MITSUBISHI ELECTRIC

Programmable Controller

MELSEC iQ-R series

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

-RJ71GN11-T2
-RJ71GN11-SX

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 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.

[Design Precautions]

⚠WARNING

- In an output circuit, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Configure a circuit so that the programmable controller is turned on first and then the external power supply. If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
- Configure a circuit so that the external power supply is turned off first and then the programmable controller. If the programmable controller is turned off first, an accident may occur due to an incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to manuals for the network used. For the manuals, please consult your local Mitsubishi representative. Incorrect output or malfunction due to a communication failure may result in an accident.
- 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.

[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 MELSEC iQ-R Module Configuration Manual. 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.
- When using the programmable controller in an environment of frequent vibrations, fix the module with a screw.
- 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.

[Precautions for using CC-Link IE TSN (when optical fiber cables are used)]

- The optical transmitter and receiver of the CC-Link IE TSN master/local module (1000BASE-SX model) use laser diodes (class 1 in accordance with IEC 60825-1/JIS C6802). Do not look directly at a laser beam. Doing so may harm your eyes. Also, do not handle the product in ways other than those described in this manual, or do not disassemble or modify the product. Doing so may result in exposure to laser radiation.

[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. Failure to do so may result in malfunction due to noise. Keep a distance of 100mm or more between those cables. (Only for the RJ71GN11-T2)
- 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.

[Wiring Precautions]

⚠CAUTION

- 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.

[Precautions for using CC-Link IE TSN (when optical fiber cables are used)]

- For optical fiber cables to be used in the system, select the ones that meet the specifications in the MELSEC iQ-R CC-Link IE TSN User's Manual (Startup). 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.

[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.

[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.

CONDITIONS OF USE FOR THE PRODUCT

(1) MELSEC programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI ELECTRIC SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI ELECTRIC USER'S, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above restrictions, Mitsubishi Electric may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi Electric and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi Electric representative in your region.

(3) Mitsubishi Electric 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.

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.
Note that the menu names and operating procedures may differ depending on an operating system in use and its version.
When reading this manual, replace the names and procedures with the applicable ones as necessary.
Please make sure that the end users read this manual.

Relevant products

RJ71GN11-T2
RJ71GN11-SX

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RELEVANT MANUALS

The following manuals are relevant to this product.

Manual name [manual number]	Description
MELSEC iQ-R CC-Link IE TSN User's Manual (Application) [SH-082129ENG] (this manual)	Functions, parameter settings, troubleshooting, I/O signals, and buffer memory of CC-Link IE TSN
MELSEC iQ-R Module Configuration Manual [SH-081262ENG]	The combination of the MELSEC iQ-R series modules, common information on the installation/wiring in the system, and specifications of the power supply module, base unit, SD memory card, and battery
MELSEC iQ-R CC-Link IE TSN User's Manual (Startup) [SH-082127ENG]	Specifications, procedures before operation, system configuration, wiring, and communication examples of CC-Link IE TSN
MELSEC iQ-R Programming Manual (Module Dedicated Instructions) [SH-081976ENG]	Dedicated instructions for the intelligent function modules
MELSEC iQ-R Ethernet, CC-Link IE, and MELSECNET/H Function Block Reference [BCN-P5999-0381]	Specifications of the following MELSEC iQ-R series module FBs: Ethernet-equipped module FBs, CC-Link IE TSN module FBs, CC-Link IE Controller Network module FBs, CC-Link IE Field Network module FBs, and MELSECNET/H network module FBs
GX Works3 Operating Manual [SH-081215ENG]	System configuration, parameter settings, and online operations of GX Works3
SLMP Reference Manual [SH-080956ENG]	A protocol used to access an SLMP-compatible device from an external device (such as a personal computer or HMI (Human Machine Interface)) or an SLMP-compatible module (such as the Ethernet-equipped module or modules on CC-Link IE TSN)
MELSEC iQ-R System Recorder Co-recording Function Reference Manual [SH-082553ENG]	Function, system configuration, parameter settings, and troubleshooting for co-recording

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Buffer memory	Memory in an intelligent function module to store data such as setting values and monitor values. For CPU modules, it refers to memory to store data such as setting values and monitor values of the Ethernet function, or data used for data communication of the multiple CPU system function.
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. The multiple CPU system allows the user to assign the control CPU on a module-by-module basis.
CPU module (built-in Ethernet port part)	A built-in Ethernet port part of the CPU module (CPU part for the RnENCPU)
Current master station	A station that controls the entire network when the master station shift function is used.
Cyclic data transfer processing	Processing of a cyclic transmission from its start to finish, performed by all the stations on a single network. The processing is performed asynchronously with the sequence scan of the CPU module. The cyclic data transfer processing time varies depending on data volume and the number of transient transmission requests.
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.
Device station	A station other than a master station: a local station, a remote station
Engineering tool	A tool used for setting up programmable controllers, programming, debugging, and maintenance
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)
Group No.	Number 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.
Industrial switch (CC-Link IE TSN certified)	A CC-Link IE TSN Class B and CC-Link IE TSN Class A industrial switches authorized by the CC-Link Partner Association (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
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
Link device	A device (RX, RY, RWr, RWw, LB, or LW) in a module on CC-Link IE TSN
Link refresh	Processing of data transfer between link devices of the network module and CPU module devices. Link refresh is performed in "END processing" of the sequence scan of the CPU module.
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. For the module used, GX Works3 automatically generates this label, which can be used as a global label.
Multicast filter	A filter function that selects whether to send cyclic data of multicast mode received by the own station to the subsequent stations. Setting parameters for this function are not required because the master station automatically sets the parameters according to the system configuration.
Multicast mode	A communication mode used to send cyclic data to multiple stations
Relay station	A station that relays data link to other station with mounting more than one network modules on one programmable controller.
Remote station	A station that exchanges I/O signals (bit data) and I/O data (word data) with another station by cyclic transmission. This station can perform transient transmission.

Term	Description
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.
RnENCPU (network part)	A module on the right-hand side of the RnENCPU (MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
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
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 items: • 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))
CC-Link IE Field Network-equipped master/local module	A generic term for the RJ71GF11-T2 CC-Link IE Field Network master/local module and the following modules when the CC-Link IE Field Network function is used: • RJ71EN71 • RnENCPU
CC-Link IE TSN-equipped module	A generic term for the RJ71GN11-T2, RJ71GN11-SX, and RJ71GN11-EIP
CCPASET	A generic term for the G.CCPASET and GP.CCPASET
CCPASETX	A generic term for the G.CCPASETX and GP.CCPASETX
CR800-R	An abbreviation for a set of the robot CPU (R16RTCPU) and the CR800 controller (CR800)
Data link	A generic term for cyclic transmission and transient transmission
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
LB	An abbreviation for a link relay of a link device. Bit data send from each station of the network.
LW	An abbreviation for a link register of a link device. Word data send from each station of the network.
Network module	A generic term for the following modules: • Ethernet interface module • A module on CC-Link IE TSN (a CC-Link IE TSN master/local module, a CC-Link IE TSN master/local module (1000BASE-SX model), a CC-Link IE TSN Plus master/local module, and a module on a remote station) • CC-Link IE Controller Network module • A 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. Aggregation of application objects transferred 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.
READ	A generic term for the JP.READ and GP.READ
RECV	A generic term for the JP.RECV and GP.RECV
REMFR	A generic term for the JP.REMFR and ZP.REMFR
REMFRD	An abbreviation for the JP.REMFRD
REMFRDIP	An abbreviation for the GP.REMFRDIP
REMFRIP	An abbreviation for the GP.REMFRIP
REMTO	A generic term for the JP.REMTO and ZP.REMTO
REMTOD	An abbreviation for the JP.REMTOD
REMTODIP	An abbreviation for the GP.REMTODIP
REMTOIP	An abbreviation for the GP.REMTOIP
REQ	A generic term for the J.REQ, JP.REQ, G.REQ, and GP.REQ
RJ71GN11	A generic term for the RJ71GN11-T2 and RJ71GN11-SX
RWr	An abbreviation for a remote register of a link device. Word data (16-bit data) input from a device station to the master station. (For some areas in a local station, data are input in the opposite direction.)
RWw	An abbreviation for a remote register of a link device. Word data (16-bit data) output from the master station to a device station (For some areas in a local station, data are output in the opposite direction.)
RX	An abbreviation for remote input of a link device. Bit data input from a device station to the master station. (For some areas in a local station, data are input in the opposite direction.)
RY	An abbreviation for remote output of a link device. Bit data output from the master station to a device station (For some areas in a local station, data are output in the opposite direction.)

Generic term/abbreviation	Description
Safety CPU	A generic term for the R08SFCPU, R16SFCPU, R32SFCPU, and R120SFCPU
Safety station	A generic term for a station that performs safety communications and standard communications
SB	An abbreviation for a link special relay. Bit data that indicates the operating status and data link status of a module on CC-Link IE.
SDO	An abbreviation for Service Data Object. A message to access an object entry in the object dictionary of a CANopen node. Data is sent/received between the stations aperiodically.
SEND	A generic term for the JP.SEND and GP.SEND
SLMPSND	A generic term for the J.SLMPSND, JP.SLMPSND, G.SLMPSND, and GP.SLMPSND
SREAD	A generic term for the JP.SREAD and GP.SREAD
SW	An abbreviation for a link special register. Word data that indicates the operating status and data link status of a module on CC-Link IE.
SWRITE	A generic term for the JP.SWRITE and GP.SWRITE
UINI	A generic term for the G.UINI, GP.UINI, Z.UINI, and ZP.UINI
WRITE	A generic term for the JP.WRITE and GP.WRITE

1 FUNCTIONS

1.1 Cyclic Transmission

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

- The link device is assigned in the "CC-Link IE TSN Configuration" window. (☞ Page 142 "CC-Link IE TSN Configuration" Window)
- The link refresh is assigned in "Refresh Settings" under "Basic Settings". (☞ Page 125 Refresh Settings)

Unicast mode and multicast mode

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 352 Communication cycle intervals)
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 352 Communication cycle intervals)

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. (☞ Page 164 Communication Example with CC-Link IE TSN Class A Remote Station (RJ71GN11-T2), Page 177 Communication Example with CC-Link IE TSN Class A Remote Station (RJ71GN11-SX))
- In multicast mode, set "Communication Period Setting" for the local station to "Basic Period" in the "CC-Link IE TSN Configuration" window. However, when extending the number of link points, the "Communication Period Setting LB/LW" of the local station can also be set to "Normal-Speed" or "Low-Speed". (☞ Page 35 Setting method)
- 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.

Communications using RX, RY, RWr, and RWw

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

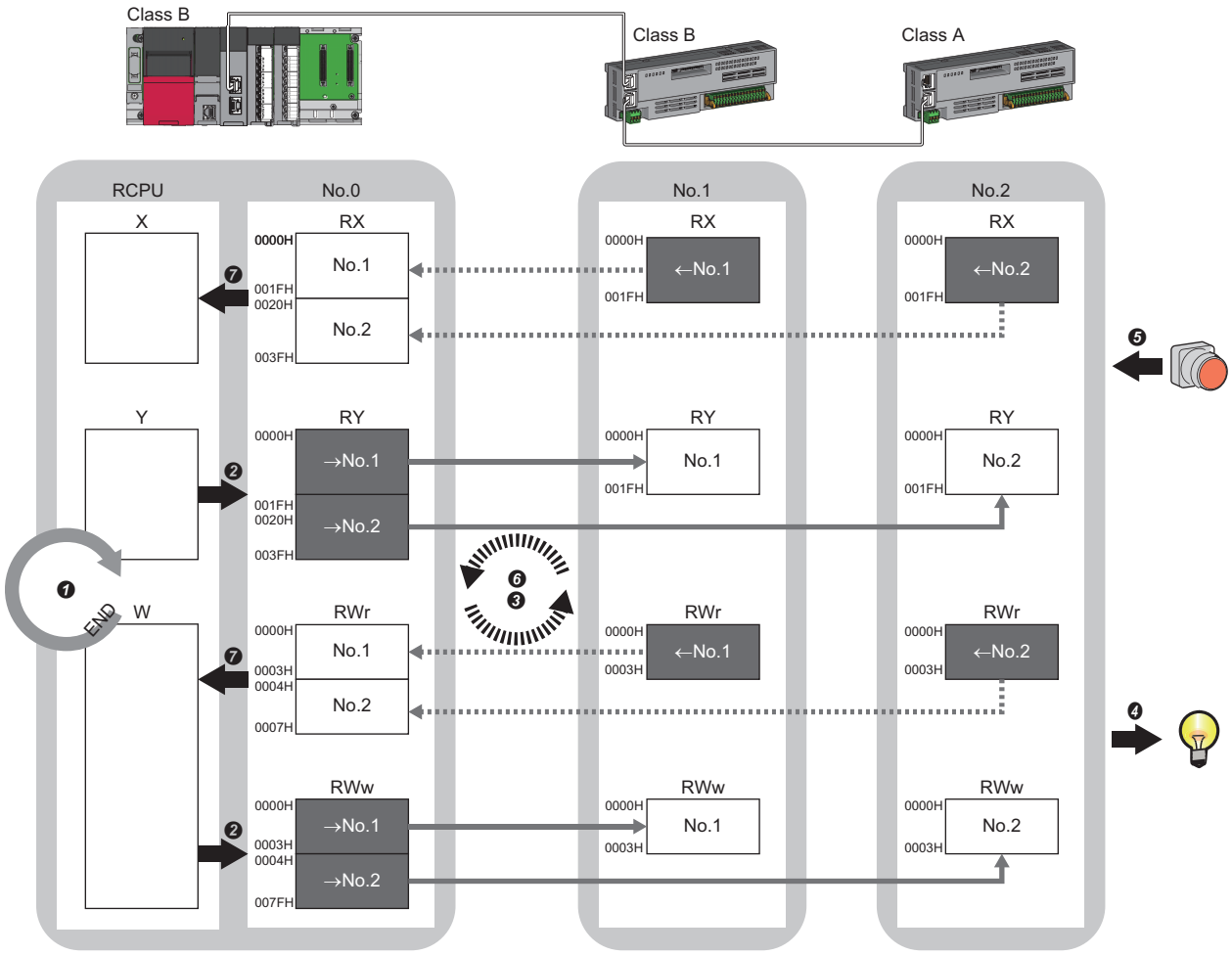
Master station and remote stations

■Unicast mode

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

Point

When the RJ71GN11-SX is used, the stations can communicate when the firmware version is "04" or later.



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 21 Unicast mode)

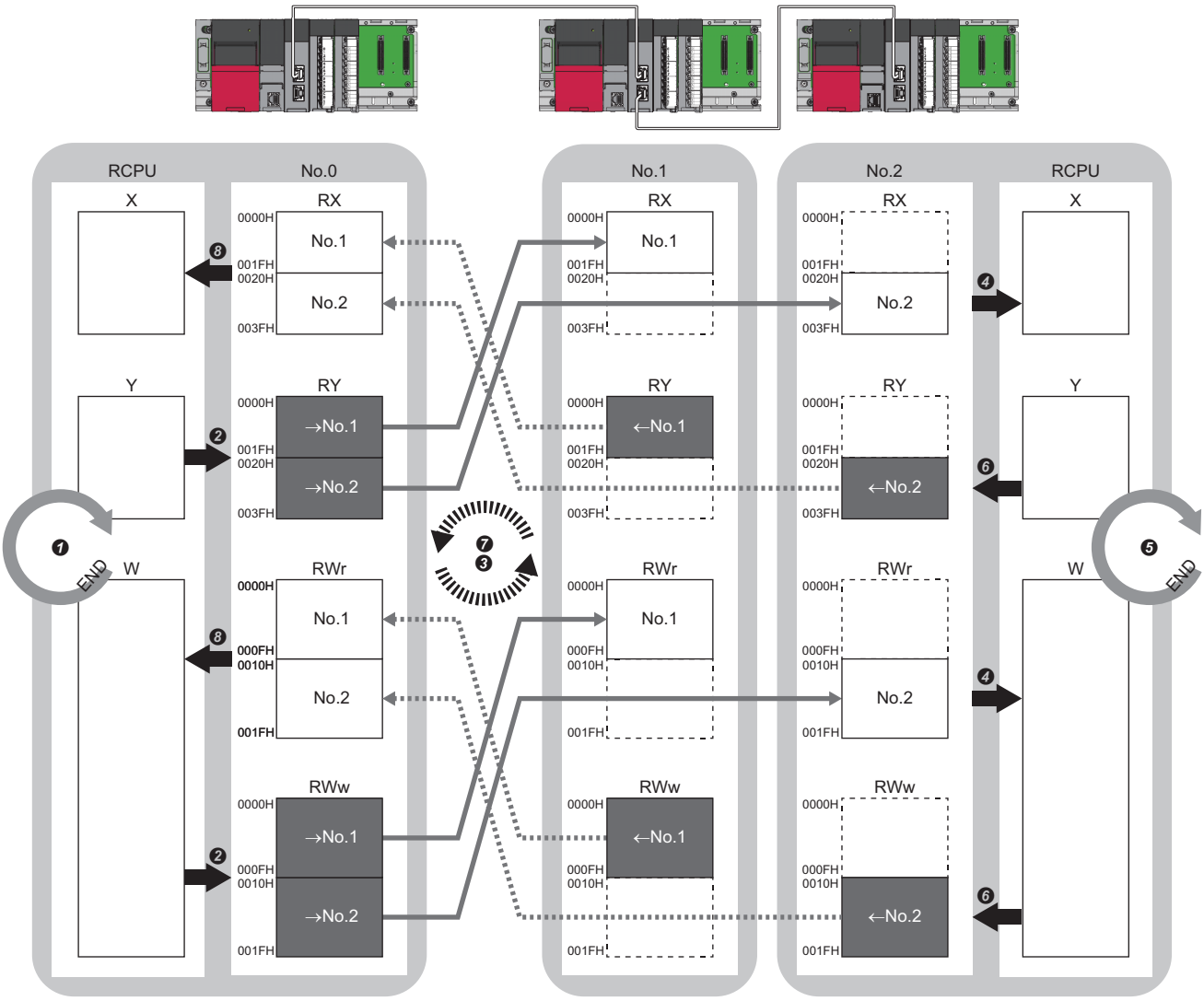
Master station and local stations

■Unicast mode

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

Point

For the RJ71GN11-SX with the firmware version "03" or earlier, only ring topology is supported.



