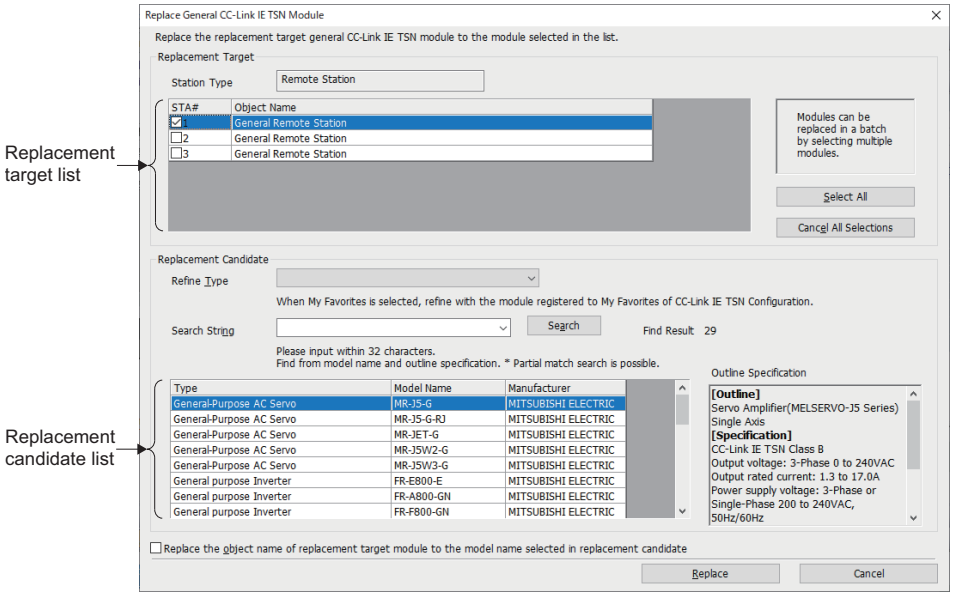
Module change

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

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

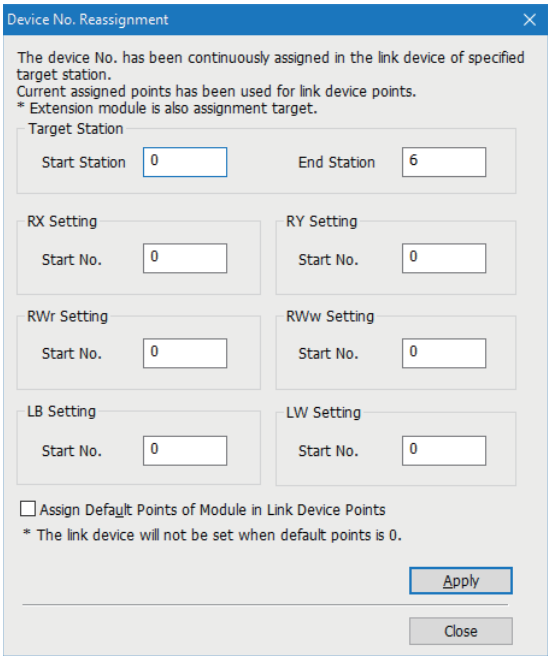
Right-click a device station in the station list on the "CC-Link IE TSN Configuration" window ⇨ click [Change Module] ⇨ [Change to General CC-Link IE TSN Module].

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.

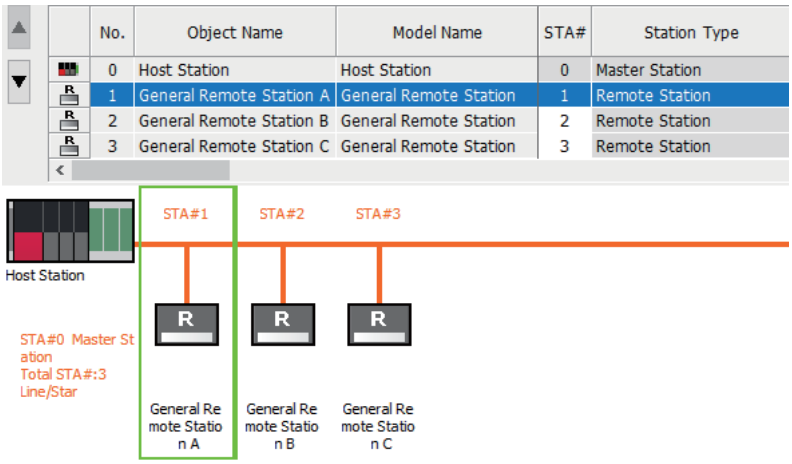
Point

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]

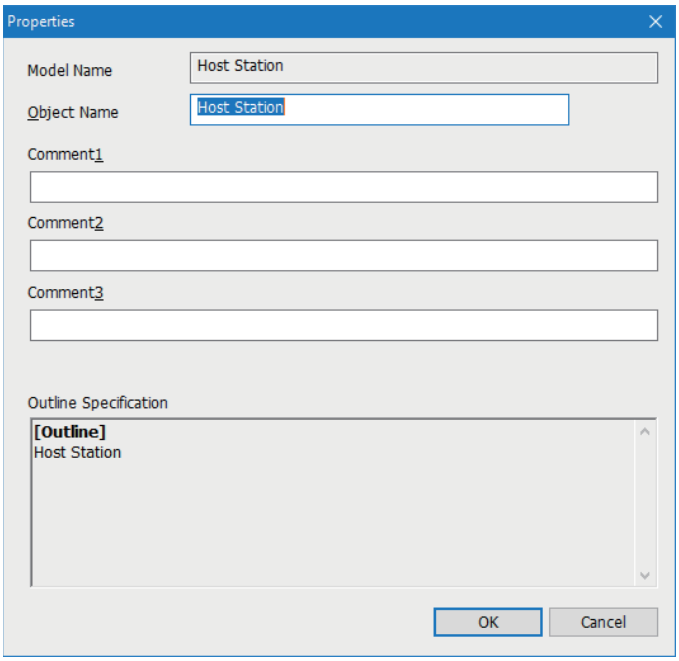


Changing the object name

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".



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

3 PROGRAMMING

This chapter describes programming and startup examples of CC-Link IE TSN.

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 146 Communication Example of Safety Communication

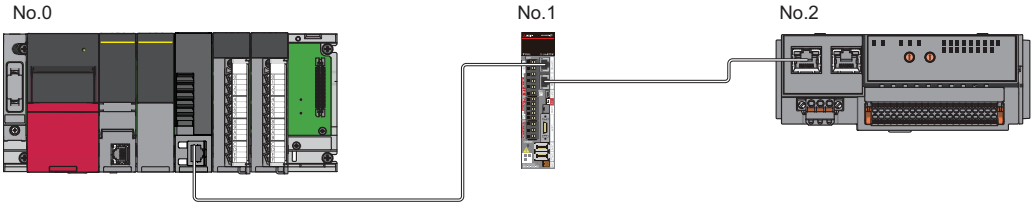
3.2 Communication Example of Safety Communication

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

System configuration

The following system configuration explains how the communication works in a system using the Safety CPU.

- Power supply module: R61P
- Safety CPU: R08SFCPU
- Safety function module: R6SFM
- Motion module: RD78G16
- Drive unit: MR-J5-G-RJ
- Remote I/O module with safety functions: NZ2GNSS2-16DTE

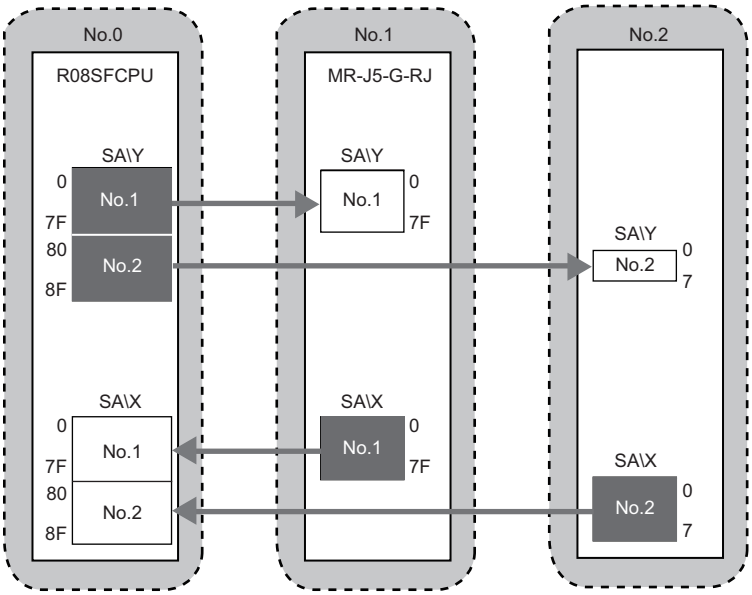


In this program example, I/O devices are connected to X0, X1 (double input) and Y0, Y1 (double output) of the remote station. For combination with connection device, refer to "Relevant functions" under "Connectable device to CC-Link IE TSN" in the following manual.

- When using the PLCopen Motion control FB mode
  MELSEC iQ-R Motion Module User's Manual (Application)
- When using the Simple Motion mode
  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".

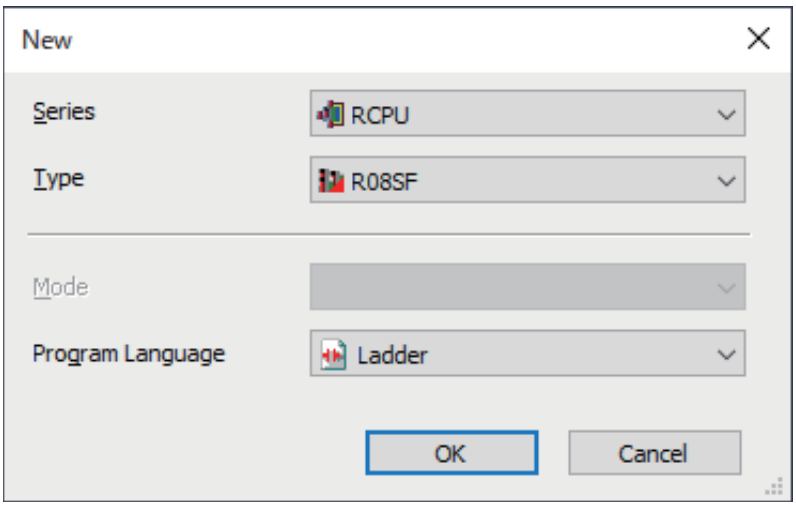


Setting in the master station

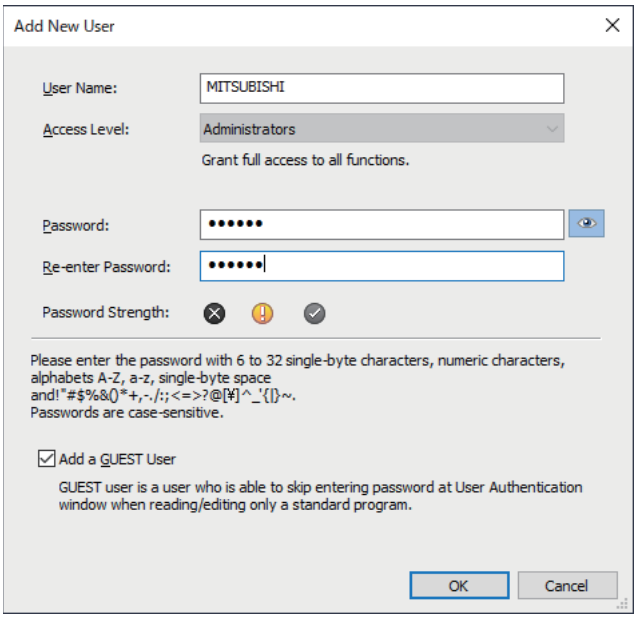
Connect the engineering tool to the Safety CPU of the master station and set parameters.

1. Set the Safety CPU as follows.

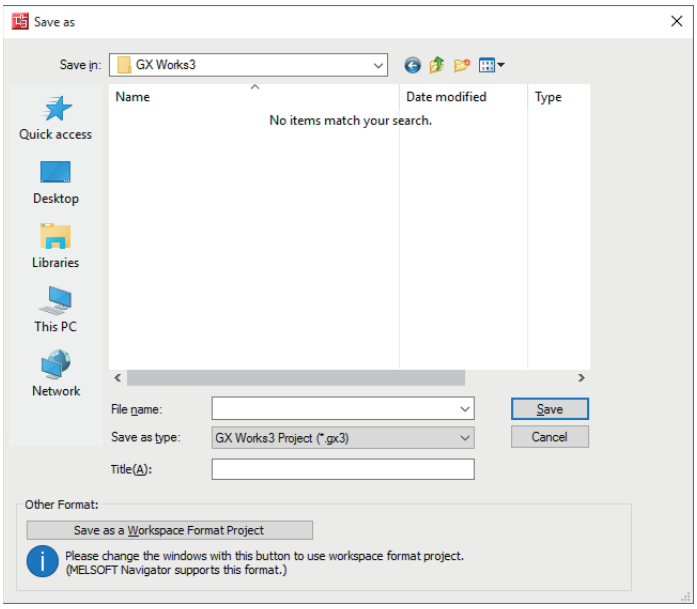
[Project] ⇨ [New]



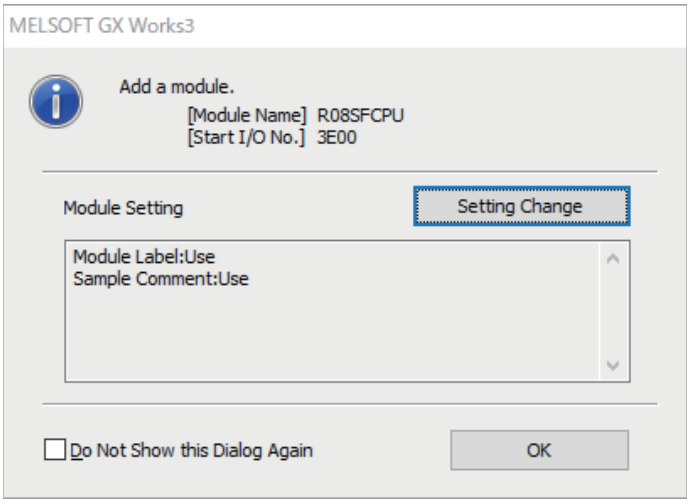
2. In the following window, enter a password and re-enter password, and click the [OK] button.



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

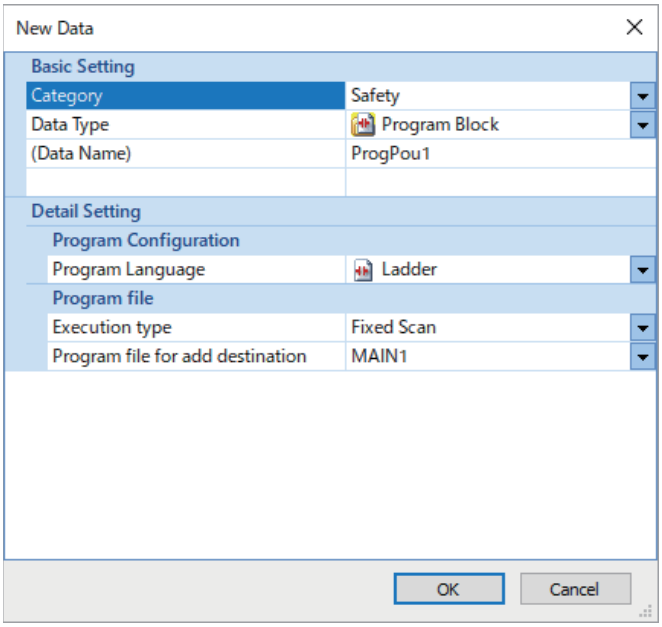


4. Click the [Setting Change] button to use the module labels of the CPU module.



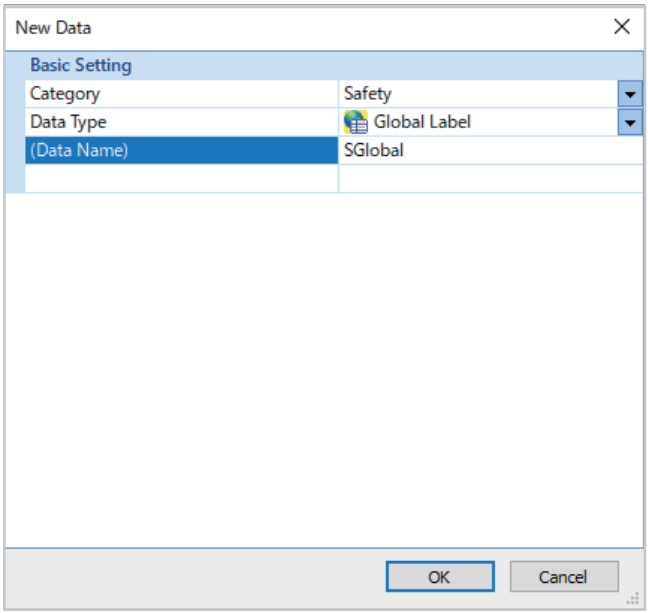
5. Add the safety program in the following.

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



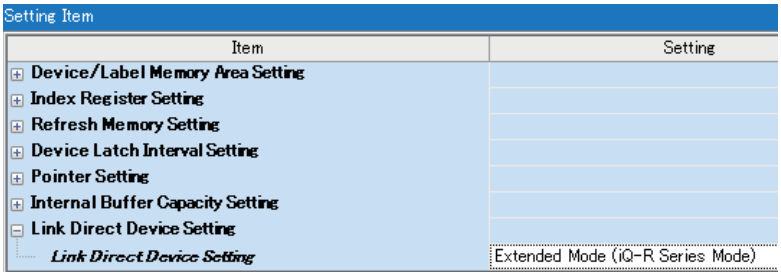
6. Add the safety global label in the following.

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"

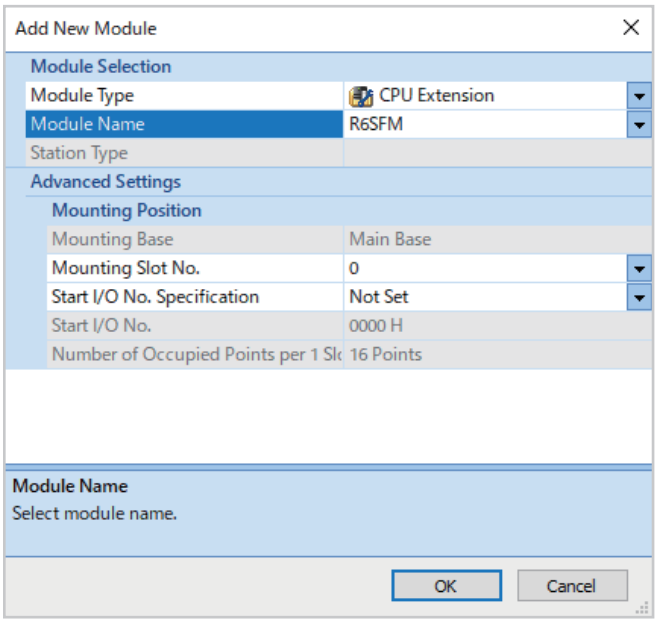


Point

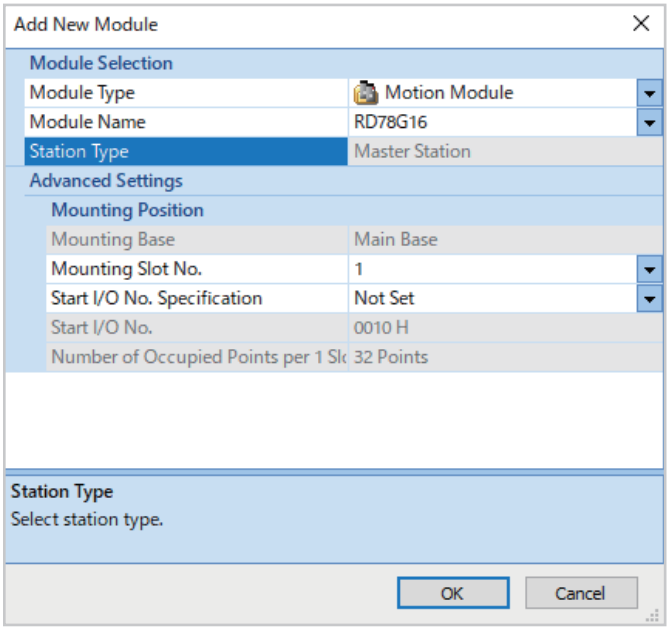
To write module parameters of the Motion module to a Safety CPU using an engineering tool, set "Link Direct Device Setting" to "Extended Mode (iQ-R Series Mode)".
If "Link Direct Device Setting" is "Q Series Compatible Mode", "Write to PLC" cannot be executed.

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

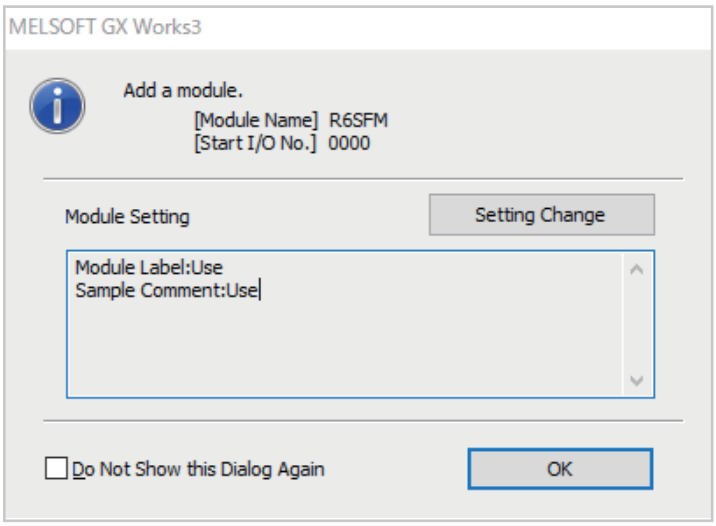
"Navigation window" ⇨ "Parameter" ⇨ "System Parameter" ⇨ "I/O Assignment" tab ⇨ "I/O Assignment Setting"



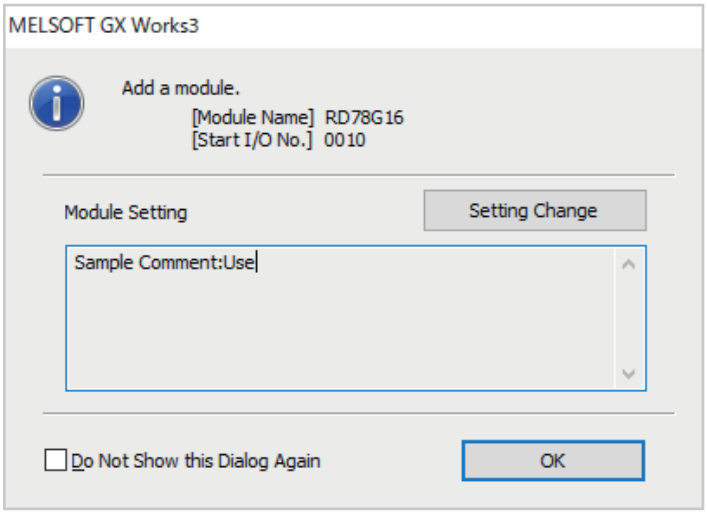
9. Set the Motion module for slot No.1.



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*1" ⇨ "Module Parameter (Network)" ⇨ "Required Settings"

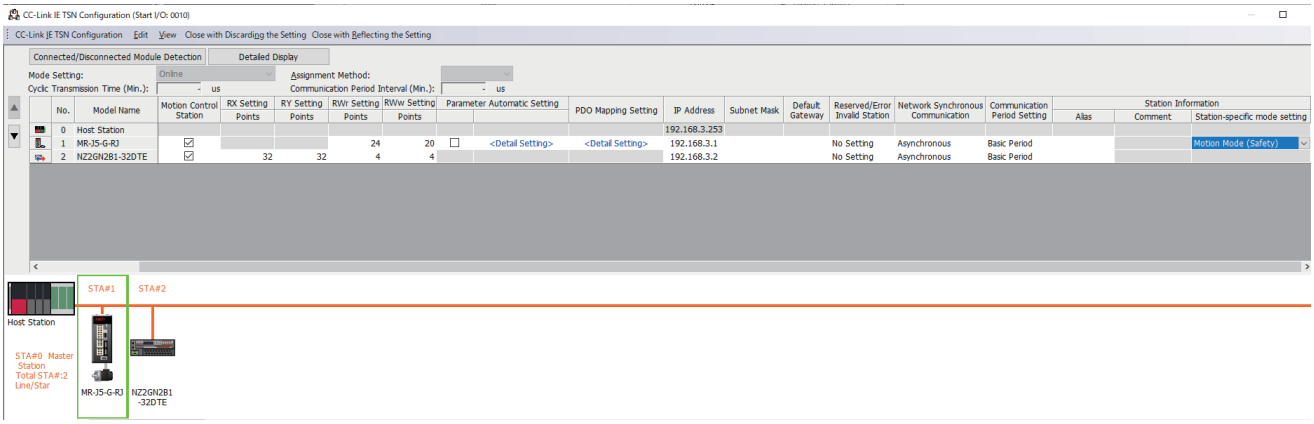
Setting Item

Item	Setting
Station Type	
Station Type	Master Station
Network No.	
Network No.	1
Station No./IP Address Setting	
Station No.	
Station No.	0
IP Address	
IP Address	192 . 168 . 3 . 253
Subnet Mask	. . .
Default Gateway	. . .

*1 RD78G16(S) when using Simple Motion mode.

13. Set the network configuration as follows.

"Navigation window" ⇨ "Parameter" ⇨ "Module Information" ⇨ "RD78G16*1" ⇨ "Module Parameter (Network)" ⇨ "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.

*1 RD78G16(S) when using Simple Motion mode.

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*1" ⇨ "Module Parameter (Network)" ⇨ "Basic Settings" ⇨ "Refresh Settings" ⇨ <Detailed Setting>

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

The refresh settings are for standard communications.

*1 RD78G16(S) when using Simple Motion mode.

16. Log on to the programmable controller.

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

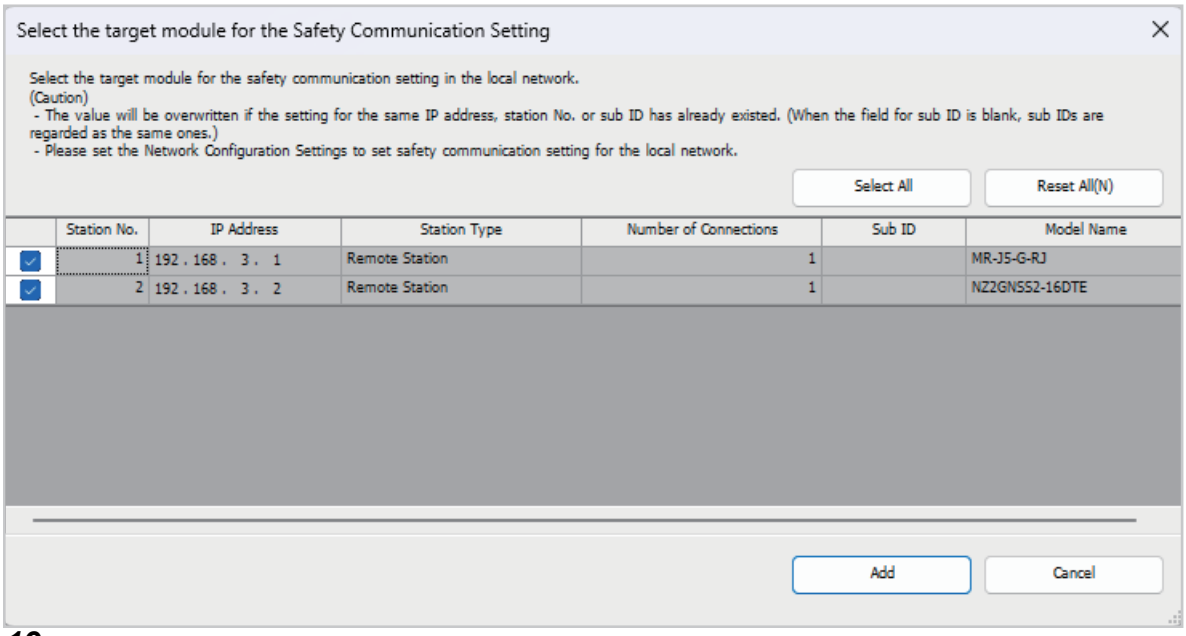
If logon fails, writing user information or initializing all information of the programmable controller is required. (📖GX Works3 Operating Manual)

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

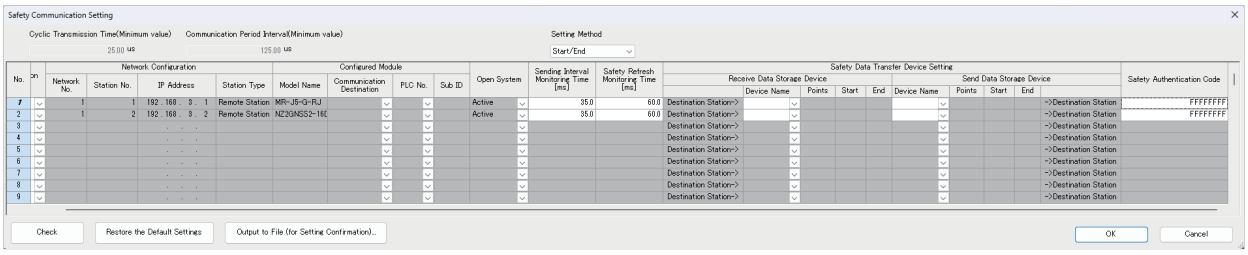
"Navigation window" ⇨ "Parameter" ⇨ "Module Information" ⇨ "RD78G16" ⇨ "Module Parameter (Network)" ⇨ "Basic Settings" ⇨ "Safety Communication Setting" ⇨ "To Use or Not to Use the Safety Communication Setting"

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" ⇨ "Module Parameter (Network)" ⇨ "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.

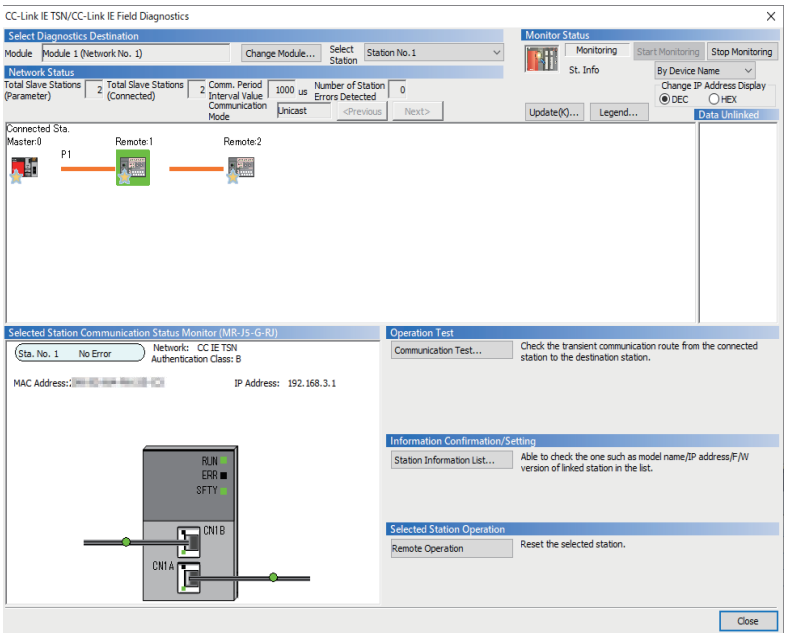
Checking the network status

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 161 Checking the Network Status)

4 TROUBLESHOOTING

This chapter describes troubleshooting of CC-Link IE TSN.

4.1 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?	If the Motion module is not 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 module diagnostics window.
Is a data unlinked station displayed on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window?	• Connect the data unlinked device station. • Correct "Network Configuration Settings" under "Basic Settings" of the master station in accordance with the device station actually connected. Also change the data unlinked device station to a reserved station.
Is a data link faulty station displayed on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window?	• Correct "Network Configuration Settings" and "Communication Period Setting" under "Basic Settings" of the master station in accordance with the device station actually connected. • Perform troubleshooting for when the D LINK LED turns off or is flashing in the data link faulty station. (☞ Page 156 When the D LINK LED turns off or is flashing) ■When the version of Add-on baseSystem is "1.14" or earlier • When the communication speed of the data link faulty station is 100Mbps and the communication speed of the master station is 1Gbps, use only either P1 or P2 of the master station. (📖Manual of the device used) ■When the version of Add-on baseSystem is "1.24" or later • When the communication speed of the data link faulty station is 100Mbps, the communication speed of the master station is 1Gbps, and the data link faulty station is used under the multicast mode, connect the data link faulty station to the device supporting the multicast filter. (📖Manual of the device used)
Is the initialization failed (parameter mismatch between the master station and device station) (event code: 00C71H) 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 device stations.)	Take the following actions for the device station with the IP address displayed in the detailed information of the event. • For a local station, match "Fixed Scan Interval Setting of Inter-module Synchronization" in "Inter-module Synchronization Setting" in "System Parameter" to the setting on the master side. • Replace the device with a device supporting CC-Link IE TSN Class B network synchronous communication. • Match "Network Synchronous Communication" in "Network Configuration Settings" under "Basic Settings" of the master station to the synchronization setting of the device station.
Is the event code 00C81H registered in the event history?	Take the following actions for the device station with the IP address displayed in the detailed information of the event history. • Match "CC-Link IE TSN Class Setting" in "Network Configuration Settings" under "Basic Settings" of the master station to the CC-Link IE TSN Class of the device station.
Is the event code 00C72H registered in the master station event history?	• Update the engineering tool to the latest version. • Update the device station firmware with the IP address displayed in the detailed information of the event history to the latest version.
Is the event code 00C80H registered in the event history when "Connection Device Information" under "Basic Settings" of the master station is set to "Mixture of CC-Link IE TSN Class B/A" or "CC-Link IE TSN Class A Only"?	Take one of the following actions. • Check 'Station protocol version 2.0 support status' (SW01A0 to SW01A7) and update the firmware of all device stations to a version that supports the protocol version 2.0. Alternatively, replace with device stations that support protocol version 2.0. • After powering on the device stations and the devices on the communication path, power on the master station.
Is the industrial switch (CC-Link IE TSN certified) creating a loop? For example, both P1 and P2 are connected to the same industrial switch (CC-Link IE TSN certified).	Break the loop by using a method such as removing one of the Ethernet cables from the industrial switch (CC-Link IE TSN certified), and turn off and on the industrial switch. Then reset all the stations or power off and on the system.

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?	• 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)) • If an error occurs in the Motion module, take action according to the module diagnosis procedure. (Page 159 Checking the Module Status)
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. • Set IP addresses in a way that does not overlap the third to fourth octets of the IP address in all stations. • Set the IP address and subnet mask to match the network addresses of all stations. • Set the third and fourth octets of the IP address to values other than all 0 or all 1. • Set the host address of the IP address to values other than all 0 or all 1. • Set an IP address other than a reserved address.
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 the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup)
Is the industrial switch (CC-Link IE TSN certified) used operating normally?	• Use an industrial switch (CC-Link IE TSN certified) that conforms to the standard. For details, refer to "Wiring" (in the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup) • Power off and on the industrial switch (CC-Link IE TSN certified).
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within range. For details, refer to "Wiring" (in the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup)
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. (Page 111 Network Topology)
Has the time synchronization source station been reset?	• Since a station is temporarily disconnected after switching the time synchronization source, wait for it to return. • Avoid unnecessary disconnections or returns in a station that is the time synchronization source.
Is the time synchronization source station turned off?	
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?	• Avoid unnecessary reset, since a station is disconnected while resetting. • Start other stations.
Are other stations turned off?	Power on other stations.
Are other stations connected to the Motion module operating normally?	• Check if the modules on the other stations are performing data link using CC-Link IE TSN/CC-Link IE Field diagnostics. (Page 161 Checking the Network Status) • Check the operation status of modules on other stations. (User's manual for the module used)
Is there any other station that has not set an IP address?	Set the IP address for the device station for which the IP address is not set.
Is there any other station that is not set in "Network Configuration Settings" under "Basic Settings" of the master station?	Set the connected device station to "Network Configuration Settings" under "Basic Settings" of the master station.
Is a network topology with restrictions used for connection?	Correct the wiring. For details, refer to "SYSTEM CONFIGURATION" (in the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup)
Are station Nos. unique?	Change the overlapped station No.

Check item	Action
Is the IP address overlapped with another station?	Change the IP address of the overlapped station.
Are more than the total number of device stations connected?	Change the connection of the device 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 the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup)
Is the IP address of the device 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 device 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)
Is an Ethernet switch connected in a ring topology?	Do not connect an Ethernet switch in a ring topology.
Is the connected industrial switch (CC-Link IE TSN Class B certified) operating normally?	Power off and on the TSN hub.
	Set the parameters of the industrial switch (CC-Link IE TSN Class B certified) as follows. • Enable each port of the industrial switch (CC-Link IE TSN Class B certified). • Set the communication speed and port type to Auto. • Match the settings of the time synchronization and communication cycle of the industrial switch (CC-Link IE TSN Class B certified) to those of the master station. • Match the VLAN setting of the master station to the VLAN setting of the device station. For the setting method, refer to the manual for the industrial switch (CC-Link IE TSN Class B certified) used.
Is the industrial switch (CC-Link IE TSN certified) creating a loop? For example, both P1 and P2 are connected to the same industrial switch (CC-Link IE TSN certified).	Break the loop by using a method such as removing one of the Ethernet cables from the industrial switch (CC-Link IE TSN certified), and turn off and on the industrial switch. Then reset all the stations or power off and on the system.
Is the network in the ring topology configured correctly?	Correct the wiring to avoid an improper ring topology such as loop wiring.

When the L ER LED turns on

When the L ER LED turns on, check the following.

Check item	Action
Do the Ethernet cables used conform to the standard?	Use an Ethernet cable that conforms to the standard. For details, refer to "Wiring" (in the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup)
Are the distance between stations within 100m?	Make the distance between stations within 100m.
Is the wire of the Ethernet cable broken?	Replace the Ethernet cable.
Is the industrial switch (CC-Link IE TSN certified) used operating normally?	• Use an industrial switch (CC-Link IE TSN certified) that conforms to the standard. For details, refer to "Wiring" (in the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup) • Power OFF and ON the industrial switch (CC-Link IE TSN certified).
Is there any source of noise near the module or cables?	Change the location of the module or cables.
Does the actual connection differ from the one set in "Network Topology" under "Basic Settings" of the master station"?	Review the wiring so that the Motion module is correctly connected in the ring topology.

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 the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup)
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within range. For details, refer to "Wiring" (in the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup)
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 industrial switch (CC-Link IE TSN certified) used operating normally?	• Use an industrial switch (CC-Link IE TSN certified) that conforms to the standard. For details, refer to "Wiring" (in the chapter of the control mode used) of the following manual. MELSEC iQ-R Motion Module User's Manual (Startup) • Power off and on the industrial switch (CC-Link IE TSN certified).
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".
When using a Motion module with an Add-on baseSystem version of "1.7" or earlier, is the communication speed of the connected device 1Gbps?	Connect devices which support a communication speed of 1Gbps.
If "Communication Speed" is set to 100Mbps for the master station to connect a device with a communication speed of 100Mbps, 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.

4.2 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.

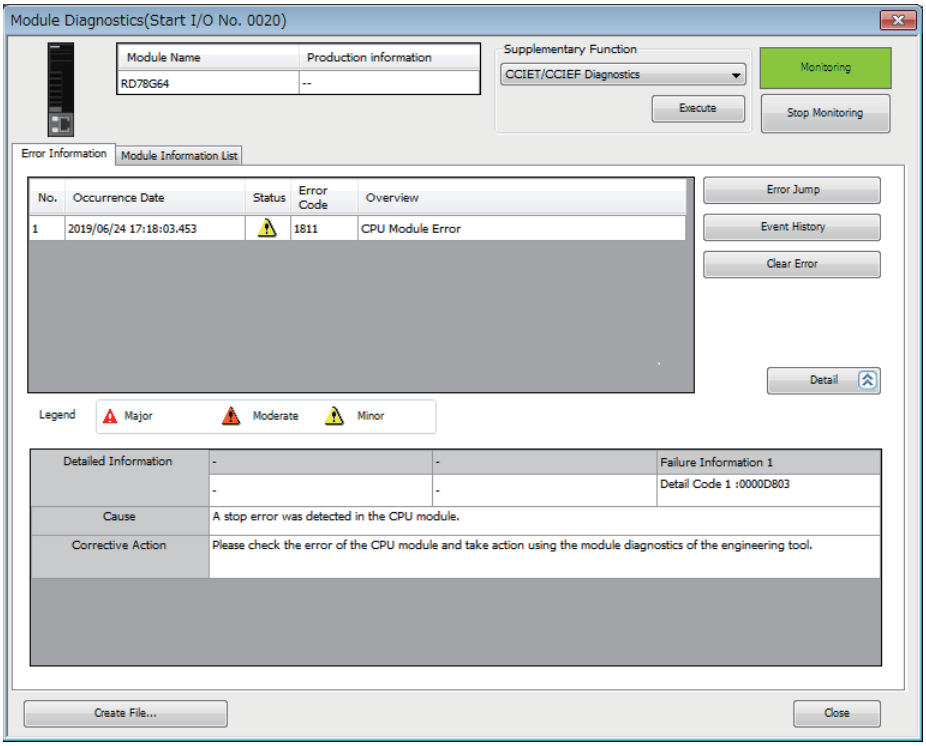
Module Diagnostics

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 161 Checking the Network Status)

Error Information

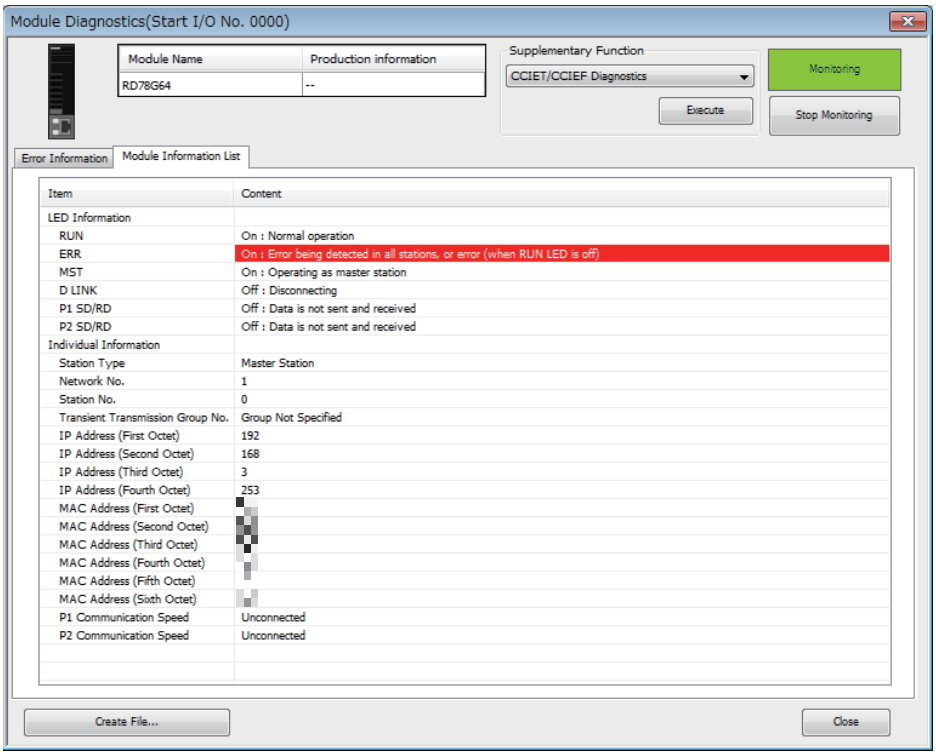
The details of the errors currently occurring and the corrective actions for these errors are displayed in the [Error Information] tab.



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 191 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 218 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 216 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	

4.3 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)".
- "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 164 "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 169 Communication Test
Information Confirmation/ Setting	Station Information List	Check information of the device stations which are performing data link in a list form.	○	☞ Page 170 Station Information List
Selected Station Operation	Remote Operation	Operate remotely from the engineering tool to device stations.	△*1	☞ Page 171 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

Restriction

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.

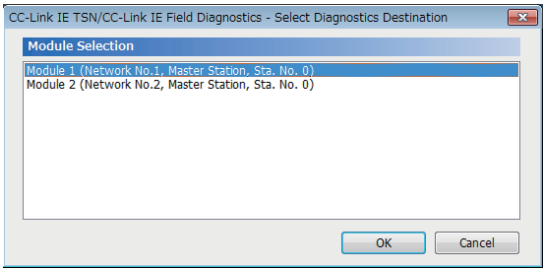
If a device station cannot be monitored due to an error such as cable disconnection, directly connect the engineering tool to the device station.

2. Start the CC-Link IE TSN/CC-Link IE Field diagnostics.

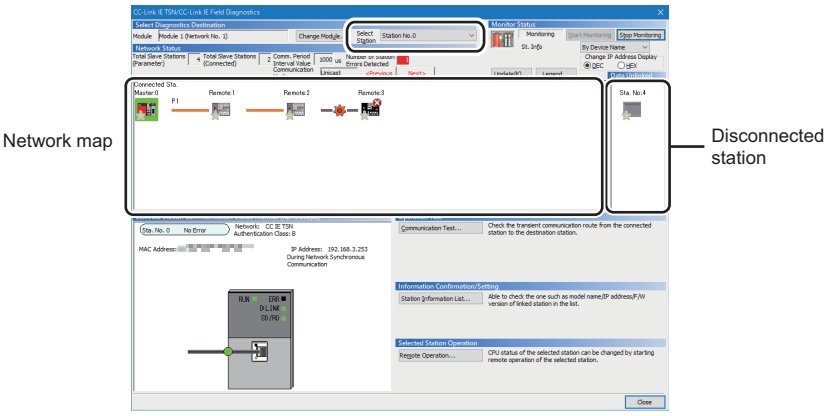
[Diagnostics] ⇨ [CC-Link IE TSN/CC-Link IE Field Diagnostics]

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.



In this manual, "Authentication Class" is written as "CC-Link IE TSN Class".

- 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 164 "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 169 Communication Test, Page 171 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

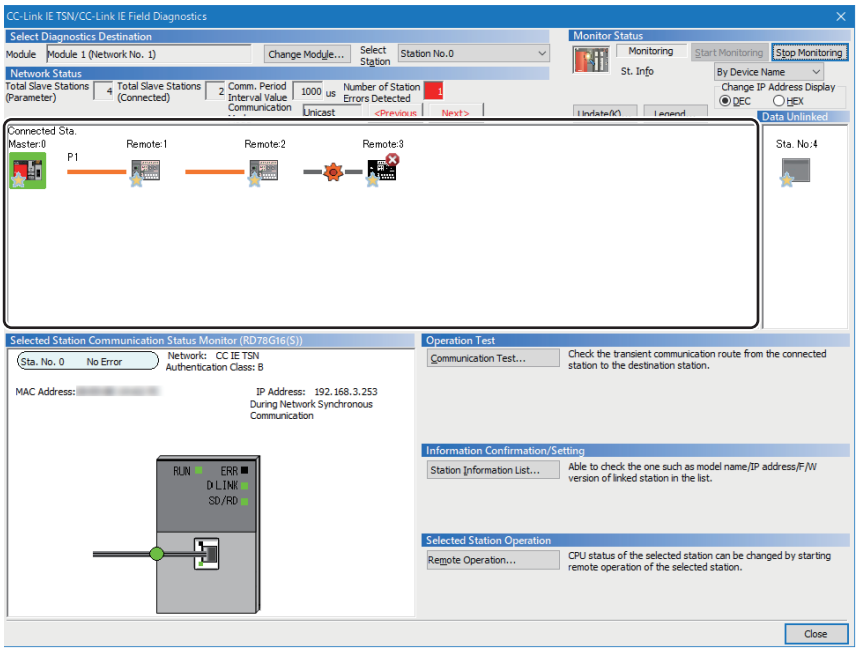
The CC-Link IE TSN/CC-Link IE Field diagnostics cannot be started when "Other Station (Co-existence Network)" has been specified in "Other Station Setting" on the "Specify Connection Destination Connection" window and "CC-Link" or "C24" has been specified in "Co-existence Network Route".

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 162 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



In this manual, "Authentication Class" is written as "CC-Link IE TSN Class".

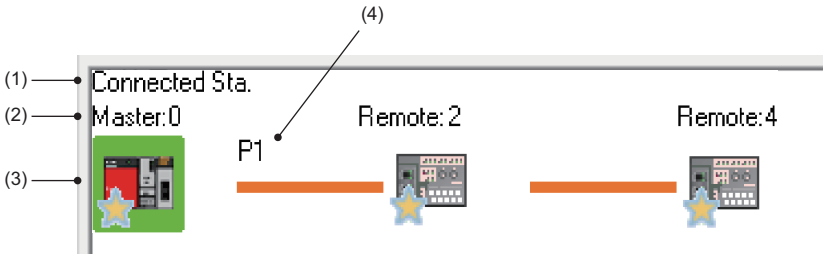
Item		Description
Select Diagnostics Destination	Module	The Motion module under diagnostics is displayed.
	[Change Module] button	Allows to change the target Motion module when multiple Motion module are mounted.
	Select Station	Selects the station No. of the station to be diagnosed. A station to be 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 device 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 device 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 Device Stations (Parameter)	Displays the total number of device stations set in "Network Configuration Settings" under "Basic Settings".
	Total Device Stations (Connected)	Displays the total number of device stations (number of device 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. (μs 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 166 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. • 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 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 168 Selected Station Communication Status Monitor)
Operation Test	[Communication Test] button	Performs a communication test. (☞ Page 169 Communication Test)
Information Confirmation /Setting	[Station Information List] button	Displays information of the device stations which are performing data link in a list form. (☞ Page 170 Station Information List)
Selected Station Operation	[Remote Operation] button	Performs remote operation (such as RUN, STOP, or RESET operations) to the CPU module. (☞ Page 171 Remote Operation)

Network map

■Icon

The module type and station No. are displayed with an icon.



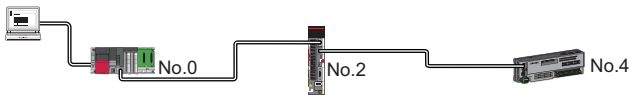
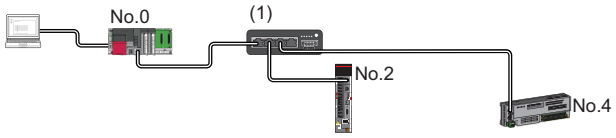
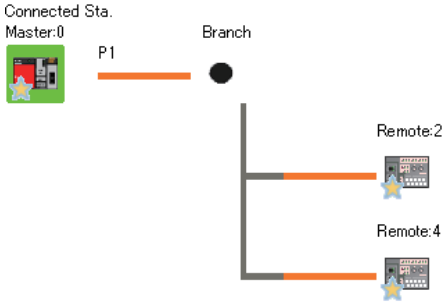
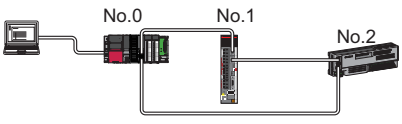
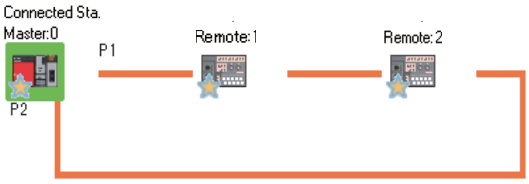
- Click: Selection
- Right-click: Executes tests or debugging.
- ↑ ↓ ← → keys on the keyboard: Move the focus to the module to be diagnosed, and determine it with the Space key.

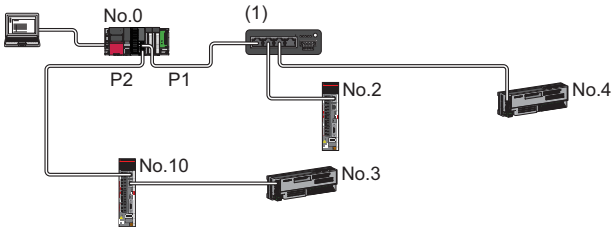
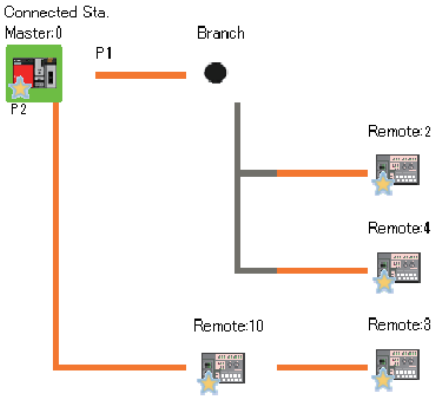
No.	Description
(1)	Displays the station (own station) where the engineering tool is connected.
(2)	Displays the station type and station No. "?" is displayed when a station No. has not been set. When the background of the text if colored, the relevant station may have been set as a reserved station 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".*1 (☞ Page 168 Selected Station Communication Status Monitor)
(4)	P1 or P2 to which an Ethernet cable is connected is displayed.

*1 When the communication cycle interval setting is less than 125µs, the network configuration device station icon will not display as an error station when the device station is in error.

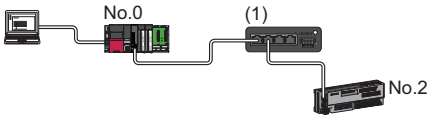
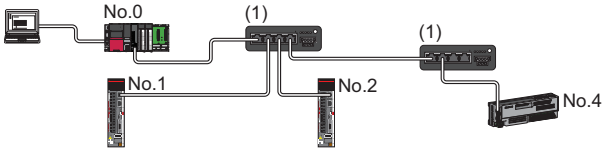
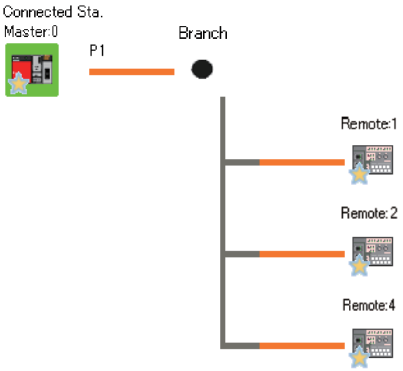
■Network map

A network map is displayed according to the connection status.

Connection status	Display of the network map
Line topology 	
Star topology  (1) Industrial switch	
Ring topology 	

Connection status	Display of the network map
Star topology and line topology  (1) Industrial switch	

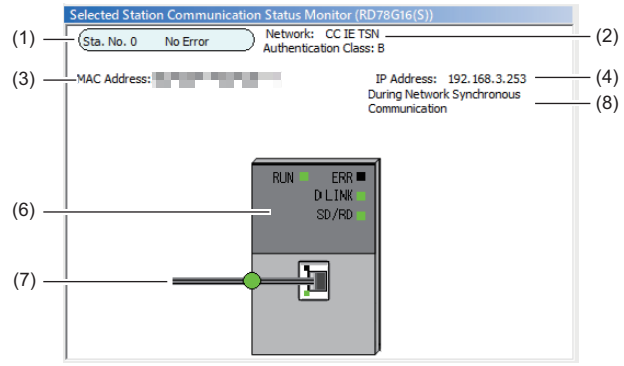
In the following cases, the network map is displayed differently from the actual connection status.

Connection status	Display of the network map
Two stations are connected through an industrial switch.  (1) Industrial switch	Branches are not displayed in the network map. 
Industrial switches are in the cascade connection.  (1) Industrial switch	Only one branch is displayed. 

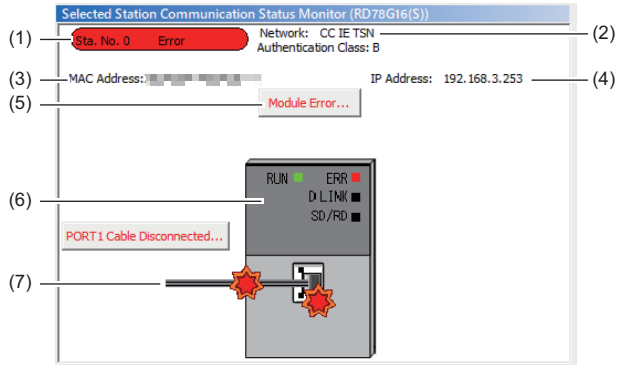
Selected Station Communication Status Monitor

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 the chapter of the control mode used) 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 device station if the network synchronous communication is performed in the device station.

■When a selected station is not available for communication status monitor

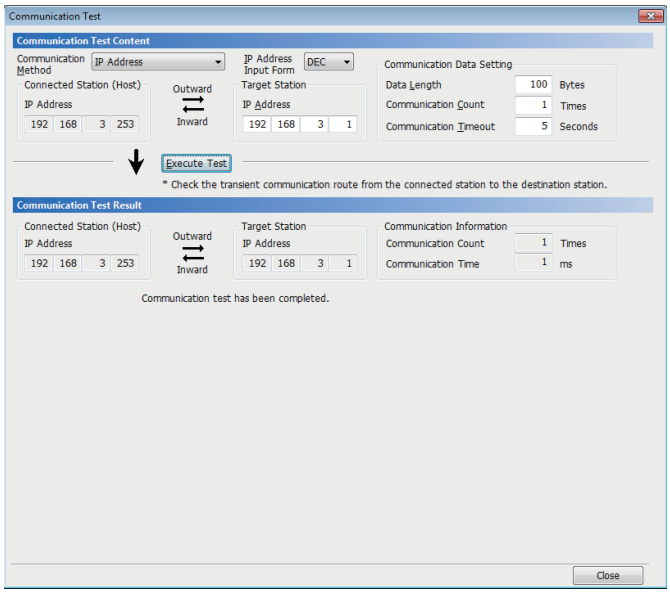
The information of devices are not displayed. The "Error details" window (detailed information, error factor, troubleshooting) is displayed.

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.	○ Available for check (relay stations to be transmitted through can also be checked)
IP Address	○ Available for check

Explanation of the communication test procedure.



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.

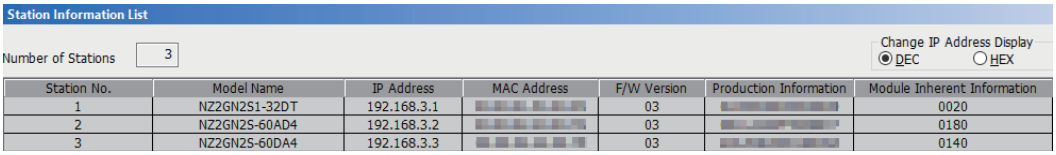
Precautions

- 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 device stations which are performing data link in a list.



Item	Description
Number of Stations	Displays the number of device 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 device station.
Model Name	Displays the model name of the device station.
IP Address	Displays the IP address of the device station.
MAC Address	Displays the MAC address of the device station.
F/W Version	Displays the firmware version of the device station.
Production Information	Displays the production information of the device station.
Module Inherent Information	Displays the module-specific information of the device station.

Point

- Only the device 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 device station, "-" is displayed in each item.
- If the relevant device station is an unsupported module, "Other Modules" is displayed.

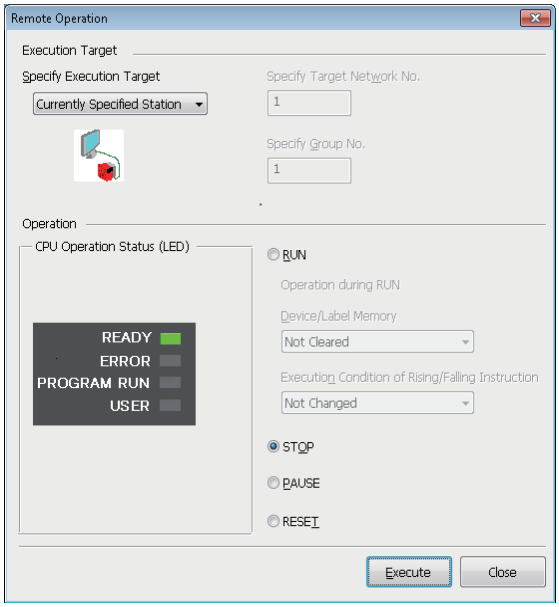
Remote Operation

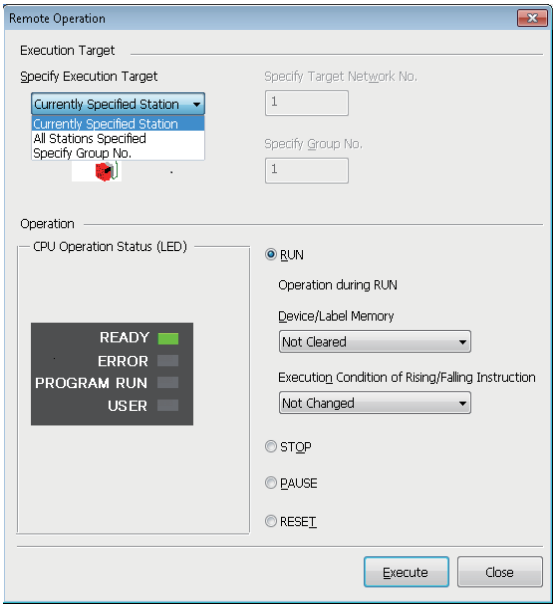
This function executes remote operations (such as RUN, STOP, and RESET operations) to the station selected on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window, from the engineering tool. (Remote operation for device stations is available only for RESET)

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".*1
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.

Point

For details on the remote operations, refer to the user's manual for the CPU module used.

4.4 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 161 Checking the Network Status)

- ☞ Page 173 Cyclic transmission failed
- ☞ Page 177 Transient transmission failed
- ☞ Page 180 Station is disconnected from the network
- ☞ Page 180 Station repeats disconnection and return
- ☞ Page 182 Communications are unstable
- ☞ Page 182 SLMP communications failed
- ☞ Page 183 The control CPU of the local station cannot synchronize time
- ☞ Page 183 Communications with Ethernet devices failed
- ☞ Page 184 Data link is normal but link device communications fail
- ☞ Page 184 Synchronization cannot be performed with the synchronous communication function
- ☞ Page 185 Safety communications failed
- ☞ Page 185 Cannot be monitored using the Communication Software
- ☞ Page 186 Network map is not displayed correctly
- ☞ Page 186 No error is occurring but motion control cannot be started
- ☞ Page 186 Motion control setting and Motion module cannot communicate
- ☞ Page 187 MR-J5(W)-G/MR-JET-G cannot be connected
- ☞ Page 188 CC-Link IE TSN Class A device cannot perform data link
- ☞ Page 190 ERR LED control cannot properly work
- ☞ Page 190 Improper information is displayed
- Co-recording function does not operate correctly (MELSEC iQ-R System Recorder Co-recording Function Reference Manual)

Cyclic transmission failed

The following lists the actions to be taken.

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 156 When the D LINK LED turns off or is flashing)
Does the device station support the link device set in "Network Configuration Settings" of the master station?		Correct the link device to be assigned to the device 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 device 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.
Is a dedicated industrial switch (CC-Link IE TSN Class B certified) used?		• Correct the industrial switch (CC-Link IE TSN Class B certified) used and the settings for the industrial switch (CC-Link IE TSN Class B certified). For the setting method, refer to the manual for the industrial switch (CC-Link IE TSN Class B certified) used. • When using an industrial switch (CC-Link IE TSN Class B certified), check the precautions and restrictions for system configuration on the CC-Link Partner Association website (www.cc-link.org). • Correct the industrial switch (CC-Link IE TSN Class B certified)delay time according to the industrial switch (CC-Link IE TSN Class B certified) used. (☞ Page 306 Communication cycle interval) For the switching hub delay time, refer to the manual for the industrial switch (CC-Link IE TSN Class B certified) used.
When using an CC-Link IE TSN 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 200μs?		Set "System Reservation Time" to 200μs.
When "Connection Device Information" under "Basic Settings" of the master station is set to "CC-Link IE TSN Class B Only"	Are CC-Link IE TSN Class A devices connected?	• Check the connected device and disconnect the CC-Link IE TSN Class A devices. • When connecting a CC-Link IE TSN Class A device, set "Connection Device Information" of the master station to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only".
	Is a switch other than an industrial switch (CC-Link IE TSN Class B certified) connected between CC-Link IE TSN Class B devices?	Check the connected device and disconnect the switch other than an industrial switch (CC-Link IE TSN Class B certified) or replace it with an industrial switch (CC-Link IE TSN Class B certified).

Check item			Action
When "Connection Device Information" under "Basic Settings" of the master station is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only"	■When the version of Add-on baseSystem is "1.18" or earlier Are nine or more CC-Link IE TSN Class B devices and industrial switches (CC-Link IE TSN Class B certified) connected in total to each port of the master station in the transmission path from the master station to the CC-Link IE TSN Class B device of the end?		Check the connected device and reduce the number of CC-Link IE TSN Class B devices and industrial switches (CCLink IE TSN Class B certified) to eight or less in total for each port of the master station in the transmission path from the master station to the CC-Link IE TSN Class B device of the end.
	Is the CC-Link IE TSN Class B device other than the master station connected with an industrial switch (CC-Link IE TSN Class B certified) in star topology?		• Other than the master station, do not connect CC-Link IE TSN Class B devices to an industrial switch (CC-Link IE TSN Class B certified) in star topology. • Connect CC-Link IE TSN Class B devices to an industrial switch (CC-Link IE TSN Class B certified).
	Is the master station connected with CC-Link IE TSN Class B devices via an industrial switch (CC-Link IE TSN Class B certified)?		• Check the connected device and connect the master station and CC-Link IE TSN Class B devices in line topology without connecting a switch other than an industrial switch (CC-Link IE TSN Class B certified). • Check the connected device and connect the master station and CC-Link IE TSN Class B devices using an industrial switch (CC-Link IE TSN Class B certified).
	In multicast mode, is the CC-Link IE TSN Class A remote station connected to a local station or a remote station that does not support the multicast filter?		• Connect the local station or remote station supporting the multicast filter to the CC-Link IE TSN Class A remote station. • Set unicast mode.
	In multicast mode, are a local station and a CC-Link IE TSN Class A remote station mixedly connected on the end side via an industrial switch (CC-Link IE TSN Class B certified)?		• Configure settings with the industrial switch (CC-Link IE TSN Class B certified) so that the multicast frame (with multicast MAC address 09:00:70:00:10:02 and 09:00:70:00:10:05) will not be transferred to the port of the CC-Link IE TSN Class A remote station. • Check the connected device and do not connect both a local station and a CC-Link IE TSN Class A remote station on the end side of the industrial switch (CC-Link IE TSN Class B certified). • Set unicast mode.
	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 Ethernet switch support the CC-Link IE TSN Class in use?		Use the Ethernet switches that support "CC-Link IE TSN Class Setting" set to the master station. For the models and usage methods of the Ethernet switches, refer to the CC-Link Partner Association website (www.cc-link.org).
	■When the version of Add-on baseSystem is "1.20" or later Is the event code 00C81H registered in the event history?		Change "CC-Link IE TSN Class Setting" under "Network Configuration Settings" or "CC-Link IE TSN Class" on the device station side so that the CC-Link IE TSN Class settings for each station match.
	If the device stations in use support protocol version 2.0, is an master station that does not support protocol version 2.0 in use?		Update the master station to a firmware version that supports protocol version 2.0. Alternatively, replace with a master station that supports protocol version 2.0.
	■When connected devices are protocol version 2.0 Is the event code 00C80H registered in the event history?		Take one of the following actions. • Check 'Station protocol version 2.0 support status' (SW01A0 to SW01A7) and update the firmware of all device stations to a version that supports the protocol version 2.0. Alternatively, replace with device stations that support protocol version 2.0. • After powering on the device stations and the devices on the communication path, power on the master station.
	■When connected devices are protocol version 2.0 Is '2: Operating with the protocol version 2.0' stored in 'Protocol operating status' (Un\G1294016)?	Is information on stations that do not support the protocol version 2.0 stored in 'Station protocol version 2.0 support status' (SW01A0 to SW01A7)?	Take one of the following actions. • Check 'Station protocol version 2.0 support status' (SW01A0 to SW01A7) and update the firmware of all device stations to a version that supports the protocol version 2.0. Alternatively, replace with device stations that support protocol version 2.0. • After powering on the device stations and the devices on the communication path, power on the master station.

Check item			Action
When "Connection Device Information" under "Basic Settings" of the master station is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only"	■When connected devices are protocol version 2.0 Is '1: Operating with the protocol version 1.0' stored in 'Protocol operating status' (Un\G1294016)?	Is information on stations that do not support the protocol version 2.0 stored in 'Station protocol version 2.0 support status' (SW01A0 to SW01A7)?	Check 'Station protocol version 2.0 support status' (SW01A0 to SW01A7) and update the firmware of all device stations to a version that supports the protocol version 2.0. Alternatively, replace with device stations that support protocol version 2.0.
		Is a CC-Link IE TSN Class A device that supports the protocol version 2.0 connected to an industrial switch (CC-Link IE TSN Class A certified)?	Check that the VLAN function of the industrial switch (CC-Link IE TSN Class A certified) is set to "Enable". If so, change it to "Disable".
		Are nine or more CC-Link IE TSN Class B devices and industrial switches (CCLink IE TSN Class B certified) connected in total to each port of the master station in the transmission path from the master station to the CC-Link IE TSN Class B device of the end?	Check the connected device and reduce the number of CC-Link IE TSN Class B devices and industrial switches (CCLink IE TSN Class B certified) to eight or less in total for each port of the master station in the transmission path from the master station to the CC-Link IE TSN Class B device of the end.
		Has the cyclic data size exceeded 2K bytes in total for CC-Link IE TSN Class A devices connected to the CC-Link IE TSN Class B devices other than the master station? (Including when connected to a CC-Link IE TSN Class B device via an industrial switch (CC-Link IE TSN Class A certified))	• Connect to a CC-Link IE TSN Class B device via an industrial switch (CC-Link IE TSN Class B certified). (If the device is connected via a switch other than an industrial switch (CC-Link IE TSN Class B certified), change the industrial switch (CCLink IE TSN Class A certified) to an industrial switch (CC-Link IE TSN Class B certified)) • Limit the number of the connected stations so that the cyclic data size of the CC-Link IE TSN Class A devices does not exceed 2K bytes in total. • Connect the CC-Link IE TSN Class A device to the master station.
	■When connected devices are protocol version 2.0 Is there any difference between the CC-Link IE TSN Class B/A mixed system configuration and the "TSN HUB Setting" in "Connection Device Information" under "Basic Settings"?		For details, refer to the following. ☞ Page 188 CC-Link IE TSN Class A device cannot perform data link
	■When connected devices are protocol version 2.0 If "CC-Link IE TSN Class Setting" of the general CC-Link IE TSN module added to the station list in the "CC-Link IE TSN Configuration" window is CC-Link IE TSN Class A, are the minimum values of the communication cycle interval and the cyclic transmission time set to "Communication Period Interval Setting" and "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings"?		Select the actual device to be used from "Module List" in the "CC-Link IE TSN Configuration" window and add it to the list of stations, or refer to the manual for the device to be connected to check the maximum response time for the time managed polling method and set the calculated values to "Communication Period Interval Setting" and "Cyclic Transmission Time".
	Is the event code 00C72H registered in the event history?		• Update the engineering tool to the latest version. • Update the device station firmware with IP address displayed in the detailed information of the event history to the latest version.
	■When the version of Add-on baseSystem is "1.20 to 1.22" Is a CC-Link IE TSN Class A device that supports the CANopen profile with the protocol version 2.0 connected?		Update the master station firmware to Add-on baseSystem version "1.24" or later.

Check item		Action
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 device station side?		• Check if an error has occurred on the device station. • Check if the device station settings and parameters are correct. • Refer to the manual of the device station for troubleshooting.
Is the event code 00C44H registered in the event history?		Match the communication speed of the master station to the communication speed of the station for which the device station parameter automatic setting is to be configured.
When "Network Topology" under "Basic Settings" of the master station is set to "Ring"	Is an Ethernet switch used?	Disconnect the Ethernet switch.
	Is a device not supporting ring topology connected?	Disconnect the device not supporting ring topology, and connect a device supporting ring topology.
	Is the communication speed of the master station the same as the communication speed of device station?	Ensure that the communication speed of the master station and the communication speed of device station match.
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 the largest out of the following to the cyclic transmission time. • 10% of the calculated minimum cyclic transmission time • When the communication speed of the master station is set to 1Gbps: Number of device stations × 2μs • When the communication speed of the master station is set to 100Mbps: Number of device stations × 20μs
Is the minimum value for cyclic transmission time set to "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" of the module parameter?		
In multicast mode, has an external device sent a frame to a station before data link establishment of all stations?		Ensure that the external device will not send a frame before data link establishment of all stations, and then reset the master station.
When the communication speed setting of the master station is set to 1Gbps, is the total cyclic data size of all device stations on the 100Mbps device side at the boundary between CC-Link IE TSN Class B 1Gbps devices other than the master station and CC-Link IE TSN Class B 100Mbps devices exceeding 2K bytes?		• Restrict the number of stations to be connected so that the total cyclic data size of 100Mbps devices does not exceed 2K bytes. • Connect 100Mbps devices to the master station.
■For the version of Add-on baseSystem is "1.22" or earlier When the communication speed of the master station and the device station of the CC-Link IE TSN Class A is 1Gbps, is the "Communication Period Setting" of the device station of the CC-Link IE TSN Class A set to "Basic Period" or "Normal-Speed"?		• Update the Motion module to Add-on baseSystem version "1.24" or later. • Set the value set for "Communication Period Interval Setting" and "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" to greater than or equal to the calculation value of the calculation formula. (☞ Page 306 Communication cycle interval)

■When the Motion module with the baseSystem version of "1.7" or earlier is used

Check the following.

Check item		Action
When "Connection Device Information" under "Basic Settings" of the master station is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN 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, device station: 30) or less.
	Are CC-Link IE TSN Class A devices in line topology?	• Check the connected device and do not connect the CC-Link IE TSN Class A device in line topology. • When connecting the CC-Link IE TSN Class B device and the CC-Link IE TSN Class A device, connect them via an industrial switch (CC-Link IE TSN).
	In line topology plus star topology, are CC-Link IE TSN 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 CC-Link IE TSN Class B devices.
	Are the master station and CC-Link IE TSN Class A devices in line topology?	Check the connected device, and if connecting the master station and a CC-Link IE TSN Class A device, connect them with an industrial switch (CC-Link IE TSN Class B certified).
	Are CC-Link IE TSN Class A devices connected to each other?	Check the connected device, and connect only one CC-Link IE TSN Class A device to each port of an industrial switch (CC-Link IE TSN Class A certified).
	Are a CC-Link IE TSN Class A device and an Ethernet device in line topology?	Check the connected device and do not connect a CC-Link IE TSN Class A device and an Ethernet device.
	Is an industrial switch (CC-Link IE TSN Class B certified) 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 156 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 161 Checking the Network Status)
Is the following control data of the dedicated instruction correct? • CPU type of the target module • Target network number • Target station number • Target IP address		Correct the control data of the dedicated instruction.
Is the network No. overlapped on the network?		Change the overlapped network No.
Are multiple link dedicated instructions with the same channel setting executed simultaneously?		• Set a different channel to each instruction. • Shift the execution timing of the link dedicated instructions.
When "Connection Device Information" under "Basic Settings" of the master station is set to "CC-Link IE TSN Class B Only"	Are CC-Link IE TSN Class A devices connected?	• Check the connected device and disconnect the CC-Link IE TSN Class A devices. • When connecting a CC-Link IE TSN Class A device, set "Connection Device Information" of the master station to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only"
	Is a switch other than an industrial switch (CC-Link IE TSN Class B certified) connected between CC-Link IE TSN Class B devices?	Check the connected device and disconnect the industrial switch other than an industrial switch (CC-Link IE TSN Class B certified) or replace it with an industrial switch (CC-Link IE TSN Class B certified).
When "Connection Device Information" under "Basic Settings" of the master station is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only"	■When the version of Add-on baseSystem is "1.18" or earlier Are nine or more CC-Link IE TSN Class B devices and industrial switches (CC-Link IE TSN Class B certified) connected in total to each port of the master station in the transmission path from the master station to the CC-Link IE TSN Class B device of the end?	Check the connected device and reduce the number of CC-Link IE TSN Class B devices and industrial switches (CC-Link IE TSN Class B certified) to eight or less in total for each port of the master station in the transmission path from the master station to the CC-Link IE TSN Class B device of the end.
	Is the CC-Link IE TSN Class B device other than the master station connected with a switch other than an industrial switch (CC-Link IE TSN Class B certified) in star topology?	• Other than the master station, do not connect CC-Link IE TSN Class B devices to a switch other than an industrial switch (CC-Link IE TSN Class B certified) in star topology. • Connect CC-Link IE TSN Class B devices to an industrial switch (CC-Link IE TSN Class B certified).
	Is the master station connected with CC-Link IE TSN Class B devices via a switch other than an industrial switch (CC-Link IE TSN Class B certified)?	• Check the connected device and connect the master station to CC-Link IE TSN Class B devices in line topology instead of using a switch other than an industrial switch (CC-Link IE TSN Class B certified). • Check the connected device and connect the master station and CC-Link IE TSN Class B devices using an industrial switch (CC-Link IE TSN Class B certified).
	In multicast mode, is the CC-Link IE TSN Class A remote station connected to a local station or a remote station that does not support the multicast filter?	• Connect the local station or remote station supporting the multicast filter to the CC-Link IE TSN Class A remote station. • Set unicast mode.
	In multicast mode, are a local station and a CC-Link IE TSN Class A remote station mixedly connected on the end side via an industrial switch (CC-Link IE TSN Class B certified)?	• Configure settings with the industrial switch (CC-Link IE TSN Class B certified) so that the multicast frame (with multicast MAC address 09:00:70:00:10:02 and 09:00:70:00:10:05) will not be transferred to the port of the CC-Link IE TSN Class A remote station. • Check the connected device and do not connect both a local station and a CC-Link IE TSN Class A remote station on the end side of the industrial switch (CC-Link IE TSN Class B certified). • Set unicast mode.
	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 Ethernet switch support the CC-Link IE TSN Class in use?	Use the Ethernet switches that support "CC-Link IE TSN Class Setting" set to the master station. For the models and usage methods of the Ethernet switches, refer to the CC-Link Partner Association website (www.cc-link.org).

Check item			Action
When "Connection Device Information" under "Basic Settings" of the master station is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only"	■When the version of Add-on baseSystem is "1.20" or later Is the event code 00C81 registered in the event history?		Change "CC-Link IE TSN Class Setting" under "Network Configuration Settings" or "CC-Link IE TSN Class" on the device station side so that the CC-Link IE TSN Class settings for each station match.
	If the device stations in use support protocol version 2.0, is an master station that does not support protocol version 2.0 in use?		Update the master station to a firmware version that supports protocol version 2.0. Alternatively, replace with a master station that supports protocol version 2.0.
	■When connected devices are protocol version 2.0 Is the event code 00C80H registered in the event history?		Take one of the following actions. • Check 'Station protocol version 2.0 support status' (SW01A0 to SW01A7) and update the firmware of all device stations to a version that supports the protocol version 2.0. Alternatively, replace with device stations that support protocol version 2.0. • After powering on the device stations and the devices on the communication path, power on the master station.
	■When connected devices are protocol version 2.0 Is '2: Operating with the protocol version 2.0' stored in 'Protocol operating status' (Un\G1294016)?	Is information on stations that do not support the protocol version 2.0 stored in 'Station protocol version 2.0 support status' (SW01A0 to SW01A7)?	Take one of the following actions. • Check 'Station protocol version 2.0 support status' (SW01A0 to SW01A7) and update the firmware of all device stations to a version that supports the protocol version 2.0. Alternatively, replace with device stations that support protocol version 2.0. • After powering on the device stations and the devices on the communication path, power on the master station.
	■When connected devices are protocol version 2.0 Is '1: Operating with the protocol version 1.0' stored in 'Protocol operating status' (Un\G1294016)?	Is information on stations that do not support the protocol version 2.0 stored in 'Station protocol version 2.0 support status' (SW01A0 to SW01A7)?	Check 'Station protocol version 2.0 support status' (SW01A0 to SW01A7) and update the firmware of all device stations to a version that supports the protocol version 2.0. Alternatively, replace with device stations that support protocol version 2.0.
		Is a CC-Link IE TSN Class A device that supports the protocol version 2.0 connected to an industrial switch (CC-Link IE TSN Class A certified)?	Check that the VLAN function of the industrial switch (CC-Link IE TSN Class A certified) hub is set to "Enable". If so, change it to "Disable".
		Are nine or more CC-Link IE TSN Class B devices and industrial switches (CC-Link IE TSN Class B certified) connected in total to each port of the master station in the transmission path from the master station to the CC-Link IE TSN Class B device of the end?	Check the connected device and reduce the number of CC-Link IE TSN Class B devices and industrial switches (CC-Link IE TSN Class B certified) to eight or less in total for each port of the master station in the transmission path from the master station to the CC-Link IE TSN Class B device of the end.
		Has the cyclic data size exceeded 2K bytes in total for CC-Link IE TSN Class A devices connected to the CC-Link IE TSN Class B devices other than the master station? (Including when connected to a CC-Link IE TSN Class B device via an industrial switch (CC-Link IE TSN Class A certified))	• Connect to a CC-Link IE TSN Class B device via an industrial switch (CC-Link IE TSN Class B certified). (If connecting via an industrial switch (CC-Link IE TSN Class A certified), change the industrial switch (CC-Link IE TSN Class A certified) to an industrial switch (CC-Link IE TSN Class B certified)) • Limit the number of the connected stations so that the cyclic data size of the CC-Link IE TSN Class A devices does not exceed 2K bytes in total. • Connect the CC-Link IE TSN Class A device to the master station.

Check item		Action
When "Connection Device Information" under "Basic Settings" of the master station is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only"	■When connected devices are protocol version 2.0 Is there any difference between the CC-Link IE TSN Class B/A mixed system configuration and the "TSN HUB Setting" in "Connection Device Information" under "Basic Settings"?	For details, refer to the following. ☞ Page 188 CC-Link IE TSN Class A device cannot perform data link
	■When connected devices are protocol version 2.0 If "CC-Link IE TSN Class Setting" of the general CC-Link IE TSN module added to the station list in the "CC-Link IE TSN Configuration" window is CC-Link IE TSN Class A, are the minimum values of the communication cycle interval and the cyclic transmission time set to "Communication Period Interval Setting" and "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings"?	Select the actual device to be used from "Module List" in the "CC-Link IE TSN Configuration" window and add it to the list of stations, or refer to the manual for the device to be connected to check the maximum response time for the time managed polling method and set the calculated values to "Communication Period Interval Setting" and "Cyclic Transmission Time".
	Is the event code 00C72H registered in the event history?	• Update the engineering tool to the latest version. • Update the device station firmware with IP address displayed in the detailed information of the event history to the latest version.
	■When the version of Add-on baseSystem is "1.20 to 1.22" Is a CC-Link IE TSN Class A device that supports the CANopen profile with the protocol version 2.0 connected?	Update the master station firmware to Add-on baseSystem version "1.24" or later.
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 device station side?		• Check if an error has occurred on the device station. • Check if the device station settings and parameters are correct. • Refer to the manual of the device station for troubleshooting.
Is the event code 00C44H registered in the event history?		Match the communication speed of the master station to the communication speed of the station for which the device station parameter automatic setting is to be configured.
In multicast mode, are a local station and a CC-Link IE TSN Class A remote station mixedly connected on the end side via an industrial switch (CC-Link IE TSN Class B certified)?		• Configure settings with the industrial switch (CC-Link IE TSN Class B certified) so that the multicast frame (with multicast MAC address 09:00:70:00:10:02 and 09:00:70:00:10:05) will not be transferred to the port of the CC-Link IE TSN Class A remote station. • Check the connected device and do not connect both a local station and a CC-Link IE TSN Class A remote station on the end side of the industrial switch (CC-Link IE TSN Class B certified). • Set unicast mode.
When "Network Topology" under "Basic Settings" of the master station is set to "Ring"	Is an Ethernet switch used?	Disconnect the Ethernet switch.
	Is a device not supporting ring topology connected?	Disconnect the device not supporting ring topology, and connect a device supporting ring topology.
	Is the communication speed of the master station the same as the communication speed of device station?	Ensure that the communication speed of the master station and the communication speed of device station match.
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.
In multicast mode, has an external device sent a frame to a station before data link establishment of all stations?		Ensure that the external device will not send a frame before data link establishment of all stations, and then reset the master station.
When the communication speed setting of the master station is set to 1Gbps, is the total cyclic data size of all device stations on the 100Mbps device side at the boundary between CC-Link IE TSN Class B 1Gbps devices other than the master station and CC-Link IE TSN Class B 100Mbps devices exceeding 2K bytes?		• Restrict the number of stations to be connected so that the total cyclic data size of 100Mbps devices does not exceed 2K bytes. • Connect 100Mbps devices to the master station.
Does a loopback occur or is a loopback not resolved?		• Perform transient transmission again. • When using a dedicated instruction, correct the number of resends or the monitoring time. (☞ Page 77 Precautions)
Is the communication route for dynamic routing decided?		• After turning the power supply ON, start transient transmission after a small amount time has elapsed. • When the "Dynamic Routing" setting for the station of the communication route is set to "Disable", set it to "Enable".

Check item	Action
Does the relay station of the communication route support dynamic routing?	When there is a relay station that does not support dynamic routing, set the "Routing Setting" of "CPU Parameter" to all stations of the communication route.
Is the wire of the Ethernet cable broken?	Replace the Ethernet cable.

If the above actions do not solve the problem, perform the following tests to check for an error.

- Communication test (☞ Page 169 Communication Test)

■When the Motion module with the baseSystem version of "1.7" or earlier is used

Check the following.

Check item		Action
When "Connection Device Information" under "Basic Settings" of the master station is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN 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, device station: 30) or less.
	Are CC-Link IE TSN Class A devices in line topology?	• Check the connected device and do not connect the CC-Link IE TSN Class A devices in line topology. • When connecting the CC-Link IE TSN Class B device and the CC-Link IE TSN Class A device, connect them via an industrial switch (CC-Link IE TSN certified).
	In line topology plus star topology, are CC-Link IE TSN 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 CC-Link IE TSN Class B devices.
	Are the master station and CC-Link IE TSN Class A devices in line topology?	Check the connected device, and if connecting the master station and a CC-Link IE TSN Class A device, connect them with an industrial switch (CC-Link IE TSN certified).
	Are CC-Link IE TSN Class A devices connected to other CC-Link IE TSN Class A devices?	Check the connected devices, and connect only one CC-Link IE TSN Class A device to each port of an industrial switch (CC-Link IE TSN certified).
	Are a CC-Link IE TSN Class A device and an Ethernet device in line topology?	Check the connected device and do not connect a CC-Link IE TSN Class A device and an Ethernet device.

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 the chapter of the control mode used) of the following manual. 📖MELSEC iQ-R Motion Module User's Manual (Startup)
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 industrial switch (CC-Link IE TSN certified) used operating normally?	• Use an industrial switch (CC-Link IE TSN certified) that conforms to the standard. For details, refer to "Wiring" (in the chapter of the control mode used) of the following manual. 📖MELSEC iQ-R Motion Module User's Manual (Startup) • Power off and on the industrial switch (CC-Link IE TSN certified).
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 "100Mbps", is "System Reservation Time" in "Communication Period Setting" under "Basic Settings" of the master station set to other than 200μs?	Set "System Reservation Time" to 200μs.