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

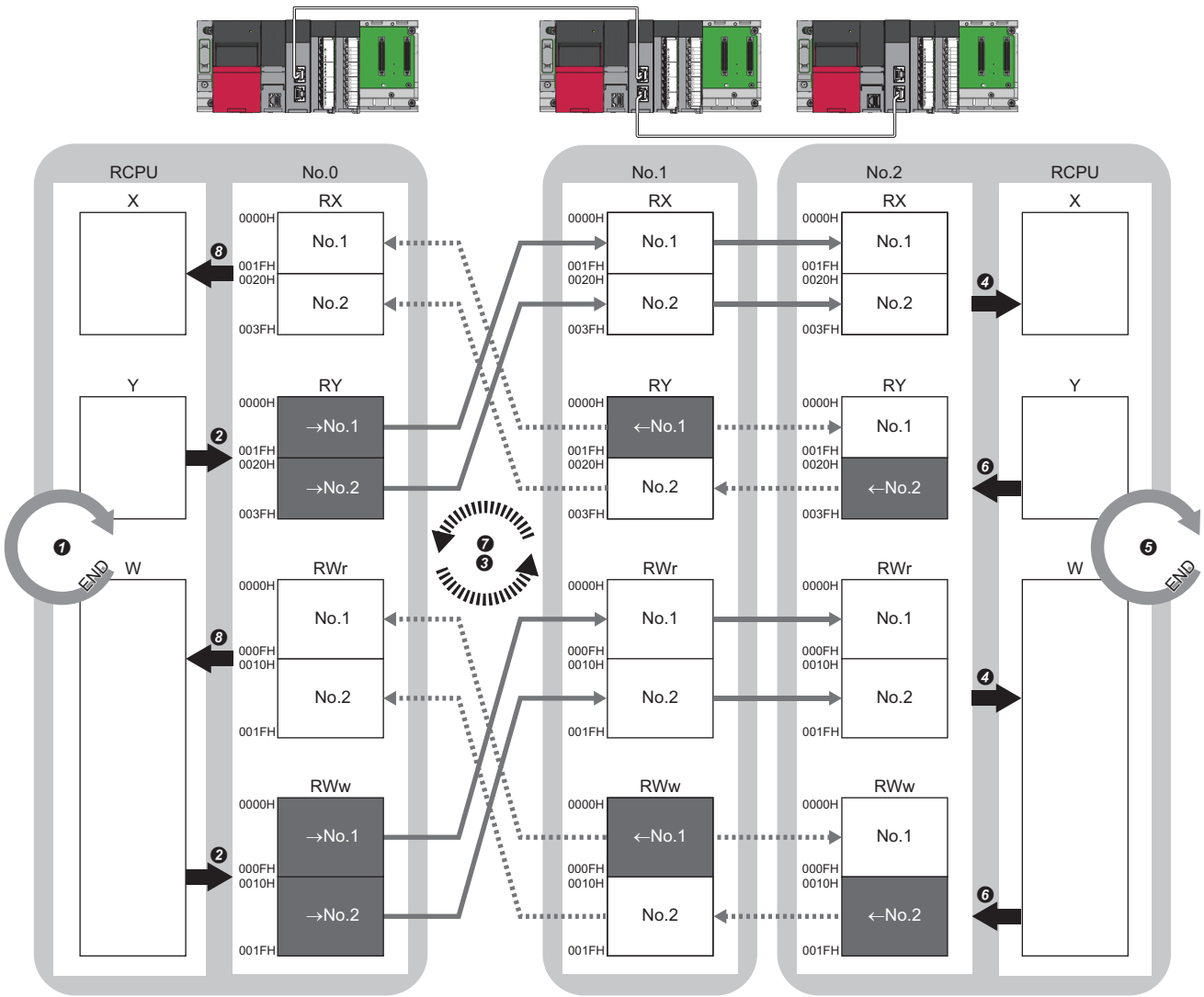
❺ The device is turned on by the sequence scan of the CPU module in the local station, and END processing is performed.
❻ The device status of the CPU module is stored in the link devices (RY, RWw) of the local station by link refresh.
❼ The status of the link devices (RY, RWw) of the local station is 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.

Point

For the RJ71GN11-SX with the firmware version "03" or earlier, only ring topology is supported.



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.

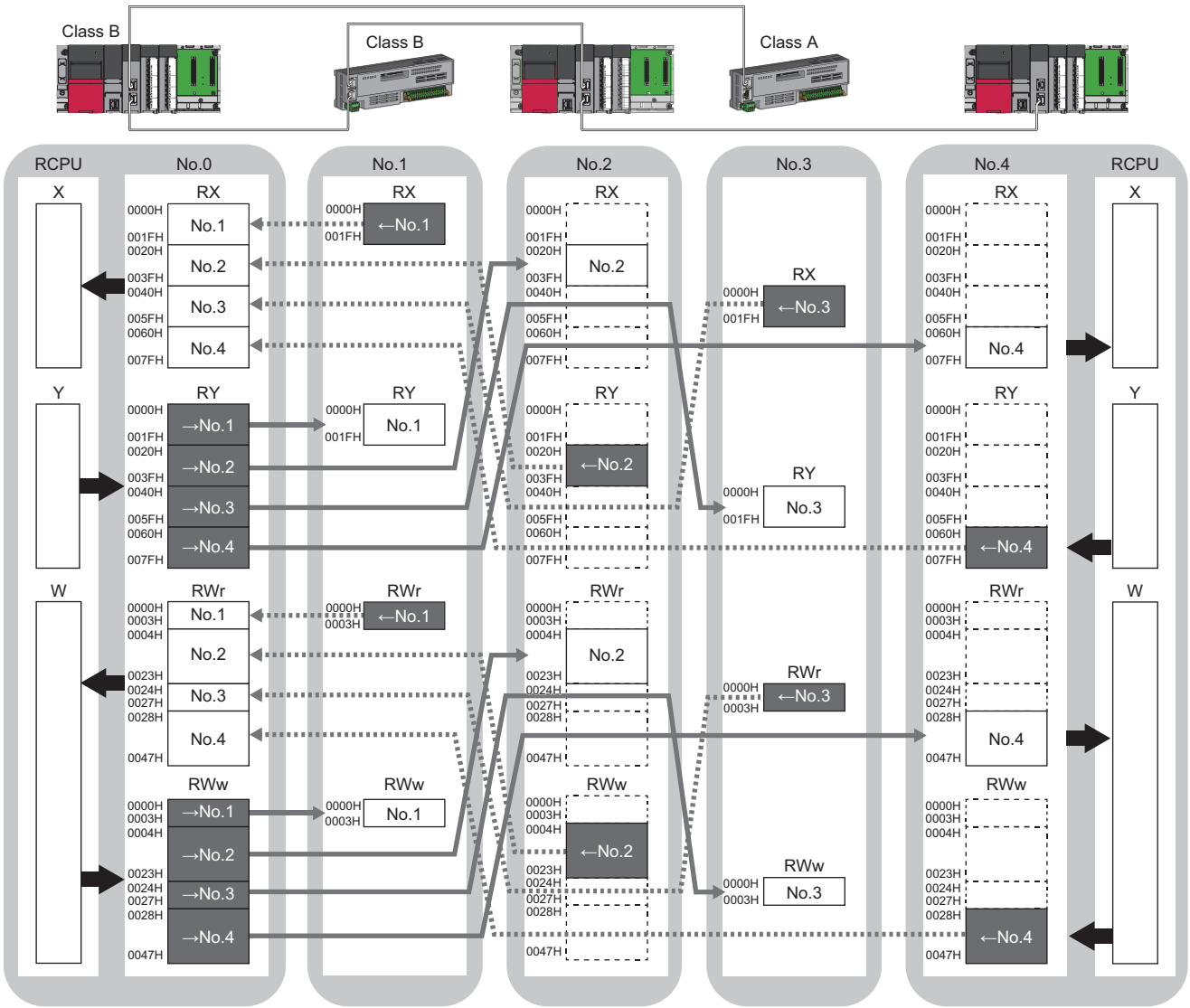
Coexistence of remote stations and local stations

■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.

Point

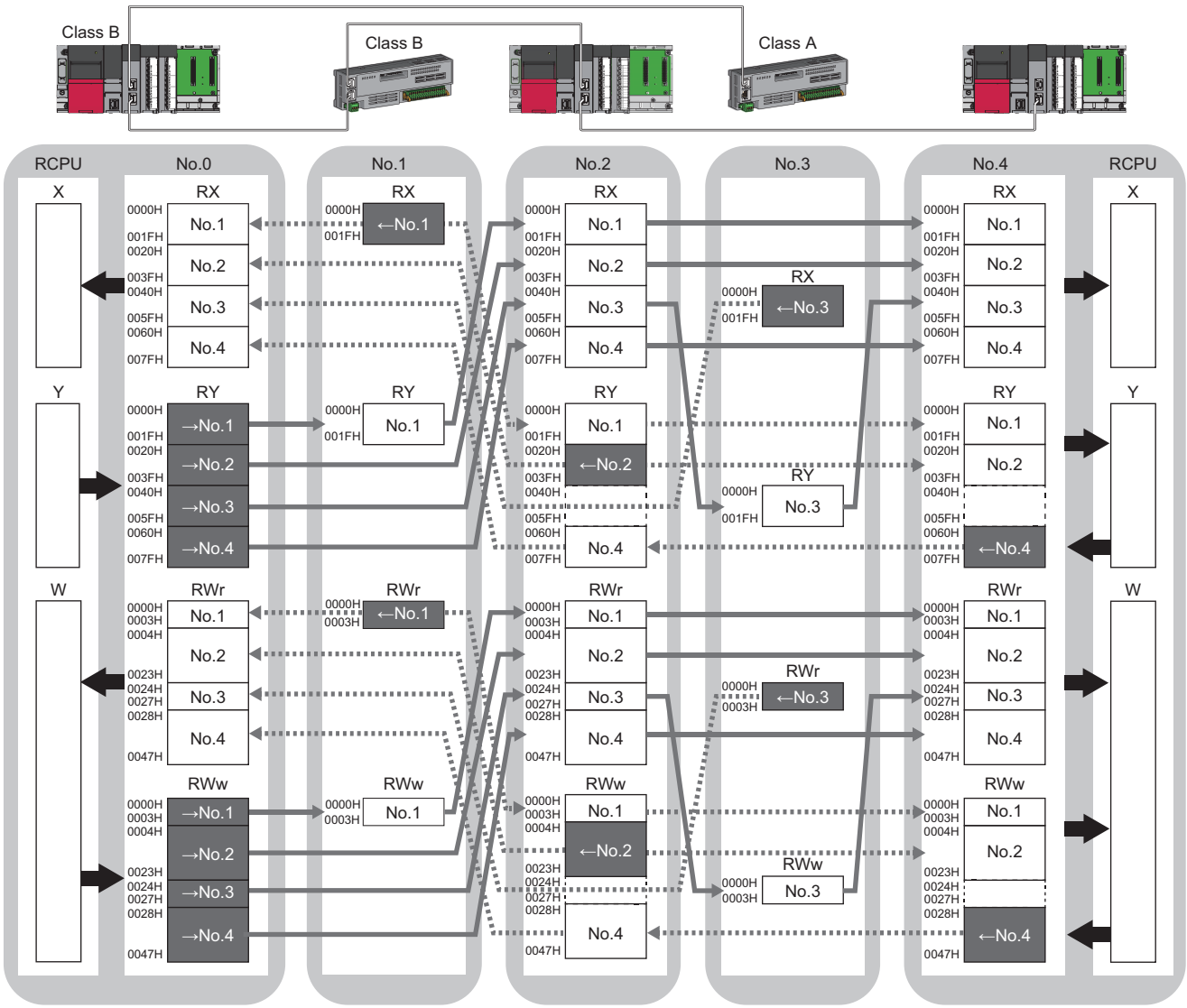
When the RJ71GN11-SX is used, the stations can communicate when the firmware version is "04" or later.



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

■Multicast mode

The master station and 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

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

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

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 communicated in units of bits and words between the master station and local stations.

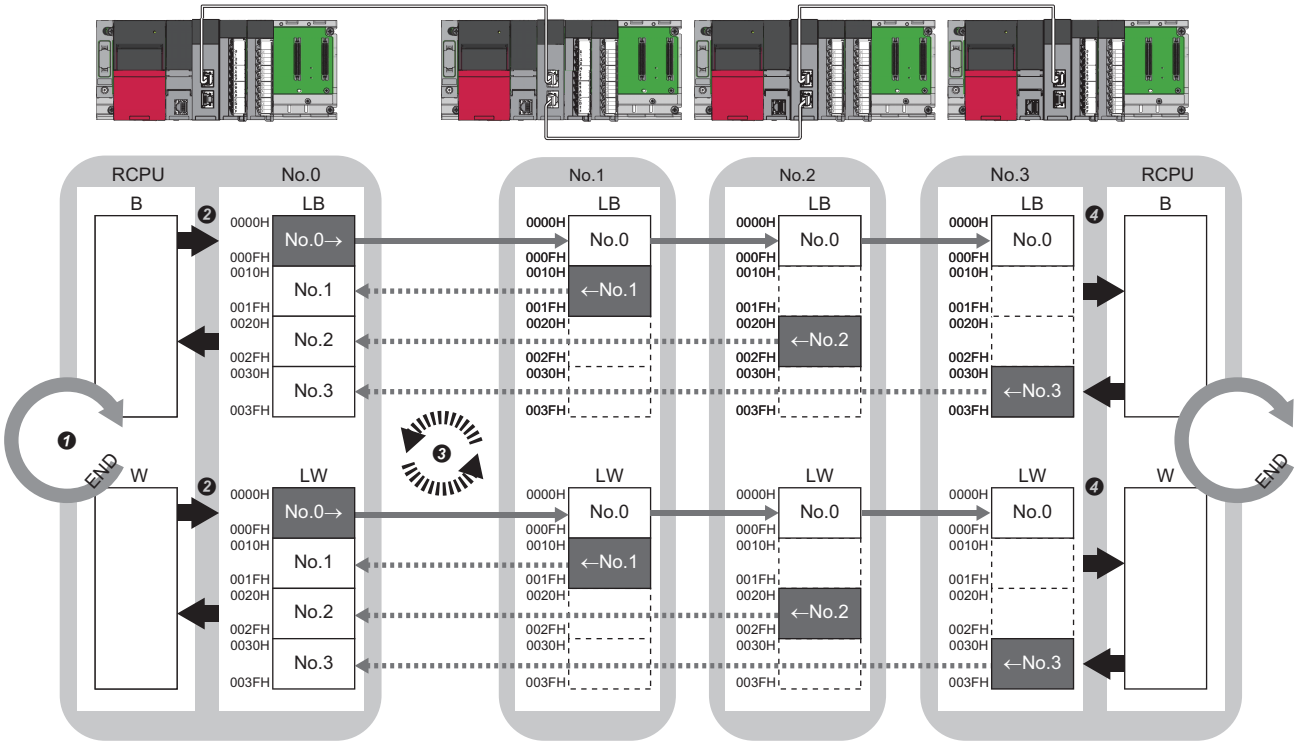
Master station and local stations, or between local stations

■Unicast mode

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

Point

For the RJ71GN11-SX with the firmware version "03" or earlier, only ring topology is supported.



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.

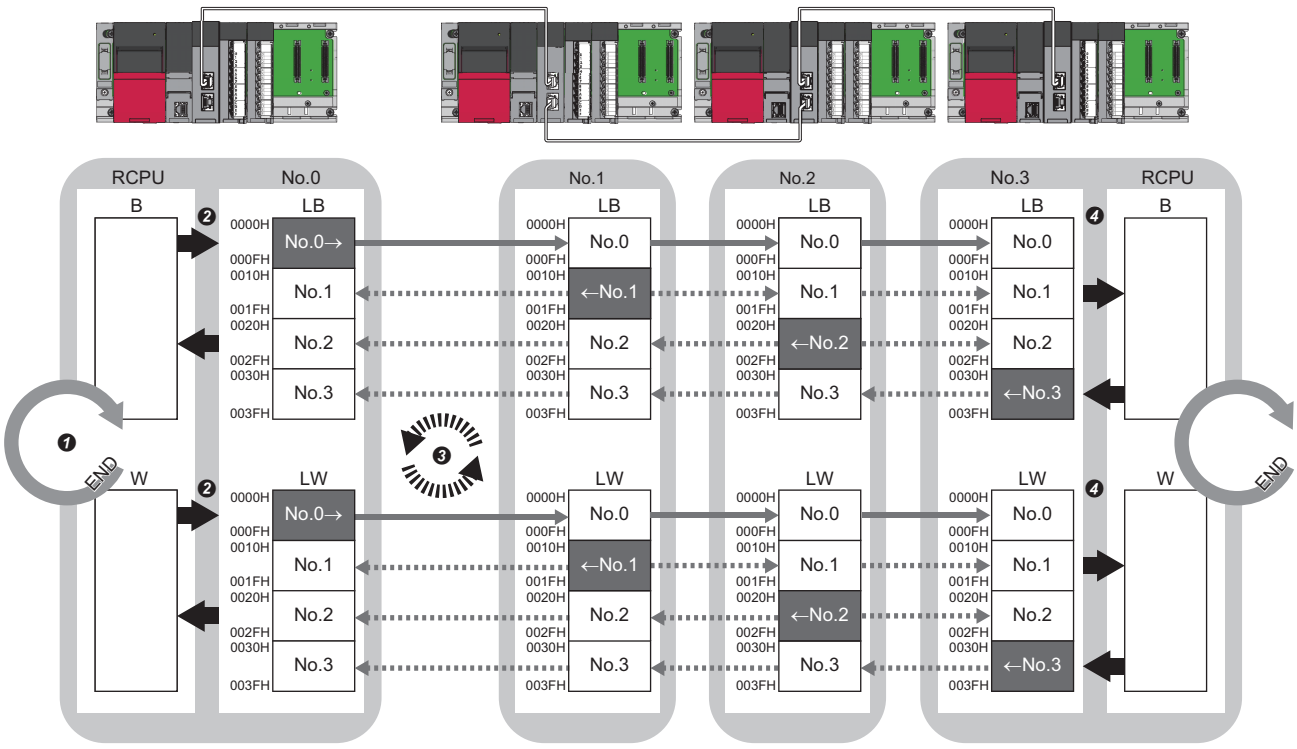
❹ The status of the link devices (LB, LW) is stored in the devices of the CPU module on the receiving side.