Check item		Action
When "Communication Speed" of the master station is set to "1Gbps" and a CC-Link IE TSN Class B/A device with a communication speed of 100Mbps is used, is "Communication Period Setting" set to "Basic Period" or "Normal-Speed"?		For a CC-Link IE TSN Class B/A device with a communication speed of 100Mbps, set "Communication Period Setting" to "Low-Speed".
When "Communication Period Setting" of the master station is set to "1Gbps" and a CC-Link IE TSN Class B/A device with a communication speed of 100Mbps is used in multicast mode, does the station repeat disconnection and return even if "Communication Period Setting" is set to "Low-Speed"?		Connect the data link faulty station to the device supporting the multicast filter. (Manual of the device used)
In multicast mode, is the CC-Link IE TSN Class A remote station connected to the master station, remote station, or CC-Link IE TSN Class A local station?		• Check the connected devices and connect the CC-Link IE TSN Class A remote station to the CC-Link IE TSN Class B local station. • Set unicast mode.
In multicast mode, are a local station and a CC-Link IE TSN Class A remote station mixedly connected on the end side via an industrial switch (CC-Link IE TSN Class B certified)?		• Configure settings with the industrial switch (CC-Link IE TSN Class B certified) so that the multicast frame (with multicast MAC address 09:00:70:00:10:02 and 09:00:70:00:10:05) will not be transferred to the port of the Ethernet device. • Check the connected device and do not connect both a local station and a CC-Link IE TSN Class A remote station on the end side of the industrial switch (CC-Link IE TSN Class B certified). • Set unicast mode.
Is '1: Operating with the protocol version 1.0' stored in 'Protocol operating status' (Un\G1294016)?	Has the cyclic data size exceeded 2K bytes in total for CC-Link IE TSN Class A devices connected to the CC-Link IE TSN Class B devices other than the master station? (Including when connected to a CC-Link IE TSN Class B device via an industrial switch (CC-Link IE TSN Class A certified))	• Connect to a CC-Link IE TSN Class B device via an industrial switch (CC-Link IE TSN Class B certified). (If connecting via an industrial switch (CC-Link IE TSN Class A certified), change the industrial switch (CC-Link IE TSN Class A certified) to an industrial switch (CC-Link IE TSN Class B certified)) • Limit the number of the connected stations so that the cyclic data size does not exceed 2K bytes in total for CC-Link IE TSN Class A devices connected to CC-Link IE TSN Class B devices other than the master station. (Including when connected to a CC-Link IE TSN Class B device via an industrial switch (CC-Link IE TSN Class A certified))
■When connected devices are protocol version 2.0 Is there any difference between the CC-Link IE TSN Class B/A mixed system configuration and the "TSN HUB Setting" in "Connection Device Information" under "Basic Settings"?		For details, refer to the following. ☞ Page 188 CC-Link IE TSN Class A device cannot perform data link
Are the restrictions on industrial switch (CC-Link IE TSN Class B certified) violated?		Observe the restrictions on industrial switch (CC-Link IE TSN Class B certified). For the restrictions, refer to the manual of the industrial switch (CC-Link IE TSN Class B certified) to be used.
When the communication speed setting of the master station is set to 1Gbps, is the total cyclic data size of all device stations on the 100Mbps device side at the boundary between CC-Link IE TSN Class B 1Gbps devices other than the master station and CC-Link IE TSN Class B 100Mbps devices exceeding 2K bytes?		• Restrict the number of stations to be connected so that the total cyclic data size of 100Mbps devices does not exceed 2K bytes. • Connect 100Mbps devices to the master station.
Is the total cyclic data size of all device stations on the CC-Link IE TSN Class A device side at the boundary between CC-Link IE TSN Class B devices other than the master station and CC-Link IE TSN Class A devices exceeding 2K bytes?		• Restrict the number of stations to be connected so that the total cyclic data size of CC-Link IE TSN Class A devices does not exceed 2K bytes. • Connect CC-Link IE TSN Class A devices to the master station.
In multicast mode, is the CC-Link IE TSN Class A remote station connected to a local station or a remote station that does not support the multicast filter?		• Connect the local station or remote station supporting the multicast filter to the CC-Link IE TSN Class A remote station. • Set unicast mode.
■When the version of Add-on baseSystem is "1.20 to 1.22" Is a CC-Link IE TSN Class A device that supports the CANopen profile with the protocol version 2.0 connected?		Update the master station firmware to Add-on baseSystem version "1.24" or later.

■When the Motion module with the baseSystem version of "1.15" or earlier is used

Check the following.

Check item	Action
When "Communication Speed" of the master station is set to "1Gbps" and a CC-Link IE TSN Class B/A device with a communication speed of 100Mbps 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. • Use only either P1 or P2 of the master station.

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 157 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

Check the following items.

Check item	Action
Has the connection with the external device been opened?	• If the connection with the external device is not opened, perform the open processing.*1 • If an error occurs, check and eliminate the error cause.
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?	• 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. • If a response was returned, check the end and error codes to correct the faulty area.
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.
In multicast mode, is an Ethernet device connected to a local station or a remote station that does not support the multicast filter?	• Connect the Ethernet device to a local station or a remote station that supports the multicast filter. • Set unicast mode. • Take actions so that the Ethernet device does not receive cyclic data in multicast mode.
In multicast mode, are a local station and an Ethernet device mixedly connected on the end side via an industrial switch (CC-Link IE TSN Class B certified)?	• Configure settings with the industrial switch (CC-Link IE TSN Class B certified) so that the multicast frame (with multicast MAC address 09:00:70:00:10:02 and 09:00:70:00:10:05) will not be transferred to the port of the Ethernet device. • Check the connected device and do not connect both a local station and an Ethernet device on the end side of the industrial switch (CC-Link IE TSN Class B certified). • Set unicast mode. • Take actions so that the Ethernet device does not receive cyclic data in multicast mode.

*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.

The control CPU of the local station cannot synchronize time

Check the following items.

Check item	Action
Is the time zone and daylight savings time set to the control CPUs different between the master station and local stations?	Set the same time zone and daylight savings time to the control CPUs of the master station and local stations.
Has the clock data been changed by the clock function of the control CPUs of the master station and the local stations?	Check whether the clock data has been changed by the clock function of the control CPUs of the master station and the local stations.
Is 'Time distribution interval setting of the CPU module' (Un\G1275136) of the local station set correctly?	Set 'Time distribution interval setting of the CPU module' (Un\G1275136) of the local station correctly.
Is 'Time reflection setting to the CPU module' (Un\G1275137) of the local station set correctly?	Set 'Time reflection setting to the CPU module' (Un\G1275137) of the local station correctly.

Communications with Ethernet devices failed

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. • Is the security setting level of the antivirus software low? • Is a response to the PING command (ICMP echo request) disabled in the firewall settings?
In multicast mode, is an Ethernet device connected to the master station?	• Connect the Ethernet device to a local station or a remote station that supports the multicast filter. • Set unicast mode. • Take actions so that the Ethernet device does not receive cyclic data in multicast mode.
In multicast mode, is an Ethernet device connected to a local station or a remote station that does not support the multicast filter?	• Connect the Ethernet device to a local station or a remote station that supports the multicast filter. • Set unicast mode. • Take actions so that the Ethernet device does not receive cyclic data in multicast mode.
In multicast mode, are a local station and an Ethernet device mixedly connected on the end side via an industrial switch (CC-Link IE TSN Class B certified)?	• Configure settings with the industrial switch (CC-Link IE TSN Class B certified) so that the multicast frame (with multicast MAC address 09:00:70:00:10:02 and 09:00:70:00:10:05) will not be transferred to the port of the Ethernet device. • Check the connected device and do not connect both a local station and an Ethernet device on the end side of the industrial switch (CC-Link IE TSN Class B certified). • Set unicast mode. • Take actions so that the Ethernet device does not receive cyclic data in multicast mode.

For details on when communication using the engineering tool is not allowed in the settings of Windows Firewall, refer to the following.

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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 device station set to "Reserved Station" in "Network Configuration Settings" of the master station?	Set "Reserved/Error Invalid Station" of the device station to "No Setting".
Is the input/output bit setting or input/output word setting of the device station set in "Network Configuration Settings" of the master station? (Simple display)	Set a link device used in the device station correctly.
Are "RX Setting", "RY Setting", "RWw Setting", "RWr Setting", "LB Setting", and "LW Setting" of the device station set in "Network Configuration Settings" of the master station? (Detailed display)	Set a link device used in the device station correctly.
Does the device station support the link devices set in "Network Configuration Settings" of the master station?	Correct the link devices to be assigned to the device 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".
Is the transfer range set in "Interlink Transmission Settings" correct?	Correct the transfer range set in "Interlink Transmission Settings".
Are the settings in "Transfer Source Module" and "Transfer Destination Module" of "Interlink Transmission Settings" correct?	Correct the settings in "Transfer Source Module" and "Transfer Destination Module" of "Interlink Transmission Settings".
When the local station cannot receive cyclic data from another station, is "Communication Mode" of the master station set to "Multicast"?	Set "Communication Mode" of the master station to "Multicast".

Synchronization cannot be performed with the 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. MELSEC iQ-R Inter-Module Synchronization Function Reference Manual
Is the network synchronous communication set to the standard device station in the network configuration setting of the master station?	Set "Network Synchronous Communication" to "Synchronous" for the standard device station under "Network Configuration Settings" in the module parameters.
Is the network synchronous communication set in the parameter settings of the device station?	Set "Network Synchronous Communication" in the parameter settings of the device station to "Synchronous". (Manual 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.

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 122 "CC-Link IE TSN Configuration" Window)
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 325 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 326 Safety refresh monitoring time)
Does safety station interlock status indicate interlock state?	• Correct the setting value of "Sending Interval Monitoring Time" in "Safety Communication Setting" under "Basic Settings". (☞ Page 325 Transmission interval monitoring time) • Correct the setting value of "Safety Refresh Monitoring Time" in "Safety Communication Setting" under "Basic Settings". (☞ Page 326 Safety refresh monitoring time) • Release the interlock state by using Interlock release request for each safety connection. (📖MELSEC iQ-R CPU Module User's Manual (Application))
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)
Is the setting for the CPU number when the CPU module to be selected the CPU number in the communication destination is selected in "Safety Communication Setting" of "Basic Settings" of the master station correctly set?	Set the CPU number of the CPU module in a local station to perform safety communications with the master station. (📖User's manual for the CPU module of the communication destination)

Cannot be monitored using the Communication Software

The following lists the actions to be taken if information cannot be monitored using the CC-Link IE TSN Communication Software.

Check item	Action
Are three or more modules connected to CC-Link IE TSN Communication Software?	Connect two or fewer modules.
Is "Network Topology" under "Basic Settings" in the master station set to "Ring"?	Set "Network Topology" under "Basic Settings" to "Line", "Star", or "Line/Star".
Is the CC-Link IE TSN communication software connected to a CC-Link IE TSN Class A device?	Connect the CC-Link IE TSN communication software to a CC-Link IE TSN Class B device or an industrial switch (CC-Link IE TSN Class B certified).
Is "Communication Mode" under "Application Settings" set to "Unicast"?	Set "Communication Mode" under "Application Settings" to "Multicast".
Is the CC-Link IE TSN Communication Software connected to a switch other than an industrial switch (CC-Link IE TSN Class B certified)?	Connect the CC-Link IE TSN communication software to a CC-Link IE TSN Class B device or an industrial switch (CC-Link IE TSN Class B certified).
Is the CC-Link IE TSN Communication Software reconnected within 20 seconds after disconnecting?	Before reconnecting the CC-Link IE TSN Communication Software, wait 20 seconds or more.

In addition to the above actions, refer to the following troubleshooting methods.

📖CC-Link IE TSN Communication Software for Windows User's Manual

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 network in the ring topology configured correctly?		• Match "Network Topology" under "Basic Settings" to the actual connection status. • Disconnect the Ethernet switch. When "Network Topology" under "Basic Settings" is set to "Ring", disconnect the following network modules. • A network module not supporting ring topology • A network module with a communication speed different from the communication speed of the master station • A network module not set in the parameters of the master station
Is the PLCopen Motion control FB mode set and a value less than 125μs set in the communication period interval setting?	Is the number of device stations in the network configuration settings exceeding the referential number of axes[*1]?	• Reduce the number of device stations set in the network configuration. • Increase the setting value of the communication period interval setting.

*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

Check the following.

Check item		Action
Is the PLCopen Motion control FB mode set and a value less than 125μs set in the communication period interval setting?	Is the number of device stations in the network configuration settings exceeding the referential number of axes[*1]?	• Reduce the number of device stations set in the network configuration. • Increase the setting value of the communication period interval setting.

*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

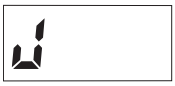
When the motion control setting and Motion module cannot communicate in the PLCopen Motion control FB mode, check the following.

Check item		Action
Is a value less than 125μs set in the communication period interval setting?	Is the number of device stations in the network configuration settings exceeding the referential number of axes?[*1]	• Reduce the number of device stations set in the network configuration. • Increase the setting value of the communication period interval setting.

*1 For details, refer to "Operation Cycle" in the following manual.
MELSEC iQ-R Motion Module User's Manual (Application)

MR-J5(W)-G/MR-JET-G cannot be connected

Check the following items.

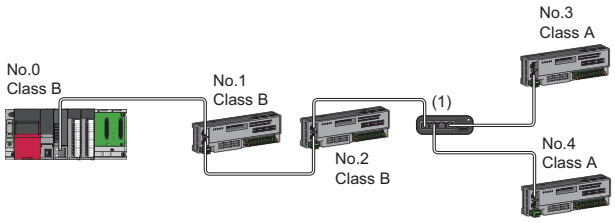
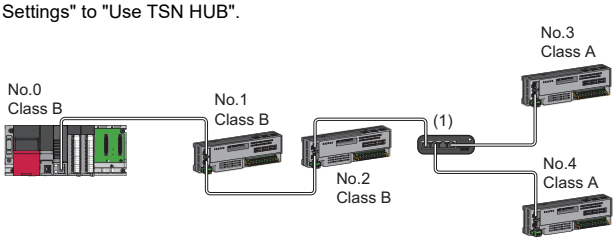
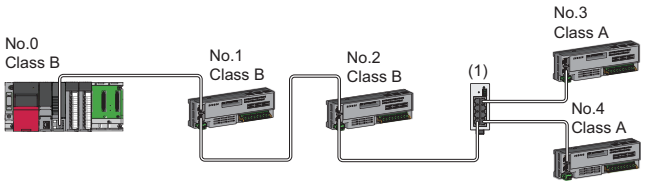
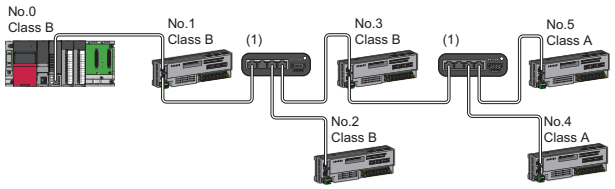
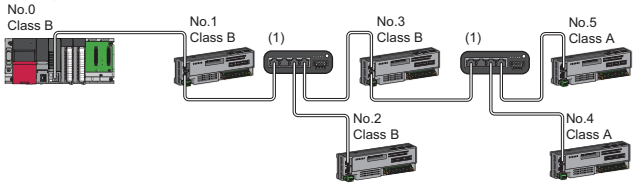
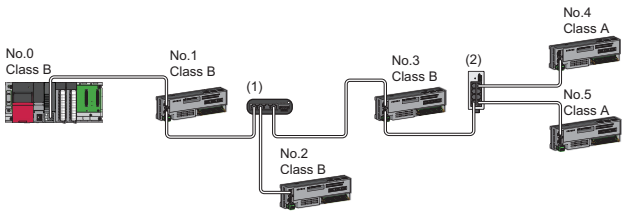
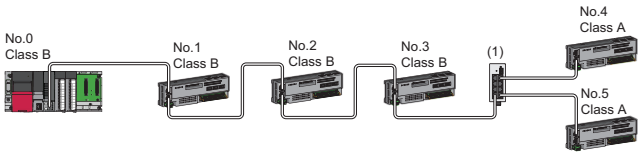
Check item		Action
Has "Network parameter error" (error code: 2221H) occurred?		Check the event history, and confirm the relevant parameter that corresponds with the parameter No. found in detailed information.
Has the MR-J5(W)-G/MR-JET-G 7-segment LED keep displaying as shown below?*1  	Has a moderate error/major error occurred in the Motion module?	Check the event history, and perform the processing found in detailed information.
	When using multi-axis servo amplifiers, has the control axis deactivation switch of the DIP switch (SW3) been set to ON?	• When setting a disabled axis in a multi-axis servo amplifier, set the disabled axes from the latter axis. • In Network configuration settings, change the number of extension modules that are connected to the corresponding multi-axis servo amplifier so that they match the number of axes not set to Axis Disabled minus "1". <Example> When setting only 1 axis from axes A to C of MR-J5W3-G to axis disabled. • Control axis deactivation switch (SW3) setting: Set only C axis to axis disabled (SW3-4 to ON). • Network configuration setting: Add or delete MRJ5W3-G_BC_Axis so that there is only 1 MRJ5W3-G_BC_Axis that is connected to MR-J5W3-G.
	In network configuration settings, has the number of extension modules connected to the multi-axis servo amplifier been changed from the default settings?	
When in Simple Motion mode, has the MR-J5(W)-G/MR-JET-G 7-segment LED display stopped as shown below?*1 	Has "Motion control station setting error" (error code: 1C4BH) occurred in the Motion module?	• In network configuration settings, allocate the device station set to the Motion control station to an axis in Simple Motion settings. • Set the device stations with no allocations to any axes to a general station (no check next to Motion control station setting) in network configuration settings.

*1 For MR-J5W-G, the number of characters displayed on the 7-segment LED is different.

CC-Link IE TSN Class A device cannot perform data link

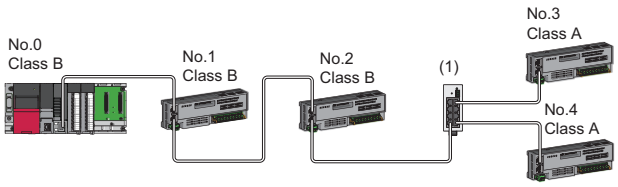
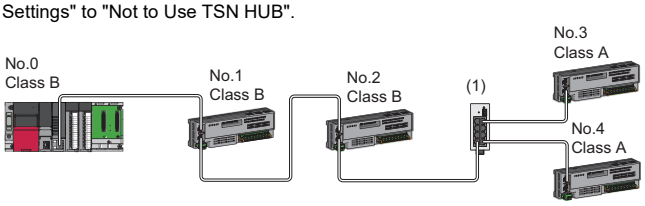
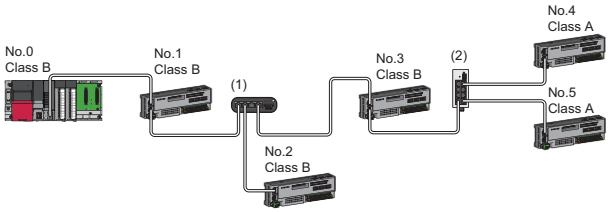
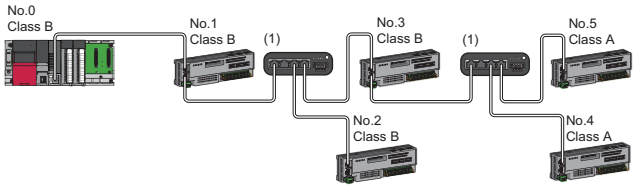
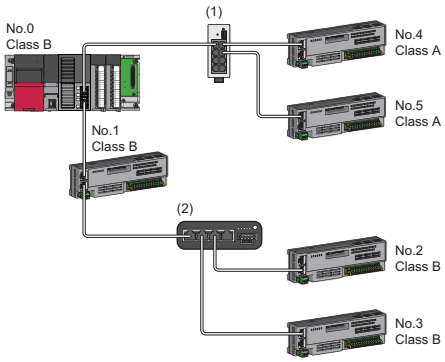
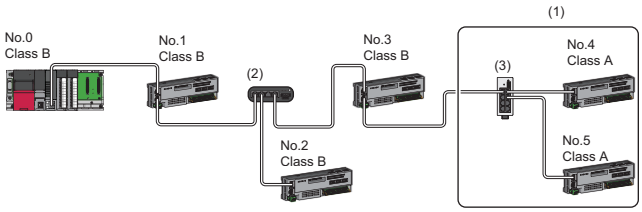
■When set to "Not to Use TSN HUB"

If "TSN HUB Setting" in "Connection Device Information" under "Basic Settings" is set to "Not to Use TSN HUB", check the following items.

Check item	Action
Is a CC-Link IE TSN Class B device connected to a CC-Link IE TSN Class A device via an industrial switch (CC-Link IE TSN Class B certified)?  (1) Industrial switch (CC-Link IE TSN Class B certified)	Set "TSN HUB Setting" in "Connection Device Information" under "Basic Settings" to "Use TSN HUB".  (1) Industrial switch (CC-Link IE TSN Class B certified)
	Connect the CC-Link IE TSN Class B device directly to the CC-Link IE TSN Class A device. Alternatively, connect via an industrial switch (CC-Link IE TSN Class A certified).  (1) Industrial switch (CC-Link IE TSN Class A certified)
Is an industrial switch (CC-Link IE TSN Class B certified) used for connection between CC-Link IE TSN Class B devices?  (1) Industrial switch (CC-Link IE TSN Class B certified)	Set "TSN HUB Setting" in "Connection Device Information" under "Basic Settings" to "Use TSN HUB".  (1) Industrial switch (CC-Link IE TSN Class B certified)
Is an industrial switch (CC-Link IE TSN Class B certified) used for connection between CC-Link IE TSN Class B devices?  (1) Industrial switch (CC-Link IE TSN Class B certified) (2) Industrial switch (CC-Link IE TSN Class A certified)	Disconnect the industrial switch (CC-Link IE TSN Class B certified) used for the connection between the CC-Link IE TSN Class B devices.  (1) Industrial switch (CC-Link IE TSN Class A certified)

■When set to "Use TSN HUB"

If "TSN HUB Setting" in "Connection Device Information" under "Basic Settings" is set to "Use TSN HUB", check the following items.

Check item	Action
Are the CC-Link IE TSN Class B device and the CC-Link IE TSN Class A device connected directly or via an industrial switch (CC-Link IE TSN Class A certified)?  (1) Industrial switch (CC-Link IE TSN Class A certified)	Set "TSN HUB Setting" in "Connection Device Information" under "Basic Settings" to "Not to Use TSN HUB".  (1) Industrial switch (CC-Link IE TSN Class A certified)
Are the CC-Link IE TSN Class B device and the CC-Link IE TSN Class A device connected directly or via an industrial switch (CC-Link IE TSN Class A certified)?  (1) Industrial switch (CC-Link IE TSN Class B certified) (2) Industrial switch (CC-Link IE TSN Class A certified)	Connect the CC-Link IE TSN Class B device to the CC-Link IE TSN Class A device via an industrial switch (CC-Link IE TSN Class B certified).  (1) Industrial switch (CC-Link IE TSN Class B certified)
	Connect the CC-Link IE TSN Class A device directly to the master station. Alternatively, connect via an industrial switch (CC-Link IE TSN certified).  (1) Industrial switch (CC-Link IE TSN certified) (2) Industrial switch (CC-Link IE TSN Class B certified)
	Limit the number of the connected stations so that the cyclic data size does not exceed 2K bytes in total (1) for device stations on the CC-Link IE TSN Class A device side at the boundary between CC-Link IE TSN Class B devices and CC-Link IE TSN Class A devices?  (2) Industrial switch (CC-Link IE TSN Class B certified) (3) Industrial switch (CC-Link IE TSN Class A certified)

ERR LED control cannot properly work

When ERR LED control does not properly work, check the following.

Check item	Action
Is the data link faulty station correctly specified?	• Check that 'Data link faulty station specification' (Un\G1294384 to Un\G1294399) is correctly set. • To connect a local station after ERR LED control is used, change 'Send request' (Un\G1294368) from 0 to 1 again.
Does the Motion module, or do connected local stations support ERR LED control?	Refer to the manual of the Motion module or connected local stations and check if ERR LED control is supported. If supported, update the firmware version.

Improper information is displayed

If improper information such as the IP address of an unconnected device is displayed in the detailed information of the event history or the module diagnostics window, check the following.

Check item	Action
Is the network in the ring topology configured correctly?	Correct the wiring to avoid an improper ring topology such as loop wiring.

4.5 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 159 Error Information)

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
1124H	• The default gateway is not set correctly. • The gateway IP address is not set correctly. • The default gateway/gateway IP address (network address after the subnet mask) is different from that of the IP address of the own node.	• Correct the default gateway IP address. • Set the same network address as that of the IP address.	■Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—
1128H	The port No. is incorrect.	Correct the port No.	—
1152H	The IP address is not set correctly.	Correct the IP addresses.	■Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—
1155H	• The specified connection was already closed in TCP/IP communications. • Open processing is not performed.	• Perform the open processing for the specified connection. • Check if the open processing has been performed in the external device.	—
1167H	Unsent data found, but could not be sent.	• Check the settings for connection with the external device. • Check the operation of the external device or industrial switches (CC-Link IE TSN certified). • Since there may be congestion of packets on the line, send data after a certain period of time. • Check if the cable is connected properly. • Check that there is no connection failure with the industrial switches (CC-Link IE TSN certified). • Execute the communication test, and if the test was completed with an error, take corrective action.	—
1802H	■Add-on baseSystem version "1.32" or later • The IP addresses of device stations are overlapped at startup of data link. • Duplicate IP address was detected during data link. ■Add-on baseSystem version "1.31" or earlier • During data link, overlapping IP addresses have been detected.	Change the IP address of devices with an overlapped IP address.	■Operation source information • IP address ■IP address duplication information • Duplication station 1 MAC address (1st octet, 2nd octet) • Duplication station 1 MAC address (3rd octet, 4th octet) • Duplication station 1 MAC address (5th octet, 6th octet) • Duplication station 2 MAC address (1st octet, 2nd octet) • Duplication station 2 MAC address (3rd octet, 4th octet) • Duplication station 2 MAC address (5th octet, 6th octet)

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
1803H	The number of connectable stations is exceeded.	■When the version of Add-on baseSystem is "1.8" or later • Reduce the number of the CC-Link IE TSN Class B devices and industrial switches (for CC-Link IE TSN Class B) to eight or less in total for each port of the master station on the transmission path from the master station to the CC-Link IE TSN Class B device of the end. Take any or both of the following. • Update the master station to a version supporting the CC-Link IE TSN protocol version 2.0. • Update the firmware of the CC-Link IE TSN Class A devices to the latest version, or replace the devices with ones that support the CC-Link IE TSN protocol version 2.0. ■When the version of Add-on baseSystem is "1.7" or earlier • Reduce the total number of stations to 31 (master station: 1, device station: 30) or less. • Reduce the number of CC-Link IE TSN Class B devices to eight or less for each port of the master station.	—
1804H	During data link, invalid connection structure has been detected. • A CC-Link IE TSN Class B station is connected further on the end side than a CC-Link IE TSN Class A station. • With the master station with a communication speed of 1Gbps, further on the end side than a station with a communication speed of 100Mbps, a station with a communication speed of 1Gbps is connected. • With the master station with a communication speed of 1Gbps, the communication cycle setting of the station with a communication speed of 100Mbps is set to basic cycle or normal speed (×4). • With the master station with a communication speed of 100Mbps, a station with a communication speed of 1Gbps is connected. • With the master station with a communication speed of 100Mbps, "Communication Period Setting" of the CC-Link IE TSN Class B station with a communication speed of 100Mbps is set to low-speed. • Communication speeds of master and local stations do not match. ■Multicast mode • A CC-Link IE TSN Class A local station is connected further on the end side than a CC-Link IE TSN Class A remote station. • For the master station with a communication speed of 1Gbps, the station with a communication speed of 1Gbps and the station with a communication speed of 100Mbps coexist at the end of the industrial switch (CC-Link IE TSN certified).	Check the connection and setting on the end side of the station shown in detailed information 2 and take the following actions. • Connect a CC-Link IE TSN Class A station further on the end side than a CC-Link IE TSN Class B station. • With the master station with a communication speed of 1Gbps, connect the station with a communication speed of 1Gbps on the master station side rather than the station with a communication speed of 100Mbps. • With the master station with a communication speed of 1Gbps, set the communication cycle setting of the station with a communication speed of 100Mbps to low-speed. • If the master station has a communication speed of 100Mbps, set the communication speed of the device station to 100Mbps. • With the master station with a communication speed of 100Mbps, set the communication cycle setting of the CC-Link IE TSN Class B station with a communication speed of 100Mbps to basic period or normal speed (×4). • Set the same communication speed for master and local stations. • If the master station has a communication speed of 1Gbps, set the 100Mbps stations to general stations. ■Multicast mode • Connect the CC-Link IE TSN Class A remote station further on the end side than the CC-Link IE TSN Class A local station. • For the master station with a communication speed of 1Gbps, please make sure that the station with a communication speed of 1Gbps and the station with a communication speed of 100Mbps do not coexist at the end of the industrial switch (CC-Link IE TSN certified).	■Own station information • I/O No. • Network No. • Station No. • IP address ■Target station information • Network No. • Station No. • IP address

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
1805H	• The cyclic data size exceeds 2K bytes in total for all device stations on the CC-Link IE TSN Class A device side at the boundary between CC-Link IE TSN Class B devices and CC-Link IE TSN Class A devices. • The total cyclic data size of all device stations on the side of the station with a communication speed of 100Mbps at the boundary between the station with a communication speed of 1Gbps and the station with a communication speed of 100Mbps exceeds 2K bytes.	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. • Do not allow the cyclic data size to exceed 2K bytes in total for all device stations on the CC-Link IE TSN Class A device side at the boundary between CC-Link IE TSN Class B devices and CC-Link IE TSN Class A devices. • Do not set the total cyclic data size of all device stations on the side of the station with a communication speed of 100Mbps at the boundary between the station with a communication speed of 1Gbps and the station with a communication speed of 100Mbps to exceed 2K bytes.	■Own station information • I/O No. • Network No. • Station No. • IP address ■Target station information • Network No. • Station No. • IP address
1806H	• A connection with a CC-Link TSN Class B device in star topology was detected when "TSN HUB Setting" was set to "Not to Use TSN HUB". • A CC-Link IE TSN Class B device is connected further on the end side than a CC-Link IE TSN Class A device.	• Disconnect the industrial switch (CC-Link IE TSN Class B certified) connected to the CC-Link IE TSN Class B device. • Set "TSN HUB Setting" to "Use TSN HUB". • Connect CC-Link IE TSN Class A stations closer to the end than CC-Link IE TSN Class B stations.	■Own station information • I/O No. • Network No. • Station No. • IP address
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.	—
1D10H	Cyclic transmission skip occurred.	• 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. • Increase the value for "Communication Period Interval Setting" and "Transient Transmission Time" in "Communication Period Setting" of the module parameter. • 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". • 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. • 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. • Set modules not requiring synchronization to asynchronous so that the execution time of synchronization interrupt program does not exceed the inter-module synchronization cycle. • Do not perform the online change in the CPU module.	—
1D11H	The correction value of time counter calculated by the inter-module synchronization function exceeds allowable range.	• Take measures to reduce noise. • 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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
1D20H	The module cannot normally communicate with the device station on CC-Link IE TSN.	• 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". • 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. • 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". • Refer to the manual of the device station in use, and if the device 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". • Do not perform the online change in the CPU module. • Check if the industrial switch (CC-Link IE TSN certified) and the cables are connected properly. • After taking the above actions, power on the system again or reset the CPU module.	■— ■Target station information • Network No. • Station No. • IP address
1D21H	Initialization processing with the device station on CC-Link IE TSN cannot be performed correctly.	• 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. • Take measures to reduce noise. • After taking the above actions, power on the system again or reset the CPU module.	■— ■Target station information • Network No. • Station No. • IP address
1D30H	An unsupported co-recording trigger has been received and discarded.	Check the firmware versions of the Motion module and the source device that sent the co-recording trigger, and if they cannot be used together, and then update the firmware of either the Motion module or the source device, depending on which one unsupports co-recording.	■Co-recording trigger source device information • Slot No. • Network No. • Station No.
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	• A parameter that is not supported by the software version of the Motion module has been set. • The parameter setting is corrupted.	• Check the software version of the Motion module, and if an unsupported parameter has been set, update the software version or correct the parameter setting. • 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.	■Parameter information • Parameter type ■—
2221H	• The set value is out of the range. • Parameters that are not supported by the software version of the Motion module have been set. • The engineering tool does not support the parameters required for executing the set functions.	• 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. • Check the software version of the Motion module. If parameters that are not supported are set, update the software version or correct the parameters. • Update the engineering tool to the latest version, and retry the operation.	■Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—
2222H	A parameter that is not supported by the software version of the Motion module has been set.	Check the software version of the Motion module, and if an unsupported parameter has been set, update the software version or correct the parameter setting.	■Parameter information • Parameter type
24C0H	An error was detected on the system bus.	• Take measures to reduce noise. • 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.	■System configuration information • I/O No. • Base No. • Slot No. • CPU No. ■—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
24C1H	An error was detected on the system bus.	• Take measures to reduce noise. • 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.	■System configuration information • I/O No. • Base No. • Slot No. • CPU No. ■—
24C2H	An error was detected on the system bus.	• Take measures to reduce noise. • 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.	■System configuration information • I/O No. • Base No. • Slot No. • CPU No. ■—
24C3H	An error was detected on the system bus.	• Take measures to reduce noise. • 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.	■System configuration information • I/O No. • Base No. • Slot No. • CPU No. ■—
24C6H	An error was detected on the system bus.	• Take measures to reduce noise. • 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.	—
2600H	The cyclic processing does not finish before the start timing for the next inter-module synchronization cycle.	• Check that the inter-module synchronous interrupt program (I44) was written to the CPU module. • 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". • 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. • If the value in 'Transient transmission additional time (calculation value)' (SW007A) is not 0, add the value (μs unit) to "Communication Period Interval Setting" and "Transient Transmission Time". • Reduce the number of cyclic assignment points and the number of connected device stations, and correct the settings so that a shorter value can be set for the communication period interval setting. • Do not perform the online change in the CPU module.	—
2610H	An inter-module synchronization signal error (synchronization loss) was detected.	• Take measures to reduce noise. • 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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
3000H	<When using PLCopen Motion control FB mode> 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. • The CPU module which cannot use the inter-module synchronization function is set as the control CPU of the Motion module. • 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". • "Network Topology" under "Basic Settings" is set to "Ring"	• Correct the parameters shown in the cause. • 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.	■Parameter information • Parameter type • I/O No. • Parameter No. ■—
	<When using Simple Motion mode> 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. ■When the version of Add-on baseSystem is "1.18" or earlier • In "Network Configuration Settings" under "Basic Settings", "Network Synchronous Communication" of the non-motion control station is set to "Synchronous". ■When the version of Add-on baseSystem is "1.20" or later • 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". • The CPU module which cannot use the inter-module synchronization function is set as the control CPU of the Motion module.	Correct the parameters shown in the cause. ■When the version of Add-on baseSystem is "1.20" or later • 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.	■Parameter information • Parameter type • I/O No. • Parameter No. ■—
3009H	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 device station set in "Network Configuration Settings" under "Basic Settings" is out of the range.	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 device station set in "Network Configuration Settings" under "Basic Settings" is within 16ms. • "Communication Period Interval Setting" under "Basic Settings" • "Communication Period Setting" for the device station in "Network Configuration Settings" For "Communication Period Setting" to be set for the device, specify a multiple in "Multiple Period Setting" under "Communication Period Setting" of "Basic Settings".	■— ■Target station information • Station No. • IP address

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
300AH	• The combination of the firmware version of the local station and the software version of the master station is not available. • The parameter setting value is out of the range. Or, the setting values of the master station and local station are inconsistent.	• 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. • 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.	■Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—
300BH	The Announce frame send cycle parameter error was detected.	• 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. • 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.	—
300CH	A propagation delay send cycle parameter error was detected.	• 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. • 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.	—
300DH	The Sync frame send cycle parameter error was detected.	• 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. • 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.	—
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.	■Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—
300FH	Multiple master stations were detected in the network.	• Connect only one master station on the same network. • After taking the above action, power off and on or reset all stations where the error was detected.	■Parameter information • Parameter type • I/O No. • Parameter No. ■Overlapped type information • 5: Master station duplication
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 device 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. If the detailed information value exceeds the upper limit of "Communication Period Interval Setting" that can be set in the master station, reduce the number of modules connected to the master station and the number of link devices assigned to each module in "Network Configuration Settings", so that the upper limit of "Communication Period Interval Setting" is not exceeded.	■— ■Communication Period Interval Information • Communication Period Interval (Calculation value: μs)
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 device 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. If the detailed information value exceeds the upper limit of "Cyclic Transmission Time" that can be set in the master station, reduce the number of modules connected to the master station and the number of link devices assigned to each module in "Network Configuration Settings", so that the upper limit of "Communication Period Interval Setting" is not exceeded.	■— ■Communication Period Interval Information • Cyclic Transmission Time (Calculation value: μs)

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
3012H	The Motion module not compatible with network synchronous communication is set as the master station, and "Network Synchronous Communication" in the device station in "Network Configuration Settings" under "Basic Settings" of the master station is set to "Synchronous".	• Update the Add-on baseSystem version to "1.16" or later. • In "Network Configuration Settings" under "Basic Settings" of the master station, set "Network Synchronous Communication" of the device station to "Asynchronous".	■Parameter information • Parameter type • I/O No. • Parameter No. ■—
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 device stations and the points of device 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.	■— ■Communication Period Interval Information • Transient Transmission Time (Calculation value: μs)
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".	• Set "Communication Mode" in "Application Settings" of the master station to "Unicast". • In "Network Configuration Settings" under "Basic Settings" of the master station, set "Communication Period Setting" of the local station to "Basic Period".	■Parameter information • Parameter type • I/O No. • Parameter No. ■Target station information • Station No. • IP address
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. • For a local station in which "Network Synchronous Communication" in "Network Configuration Settings" of "Basic Settings" is set to "Synchronous", "Communication Period Setting" is set to the setting other than "Basic Period". • For the synchronization setting in "System Parameter", a Motion module mounted to an extension base unit is set as a synchronization target module.	Correct the parameters shown in the cause.	■Parameter information • Parameter type • I/O No. • Parameter No. ■—
3016H	When "Network Topology" of "Basic Settings" of the master station is set to "Ring", for "Connection Device Information" under "Basic Settings", "CC-Link IE TSN Class Setting" is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only".	• Set "Network Topology" of "Basic Settings" of the master station to "Line/Star". • For "Connection Device Information" under "Basic Settings" of the master station, set "CC-Link IE TSN Class Setting" to "CC-Link IE TSN Class B Only".	■Parameter information • Parameter type • I/O No. • Parameter No. ■—
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".	■Parameter information • Parameter type • I/O No. • Parameter No. ■—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
3018H	• A Motion module with the software version in which multiple modules cannot be set as the inter-module synchronization target is used. • 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. • Two Motion modules or more are set for "Select Inter-module Synchronization Target Module" under "Inter-module Synchronization Setting" in "System Parameter".	• Update the Add-on baseSystem version to "1.16" or later. • Set the module which is set as the synchronization target in "Inter-module Synchronization Setting" in "System Parameter" as the inter-module synchronous master. • Set only one Motion module for "Select Inter-module Synchronization Target Module" under "Inter-module Synchronization Setting" in "System Parameter".	■Parameter information • Parameter type • I/O No. • Parameter No. ■—
3021H	At startup of data link, an overlapping IP address among device stations has been detected.	Correct the IP addresses of the device stations.	■Operation source information • IP address ■IP address duplication information • Duplication station 1 MAC address (1st octet, 2nd octet) • Duplication station 1 MAC address (3rd octet, 4th octet) • Duplication station 1 MAC address (5th octet, 6th octet) • Duplication station 2 MAC address (1st octet, 2nd octet) • Duplication station 2 MAC address (3rd octet, 4th octet) • Duplication station 2 MAC address (5th octet, 6th octet)
3040H	Response data of the dedicated instruction cannot be created.	• Increase the request interval. • Decrease the number of request nodes. • Wait for a response to the previous request before sending the next request. • Correct the timeout value.	—
3060H	The send/receive data size exceeds the allowable range.	• Check and change the send data size of the CC-Link IE TSN-equipped module or the external device. • 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.	—
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.	• Update the Add-on baseSystem version to "1.16" or later. • Set "Network Synchronous Communication" for the corresponding local station to "Asynchronous" in "Network Configuration Settings" under "Basic Settings" of the master station.	—
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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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.	■Grandmaster MAC address information • MAC address (1st, 2nd octet) • MAC address (3rd, 4th octet) • MAC address (5th, 6th octet) ■—
3135H	Over the number of stations that can be connected.	• Reduce the total number of stations to 31 stations (master station: 1, device station: 30) or less. • Reduce the number of stations of CC-Link IE TSN Class B devices to eight or less for each port of the master station.	—
3136H	An illegal ring topology was detected.	Set a line topology or star topology, and turn off and on or reset all stations.	—
3160H	The number of points of link devices of the device stations set to "CC-Link IE TSN Class A" in "CC-Link IE TSN Class" of "Network Configuration Settings" under "Basic Settings" exceeds the number of points that can be assigned.	In "Network Configuration Settings" under "Basic Settings", review the device assignment settings so that the number of points of link devices of the stations with detailed information 2 does not exceed the number of points assigned to stations with CC-Link IE TSN Class A.	■Parameter information • Parameter type • I/O No. • Parameter No. ■Target station information • Station number • IP address
31ACH	"CC-Link IE TSN Class" of the device station set in "Network Configuration Settings" does not match the "CC-Link IE TSN Class Setting" of "Connection Device Information" under "Basic Settings".	Set "CC-Link IE TSN Class" of the device station set in "Network Configuration Settings" to "CC-Link IE TSN Class B", or change the "CC-Link IE TSN Class Setting" of "Connected Device Information" under "Basic Settings" to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only".	■Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—
3203H	An error was detected in the hardware.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3600H	• For the inter-module synchronization cycle setting, the setting of the master station does not match the inter-module synchronization cycle setting of the local station. • "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. • 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".	• Correct the parameter so that all modules performing inter-module synchronization have the same cycle setting. • 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.	■Parameter information • Parameter storage location • Parameter type • I/O No. • Parameter No. ■—
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".	■Parameter information • Parameter storage location • Parameter type • I/O No. • Parameter No. • Parameter item No. ■—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
3602H	Inter-module synchronization cycle failure occurred between networks.	• Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. • Check if the industrial switch (CC-Link IE TSN Class B certified) and the cables are connected properly. • After taking the above action, power off and on or reset all the stations where the error was detected. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
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.	• Check if the industrial switch (CC-Link IE TSN Class B certified) and the cables are connected properly. • Power off and on or reset the own station. • When this error is detected by more than one RJ71GN11-T2 (local station) and RJ71GN11-EIP (local station), power off and on or reset each RJ71GN11-T2 (local station) and RJ71GN11-EIP (local station) in the order starting from the local station connected closest to the master station.	■— ■Synchronous master setting information • Synchronous master mounted slot number
3605H	A module to operate as an inter-module synchronous master could not output an inter-module synchronization signal.	• Check the master station condition. • Check the error of the master station and take action using the module diagnostics of the engineering tool. • Check that the settings of the master station are consistent with the one of the device station in "Network Configuration Settings" under "Basic Settings" of the master station. • Check that the settings of the master station are consistent with the one of the local station in "IP Address" under "Required Settings" of the local station. • Correct "IP Filter Settings" under "Application Settings". • Check if the industrial switch (CC-Link IE TSN Class B certified) and the cables are connected properly. • Power off and on or reset the own station. • When this error is detected by more than one RJ71GN11-T2 (local station) and RJ71GN11-EIP (local station), power off and on or reset each RJ71GN11-T2 (local station) and RJ71GN11-EIP (local station) in the order starting from the local station connected closest to the master station.	■— ■Synchronous master setting information • Synchronous master mounted slot number
3607H	The correction value of time counter calculated by the inter-module synchronization function exceeds allowable range successively.	• Take measures to reduce noise. • 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.	—
3608H	Inter-module synchronization signals have not been input for a certain period of time.	• Take measures to reduce noise. • 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.	—
3609H	An error has been detected in the inter-module synchronization function.	• Take measures to reduce noise. • 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.	—
360AH	An error has been detected in the inter-module synchronization function.	• Take measures to reduce noise. • 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.	—
360BH	An error has been detected in the inter-module synchronization function.	• Take measures to reduce noise. • 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.	—
360CH	An error has been detected in the inter-module synchronization function.	• Take measures to reduce noise. • 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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
360DH	• 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. • An error has been detected in the inter-module synchronization function.	• Update the Add-on baseSystem version to "1.16" or later for the Motion module set as the inter-module synchronization master. • Take measures to reduce noise. • 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.	—
3C00H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3C01H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3C02H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3C03H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3C0FH	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3C10H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3C11H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3C13H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion module. Please consult your local Mitsubishi representative.	—
3C14H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the Motion module. If the same error occurs again even after taking the above, the possible cause is a hardware failure of the Motion 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.	—
3E07H	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.	—
3F00H	The firmware version is not supported by the CPU module.	Use a CPU module which supports Motion modules.	—