■Multicast mode

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

Point

For the RJ71GN11-SX with the firmware version "03" or earlier, only ring topology is supported.



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.

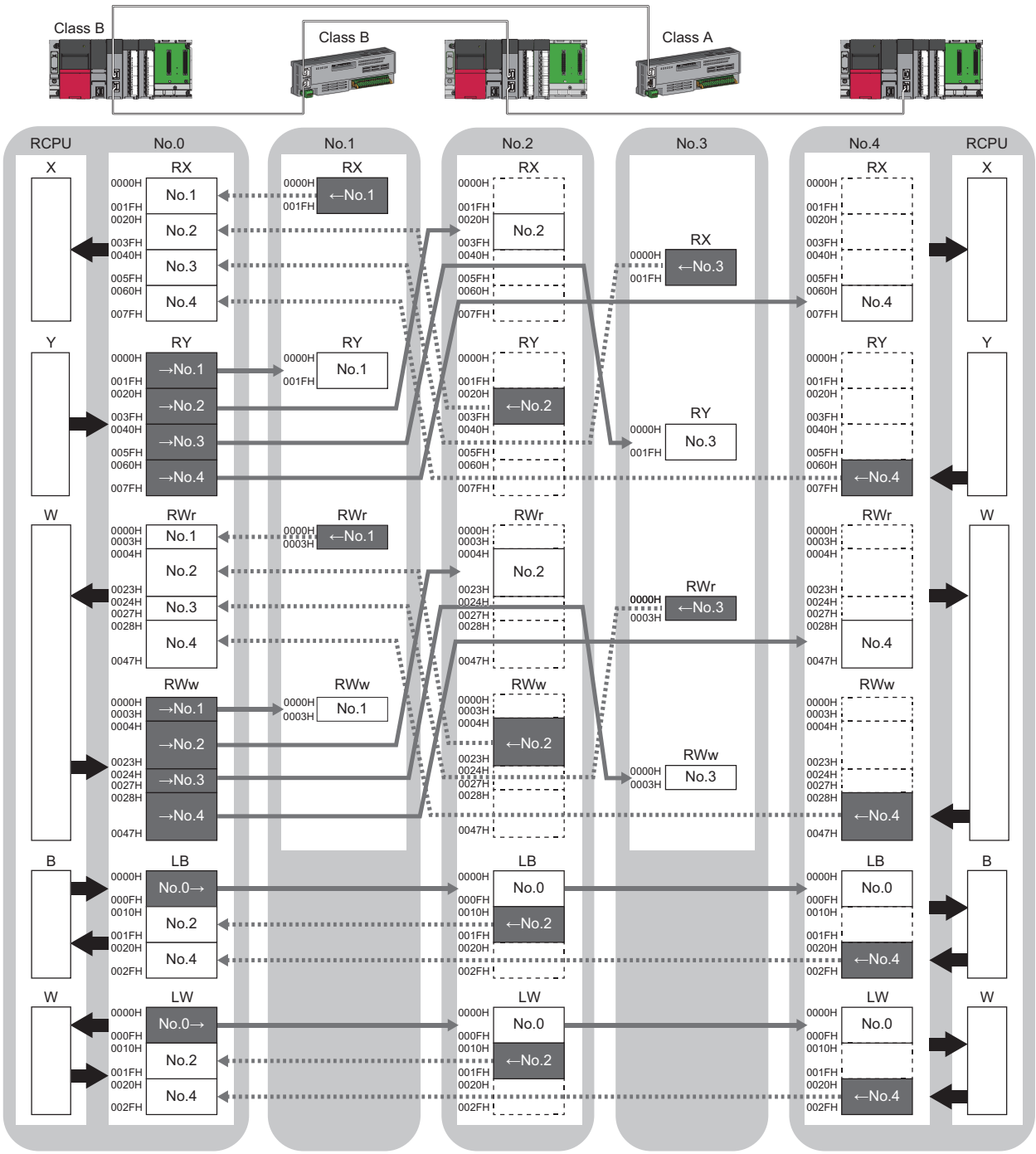
Communications using RX, RY, RWr, RWw, LB, and LW

The RJ71GN11 performs communications using RX, RY, RWr, and RWw and communications using LB and LW simultaneously.

Coexistence of the master station and device stations

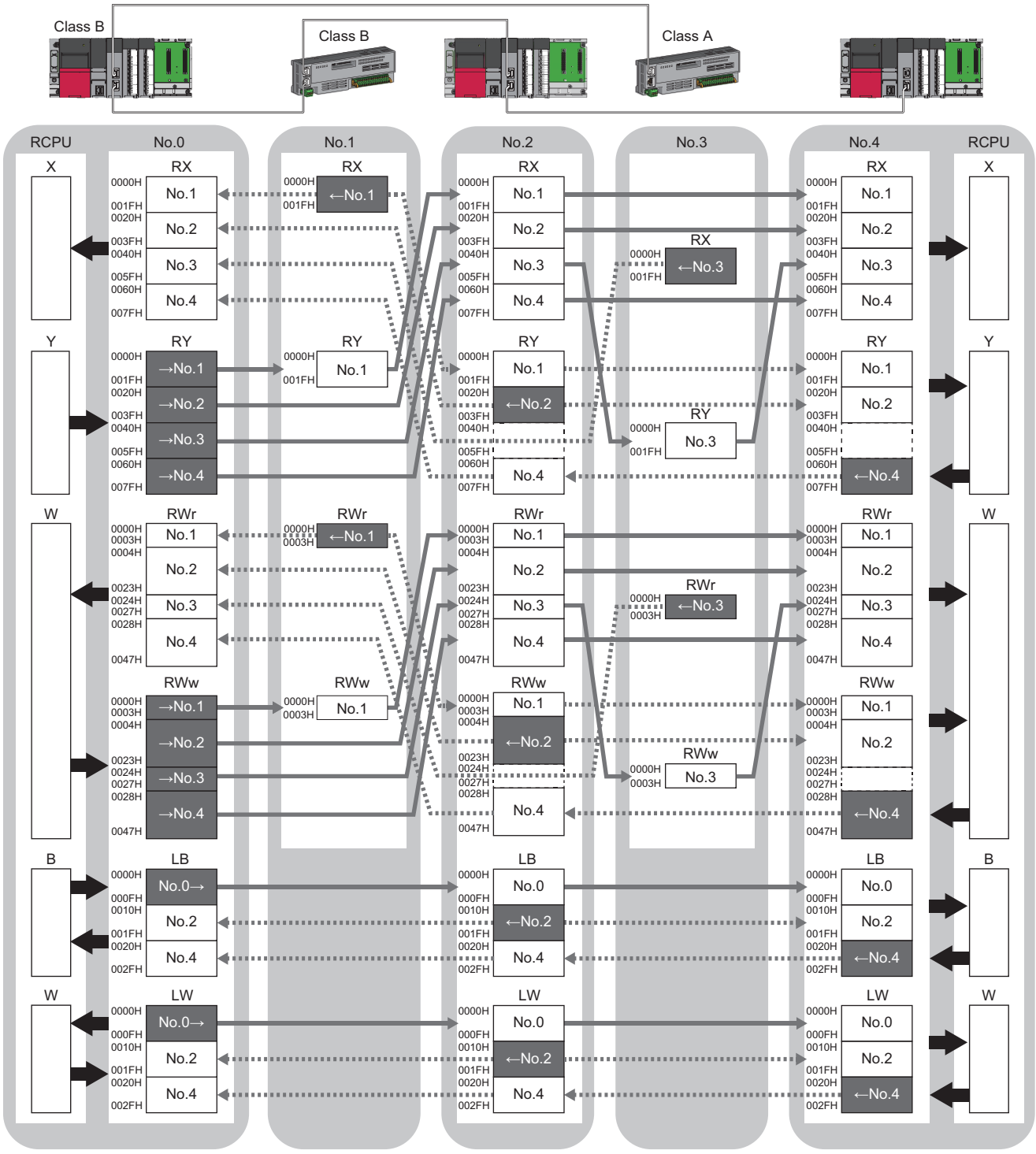
While the RJ71GN11-SX with the firmware version of "03" or earlier can perform communications using RX, RY, RWr, RWw, LB, and LW, the remote station cannot be connected as it only uses ring topology.

■Unicast 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
→No.1, →No.2, →No.3, →No.4: Send range: to station No.1, send range: to station No.2, send range: to station No.3, send range: to station No.4
←No.1, ←No.2, ←No.3, ←No.4: Send range: from station No.1, send range: from station No.2, send range: from station No.3, send range: from station No.4
No.0→: Send range: to station No.2 and station No.4
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
→No.1, →No.2, →No.3, →No.4: Send range: to station No.1, send range: to station No.2, send range: to station No.3, send range: to station No.4
←No.1, ←No.2, ←No.3, ←No.4: Send range: from station No.1, send range: from station No.2, send range: from station No.3, send range: from station No.4
No.0→: Send range: to station No.2 and station No.4
Class A: CC-Link IE TSN Class A device
Class B: CC-Link IE TSN Class B device

Number of link points extension

The maximum number of link points can be extended by setting the parameters as follows.

Station type	Number of link points	Link device	Maximum number of link points per network	Maximum number of link points per station
Master station Local station	Not to extend	LB	32K points (32768 points, 4K bytes)	32K points (32768 points, 4K bytes)
		LW	16K points (16384 points, 32K bytes)	16K points (16384 points, 32K bytes)
	Extend	LB	128K points (131072 points, 16K bytes)	128K points (131072 points, 16K bytes)
		LW	512K points (524288 points, 1024K bytes)	512K points (524288 points, 1024K bytes)

Extending the number of link points allows cost reductions as it enables running systems on a single network that originally required multiple networks due to an insufficient number of LB/LW points. This can be especially useful for networks between devices with a large amount of communications data.
The reduced number of networks has fewer devices, which simplifies maintenance and inspection work.

Restriction

- Only multicast mode is supported for the communication mode.
- The supported communication speed is 1Gbps only.
- Connection is only possible when the "LB/LW Points Extended Setting" is set to "Extend" for all mater and local stations and they have the same settings. If the settings are not the same, the master station will generate Another station: Parameter error occurrence (event code 00C75H), or the local station will generate a network parameter error (error code 2221H).
- The cyclic data size must be 556K bytes or less, which is the sum of the RX/RY/RWr/RWw assignment range and the number of LB/LW points used for each station ÷ communication period setting LB/LW. (☞ Page 32 Calculation example)

Precautions

Extending the number of link points changes the address of the buffer memory link device area. If a link device area is referenced by something such as a program, it is necessary to take action such as changing the reference depending on the 'Link points extended setting' (SB0063) setting details.

Calculation example

RX, RY, RWr, and RWw refer to the size (including gaps) from the minimum address to the maximum address across all stations.

LB and LW refer to the total size (excluding gaps), obtained by calculating the LB/LW size / Communication period setting (LB/LW) for each station (value rounded up to the nearest multiple of two).

Point

RX, RY, and LB are in units of bits, and RWr, RWw, and LW are in units of words. Convert them into bytes for calculation.

Ex.

When "Communication Period Setting" is set to "Basic Period"

Station type	RWw Setting			LW Setting			Communication Period Setting
	Points	Start	End	Points	Start	End	LB/LW
Master station	—			196608	00000	2FFFF	Basic Period
Local station 1	16	0000	000F	—			—
Local station 2	16	1FF0	1FFF	196608	40000	6FFFF	Basic Period

■RWw size

- Minimum address: Start of local station 1 = 0000
- Maximum address: End of local station 2 = 1FFF
- RWw size: Size of 0000 to 1FFF = 16384 bytes

■LW size

- Master station size: Size of 00000 to 2FFFF = 393216 bytes
- Local station 2 size: Size of 40000 to 6FFFF = 393216 bytes
- LW total size: 393216 + 393216 = 786432 bytes

■Total size

16384 + 786432 = 802816 bytes

Ex.

When "Communication Period Setting" is set to "Normal-Speed" (×4) or "Low-Speed" (×16)

Station type	RWw Setting			LW Setting			Communication Period Setting*1
	Points	Start	End	Points	Start	End	LB/LW
Master station	—			196608	00000	2FFFF	Normal speed (×4)
Local station 1	16	0000	000F	—			—
Local station 2	16	1FF0	1FFF	196608	40000	6FFFF	Low speed (×16)

*1 Normal speed (×n) represents that "Communication Period Setting (LB/LW)" is set to "Normal-Speed" and that "Multiple Period Setting" is set to "Normal-Speed" (×n). The same applies to low speed (×n).

■RWw size

- Minimum address: Start of local station 1 = 0000
- Maximum address: End of local station 2 = 1FFF
- RWw size: Size of 0000 to 1FFF = 16384 bytes

■LW size

- Master station size: Size of 00000 to 2FFFF / 4 = 98304 bytes
- Local station 2 size: Size of 40000 to 6FFFF / 16 = 24576 bytes
- LW total size: 98304 + 24576 = 122880 bytes

■Total size

16384 + 122880 = 139264 bytes

Combination of the master station and local stations

Master station	LB/LW Points Extended Setting	Local station		
		Supported version		Unsupported version
		LB/LW Points Extended Setting		
		Extend	Not to extend	
Supported version	Extend	○	×*1	×*3
	Not to extend	×*1	○	○
Unsupported version	—	×*2	○	○

*1 A network parameter error (error code: 2221H) occurs in a local station.
*2 A network parameter error (error code: 2221H) occurs in a local station.
*3 A network parameter error (error code: 300AH) occurs in a local station.

Point

When using the RJ71GN11-T2, check the firmware version. (☞ Page 389 Added and Enhanced Functions)

Changing the communication cycle

If the number of link points becomes too large by the link points extension, all data cannot be sent in one basic cycle. Therefore, the data is sent over a communication cycle that is multiple times longer than the basic cycle. (Sending over a communication cycle that is multiple times longer than the basic cycle is only performed when extending the number of link points.)

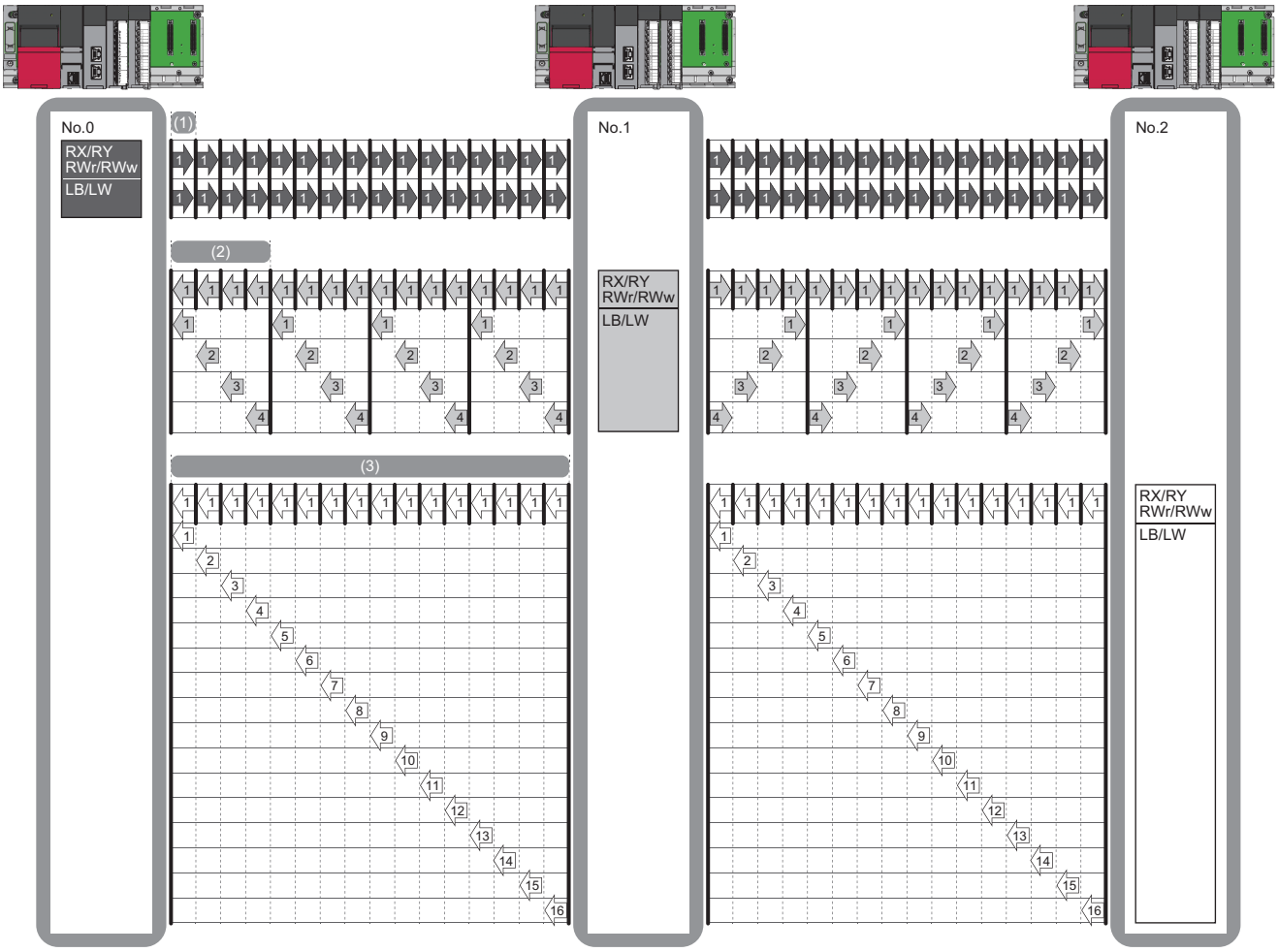
The length of the communication cycle is set in "Communication Period Setting LB/LW". (☞ Page 35 Setting method)

When extending the number of link points, it is necessary to set "Communication Mode" to "Multicast" and "Communication Period Setting RX/RY/RWr/RWw" to "Basic Period". This causes RX/RY/RWr/RWw data to be sent in each basic cycle from all stations.