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 CC-Link IE TSN-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 CC-Link IE TSN-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.	• Correct the IP address of the connected device in the network configuration setting. • Check that the IP address class of the connected device is set to A, B, or C in the network configuration setting.	—
C017H	A connection could not be established in the open processing.	• Check the operation of the external device. • Check if the open processing has been performed in the external device. • When a firewall is set in the external device, check if access is permitted. • Check if the Ethernet cable is connected properly.	—
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.	• Since there may be congestion of packets on the line, send data after a certain period of time. • Check if the Ethernet cable is connected properly.	—
C035H	The alive status of an external device could not be checked.	• Check the operation of the external device. • Correct the timer setting for data communication of the CC-Link IE TSN-equipped module. • Check if the Ethernet cable is connected properly.	—
C037H	• The receive buffer or send buffer is not sufficient. • The window size of the external device is not sufficient.	<When using PLCopen Motion control FB mode> • Check the operation of the external device or industrial switch (CC-Link IE TSN certified). • When the value of the 'Receive buffer status storage area' (Un\G6291486) is 0001H, reduce the frequency of data received from the external device.	—
		<When using Simple Motion mode> • Check the operation of the external device or industrial switch (CC-Link IE TSN certified). • When the value of the 'Receive buffer status storage area' (Un\7891486) is 0001H, reduce the frequency of data received from the external device.	—
C038H	Data was not sent correctly with UDP/IP.	• Check the connection settings and operations (whether an error has occurred or it is being reset) of the external devices (including the industrial switch), and connection failure (whether the cable is disconnected). • Since there may be congestion of packets on the line, send data after a certain period of time. • Execute the PING test and communication status test, and if the test was completed with an error, take the corrective action. • Correct the network No. and station No./IP address of the target station of the dedicated instruction.	—
C039H	Data was not sent correctly with TCP/IP.	• Check the connection settings and operations (whether an error has occurred or it is being reset) of the external devices (including the industrial switch (CC-Link IE TSN certified)), and connection failure (whether the cable is disconnected). • Since there may be congestion of packets on the line, send data after a certain period of time. • Execute the PING test and communication status test, and if the test was completed with an error, take the corrective action.	—
C040H	• Sufficient data for the data length could not be received. • The remaining part of the message divided at the TCP/IP level could not be received.	• Correct the data length of the communication data. • 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.	—
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	• 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). • The number of write points for the long counter of SLMP message is not in two-word units.	Correct the number of read/write points and send the SLMP message to the CC-Link IE TSN-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 CC-Link IE TSN-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 CC-Link IE TSN-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 CC-Link IE TSN-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 CC-Link IE TSN-equipped module again.	—
C056H	The read/write request exceeds the largest address.	• 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 CC-Link IE TSN-equipped module again. • If the access target and connection stations are modules of the MELSEC iQ-R series, send the SLMP message again to the CC-Link IE TSN-equipped module using 00□3 and 00□2 of subcommands.	—
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 CC-Link IE TSN-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 CC-Link IE TSN-equipped module again.	—
C059H	• The specified command and subcommand of the SLMP message are incorrect • A function that is not supported by the target device was executed.	• Check that there are no errors in the specification of the command and subcommand of the SLMP message. • Check whether the function executed is supported by the target device. • Check the version of the target device.	—
C05AH	The CC-Link IE TSN-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 CC-Link IE TSN-equipped module again.	—
C05BH	The CC-Link IE TSN-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 CC-Link IE TSN-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 CC-Link IE TSN-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	• The time between reception of the SLMP request message by the CC-Link IE TSN-equipped module and the returned response from the access destination exceeded the monitoring timer value set in the command. • 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.)	• Increase the monitoring timer value. • Check if the access destination is operating normally. • Correct the network No. or request destination station No. • If the access destination is a module with a different network No., correct the routing parameter setting. • If the access destination is a module with a different network No., check if the network No. is not in use.	—

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 CC-Link IE TSN-equipped module again.	—
C061H	• The request data length of the SLMP message does not match the No. of data in the character (a part of text). • The write data length specified by the label write command is not even byte.	• Check and correct the text or request data length, and send the SLMP message to the CC-Link IE TSN-equipped module again. • Add one byte of dummy data, and specify the length as an even number of bytes.	—
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.	• 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. • 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.	—
C070H	The device memory cannot be extended for the access destination specified by the SLMP message.	• Correct the SLMP message to read/write data without the device memory set for extension. • Specify the extension of the device memory only for a connected station, a MELSEC iQ-R/Q/QnACPU via a network, or a controller.	—
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 CC-Link IE TSN-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.)	• Check if the data can be requested to the access destination. • Correct the request details and send the SLMP message to the CC-Link IE TSN-equipped module again.	—
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.	• Correct the number of read/write points and send the SLMP message to the CC-Link IE TSN-equipped module again. • Correct the label to shorten the label name and send the SLMP message to the CC-Link IE TSN-equipped module again.	—
C081H	The termination processing for the CC-Link IE TSN-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 CC-Link IE TSN-equipped module.	—
C087H	IP address of the destination external device could not be acquired.	• Correct the IP address in the network station No. ↔ IP information setting. • Check if the network or station No. of the external device is correctly specified by using control data of the dedicated instruction. • Check if the Ethernet cable is connected properly. • Check if the network No. and station No. of the destination device is set correctly. • Check if the destination device is set in "Network Configuration Settings" under "Basic Settings".	—
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)	Increase the request interval (execution interval) and execute the operation. • Do not access through one station using the MELSOFT connection, link dedicated instruction, or SLMP. • Wait for a response to the previous request before sending the next request. • Correct the timer setting value for data communication of the CC-Link IE TSN-equipped module.	—
C0B3H	A request that cannot be processed was issued from the CPU module.	• Correct the request details. • Correct the network No. or request destination station No.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
C0D4H	The number of relay stations to communicate with other networks exceeds the allowable range.	• Check if the specification (network No./station No.) for the communication destination is correct. • Check that the number of relay stations accessing the communication destination is 7 or less. • Correct the settings in the network station No. ↔ IP information setting for the stations between the own station and the communication destination.	—
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	• There is an error with the command, subcommand, or request destination module I/O No. specified by the SLMP message. • A function that is not supported by the target device was executed.	• Correct the command, subcommand, or request destination module I/O No. specified by SLMP message. • Check the version of the target device.	—
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.	• Execute again after correcting the request data to be within the range. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
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.	• Execute the communication status test, and if the test was completed with an error, take the corrective action. • Perform the module communication test to check for module errors.	—
C613H	The module processing was completed with an error.	• Execute the communication status test, and if the test was completed with an error, take the corrective action. • Perform the module communication test to check for module errors.	—
C615H	The module processing was completed with an error.	• Execute the communication status test, and if the test was completed with an error, take the corrective action. • Perform the module communication test to check for module errors.	—
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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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.	—
C842H	The routing setting is not set to reach to the destination network No.	• Execute the link dedicated instruction again after correcting the target network No./station No. • When the dynamic routing is used, check that the communication path to the destination network No. is confirmed. • 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.	—
C844H	Incorrect frame was received. • Unsupported command	• Replace the network module with a module of the version supporting the function that has been executed. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
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.	• Correct the IP address of the external device. • Check if the subnet mask of the external device matches the master station. • Check if the communication speed matches the external device. • Check that the cable is connected properly, and there is no error.	—
CF40H	Incorrect frame was received.	• Check the operating status and connection status of the target device. • Check the connection of the Ethernet cable and industrial switch (CC-Link IE TSN Class B certified). • Check the line status of Ethernet. • Reset the CPU module and target device, and retry the operation. If the above actions do not solve the problem, contact the manufacturer of the target device.	—
CF41H	Incorrect frame was received.	• Check the operating status and connection status of the target device. • Check the connection of the Ethernet cable and industrial switch (CC-Link IE TSN Class B certified). • Check the line status of Ethernet. • Reset the CPU module and target device, and retry the operation. If the above actions do not solve the problem, contact the manufacturer of the target device.	—
CF42H	Incorrect frame was received.	• Check the operating status and connection status of the target device. • Check the connection of the Ethernet cable and industrial switch (CC-Link IE TSN Class B certified). • Check the line status of Ethernet. • Reset the CPU module and target device, and retry the operation. If the above actions do not solve the problem, contact the manufacturer of the target device.	—
CF43H	An error has occurred.	• Check the operating status of the external device. • Check if there is any error in the line status. If the above actions do not solve the problem, contact the manufacturer of the target device.	—
CF44H	Incorrect frame was received.	• Check the operating status and connection status of the target device. • Check the connection of the Ethernet cable and industrial switch (CC-Link IE TSN certified). • Check the line status of Ethernet. • Reset the CPU module and target device, and retry the operation. If the above actions do not solve the problem, contact the manufacturer of the target device.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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 CPU module to the STOP state (excluding a stop error), and enable the remote device test function.	—
D0A3H	Send processing of the transient transmission has failed.	• Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Correct the target station No. of transient data, and retry the operation. • When the access destination is a module with a different network No., check if "Routing Setting" of "CPU Parameter" is correctly set.	—
D0B0	Executed again while IP address setting or indicator display processing was in progress.	• Instruction execution is in progress, so try again after completion. • Check if there is any problem with the connection of the cables at the request source and the industrial switch. • Check if the Ethernet cable is connected properly. • Check whether the function executed is supported by the target device. • Check the version of the target device. • After 30 seconds have elapsed, retry the operation to the target device. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D0B1	The destination is incorrect or does not exist during IP address setting or indicator display processing.	• Check if there is any problem with the connection of the cables at the request source and the industrial switch. • Check if the Ethernet cable is connected properly.	—
D0B2	Unable to receive a response from the destination for IP address setting and indicator display processing.	• Check if there is any problem with the connection of the cables at the request source and the industrial switch. • Check if the Ethernet cable is connected properly. • Check whether the function executed is supported by the target device. • Check the version of the target device.	—
D0B3	The target device does not support the IP address setting function or indicator display function.	• Check whether the function executed is supported by the target device. • Check the version of the target device.	—
D0B4	Transient transmission failed during IP address setting or indicator display processing.	• Reset the CPU module and target device, and retry the operation. If the above actions do not solve the problem, contact the manufacturer of the target device.	—
D0B5	Transient transmission failed during IP address setting or indicator display processing.	• Check if there is any problem with the connection of the cables at the request source and the industrial switch. • Check if the Ethernet cable is connected properly. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
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.	• Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Execute the instruction again after lower the transient transmission usage frequency. • Check if the industrial switch (CC-Link IE TSN certified) and the Ethernet cables at the request source are connected properly.	—
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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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	• The command of transient transmission is incorrect. • The CC-Link IE TSN/CC-Link IE Field diagnostics was used for the network to which the relay receiving station belongs. • The connection destination module does not support this function.	• Execute the instruction again after correcting the request command at the transient request source, and retry the operation. • 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. • 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.	—
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.	• Retry the operation after a while. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D240H	The network number specification of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the network number at the request source of the dedicated instruction. • When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.	—
D241H	The target station number of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the target station number at the request source of the dedicated instruction. • When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.	—
D242H	The command code of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the command code at the request source of the dedicated instruction. • When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.	—
D243H	The channel specified in the dedicated instruction is incorrect.	• Execute the instruction again after correcting the used channel within the allowable range at the request source of the dedicated instruction. • When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.	—
D244H	The transient data is incorrect.	• Execute the instruction again after correcting the transient data at the transient request source. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D245H	The target station number of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the target station number at the request source of the dedicated instruction. • When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.	—
D247H	When the dedicated instruction was executed, response from the target station was received twice.	• Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. • Check if the industrial switch (CC-Link IE TSN certified) and the Ethernet cables at the request source are connected properly. • When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.	—
D249H	The target station CPU type of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the CPU type of the target station at the request source of the dedicated instruction. • When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.	—
D24AH	The arrival monitoring time specification of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the arrival monitoring time at the request source of the dedicated instruction. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Execute the instruction again after lowering the transient transmission usage frequency. • Check if the industrial switch (CC-Link IE TSN certified) and the Ethernet cables at the request source are connected properly.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D24BH	The number of resends specified in the dedicated instruction is incorrect.	• Execute the instruction again after correcting the number of resends at the request source of the dedicated instruction. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Execute the instruction again after lowering the transient transmission usage frequency. • Check if the industrial switch (CC-Link IE TSN certified) and the Ethernet cables at the request source are connected properly.	—
D24CH	The network number specification of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the network number at the request source of the dedicated instruction. • When the request source is other network, check if "Routing Setting" of the CPU parameter is correctly set and take corrective actions.	—
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.	• Execute it again after changing the execution type in the control data to no arrival check. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D253H	A response timeout has occurred when the dedicated instruction was executed.	<When using the PLCopen Motion control FB mode> • Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. • 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. • Execute the instruction again after increasing the number of resends at the request source of the dedicated instruction. • Execute the instruction again after lower the transient transmission usage frequency. • 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. • For the RECV instruction, execute it again after correcting the own station storage channel in the control data. • For the RECV instruction, check that 'RECV execution request flag CH1' (SB0030) to 'RECV execution request flag CH8' (SB0037) are on. • For the SLMPSND 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. • Correct the network number and station number/IP address of the target station of the dedicated instruction. • Check if the Ethernet cable is connected properly. • For the REMFR/REMTO/REMFRD/REMTOD instruction, increase 'REMFR/REMTO instruction resend count' (SW001A) or 'REMFR/REMTO instruction response wait timer time' (SW001B) at the request source and try again. • If the request destination is for another network, check if the CPU module serving as the relay station supports the routing settings, and take corrective actions. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D253H	A response timeout has occurred when the dedicated instruction was executed.	<When using the Simple Motion mode> • Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. • 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. • Execute the instruction again after increasing the number of resends at the request source of the dedicated instruction. • Execute the instruction again after lowering the transient transmission usage frequency. • 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. • For the RECV instruction, execute it again after correcting the own station storage channel in the control data. • For the RECV instruction, check that 'RECV execution request flag CH1' (SB0030) to 'RECV execution request flag CH8' (SB0037) are on. • For the SLMPSND 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. • Correct the network number and station number/IP address of the target station of the dedicated instruction. • Check if the Ethernet cable is connected properly. • For the REMFR/REMTO/REMFRD/REMTOD instruction, increase 'REMFR/REMTO instruction resend count' (SW001A) or 'REMFR/REMTO instruction response wait timer time' (SW001B) at the request source and try again. • If the request destination is for another network, check if the CPU module serving as the relay station supports the routing settings, and take corrective actions. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	— —
D254H	A dedicated instruction which the target station does not support was executed.	• Change the target station at the station that executed the SEND instruction. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	— —
D255H	The target station number of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the target station number in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	— —
D256H	The execution or error completion type of the dedicated instruction is incorrect.	• Execute the instruction again after correcting the execution or error completion type in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	— —
D257H	The request type of the REQ instruction is incorrect.	• Execute the instruction again after correcting the request type in the request data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	— —
D258H	The control station did not exist when the dedicated instruction was executed to the specified control station or current control station.	• Execute the instruction again after correcting the target station number in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	— —
D25AH	The dedicated instruction was executed with a channel in use specified.	• Retry the operation after a while. • Change the channels used by the own station or the target station storage channel in the control data.	— —
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.	• Execute the instruction again after correcting the transient data at the transient request source. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	— —

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D269H	The station type of the REMFR/REMTO/REMFRD/REMTOD/REMFRIP/REMFRDIP/REMTOIP/REMTODIP instruction target station is not a remote station.	• Set the station type of the REMFR/REMTO/REMFRD/REMTOD/REMFRIP/REMFRDIP/REMTOIP/REMTODIP instruction target station to a remote station. • Correct the network number and station number/IP address of the target station of the dedicated instruction.	—
D26AH	The target station of the REMFR/REMTO/REMFRD/REMTOD/REMFRIP/REMFRDIP/REMTOIP/REMTODIP instruction does not exist.	If the target station of the REMFR/REMTO/REMFRD/REMTOD/REMFRIP/REMFRDIP/REMTOIP/REMTODIP instruction is disconnected, execute the dedicated instruction again after return of the target station.	—
D273H	The request data size of transient transmission is incorrect.	• Correct the request command at the transient request source, and retry the operation. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D275H	Another dedicated instruction is in execution, and the executed instruction cannot be processed.	• Another dedicated instruction is in execution. Execute it again after a while. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D2D2H	The IP address/port No. of the target station is incorrect.	• Execute again after correcting the port No. of the target station in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D2D3H	Send processing of the transient transmission has failed.	• Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. • When the own station, target station, or relay station detected an error, identify the cause of the error and take action. • Execute the instruction again after correcting the target IP address of transient data. • If the access destination is a module with a different network No., correct the routing parameter setting.	—
D602H	Parameter error	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D605H	Parameter error	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D621H	Parameter error	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D628H	Parameter error (station type error)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the station type in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D629H	Parameter error (station No. range error)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the station No. in the setting data so it is within 1 to 120. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D641H	Parameter error (IP address error)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the IP address in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D642H	Parameter error (gateway address setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the gateway address setting in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D643H	Parameter error (communication cycle setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the communication cycle setting in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D644H	Parameter error (cyclic transmission time setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the cyclic transmission time in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D645H	Parameter error (transient transmission time setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the communication cycle setting or cyclic transmission time in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D646H	Parameter error (transmission path setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the transmission path setting in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D647H	Parameter error (time synchronization setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the time synchronization setting in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D649H	Parameter error (send timeslot setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the send timeslot setting in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D64AH	Parameter error (number of data link error detection)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the number of data link error detection in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D64BH	Parameter error (number of occupied stations)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the number of occupied stations in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D64DH	Parameter error (parameter automatic setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the parameter automatic setting in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D64EH	Parameter error (motion control station setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the motion control station setting in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D64FH	Parameter error (cyclic frame cycle setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the cyclic frame cycle setting in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D651H	Parameter error (number of modules)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the number of modules in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D652H	Parameter error (communication mode)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the communication mode in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
D655H	Network addresses of the master station and device stations are incorrect.	Correct the IP address setting of the master station or device 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.	• Execute the instruction again after pausing the transient transmission temporarily. • Execute the instruction again after lower the transient transmission usage frequency.	—
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	• Routing information to the destination network No. is not registered. • In transient transmission, the number of relays to other networks exceeded seven. • The communication path is being updated.	• Execute the instruction again after correcting the target network No. at the transient request source. • Execute the instruction again after correcting the communication path from the transient request source to the destination. • 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. • Change the system configuration so that the number of relay stations is seven or less. • Transient transmission cannot be performed while the communication path is being updated. Retry the operation.	—
D844H	Incorrect frame was received. • Unsupported pre-conversion protocol • Unsupported frame type • Application header variable part • Application header HDS • Application header RTP • Read command not requiring response	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.	• Correct the data at the station that started the online test, and retry the operation. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
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.	• 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. • Retry the operation after lowering the transient transmission usage frequency. • Check if "Routing Setting" of "CPU Parameter" is correctly set, and take action.	—
D906H	Transmission completion wait timeout has occurred in communication test.	• 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. • Execute the instruction again after lower the transient transmission usage frequency. • Check if "Routing Setting" of "CPU Parameter" is correctly set, and take action.	—
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.	• Check the network status using the CC-Link IE TSN/CC-Link IE Field diagnostics of the engineering tool, and take action. • If the number of device stations per network exceeds 120, reduce it to 120 or less.	—
D90CH	The communication destination specified for the communication test is incorrect.	• Correct "Target Station" of communication test, and retry the operation. • "Communication Test" cannot be executed for own station and relay sending station. Set "Target Station" to other than own station and relay transmission station. • 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).	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D90DH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
D912H	Transient transmission sending failed.	• Execute the instruction again after lower the transient transmission usage frequency. • Check if the industrial switch (CC-Link IE TSN certified) and the Ethernet cables are connected properly.	—
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.	• Correct the network No., station No., or IP address for the target station of the communication test. • 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. • 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.".	—
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.	—
DA1BH	A dedicated instruction which the target station does not support was executed.	• Change the target station at the station that executed the READ/SREAD/WRITE/SWRITE/SEND/REQ instruction. • Correct the network number and station number/IP address of the target station of the dedicated instruction.	—
DA1CH	The target station of the READ/SREAD/WRITE/SWRITE/SEND/REQ instruction does not exist.	If the target station of the READ/SREAD/WRITE/SWRITE/SEND/REQ instruction is disconnected, execute the dedicated instruction again after return of the target station.	—
DB00H	Station No.121 or later is specified.	Check station No.	—

4.6 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 159 Error Information)

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
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 1μs		A100H
			Communication Period Interval Setting (Do Not Set it in Units of 1μs)		A100H
			Communication Period Interval Setting (Set it in Units of 1μs)		A100H
			Cyclic Transmission Time		A100H
			Transient Transmission Time		A100H
		Multiple Cycle Setting	Normal-Speed		A108H
			Low-Speed		A108H

Item					Parameter No.
Basic Settings	Connection Device Information		CC-Link IE TSN Class Setting		A100H
			TSN HUB Setting		A100H
	Device Station Setting		Disconnection Detection Setting		A100H
	Safety Communication Setting		To Use of Not to Use the Safety Communication Setting		7100H
			Safety Communication Setting		A01BH
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
	Transient Transmission Group No.		Transient Transmission Group No.		A010H
	Communication Mode		Mode		A110H
	Parameter Name		Parameter Name		7310H, 7311H
	Dynamic Routing		Dynamic Routing		A110H
	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
	Interlink Transmission Settings		Interlink Transmission Settings		7500H

4.7 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 by clicking the [Event History] button in the [Error Information] tab in the "Module Diagnostics" window of the Motion module. (☞ Page 159 Error Information)

System

Event code	Overview	Cause
00100H	Link-up	The system was linked up by connecting a device (such as an external device).
00141H	CPU module time setting failure	Setting of the time to the CPU module failed.
00170H	Co-recording trigger sending	The co-recording trigger has been sent.
00171H	Co-recording trigger receiving	The co-recording trigger has been received.
00173H	Co-recording trigger sending/receiving	The co-recording trigger has been sent to the network.
00174H	Co-recording trigger sending/receiving	The co-recording trigger received from another station has been sent to the management CPU module.
00175H	Co-recording trigger sending/receiving	The co-recording trigger received from another station has been sent to the network.
00403H	Time synchronization completion	The time synchronization has completed.
00404H	Grandmaster selection (CC-Link IE TSN device)	The CC-Link IE TSN device was selected as the grandmaster.
00405H	Grandmaster selection (general-purpose device)	The general-purpose device was selected as the grandmaster.
00406H	Device station time synchronization completion	The device station time synchronization has completed.
00407H	Grandmaster selection (CC-Link IE TSN device)	The CC-Link IE TSN device was selected as the grandmaster.
00408H	Grandmaster selection (general-purpose device)	The general-purpose device was selected as the grandmaster.
00409H	Own station time synchronization completion	The own station time synchronization has completed.
00500H	Own station: Network entry	Own station enters the network.
00501H	Another station: Network entry	Another station enters the network.
00502H	Network entry in all stations	All stations enter the network.
0050AH	Connection of a tool that supports the CC-Link IE TSN	A tool that supports the CC-Link IE TSN is connected.
0050BH	Disconnection of a tool that supports the CC-Link IE TSN	A tool that supports the CC-Link IE TSN is disconnected.
00510H	Own station: Data link restart (cyclic transmission start)	Own station data link restarted.
00511H	Another station: Data link restart (cyclic transmission start)	Data link of another station restarted.
00512H	All stations data link normalization (all-station cyclic transmission start)	Data link returned to normal status at all stations.
00522H	ERR LED Control setting execution	"ERR LED Control" setting to device stations was executed.
00535H	Another station: Reserved station enable setting instruction execution	Reserved station enable setting was executed at another station.
00540H	Loopback resolution	Loopback execution status was resolved when using a ring topology (using the loopback function).
00542H	Own station: Receive frame error line status caution level	A receive frame error (line status: caution level) has occurred.
00800H	Link-down	The system was linked down by removing a device (such as an external device).
00906H	Alive check error	The alive status of an external device could not be checked.
00907H	Divided messages receive timeout error	• Sufficient data for the data length could not be received. • The remaining part of the divided message could not be received.
00908H	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.) • IP communication is highly loaded.
00909H	TCP specification port No. error	The port No. used in a connection already opened is set. (For TCP/IP)
0090AH	UDP specification port No. error	The port No. used in a connection already opened is set. (For UDP/IP)
00C00H	Own station: Disconnection from network	Own station was disconnected from the network.
00C01H	Another station: Disconnection from network	Another station was disconnected from the network.

Event code	Overview	Cause
00C02H	Abnormal access response of another station	• Abnormal response was returned from another station when accessing another station. • Abnormal response was returned to another station when accessed from another station.
00C10H	Own station: Data link stop (cyclic transmission stop)	Own station data link was stopped.
00C11H	Another station: Data link stop (cyclic transmission stop)	Data link of another station was stopped.
00C21H	Another station: Error occurrence	An error has occurred in another station.
00C23H	Loopback occurrence	Path switching has occurred when using a ring topology (using the loopback function).
00C24H	Another station: Receive frame error occurrence	A receive frame error has occurred at another station.
00C40H	Device station parameter automatic setting: Interruption	An abnormal response was received from the device station, and device station parameter automatic setting processing was interrupted. For details on device station response codes, refer to the manual for the device station used.
00C41H	Device station parameter automatic setting: Parameter update interruption	An abnormal response was received from the device station, and parameter update processing of device station parameter automatic setting was interrupted. For details on device station response codes, refer to the manual for the device station used.
00C42H	Device station parameter automatic setting: System error	An error occurred while the device station parameter automatic setting was executing.
00C43H	Device station parameter automatic setting: Transmission timeout	Transmission timed out while communicating with the device station parameter automatic setting.
00C44H	Device station parameter automatic setting: Receive timeout	The specified period of time expired without receiving while communicating with the device station parameter automatic setting.
00C46H	Device station parameter automatic setting: SLMP transmission error	An error occurred while transmitting SLMP for the device station parameter automatic setting.
00C47H	Device station parameter automatic setting: CPU module access failure	Access to the CPU module failed during device station parameter automatic setting.
00C48H	Device station parameter automatic setting: No target station parameter	The device station parameter file targeted during device station parameter automatic setting was not stored in the CPU module. Or the writing destination of the device station parameters differs from the setting of the memory card parameters.
00C50H	Time synchronization loss	The time difference between the time notified from the grandmaster and the time of the own station exceeded the allowable value.
00C51H	Time synchronization error	The time synchronization loss occurred more than a fixed number.
00C52H	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.
00C53H	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.
00C54H	Initialization failed	A communication error occurred in the initialization processing when control communications started.
00C55H	Message disposal	The request was discarded because there were too many requests to be processed.
00C56H	Response timeout	There was no response from the external device and timeout occurred.
00C57H	Message disposal	After response timeout, the response data from the external device was received.
00C58H	SLMP response frame disposal	The SLMP response frame was disposed of due to any of the following causes. • The request source of the received SLMP response frame is not clear. • The received SLMP response frame has already returned an error response according to the monitoring timeout. • The SLMP communication load is high so that the received SLMP response frame cannot be transferred.
00C59H	Specified port No. error	There was a request for a port No. not open from the external device.
00C5AH	Specification IP address error	The data was sent to a connected device while the "IP Address" setting of the device station in "Network Configuration Settings" under "Basic Settings" of the master station is incorrect.
00C5BH	Connection establishment failed	A connection could not be established in the open processing.
00C5CH	TCP connection timeout	The external device does not send an ACK response in the TCP/IP communications.
00C5DH	Send processing execution disabled	• The receive buffer or send buffer is not sufficient. • The window size of the external device is not sufficient.

Event code	Overview	Cause
00C5EH	UDP/IP send failed	Data was not sent correctly with UDP/IP due to either of the following causes. • An error occurs in the external device. • An error occurs in the industrial switch (CC-Link IE TSN certified) and Ethernet cable. • Congestion of packets on the line
00C5FH	TCP/IP send failed	Data was not sent correctly via TCP/IP due to either of following causes. • An error occurs in the external device. • An error occurs in the industrial switch (CC-Link IE TSN certified) and Ethernet cable. • Congestion of packets on the line
00C60H	IP address of the external device acquisition error	Target IP address could not be acquired from the network No. and station No.
00C61H	Time synchronization loss	The time difference between the time notified from the grandmaster and the time of the own station exceeded the allowable value.
00C62H	Time synchronization error	The time synchronization loss occurred more than a fixed number.
00C63H	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.
00C64H	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.
00C65H	Time synchronization receive processing failure	The receive processing for time synchronization failed.
00C70H	CANopen initialization failure	A communication error occurs in CANopen initialization processing.
00C71H	Initialization failed (parameter mismatch between the master station and the device station)	During initialization processing at the start of control communication, a parameter mismatch was detected between the master station and device stations.
00C72H	Maximum response time mismatch during time-managed polling	A mismatch was detected in the maximum response time during time-managed polling. Update the version of the engineering tool and the device stations to the latest version.
00C75H	Another station: Parameter error occurrence	A parameter error has occurred in another station.
00C80H	Device station that does not support CC-Link IE TSN Protocol version 2.0 detected	A device station that does not support CC-Link IE TSN Protocol version 2.0 was detected.
00C81H	CC-Link IE TSN Class mismatch	A mismatch was detected between the master station parameter and the CC-Link IE TSN Class of the device station.

Security

Event code	Overview	Cause
10200H	Remote password lock	The lock processing of the remote password was performed.
10201H	Remote password unlock successful	The unlock processing of the remote password was succeeded.
10202H	Remote password unlock failed	The unlock processing of the remote password has failed.
10300H	Access from IP restricted with IP filter setting	Accessed from IP address restricted with the IP filter setting.

Operation

Event code	Overview	Cause
20300H	SD memory card usable	An SD memory card became usable.
20301H	SD memory card forced stop	An SD memory card became removable (use prohibited) with the SD memory card usage forced stop function.
24100H	Own station: Parameter change/new parameter reception	Parameter was changed. Or new parameter was received at power-on.
24300H	Own station: Enabling remote device test function	The remote device test function was enabled.
24301H	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.
24302H	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.
24303H	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.
24304H	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.
24305H	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.
24F00H	Another station: CPU operating status change detection	Operating status of the CPU module on another station was changed.

4.8 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 (When Using the PLCopen Motion Control FB Mode)

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	←			Link register(LW)	0	Read, write
92160 to 94207	16800H to 16FFFH	←			Link relay(LB)		
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, 1245441	130100H, 130101H	←		Timeslot 0 information	Cycle start offset (ns unit)	0	Read
1245442	130102H	←			Cycle start offset (s unit)		
1245443	130103H	←			System area		
1245444, 1245445	130104H, 130105H	←			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, 1245697	130200H, 130201H	←		RX offset/size information*1	Station No. 0 RX offset	0	Read
1245698, 1245699	130202H, 130203H	←			Station No. 0 RX size	0	Read
⋮		←			⋮		
1246176, 1246177	1303E0H, 1303E1H	←			Station No. 120 RX offset	0	Read
1246178, 1246179	1303E2H, 1303E3H	←			Station No. 120 RX size	0	Read
1246180 to 1246719	1303E4H to 1305FFH	←			System area		
1246720, 1246721	130600H, 130601H	←		RY offset/size information*1	Station No. 0 RY offset	0	Read
1246722, 1246723	130602H, 130603H	←			Station No. 0 RY size	0	Read
⋮		←			⋮		
1247200, 1247201	1307E0H, 1307E1H	←			Station No. 120 RY offset	0	Read
1247202, 1247203	1307E2H, 1307E3H	←			Station No. 120 RY size	0	Read
1247204 to 1247743	1307E4H to 1309FFH	←			System area		

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P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1247744, 1247745	130A00H, 130A01H	←		RWw offset/ size information*1	Station No. 0 RWw offset	0	Read
1247746, 1247747	130A02H, 130A03H	←			Station No. 0 RWw size	0	Read
⋮		←			⋮		
1248224, 1248225	130BE0H, 130BE1H	←			Station No. 120 RWw offset	0	Read
1248226, 1248227	130BE2H, 130BE3H	←			Station No. 120 RWw size	0	Read
1248228 to 1248767	130BE4H to 130DFFH	←			System area		
1248768, 1248769	130E00H, 130E01H	←		RWr offset/ size information*1	Station No. 0 RWr offset	0	Read
1248770, 1248771	130E02H, 130E03H	←			Station No. 0 RWr size	0	Read
⋮		←			⋮		
1249248, 1249249	130FE0H, 130FE1H	←			Station No. 120 RWr offset	0	Read
1249250, 1249251	130FE2H, 130FE3H	←			Station No. 120 RWr size	0	Read
1249252 to 1249791	130FE4H to 1311FFH	←			System area		
1249792, 1249793	131200H, 131201H	←		LB offset/size information	Station No. 0 LB offset	0	Read
1249794, 1249795	131202H, 131203H	←			Station No. 0 LB size	0	Read
⋮		←			⋮		
1250272, 1250273	1313E0H, 1313E1H	←			Station No. 120 LB offset	0	Read
1250274, 1250275	1313E2H, 1313E3H	←			Station No. 120 LB size	0	Read
1250276 to 1250815	1313E4H to 1316FFH	←			System area		
1250816, 1250817	131600H, 131601H	←		LW offset/size information	Station No. 0 LW offset	0	Read
1250818, 1250819	131602H, 131603H	←			Station No. 0 LW size	0	Read
⋮		←			⋮		
1251296, 1251297	1317E0H, 1317E1H	←			Station No. 120 LW offset	0	Read
1251298, 1251299	1317E2H, 1317E3H	←			Station No. 120 LW size	0	Read
1251300 to 1251839	1317E4H to 1319FF	←			System area		
1251840 to 1252095	131A00H to 131AFFH	←		System area			
1252096	131B00H	←		Own station (network card) information	Manufacturer code	0	Read
1252097	131B01H	←			Model type	1	
1252098	131B02H	←			Model code (lower 2 bytes)	0	
1252099	131B03H	←			Model code (upper 2 bytes)	5000	
1252100	131B04H	←			Version	2	
1252101 to 1252103	131B05H to 131B07H	←			MAC address	(MAC address setting value)	

P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1252104	131B08H	←		Own station (controller) information	Controller information valid/invalid flag	0	Read
1252105	131B09H	←			Manufacturer code		
1252106	131B0AH	←			Model type		
1252107	131B0BH	←			Model code (lower 2 bytes)		
1252108	131B0CH	←			Model code (upper 2 bytes)		
1252109	131B0DH	←			Version		
1252110 to 1252119	131B0EH to 131B17H	←			Model name string		
1252120, 1252121	131B18H, 131B19H	←			Vendor-specific device information		
1252122 to 1252127	131B1AH to 131B1FH	←			System area		
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 1270015	133C10H to 1360FFH	←		System area			
1270016, 1270017	136100H, 136101H	←		Statistics of relay control part	Number of relay buffer overflow frames in timeslot 0 (PORT1→2)	0	Read
1270018 to 1270031	136102H to 13610FH	←			Number of relay buffer overflow frames in timeslot 1 to 7 (PORT1→2)	0	Read
1270032, 1270033	136110H, 136111H	←			Number of relay buffer overflow frames in timeslot 0 (PORT2→1)	0	Read
1270034 to 1270047	136112H to 13611FH	←			Number of relay buffer overflow frames in timeslot 1 to 7 (PORT2→1)	0	Read
1270048, 1270049	136120H, 136121H	←			Number of relay buffer overflow frames when timeslot 0 is invalid (PORT1→2)	0	Read
1270050 to 1270063	136122H to 13612FH	←			Number of relay buffer overflow frames when timeslot 1 to 7 is invalid (PORT1→2)	0	Read
1270064, 1270065	136130H, 136131H	←			Number of relay buffer overflow frames when timeslot 0 is invalid (PORT2→1)	0	Read
1270066 to 1270079	136132H to 13613FH	←			Number of relay buffer overflow frames when timeslot 1 to 7 is invalid (PORT2→1)	0	Read
1270080 to 1270271	136140H to 1361FFH	←		System area			
1270272, 1270273	136200H, 136201H	←		Statistics of receive control part (PORT1/ PORT2 common information)	Cyclic receive counter	0	Read
1270274, 1270275	136202H, 136203H	←			Cyclic receive frame counter	0	Read
1270276, 1270277	136204H, 136205H	←			Cyclic receive discard counter	0	Read

P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1270278, 1270279	136206H, 136207H	←		Statistics of judgement part of received frame/ES control part (PORT1 side information)	Non-cyclic receive counter	0	Read
1270280, 1270281	136208H, 136209H	←			Non-cyclic receive discard counter	0	Read
1270282, 1270283	13620AH, 13620BH	←			Number of detected short packets	0	Read
1270284, 1270285	13620CH, 13620DH	←			Number of detected long packets	0	Read
1270286, 1270287	13620EH, 13620FH	←			Number of FCS error frames	0	Read
1270288, 1270289	136210H, 136211H	←			Number of fragment error frames	0	Read
1270290, 1270291	136212H, 136213H	←			Minimum IFG frames detection counter	0	Read
1270292, 1270293	136214H, 136215H	←			SFD or lower received frame detection counter	0	Read
1270294, 1270295	136216H, 136217H	←			Received code error counter	0	Read
1270296, 1270297	136218H, 136219H	←			Received FalseCarrier error counter	0	Read
1270298, 1270299	13621AH, 13621BH	←			Received CarrierExtend error counter	0	Read
1270300, 1270301	13621CH, 13621DH	←		Statistics of judgement part of received frame/ES control part (PORT2 side information)	Non-cyclic receive counter	0	Read
1270302, 1270303	13621EH, 13621FH	←			Non-cyclic receive discard counter	0	Read
1270304, 1270305	136220H, 136221H	←			Number of detected short packets	0	Read
1270306, 1270307	136222H, 136223H	←			Number of detected long packets	0	Read
1270308, 1270309	136224H, 136225H	←			Number of FCS error frames	0	Read
1270310, 1270311	136226H, 136227H	←			Number of fragment error frames	0	Read
1270312, 1270313	136228H, 136229H	←			Minimum IFG frames detection counter	0	Read
1270314, 1270315	13622AH, 13622BH	←			SFD or lower received frame detection counter	0	Read
1270316, 1270317	13622CH, 13622DH	←			Received code error counter	0	Read
1270318, 1270319	13622EH, 13622FH	←			Received FalseCarrier error counter	0	Read
1270320, 1270321	136230H, 136231H	←			Received CarrierExtend error counter	0	Read
1270322, 1270323	136232H, 136233H	←		Statistics of judgement part of received frame (PORT1 side information)	Number of HEC error frames	0	Read
1270324, 1270325	136234H, 136235H	←			Number of DCS error frames	0	Read
1270326, 1270327	136236H, 136237H	←			Number of SDCRC error frames	0	Read
1270328, 1270329	136238H, 136239H	←			Number of detected jumbo frames	0	Read
1270330, 1270331	13623AH, 13623BH	←			Number of abnormal PDU length	0	Read
1270332, 1270333	13623CH, 13623DH	←			Number of LLDP frames	0	Read
1270334, 1270335	13623EH, 13623FH	←			Number of Sync frames	0	Read

P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1270336, 1270337	136240H, 136241H	←		Statistics of judgement part of received frame (PORT2 side information)	Number of HEC error frames	0	Read
1270338, 1270339	136242H, 136243H	←			Number of DCS error frames	0	Read
1270340, 1270341	136244H, 136245H	←			Number of SDCRC error frames	0	Read
1270342, 1270343	136246H, 136247H	←			Number of detected jumbo frames	0	Read
1270344, 1270345	136248H, 136249H	←			Number of abnormal PDU length	0	Read
1270346, 1270347	13624AH, 13624BH	←			Number of LLDP frames	0	Read
1270348, 1270349	13624CH, 13624DH	←			Number of Sync frames	0	Read
1270350, 1270351	13624EH, 13624FH	←		Other statistics	Number of link downs on PORT1 side	0	Read
1270352, 1270353	136250H, 136251H	←			Number of link downs on PORT2 side	0	Read
1270354, 1270355	136252H, 136253H	←			System area	0	Read
1270356 to 1275135	136254H to 1374FFH	←		System area			
1275136	137500H	←		Time distribution interval setting of the CPU module		0	Read, write
1275137 to 1275903	137501H to 1377FFH	←		System area			
1275904	137800H	←		Grandmaster information	Grandmaster	0	Read
1275905, 1275906	137801H, 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 timing	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	137E02H	←		Cyclic data send/receive assurance information	Multiple cycle setting (low speed)	0	Read
1277443	137E03H	←			Communication cycle intervals (calculation value)	0	Read
1277444	137E04H	←		Communication period setting value (protocol version 2.0)	Communication cycle intervals (calculation value)	0	Read
1277445	137E05H	←			Cyclic transmission time (calculation value)	0	Read
1277446	137E06H	←			Transient transmission time (calculation value)	0	Read
1277447 to 1277455	137E07H to 137E0FH	←		System area			

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P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1277456	137E10H	←		CC-Link IE TSN Communication Software information (1st module)	Manufacturer code	0	Read
1277457	137E11H	←			Model type	0	Read
1277458	137E12H	←			Model code (lower 2 bytes)	0	Read
1277459	137E13H	←			Model code (upper 2 bytes)	0	Read
1277460	137E14H	←			Model code of extension module	0	Read
1277461	137E15H	←			Version	0	Read
1277462 to 1277464	137E16H to 137E18H	←			MAC address	0	Read
1277465, 1277466	137E19H, 137E1AH	←			IP address (IPv4)	0	Read
1277467 to 1277474	137E1BH to 137E22H	←			IP address (IPv6)	0	Read
1277475 to 1277479	137E23H to 137E27H	←			System area		
1277480	137E28H	←		CC-Link IE TSN Communication Software information (2nd module)	Manufacturer code	0	Read
1277481	137E29H	←			Model type	0	Read
1277482	137E2AH	←			Model code (lower 2 bytes)	0	Read
1277483	137E2BH	←			Model code (upper 2 bytes)	0	Read
1277484	137E2CH	←			Model code of extension module	0	Read
1277485	137E2DH	←			Version	0	Read
1277486 to 1277488	137E2EH to 137E30H	←			MAC address	0	Read
1277489, 1277490	137E31H, 137E32H	←			IP address (IPv4)	0	Read
1277491 to 1277498	137E33H to 137E3AH	←			IP address (IPv6)	0	Read
1277499 to 1277503	137E3BH to 137E3FH	←			System area		
1277504 to 1277647	137E40H to 137ECFH	←		System area			
1277648, 1277649	137ED0H, 137ED1H	←		PDO information*1 (Multidrop number 0 of station No. 1)	Start offset of link device used by RPDO	0	Read
1277650, 1277651	137ED2H, 137ED3H	←			RPDO size	0	Read
1277652, 1277653	137ED4H, 137ED5H	←			Start offset of link device used by TPDO	0	Read
1277654, 1277655	137ED6H, 137ED7H	←			TPDO size	0	Read
1277656 to 1277703	137ED8H to 137F07H	←		⋮			
1277704, 1277705	137F08H, 137F09H	←		PDO information*1 (Multidrop number 7 of station No. 1)	Start offset of link device used by RPDO	0	Read
1277706, 1277707	137F0AH, 137F0BH	←			RPDO size	0	Read
1277708, 1277709	137F0CH, 137F0DH	←			Start offset of link device used by TPDO	0	Read
1277710, 1277711	137F0EH, 137F0FH	←			TPDO size	0	Read
1277712 to 1285263	137F10H to 139C8FH	←		⋮			
1285264, 1285265	139C90H, 139C91H	←		PDO information*1 (Multidrop number 0 of station No. 120)	Start offset of link device used by RPDO	0	Read
1285266, 1285267	139C92H, 139C93H	←			RPDO size	0	Read
1285268, 1285269	139C94H, 139C95H	←			Start offset of link device used by TPDO	0	Read
1285270, 1285271	139C96H, 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, 1285321	139CC8H, 139CC9H	←		PDO information*1 (Multidrop number 7 of station No. 120)	Start offset of link device used by RPDO	0	Read
1285322, 1285323	139CCAH, 139CCBH	←			RPDO size	0	Read
1285324, 1285325	139CCCH, 139CCDH	←			Start offset of link device used by TPDO	0	Read
1285326, 1285327	139CCEH, 139CCFH	←			TPDO size	0	Read
1285328 to 1294015	139CD0H to 13BEBFH	←		System area			
1294016	13BEC0H	←		Protocol information	Protocol operating status	0	Read
1294017 to 1294031	13BEC1H to 13BECFH	←			System area		
1294032 to 1294047	13BED0H to 13BEDFH	←		System area			
1294048	13BEE0H	←		Timeslot information for device station cyclic transmission	Timeslot for station number 1 cyclic transmission	0	Read
1294049 to 1294166	13BEE1H to 13BF56H	←			⋮		
1294167	13BF57H	←			Timeslot for station number 120 cyclic transmission	0	Read
1294168 to 1294303	13BF58H to 13BFDFH	←			System area		
1294304	13BFE0H	←		Device station cyclic transmission information	CC-Link IE TSN Class A (low speed) multiple	0	Read
1294305 to 1294319	13BFE1H to 13BFEFH	←			System area		
1294320 to 1294367	13BFF0H to 13C01FH	←		System area			
1294368	13C020H	←		ERR LED control	Send request	0	Read, write
1294369	13C021H	←			Send status	0	Read
1294370 to 1294383	13C022H to 13C02FH	←			System area		
1294384 to 1294399	13C030H to 13C03FH	←			Data link faulty station specification	0	Read, write
1294400 to 2097151	13C040H to 1FFFFFH	←		System area			
2097152 to 2097155	200000H to 200003H	4194304 to 4194307	400000H to 400003H	System area			

P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
2097156, 2097157	200004H, 200005H	4194308, 4194309	400004H, 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, 2097167	20000EH, 20000FH	4194318, 4194319	40000EH, 40000FH		Subnet mask	0	Read
2097168, 2097169	200010H, 200011H	4194320, 4194321	400010H, 400011H		System area		
2097170, 2097171	200012H, 200013H	4194322, 4194323	400012H, 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 2097251	20002BH to 200063H	4194347 to 4194403	40002BH to 400063H	System area			
2097252 to 2097379	200064H to 2000E3H	4194404 to 4194531	400064H to 4000E3H	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		

P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
2098152, 2098153	2003E8H, 2003E9H	4195304, 4195305	4003E8H, 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
2098160 to 2102151	2003F0H to 201387H	4195312 to 4199303	4003F0H to 401387H	System area			
2102152, 2102153	201388H, 201389H	4199304, 4199305	401388H, 401389H	Status for each protocol (IP packet)	Received packet total count	0	Read
2102154, 2102155	20138AH, 20138BH	4199306, 4199307	40138AH, 40138BH		Received packet checksum error discard count	0	Read
2102156, 2102157	20138CH, 20138DH	4199308, 4199309	40138CH, 40138DH		Sent packet total count	0	Read
2102158 to 2012173	20138EH to 20139DH	4199310 to 4199325	40138EH to 40139DH		System area		
2102174, 2102175	20139EH, 20139FH	4199326, 4199327	40139EH, 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		
2102192, 2102193	2013B0H, 2013B1H	4199344, 4199345	4013B0H, 4013B1H	Status for each protocol (ICMP packet)	Received packet total count	0	Read
2102194, 2102195	2013B2H, 2013B3H	4199346, 4199347	4013B2H, 4013B3H		Received packet checksum error discard count	0	Read
2102196, 2102197	2013B4H, 2013B5H	4199348, 4199349	4013B4H, 4013B5H		Sent packet total count	0	Read
2102198, 2102199	2013B6H, 2013B7H	4199350, 4199351	4013B6H, 4013B7H		Received echo request total count	0	Read
2102200, 2102201	2013B8H, 2013B9H	4199352, 4199353	4013B8H, 4013B9H		Sent echo reply total count	0	Read
2102202, 2102203	2013BAH, 2013BBH	4199354, 4199355	4013BAH, 4013BBH		Sent echo request total count	0	Read
2102204, 2102205	2013BCH, 2013BDH	4199356, 4199357	4013BCH, 4013BDH		Received echo reply total count	0	Read
2102206 to 2102231	2013BEH to 2013D7H	4199358 to 4199383	4013BEH to 4013D7H		System area		

A

P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
2102232, 2102233	2013D8H, 2013D9H	4199384, 4199385	4013D8H, 4013D9H	Status for each protocol (TCP packet)	Received packet total count	0	Read
2102234, 2102235	2013DAH, 2013DBH	4199386, 4199387	4013DAH, 4013DBH		Received packet checksum error discard count	0	Read
2102236, 2102237	2013DCH, 2013DDH	4199388, 4199389	4013DCH, 4013DDH		Sent packet total count	0	Read
2102238 to 2102271	2013DEH to 2013FFH	4199390 to 4199423	4013DEH to 4013FFH		System area		
2102272, 2102273	201400H, 201401H	4199424, 4199425	401400H, 401401H	Status for each protocol (UDP packet)	Received packet total count	0	Read
2102274, 2102275	201402H, 201403H	4199426, 4199427	401402H, 401403H		Received packet checksum error discard count	0	Read
2102276, 2102277	201404H, 201405H	4199428, 4199429	401404H, 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 (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	FFFFF FFFFF 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	FFFFF FFFFF FFH	Read
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			

P1		P2		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
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, 2108804	202D83H, 202D84H	4205955, 4205956	402D83H, 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 3FFFFFH	4259840 to 6291455	410000H to 5FFFFFH	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			
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 FFFFFFH	←		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, LB, LW, 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 236 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 236 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 236 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 237 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 register (LW) (Un\G75776 to Un\G92159)

The LW value is stored. The start number and number of points of LW for each station number can be checked by the LW offset/size information (Un\G1250816 to Un\G1251299). (☞ Page 237 LW offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G75776	LW0															
Un\G75777	LW1															
⋮																
Un\G92159	LW3FFF															

■Link register (LB) (Un\G92160 to Un\G94207)

The LB value is stored. The start number and number of points of LB for each station number can be checked by the LB offset/size information (Un\G1249792 to Un\G1250275). (☞ Page 237 LB offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G92160	LBF	LBE	LBD	LBC	LBB	LBA	LB9	LB8	LB7	LB6	LB5	LB4	LB3	LB2	LB1	LB0
Un\G92161	LB1F	LB1E	LB1D	LB1C	LB1B	LB1A	LB19	LB18	LB17	LB16	LB15	LB14	LB13	LB12	LB11	LB10
⋮																
Un\G94207	LB7FFF	LB7FFE	LB7FFD	LB7FFC	LB7FFB	LB7FFA	LB7FF9	LB7FF8	LB7FF7	LB7FF6	LB7FF5	LB7FF4	LB7FF3	LB7FF2	LB7FF1	LB7FF0

■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	SB1FF	SB1FE	SB1FD	SB1FC	SB1FB	SB1FA	SB1F9	SB1F8	SB1F7	SB1F6	SB1F5	SB1F4	SB1F3	SB1F2	SB1F1	SB1F0

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, 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, 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, Un\G1245697	Station No. 0 offset
Un\G1245698, Un\G1245699	Station No. 0 size (word unit)
Un\G1245700, Un\G1245701	Station No. 1 offset
Un\G1245702, Un\G1245703	Station No. 1 size (word unit)
⋮	
Un\G1246176, Un\G1246177	Station No. 120 offset
Un\G1246178, 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 + (Station number) × 4
- Buffer memory address (size) = 1245698 + (Station number) × 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, Un\G1246721	Station No. 0 offset
Un\G1246722, Un\G1246723	Station No. 0 size (word unit)
Un\G1246724, Un\G1246725	Station No. 1 offset
Un\G1246726, Un\G1246727	Station No. 1 size (word unit)
⋮	
Un\G1247200, Un\G1247201	Station No. 120 offset
Un\G1247202, 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 + (Station number) × 4
- Buffer memory address (size) = 1246722 + (Station number) × 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, Un\G1247745	Station No. 0 offset
Un\G1247746, Un\G1247747	Station No. 0 size (word unit)
Un\G1247748, Un\G1247749	Station No. 1 offset
Un\G1247750, Un\G1247751	Station No. 1 size (word unit)
⋮	
Un\G1248224, Un\G1248225	Station No. 120 offset
Un\G1248226, 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 + (Station number) × 4
- Buffer memory address (size) = 1247746 + (Station number) × 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, Un\G1248769	Station No. 0 offset
Un\G1248770, Un\G1248771	Station No. 0 size (word unit)
Un\G1248772, Un\G1248773	Station No. 1 offset
Un\G1248774, Un\G1248775	Station No. 1 size (word unit)
⋮	
Un\G1249248, Un\G1249249	Station No. 120 offset
Un\G1249250, 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 + (Station number) × 4
- Buffer memory address (size) = 1248770 + (Station number) × 4

LB offset/size information

■LB offset/size information (Un\G1249792 to Un\G1250275)

The start number and number of points of LB for each station number are stored.

Address	Description
Un\G1249792, Un\G1249793	Station No.0 offset
Un\G1249794, Un\G1249795	Station No.0 size (in units of words)
Un\G1249796, Un\G1249797	Station No.1 offset
Un\G1249798, Un\G1249799	Station No.1 size (in units of words)
⋮	
Un\G1250272, Un\G1250273	Station No.120 offset
Un\G1250274, Un\G1250275	Station No.120 size (in units of words)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset) = 1249792 + (station number) × 4
- Buffer memory address (size) = 1249794 + (station number) × 4

LW offset/size information

■LW offset/size information (Un\G1250816 to Un\G1251299)

The start number and number of points of LW for each station number are stored.

Address	Description
Un\G1250816, Un\G1250817	Station No.0 offset
Un\G1250818, Un\G1250819	Station No.0 size (in units of words)
Un\G1250820, Un\G1250821	Station No.1 offset
Un\G1250822, Un\G1250823	Station No.1 size (in units of words)
⋮	
Un\G1251296, Un\G1251297	Station No.120 offset
Un\G1251298, Un\G1251299	Station No.120 size (in units of words)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset) = 1250816 + (station number) × 4
- Buffer memory address (size) = 1250818 + (station number) × 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.) (Updated even if set as an error invalid station.) (Updated even if set as a reserved station.)
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, 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	Not used	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225
Un\G1260559	Not used															

The numbers in the table indicate network Nos.

Statistics of relay control part

■Number of relay buffer overflow frames in timeslot 0 (PORT1→2) (Un\G1270016, Un\G1270017)

Information on the number of frames that have overflowed when they are stored in the relay buffer for timeslot 0 is stored.

■Number of relay buffer overflow frames in timeslot 1 to 7 (PORT1→2) (Un\G1270018 to Un\G1270031)

Information on the number of frames that have overflowed when they are stored in the relay buffer for timeslot 1 to 7 is stored.

■Number of relay buffer overflow frames in timeslot 0 (PORT2→1) (Un\G1270032, Un\G1270033)

Information on the number of frames that have overflowed when they are stored in the relay buffer for timeslot 0 is stored.

■Number of relay buffer overflow frames in timeslot 1 to 7 (PORT2→1) (Un\G1270034 to Un\G1270047)

Information on the number of frames that have overflowed when they are stored in the relay buffer for timeslot 1 to 7 is stored.

■Number of relay buffer overflow frames when timeslot 0 is invalid (PORT1→2) (Un\G1270048, Un\G1270049)

Information on the number of frames that have overflowed when they are stored in the relay buffer when timeslot 0 is invalid.

■Number of relay buffer overflow frames when timeslot 1 to 7 is invalid (PORT1→2) (Un\G1270050 to Un\G1270063)

Information on the number of frames that have overflowed when they are stored in the relay buffer when timeslot 1 to 7 is invalid.

■Number of relay buffer overflow frames when timeslot 0 is invalid (PORT2→1) (Un\G1270064, Un\G1270065)

Information on the number of frames that have overflowed when they are stored in the relay buffer when timeslot 0 is invalid.

■Number of relay buffer overflow frames when timeslot 1 to 7 is invalid (PORT2→1) (Un\G1270066 to Un\G1270079)

Information on the number of frames that have overflowed when they are stored in the relay buffer when timeslot 1 to 7 is invalid.

A

Statistics of receive control part (PORT1/PORT2 common information)

■Cyclic receive counter (Un\G1270272, Un\G1270273)

The number of sub payloads of CC-Link IE TSN cyclic frames that have been received successfully is stored.

The target frame is as follows.

- Cyclic Ms/M/Ss/S frame

■Cyclic receive frame counter (Un\G1270274 to Un\G1270275)

The number of CC-Link IE TSN cyclic frames that have been received successfully is stored.

The target frame is as follows.

- Cyclic Ms/M/Ss/S frame

■Cyclic receive discard counter (Un\G1270276, Un\G1270277)

The number of the discarded sub payloads of received CC-Link IE TSN cyclic frames is stored.

Statistics of judgement part of received frame/ES control part (PORT1 side information)

■Non-cyclic receive counter (Un\G1270278, Un\G1270279)

The number of CC-Link IE TSN non-cyclic frames that have been received successfully is stored.
The target frames are other than the following frames.

- Cyclic Ms/M/Ss/S frame
- Encapsulated frame
- CC-Link IEF/IEC frames

■Non-cyclic receive discard counter (Un\G1270280, Un\G1270281)

The number of frames from which the received CC-Link IE TSN non-cyclic frames have been discarded is stored.

■Number of short packets detected (Un\G1270282, Un\G1270283)

The number of frames whose size is less than 64 bytes from the target MAC address in the Ethernet header of all received frames is stored.

■Number of long packets detected (Un\G1270284, Un\G1270285)

The number of frames whose size is greater than 16384 bytes from the target MAC address in the Ethernet header of all received frames is stored.

■Number of FCS error frames (Un\G1270286, Un\G1270287)

The number of FCS errors (which occur when FCS, the error-checking CRC for the entire Ethernet frame, is invalid) in all received frames is stored.

■Number of fragment error frames (Un\G1270288, Un\G1270289)

The number of frames in which both short packets and FCS errors occur is stored.

■Minimum IFG frames detection counter (Un\G1270290, Un\G1270291)

The number of times a frame is detected within the minimum IFG (InterFrame Gap) is stored.

■SFD or lower received frame detection counter (Un\G1270292, Un\G1270293)

The number of times a received frame is terminated in the field up to SFD (Start Frame Delimiter) and cannot be recognized as a valid frame is stored.

■Received code error counter (Un\G1270294, Un\G1270295)

The number of times an error is detected between MAC and PHY (RGMII) is stored.
Even if multiple errors are detected during continuous reception, the error is counted once.

■Received FalseCarrier error counter (Un\G1270296, Un\G1270297)

The number of times the error False Carrier occurs during non-reception between MAC and PHY (RGMII) is stored.
Even if multiple False Carriers occur during non-reception, the error is counted once.

■Received CarrierExtend error counter (Un\G1270298, Un\G1270299)

The number of times the error Carrier Extend occurs during non-reception between MAC and PHY (RGMII) is stored.
Even if multiple Carrier Extend occur during non-reception, the error is counted once.

Statistics of judgement part of received frame/ES control part (PORT2 side information)

■Non-cyclic receive counter (Un\G1270300, Un\G1270301)

The number of CC-Link IE TSN non-cyclic frames that have been received successfully is stored.
The target frames are other than the following frames.

- Cyclic Ms/M/Ss/S frame
- Encapsulated frame
- CC-Link IEF/IEC frames

■Non-cyclic receive discard counter (Un\G1270302, Un\G1270303)

The number of frames from which the received CC-Link IE TSN non-cyclic frames have been discarded is stored.

■Number of short packets detected (Un\G1270304, Un\G1270305)

The number of frames whose size is less than 64 bytes from the target MAC address in the Ethernet header of all received frames is stored.

■Number of long packets detected (Un\G1270306, Un\G1270307)

The number of frames whose size is greater than 16384 bytes from the target MAC address in the Ethernet header of all received frames is stored.

■Number of FCS error frames (Un\G1270308, Un\G1270309)

The number of FCS errors (which occur when FCS, the error-checking CRC for the entire Ethernet frame, is invalid) in all received frames is stored.

■Number of fragment error frames (Un\G1270310, Un\G1270311)

The number of frames in which both short packets and FCS errors occur is stored.

■Minimum IFG frames detection counter (Un\G1270312, Un\G1270313)

The number of times a frame is detected within the minimum IFG (InterFrame Gap) is stored.

■SFD or lower received frame detection counter (Un\G1270314, Un\G1270315)

The number of times a received frame is terminated in the field up to SFD (Start Frame Delimiter) and cannot be recognized as a valid frame is stored.

■Received code error counter (Un\G1270316, Un\G1270317)

The number of times an error is detected between MAC and PHY (RGMII) is stored.
Even if multiple errors are detected during continuous reception, the error is counted once.

■Received FalseCarrier error counter (Un\G1270318, Un\G1270319)

The number of times the error False Carrier occurs during non-reception between MAC and PHY (RGMII) is stored.
Even if multiple False Carriers occur during non-reception, the error is counted once.

■Received CarrierExtend error counter (Un\G1270320, Un\G1270321)

The number of times the error Carrier Extend occurs during non-reception between MAC and PHY (RGMII) is stored.
Even if multiple Carrier Extend occur during non-reception, the error is counted once.

Statistics of judgement part of received frame (PORT1 side information)

■Number of HEC error frames (Un\G1270322, Un\G1270323)

The number of HEC errors in received CC-Link IE TSN frames/CC-Link IE frames is stored.

■Number of DCS error frames (Un\G1270324, Un\G1270325)

The number of DCS errors (which occur when DCS, the error-checking CRC for CC-Link IE Header, is invalid) in the received CC-Link IE TSN frames is stored.

■Number of SDCRC error frames (Un\G1270326, Un\G1270327)

The number of SDCRC errors (which occur when SDCRC (sub payload checksum) of the data part is invalid) in the received CC-Link IE TSN frame is stored.

■Number of jumbo frames detected (Un\G1270328, Un\G1270329)

The number of frames whose size is 2001 bytes or greater from the target MAC address in the Ethernet header of all received frames is stored.

■Number of abnormal PDU length (Un\G1270330, Un\G1270331)

The number of abnormal PDU length in the received CC-Link IE TSN cyclic frames is stored.

■Number of LLDP frames (Un\G1270332, Un\G1270333)

The number of received LLDP frames is stored.

■Number of Sync frames (Un\G1270334, Un\G1270335)

The number of Sync frames of received IEEE802.1AS/IEEE1588 frames is stored.

Statistics of judgement part of received frame (PORT2 side information)

■Number of HEC error frames (Un\G1270336, Un\G1270337)

The number of HEC errors in received CC-Link IE TSN frames/CC-Link IE frames is stored.

■Number of DCS error frames (Un\G1270338, Un\G1270339)

The number of DCS errors (which occur when DCS, the error-checking CRC for CC-Link IE Header, is invalid) in the received CC-Link IE TSN frames is stored.

■Number of SDCRC error frames (Un\G1270340, Un\G1270341)

The number of SDCRC errors (which occur when SDCRC (sub payload checksum) of the data part is invalid) in the received CC-Link IE TSN frame is stored.

■Number of jumbo frames detected (Un\G1270342, Un\G1270343)

The number of frames whose size is 2001 bytes or greater from the target MAC address in the Ethernet header of all received frames is stored.

■Number of abnormal PDU length (Un\G1270344, Un\G1270345)

The number of abnormal PDU length in the received CC-Link IE TSN cyclic frames is stored.

■Number of LLDP frames (Un\G1270346, Un\G1270347)

The number of received LLDP frames is stored.

■Number of Sync frames (Un\G1270348, Un\G1270349)

The number of Sync frames of received IEEE802.1AS/IEEE1588 frames is stored.

Other statistics

■Number of link downs on PORT1 side (Un\G1270350, Un\G1270351)

The number of times a link down has occurred on the PORT1 side is stored.

■Number of link downs on PORT2 side (Un\G1270352, Un\G1270353)

The number of times a link down has occurred on the PORT2 side is stored.

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 device 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 FFFEH: (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 timing

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

Cyclic data send/receive assurance information

■Multiple cycle setting (low speed) (Un\G1277442)

The setting value of the multiple cycle setting (low speed) that ensures the cyclic data communications (send/receive) is stored.

This value is stored when a device station exists for which, under "Basic Settings", "CC-Link IE TSN Class Setting" in "Connection Device Information" is "CC-Link IE TSN Class A" and "Communication Period Setting" is "Low-Speed".

- 0: Calculation not performed
- 16, 32, 64, 128: Low speed cycle for basic cycle

■Communication cycle interval (calculation value) (Un\G1277443)

The setting value of the communication cycle interval that ensures the cyclic data communications (send/receive) is stored.

This value is stored when a device station exists for which, under "Basic Settings", "CC-Link IE TSN Class Setting" in "Connection Device Information" is "CC-Link IE TSN Class A" and "Communication Period Setting" is "Low-Speed".

- 0: Calculation not performed
- 125 to 10000: Communication cycle interval (unit: μs)

Communication period setting value (protocol version 2.0)

■Communication cycle interval (calculation value) (Un\G1277444)

Stores the communication cycle interval of "CC-Link IE TSN protocol version 2.0" that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

- 125 or greater: Communication cycle intervals (unit: μs)

■Cyclic transmission time (calculation value) (Un\G1277445)

Stores the communication cycle interval of "CC-Link IE TSN protocol version 2.0" that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

- 1 or greater: Cyclic transmission time (unit: μs)

■Transient transmission time (calculation value) (Un\G1277446)

Stores the communication cycle interval of "CC-Link IE TSN protocol version 2.0" that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

- 1 or greater: Transient transmission time (unit: μs)

CC-Link IE TSN Communication Software information

Information related to the CC-Link IE TSN Communication Software is stored.

■CC-Link IE TSN Communication Software information (1st module) (Un\G1277456 to Un\G1277479)

Address	Name	Description
Un\G1277456	Manufacturer code	Information of the CC-Link IE TSN Communication Software in the 1st module is stored.
Un\G1277457	Model type	
Un\G1277458	Model code (lower 2 bytes)	
Un\G1277459	Model code (upper 2 bytes)	
Un\G1277460	Model code of extension module	
Un\G1277461	Version	
Un\G1277462 to Un\G1277464	MAC address	
Un\G1277465, Un\G1277466	IP address (IPv4)	
Un\G1277467 to Un\G1277474	IP address (IPv6)	
Un\G1277475 to Un\G1277479	System area	—

■CC-Link IE TSN Communication Software information (2nd module) (Un\G1277480 to Un\G1277503)

Address	Name	Description
Un\G1277480	Manufacturer code	Information of the CC-Link IE TSN Communication Software in the 2nd module is stored.
Un\G1277481	Model type	
Un\G1277482	Model code (lower 2 bytes)	
Un\G1277483	Model code (upper 2 bytes)	
Un\G1277484	Model code of extension module	
Un\G1277485	Version	
Un\G1277486 to Un\G1277488	MAC address	
Un\G1277489, Un\G1277490	IP address (IPv4)	
Un\G1277491 to Un\G1277498	IP address (IPv6)	
Un\G1277499 to Un\G1277503	System area	—

PDO information

■PDO information (Un\G1277648 to Un\G1293967)

Address	Name		Description
Un\G1277648, Un\G1277649	Multidrop number 0 of station No. 1	Start offset of link device used by RPDO	The start offset of link device used by RPDO is stored. (Master station: RWw)
Un\G1277650, Un\G1277651		RPDO size	The RPDO size is stored in word units.
Un\G1277652, Un\G1277653		Start offset of link device used by TPDO	The start offset of link device used by TPDO is stored. (Master station: RWr)
Un\G1277654, Un\G1277655		TPDO size	The TPDO size is stored in word units.
⋮			
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		—

Protocol information

■Protocol information (Un\G1294016 to Un\G1294031)

Address	Name	Description
Un\G1294016	Protocol operating status	Stores the operating status of the protocol. 0: Operating protocol not determined or CC-Link IE TSN Class settings set to CC-Link IE TSN Class B only 1: Operating with the protocol version 1.0 2: Operating with the protocol version 2.0
Un\G1294017 to Un\G1294031	System area	—

Timeslot information for device station cyclic transmission

■Timeslot information for device station cyclic transmission (Un\G1294048 to Un\G1294167)

Address	Name	Description
Un\G1294048	Timeslot for station number 1 cyclic transmission	Stores the Timeslot for cyclic transmission of station number 1. 0: Undetermined 1: Timeslot 1 3: Timeslot 3 4: Timeslot 4 5: Timeslot 5 6: Timeslot 6
⋮		
Un\G1294167	Timeslot for station number 120 cyclic transmission	Stores the Timeslot for cyclic transmission of station number 120. 0: Undetermined 1: Timeslot 1 3: Timeslot 3 4: Timeslot 4 5: Timeslot 5 6: Timeslot 6

Device station cyclic transmission information

■CC-Link IE TSN Class A (low speed) multiple (Un\G1294304)

Stores the multiple n used to calculate the transmission delay time of a CC-Link IE TSN Class A device station for which "Communication Period Setting" is set to "Low-Speed".

- 0: There is no device station on the network configuration with CC-Link IE TSN Class A and "Communication Period Setting" set to "Low-Speed"
- 1 or greater: n value[*1]

*1 When 'Protocol operating status' (Un\G1294016) is '1: Operating with the protocol version 1.0', it is set to 1.

ERR LED control

■Send request (Un\G1294368)

A send request is issued to a module.

- 0: Do not send
- 1: Send (enabled at startup)

■Send status (Un\G1294369)

The send status of a module is stored.

- 0: Not sent
- 1: Sending
- 2: Send completed

When this status is "2: Send completed" and Send request (Un\G1294368) is changed from "1: Send" to "0: Do not send", "0: Not sent" is stored.

■Data link faulty station specification (Un\G1294384 to Un\G1294399)

This function prevents the ERR LEDs of other stations from flashing when a data link error occurs at the specified station.

- 0: Not specified
- 1: Specified

(Default: 0 for all stations)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1294384	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Un\G1294385	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Un\G1294386	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
Un\G1294387	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
Un\G1294388	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
Un\G1294389	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
Un\G1294390	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
Un\G1294391	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113
Un\G1294392 to Un\G1294399	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Each number in the table represents a station number. — is fixed to 0.

A

Own node setting status storage area

■Own node IP address (Un\G2097156, Un\G2097157)

The setting values of the IP address are stored.

Range: 1H to DFFFFFFEH

■Subnet mask (Un\G2097166, Un\G2097167)

The setting values of the subnet mask are stored.

Range: 1H to FFFFFFFFH

0: No setting

■Default gateway IP address (Un\G2097170, 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, Un\G2102153, Un\G4199304, Un\G4199305)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received packet checksum error discard count (Un\G2102154, Un\G2102155, Un\G4199306, Un\G4199307)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent packet total count (Un\G2102156, Un\G2102157, Un\G4199308, Un\G4199309)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Simultaneous transmission error detection count (receive buffer full count) (Un\G2102174, Un\G2102175, Un\G4199326, 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, Un\G2102193, Un\G4199344, Un\G4199345)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received packet checksum error discard count (Un\G2102194, Un\G2102195, Un\G4199346, Un\G4199347)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent packet total count (Un\G2102196, Un\G2102197, Un\G4199348, Un\G4199349)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received echo request total count (Un\G2102198, Un\G2102199, Un\G4199350, Un\G4199351)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent echo reply total count (Un\G2102200, Un\G2102201, Un\G4199352, Un\G4199353)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent echo request total count (Un\G2102202, Un\G2102203, Un\G4199354, Un\G4199355)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received echo reply total count (Un\G2102204, Un\G2102205, Un\G4199356, Un\G4199357)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

Status for each protocol (TCP packet)

■Received packet total count (Un\G2102232, Un\G2102233, Un\G4199384, Un\G4199385)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received packet checksum error discard count (Un\G2102234, Un\G2102235, Un\G4199386, Un\G4199387)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent packet total count (Un\G2102236, Un\G2102237, Un\G4199388, Un\G4199389)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

Status for each protocol (UDP packet)

■Received packet total count (Un\G2102272, Un\G2102273, Un\G4199424, Un\G4199425)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received packet checksum error discard count (Un\G2102274, Un\G2102275, Un\G4199426, Un\G4199427)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent packet total count (Un\G2102276, Un\G2102277, Un\G4199428, 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 (connection information area)

■Communication mode (Un\G2102343, Un\G4199495)

- 0: Half-duplex/not connected
- 1: Full-duplex

■Connection status (Un\G2102344, Un\G4199496)

- 0: Not connected/disconnected
- 1: Connected

■Communication speed (Un\G2102345, Un\G4199497)

- 0: Not connected
- 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.

- 0: Receive buffer not full
- 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 (When Using the Simple Motion Mode)

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	186A00H to 1949FFH	System area			
1657344 to 1658367	194A00H to 194DFFH	Link device area	Remote input (RX)	0	Read
1658368 to 1659391	194E00H to 1951FFH		Remote output (RY)		Read, write
1659392 to 1667583	195200H to 1971FFH		Remote register (RWw)		
1667584 to 1675775	197200H to 1991FFH		Remote register (RWr)		Read
1675776 to 1692159	199200H to 19D1FFH		Link register(LW)	0	Read, write
1692160 to 1694207	19D200H to 19D9FFH		Link relay(LB)	0	Read, write
1694208 to 1694463	19DA00H to 19DAFFH		Link special relay (SB)	0	Read, write
1694464 to 1698559	19DB00H to 19EAFFH		Link special register (SW)		Read, write
1698560 to 2845439	19EB00H to 2B6AFFH	System area			
2845440, 2845441	2B6B00H, 2B6B01H	Timeslot 0 information	Cycle start offset (ns unit)	0	Read
2845442	2B6B02H		Cycle start offset (s unit)		
2845443	2B6B03H		System area		
2845444, 2845445	2B6B04H, 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	Same as Timeslot 0 information	0	Read
2845568 to 2845695	2B6B80H to 2B6BFFH	System area			
2845696, 2845697	2B6C00H, 2B6C01H	RX offset/size information*1	Station No. 0 RX offset	0	Read
2845698, 2845699	2B6C02H, 2B6C03H		Station No. 0 RX size	0	Read
⋮			⋮		
2846176, 2846177	2B6DE0H, 2B6DE1H		Station No. 120 RX offset	0	Read
2846178, 2846179	2B6DE2H, 2B6DE3H		Station No. 120 RX size	0	Read
2846180 to 2846719	2B6DE4H to 2B6FFFH		System area		
2846720, 2846721	2B7000H, 2B7001H	RY offset/size information*1	Station No. 0 RY offset	0	Read
2846722, 2846723	2B7002H, 2B7003H		Station No. 0 RY size	0	Read
⋮			⋮		
2847200, 2847201	2B71E0H, 2B71E1H		Station No. 120 RY offset	0	Read
2847202, 2847203	2B71E2H, 2B71E3H		Station No. 120 RY size	0	Read
2847204 to 2847743	2B71E4H to 2B73FFH		System area		
2847744, 2847745	2B7400H, 2B7401H	RWw offset/size information*1	Station No. 0 RWw offset	0	Read
2847746, 2847747	2B7402H, 2B7403H		Station No. 0 RWw size	0	Read
⋮			⋮		
2848224, 2848225	2B75E0H, 2B75E1H		Station No. 120 RWw offset	0	Read
2848226, 2848227	2B75E2H, 2B75E3H		Station No. 120 RWw size	0	Read
2848228 to 2848767	2B75E4H to 2B77FFH		System area		
2848768, 2848769	2B7800H, 2B7801H	RWr offset/size information*1	Station No. 0 RWr offset	0	Read
2848770, 2848771	2B7802H, 2B7803H		Station No. 0 RWr size	0	Read
⋮			⋮		
2849248, 2849249	2B79E0H, 2B79E1H		Station No. 120 RWr offset	0	Read
2849250, 2849251	2B79E2H, 2B79E3H		Station No. 120 RWr size	0	Read
2849252 to 2849791	2B79E4H to 2B7BFFH		System area		

P1		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)				
2849792, 2849793	2B1200H, 2B1201H	LB offset/size information	Station No. 0 LB offset	0	Read
2849794, 2849795	2B1202H, 2B1203H		Station No. 0 LB size	0	Read
⋮			⋮		
2850272, 2850273	2B13E0H, 2B13E1H		Station No. 120 LB offset	0	Read
2850274, 2850275	2B13E2H, 2B13E3H		Station No. 120 LB size	0	Read
2850276 to 2850815	2B13E4H to 2B16FFH		System area		
2850816, 2850817	2B1600H, 2B1601H	LW offset/size information	Station No. 0 LW offset	0	Read
2850818, 2850819	2B1602H, 2B1603H		Station No. 0 LW size	0	Read
⋮			⋮		
2851296, 2851297	2B17E0H, 2B17E1H		Station No. 120 LW offset	0	Read
2851298, 2851299	2B17E2H, 2B17E3H		Station No. 120 LW size	0	Read
2851300 to 2851839	2B17E4H to 2B19FF		System area	0	Read
2851840 to 2852095	2B1A00H 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, 2852121	2B8518H, 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 2870015	2BA610H to 2BCAFFH	System area			
2870016, 2870017	2BCB00H, 2BCB01H	Statistics of relay control part	Number of relay buffer overflow frames in timeslot 0 (PORT1→2)	0	Read
2870018 to 2870031	2BCB02H to 2BCB0FH		Number of relay buffer overflow frames in timeslot 1 to 7 (PORT1→2)	0	Read
2870032, 2870033	2BCB10H, 2BCB11H		Number of relay buffer overflow frames in timeslot 0 (PORT2→1)	0	Read
2870034 to 2870047	2BCB12H to 2BCB1FH		Number of relay buffer overflow frames in timeslot 1 to 7 (PORT2→1)	0	Read
2870048, 2870049	2BCB20H, 2BCB21H		Number of relay buffer overflow frames when timeslot 0 is invalid (PORT1→2)	0	Read
2870050 to 2870063	2BCB22H to 2BCB2FH		Number of relay buffer overflow frames when timeslot 1 to 7 is invalid (PORT1→2)	0	Read
2870064, 2870065	2BCB30H, 2BCB31H		Number of relay buffer overflow frames when timeslot 0 is invalid (PORT2→1)	0	Read
2870066 to 2870079	2BCB32H to 2BCB3FH		Number of relay buffer overflow frames when timeslot 1 to 7 is invalid (PORT2→1)	0	Read
2870080 to 2870271	2BCB40H to 2BCBFFH	System area			
2870272, 2870273	2BCC00H, 2BCC01H	Statistics of receive control part (PORT1/PORT2 common information)	Cyclic receive counter	0	Read
2870274, 2870275	2BCC02H, 2BCC03H		Cyclic receive frame counter	0	Read
2870276, 2870277	2BCC04H, 2BCC05H		Cyclic receive discard counter	0	Read

P1		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)				
2870278, 2870279	2BCC06H, 2BCC07H	Statistics of judgement part of received frame/ES control part (PORT1 side information)	Non-cyclic receive counter	0	Read
2870280, 2870281	2BCC08H, 2BCC09H		Non-cyclic receive discard counter	0	Read
2870282, 2870283	2BCC0AH, 2BCC0BH		Number of short packets detected	0	Read
2870284, 2870285	2BCC0CH, 2BCC0DH		Number of long packets detected	0	Read
2870286, 2870287	2BCC0EH, 2BCC0FH		Number of FCS error frames	0	Read
2870288, 2870289	2BCC10H, 2BCC11H		Number of fragment error frames	0	Read
2870290, 2870291	2BCC12H, 2BCC13H		Minimum IFG frames detection counter	0	Read
2870292, 2870293	2BCC14H, 2BCC15H		Detection counter of SFD or lower received frame	0	Read
2870294, 2870295	2BCC16H, 2BCC17H		Received code error counter	0	Read
2870296, 2870297	2BCC18H, 2BCC19H		Error counter of received FalseCarrier	0	Read
2870298, 2870299	2BCC1AH, 2BCC1BH		Error counter of received CarrierExtend	0	Read
2870300, 2870301	2BCC1CH, 2BCC1DH	Statistics of judgement part of received frame/ES control part (PORT2 side information)	Non-cyclic receive counter	0	Read
2870302, 2870303	2BCC1EH, 2BCC1FH		Non-cyclic receive discard counter	0	Read
2870304, 2870305	2BCC20H, 2BCC21H		Number of short packets detected	0	Read
2870306, 2870307	2BCC22H, 2BCC23H		Number of long packets detected	0	Read
2870308, 2870309	2BCC24H, 2BCC25H		Number of FCS error frames	0	Read
2870310, 2870311	2BCC26H, 2BCC27H		Number of fragment error frames	0	Read
2870312, 2870313	2BCC28H, 2BCC29H		Minimum IFG frames detection counter	0	Read
2870314, 2870315	2BCC2AH, 2BCC2BH		Detection counter of SFD or lower received frame	0	Read
2870316, 2870317	2BCC2CH, 2BCC2DH		Received code error counter	0	Read
2870318, 2870319	2BCC2EH, 2BCC2FH		Error counter of received FalseCarrier	0	Read
2870320, 2870321	2BCC30H, 2BCC31H		Error counter of received CarrierExtend	0	Read
2870322, 2870323	2BCC32H, 2BCC33H	Statistics of judgement part of received frame (PORT1 side information)	Number of HEC error frames	0	Read
2870324, 2870325	2BCC34H, 2BCC35H		Number of DCS error frames	0	Read
2870326, 2870327	2BCC36H, 2BCC37H		Number of SDCRC error frames	0	Read
2870328, 2870329	2BCC38H, 2BCC39H		Number of jumbo frames detected	0	Read
2870330, 2870331	2BCC3AH, 2BCC3BH		Number of abnormal PDU length	0	Read
2870332, 2870333	2BCC3CH, 2BCC3DH		Number of LLDP frames	0	Read
2870334, 2870335	2BCC3EH, 2BCC3FH		Number of Sync frames	0	Read
2870336, 2870337	2BCC40H, 2BCC41H	Statistics of judgement part of received frame (PORT2 side information)	Number of HEC error frames	0	Read
2870338, 2870339	2BCC42H, 2BCC43H		Number of DCS error frames	0	Read
2870340, 2870341	2BCC44H, 2BCC45H		Number of SDCRC error frames	0	Read
2870342, 2870343	2BCC46H, 2BCC47H		Number of jumbo frames detected	0	Read
2870344, 2870345	2BCC48H, 2BCC49H		Number of abnormal PDU length	0	Read
2870346, 2870347	2BCC4AH, 2BCC4BH		Number of LLDP frames	0	Read
2870348, 2870349	2BCC4CH, 2BCC4DH		Number of Sync frames	0	Read
2870350, 2870351	2BCC4EH, 2BCC4FH	Other statistics	Number of link downs on PORT1 side	0	Read
2870352, 2870353	2BCC50H, 2BCC51H		Number of link downs on PORT2 side	0	Read
2870354, 2870355	2BCC52H, 2BCC53H		System area	0	Read
2870356 to 2875135	2BCC54H to 2BDEFFH	System area			
2875136	2BDF00H	Time distribution interval setting of the CPU module		0	Read, write
2875137 to 2875903	2BDF01H to 2BE1FFH	System area			
2875904	2BE200H	Grandmaster information	Grandmaster	0	Read
2875905, 2875906	2BE201H, 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		

P1		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)				
2875936 to 2877439	2BE220H to 2BE7FFH	System area			
2877440	2BE800H	Communication cycle timing	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	2BE802H	Cyclic data send/receive assurance information	Multiple cycle setting (low speed)	0	Read
2877443	2BE803H		Communication cycle intervals (calculation value)	0	Read
2877444	2BE804H	Communication period setting value (protocol version 2.0)	Communication cycle intervals (calculation value)	0	Read
2877445	2BE805H		Cyclic transmission time (calculation value)	0	Read
2877446	2BE806H		Transient transmission time (calculation value)	0	Read
2877447 to 2877455	2BE807H to 2BE80FH	System area			
2877456	2BE810H	CC-Link IE TSN Communication Software information (1st module)	Manufacturer code	0	Read
2877457	2BE811H		Model type	0	Read
2877458	2BE812H		Model code (lower 2 bytes)	0	Read
2877459	2BE813H		Model code (upper 2 bytes)	0	Read
2877460	2BE814H		Model code of extension module	0	Read
2877461	2BE815H		Version	0	Read
2877462 to 2877464	2BE816H to 2BE818H		MAC address	0	Read
2877465, 2877466	2BE819H, 2BE81AH		IP address (IPv4)	0	Read
2877467 to 2877474	2BE81BH to 2BE822H		IP address (IPv6)	0	Read
2877475 to 2877479	2BE823H to 2BE827H		System area		
2877480	2BE828H	CC-Link IE TSN Communication Software information (2nd module)	Manufacturer code	0	Read
2877481	2BE829H		Model type	0	Read
2877482	2BE82AH		Model code (lower 2 bytes)	0	Read
2877483	2BE82BH		Model code (upper 2 bytes)	0	Read
2877484	2BE82CH		Model code of extension module	0	Read
2877485	2BE82DH		Version	0	Read
2877486 to 2877488	2BE82EH to 2BE830H		MAC address	0	Read
2877489, 2877490	2BE831H, 2BE832H		IP address (IPv4)	0	Read
2877491 to 2877498	2BE833H to 2BE83AH		IP address (IPv6)	0	Read
2877499 to 2877503	2BE83BH to 2BE83FH		System area		
2877504 to 2877647	2BE840H to 2BE8CFH	System area			
2877648, 2877649	2BE8D0H, 2BE8D1H	PDO information*1 (Multidrop number 0 of station No. 1)	Start offset of link device used by RPDO	0	Read
2877650, 2877651	2BE8D2H, 2BE8D3H		RPDO size	0	Read
2877652, 2877653	2BE8D4H, 2BE8D5H		Start offset of link device used by TPDO	0	Read
2877654, 2877655	2BE8D6H, 2BE8D7H		TPDO size	0	Read
2877656 to 2877703	2BE8D8H to 2BE907H	⋮			
2877704, 2877705	2BE908H, 2BE909H	PDO information*1 (Multidrop number 7 of station No. 1)	Start offset of link device used by RPDO	0	Read
2877706, 2877707	2BE90AH, 2BE90BH		RPDO size	0	Read
2877708, 2877709	2BE90CH, 2BE90DH		Start offset of link device used by TPDO	0	Read
2877710, 2877711	2BE90EH, 2BE90FH		TPDO size	0	Read
2877712 to 2885263	2BE910H to 2C068FH	⋮			
2885264, 2885265	2BE910H, 2C0691H	PDO information*1 (Multidrop number 0 of station No. 120)	Start offset of link device used by RPDO	0	Read
2885266, 2885267	2C0692H, 2C0693H		RPDO size	0	Read
2885268, 2885269	2C0694H, 2C0695H		Start offset of link device used by TPDO	0	Read
2885270, 2885271	2C0696H, 2C0697H		TPDO size	0	Read
2885272 to 2885319	2C0698H to 2C06C7H	⋮			

P1		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)				
2885320, 2885321	2C06C8H, 2C06C9H	PDO information[*1] (Multidrop number 7 of station No. 120)	Start offset of link device used by RPDO	0	Read
2885322, 2885323	2C06CAH, 2C06CBH		RPDO size	0	Read
2885324, 2885325	2C06CCH, 2C06CDH		Start offset of link device used by TPDO	0	Read
2885326, 2885327	2C06CEH, 2C06CFH		TPDO size	0	Read
2885328 to 2894015	2C06D0H to 2C06BFH	System area			
2894016	2C06C0H	Protocol information	Protocol operating status	0	Read
2894017 to 2894031	2C06C6H to 2C06CFH		System area		
2894032 to 1294047	2C06D0H to 2C06DFH	System area			
2894048	2C06E0H	Timeslot information for slave station cyclic transmission	Timeslot for station number 1 cyclic transmission	0	Read
2894049 to 2894166	2C06E1H to 2C2956H		⋮		
2894167	2C2957H		Timeslot for station number 120 cyclic transmission	0	Read
2894168 to 2894303	2C2958H to 2C29DFH		System area		
2894304	2C29E0H	Slave station cyclic transmission information	CC-Link IE TSN Class A (low speed) multiple	0	Read
2894305 to 2894367	2C29E1H to 2C2A1FH	System area			
2894368	2C2A20H	ERR LED control	Send request	0	Read, write
2894369	2C2A21H		Send status	0	Read
2894370 to 2894383	2C2A22H to 2C2A2FH		System area		
2894384 to 2894399	2C2A30H to 2C2A3FH		Data link faulty station specification	0	Read, write
2894400 to 3697155	2C2A40H to 386A03H	System area			
3697156, 3697157	386A04H, 386A05H	Own node setting status storage area	Own node IP address	0	Read
3697158 to 3697165	386A06H to 386A0DH		System area		
3697166, 3697167	386A0EH, 386A0FH		Subnet mask	0	Read
3697168, 3697169	386A10H, 386A11H		System area		
3697170, 3697171	386A12H, 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		

P1		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)				
3698152, 3698153	386DE8H, 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			
3702152, 3702153	387D88H, 387D89H	Status for each protocol (IP packet)	Received packet total count	0	Read
3702154, 3702155	387D8AH, 387D8BH		Received packet checksum error discard count		
3702156, 3702157	387D8CH, 387D8DH		Sent packet total count		
3702158 to 3702173	387D8EH to 387D9DH		System area		
3702174, 3702175	387D9EH, 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, 3702193	387DB0H, 387DB1H	Status for each protocol (ICMP packet)	Received packet total count	0	Read
3702194, 3702195	387DB2H, 387DB3H		Received packet checksum error discard count		
3702196, 3702197	387DB4H, 387DB5H		Sent packet total count		
3702198, 3702199	387DB6H, 387DB7H		Received echo request total count		
3702200, 3702201	387DB8H, 387DB9H		Sent echo reply total count		
3702202, 3702203	387DBAH, 387DBBH		Sent echo request total count		
3702204, 3702205	387DBCH, 387DBDH		Received echo reply total count		
3702206 to 3702231	387DBEH to 387DD7H		System area		
3702232, 3702233	387DD8H, 387DD9H	Status for each protocol (TCP packet)	Received packet total count	0	Read
3702234, 3702235	387DDAH, 387DDBH		Received packet checksum error discard count		
3702236, 3702237	387DDCH, 387DDDH		Sent packet total count		
3702238 to 3702271	387DDEH to 387DFFH		System area		
3702272, 3702273	387E00H, 387E01H	Status for each protocol (UDP packet)	Received packet total count	0	Read
3702274, 3702275	387E02H, 387E03H		Received packet checksum error discard count		
3702276, 3702277	387E04H, 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 (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	FFFFFFFFFFFFH	
3702356 to 3702358	387E54H to 387E56H		MAC address of the station with the IP address already used	FFFFFFFFFFFFH	
3702359 to 3702451	387E57H to 387EB3H	System area			

A

P1		Name		Initial value	Read, write
Address (decimal)	Address (hexadecimal)				
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			
3708736 to 3708799	389740H to 38977FH	Remote password function monitoring area	System area		
3708800	389780H		Auto-open UDP port continuous unlock failure count	0	Read
3708801	389781H		MELSOFT transmission port (UDP/IP) continuous unlock failure count		
3708802	389782H		MELSOFT transmission port (TCP/IP) continuous unlock failure count		
3708803, 3708804	389783H, 389784H		System area		
3708805	389785H		SLMP transmission port (UDP/IP) continuous unlock failure count	0	Read
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 FFFFFFH	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).