Ex.

The following figure shows an example of when a link device sends data over a communication cycle that is multiple times longer than the basic cycle.

- No.0: When "Communication period setting LB/LW" on the master station is set to "Basic Period", the LB/LW data is sent every basic cycle.
- No.1: When "Communication Period Setting LB/LW" on the local station 1 is set to "Normal-Speed" (×4), the LB/LW data is sent in one-quarter increments over a communication cycle that is four times longer than the basic cycle.
- No.2: When "Communication Period Setting LB/LW" on the local station 2 is set to "Low-Speed" (×16), the LB/LW data is sent in 1/16th increments over a communication cycle that is 16 times longer than the basic cycle.



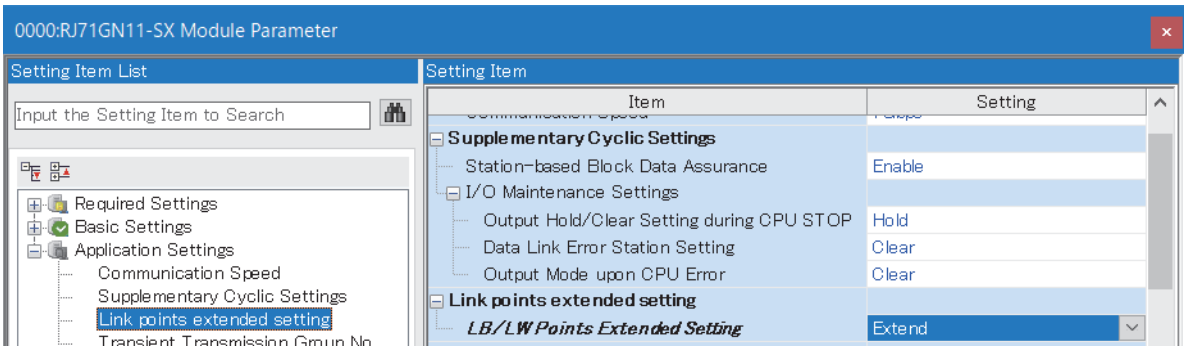
(1) Basic cycle
(2) Normal speed (×4)
(3) Low speed (×16)

Setting method

This section describes a setting example for the RJ71GN11-SX.

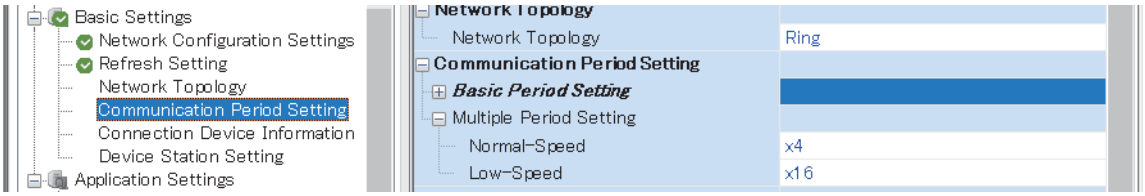
1. Apply the following settings to the master station and local station.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Application Settings] ⇨ [Link points extended setting]



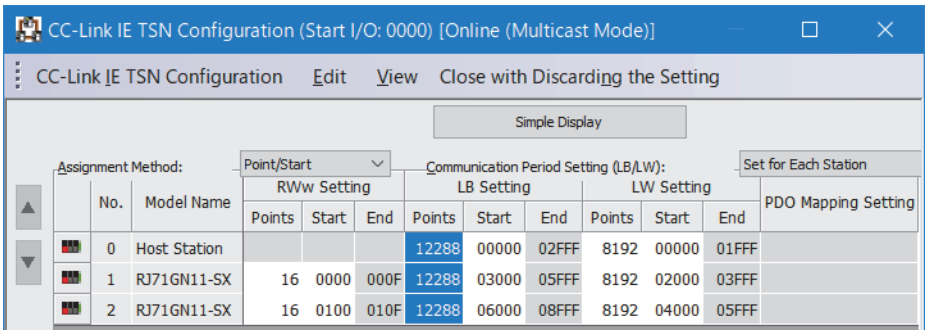
2. On the master station, set "Normal-Speed" and "Low-Speed" to appropriate multiples.

[RJ71GN11-SX] ⇨ [Basic Settings] ⇨ [Communication Period Setting] ⇨ [Multiple Period Setting]



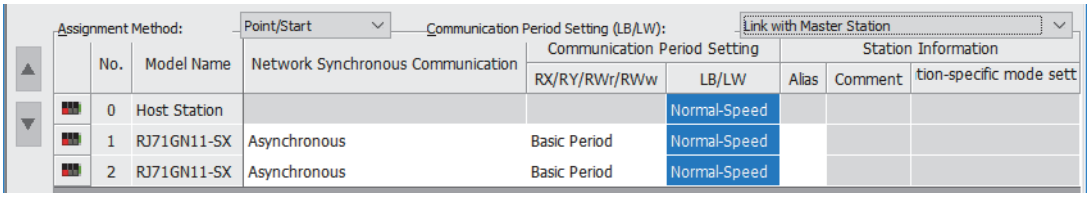
3. On the master station "CC-Link IE TSN Configuration" window, assign the number of points to "LB Setting" and "LW Setting".

[RJ71GN11-SX] ⇨ [Basic Settings] ⇨ [Network Configuration Settings]

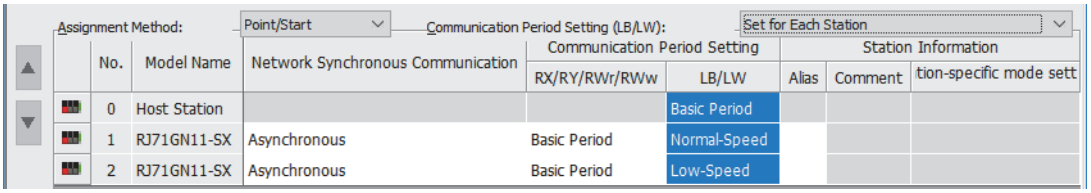


4. Set the "Communication Period Setting (LB/LW)"

- If "Link with Master Station" is selected from the drop-down menu, the local station "Communication Period Setting LB/LW" will be interlocked with the master station.



- If "Set for Each Station" is selected from the drop-down menu, it is possible to set the local station "Communication Period Setting LB/LW" to any desired value.



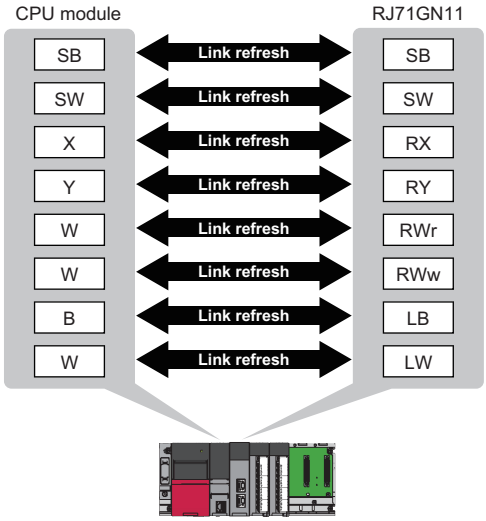
Point

For a communication example, refer to the following.

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

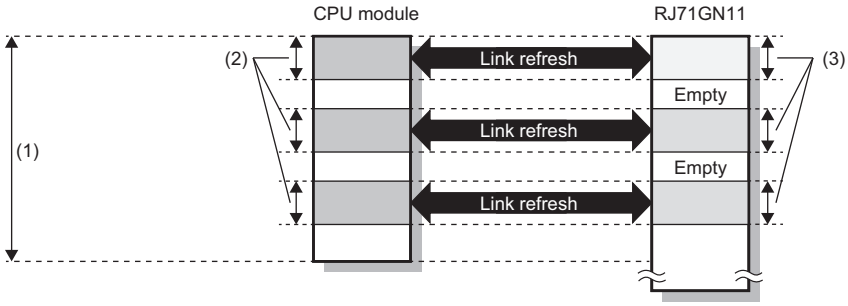
Link refresh

This function automatically transfers data between the devices of the RJ71GN11 and the devices of the CPU module.



Concept of the link refresh range (number of points)

The link refresh is performed to the area set in "Refresh Settings" under "Basic Settings" and also set in the "CC-Link IE TSN Configuration" window.



(1) Range set in "Refresh Settings" under "Basic Settings"
(2) Actual link refresh range
(3) Range set in 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 352 Communication cycle intervals)

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 frequently used in the CPU module as the link refresh range. (☞ Page 125 Refresh Settings)
- Remove infrequently used link devices in the CPU module from the link refresh range, and directly read or write the corresponding data from the program by direct access. (☞ Page 39 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 125 Refresh Settings)

Precautions

■Latched devices of the CPU module

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

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

*1 For the initial device value setting of the CPU module, refer to the following.
GX Works3 Operating Manual

Direct access to link devices

The corresponding data is directly read or written from/to link devices of the RJ71GN11 using the program.

Specify a link device as the link direct device (J□\□) for direct access.

The link special relay (SB) and link special register (SW) can be set using module label. (☞ Page 290 _D)

Specification method

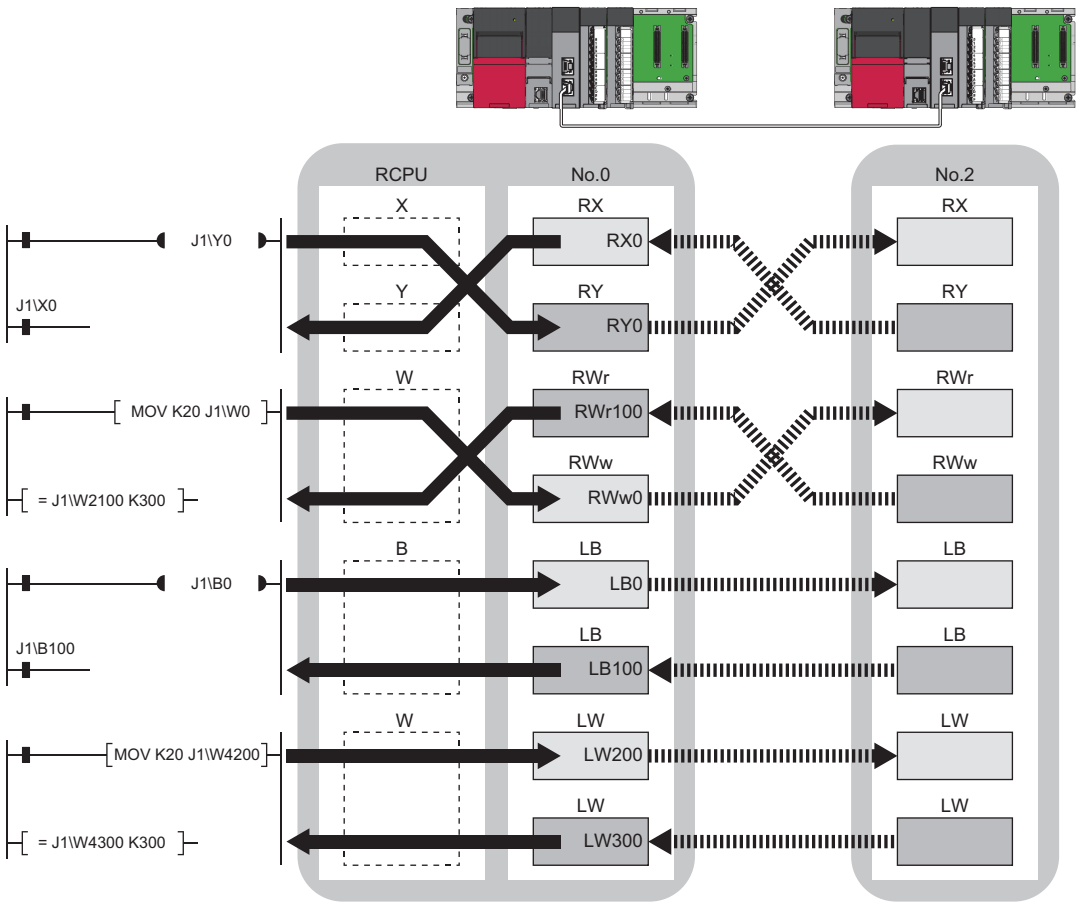
Specify the network number and the link devices of the RJ71GN11 for reading or writing data.

J□\□
(1) (2)

(1) Network number: 1 to 239

(2) Remote input (RX): X0 to X3FFF
Remote output (RY): Y0 to Y3FFF
Remote register (RWw): W0 to W1FFF
Remote register (RWr): W2000 to W3FFF
Link relay (LB): B0 to B7FFF, B0 to B1FFFF when extending the number of link points (☞ Page 31 Number of link points extension)
Link register (LW): W4000 to W7FFF, W4000 to W83FFF when extending the number of link points (☞ Page 31 Number of link points extension)
Link special relay (SB): SB0 to SBFFF
Link special register (SW): SW0 to SWFFF

Ex.



Readable and writable range

Data can be read or written from/to the RJ71GN11 on the base unit where the CPU module is mounted.

■Read

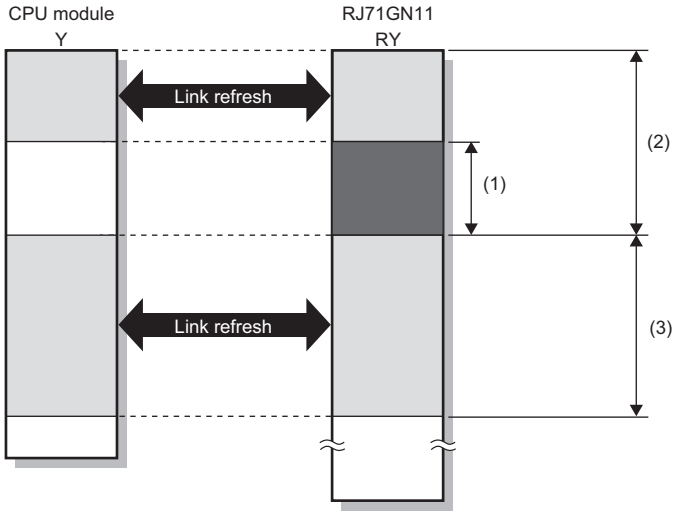
All link devices of the RJ71GN11 can be specified. (☞ Page 39 Specification method)

■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 29 Communications using RX, RY, RWr, RWw, LB, and LW)
- Within the link device range of the RJ71GN11 (☞ Page 39 Specification method)

Ex.



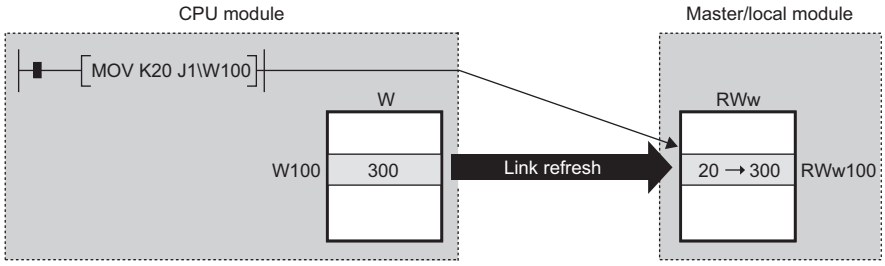
(1) Out of the link refresh range (Data can be written here.)
(2) Area where data is sent to other stations
(3) Area for receiving data from other stations

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.

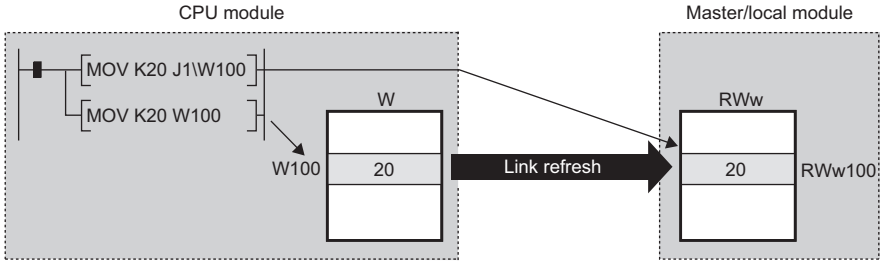
• Bad example (Directly accessing the link refresh target only)

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 the link direct device (J□\□) is used, refer to the following.
MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)

Shortening the transmission delay time

The transmission delay time can be shortened by reducing the number of link refresh points and shortening a communication cycle interval. (☞ Page 352 Communication cycle intervals)

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 frequently used in the CPU module as the link refresh range. (☞ Page 125 Refresh Settings)
- Remove infrequently used link devices in the CPU module from the link refresh range, and directly read or write the corresponding data from 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 32-bit data assurance, or if cyclic data of more than 32 bits needs to be assured, use interlock programs. (☞ Page 43 Cyclic data assurance)

■Mounting multiple modules of the same network number

When multiple RJ71GN11s 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 device in a multiple CPU system

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

Cyclic data assurance

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

○: Assured, ×: Not assured

Method	Description	Link refresh	Direct access to link devices	Access to buffer memory
32-bit data assurance	Assures data in 32-bit units. Data is automatically assured by satisfying assignment conditions of link devices.	○	○	○
Station-based block data assurance	Assures data in station-based units. Data is assured by enabling the station-based block data assurance in the parameter setting.	○	×	×
Interlock program	Assures data of more than 32 bits. Data is assured by configuring interlocks on programs.	○	○	○

Point

When a remote station is in the network, use station-based block data assurance. If it is disabled, the functions of the remote station cannot be assured.