Details of buffer memory addresses

Link device area

The RX, RY, RWw, RWr, LB, LW, 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 263 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 263 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 263 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 264 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 register (LW) (Un\G1675776 to Un\G1692159)

The LW value is stored. The start number and number of points of LW for each station number can be checked by the LW offset/size information (Un\G2850816 to Un\G2851299). (☞ Page 264 LW offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1675776	LW0															
Un\G1675777	LW1															
⋮																
Un\G1692159	LW3FFF															

■Link register (LB) (Un\1692160 to Un\1694207)

The LB value is stored. The start number and number of points of LB for each station number can be checked by the LB offset/size information (Un\G2850272 to Un\G2850275). (☞ Page 264 LB offset/size information)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1692160	LBF	LBE	LBD	LBC	LBB	LBA	LB9	LB8	LB7	LB6	LB5	LB4	LB3	LB2	LB1	LB0
Un\G1692161	LB1F	LB1E	LB1D	LB1C	LB1B	LB1A	LB19	LB18	LB17	LB16	LB15	LB14	LB13	LB12	LB11	LB10
⋮																
Un\G1694207	LB7FFF	LB7FFE	LB7FFD	LB7FFC	LB7FFB	LB7FFA	LB7FF9	LB7FF8	LB7FF7	LB7FF6	LB7FF5	LB7FF4	LB7FF3	LB7FF2	LB7FF1	LB7FF0

■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	SB1FF	SB1FE	SB1FD	SB1FC	SB1FB	SB1FA	SB1F9	SB1F8	SB1F7	SB1F6	SB1F5	SB1F4	SB1F3	SB1F2	SB1F1	SB1F0

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, 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, 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, Un\G2845697	Station No. 0 offset
Un\G2845698, Un\G2845699	Station No. 0 size (word unit)
Un\G2845700, Un\G2845701	Station No. 1 offset
Un\G2845702, Un\G2845703	Station No. 1 size (word unit)
⋮	
Un\G2846176, Un\G2846177	Station No. 120 offset
Un\G2846178, 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 + (Station number) × 4
- Buffer memory address (size) = 2845698 + (Station number) × 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, Un\G2846721	Station No. 0 offset
Un\G2846722, Un\G2846723	Station No. 0 size (word unit)
Un\G2846724, Un\G2846725	Station No. 1 offset
Un\G2846726, Un\G2846727	Station No. 1 size (word unit)
⋮	
Un\G2847200, Un\G2847201	Station No. 120 offset
Un\G2847202, 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 + (Station number) × 4
- Buffer memory address (size) = 2846722 + (Station number) × 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, Un\G2847745	Station No. 0 offset
Un\G2847746, Un\G2847747	Station No. 0 size (word unit)
Un\G2847748, Un\G2847749	Station No. 1 offset
Un\G2847750, Un\G2847751	Station No. 1 size (word unit)
⋮	
Un\G2848224, Un\G2848225	Station No. 120 offset
Un\G2848226, 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 + (Station number) × 4
- Buffer memory address (size) = 2847746 + (Station number) × 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, Un\G2848769	Station No. 0 offset
Un\G2848770, Un\G2848771	Station No. 0 size (word unit)
Un\G2848772, Un\G2848773	Station No. 1 offset
Un\G2848774, Un\G2848775	Station No. 1 size (word unit)
⋮	
Un\G2849248, Un\G2849249	Station No. 120 offset
Un\G2849250, 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 + (Station number) × 4
- Buffer memory address (size) = 2848770 + (Station number) × 4

LB offset/size information

■LB offset/size information (Un\G2849792 to Un\G2850275)

The start number and number of points of LB for each station number are stored.

Address	Description
Un\G2849792, Un\G2849793	Station No. 0 offset
Un\G2849794, Un\G2849795	Station No. 0 size (in units of words)
Un\G2849796, Un\G2849797	Station No. 1 offset
Un\G2849798, Un\G2849799	Station No. 1 size (in units of words)
⋮	
Un\G2850272, Un\G2850273	Station No. 120 offset
Un\G2850274, Un\G2850275	Station No. 120 size (in units of words)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset) = 2849792 + (station number) × 4
- Buffer memory address (size) = 2849794 + (station number) × 4

LW offset/size information

■LW offset/size information (Un\G2850816 to Un\G2851299)

The start number and number of points of LW for each station number are stored.

Address	Description
Un\G2850816, Un\G2850817	Station No. 0 offset
Un\G2850818, Un\G2850819	Station No. 0 size (in units of words)
Un\G2850820, Un\G2850821	Station No. 1 offset
Un\G2850822, Un\G2850823	Station No. 1 size (in units of words)
⋮	
Un\G2851296, Un\G2851297	Station No. 120 offset
Un\G2851298, Un\G2851299	Station No. 120 size (in units of words)

The buffer memory addresses of offset and size for each station number can be calculated with the following formula.

- Buffer memory address (offset) = 2850816 + (station number) × 4
- Buffer memory address (size) = 2850818 + (station number) × 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, 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	Not used	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225
Un\G2860559	Not used															

The numbers in the table indicate network Nos.

Statistics of relay control part

■Number of relay buffer overflow frames in timeslot 0 (PORT1→2) (Un\G2870016, Un\G2870017)

Information on the number of frames that have overflowed when they are stored in the relay buffer for timeslot 0 is stored.

■Number of relay buffer overflow frames in timeslot 1 to 7 (PORT1→2) (Un\G2870018 to Un\G2870031)

Information on the number of frames that have overflowed when they are stored in the relay buffer for timeslot 1 to 7 is stored.

■Number of relay buffer overflow frames in timeslot 0 (PORT2→1) (Un\G2870032, Un\G2870033)

Information on the number of frames that have overflowed when they are stored in the relay buffer for timeslot 0 is stored.

■Number of relay buffer overflow frames in timeslot 1 to 7 (PORT2→1) (Un\G2870034 to Un\G2870047)

Information on the number of frames that have overflowed when they are stored in the relay buffer for timeslot 1 to 7 is stored.

■Number of relay buffer overflow frames when timeslot 0 is invalid (PORT1→2) (Un\G2870048, Un\G2870049)

Information on the number of frames that have overflowed when they are stored in the relay buffer when timeslot 0 is invalid.

■Number of relay buffer overflow frames when timeslot 1 to 7 is invalid (PORT1→2) (Un\G2870050 to Un\G2870063)

Information on the number of frames that have overflowed when they are stored in the relay buffer when timeslot 1 to 7 is invalid.

■Number of relay buffer overflow frames when timeslot 0 is invalid (PORT2→1) (Un\G2870064, Un\G2870065)

Information on the number of frames that have overflowed when they are stored in the relay buffer when timeslot 0 is invalid.

■Number of relay buffer overflow frames when timeslot 1 to 7 is invalid (PORT2→1) (Un\G2870066 to Un\G2870079)

Information on the number of frames that have overflowed when they are stored in the relay buffer when timeslot 1 to 7 is invalid.

Statistics of receive control part (PORT1/PORT2 common information)

■Cyclic receive counter (Un\G2870272, Un\G2870273)

The number of sub payloads of CC-Link IE TSN cyclic frames that have been received successfully is stored.

The target frame is as follows.

- Cyclic Ms/M/Ss/S frame

■Cyclic receive frame counter (Un\G2870274 to Un\G2870275)

The number of CC-Link IE TSN cyclic frames that have been received successfully is stored.

The target frame is as follows.

- Cyclic Ms/M/Ss/S frame

■Cyclic receive discard counter (Un\G2870276, Un\G2870277)

The number of the discarded sub payloads of received CC-Link IE TSN cyclic frames is stored.

Statistics of judgement part of received frame/ES control part (PORT1 side information)

■Non-cyclic receive counter (Un\G2870278, Un\G2870279)

The number of CC-Link IE TSN non-cyclic frames that have been received successfully is stored.
The target frames are other than the following frames.

- Cyclic Ms/M/Ss/S frame
- Encapsulated frame
- CC-Link IEF/IEC frames

■Non-cyclic receive discard counter (Un\G2870280, Un\G2870281)

The number of frames from which the received CC-Link IE TSN non-cyclic frames have been discarded is stored.

■Number of short packets detected (Un\G2870282, Un\G2870283)

The number of frames whose size is less than 64 bytes from the target MAC address in the Ethernet header of all received frames is stored.

■Number of long packets detected (Un\G2870284, Un\G2870285)

The number of frames whose size is greater than 16384 bytes from the target MAC address in the Ethernet header of all received frames is stored.

■Number of FCS error frames (Un\G2870286, Un\G2870287)

The number of FCS errors (which occur when FCS, the error-checking CRC for the entire Ethernet frame, is invalid) in all received frames is stored.

■Number of fragment error frames (Un\G2870288, Un\G2870289)

The number of frames in which both short packets and FCS errors occur is stored.

■Minimum IFG frames detection counter (Un\G2870290, Un\G2870291)

The number of times a frame is detected within the minimum IFG (InterFrame Gap) is stored.

■SFD or lower received frame detection counter (Un\G2870292, Un\G2870293)

The number of times a received frame is terminated in the field up to SFD (Start Frame Delimiter) and cannot be recognized as a valid frame is stored.

■Received code error counter (Un\G2870294, Un\G2870295)

The number of times an error is detected between MAC and PHY (RGMII) is stored.
Even if multiple errors are detected during continuous reception, the error is counted once.

■Received FalseCarrier error counter (Un\G2870296, Un\G2870297)

The number of times the error False Carrier occurs during non-reception between MAC and PHY (RGMII) is stored.
Even if multiple False Carriers occur during non-reception, the error is counted once.

■Received CarrierExtend error counter (Un\G2870298, Un\G2870299)

The number of times the error Carrier Extend occurs during non-reception between MAC and PHY (RGMII) is stored.
Even if multiple Carrier Extend occur during non-reception, the error is counted once.

Statistics of judgement part of received frame/ES control part (PORT2 side information)

■Non-cyclic receive counter (Un\G2870300, Un\G2870301)

The number of CC-Link IE TSN non-cyclic frames that have been received successfully is stored.
The target frames are other than the following frames.

- Cyclic Ms/M/Ss/S frame
- Encapsulated frame
- CC-Link IEF/IEC frames

■Non-cyclic receive discard counter (Un\G2870302, Un\G2870303)

The number of frames from which the received CC-Link IE TSN non-cyclic frames have been discarded is stored.

■Number of short packets detected (Un\G2870304, Un\G2870305)

The number of frames whose size is less than 64 bytes from the target MAC address in the Ethernet header of all received frames is stored.

■Number of long packets detected (Un\G2870306, Un\G2870307)

The number of frames whose size is greater than 16384 bytes from the target MAC address in the Ethernet header of all received frames is stored.

■Number of FCS error frames (Un\G2870308, Un\G2870309)

The number of FCS errors (which occur when FCS, the error-checking CRC for the entire Ethernet frame, is invalid) in all received frames is stored.

■Number of fragment error frames (Un\G2870310, Un\G2870311)

The number of frames in which both short packets and FCS errors occur is stored.

■Minimum IFG frames detection counter (Un\G2870312, Un\G2870313)

The number of times a frame is detected within the minimum IFG (InterFrame Gap) is stored.

■SFD or lower received frame detection counter (Un\G2870314, Un\G2870315)

The number of times a received frame is terminated in the field up to SFD (Start Frame Delimiter) and cannot be recognized as a valid frame is stored.

■Received code error counter (Un\G2870316, Un\G2870317)

The number of times an error is detected between MAC and PHY (RGMII) is stored.
Even if multiple errors are detected during continuous reception, the error is counted once.

■Received FalseCarrier error counter (Un\G2870318, Un\G2870319)

The number of times the error False Carrier occurs during non-reception between MAC and PHY (RGMII) is stored.
Even if multiple False Carriers occur during non-reception, the error is counted once.

■Received CarrierExtend error counter (Un\G2870320, Un\G2870321)

The number of times the error Carrier Extend occurs during non-reception between MAC and PHY (RGMII) is stored.
Even if multiple Carrier Extend occur during non-reception, the error is counted once.

Statistics of judgement part of received frame (PORT1 side information)

■Number of HEC error frames (Un\G2870322, Un\G2870323)

The number of HEC errors in received CC-Link IE TSN frames/CC-Link IE frames is stored.

■Number of DCS error frames (Un\G2870324, Un\G2870325)

The number of DCS errors (which occur when DCS, the error-checking CRC for CC-Link IE Header, is invalid) in the received CC-Link IE TSN frames is stored.

■Number of SDCRC error frames (Un\G2870326, Un\G2870327)

The number of SDCRC errors (which occur when SDCRC (sub payload checksum) of the data part is invalid) in the received CC-Link IE TSN frame is stored.

■Number of jumbo frames detected (Un\G2870328, Un\G2870329)

The number of frames whose size is 2001 bytes or greater from the target MAC address in the Ethernet header of all received frames is stored.

■Number of abnormal PDU length (Un\G2870330, Un\G2870331)

The number of abnormal PDU length in the received CC-Link IE TSN cyclic frames is stored.

■Number of LLDP frames (Un\G2870332, Un\G2870333)

The number of received LLDP frames is stored.

■Number of Sync frames (Un\G2870334, Un\G2870335)

The number of Sync frames of received IEEE802.1AS/IEEE1588 frames is stored.

Statistics of judgement part of received frame (PORT2 side information)

■Number of HEC error frames (Un\G2870336, Un\G2870337)

The number of HEC errors in received CC-Link IE TSN frames/CC-Link IE frames is stored.

■Number of DCS error frames (Un\G2870338, Un\G2870339)

The number of DCS errors (which occur when DCS, the error-checking CRC for CC-Link IE Header, is invalid) in the received CC-Link IE TSN frames is stored.

■Number of SDCRC error frames (Un\G2870340, Un\G2870341)

The number of SDCRC errors (which occur when SDCRC (sub payload checksum) of the data part is invalid) in the received CC-Link IE TSN frame is stored.

■Number of jumbo frames detected (Un\G2870342, Un\G2870343)

The number of frames whose size is 2001 bytes or greater from the target MAC address in the Ethernet header of all received frames is stored.

■Number of abnormal PDU length (Un\G2870344, Un\G2870345)

The number of abnormal PDU length in the received CC-Link IE TSN cyclic frames is stored.

■Number of LLDP frames (Un\G2870346, Un\G2870347)

The number of received LLDP frames is stored.

■Number of Sync frames (Un\G2870348, Un\G2870349)

The number of Sync frames of received IEEE802.1AS/IEEE1588 frames is stored.

Other statistics

■Number of link downs on PORT1 side (Un\G2870350, Un\G2870351)

The number of times a link down has occurred on the PORT1 side is stored.

■Number of link downs on PORT2 side (Un\G2870352, Un\G2870353)

The number of times a link down has occurred on the PORT2 side is stored.

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 device 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 FFFEH: (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 timing

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

Cyclic data send/receive assurance information

■Multiple cycle setting (low speed) (Un\G2877442)

The setting value of the multiple cycle setting (low speed) that ensures the cyclic data communications (send/receive) is stored.

This value is stored when a device station exists for which, under "Basic Settings", "CC-Link IE TSN Class Setting" in "Connection Device Information" is "CC-Link IE TSN Class A" and "Communication Period Setting" is "Low-Speed".

- 0: Calculation not performed
- 16, 32, 64, 128: Low speed cycle for basic cycle

■Communication cycle interval (calculation value) (Un\G2877443)

The setting value of the communication cycle interval that ensures the cyclic data communications (send/receive) is stored.

This value is stored when a device station exists for which, under "Basic Settings", "CC-Link IE TSN Class Setting" in "Connection Device Information" is "CC-Link IE TSN Class A" and "Communication Period Setting" is "Low-Speed".

- 0: Calculation not performed
- 125 to 10000: Communication cycle interval (unit: μs)

Communication period setting value (protocol version 2.0)

■Communication cycle interval (calculation value) (Un\G2877444)

Stores the communication cycle interval of "CC-Link IE TSN protocol version 2.0" that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

- 125 or greater: Communication cycle intervals (unit: μs)

■Cyclic transmission time (calculation value) (Un\G2877445)

Stores the communication cycle interval of "CC-Link IE TSN protocol version 2.0" that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

- 1 or greater: Cyclic transmission time (unit: μs)

■Transient transmission time (calculation value) (Un\G2877446)

Stores the communication cycle interval of "CC-Link IE TSN protocol version 2.0" that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

- 1 or greater: Transient transmission time (unit: μs)

CC-Link IE TSN Communication Software information

Information related to the CC-Link IE TSN Communication Software is stored.

■CC-Link IE TSN Communication Software information (1st module) (Un\G2877456 to Un\G2877479)

Address	Name	Description
Un\G2877456	Manufacturer code	Information of the CC-Link IE TSN Communication Software in the 1st module is stored.
Un\G2877457	Model type	
Un\G2877458	Model code (lower 2 bytes)	
Un\G2877459	Model code (upper 2 bytes)	
Un\G2877460	Model code of extension module	
Un\G2877461	Version	
Un\G2877462 to Un\G2877464	MAC address	
Un\G2877465, Un\G2877466	IP address (IPv4)	
Un\G2877467 to Un\G2877474	IP address (IPv6)	
Un\G2877475 to Un\G2877479	System area	—

■CC-Link IE TSN Communication Software information (2nd module) (Un\G2877480 to Un\G2877503)

Address	Name	Description
Un\G2877480	Manufacturer code	Information of the CC-Link IE TSN Communication Software in the 2nd module is stored.
Un\G2877481	Model type	
Un\G2877482	Model code (lower 2 bytes)	
Un\G2877483	Model code (upper 2 bytes)	
Un\G2877484	Model code of extension module	
Un\G2877485	Version	
Un\G2877486 to Un\G2877488	MAC address	
Un\G2877489, Un\G2877490	IP address (IPv4)	
Un\G2877491 to Un\G2877498	IP address (IPv6)	
Un\G2877499 to Un\G2877503	System area	—

PDO information

■PDO information (Un\G2877648 to Un\G2893967)

Address	Name		Description
Un\G2877648, Un\G2877649	Multidrop number 0 of station No. 1	Start offset of link device used by RPDO	The start offset of link device used by RPDO is stored. (Master station: RWw)
Un\G2877650, Un\G2877651		RPDO size	The RPDO size is stored in word units.
Un\G2877652, Un\G2877653		Start offset of link device used by TPDO	The start offset of link device used by TPDO is stored. (Master station: RWr)
Un\G2877654, Un\G2877655		TPDO size	The TPDO size is stored in word units.
⋮			
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		—

Protocol information

■Protocol information (Un\G2894016 to Un\G2894031)

Address	Name	Description
Un\G2894016	Protocol operating status	Stores the operating status of the protocol. 0: Operating protocol not determined or CC-Link IE TSN Class settings set to CC-Link IE TSN Class B only 1: Operating with the protocol version 1.0 2: Operating with the protocol version 2.0
Un\G2894017 to Un\G2894031	System area	—

Timeslot information for device station cyclic transmission

■Timeslot information for device station cyclic transmission (Un\G2894048 to Un\G2894167)

Address	Name	Description
Un\G2894048	Timeslot for station number 1 cyclic transmission	Stores the Timeslot for cyclic transmission of station number 1. 0: Undetermined 1: Timeslot 1 3: Timeslot 3 4: Timeslot 4 5: Timeslot 5 6: Timeslot 6
⋮		
Un\G2894167	Timeslot for station number 120 cyclic transmission	Stores the Timeslot for cyclic transmission of station number 120. 0: Undetermined 1: Timeslot 1 3: Timeslot 3 4: Timeslot 4 5: Timeslot 5 6: Timeslot 6

Device station cyclic transmission information

■CC-Link IE TSN Class A (low speed) multiple (Un\G2894304)

Stores the multiple n used to calculate the transmission delay time of a CC-Link IE TSN Class A device station for which "Communication Period Setting" is set to "Low-Speed".

- 0: There is no device station on the network configuration with CC-Link IE TSN Class A and "Communication Period Setting" set to "Low-Speed"
- 1 or greater: n value[*1]

*1 When 'Protocol operating status' (Un\G2894016) is '1: Operating with the protocol version 1.0', it is set to 1 Fixed.

ERR LED control

■Send request (Un\G2894368)

A send request is issued to a module.

- 0: Do not send
- 1: Send (enabled at startup)

■Send status (Un\G2894369)

The send status of a module is stored.

- 0: Not sent
- 1: Sending
- 2: Send completed

When this status is "2: Send completed" and Send request (Un\G2894368) is changed from "1: Send" to "0: Do not send", "0: Not sent" is stored.

■Data link faulty station specification (Un\G2894384 to Un\G2894399)

This function prevents the ERR LEDs of other stations from flashing when a data link error occurs at the specified station.

- 0: Not specified
- 1: Specified

(Default: 0 for all stations)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G2894384	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Un\G2894385	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Un\G2894386	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
Un\G2894387	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
Un\G2894388	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
Un\G2894389	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
Un\G2894390	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
Un\G2894391	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113
Un\G2894392 to Un\G2894399	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Each number in the table represents a station number. — is fixed to 0.

Own node setting status storage area

■Own node IP address (Un\G3697156, Un\G3697157)

The setting values of the IP address are stored.

Range: 1H to DFFFFFFEH

■Subnet mask (Un\G3697166, Un\G3697167)

The setting values of the subnet mask are stored.

Range: 1H to FFFFFFFFH

0: No setting

■Default gateway IP address (Un\G3697170, 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, Un\G3702153)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received packet checksum error discard count (Un\G3702154, Un\G3702155)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent packet total count (Un\G3702156, Un\G3702157)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Simultaneous transmission error detection count (receive buffer full count) (Un\G3702174, 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, Un\G3702193)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received packet checksum error discard count (Un\G3702194, Un\G3702195)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent packet total count (Un\G3702196, Un\G3702197)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received echo request total count (Un\G3702198, Un\G3702199)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent echo reply total count (Un\G3702200, Un\G3702201)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent echo request total count (Un\G3702202, Un\G3702203)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received echo reply total count (Un\G3702204, Un\G3702205)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

Status for each protocol (TCP packet)

■Received packet total count (Un\G3702232, Un\G3702233)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received packet checksum error discard count (Un\G3702234, Un\G3702235)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent packet total count (Un\G3702236, Un\G3702237)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

Status for each protocol (UDP packet)

■Received packet total count (Un\G3702272, Un\G3702273)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Received packet checksum error discard count (Un\G3702274, Un\G3702275)

The status is counted from 0 to 4294967295 (FFFFFFFFH).

■Sent packet total count (Un\G3702276, 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 (connection information area)

■Communication mode (Un\G3702343)

- 0: Half-duplex/not connected
- 1: Full-duplex

■Connection status (Un\G3702344)

- 0: Not connected/disconnected
- 1: Connected

■Communication speed (Un\G3702345)

- 0: Not connected
- 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.

- 0: Receive buffer not full
- 1: Receive buffer 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

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.

Point

Do not turn ON/OFF areas whose Nos. are not on the following list or within the ranges turned ON/OFF by the system. Doing so may cause malfunction of the programmable controller system.

○: Available, ×: Not available

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)	○	○
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)	○	○
SB0016	Remote device forced output request	Requests to enable the remote device test function. OFF: Not requested ON: Requested	○	○
SB0030	RECV execution request flag CH1	Stores the data reception status of own station channel 1. OFF: No data received ON: Data received	○	○
SB0031	RECV execution request flag CH2	Stores the data reception status of own station channel 2. OFF: No data received ON: Data received	○	○
SB0032	RECV execution request flag CH3	Stores the data reception status of own station channel 3. OFF: No data received ON: Data received	○	○
SB0033	RECV execution request flag CH4	Stores the data reception status of own station channel 4. OFF: No data received ON: Data received	○	○
SB0034	RECV execution request flag CH5	Stores the data reception status of own station channel 5. OFF: No data received ON: Data received	○	○
SB0035	RECV execution request flag CH6	Stores the data reception status of own station channel 6. OFF: No data received ON: Data received	○	○
SB0036	RECV execution request flag CH7	Stores the data reception status of own station channel 7. OFF: No data received ON: Data received	○	○

No.	Name	Description	Availability	
			PLCopen Motion control FB mode	Simple Motion mode
SB0037	RECV execution request flag CH8	Stores the data reception status of own station channel 8. OFF: No data received ON: Data received	○	○
SB0040	Network type of own station	Stores the network type of the own station. ON: CC-Link IE TSN	○	○
SB0043	Module operation mode of own station	Stores the module operation mode of the own station. OFF: Online mode ON: Other than online mode	○	○
SB0044	Station setting 1 of own station	Stores the station type of the own station. OFF: Device station (other than the master station) ON: Master station	○	○
SB0045	Station setting 2 of own station	Stores the communication mode of the own station. OFF: Unicast mode ON: Multicast mode	○	○
SB0046	Station No. setting status of own station	Stores the station No. setting status. OFF: Station No. set	○	○
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.)	○	○
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 device 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 device 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.)	○	○
SB0065	Loopback status	Stores the loopback status. The station number of the loopback station can be checked with 'Loopback station number 1' (SW0070) and 'Loopback station number 2' (SW0071). OFF: Normal (no loopback stations) ON: Loopback being performed (Conditions) This relay is enabled when 'Data link status of own station' (SB0049) is off, and 'Network topology setting' (SB0078) is on. When 'Data link status of own station' (SB0049) is turned on (error), data prior to error is held.	○	○

No.	Name	Description	Availability	
			PLCopen Motion control FB mode	Simple Motion mode
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 setting	Stores the setting status of "Network Topology" of the own station (current master 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	○	○
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	○	○

No.	Name	Description	Availability	
			PLCopen Motion control FB mode	Simple Motion mode
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) and 'Data link error status of master station' (SB00B1). • Depending on the link refresh timing, the update of 'Data link status of each station' (SW00B0 to SW00B7) and 'Data link error status of master station' (SB00B1)may be offset by one sequence scan. • Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station in multicast mode, the CC-Link IE TSN Class A remote station is reflected as a normally operating station, even if an error occurs at that station. (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. Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station when communicating in multicast mode, "0: RUN, PAUSE" is reflected to the CC-Link IE TSN Class A remote station.	○	○
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. For local stations, the moderate/major error occurrence status in the CPU module of each station are stored. 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. Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station when communicating in multicast mode, "0: No moderate/major error" is reflected to the CC-Link IE TSN Class A remote station. • When using PLCopen Motion control FB mode, if the communication cycle interval setting is less than 125µs, this will be fixed at "OFF: No moderate/major error".	○	○
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. For local stations, the minor error occurrence status in the CPU module of each station are stored. 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. Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station when communicating in multicast mode, "0: Normal, or a moderate or major error occurring" is reflected to the CC-Link IE TSN Class A remote station. • When using PLCopen Motion control FB mode, if the communication cycle interval setting is less than 125µs, this will be fixed at "0: Normal, or a moderate or major error occurring".	○	○
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	○	○
SB0500	Co-recording device station supporting information	Stores supporting information on the device station. OFF: No stations are available for co-recording ON: Stations that are available for co-recording exist When ON, each supporting information can be checked with 'Co-recording each station supporting information' (SW0500 to SW0507).	○	×
SB0510	Co-recording device station setting information	Stores the setting information on the device station. OFF: No stations use co-recording ON: Stations that are available for co-recording exist When ON, each setting information can be checked with 'Co-recording each station setting information' (SW0510 to SW0517).	○	×

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)

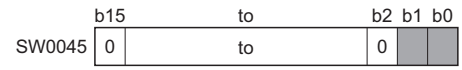
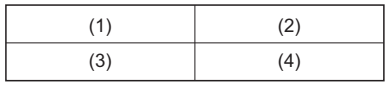
The following table lists the link special register areas (SW) when they are assigned from SW0000 to SW0FFF.

Point

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.

○: Available, ×: Not available

No.	Name	Description	Availability	
			PLCopen Motion control FB mode	Simple Motion mode
SW001A	REMFR/REMTO instruction resend count	Set the number of resends for the REMFR/REMTO/REMFRD/REMTOD instruction. 0: Not resent (default) Other than the above: Number of times that is set, 1 to 15 (times)	○	○
SW001B	REMFR/REMTO instruction response wait timer time	Set the response wait time for the REMFR/REMTO/REMFRD/REMTOD instruction. 0: 10 seconds (default) Other than the above: Number of seconds that is set, 1 to 32767 (seconds)	○	○
SW0030	Link dedicated instructions processing result CH1	Stores the processing results of the link dedicated instruction that used channel 1 of the own station. 0: Completed successfully 1 or greater: Completed with an error (Error code is stored.)	○	○
SW0031	Link dedicated instructions processing result CH2	Stores the processing results of the link dedicated instruction that used channel 2 of the own station. 0: Completed successfully 1 or greater: Completed with an error (Error code is stored.)	○	○
SW0040	Network No.	Stores the network No. of the own station. Range: 1 to 239	○	○
SW0042	Station No.	Stores the station No. of the own station. Range: • Master station: 125 • Local station: 1 to 120, 255 (station number not set)	○	○
SW0043	Mode status of own station	Stores the module operation mode setting or communication mode of the own station. 0: Online mode/Unicast mode 1: Online mode/Multicast mode 2: Offline mode B: Module communication test mode	○	○

No.	Name	Description	Availability	
			PLCopen Motion control FB mode	Simple Motion mode
SW0045	Module type	Stores the hardware status of the own station.  ■Model type (b0 to b1) 00: Module 01: Board 10: HMI (Human Machine Interface)	○	○
SW0046 to SW0047	IPv4 address	Indicates the IP address (IPv4) set in the own station.  (1): Third octet (2): Fourth octet (3): First octet (4): Second octet	○	○
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 device station (master station only) 10H: Parameter not received (local station only) 11H: Outside the range of own station numbers 12H: Reserved station setting of own station (local station only) 14H: Master station duplication (master station only) 16H: Station number not set (local station only) 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 if set as an error invalid station.) (Updated even if set as a 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 device stations setting value	Stores the total number of device stations that are set by the parameters. Range: 1 to 120[*1]	○	○
SW0059	Total number of device stations present value	Stores the total number of device stations that are actually connected by data link. Range: 1 to 120[*1] (0 when own station is disconnected) Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station when communicating in multicast mode, the CC-Link IE TSN Class A remote station is reflected as a station performing normal data link.	○	○
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) Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station when communicating in multicast mode, the CC-Link IE TSN Class A remote station is reflected as a station performing normal data link. (Conditions) • This register is enabled when 'Data link error status of own station' (SB0049) is off.	○	○

No.	Name	Description	Availability	
			PLCopen Motion control FB mode	Simple Motion mode
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.	○	○
SW0066	Connection status of own station	Stores the connection status of the own station. 00H: Normal (communication in progress on P1 and P2) 01H: Normal (communication in progress on P1, cable disconnected on P2) 04H: Normal (loopback 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) 40H: Normal (cable disconnected on P1, loopback communication in progress on P2)	○	○
SW0070	Loopback station number 1	Stores the number of the station where a loopback is being performed. 0: No loopback stations 1 to 120: Station number of the device station carrying out loopback 125: Master station carrying out loopback 65535: Station not set in the network configuration setting carrying out loopback (Conditions) This relay is enabled when 'Data link status of own station' (SB0049) is OFF, or 'Network topology setting' (SB0078) is ON. When 'Data link status of own station' (SB0049) is turned ON (error), data prior to error is held.	○	×
SW0071	Loopback station number 2		○	×
SW0072	Communication cycle intervals (Calculation value)	Stores the communication cycle intervals that were calculated by the number of device 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 device 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. When FFFFFFFFH (maximum value 4294967295) is counted, counting stops.	○	○
SW0077	PORT1 total number of received data (upper 1 word)		○	○
SW0078	Transient transmission time (Calculation value)	Stores the transient transmission time that are calculated by the number of device 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 device stations which are actually connected. (Unit: μs)	○	○

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>PLCopen Motion control FB mode</th><th>Simple Motion mode</th></tr>
<tr><td>SW007A</td><td>Transient transmission addition time (calculation value)</td><td>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)</td><td>○</td><td>○</td></tr>
<tr><td>SW007C</td><td>PORT2 cable disconnection detection count</td><td>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.</td><td>○</td><td>×</td></tr>
<tr><td>SW007D</td><td>PORT2 receive error detection count</td><td>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.</td><td>○</td><td>×</td></tr>
<tr><td>SW007E</td><td>PORT2 total number of received data (lower 1 word)</td><td rowspan="2">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.
When FFFFFFFFH (maximum value 4294967295) is counted, counting stops.</td><td>○</td><td>×</td></tr>
<tr><td>SW007F</td><td>PORT2 total number of received data (upper 1 word)</td><td>○</td><td>×</td></tr>
<tr><td>SW0080 to SW009F</td><td>REMFR/REMTO instruction execution status</td><td>Stores the execution status of the REMFR/REMTO/REMFRD/REMTOD instruction for each channel.
SW0080 to SW009F: Channel 1 to Channel 32
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW00B0 to SW00B7</td><td>Data link status of each station</td><td>Stores the data link status of each station.
0: Data link normally operating station
1: Data link faulty station
• 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.
• If no response is received for several communication cycles, the station is determined to be a data link faulty station.
• Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station when communicating in multicast mode, "0: Data link normally operating station" is reflected to the CC-Link IE TSN Class A remote station.
<table><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><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></table>
Each No. in the table represents a station No.
— is fixed to 0.
(Conditions)
• Stations that surpass the maximum station No. are ignored.
(Also used in the CLPA conformance test.)</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>PLCopen Motion control FB mode</th><th>Simple Motion mode</th></tr>
<tr><td>SW00C0
to
SW00C7</td><td>Reserved station setting status</td><td>Stores the reserved station setting status of each station.
0: Station other than a reserved station
1: Reserved station

<table><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><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></table>
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(Condition)
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(Also used in the CLPA conformance test.)</td><td>○</td><td>○</td></tr>
<tr><td>SW00C8
to
SW00CF</td><td>Parameter setting status</td><td>Stores the status of parameter settings.
0: Station not set in the parameter
1: Station set in the parameter

<table><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><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></table>
Each No. in the table represents a station No.
— is fixed to 0.
(Conditions)
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<tr><td>SW00D0
to
SW00D7</td><td>Error invalid station setting status</td><td>Stores the error invalid station setting status of each station.
0: Station other than an error invalid station
1: Error invalid station

<table><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><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></table>
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— is fixed to 0.
(Condition)
• Stations that surpass the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
</table>

No.	Name	Description	Availability	
			PLCopen Motion control FB mode	Simple Motion mode
SW00E8 to SW00EF	Station type match status	Stores the match status between the station type set in the master station and that of the device station. 0: Station type match 1: Station type mismatch Each No. in the table represents a station No. — is fixed to 0.	○	○
SW00F0 to SW00F7	CPU operating status of each station	Stores the CPU operating status of each station. 0: RUN, PAUSE 1: STOP or moderate/major error occurring 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. • Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station when communicating in multicast mode, "0: RUN, PAUSE" is reflected to the CC-Link IE TSN Class A remote station.	○	○
SW0100 to SW0107	CPU moderate/major error status of each station	Stores the moderate/major error occurrence status of each station. 0: No moderate/major error 1: Moderate/major error occurring 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. • Since a local station cannot obtain the station information of the CC-Link IE TSN Class A remote station when communicating in multicast mode, "0: No moderate/major error" is reflected to the CC-Link IE TSN Class A remote station. • When using PLCopen motion control FB mode, if the communication cycle interval setting is less than 125μs, this will be fixed at "OFF: No moderate/major error".	○	○

	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
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
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

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>PLCopen Motion control FB mode</th><th>Simple Motion mode</th></tr>
<tr><td>SW0110 to SW0117</td><td>CPU minor error status of each station</td><td>Stores the minor error occurrence status of each station.
0: Normal, or a moderate or major error occurring
1: Minor error occurring
<table><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><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></table>Each No. in the table represents a station No.
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(Condition)
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• When using PLCopen motion control FB mode, if the communication cycle interval setting is less than 125μs, the status of each station will be fixed at "0: Normal, or a moderate or major error occurring".</td><td>○</td><td>○</td></tr>
<tr><td>SW0160 to SW0167</td><td>Execution result of device station parameter automatic setting function</td><td>When the device station parameter automatic setting is completed with an error, the bit of the target station is turned ON.
OFF: Completed successfully
ON: Completed with an error
When completed with an error, the error code is stored in 'Detailed execution result of device station parameter automatic setting' (SW0194).
When completed with an error caused by the master station, the bit is not turned on.
<table><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><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></table>Each No. in the table represents a station No.
— is fixed to 0.</td><td>○</td><td>○</td></tr>
<tr><td>SW0194</td><td>Detailed execution result of device station parameter automatic setting</td><td>When the device station parameter automatic setting is completed with an error, the error code is stored.
When completed with an error caused by the device station, the bit of the target station of 'Execution result of device station parameter automatic setting function' (SW0160 to SW0167) is turned ON.</td><td>○</td><td>○</td></tr>
<tr><td>SW0198</td><td>Link dedicated instructions processing result CH3</td><td>Stores the processing results of the link dedicated instruction that used channel 3 of the own station.
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW0199</td><td>Link dedicated instructions processing result CH4</td><td>Stores the processing results of the link dedicated instruction that used channel 4 of the own station.
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW019A</td><td>Link dedicated instructions processing result CH5</td><td>Stores the processing results of the link dedicated instruction that used channel 5 of the own station.
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>PLCopen Motion control FB mode</th><th>Simple Motion mode</th></tr>
<tr><td>SW019B</td><td>Link dedicated instructions processing result CH6</td><td>Stores the processing results of the link dedicated instruction that used channel 6 of the own station.
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW019C</td><td>Link dedicated instructions processing result CH7</td><td>Stores the processing results of the link dedicated instruction that used channel 7 of the own station.
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW019D</td><td>Link dedicated instructions processing result CH8</td><td>Stores the processing results of the link dedicated instruction that used channel 8 of the own station.
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW01A0 to SW01A7</td><td>Station protocol version 2.0 support status</td><td>Stores the protocol version 2.0 compatibility status of each station.
0: Not supported
1: Supported
<table><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><tr><td>SW01A0</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>SW01A1</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>SW01A2</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>SW01A3</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>SW01A4</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>SW01A5</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>SW01A6</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>SW01A7</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></table>Each number in the table represents a station number.
— is fixed to 0.
(Conditions)
• Stations that surpass the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW01C0 to SW01C7</td><td>Information of CC-Link IE TSN Network synchronous communication function of each station</td><td>Stores whether each station supports the CC-Link IE TSN Network synchronous communication function.
0: Not supported
1: Supported
<table><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><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></table>Each No. in the table represents a station No.
— is fixed to 0.
(Condition)
• Stations that surpass the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>PLCopen Motion control FB mode</th><th>Simple Motion mode</th></tr>
<tr><td>SW01C8
to
SW01CF</td><td>Synchronous/non-synchronous operating status information of each station</td><td>Stores the operating status of the CC-Link IE TSN Network synchronous communication function of each station.
0: Non-synchronous
1: Synchronous
<table><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><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></table>Each No. in the table represents a station No.
— is fixed to 0.
(Condition)
• Stations that surpass the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW01D0
to
SW01D7</td><td>Watchdog counter operating status information for each station</td><td>Stores the watchdog counter operating status information for each station in CC-Link IE TSN communications. (Station No.1 to 120)
0: Not operating
1: Operating
Stations which are not performing data links are treated as "0: Not operating" because the information indicates that device stations are communicating using the watchdog counter.
<table><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><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></table>Each No. in the table represents a station No.
— is fixed to 0.
(Condition)
• Stations that surpass the maximum station No. are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW01E9</td><td>Inter-module synchronization cycle over count</td><td>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.</td><td>○</td><td>○</td></tr>
<tr><td>SW01EA
to
SW01EB</td><td>Inter-module synchronization cycle setting value</td><td>Stores the cycle setting value of the fixed interval synchronization of the inter-module synchronization. (Unit: μs)
"0" is stored when the inter-module synchronization function is not used.</td><td>○</td><td>○</td></tr>
<tr><td>SW025A</td><td>Remote device forced output request result</td><td>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.</td><td>○</td><td>○</td></tr>
<tr><td>SW02A0
to
SW02A7</td><td>Motion control station setting status</td><td>Stores the motion control station setting status of each station. (Station No. 1 to 120)
0: Standard station
1: Motion control station</td><td>○</td><td>○</td></tr>
</table>

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<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>PLCopen Motion control FB mode</th><th>Simple Motion mode</th></tr>
<tr><td>SW0470 to SW047F</td><td>NMT state machine</td><td>Stores the communication status of the device 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 device station is disconnected.
1: In the CANopen function initialization sequence, the NMT state machine is in the Operational state.
The value of the device station that does not support CANopen communications is 0.
This value is stored by each module number of the device stations set in the network configuration setting.</td><td>○</td><td>○</td></tr>
<tr><td>SW04A0</td><td>Time synchronization method</td><td>Stores the synchronization method.
0: IEEE 1588
1: IEEE 802.1AS</td><td>○</td><td>○</td></tr>
<tr><td>SW04B0 to SW04B7</td><td>Time synchronization status of each station</td><td>Stores the time synchronization status of each station. (Station number: 1 to 120)
0: Station that does not perform time synchronization
1: Station that performs time synchronization
The time synchronization method can be checked in 'Time synchronization method' (SW04A0).
<table><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><tr><td>SW04B0</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>SW04B1</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>SW04B2</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>SW04B3</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>SW04B4</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>SW04B5</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>SW04B6</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>SW04B7</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></table>Each No. in the table represents a station No.
— is fixed to 0.
(Conditions)
• Stations that surpass the maximum station No are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW04C0</td><td>Driver communication cycle interval</td><td>Stores the driver communication cycle currently operating. (Unit: μs)
Fixed to 0 when driver communication is disabled.</td><td>○</td><td>○</td></tr>
<tr><td>SW04C1</td><td>Driver communication cycle system reservation time</td><td>Stores the system reservation time in 'Driver communication cycle interval' (SW04C0). (Unit: μs)
Fixed to 0 when driver communication is disabled.</td><td>○</td><td>○</td></tr>
<tr><td>SW04C2</td><td>Driver communication cycle cyclic transmission time</td><td>Stores the cyclic transmission time in 'Driver communication cycle interval' (SW04C0). (Unit: μs)
Fixed to 0 when driver communication is disabled.</td><td>○</td><td>○</td></tr>
<tr><td>SW04C3</td><td>Driver communication cycle transient transmission time</td><td>Stores the transient transmission time in 'Driver communication cycle interval' (SW04C0). (Unit: μs)
Fixed to 0 when driver communication is disabled.</td><td>○</td><td>○</td></tr>
<tr><td>SW04C4</td><td>Driver communication magnification (basic)</td><td>Stores the magnification of the basic communication cycle conversion based on 'Driver communication cycle interval' (SW04C0).
Fixed to 0 when driver communication is disabled.</td><td>○</td><td>○</td></tr>
<tr><td>SW04C5</td><td>Driver communication magnification (medium-speed)</td><td>Stores the magnification of the multiple cycle setting (medium-speed) conversion based on 'Driver communication cycle interval' (SW04C0).
Fixed to 0 when driver communication is disabled.</td><td>○</td><td>○</td></tr>
<tr><td>SW04C6</td><td>Driver communication magnification (low-speed)</td><td>Stores the magnification of the multiple cycle setting (low-speed) conversion based on 'Driver communication cycle interval' (SW04C0).
Fixed to 0 when driver communication is disabled.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>PLCopen Motion control FB mode</th><th>Simple Motion mode</th></tr>
<tr><td>SW0500 to SW0507</td><td>Co-recording each station supporting information</td><td>Stores the supporting information of each station. (Station number 1 to 120)
0: Not supported
1: Supported
<table><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><tr><td>SW0500</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>SW0501</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>SW0502</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>SW0503</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>SW0504</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>SW0505</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>SW0506</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>SW0507</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></table>Each number in the table represents a station number.
— is fixed to 0.</td><td>○</td><td>×</td></tr>
<tr><td>SW0510 to SW0517</td><td>Co-recording each station setting information</td><td>Stores the setting information of each station. (Station number 1 to 120)
0: Not use
1: Use
<table><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><tr><td>SW0510</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>SW0511</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>SW0512</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>SW0513</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>SW0514</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>SW0515</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>SW0516</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>SW0517</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></table>Each number in the table represents a station number.
— is fixed to 0.</td><td>○</td><td>×</td></tr>
</table>

*1 For the version of Add-on baseSystem, "1.4" or earlier, the range is "1 to 64".