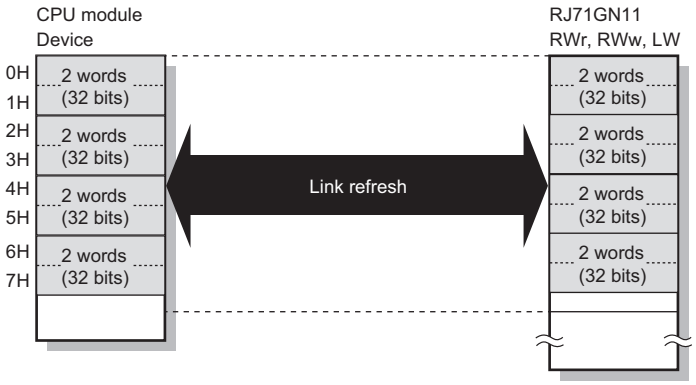
32-bit data assurance

RWr, RWw, and LW 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:

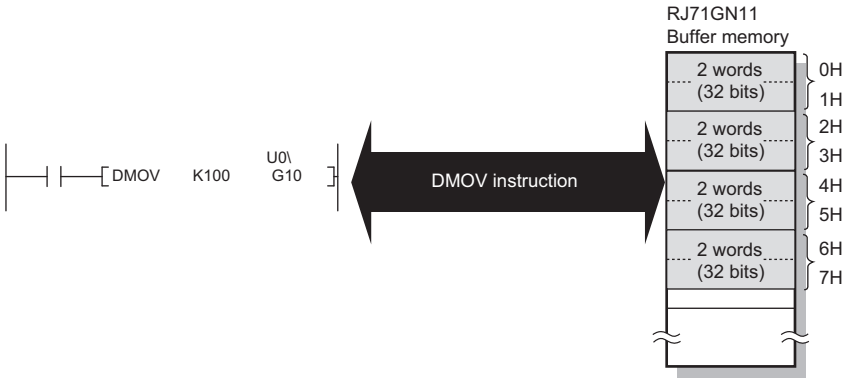
- The start device number of RWr, RWw, and LW is a multiple of 2
- The number of points assigned to RWr, RWw, and LW is a multiple of 2.



■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

Cyclic data is assured for each station by a handshake between the CPU module and the RJ71GN11 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

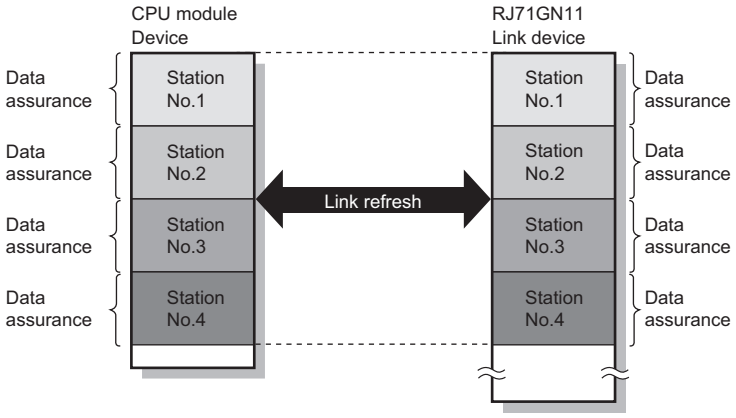
■Setting

Set station-based block data assurance under "Supplementary Cyclic Settings" in "Application Settings" of the master station. (☞ Page 134 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.

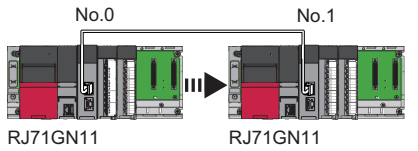
Interlock program

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

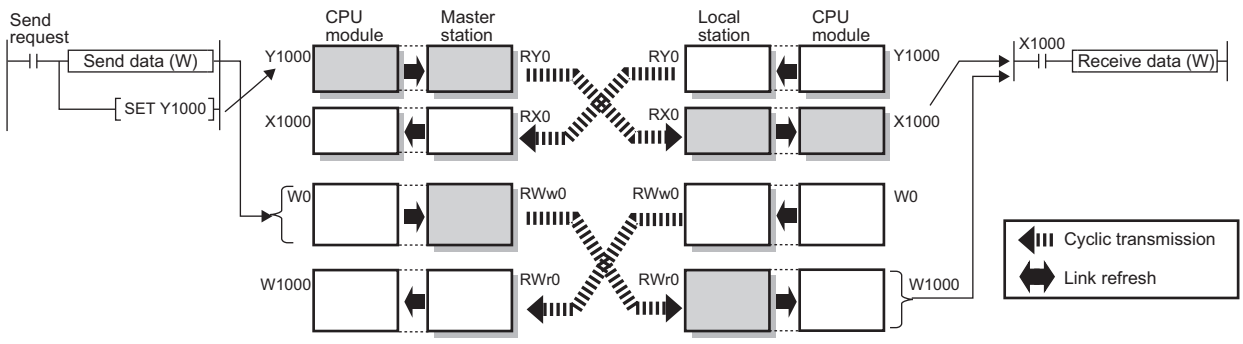
- Data assurance by handshake of the remote I/O
- Data assurance by handshake of the remote register
- Data assurance by handshake of the link relay

■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

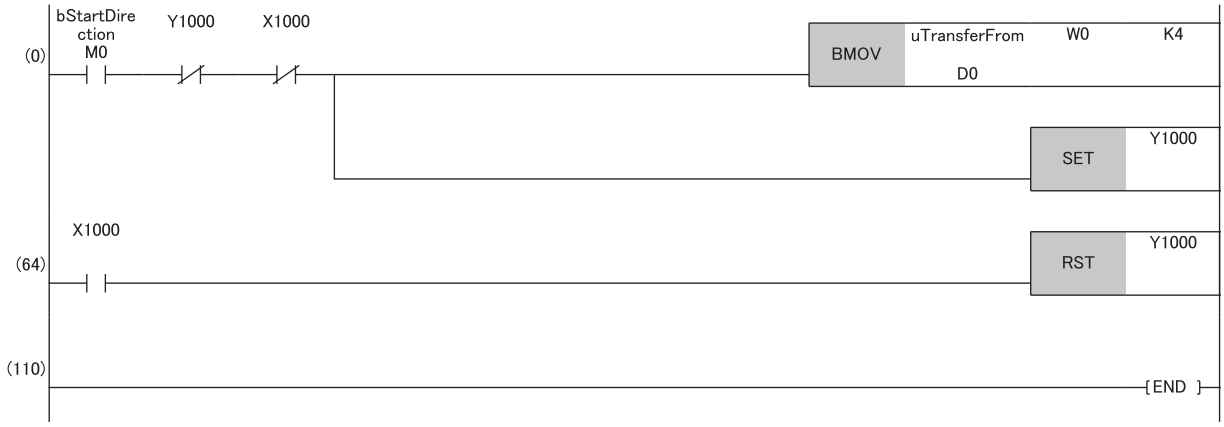


• Program

Sending station: Master station (station No.0)

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

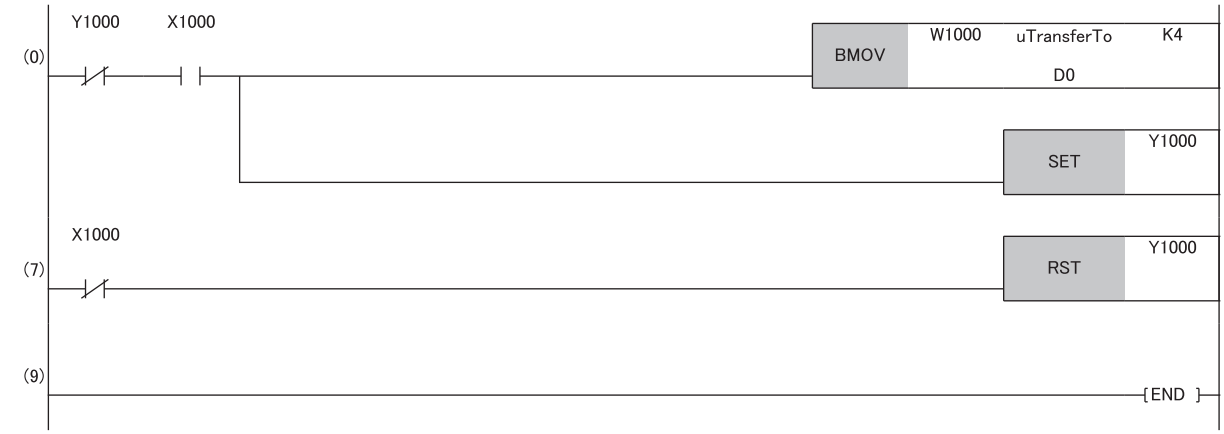
	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartDirection	Bit	...	VAR_GLOBAL	M0
2	uTransferFrom	Word [Signed]	...	VAR_GLOBAL	D0



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).

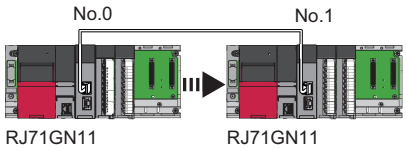
❹ When the transfer is completed, the local station turns on Y1000.

❺ The master station checks that X1000 is turned on, and turns off Y1000.

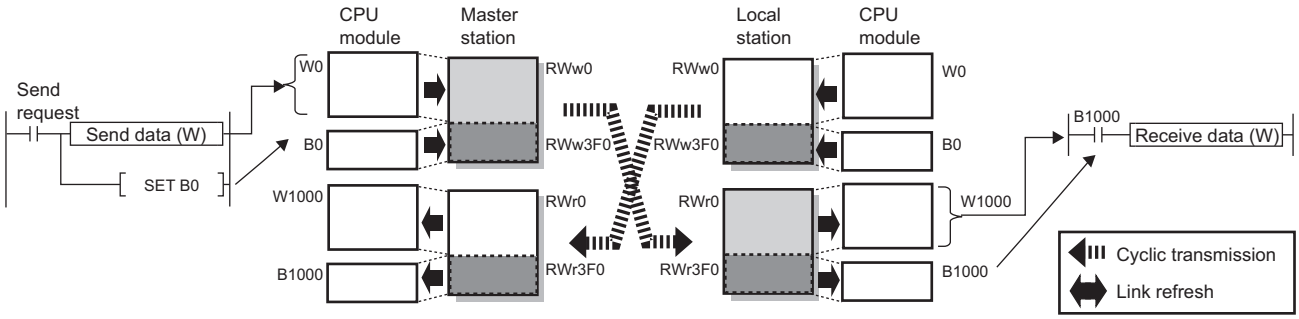
❻ The local station checks that X1000 is turned off, and turns off the reception complete signal Y1000.

■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

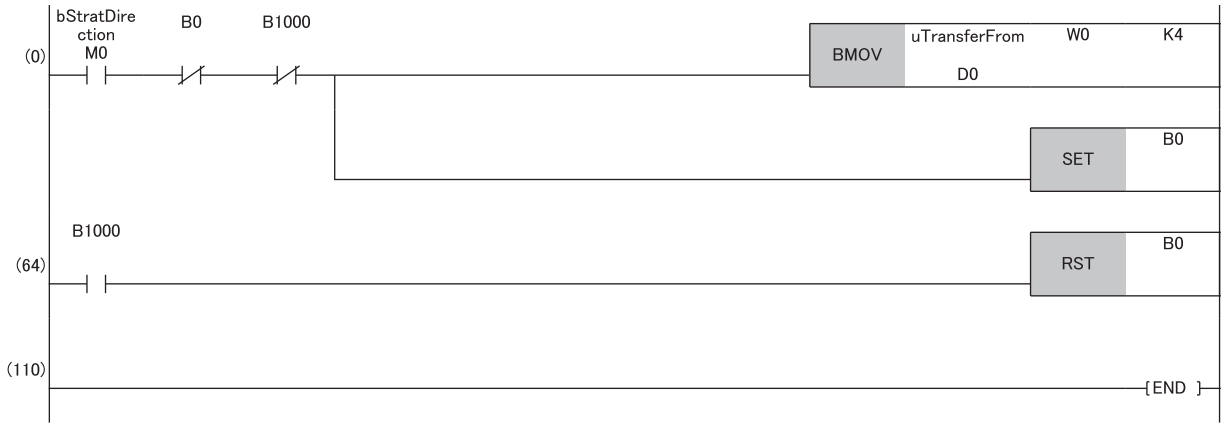


• Program

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

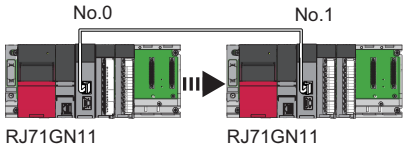
❶ The master station checks that the send request bStartDirection (M0) is turned on, and transfers contents of uTransferFrom [0] to [3] to the send data W0 to W3.
❷ When the transfer is completed, the master station turns on B0.
❸ The local station checks that B1000 is turned on, and transfers contents 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

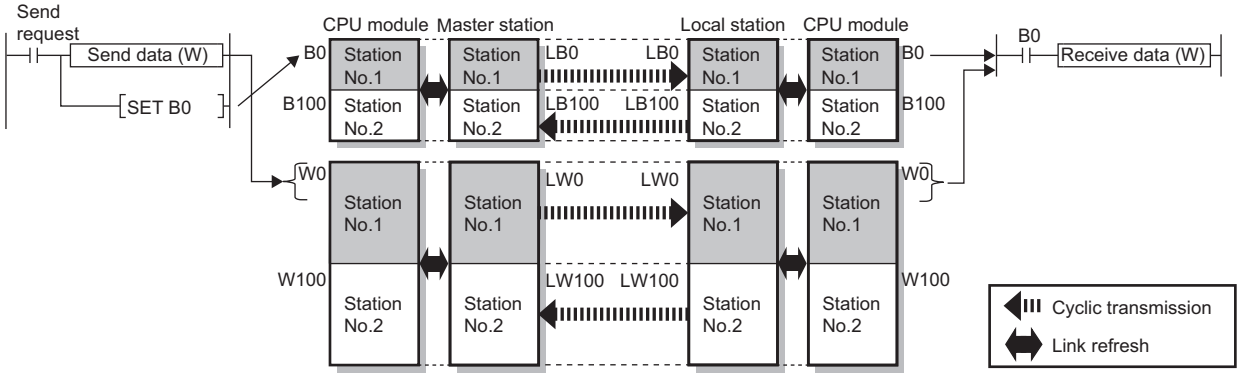
In communications using LB and LW, the link relay (LB) is sent after the link register (LW). Therefore, data inconsistency of the link register (LW) can be prevented by handshake in the data of the link relay (LB).