A

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.

Link dedicated instructions

The following table lists the instructions used for transient transmission to or from programmable controllers of other stations. Each link dedicated instruction allows access to a station on a network other than CC-Link IE TSN.

Instruction	Description
READ	Reads the data in units of words from devices in the programmable controllers of other stations.
SREAD	Reads the data in units of words from devices in the programmable controllers of other stations. When reading of the data is completed, another station devices are turned on.
WRITE	Writes the data in units of words to devices in the programmable controllers of other stations.
SWRITE	Writes the data in units of words to devices in the programmable controllers of other stations. When writing of the data is completed, another station devices are turned on.
SEND	Sends data to the programmable controllers of other stations.
RECV	Reads the data received from the programmable controllers of other stations. (For a main routine program)
REQ	Requests the remote RUN/STOP to the programmable controllers of other stations.
	Reads/writes clock data from/to the programmable controllers of other stations.

Transient transmission ranges

In a single network system, communication with all stations on the network is possible.
In multi-network system, communications can be made with stations up to eight networks apart.

Precautions

■When multiple link dedicated instructions are executed simultaneously

When executing multiple link dedicated instructions simultaneously, check that the channels for the instructions are not duplicated. Link dedicated instructions with a same channel number cannot be executed simultaneously. To use the same channel for multiple link dedicated instructions, configure an interlock so that an instruction is executed after completion of another.

■When different communication speeds are set for the master station and target station

- When executing a dedicated instruction, execute it on the master station.
- Do not execute multiple dedicated instructions simultaneously. If multiple dedicated instructions are executed simultaneously, the other dedicated instruction may not be executed. When executing multiple dedicated instructions, configure an interlock so that an instruction is executed after completion of another.

Remote instructions

The following table lists the instructions used for transient transmission to the remote station.

Restriction

When the version of Add-on baseSystem is "1.22" or earlier remote instructions are not supported.

Instruction	Description
REMFR*1	Reads data in units of words from the buffer memory in the remote station. (16-bit address specification)
REMFRD*1	Reads data in units of words from the buffer memory in the remote station. (32-bit address specification)
REMFRIP*1	Reads data in units of words from the buffer memory in the remote station. (Target station IP address specification) (16-bit address specification)
REMFRDIP*1	Reads data in units of words from the buffer memory in the remote station. (Target station IP address specification) (32-bit address specification)
REMTO*1	Writes data in units of words to the buffer memory in the remote station. (16-bit address specification)
REMTOD*1	Writes data in units of words to the buffer memory in the remote station. (32-bit address specification)
REMTOIP*1	Writes data in units of words to the buffer memory in the remote station. (Target station IP address specification) (16-bit address specification)
REMTODIP*1	Writes data in units of words to the buffer memory in the remote station. (Target station IP address specification) (32-bit address specification)

*1 The instruction cannot be executed on the local station. Execute it on the master station.

Transient transmission ranges

In a single network system, communication with the remote station on the network is possible.
Communication is not available with stations in other networks.

Precautions

When using the REMFR, REMTO, REMFRD, or REMTOD instructions, configure an interlock with the following module devices.

- 'Data link error status of own station' (SB0049)
- 'Data link status of each station' (SW00B0 to SW00B7) of the target station

Check that the data link status is normal. ('Data link error status of own station' (SB0049) and 'Data link status of each station' (SW00B0 to SW00B7) of the target station are OFF.)

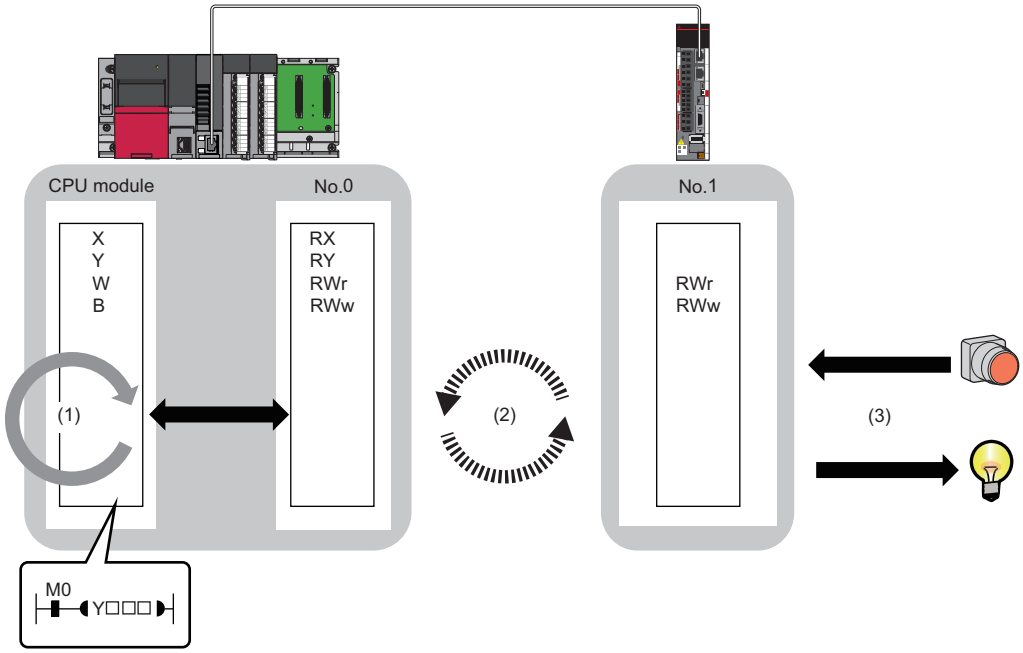
SLMP communication instruction

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 306 Communication cycle interval

(3) Processing time of the device station: Manual of the device station used

PLCopen Motion control FB mode

The cyclic transmission delay time in the PLCopen Motion control FB mode consists of the following. (☞ Page 299 Cyclic transmission delay time)

(2) Communication cycle interval (cyclic data transfer processing time) + (3) Processing time of the device station

Simple Motion mode

The cyclic transmission delay time in the Simple Motion mode consists of the following. (☞ Page 299 Cyclic transmission delay time)

(1) Sequence scan time of the master station + (2) Communication cycle interval (cyclic data transfer processing time) + (3) Processing time of the device station

Cyclic transmission delay time

This section describes how to calculate the following cyclic transmission delay times.

- The time between the transmission source CPU module device turning ON or OFF and the transmission destination CPU module device turning ON or OFF
- The time between data setting in the transmission source CPU module device and the data being stored in the transmission destination CPU module device

In "Basic Settings" of the master station, when "Communication Period Setting" of the communication destination in "Network Configuration Settings" is set to an option other than "Basic Period", multiply the LS (communication cycle intervals) by the multiplier corresponding to the set option, which is specified in "Multiple Period Setting" under "Communication Period Setting".

At this time, the multiple is as follows, depending on "Communication Period Setting" under "Basic Settings" and "CC-Link IE TSN Class" under "Network Configuration Settings".

- For "CC-Link IE TSN Class B": The multiple specified in "Multiple Period Setting" in "Communication Period Setting" under "Basic Settings"
- When "CC-Link IE TSN Class A" and "Communication Period Setting" are "Normal-Speed": The multiple specified in "Multiple Period Setting" in "Communication Period Setting" under "Basic Settings"
- When "CC-Link IE TSN Class A" and "Communication Period Setting" are "Low-Speed": The multiple × n specified in "Multiple Period Setting" in "Communication Period Setting" under "Basic Settings"

n can be checked with 'Device station cyclic transmission information' (Un\G1294304).

Stations with "CC-Link IE TSN Class A" where "Communication Period Setting" is set to "Low-Speed" are grouped by the sizes of cyclic data sent from the master station to a device station or cyclic data which the master station receives from a device station. The number n is determined by the number of the groups.

The algorithm for determining n is shown below.

No.	Processing	Branch		Loop 1	Loop 2	Detailed description
		Yes	No			
1	Start	—	—	—	—	Check the stations in "Network Configuration Settings" for the master station in the order of the station No. column to assign stations with "CC-Link IE TSN Class A" whose "Communication Period Setting" is "Low-Speed" to groups.
2	Loop according to the number of stations (i = 1; i ≤ set stations; i++)	—	—	No.2 to No.11	—	Check device stations with the station No. of 1 to 120 in "Network Configuration Settings" for the master station one by one. (Loop the processing of No.2 to No.11 for the number of stations)
3	Are "CC-Link IE TSN Class A" and "Communication Period Setting" set to "Low-Speed"?	→No.4	→No.11		—	In "Network Configuration Settings" of the master station, check the "CC-Link IE TSN Class" and "Communication Period Setting" of the i-th station. If "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed", perform the processing starting from No.4.
4	Calculate the values for cyclic data size (DMsi) sent from the master station to a device station and cyclic data size (DSsi) which the master station receives from a device station.	—	—		—	If DMsi and DSsi are defined as the sizes of cyclic data sent from the master station to a device station and cyclic data which the master station receives from a device station, they are calculated by the following formulas: DMsi = (HBL × n1i) + (16 × n2i) + ndmi DSsi = (HBL × n3i) + (20 × n4i) + ndsi
5	Loop up to the maximum number of groups (j = 1; j ≤ 120; j++)	—	—		No.5 to No.10	A group can be assigned up to a total of 2K bytes, and it is determined in order, starting from 1, which group number the i-th station can be assigned to from 1 to 120. (Loop the processing of No.5 to No.10 for the number of stations)
6	Does it satisfy GMsj+Dmsi ≤ 2044	→No.7	→No.10			If GMsj is defined as the total value of the data sizes of the cyclic data sent from the master station to device stations assigned to the jth group, determine whether the following condition is met. GMsj + DMsi ≤ 2044
7	Does it satisfy GSsj+DSsi ≤ 2044	→No.8	→No.10			If GSsj is defined as the total value of the data sizes of the cyclic data which the master station receives from device stations assigned to the jth group, determine whether the following condition is met. GSsj + DSsi ≤ 2044
8	Update the data size (GMsj, GSsj) of the assigned group.	—	—			When the conditions No.6 and No.7 are both satisfied, the values of GMsj and GSsj will be updated.
9	Assign the group number j to the i-th station.	—	—			When the conditions No.6 and No.7 are both satisfied, the group number j is assigned to the i-th station.
10	End of loop No.5	—	—			—
11	End of loop No.2	—	—		—	—
12	Get the maximum value J of the group number.	—	—	—	—	After assigning a group number to all "CC-Link IE TSN Class A" and "Communication Period Setting" stations with "Low-Speed", the maximum value J of the group number is obtained.
13	Round up the calculated value to the nearest integer of n = J ÷ 4	—	—	—	—	n is determined from the following equation: Round up the calculated value to the nearest integer of n = J ÷ 4
14	End	—	—	—	—	—

The following shows the variable names used by the algorithm.

Name of variable	Description
HBL	42
n1i	Round up the calculated value to the nearest integer of (ndmi + (16 × n2i)) ÷ 1484 When the calculation result of n1i is 2 or greater, add 1 to n2i.
n2i	■Other than ■ below (RYbi + RWwbi) RYbi: Round up the calculated value to the nearest integer of (The "RY Setting" number of points for the i-th station in which "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed") ÷ 11744 RWwbi: Round up the calculated value to the nearest integer of (The "RWw Setting" number of points for the i-th station in which "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed") ÷ 734 ■A station set to "CC-Link IE TSN Class A" and "Low-Speed" in "Communication Period Setting" for the i-th station is a CANopen communication compatible device n7i
ndmi	■Other than ■ below (The "RY Setting" number of points for the i-th station in which "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed") ÷ 8 + (The "RWw Setting" number of points for the i-th station in which "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed") × 2 ■A station set to "CC-Link IE TSN Class A" and "Low-Speed" in "Communication Period Setting" for the i-th station is a CANopen communication compatible device n5i × 2
n3i	Round up the calculated value to the nearest integer of (ndsi + (20 × n4i)) ÷ 1484
n4i	■Other than ■ below (RXbi + RWrbi) + 1 RXbi: Round up the calculated value to the nearest integer of (The "RX Setting" number of points for the i-th station in which "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed") ÷ 11712 RWrbi: Round up the calculated value to the nearest integer of (The "RWr Setting" number of points for the i-th station in which "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed") ÷ 732 ■A station set to "CC-Link IE TSN Class A" and "Low-Speed" in "Communication Period Setting" for the i-th station is a CANopen communication compatible device n7i + 1
ndsi	■Other than ■ below (The "RX Setting" number of points for the i-th station in which "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed") ÷ 8 + (The "RWr Setting" number of points for the i-th station in which "CC-Link IE TSN Class A" and "Communication Period Setting" are set to "Low-Speed") × 2 + 8 ■A station set to "CC-Link IE TSN Class A" and "Low-Speed" in "Communication Period Setting" for the i-th station is a CANopen communication compatible device n6i × 2 + 8
n5i	A total number of device points for RPDO set in the PDO mapping whose stations are set to "CC-Link IE TSN Class A" and "Low-Speed" in "Communication Period Setting" for the i-th station
n6i	A total number of device points for TPDO set in the PDO mapping whose station is set to "CC-Link IE TSN Class A" and "Low-Speed" in "Communication Period Setting" for the i-th station
n7i	A total number of the main modules and extension modules whose stations are set to "CC-Link IE TSN Class A" and "Low-Speed" in "Communication Period Setting" for the i-th station

Ex.

When using the inverter FR-E800 (RX: 32 points, RY: 32 points, RWr: 32 points, RWw: 32 points)

When 1 ≤ the number of inverters ≤ 44, n = 1

When 45 ≤ the number of inverters ≤ 88, n = 2

When 89 ≤ the number of inverters ≤ 120, n = 3

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 × 1) + (LS × n1) + Rio	(SM × 1) + (LS × 1) + Rio
Maximum value	(SM × 1) + (LS × (n1 + 1)) + Rio	(SM × 1) + (LS × 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 ÷ 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 × n2) + (LS × 1) + Rio	(SM × 1) + (LS × 1) + Rio
Maximum value	(SM × n2) + (LS × 2) + Rio	(SM × 1) + (LS × 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 ÷ SM)	—

■Master station ← local station

When data is transmitted from a local station to the master station as follows:

- Master station (RX) ← local station (RY)
- Master station (RWr) ← local station (RWw)
- Master station (LB) ← local station (LB)
- Master station (LW) ← local station (LW)

Calculation value	Station-based block data assurance	No station-based block data assurance
Normal value	If LS < SL: (SM × 1) + (LS × (n1+ 1)) + (SL × 1)	(SM × 1) + (LS × 2) + (SL × 1)
	If LS ≥ SL: (SM × 1) + (LS × (n1 + 2))	
Maximum value	(SM × 2) + (LS × (n1 + 2)) + (SL × 1)	(SM × 2) + (LS × 3) + (SL × 1)

- Variable

Name of variable	Description	Unit
SM	Master station sequence scan time	μs
LS	Communication cycle intervals (can be checked in the SW0060)	μs
SL	Local station sequence scan time	μs
n1	Round up the calculated value to the nearest integer of (SM ÷ LS)	—

■Master station → local station

When data is transmitted from the master station to a local station as follows:

- Master station (RX) → local station (RY)
- Master station (RWr) → local station (RWw)
- Master station (LB) → local station (LB)
- Master station (LW) → local station (LW)

Calculation value	Station-based block data assurance	No station-based block data assurance
Normal value	If LS < SM: (SM × 1) + (LS × (n3 + 1)) + (SL × 1)	(SM × 1) + (LS × 2) + (SL × 1)
	If LS ≥ SM: (LS × (n3 + 2)) + (SL × 1)	
Maximum value	(SM × 1) + (LS × (n3 + 2)) + (SL × 2)	(SM × 2) + (LS × 3) + (SL × 1)

- Variable

Name of variable	Description	Unit
SM	Master station sequence scan time	μs
LS	Communication cycle intervals (can be checked in the SW0060)	μs
SL	Local station sequence scan time	μs
n3	Round up the calculated value to the nearest integer of (SL ÷ LS)	—

Motion control station (When using the PLCopen Motion control FB mode)

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 × 2) + Rio	(LS × 1) + Rio
Maximum value	(LS × 3) + Rio	(LS × 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 × 3) + Rio	(LS × 2) + Rio
Maximum value	(LS × 4) + Rio	(LS × 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

Motion control station (When using the Simple Motion mode)

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 × 1) + Rio
Maximum value	(LS × 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	Transmission delay time
Normal value	(LS × 2) + Rio
Maximum value	(LS × 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

A

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	1Gbps	☞ Page 308 Communication cycle interval: Unicast mode (1Gbps)
	100Mbps	☞ Page 312 Communication cycle interval: Unicast mode (100Mbps)
Multicast mode	1Gbps	☞ Page 315 Communication cycle interval: Multicast mode (1Gbps)
	100Mbps	☞ Page 319 Communication cycle interval: Multicast mode (100Mbps)

Precautions

■When cyclic transmission is not performed with a calculation value used as a setting value

The minimum values for communication cycle interval and cyclic transmission time calculated by the formulas serve as a guide. If cyclic transmission is not performed while the calculation value is set, set a value obtained by the following formula: Minimum value for cyclic transmission time + Greatest value among the two values shown below.

- 10% of the minimum value of the calculated cyclic transmission time
- When the communication speed for the master station is set to 1Gbps: The number of device stations × 2μs
- When the communication speed for the master station is set to 100Mbps: The number of device stations × 20μs

Each calculation value obtained from the calculation formulas are stored in the following SWs.

- SW0072: Communication cycle interval (calculation value) [μs]
- SW0073: Cyclic transmission time (calculation value) [μs]
- SW0078: Transient transmission time (calculation value) [μs]

■When the calculated value is greater than the setting

If each calculation result is larger than the set value of "Basic Period Setting" under "Basic Settings" as follows, an error occurs.

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.

- 3010H: When the communication cycle interval (calculation value) [μs] is larger than the set value of "Communication Period Interval Setting"
- 3011H: When the cyclic transmission time (calculation value) [μs] is larger than the set value of "Cyclic Transmission Time"
- 3013H: When the transient transmission time (calculation value) [μs] is larger than the displayed value of "Transient Transmission Time"

■When the general CC-Link IE TSN module is CC-Link IE TSN Class A

When the "CC-Link IE TSN Class Setting" of the general CC-Link IE TSN module added to the list of network configuration setting stations is CC-Link IE TSN Class A, when the calculated values for the communication cycle interval (calculated value) (SW0072) and the cyclic transmission time (calculated value) (SW0073) are set to "Communication Period Interval Setting" and "Cyclic Transmission Time", cyclic transmission may not be possible. In this case, perform one of the following operations.

- Select the actual equipment to be used from the "Module List" and add it to the list of stations".
- Confirm the maximum response time during time-managed polling in the manual of the device used, and calculate and set the communication cycle interval and cyclic transmission time.

■When using the PLCopen Motion control FB mode

- 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 125.00μs or longer. If it is set to 31.25μs and 62.50μs, the operation formulas cannot be applied. The following table lists the numbers of connectable device stations when 31.25μs or 62.50μs is set.

Communication cycle interval	RD78G	RD78GH
31.25μs	—	2 stations
62.50μs	1 station	4 stations

- For the number of connectable axes with the communication cycle interval of 31.25μs and 62.50μs, refer to "Operation Cycle" of the following manual.
  MELSEC iQ-R Motion Module User's Manual (Application)
  For 31.25μs and 62.50μs, 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
31.25μs	10.00μs	7.00μs	14.25μs
62.50μs	20.00μs	20.00μs	22.50μs

■When using the Simple Motion mode

- For the motion control stations, set the numbers of points of RWw and RWr as follows.

	RWw	RWr	Remarks
Extension remote station	24 points	27 points	Assign a point to each module, including the start module
Non-extension remote station	40 points	40 points	

- 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)

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	RJ71GN11-T2	1	Local Station	☑	32	32	16	16
	2	General Remote Station	2	Remote Station	☑	16	16	8	8
	3	General Extension Module	-	-	☑			8	8
	4	MR-J5W3-G	3	Remote Station	☑			24	20
	5	MR-J5W3-G_BC_Axis	-	-	☑			24	20
	6	MR-J5W3-G_BC_Axis	-	-	☑			24	20

Item	Module No.	Number of modules
Main module	No.1, No.2, No.4	3
Extension module	No.3, No.5, No.6	3
Local station	No.1	1
Remote station*1	No.2, No.4	2
Device station*1	No.1, No.2, No.4	3

*1 Extension modules are not included.

Communication cycle interval: Unicast mode (1Gbps)

The communication cycle interval [ns] is calculated as follows.

Round up less than 1μs in α_c, α_p, α_{sc}, and α_{sp}.

Supported mode	Calculation formula
When using the Motion control FB mode	$\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$ or 125000, whichever the larger
When using the Simple Motion mode	$\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$ or 250000, whichever the larger

■Cyclic transmission time

Cyclic transmission time [ns] is $\alpha_c + \alpha_{sc}$.

- α_c:This value varies depending on the following.

Item	Calculation formula
When a CC-Link IE TSN Class A device station set as "basic cycle" or "normal speed" does not exist	The largest value in items No.1 to No.4 + No.5
When a CC-Link IE TSN Class A device station set as "basic cycle" or "normal speed" exists	(the larger of No.1 or No.2) + (the larger of No.3 or No.4) + No.5 + No.6

Calculation formula		
No.1	A1 + A2	Calculation formula of main modules A1: {(50 × n1) + (16 × n2) + ndm} × 8 + (Sn - 1) × 830 + 14000 + nh + nrp
		Calculation formula of extension modules A2: {(50 × en1) + (16 × en2) + endm} × 8
No.2	B1 + B2	Calculation formula of main modules B1: {(30 × n1) + (16 × n2) + ndm} × 4 + (1661 × n1) + (Sn - 1) × 830 + 14300 + nh + nrp
		Calculation formula of extension modules B2: {(30 × en1) + (16 × en2) + endm} × 4 + (1661 × en1)
No.3	C1 + C2	Calculation formula of main modules C1: {(50 × n3) + (20 × n4) + nds} × 8 + 14000 + nh + nrp
		Calculation formula of extension modules C2: {(50 × en3) + (20 × en4) + ends} × 8
No.4	D1 + D2	Calculation formula of main modules D1: {(50 × n5) + (20 × n6) + ndl} × 8 + (Sn - 1) × 830 + 14000 + nh + nrp
		Calculation formula of extension modules D2: {(50 × en5) + (20 × en6) + endl} × 8
No.5	E × n7	E: (Sn - 1) × 830 + 39102
No.6	The largest value among the maximum response time during the time-managed polling of the CC-Link IE TSN Class A device stations set to "basic cycle" or "medium speed"	

Point

For the maximum response time for time-managed polling for the device stations, refer to the user's manual for the device station used.

- α_{sc}: {(30 × sn1) + (16 × sn2) + sndm} × 4 + (1661 × sn1)

■Cyclic processing time

Cyclic processing time [ns] is $\alpha_p + \alpha_{sp}$.

- α_p: p1 + p3 + kp + kuu
- α_{sp}: p4

■Variable

Round up the value after decimal point of each variable before assigning it to the calculation formula.

The part in the following description surrounded by " " is the setting value of "Network Configuration Settings".

Name of variable	Description
n1	(ndm + (16 × n2)) / 1488 or Sn, whichever is larger
n2	Sn × (RYb + RWwb) + Ln × (LBmb + LWmb) RYb: Value of (Total number of points of "RY Setting" of main modules) / (11776 × Sn) rounded up to the nearest integer RWwb: Value of (Total number of points of "RWw Setting" of main modules) / (736 × Sn) rounded up to the nearest integer LBmb: Value of (Number of points of "LB setting" set in the master station) / 11776 rounded up to the nearest integer LWmb: Value of (Number of points of "LW setting" set in the master station) / 736 rounded up to the nearest integer
sn1	(sndm + (16 × sn2)) / 1488 or SSn, whichever is larger
sn2	SSn × SRYb SRYb: Value of (Number of connections in "Safety Communication Setting" in "Basic Settings" of the master station) / (18.4 × SSn) rounded up to the nearest integer
ndm	((Total number of points of "RY Setting" of main modules) / 8) + ((Total number of points of "RWw Setting" of main modules) × 2) + ((Number of points of "LB setting" set in the master station) / 8) × ((Number of points of "LW setting" set in the master station) × 2) × Ln

Name of variable	Description
sndm	Number of connections in "Safety Communication Setting" in "Basic Settings" of the master station × 80
Sn	Number of device stations
SSn	Number of device stations using safety communications
Ln	Number of local stations
nh	Switching hub delay time × Number of industrial switches (CC-Link IE TSN certified) connected to the network Switching hub delay time: 50000[*1]
nrp	When "Network Topology" under "Basic Settings" is set to "Line/Star": 0 When "Network Topology" under "Basic Settings" is set to "Ring": 13000
n3	Sn × nhs nhs: Value of (nds + (20 × n4)) / (1488 × Sn) rounded up to the nearest integer
n4	Sn × (RXb + RWrb) + Ln × (LBxmb + LWxmb) + Sn RXb: Value of (Total number of points of "RX Setting" of main modules) / (11744 × Sn) rounded up to the nearest integer RWrb: Value of (Total number of points of "RWr Setting" of main modules) / (734 × Sn) rounded up to the nearest integer LBxmb: Value of (Total number of points of "LB setting" excluding master station) / (11744 × Ln) rounded up to the nearest integer LWxmb: Value of (Total number of points of "LW setting" excluding master station) / (734 × Ln) rounded up to the nearest integer
nds	((Total number of points of "RX setting" of main modules) / 8) + ((Total number of points of "RWr setting" of main modules) × 2) + ((Total number of points of "LB setting" excluding the master station) / 8) + ((Total number of points of "LW setting" excluding the master station) × 2) + 8 × Sn
n5	(ndl + 20 × n6) / 1488
n6	(ndl - 8) / 1468 + 1
ndl	(RXl / 8) + (RWrl × 2) + (LBl / 8) + (LWl × 2) + 8 RXl: Number of points of "RX Setting" of the main module of the device station[*2] to be used as the maximum number of link points RWrl: Number of points of "RWr Setting" of the main module of the device station[*2] to be used as the maximum number of link points LBl: Number of points of "LB setting" of the device station[*2] to be used as the maximum number of link points LWl: Number of points of "LW setting" of the device station[*2] to be used as the maximum number of link points
n7	When "CC-Link IE TSN Class Setting" is set to "Mixture of CC-Link IE TSN Class B / A or CC-Link IE TSN Class A Only" and "TSN HUB Setting" is set to "Not to Use TSN HUB": 4 Other than the above: 0
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 $mf_i \leq 16$ $mf_i = 1488 - mod$ 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_i: Number of points of "RY Setting" of the main module of the station number i / 8 $mRWw_i$: 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 $eRyn_i$: 0 (fixed) $eRWwn_i$: 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 $eRyAll_i$: 0 (fixed) $eRWwAll_i$: Total number of points of "RWw Setting" of the extension modules of the station number i

Name of variable	Description
en3	$\sum_{i=1}^{120} en3_i$ $en3_i = ((ends_i + en4_i \times 20) / 1488)^{*3} - k_i$ However, if $ends_i$ is 0, $en3_i$ becomes 0. $k_i = 1$ if $sf_i > 20$, $k_i = 0$ if $sf_i \leq 20$ $sf_i = 1488 - mod$ mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^{*3} \times 20) + (mRWr_i + (mRWr_i / 1468)^{*3} \times 20)) / 1488\}$ However, if the calculation result of sf_i is 1488, this value becomes 0. i: Station number mRx_i: Number of points of "RX Setting" of the main module of the station number i / 8 $mRWr_i$: Number of points of "RWr 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 $eRxn_i$: 0 (fixed) $eRWrn_i$: Number of extension modules which have a number of points of "RWr Setting" of the station number i larger than 0
ends	$\sum_{i=1}^{120} ends_i$ $ends_i = eRxAll_i / 8 + eRWrAll_i \times 2$ i: Station number $eRxAll_i$: 0 (fixed) $eRWrAll_i$: Total number of points of "RWr Setting" of the extension modules of the station number i
en5	$((endl + 20 \times en6) / 1488)^{*3} - k_i$ However, if endl is 0, en5 becomes 0. $k_i = 1$ if $sf_i > 20$, $k_i = 0$ if $sf_i \leq 20$ $sf_i = 1488 - mod$ mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^{*3} \times 20) + (mRWr_i + (mRWr_i / 1468)^{*3} \times 20)) / 1488\}$ However, if the calculation result of sf_i is 1488, this value becomes 0. i: Station number of the device station to be used as the maximum number of link points[*2] mRx_i: Number of points of "RX Setting" of the main module of the station number i / 8 $mRWr_i$: Number of points of "RWr Setting" of the main module of the station number i × 2
en6	$eRxln_i + eRWrln_i + ((endl + (eRxln_i + eRWrln_i) \times 20) / 1488)^{*3} - 1$ However, if endl is 0, the value of en6 becomes 0. i: Station number of the device station to be used as the maximum number of link points[*2] $eRxln_i$: 0 (fixed) $eRWrln_i$: Total number of extension modules which have a number of points of "RWr Setting" of the station number i larger than 0
endl	$eRxlAll_i / 8 + eRWrlAll_i \times 2$ i: Station number of the device station to be used as the maximum number of link points[*2] $eRxlAll_i$: 0 (fixed) $eRWrlAll_i$: Total number of points of "RWr Setting" of the extension modules of the device station to be used as the maximum number of link points[*2]
p1: Processing time of RX/RY/RWr/RWw	{((Total number of points of "RX Setting") + (Total number of points of "RY Setting")) / 8 + ((Total number of points of "RWr Setting") + (Total number of points of "RWw Setting")) × 2} × 5 + (SMn × 1300) + ((Sn - SMn) × 3300) 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
p2: LB/LW processing time	(((Total number of points of "LB setting" excluding master station) / 8) + ((Total number of points of "LW setting" excluding master station) × 2) + ((Number of points of "LB setting" set in the master station) / 8) × Ln + ((Number of points of "LW setting" set in the master station) × 2) × Ln) × 5 + (Sn × 6000) However, if Total number of points of "LB setting" = Total number of points of "LW setting" = 0, then p2 = 0.
p3: Diagnostic information processing time	Sn × 40
p4: Safety I/O processing time	7000 × (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 standard station, the value becomes 78000

Name of variable	Description
kuu: Inter-module synchronization processing time (unicast)	1800 × (Number of device stations) + 10000 However, if the inter-module synchronization is not performed in the master station*4, kuu = 0.

*1 The switching hub delay time changes depending on the industrial switch (CC-Link IE TSN certified) model and settings.

*2 This is the device station with the largest calculation value when ("RX Setting" / 8) + ("RWr Setting" × 2) is calculated for each device 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".

Communication cycle interval: Unicast mode (100Mbps)

The communication cycle interval [ns] is calculated as follows: $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$.

Round up less than 1μs in α_c, α_p, α_{sc}, and α_{sp}.

■Cyclic transmission time

Cyclic transmission time [ns] is $\alpha_c + \alpha_{sc}$.

- α_c: This value varies depending on the following.

Item	Calculation formula
When a CC-Link IE TSN Class A device station set as "basic cycle" or "normal speed" does not exist	The largest value in items No.1 to No.3 + No.4
When a CC-Link IE TSN Class A device station set as "basic cycle" or "normal speed" exists	No.1 + (the value in No.2 or No.3, whichever is larger) + No.4 + No.5

Calculation formula		
No.1	A1 + A2	Calculation formula of main modules A1: {(42 × n1) + (16 × n2) + ndm} × 80 + (Sn - 1) × 5150 + 14000 + nh + nrp
		Calculation formula of extension modules A2: {(42 × en1) + (16 × en2) + endm} × 80
No.2	B1 + B2	Calculation formula of main modules B1: {(42 × n3) + (20 × n4) + nds} × 80 + 14000 + nh + nrp
		Calculation formula of extension modules B2: {(42 × en3) + (20 × en4) + ends} × 80
No.3	C1 + C2	Calculation formula of main modules C1: {(42 × n5) + (20 × n6) + ndl} × 80 + (Sn - 1) × 5150 + 14000 + nh + nrp
		Calculation formula of extension modules C2: {(42 × en5) + (20 × en6) + endl} × 80
No.4	D × n7	D: (Sn - 1) × 5150 + 187440
No.5	The largest value among the maximum response time during the time-managed polling of the CC-Link IE TSN Class A device stations set to "basic cycle" or "medium speed"	

Point

For the maximum response time for time-managed polling for the device stations, refer to the user's manual for the device station used.

- α_{sc}: {(42 × sn3) + (20 × sn4) + sndm} × 80

■Cyclic processing time

Cyclic processing time [ns] is $\alpha_p + \alpha_{sp}$ or 340000, whichever is larger.

- α_p: p1 + p3 + kp + kuu
- α_{sp}: p4

■Variable

Round up the value after decimal point of each variable before assigning it to the calculation formula.

The part in the following description surrounded by " " is the setting value of "Network Configuration Settings".

Name of variable	Description
n1	(ndm + (16 × n2)) / 1488 or Sn, whichever is larger
n2	Sn × (RYb + RWwb) + Ln × (LBmb + LWmb) RYb: Value of (Total number of points of "RY Setting" of main modules) / (11776 × Sn) rounded up to the nearest integer RWwb: Value of (Total number of points of "RWw Setting" of main modules) / (736 × Sn) rounded up to the nearest integer LBmb: Value of (Number of points of "LB setting" set in the master station) / 11776 rounded up to the nearest integer LWmb: Value of (Number of points of "LW setting" set in the master station) / 736 rounded up to the nearest integer
ndm	((Total number of points of "RY Setting" of main modules) / 8) + ((Total number of points of "RWw Setting" of main modules) × 2) + ((Number of points of "LB setting" set in the master station) / 8) × Ln + ((Number of points of "LW setting" set in the master station) × 2) × Ln
sndm	Number of connections in "Safety Communication Setting" in "Basic Settings" of the master station × 80
Sn	Number of device stations
SSn	Number of device stations in which safety communication is performed
Ln	Number of local stations
nh	Switching hub delay time × Number of industrial switches (CC-Link IE TSN certified) connected to the network Switching hub delay time: 160000[*1]
nrp	When "Network Topology" under "Basic Settings" is set to "Line/Star": 0 When "Network Topology" under "Basic Settings" is set to "Ring": 130000

Name of variable	Description
n3	Sn × nhs nhs: Value of (nds + (20 × n4)) / (1488 × Sn) rounded up to the nearest integer
n4	Sn × (RXb + RWrb) + Ln × (LBxmb + LWxmb) + Sn RXb: Value of (Total number of points of "RX Setting" of main modules) / (11744 × Sn) rounded up to the nearest integer RWrb: Value of (Total number of points of "RWr Setting" of main modules) / (734 × Sn) rounded up to the nearest integer LBxmb: Value of (Total number of points of "LB setting" excluding master station) / (11744 × Ln) rounded up to the nearest integer LWxmb: Value of (Total number of points of "LW setting" excluding master station) / (734 × Ln) rounded up to the nearest integer
sn3	SSn × snhs snhs: Value of (sndm + (20 × sn4)) / (1488 × SSn) rounded up to the nearest integer
sn4	SSn × SRYb SRYb: Value of (Number of connections in "Safety Communication Setting" in "Basic Settings" of the master station) / (18.35 × SSn) rounded up to the nearest integer
nds	((Total number of points of "RX Setting" of main modules) / 8) + ((Total number of points of "RWr Setting" of main modules) × 2) + ((Total number of points of "LB setting" excluding the master station) / 8) + ((Total number of points of "LW setting" excluding the master station) × 2) + 8 × Sn
n5	(ndl + 20 × n6) / 1488
n6	(ndl - 8) / 1468 + 1
ndl	(RXl / 8) + (RWrl × 2) + 8 RXl: Number of points of "RX Setting" of the device station to be used as the maximum number of link points*2 RWrl: Number of points of "RWr Setting" of the device station to be used as the maximum number of link points*2 LBl: Number of points of "LB setting" of the device station*2 to be used as the maximum number of link points LWl: Number of points of "LW setting" of the device station*2 to be used as the maximum number of link points
n7	When "CC-Link IE TSN Class Setting" is set to "Mixture of CC-Link IE TSN Class B / A or CC-Link IE TSN Class A Only" and "TSN HUB Setting" is set to "Not to Use TSN HUB": 4 Other than the above: 0
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 $mf_i \leq 16$ $mf_i = 1488 - mod$ 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_i: Number of points of "RY Setting" of the main module of the station number i / 8 $mRWw_i$: 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 $eRyn_i$: 0 (fixed) $eRWwn_i$: 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 $eRyAll_i$: 0 (fixed) $eRWwAll_i$: 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 $sf_i \leq 20$ $sf_i = 1488 - mod$ mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^{*3} \times 20) + (mRWr_i + (mRWr_i / 1468)^{*3} \times 20)) / 1488\}$ However, if the calculation result of sf_i is 1488, this value becomes 0. i: Station number mRx_i: Number of points of "RX Setting" of the main module of the station number i / 8 $mRWr_i$: Number of points of "RWr Setting" of the main module of the station number i × 2

Name of variable	Description
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 $eRxn_i$: 0 (fixed) $eRWrn_i$: Number of extension modules which have a number of points of "RWr Setting" of the station number i larger than 0
ends	$\sum_{i=1}^{120} ends_i$ $ends_i = eRxAll_i / 8 + eRWrAll_i \times 2$ i: Station number $eRxAll_i$: 0 (fixed) $eRWrAll_i$: Total number of points of "RWr Setting" of the extension modules of the station number i
en5	$((endl + 20 \times en6) / 1488)^{*3} - k_i$ However, if endl is 0, en5 becomes 0. $k_i = 1$ if $sf_i > 20$, $k_i = 0$ if $sf_i \leq 20$ $sf_i = 1488 - mod$ mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^{*3} \times 20) + (mRWr_i + (mRWr_i / 1468)^{*3} \times 20)) / 1488\}$ However, if the calculation result of sf_i is 1488, this value becomes 0. i: Station number of the device station to be used as the maximum number of link points[*2] mRx_i: Number of points of "RX Setting" of the main module of the station number i / 8 $mRWr_i$: Number of points of "RWr Setting" of the main module of the station number i × 2
en6	$eRxln_i + eRWrln_i + ((endl + (eRxln_i + eRWrln_i) \times 20) / 1488)^{*3} - 1$ However, if endl is 0, the value of en6 becomes 0. i: Station number of the device station to be used as the maximum number of link points[*2] $eRxln_i$: 0 (fixed) $eRWrln_i$: Total number of extension modules which have a number of points of "RWr Setting" of the station number i larger than 0
endl	$eRxlAll_i / 8 + eRWrlAll_i \times 2$ i: Station number of the device station to be used as the maximum number of link points[*2] $eRxlAll_i$: 0 (fixed) $eRWrlAll_i$: Total number of points of "RWr Setting" of the extension modules of the device station to be used as the maximum number of link points[*2]
p1: Processing time of RX/RY/RWr/RWw	{((Total number of points of "RX Setting") + (Total number of points of "RY Setting")) / 8 + ((Total number of points of "RWr Setting") + (Total number of points of "RWw Setting")) × 2} × 5 + (SMn × 1300) + ((Sn - SMn) × 3300) 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
p2: LB / LW processing time	{((Total number of points of "LB setting" excluding master station) / 8) + ((Total number of points of "LW setting" excluding master station) × 2) + ((Number of points of "LB setting" set in the master station) / 8) × Ln + ((Number of points of "LW setting" set in the master station) × 2) × Ln} × 5 + (Sn × 6000) However, if Total number of points of "LB setting" = Total number of points of "LW setting" = 0, then p2 = 0.
p3: Diagnostic information processing time	Sn × 40
p4: Safety I/O processing time	7000 × (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 standard station, the value becomes 78000
kuu: Inter-module synchronization processing time (unicast)	1800 × (Number of device stations) + 10000 However, if the inter-module synchronization is not performed in the master station[*4], kuu = 0.