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

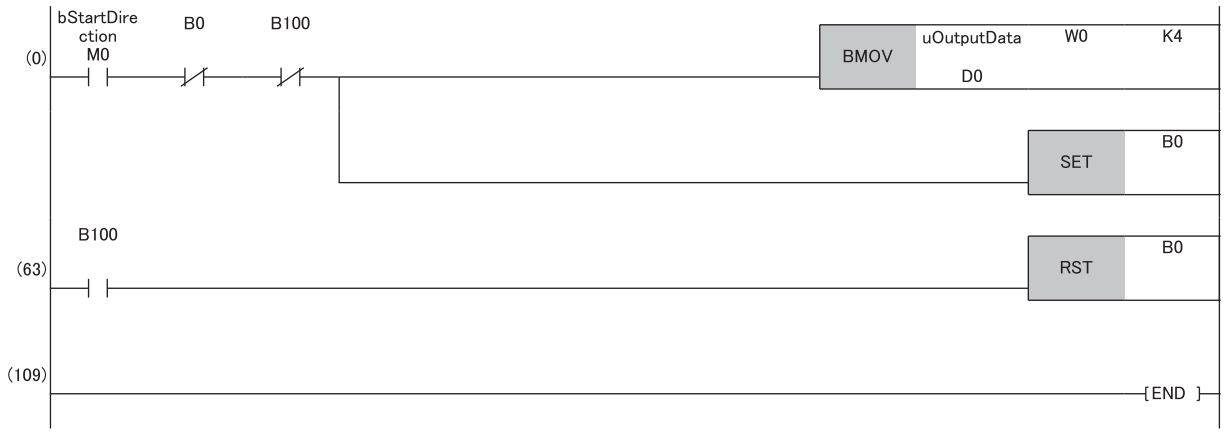


• Program

Sending station: Master station (station No.0)

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

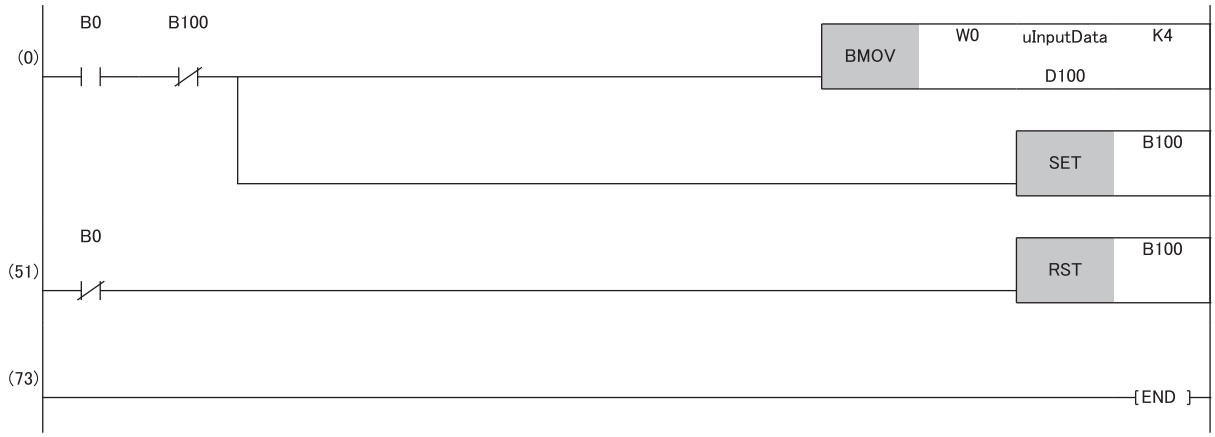
	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartDirection	Bit	...	VAR_GLOBAL	M0
2	uOutputData	Word [Signed]	...	VAR_GLOBAL	D0



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

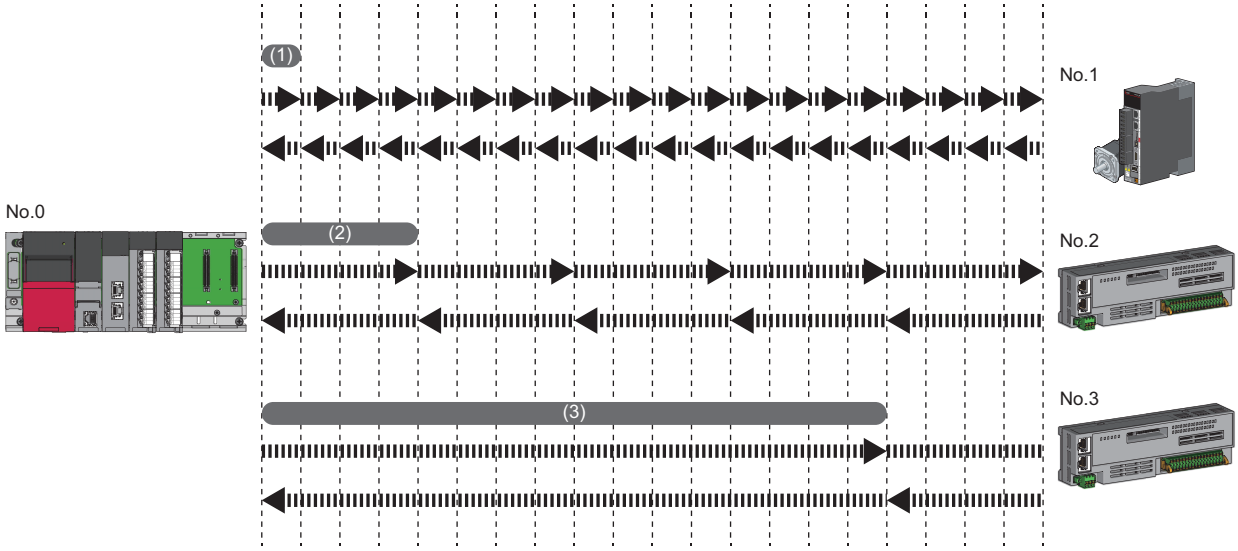


- Program flow

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 (for "×4")
(3) Low speed (for "×16")

Setting method

The master station communicates with device stations by using three communication cycles consisting of the basic cycle under "Basic Period Setting", as well as "Normal-Speed" and "Low-Speed" under "Multiple Period Setting". (☞ Page 128 Communication Period Setting)
The communication cycle of each device station can be selected from "Basic Period", "Normal-Speed", or "Low-Speed" in "Communication Period Setting" in the "CC-Link IE TSN Configuration" window.

Precautions

The available communication cycle to be set to the local station varies depending on the settings of "Communication Mode" and "Link points extended setting" under "Application Settings".

■Unicast mode

The setting value of "Communication Period Setting LB/LW" of the local station in the "CC-Link IE TSN Configuration" window becomes the same setting as that of "Communication Period Setting RX/RY/RWr/RWw", and the setting can be set to" Basic Period", "Normal-Speed", or "Low-Speed".

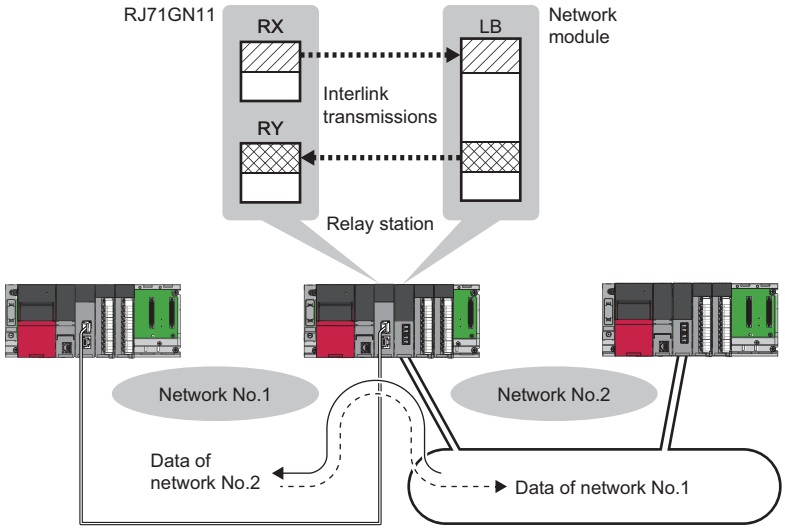
■Multicast mode

- When not extending the number of link points: Set "Basic Period" in "Communication Period Setting" of the local station in the "CC-Link IE TSN Configuration" window.
- When extending the number of link points: Set "Basic Period" in "Communication Period Setting RX/RY/RWr/RWw" of the local station in the "CC-Link IE TSN Configuration" window. "Communication Period Setting LB/LW" can be set to "Basic Period", "Normal-Speed", or "Low-Speed".

Interlink transmission

This function transfers data in the link devices of the master station to another network module on a relay station.
Modules that can support interlink transmission are as follows.

- RJ71GN11-T2 (master station and local station)
- RJ71GN11-SX (master station and local station)
- RJ71GN11-EIP (master station and local station)
- CC-Link IE Controller Network-equipped module (control station and normal station)
- CC-Link IE Field Network-equipped module (master station and submaster station)
- RJ71LP21-25 (control station and normal station)

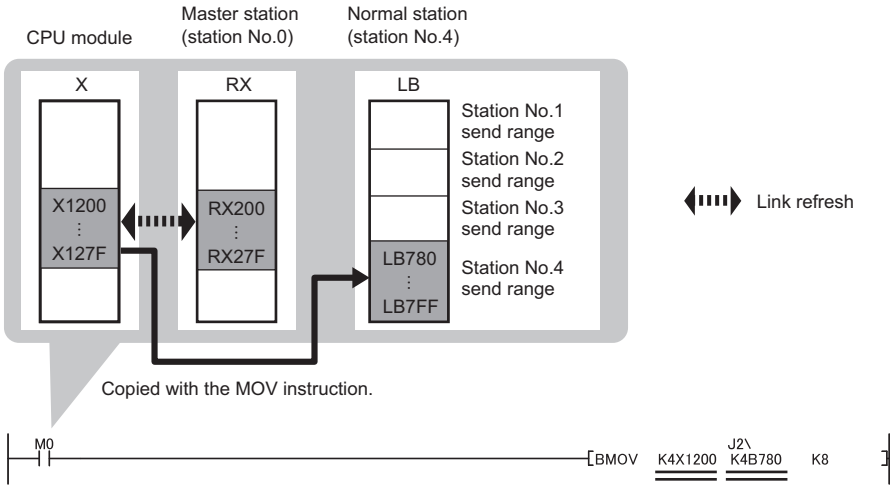


Setting method

Set interlink transmission in "Interlink Transmission Settings" in "Application Settings". (☞ Page 138 Interlink Transmission Settings)

■Setting 65 or more interlink transmission ranges

Use link direct devices in a program to perform interlink transmission.



A link direct device cannot be specified for both the first and second arguments. Either one of them must use link refresh and specify the CPU device.

■Performing interlink transmission in a multiple CPU system

When different control CPUs are set for the network modules, interlink transmission cannot be performed using interlink transmission parameters or a program. Perform interlink transmission using data communication by the CPU buffer memory. (📖 MELSEC iQ-R CPU Module User's Manual (Application))

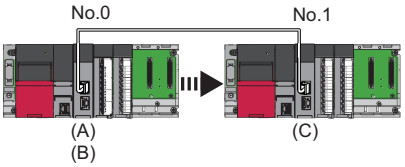
I/O maintenance settings

When using cyclic transmission, set whether to hold or clear output on the sending side or input on the receiving side by using the following setting of (A), (B), or (C). (☞ Page 135 Supplementary Cyclic Settings)

- Setting on sending side (A): "Output Mode upon CPU Error" for if a stop error occurred in the CPU module on the sending side
- Setting on sending side (B): "Output Hold/Clear Setting during CPU STOP" for if the status of the CPU module on the sending side changed from RUN to STOP
- Setting on receiving side (C): "Data Link Faulty Station Setting" for if the sending side disconnected

[Application Settings] ⇨ [Supplementary Cyclic Settings] ⇨ [I/O Maintenance Settings]

Input data hold/clear operation on the receiving side



■If a CPU module stop error occurred on the sending side

- If both settings (A) and (B) on the sending side are "Hold", input data on the receiving side is held.
- If setting (A) is "Hold" and setting (B) is "Clear" on the sending side, input data on the receiving side is cleared.
- If setting (A) on the sending side is "Clear" and setting (C) on the receiving side is "Hold", input data on the receiving side is held.
- If setting (A) on the sending side is "Clear" and setting (C) on the receiving side is "Clear", input data on the receiving side is cleared.

For operation when a module other than master/local modules is used on the receiving side, refer to the user's manual for the module used.

■If the CPU module on the sending side changed from RUN to STOP

- If setting (B) on the sending side is "Hold", input data on the receiving side is held.
- If setting (B) on the sending side is "Clear", input data on the receiving side is cleared. (The sending side sends the data cleared to 0.)

■If the sending side disconnected

- If setting (C) on the receiving side is "Hold", input data from before disconnection is held on the receiving side.
- If setting (C) on the receiving side is "Clear", input data on the receiving side is cleared.

Devices where hold/clear settings are enabled

The following table and figure show devices for which the settings on the sending side (A)(B) and the setting on the receiving side (C) are enabled.

Setting to	Setting items	Hold/clear settings are enabled	Hold regardless of setting	Clear regardless of setting
Setting on sending side (A)	Output mode upon CPU error	• Master station RY • Local station RY (only the output data from the own station)	—	—
Setting on sending side (B)	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)
Setting on receiving side (C)	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 the direct access to link devices

The output varies according to the setting of "Output Hold/Clear Setting during CPU STOP".

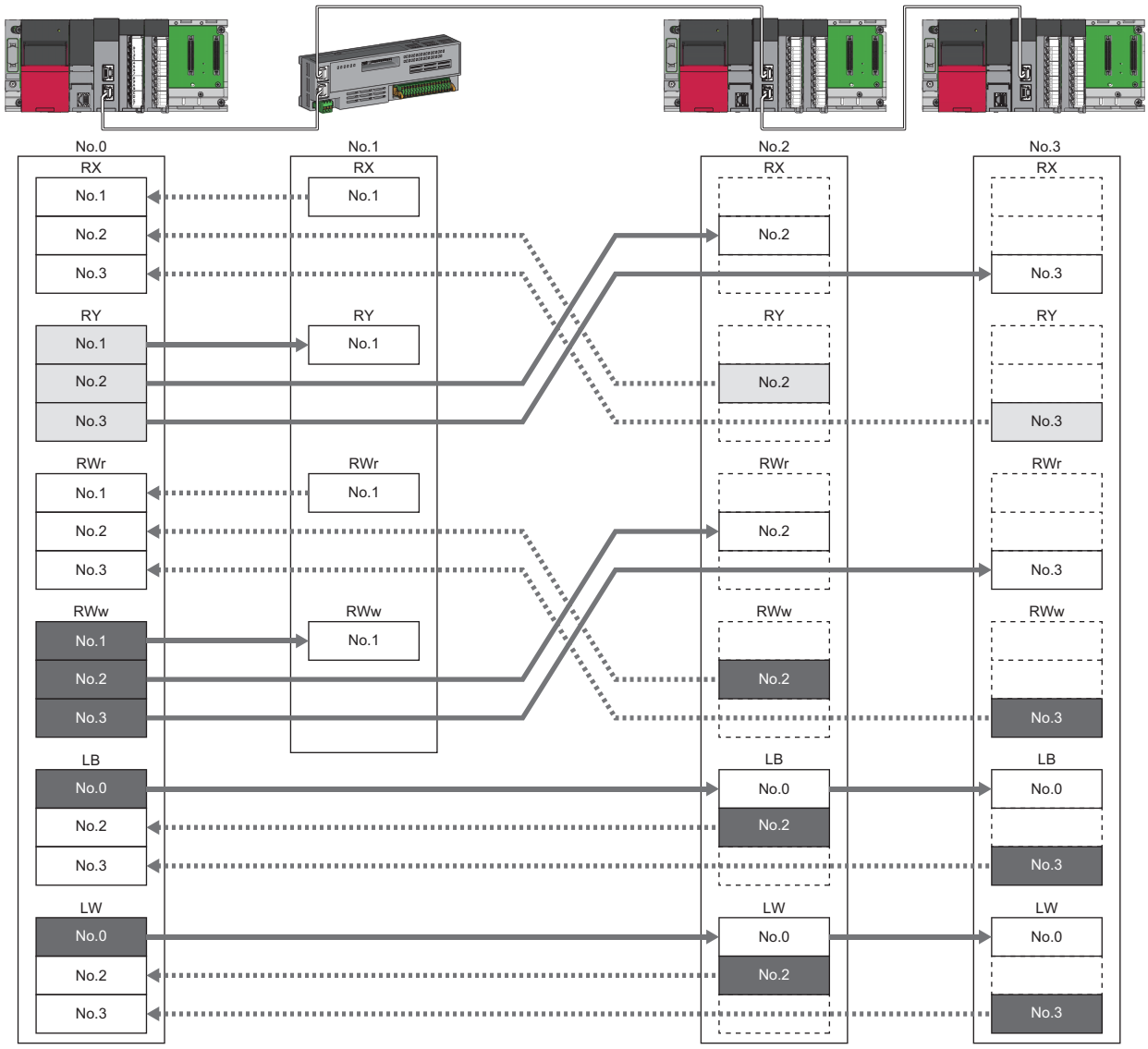
■When the Safety CPU is used

When the safety operation mode is in the safety mode, the safety output will be cleared even if "Hold" is set in "Output Hold/Clear Setting during CPU STOP".

Output data hold/clear operation during CPU STOP

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

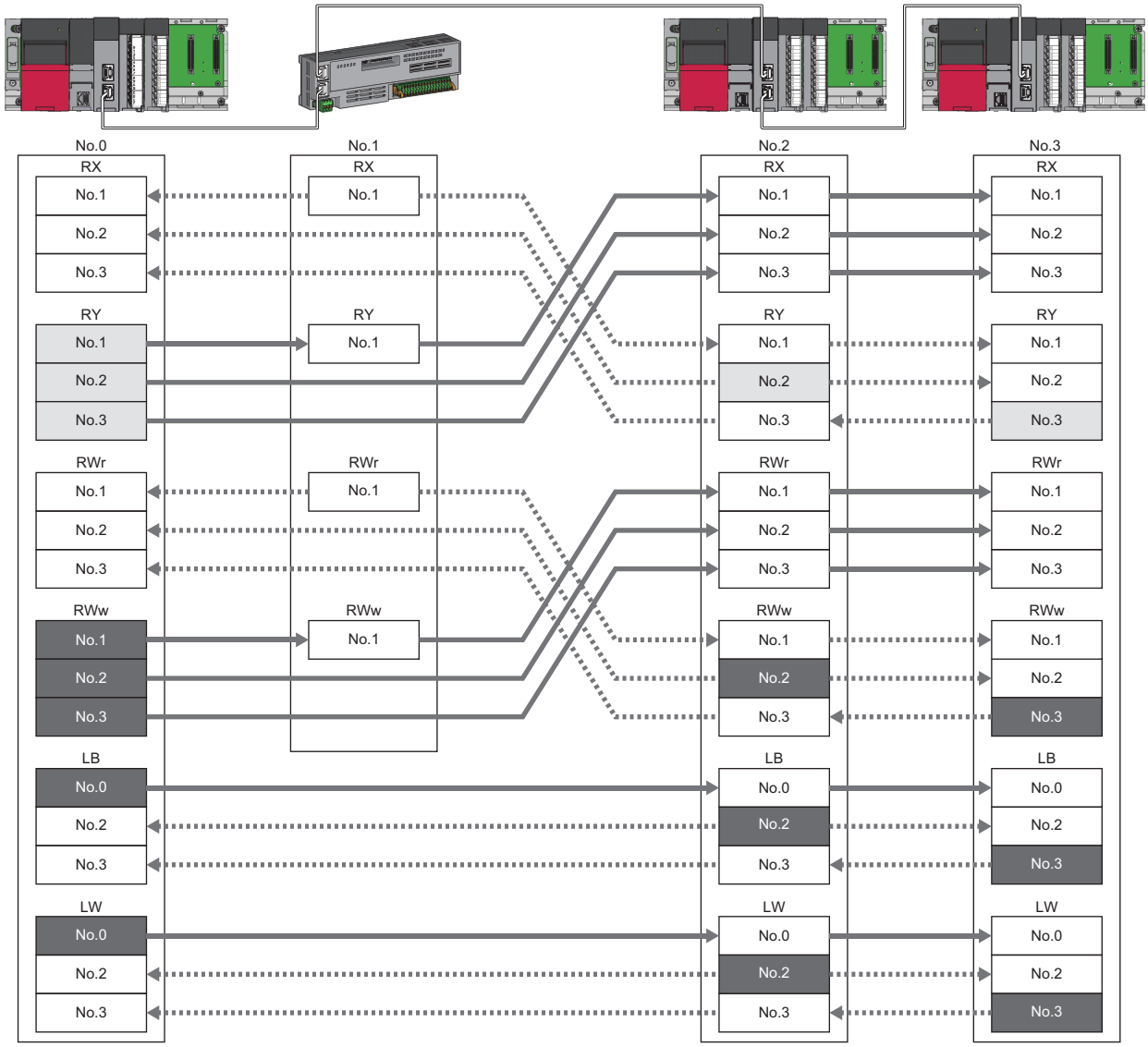
■Unicast mode



: 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



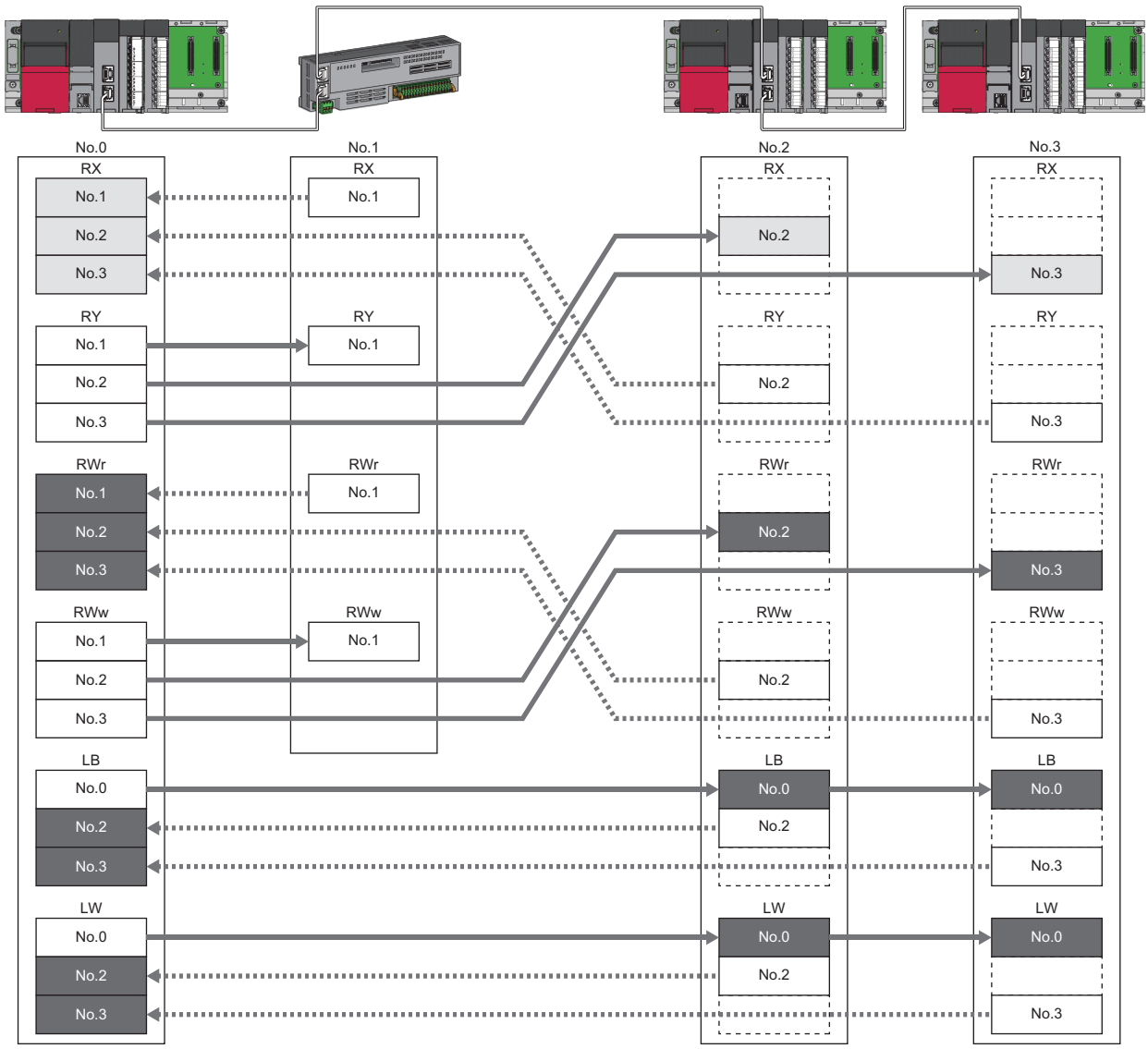
: When the link refresh source is set to other than Y, data is held or cleared according to the parameter setting. When the link refresh source is set to Y, data is cleared regardless of the parameter setting.

: Data is held regardless of the parameter setting.

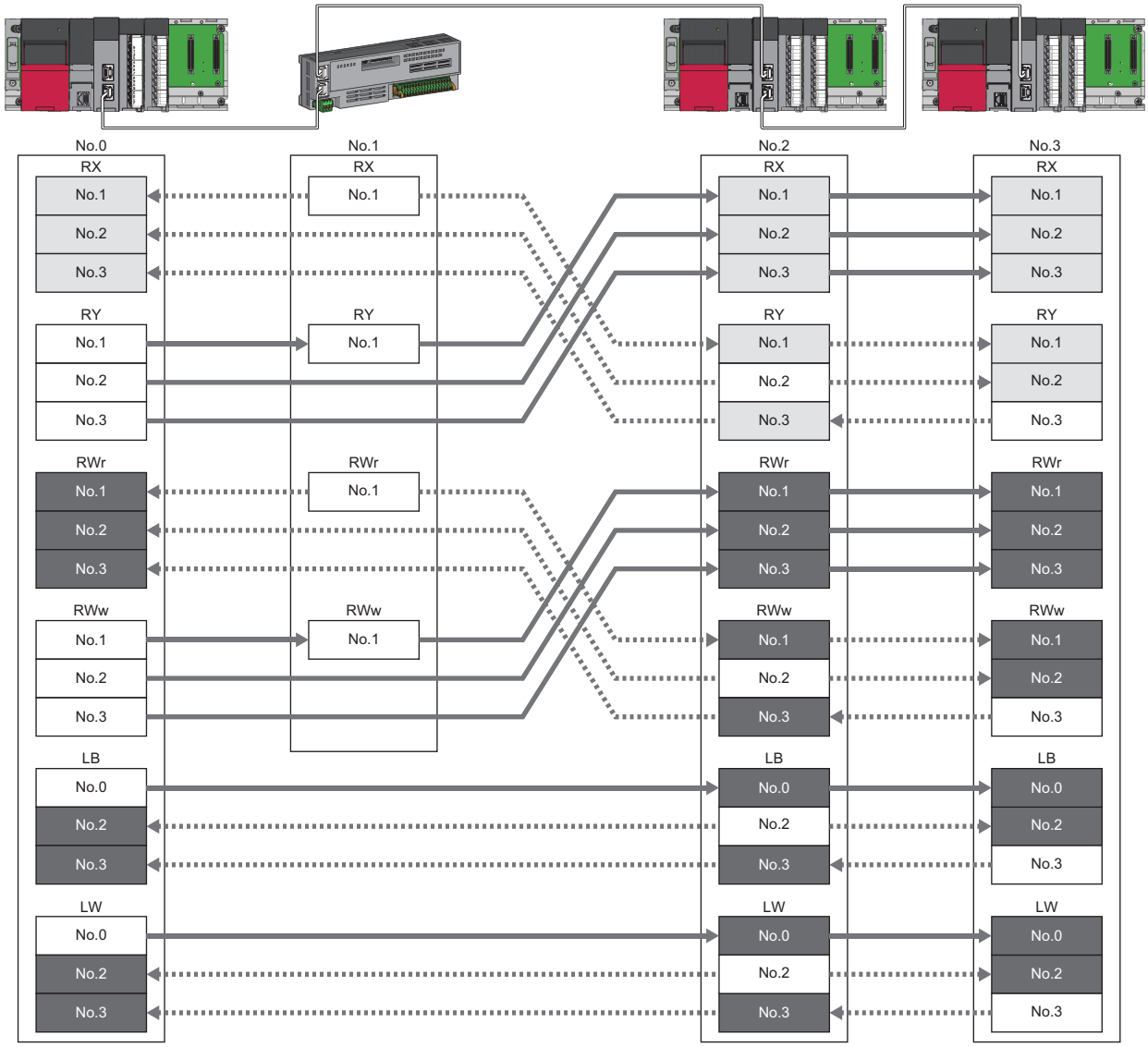
Input data hold/clear operation from the data link faulty station

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

■Unicast mode



■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 remote station can be turned on or off when the CPU module is in STOP state.
Ordinarily, the output of the remote station with the output HOLD/CLEAR setting function cannot be turned on or off. In that case, use the remote device test function.
When checking the connection between the remote station and the external device by turning the remote output on or off, the connection can be checked during CPU STOP (without using a program) if the remote device test is used.
For the output HOLD/CLEAR setting function, refer to the following.
📖 Manual for the remote station used

Restriction

Before using this function, check the firmware version of the RJ71GN11. (☞ Page 389 Added and Enhanced Functions)

Output hold/clear setting during CPU STOP

■Output value in the 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 remote station	Remote station output*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 CC-Link IE TSN digital-analog converter module. 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 to the STOP position of the CPU module.
2. Turn off and on the 'Remote device forced output request' (SB0016) to start the remote device test.
3. Check that the 'Remote device forced output request accept' (SB0086) and 'Remote device forced output status' (SB0087) are on. (In addition, check that the 'Remote device forced output result' (SW025A) is 0 (no error).)
4. Check by turning on or off the output of the remote station.
5. Turn on and off the 'Remote device forced output request' (SB0016) to end the remote device test.

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 253 List of Error Codes)
When this function is used for the RJ71GN11-T2 with a firmware version earlier than "10", the value stored in 'Remote device forced output result' (SW025A) is 0.

Precautions

■Conditions

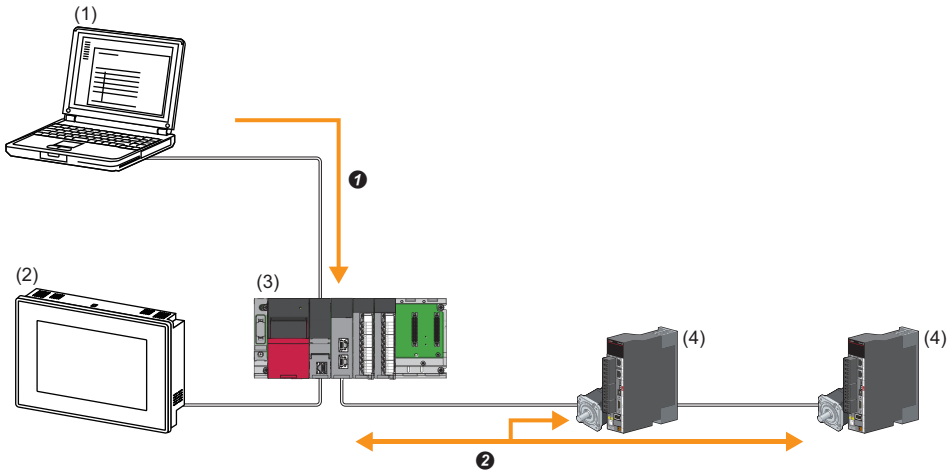
- The remote device test does not start even if the 'Remote device forced output request' (SB0016) is turned off and on while the CPU module is in RUN or PAUSE state.
- Even if the CPU module is changed to STOP state after the 'Remote device forced output request' (SB0016) is turned off and on, the remote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

■Output HOLD/CLEAR setting function

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

CANopen communications

CANopen communications are used for controlling a device that supports the CANopen profile.
CANopen communications have SDO communication using transient transmission and PDO communication using cyclic transmission for devices that support the CANopen profile. SDO communication is performed using the SLMPSND instruction. For details on the SLMPSND instruction, refer to the following.
📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)
Parameters for PDO communications are defined by the PDO mapping and the settings are specified in "Batch Setting of PDO Mapping" or "PDO Mapping Setting".



(1) Engineering tool
(2) HMI (Human Machine Interface)
(3) RJ71GN11
(4) Servo amplifier
❶ Writing PDO mapping settings
❷ PDO communications

Restriction

Before using this function, check the firmware version of the RJ71GN11. (☞ Page 389 Added and Enhanced Functions)
If the firmware version does not support CANopen communications, a network parameter error (error code 2221H) or Initialization failure (event code 00C54H) occurs and data link cannot be performed.

Setting method

Set the parameter of "Batch Setting of PDO Mapping" or "PDO Mapping Setting" in the "CC-Link IE TSN Configuration" window. (☞ Page 158 PDO mapping setting)

Precautions

■Motion control station

Do not set a device station as the motion control station. Doing so results in Parameter error (motion control station setting) (error code D64EH).

■PDO mapping setting

When a servo amplifier is added to the device station in the "CC-Link IE TSN Configuration" window, set the parameter of "PDO Mapping Setting".

■Multi-axis servo amplifier

For a multi-axis servo amplifier, single module can use up to eight axes.

1.2 Transient Transmission

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

☞ Page 61 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.

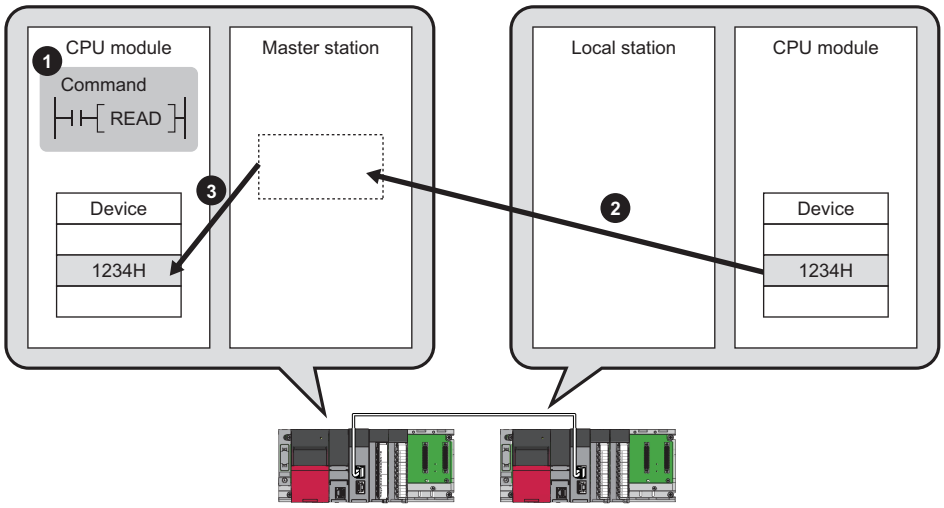
For dedicated instructions that can be used and details on dedicated instructions, refer to the following.

☞ Page 343 Dedicated Instruction

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

Ex.

Accessing a local station using the dedicated instruction (READ instruction)



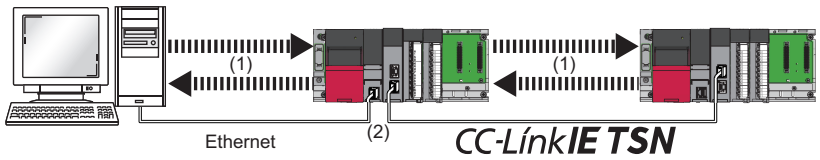
Communications using the SLMP

Data is read/written from the RJ71GN11 and 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 and the buffer memory areas of the remote station via an SLMP.

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

The RJ71GN11 sends and receives (1), and relays (2) SLMP messages. For details on an SLMP, refer to the following.

📖 SLMP Reference Manual

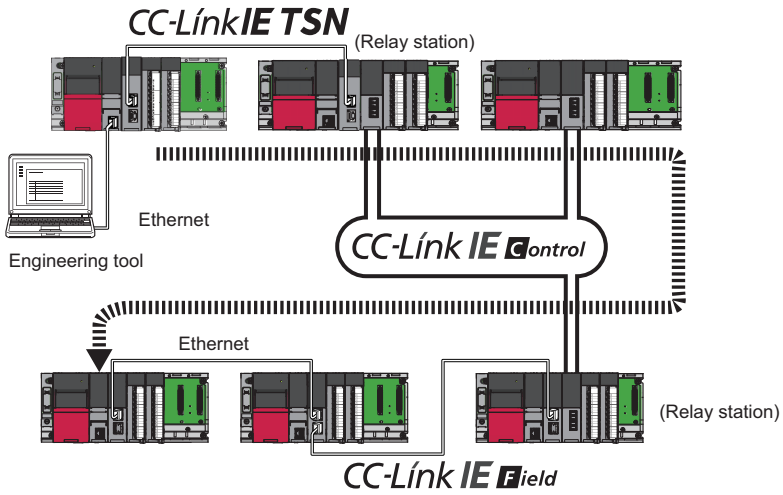


Precautions

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

Communications using the engineering tool

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



Point

Communications can be made with stations up to eight networks apart (number of relay stations: 7).

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 MELSEC iQ-R series and other series)

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

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

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

■Setting method

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

Communication test

This test checks if transient transmission data can be properly routed from the own station to the communication target. (☞ Page 225 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.