*1 The switching hub delay time changes depending on the industrial switch (CC-Link IE TSN certified) model and settings.

*2 This is the device station with the largest calculation value when ("RX Setting" / 8) + ("RWr Setting" × 2) is calculated for each device 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".

Communication cycle interval: Multicast mode (1Gbps)

The communication cycle interval [ns] is calculated as follows.

Round up less than of 1μs in α_c, α_p, α_{sc}, and α_{sp}.

Supported mode	Calculation formula
When using the Motion control FB mode	$\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$ or 125000, whichever the larger
When using the Simple Motion mode	$\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$ or 250000, whichever the larger

■Cyclic transmission time

Cyclic transmission time [ns] is $\alpha_c + \alpha_{sc}$.

- α_c: This value varies depending on the following.

Item	Calculation formula
When a CC-Link IE TSN Class A device station set as "basic cycle" or "normal speed" does not exist	The larger of No.1 or No.2 + No.5
When a CC-Link IE TSN Class A device station set as "basic cycle" or "normal speed" exists	The larger of No.1 or No.2 + No.5 + No.6

Calculation formula			
No.1	A1 + A2 + (the value obtained by the calculation formula in No.3 or No.4, whichever is larger)	Calculation formula of main modules A1: {(50 × (n1r + n1l)) + (16 × (n2r + n2l)) + (ndmr + ndml)} × 8 + (Sn - 1) × 830 + 14000 + nh + nrp
		Calculation formula of extension modules A2: {(50 × en1r) + (16 × en2r) + endmr} × 8
No.2	B1 + B2 + (the value obtained by the calculation formula in No.3 or No.4, whichever is larger)	Calculation formula of main modules B1: {(30 × (n1r + n1l)) + (16 × (n2r + n2l)) + (ndmr + ndml)} × 4 + (1661 × (n1r + n1l)) + (Sn - 1) × 830 + 14300 + nh + nrp
		Calculation formula of extension modules B2: {(30 × en1r) + (16 × en2r) + endmr} × 4 + (1661 × en1r)
No.3	C1 + C2	Calculation formula of main modules C1: {(50 × n3) + (20 × n4) + nds} × 8 + 14000 + nh
		Calculation formula of extension modules C2: {(50 × en3) + (20 × en4) + ends} × 8
No.4	D1 + D2	Calculation formula of main modules D1: {(50 × n5) + (20 × n6) + ndl} × 8 + (Sn - 1) × 830 + 14000 + nh
		Calculation formula of extension modules D2: {(50 × en5) + (20 × en6) + endl} × 8
No.5	E × n7	E: (Sn - 1) × 830 + 39102
No.6	The largest value among the maximum response time during the time-managed polling of the CC-Link IE TSN Class A device stations set to "basic cycle" or "medium speed"	

Point

For the maximum response time for time-managed polling for the device stations, refer to the user's manual for the device station used.

- α_{sc}: The following calculation formula.

■Cyclic processing time

Cyclic processing time [ns] is $\alpha_p + \alpha_{sp}$.

- α_p: p1 + p2 + p3 + kp + kum
- α_{sp}: p4

■Variable

Round up the value after decimal point of each variable before assigning it to the calculation formula.

The part in the following description surrounded by " " is the setting value of "Network Configuration Settings".

Name of variable	Description
n1r	(ndmr + (16 × n2r)) / 1488 or Rn, whichever is larger
n1l	Round up the calculated value to the nearest integer of (ndml + (16 × n2l)) / 1488
sn1r	(sndmr + (16 × sn2r)) / 1488 or SRn, whichever is larger
sn1l	Round up the calculated value to the nearest integer of (sndml + (16 × sn2l)) / 1488
n2r	Rn × (RYrb + RWwrb) RYrb: Value of (Total number of points of "RY setting" set in the remote station (main modules)) / (11776 × Rn) rounded up to the nearest integer RWwrb: Value of (Total number of points of "RWw setting" set in the remote station (main modules)) / (736 × Rn) rounded up to the nearest integer

Name of variable	Description
n2l	RYlb + RWwlb + LBmb + LWmb + 1 RYlb: Value of (Total number of points of "RY setting"[*2]) / 11776 rounded up to the nearest integer RWwlb: Value of (Total number of points of "RWw setting"[*2]) / 736 rounded up to the nearest integer LBmb: {Value of [(Number of points of "LB setting" set in the master station) / 8] rounded up to the nearest multiple of two} / value of 1472 rounded up to the nearest integer LWmb: {Value of [(Number of points of "LW setting" set in the master station) × 2] rounded up to the nearest multiple of two} / value of 1472 rounded up to the nearest integer
sn2r	SRn × SRYrb SRYrb: The number of connections in the remote stations of "Safety Communication Setting" in "Basic Settings" set in the master station / (18.4 × SRn) rounded up to the nearest integer
sn2l	The number of connections of "Safety Communication Setting" in "Basic Settings" set in the master station / 18.4 rounded up to the nearest integer
ndmr	((Total number of points of "RY setting" set in the remote station (main modules)) / 8) + ((Total number of points of "RWw setting" set in the remote station (main modules)) × 2)
ndml	[(Total number of points of "RY setting"[*2]) / 8] + [(Total number of points of "RWw setting" set in the master station[*2]) × 2] + value of [(Number of points of "LB setting" set in the master station) / 8] rounded up to the nearest multiple of two + value of [(Number of points of "LW setting" set in the master station) × 2] rounded up to the nearest multiple of two + 24
sndmr	The number of connections in the remote stations of "Safety Communication Setting" in "Basic Settings" set in the master station × 80
sndml	The number of connections of "Safety Communication Setting" in "Basic Settings" set in the master station × 80
Sn	Number of device stations
Rn	Number of remote stations
SSn	Number of device stations using safety communications
SRn	Number of remote stations using safety communications
Ln	Number of local stations
nh	Switching hub delay time × Number of industrial switches connected to the network Switching hub delay time: 50000[*1]
nrp	When "Network Topology" under "Basic Settings" is set to "Line/Star": 0 When "Network Topology" under "Basic Settings" is set to "Ring": 13000
n3	Sn × nhs nhs: Value of (nds + (20 × n4)) / (1488 × Sn) rounded up to the nearest integer
n4	Sn × (RXb + RWrb) + Ln × (LBxmb + LWxmb) + Sn RXb: Value of (Total number of points of "RX setting" of main modules) / (11744 × Sn) rounded up to the nearest integer RWrb: Value of (Total number of points of "RWr setting" of main modules) / (734 × Sn) rounded up to the nearest integer LBxmb: Value of <{ $\sum_{i=1}^{120}$ [Value of (Number of points of "LB Setting" in the station number i / 8) rounded up to the nearest multiple of two]} / (1468 × Ln) > rounded up to the nearest integer LWxmb: Value of <{ $\sum_{i=1}^{120}$ [Value of (Number of points of "LW Setting" in the station number i / 8) rounded up to the nearest multiple of two]} / (1468 × Ln) > rounded up to the nearest integer
nds	[(Total number of points of "RX setting" of main modules) / 8] + [(Total number of points of "RWr setting" of main modules) × 2] +{ $\sum_{i=1}^{120}$ Value of [(Number of points of "LB Setting" in the station number i) / 8] rounded up to the nearest multiple of two} +{ $\sum_{i=1}^{120}$ Value of [(Number of points of "LW Setting" in the station number i) × 2] rounded up to the nearest multiple of two} + Sn × 8
n5	(ndl + 20 × n6) / 1488
n6	(ndl - 8) / 1468 + 1
ndl	(RXl / 8) + (RWrl × 2) + LBl + LWl + 8 RXl: Number of points of "RX setting" of main modules of the device station[*3] to be used as the maximum number of link points RWrl: Number of points of "RWr setting" of main modules of the device station[*3] to be used as the maximum number of link points LBl: "LB Setting" points of the device station[*3] with the maximum number of link points / value of 8 rounded up to the nearest multiple of two LWl: "LW Setting" points of the device station[*3] with the maximum number of link points × value of 2 rounded up to the nearest multiple of two
n7	When "CC-Link IE TSN Class Setting" is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only" and "TSN HUB Setting" is set to "Not to Use TSN HUB": 4 Other than the above: 0

Name of variable	Description
en1r	$\sum_{i=1}^{120} en1_i$ $en1r_i = ((endmr_i + en2r_i \times 16) / 1488)^{*4} - kr_i$ When station No.i represents a station other than a remote station, $en1r_i$ is 0. When $endmr_i$ is 0, $en1r_i$ is 0. When $mfr_i > 16$, $kr_i = 1$, and when $mfr_i \leq 16$, $kr_i = 0$. mfr_i = 1488 - mod mod: Remainder of $\{((mRyr_i + (mRyr_i / 1472)^{*4} \times 16) + (mRWwr_i + (mRWwr_i / 1472)^{*4} \times 16)) / 1488\}$ However, the value is 0 when the calculation result of mfr_i is 1488. i: Station number $mRyr_i$: Number of points of "RY setting" of main modules with station No.i / 8 $mRWwr_i$: Number of points of "RWw setting" of main modules with station No.i × 2
en2r	$\sum_{i=1}^{120} en2_i$ $en2r_i = eRyrn_i + eRWwrn_i + ((endmr_i + (eRyrn_i + eRWwrn_i) \times 16) / 1488)^{*4} - 1$ When station No.i represents a station other than a remote station, $en2r_i$ is 0. When $endmr_i$ is 0, $en2r_i$ is 0. i: Station number $eRyrn_i$: 0 (fixed) $eRWwrn_i$: Total number of extension modules with station No.i whose number of points of "RWw setting" is more than 0
endmr	$\sum_{i=1}^{120} endm_i$ $endmr_i = eRyrAll_i / 8 + eRWwrAll_i \times 2$ When station No.i represents a station other than a remote station, $endmr_i$ is 0. i: Station number $eRyrAll_i$: 0 (fixed) $eRWwrAll_i$: Total number of points of "RWw setting" of extension modules with station No.i
en3	$\sum_{i=1}^{120} en3_i$ $en3_i = ((ends_i + en4_i \times 20) / 1488)^{*4} - k_i$ However, when $ends_i$ is 0, $en3_i$ is 0. When $sf_i > 20$, $k_i = 1$, and when $sf_i \leq 20$, $k_i = 0$. sf_i = 1488 - mod mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^{*4} \times 20) + (mRWr_i + (mRWr_i / 1468)^{*4} \times 20)) / 1488\}$ However, the value is 0 when the calculation result of sf_i is 1488. i: Station number mRx_i: Number of points of "RX setting" of main modules with station No.i / 8 $mRWr_i$: Number of points of "RWr setting" of main modules with station No.i × 2
en4	$\sum_{i=1}^{120} en4_i$ $en4_i = eRxn_i + eRWrn_i + ((ends_i + (eRxn_i + eRWrn_i) \times 20) / 1488)^{*4} - 1$ However, when $ends_i$ is 0, $en4_i$ is 0. i: Station number $eRxn_i$: 0 (fixed) $eRWrn_i$: Number of extension modules with station No.i whose number of points of "RWr setting" is more than 0
ends	$\sum_{i=1}^{120} ends_i$ $ends_i = eRxAll_i / 8 + eRWrAll_i \times 2$ i: Station number $eRxAll_i$: 0 (fixed) $eRWrAll_i$: Total number of points of "RWr setting" of extension modules with station No.i
en5	$((endl + 20 \times en6) / 1488)^{*4} - k_i$ However, when endl is 0, en5 is 0. When $sf_i > 20$, $k_i = 1$, and when $sf_i \leq 20$, $k_i = 0$. sf_i = 1488 - mod mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^{*4} \times 20) + (mRWr_i + (mRWr_i / 1468)^{*4} \times 20)) / 1488\}$ However, the value is 0 when the calculation result of sf_i is 1488. i: Station number of the device station[*3] to be used as the maximum number of link points mRx_i: Number of points of "RX setting" of main modules with station No.i / 8 $mRWr_i$: Number of points of "RWr setting" of main modules with station No.i × 2

Name of variable	Description
en6	$eRxIn_i + eRWrIn_i + ((endI + (eRxIn_i + eRWrIn_i) \times 20) / 1488)$[*4] - 1 However, when endI is 0, the value for en6 is 0. i: Station number of the device station[*3] to be used as the maximum number of link points $eRxIn_i$: 0 (fixed) $eRWrIn_i$: Total number of extension modules with station No.i whose number of points of "RWr setting" is more than 0
endI	$eRxIAll_i / 8 + eRWrIAll_i \times 2$ i: Station number of the device station[*3] to be used as the maximum number of link points $eRxIAll_i$: 0 (fixed) $eRWrIAll_i$: Total number of points of "RWr setting" of extension modules of the device station[*3] to be used as the maximum number of link points
p1: RX/RY/RWr/RWw processing time	{((Total number of points of "RX setting") + (Total number of points of "RY setting"[*2])) / 8 + ((Total number of points of "RWr setting") + (Total number of points of "RWw setting"[*2])) × 2} × 5 + (SMn × 1300) + ((Sn - SMn) × 3300) However, if Total number of points of "RY setting"[*2] = Total number of points of "RX setting" = Total number of points of "RWr setting" = Total number of points of "RWw setting"[*2] = 0, then p1 = 0.
p2: LB/LW processing time	{((Total number of points of "LB setting" excluding master station) / 8) + ((Total number of points of "LW setting" excluding master station) × 2) + ((Number of points of "LB setting" set in the master station) / 8) + ((Number of points of "LW setting" set in the master station) × 2)} × 5 + (Sn × 6000) However, if Total number of points of "LB setting" = Total number of points of "LW setting" = 0, then p2 = 0.
p3: Diagnostic information processing time	Sn × 40
p4: Safety input/output processing time	7000 × (The number of connections of "Safety Communication Setting" in "Basic Settings" set in the master station) + 20000 However, if the number of connections of "Safety Communication Setting" in "Basic Settings" set in the master station + 0, then p4 = 0.
SMn	Number of motion control stations
kp	35000 However, if there is a standard station, the value becomes 78000
kum: Inter-module synchronous processing time (multicast)	2000 × (Number of device stations) +18000 However, if the inter-module synchronization is not performed in the master station[*5], then kum=0.

*1 The switching hub delay time changes depending on the model and settings of industrial switch (CC-Link IE TSN certified).

*2 Total number of points is the smallest value set in "Start" to the largest value set in "End" of "Network Configuration Settings".

*3 This is the device station with the largest value obtained by summing the following four values for each device station (including extension modules).
- "RX Setting" / 8
- Value of "LB Setting" / 8 rounded up to the nearest multiple of two
- "RWr Setting" × 2
- Value of "LW Setting" × 2 rounded up to the nearest multiple of two

*4 Round up the values in the brackets.

*5 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".

Communication cycle interval: Multicast mode (100Mbps)

The Communication cycle interval [ns] is calculated as follows: $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$.

Round up less than 1μs in α_c, α_p, α_{sc}, and $\alpha\alpha_{sp}$.

■Cyclic transmission time

Cyclic transmission time [ns] is $\alpha_c + \alpha_{sc}$.

- α_c: This value varies depending on the following.

Item	Calculation formula
When a CC-Link IE TSN Class A device station set as "basic cycle" or "normal speed" does not exist	No.1 + No.4
When a CC-Link IE TSN Class A device station set as "basic cycle" or "normal speed" exists	No.1 + No.4 + No.5

Calculation formula		
No.1	A1 + A2 + (the value obtained by the calculation formula in No.2 or No.3, whichever is larger)	Calculation formula of main modules A1: {(42 × (n1r + n1l)) + (16 × (n2r + n2l)) + (ndmr + ndml)} × 80 + (Sn - 1) × 5150 + 14000 + nh + nrp
		Calculation formula of extension modules A2: {(42 × en1r) + (16 × en2r) + endmr} × 80
No.2	B1 + B2	Calculation formula of main modules B1: {(42 × n3) + (20 × n4) + nds} × 80 + 14000 + nh
		Calculation formula of extension modules B2: {(42 × en3) + (20 × en4) + ends} × 80
No.3	C1 + C2	Calculation formula of main modules C1: {(42 × n5) + (20 × n6) + ndl} × 80 + (Sn - 1) × 5150 + 14000 + nh
		Calculation formula of extension modules C2: {(42 × en5) + (20 × en6) + endl} × 80
No.4	D × n7	D: (Sn - 1) × 5150 + 187440
No.5	The largest value among the maximum response time during the time-managed polling of the CC-Link IE TSN Class A device stations set to "basic cycle" or "medium speed"	

Point

For the maximum response time for time-managed polling for the device stations, refer to the user's manual for the device station used.

- α_{sc}: {(42 × (sn1r + sn1l)) + (16 × (sn2r + sn2l)) + (sndmr + sndml)} × 80

■Cyclic processing time

Cyclic processing time [ns] is $\alpha_p + \alpha_{sp}$ or 340000, whichever is larger.

- α_p: p1 + p2 + p3 + kp + kum
- α_{sp}: p4

■Variable

Round up the value after decimal point of each variable before assigning it to the calculation formula.

The part in the following description surrounded by " " is the setting value of "Network Configuration Settings".

Name of variable	Description
n1r	(ndmr + (16 × n2r)) / 1488 or Rn, whichever is larger
n1l	Round up the calculated value to the nearest integer of (ndml + (16 × n2l)) / 1488
sn1r	(sndmr + (16 × sn2r)) / 1488 or SRn, whichever is larger
sn1l	Round up the calculated value to the nearest integer of (sndml + (16 × sn2l)) / 1488
n2r	Rn × (RYrb + RWwrb) RYrb: Value of (Total number of points of "RY setting" set in the remote station (main modules)) / (11776 × Rn) rounded up to the nearest integer RWwrb: Value of (Total number of points of "RWw setting" set in the remote station (main modules)) / (736 × Rn) rounded up to the nearest integer
n2l	RYlb + RWwlb + LBmb + LWmb + 1 RYlb: Value of (Total number of points of "RY setting"[*2]) / 11776 rounded up to the nearest integer RWwlb: Value of (Total number of points of "RWw setting"[*2]) / 736 rounded up to the nearest integer LBmb: Value of (Number of points of "LB setting" set in the master station) / 11776 rounded up to the nearest integer LWmb: Value of (Number of points of "LW setting" set in the master station) / 736 rounded up to the nearest integer
sn2r	SRn × SRYrb SRYrb: The number of connections in the remote stations of "Safety Communication Setting" in "Basic Settings" set in the master station / (18.4 × SRn) rounded up to the nearest integer

Name of variable	Description
sn2l	The number of connections of "Safety Communication Setting" in "Basic Settings" set in the master station / 18.4 rounded up to the nearest integer
ndmr	((Total number of points of "RY setting" set in the remote station (main modules)) / 8) + ((Total number of points of "RWw setting" set in the remote station (main modules)) × 2)
ndml	((Total number of points of "RY setting"[*2]) / 8) + ((Total number of points of "RWw setting"[*2]) × 2) + ((Number of points of "LB setting" set in the master station) / 8) + ((Number of points of "LW setting" set in the master station) × 2) + 24
sndmr	The number of connections in the remote stations of "Safety Communication Setting" in "Basic Settings" set in the master station × 80
sndml	The number of connections of "Safety Communication Setting" in "Basic Settings" set in the master station × 80
Sn	Number of device stations
Rn	Number of remote stations
SSn	Number of device stations using safety communications
SRn	Number of remote stations using safety communications
Ln	Number of local stations
nh	Switching hub delay time × Number of industrial switches (CC-Link IE TSN certified) connected to the network Switching hub delay time: 160000[*1]
nrp	When "Network Topology" under "Basic Settings" is set to "Line/Star": 0 When "Network Topology" under "Basic Settings" is set to "Ring": 130000
n3	Sn × nhs nhs: Value of (nds + (20 × n4)) / (1488 × Sn) rounded up to the nearest integer
n4	Sn × (RXb + RWrb) + Ln × (LBxmb + LWxmb) + Sn RXb: Value of (Total number of points of "RX setting" of main modules) / (11744 × Sn) rounded up to the nearest integer RWrb: Value of (Total number of points of "RWr setting" of main modules) / (734 × Sn) rounded up to the nearest integer LBxmb: Value of (Total number of points of "LB setting" excluding master station) / (11744 × Ln) rounded up to the nearest integer LWxmb: Value of (Total number of points of "LW setting" excluding master station) / (734 × Ln) rounded up to the nearest integer
nds	((Total number of points of "RX setting" of main modules) / 8) + ((Total number of points of "RWr setting" of main modules) × 2) + ((Total number of points of "LB setting" excluding the master station) / 8) + ((Total number of points of "LW setting" excluding the master station) × 2) + 8 × Sn
n5	(ndl + 20 × n6) / 1488
n6	(ndl - 8) / 1468 + 1
ndl	(RXl / 8) + (RWrl × 2) + (LBl / 8) + (LWl × 2) + 8 RXl: Number of points of "RX setting" of main modules of the device station[*3] to be used as the maximum number of link points RWrl: Number of points of "RWr setting" of main modules of the device station[*3] to be used as the maximum number of link points LBl: Number of points of "LB setting" of the device station[*3] to be used as the maximum number of link points LWl: Number of points of "LW setting" of the device station[*3] to be used as the maximum number of link points
n7	When "CC-Link IE TSN Class Setting" is set to "Mixture of CC-Link IE TSN Class B / A or CC-Link IE TSN Class A Only" and "TSN HUB Setting" is set to "Not to Use TSN HUB": 4 Other than the above: 0
en1r	$\sum_{i=1}^{120} en1_i$ $en1r_i = ((endmr_i + en2r_i \times 16) / 1488)^{*4} - kr_i$ When station No.i represents a station other than a remote station, $en1r_i$ is 0. When $endmr_i$ is 0, $en1r_i$ is 0. When $mfr_i > 16$, $kr_i = 1$, and when $mfr_i \leq 16$, $kr_i = 0$. $mfr_i = 1488 - mod$ mod: Remainder of $\{((mRyr_i + (mRyr_i / 1472)^{*4} \times 16) + (mRWwr_i + (mRWwr_i / 1472)^{*4} \times 16)) / 1488\}$ However, the value is 0 when the calculation result of mfr_i is 1488. i: Station number $mRyr_i$: Number of points of "RY setting" of main modules with station No.i / 8 $mRWwr_i$: Number of points of "RWw setting" of main modules with station No.i × 2
en2r	$\sum_{i=1}^{120} en2_i$ $en2r_i = eRyrn_i + eRWwrn_i + ((endmr_i + (eRyrn_i + eRWwrn_i) \times 16) / 1488)^{*4} - 1$ When station No.i represents a station other than a remote station, $en2r_i$ is 0. When $endmr_i$ is 0, $en2r_i$ is 0. i: Station number $eRyrn_i$: 0 (fixed) $eRWwrn_i$: Total number of extension modules with station No.i whose number of points of "RWw setting" is more than 0

Name of variable	Description
endmr	$\sum_{i=1}^{120} endm_i$ $endmr_i = eRyrAll_i / 8 + eRWwrAll_i \times 2$ When station No.i represents a station other than a remote station, $endmr_i$ is 0. i: Station number $eRyrAll_i$: 0 (fixed) $eRWwrAll_i$: Total number of points of "RWw setting" of extension modules with station No.i
en3	$\sum_{i=1}^{120} en3_i$ $en3_i = ((ends_i + en4_i \times 20) / 1488)^{*4} - k_i$ However, when $ends_i$ is 0, $en3_i$ is 0. When $sf_i > 20$, $k_i = 1$, and when $sf_i \leq 20$, $k_i = 0$. $sf_i = 1488 - mod$ mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^{*4} \times 20) + (mRWr_i + (mRWr_i / 1468)^{*4} \times 20)) / 1488\}$ However, the value is 0 when the calculation result of sf_i is 1488. i: Station number mRx_i: Number of points of "RX setting" of main modules with station No.i / 8 $mRWr_i$: Number of points of "RWr setting" of main modules with station No.i × 2
en4	$\sum_{i=1}^{120} en4_i$ $en4_i = eRxn_i + eRWrn_i + ((ends_i + (eRxn_i + eRWrn_i) \times 20) / 1488)^{*4} - 1$ However, when $ends_i$ is 0, $en4_i$ is 0. i: Station number $eRxn_i$: 0 (fixed) $eRWrn_i$: Number of extension modules with station No.i whose number of points of "RWr setting" is more than 0
ends	$\sum_{i=1}^{120} ends_i$ $ends_i = eRxAll_i / 8 + eRWrAll_i \times 2$ i: Station number $eRxAll_i$: 0 (fixed) $eRWrAll_i$: Total number of points of "RWr setting" of extension modules with station $No._i$
en5	$((endl + 20 \times en6) / 1488)^{*4} - k_i$ However, when endl is 0, en5 is 0. When $sf_i > 20$, $k_i = 1$, and when $sf_i \leq 20$, $k_i = 0$. $sf_i = 1488 - mod$ mod: Remainder of $\{((mRx_i + (mRx_i / 1468)^{*4} \times 20) + (mRWr_i + (mRWr_i / 1468)^{*4} \times 20)) / 1488\}$ However, the value is 0 when the calculation result of sf_i is 1488. i: Station number of the device station*3 to be used as the maximum number of link points mRx_i: Number of points of "RX setting" of main modules with station No.i / 8 $mRWr_i$: Number of points of "RWr setting" of main modules with station No.i × 2
en6	$eRxln_i + eRWrln_i + ((endl + (eRxln_i + eRWrln_i) \times 20) / 1488)^{*4} - 1$ However, when endl is 0, the value for en6 is 0. i: Station number of the device station*3 to be used as the maximum number of link points $eRxln_i$: 0 (fixed) $eRWrln_i$: Total number of extension modules with station No.i whose number of points of "RWr setting" is more than 0
endl	$eRxlAll_i / 8 + eRWrlAll_i \times 2$ i: Station number of the device station*3 to be used as the maximum number of link points $eRxlAll_i$: 0 (fixed) $eRWrlAll_i$: Total number of points of "RWr setting" of extension modules of the device station*3 to be used as the maximum number of link points
p1: RX/RY/RWr/RWw processing time	{((Total number of points of "RX setting") + (Total number of points of "RY setting"*2)) / 8 + ((Total number of points of "RWr setting") + (Total number of points of "RWw setting"*2)) × 2} × 5 + (SMn × 1300) + ((Sn - SMn) × 3300) However, if Total number of points of "RY setting"*2 = Total number of points of "RX setting" = Total number of points of "RWr setting" = Total number of points of "RWw setting"*2 = 0, then p1 = 0.
p2: LB/LW processing time	{((Total number of points of "LB setting" excluding master station) / 8) + ((Total number of points of "LW setting" excluding master station) × 2) + ((Number of points of "LB setting" set in the master station) / 8) + ((Number of points of "LW setting" set in the master station) × 2)} × 5 + (Sn × 6000) However, if Total number of points of "LB setting" = Total number of points of "LW setting" = 0, then p2 = 0.

Name of variable	Description
p3: Diagnostic information processing time	p3 = Sn × 40
p4: Safety input/ output processing time	7000 × (The number of connections of "Safety Communication Setting" in "Basic Settings" set in the master station) + 20000 However, if the number of connections of "Safety Communication Setting" in "Basic Settings" set in the master station + 0, then p4 = 0.
SMn	Number of motion control stations
kp	35000 However, if there is a standard station, the value becomes 78000
kum: Inter-module synchronous processing time (multicast)	2000 × (Number of device stations) +18000 However, if the inter-module synchronization is not performed in the master station*5, then kum = 0.

*1 The switching hub delay time changes depending on the model and settings of industrial switch (CC-Link IE TSN certified).
*2 Total number of points is the smallest value set in "Start" to the largest value set in "End" of "Network Configuration Settings".
*3 This is the device station with the largest calculation value when, for each device station (including extension modules), (("RX setting" + "LB setting") / 8) + (("RWr setting" + "LW setting") × 2) is calculated.
*4 Round up the values in the brackets.
*5 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".

Interlink transmission time

The following is the formula to calculate the time required for interlink transmission. Interlink transmission does not affect the sequence scan time.

Interlink transmission time to completely transmit all set points

α_{DL} = KM4 × ((RX + RY) ÷ 16 + RWr + RWw) [ms]

α_{DL}: Interlink transmission time

RX: Total number of source "RX/RY" or "RX/LB" points set in "Interlink Transmission Settings" of "Application Settings".

RY: Total number of source "LB/RY" or "LB/LB" points set in "Interlink Transmission Settings" of "Application Settings".

RWr: Total number of source "RWr/RWw" or "RWr/LW" points set in "Interlink Transmission Settings" of "Application Settings".

RWw: Total number of source "LW/RWw" or "LW/LW" points set in "Interlink Transmission Settings" of "Application Settings".

- Constant (KM4)

Base unit to which the network module is mounted		KM4 ($\times 10^{-3}$)
Source	Destination	
Main base unit	Main base unit	0.175
	Extension base unit	0.202
Extension base unit	Main base unit	0.242
	Extension base unit	0.271

Precautions

The interlink transmission time may become longer due to the following causes.

- Communication with the engineering tool (such as CC-Link IE TSN/CC-Link IE Field diagnostics, module diagnostics)
- Execution of a link dedicated instruction
- Link refresh
- Interlink transmission between other modules

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.

Transmission delay time

■Master station (safety station) ↔ local station (safety station)

The following table lists the time between a safety device of the Safety CPU on the sending station turning on or off and that on the receiving station turning on or off.

Calculation value	Formula
Normal value	SCsnd + LS + SCrcv + TMsnd
Maximum value	SCsnd + (LS × 2) + (SCrcv × 2) + TMsnd

SCsnd: Safety cycle time of the sending station [ms] (MELSEC iQ-R CPU Module User's Manual (Application))
LS: Communication cycle intervals [μs] (can be checked in the SW0060, but need to be converted into [ms]) (☞ Page 306 Communication cycle interval)
SCrcv: Safety cycle time of the receiving station [ms] (MELSEC iQ-R CPU Module User's Manual (Application))
TMsnd: Transmission interval monitoring time of the sending station [ms] (☞ Page 324 Monitoring time for safety communications)

■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 × 2) + (LS × 2) + SRref + TMrmt + SRin

SCmst: Safety cycle time of the master station (safety station) [ms] (MELSEC iQ-R CPU Module User's Manual (Application))
LS: Communication cycle intervals [μs] (can be checked in the SW0060, but need to be converted into [ms]) (☞ Page 306 Communication cycle interval)
SRref: Safety remote station refresh response processing time [ms] (Manual for the remote station used)
TMrmt: Transmission interval monitoring time of the remote station (safety station) [ms] (Manual for the remote station used)
SRin: Safety remote station input response time [ms] (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 × 2) + (SRref × 2) + TMmst + SRout

SCmst: Safety cycle time of the master station (safety station) [ms] (📖 MELSEC iQ-R CPU Module User's Manual (Application))
LS: Communication cycle intervals [μs] (can be checked in the SW0060, but need to be converted into [ms]) (☞ Page 306 Communication cycle interval)
SRref: Safety remote station refresh response processing time [ms](📖 Manual for the remote station used)
TMmst: Transmission interval monitoring time of the master station (safety station) [ms](☞ Page 325 Transmission interval monitoring time)
SRout: Safety remote station output response time [ms](📖 Manual for the remote station used)

Safety response time

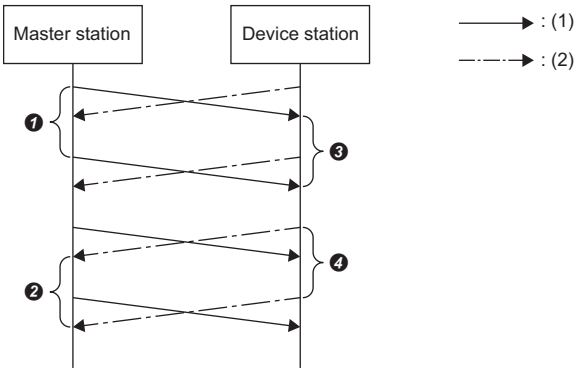
The safety response time is the maximum value of the time between a safety input of the remote station (safety station) turning OFF and a safety output of the remote station (safety station) turning OFF (including an error detection time).
For calculation method of the safety response time, refer to the following.
📖Mitsubishi Safety Programmable Controller MELSEC iQ-R Series Machinery Directive (2006/42/EC) Compliance

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	• The device station monitors the interval ❶ at which the master station sends safety data. • The master station sends data to a device station when the safety communication starts. • The time information at the time of sending that is added to the safety data received by the device station is compared with the previous value and monitored.	Device station
	Safety refresh monitoring time[*1]	The master station monitors the interval ❷ at which safety data is received from the device station.	Master station
		• The device station monitors the interval ❸ at which safety data is received from the device station. • The master station sends data to a device station when the safety communication starts.	Device station
Device station	Transmission interval monitoring time	• The master station monitors the interval ❹ at which the device station sends safety data. • The device station sends data to the master station when the safety communication starts. • 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.	Master station

*1 The master station and device station use a common value as the safety refresh monitoring time.



(1) Safety data to be sent from the master station to a device station
(2) Safety data to be sent from a device 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) or local station (safety station)	• TM ≥ SCown × 3 • TM ≥ SCoth × 2 + LS × 2
Remote station (safety station)	• TM ≥ SCown × 3 • TM ≥ SRref × 2 + LS × 2

TM: Transmission interval monitoring time [ms]
SCown: Safety cycle time of the own station [ms](MELSEC iQ-R CPU Module User's Manual (Application))
SCoth: Safety cycle time of the communication destination [ms]
LS: Communication cycle intervals [μs](can be checked in the SW0060, but need to be converted into [ms]) (☞ Page 306 Communication cycle interval)
SRref: Safety remote station refresh response processing time of the communication destination [ms](Manual for the remote station used)

Point

- 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 326 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 ≥ TMact + (TMpas ÷ 2) + (LS × 2) - a • RM ≥ (TMact ÷ 2) + TMpas + (LS × 2) - c • RM > TMact • RM > TMpas

RM: Safety refresh monitoring time [ms]

TMact: Transmission interval monitoring time of the Active side [ms](☞ Page 325 Transmission interval monitoring time)

TMpas: Transmission interval monitoring time of the Passive side [ms](☞ Page 325 Transmission interval monitoring time)

LS: Communication cycle intervals [μs] (can be checked in the SW0060, but need to be converted into [ms]) (☞ Page 306 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 ÷ 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 ÷ 2

Ex.

Calculation example of b when the transmission interval monitoring time (TMact) is 24ms and the safety cycle time is 10ms.

24 ÷ 2 = 12

The safety refresh monitoring time is 20, the smallest multiple of safety cycle time (10ms) which is greater than 12.

Ex.

Calculation example of b when the transmission interval monitoring time (TMact) is 24ms and the safety remote station refresh response processing time is 2ms.

24 ÷ 2 = 12

The value is the multiple of safety remote station refresh response processing time (2ms) so the safety refresh monitoring time is 12.

Point

- Calculate the communication cycle interval used in the calculation of the safety refresh monitoring time in accordance with the conditions of the system used.
- The Safety CPU may detect a safety communication timeout if the safety communications are affected by noise. If required, add an integral multiple of ((TMact ÷ 2) + (TMpas ÷ 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 10ms and the safety remote station refresh response processing time of the safety remote I/O module is 2.3ms.

Condition			Master station setting value		Device station setting value
Master station safety cycle time	Safety remote station refresh response processing time of device station (safety remote I/O module)	Actual communication cycle interval*1	Transmission interval monitoring time*2	Safety refresh monitoring time*2	Transmission interval monitoring time*3
10ms	2.3ms	4ms	35ms	60ms	35ms
		8ms	50ms	80ms	50ms
		16ms	60ms	100ms	60ms
		32ms	100ms	300ms	100ms

*1 The actual cycle interval of the communication with the target device 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 2ms and the communication with the target device station is performed at medium speed (four times)
Actual communication cycle interval [ms] = 2 × 4 = 8ms

*2 For calculation method of the monitoring time to be set for the master station, refer to the following.
Transmission interval monitoring time: ☞ Page 325 Transmission interval monitoring time
Safety refresh monitoring time: ☞ Page 326 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

Point

- 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.

A

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, 21	14H, 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, 61501	F03CH, F03DH	For system
62000 to 65534	F230H to FFFEH	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			

WriteObject

■Request data

Command		Sub Command		Index		Sub Index		Write data size (1 byte unit)		Write data
20H	40H	02H	00H				00H			

■Response data (normal response)

Index		Sub Index			
			00H	00H	00H

ObjectSubIDReadBlock

■Request data

Command		Sub Command		Index		Sub Index (*1)		Data read size	
20H	40H	05H	00H				00H		

*1 Only 0 or 1 can be specified in Sub Index.

■Response data (normal response)

Index		Sub Index		Read data size (in 1-byte units)		Read data
			00H			

ObjectSubIDWriteBlock

■Request data

Command		Sub Command		Index		Sub Index (*1)		Write data size (1 byte unit)		Write data
20H	40H	06H	00H				00H			

*1 Only 0 or 1 can be specified in Sub Index.

■Response data (normal response)

Index		Sub Index			
			00H	00H	00H

Appendix 9 Added and Enhanced Functions

The following table lists the added and enhanced functions in the Motion module.

Added and enhanced functions	Add-on baseSystem version			
	PLCopen Motion control FB mode		Simple Motion mode	
	Standard station	Motion control station	Standard station	Motion control station
Data communications using RX/RY/RWr/RWw	"1.20" or later	"1.0" or later	"1.16" or later	
Data communications using RX/RY/RWr/RWw	"1.0" or later			
CANopen communications function	"1.20" or later	"1.0" or later		
CC-Link IE TSN network synchronous communication function*1		"1.5" or later	"1.20" or later	"1.16" or later
Communication speed of 100Mbps	"1.8" or later		"1.16" or later	
TSN hub				
Safety communications in a system using the Safety CPU*1	"1.20" or later	"1.8" or later		
Automatic return	"1.10" or later			
Inter-Module Synchronization Function	"1.16" or later		"1.20" or later	
Station information list			"1.16" or later	
Watchdog counter				
Remote device test	"1.20" or later	—	"1.16" or later	—
Time-managed polling (protocol version 2.0)	"1.20" or later		"1.20" or later	
Link refresh (RX/RY/RWw/RWr/SB/SW)	"1.20" or later	—	"1.16" or later	—
Direct access to link devices (RX/RY/RWw/RWr)				
station-based block data assurance				
Communication cycles coexistence				
I/O maintenance settings				
Reserved station setting	"1.20" or later		"1.16" or later	"1.20" or later
Error invalid station setting				
Link refresh (LB/LW)	"1.24" or later	—	"1.24" or later	—
Direct access to link devices (LB/LW)				
Multicast mode function	"1.24" or later		"1.24" or later	
CC-Link IE TSN Communication Software				
Dividing by cyclic frame ports (multicast mode)				
Connection of local station	"1.24" or later	—	"1.24" or later	—
Interlink transmission	"1.24" or later		"1.24" or later	
Link dedicated instructions				
Remote instructions				
Improvement of detection function of connected/disconnected devices				
Connection with a CC-Link IE TSN Class A device that supports the CANopen profile with the protocol version 2.0				
Co-recording function	"1.26" or later		—	
Ring topology	"1.30" or later		—	
IP address setting function of device stations	"1.32" or later		"1.32" or later	
ERR LED control	"1.38" or later		"1.38" or later	
Safety communications with a safety station using the sub ID	"1.38" or later		"1.38" or later	

*1 There are restrictions on the CPU module to be used. For details, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

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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	■Added models RD78GHV, RD78GHW ■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
August 2020	IB(NA)-0300426ENG-C	■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
August 2021	IB(NA)-0300426ENG-D	■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
January 2022	IB(NA)-0300426ENG-E	■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
August 2022	IB(NA)-0300426ENG-F	■Added or modified parts WHEN USING A HUB WITH CC-Link IE TSN, INTRODUCTION, RELEVANT MANUALS, TERMS, GENERIC TERMS AND ABBREVIATIONS, Chapter 1, Section 2.3, 2.4, 2.5, 3.2, 7.1, 7.3, 7.4, 7.5, 7.6, 7.7, Appendix 1, 2 ,3, 4 ,5 ,6 ■Deleted parts FUTURE SUPPORT PLANNED, Part 1, 2, 3, Chapter 4, 5, 6
May 2023	IB(NA)-0300426ENG-G	■Added function Co-recording function ■Added or modified parts SAFETY PRECAUTIONS, GENERIC TERMS AND ABBREVIATIONS, Section 1.4, 1.8, 2.3, 2.5, 3.2, 4.4, 4.5, 4.7, Appendix 1, 3, 4, 6, 8, 9
August 2023	IB(NA)-0300426ENG-H	■Added functions Ring topology, Loopback function ■Added or modified parts GENERIC TERMS AND ABBREVIATIONS, Section 1.5, 1.6, 1.8, 2.3, 2.5, 4.1, 4.4, 4.7, Appendix 3, 4, 6, 9
January 2024	IB(NA)-0300426ENG-J	■Added functions IP address setting function of device stations ■Added or modified parts SAFETY PRECAUTIONS, TERMS, Section 1.1, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.3, 2.4, 2.5, 3.2, 4.1, 4.4, 4.5, Appendix 1, 2, 6, 9
September 2024	IB(NA)-0300426ENG-K	■Added or modified parts SAFETY PRECAUTIONS, RELEVANT MANUALS, TERMS, GENERIC TERMS AND ABBREVIATIONS, Section 2.3, 2.5, 4.5, 4.7, Appendix 1, 2, 6, 9
February 2025	IB(NA)-0300426ENG-L	■Added or modified parts RELEVANT MANUALS, TERMS, Section 4.4, 4.5
July 2025	IB(NA)-0300426ENG-M	■Added functions ERR LED control ■Added or modified parts TERMS, GENERIC TERMS AND ABBREVIATIONS, Section 1.1, 1.3, 1.4, 1.5, 1.6, 1.7, 2.3, 2.4, 2.5, 3.2, 4.1, 4.3, 4.4, 4.5, 4.7, Appendix 1, 2, 3, 4, 6, 9

Japanese manual number: IB-0300425-P

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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 is 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.

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IB(NA)-0300426ENG-M(2507)MEE
MODEL: RD78-U-NET-E
MODEL CODE: 1XB040

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Specifications subject to change without notice.