Restriction

Before using this function, check the firmware version of the RJ71GN11. (☞ Page 389 Added and Enhanced Functions)

Connection with MELSOFT products and a GOT

Programming and monitoring of the programmable controller using the engineering tool, and monitoring and testing of the programmable controller from the GOT are performed via Ethernet. This function enables remote control using long-distance connectivity and high-speed communications via Ethernet.
This section describes the methods of connecting the RJ71GN11 to MELSOFT products (such as engineering tool and MX Component) and a 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 65 Connection via a hub
Connection via HUB (Connection by specifying the network number and station number)	To connect multiple MELSOFT products and GOTs	○	○	

Point

For the procedures to connect the RJ71GN11 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 a MELSOFT product or GOT is connected via the RJ71GN11, a connection cannot be established if another RJ71GN11 to which the same network number is set is mounted on the same base unit (main base unit and extension base unit) as the RJ71GN11 used for the connection.

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 378 Port Number
- Number of simultaneous open connections (maximum number of connections): 📖MELSEC iQ-R CC-Link IE TSN User's Manual (Startup)

Connection via a hub

■Settings on the RJ71GN11 side

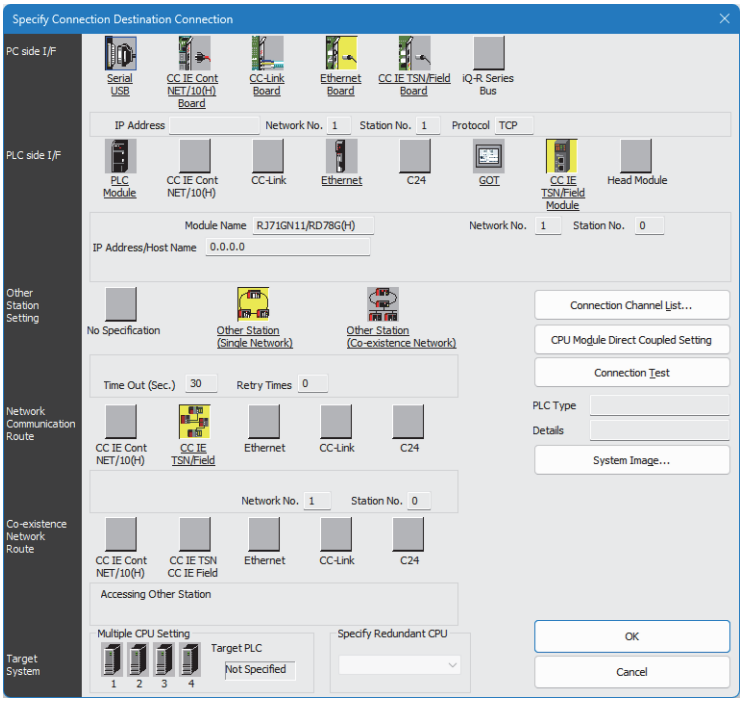
- For connection by specifying the IP address, set the IP address using "Required Settings". (☞ Page 122 Station No./IP Address Setting)
- For connection by specifying the network number and station number, set the network number and station number in "Required Settings".

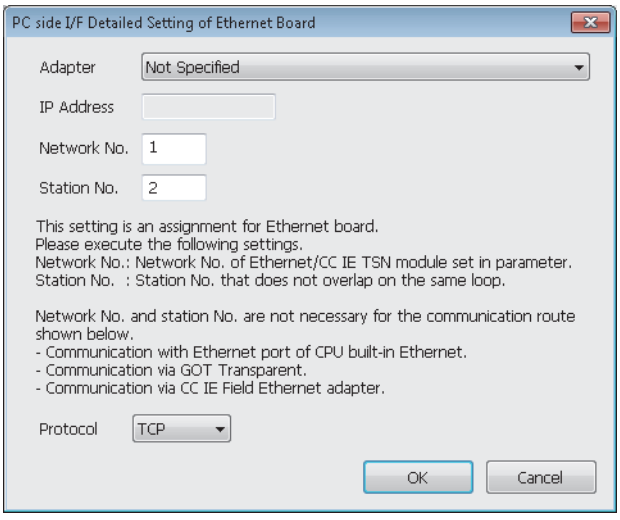
Neither of the connections require the settings in the "CC-Link IE TSN Configuration" window.

■Settings on the engineering tool side

Set in the "Specify Connection Destination Connection" window.

[Online] ⇨ [Current Connection Destination]



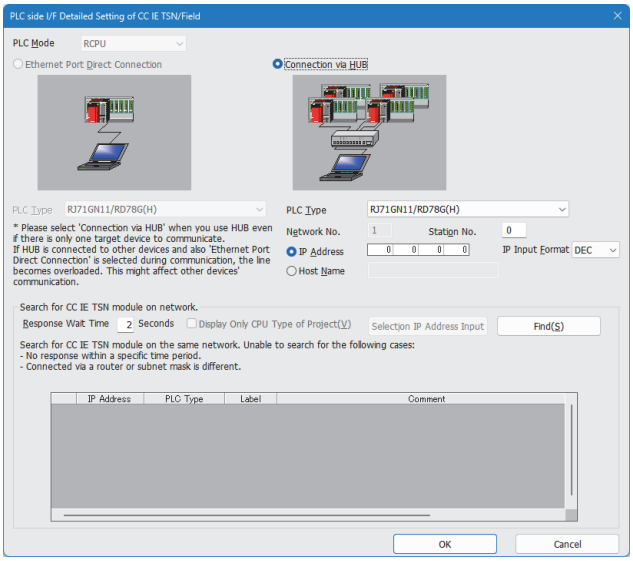


1. Set "PC side I/F" to "Ethernet Board".
2. Double-click "Ethernet Board", and open the "PC side I/F Detailed Setting of Ethernet Board" window.
3. Set the network number, station number, and protocol of the personal computer.

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 "PLC side I/F Detailed Setting of CC IE TSN/Field Module" window.

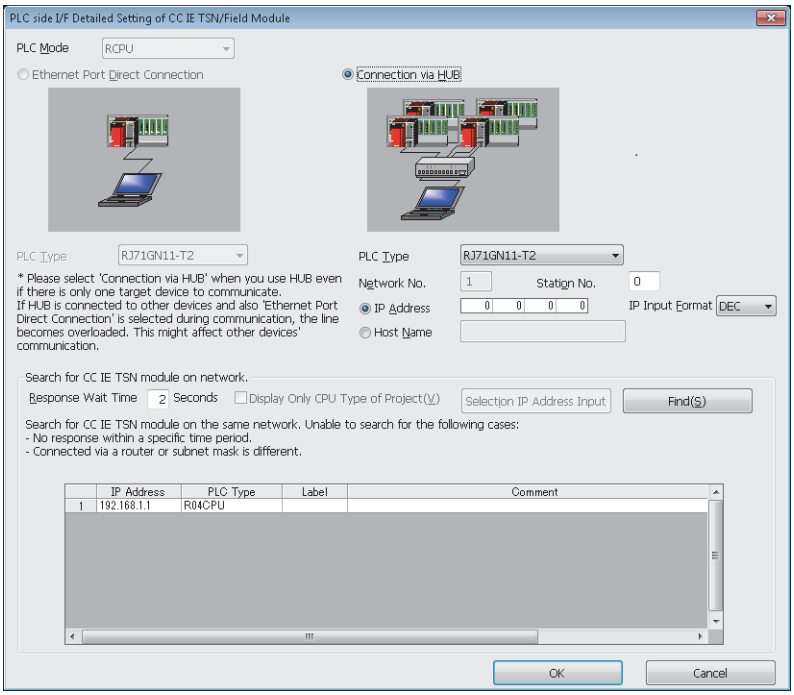
6. Select "Connection via HUB" for the connection method, and enter the station number and IP address or host name of the RJ71GN11.

7. Specify "Other Station Setting" or "Network Communication Route" if necessary.

Searching modules on the network

Search for RJ71GN11 control CPUs 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 "Search" button on the "PLC side I/F Detailed Setting of CC IE TSN/Field Module" window.



Search target modules are as follows.

- The control CPU of the RJ71GN11 connected to the same industrial switch as the engineering tool
- The control CPU of the RJ71GN11 connected to a cascade-connected industrial switch

Precautions

If the connected RJ71GN11 does not appear in the list after searching the modules on the network, check the following items.

- Search cannot be performed if it is disabled with the IP filter.
- Modules connected via a router cannot be searched.
- If modules with the same IP address are listed, correct the setting of the IP address in the "CC-Link IE TSN" 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.

Connection with SLMP-compatible devices

This type of connection allows SLMP-compatible devices (such as a personal computer or a vision sensor) to be connected to the RJ71GN11.

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

1.4 Security

This function ensures security according to the network environment by restricting access for each communication path to the CPU module. The following two access restriction methods can be used.

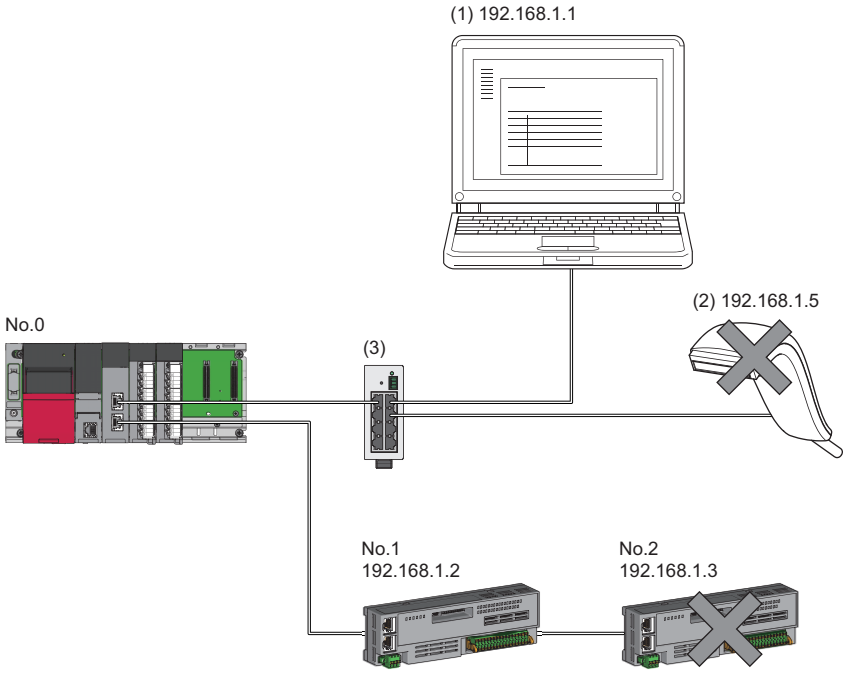
☞ Page 69 IP filter
☞ Page 72 Remote password

IP filter

This function identifies the IP address of the access source, and prevents unauthorized access.

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

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



When the "Allow" IP 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 137 Security) A warning is displayed in the following cases.

- When blocking the IP address of the device station set in the "CC-Link IE TSN Configuration" window was attempted
- When a device station is not set in the "CC-Link IE TSN Configuration" window, and "IP Address" allowed to access is not set in the "IP Filter Settings" window (because the IP filter blocks every IP address)

2. Write the module parameters to the CPU module.
3. The IP filter is enabled when power is turned off and on or the CPU module is reset.

Point

Even if the connection was specified in 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

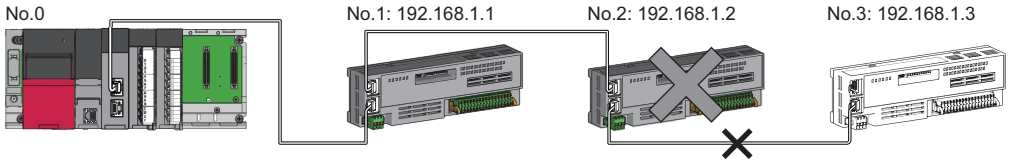
Allow or block should be set to all IP addresses that connect to the same network. Also, set allow or block to the IP address of the device station that is registered in the "CC-Link IE TSN Configuration" window.
Register the setting details to the master station or the local station, and allow or block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

Operation

Even for the device station registered in 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 215 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 287 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 is 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 device station No.1 can access the master station, and 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

This function permits or prohibits access from the external device to the CPU module via the RJ71GN11. This prevents unauthorized access to the CPU module from a remote location.

Restriction

A C Controller module and a MELSECWinCPU module cannot use this function.

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.)

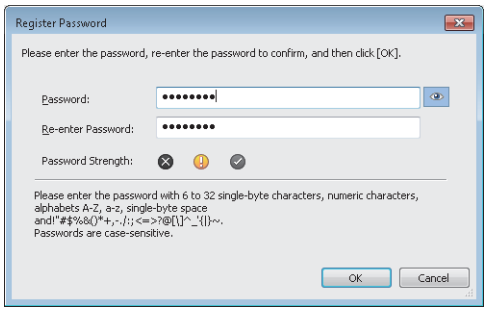
Number of settable modules

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

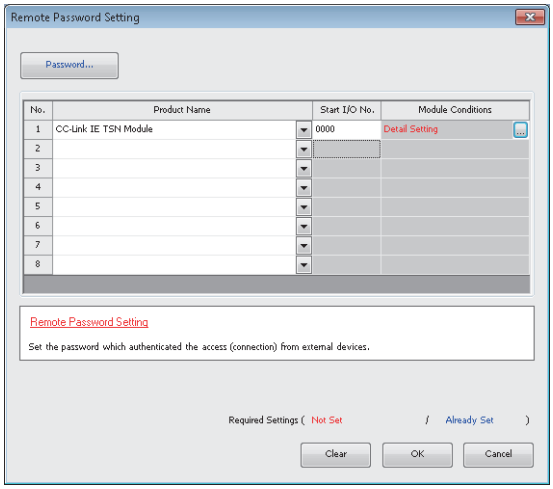
Set on the "Remote Password Setting" window.

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

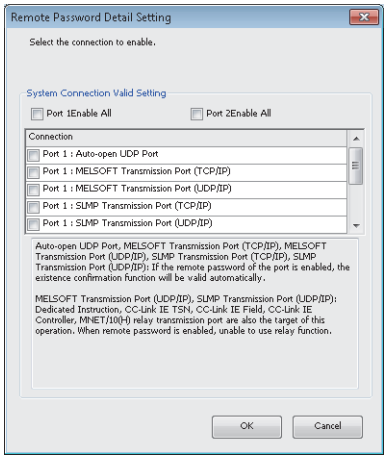


1. Click the [Password] button, and register the remote password on the "Register Password" window.

[Password] button



2. Select the module for which the remote password is to be applied, and set the start I/O number.



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

"Detail Setting" for the target module

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

■PING

This function uses the PING command to perform an alive check of external devices whose access is permitted in UDP communications. Therefore, if external devices do not respond to PING, an alive check error (event code 00906H) 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 RJ71GN11.

If the password is not unlocked, the RJ71GN11 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.

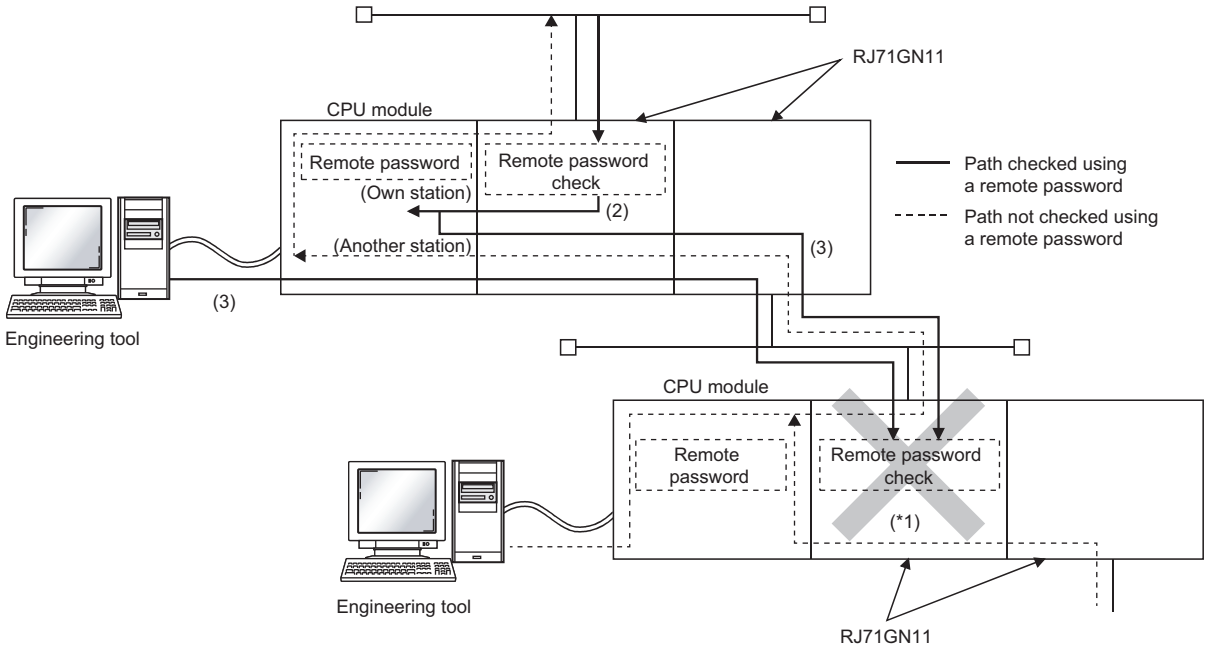
- SLMP dedicated command (Remote Password Lock)
- Lock with engineering tool (executed automatically)

Remote password check operation

■Communications that are checked

The RJ71GN11 checks the remote password for a communication request made to the own station or another station received from the external device.

When checking a remote password for modules with multiple connections, the connection for which the remote password is set is the target.



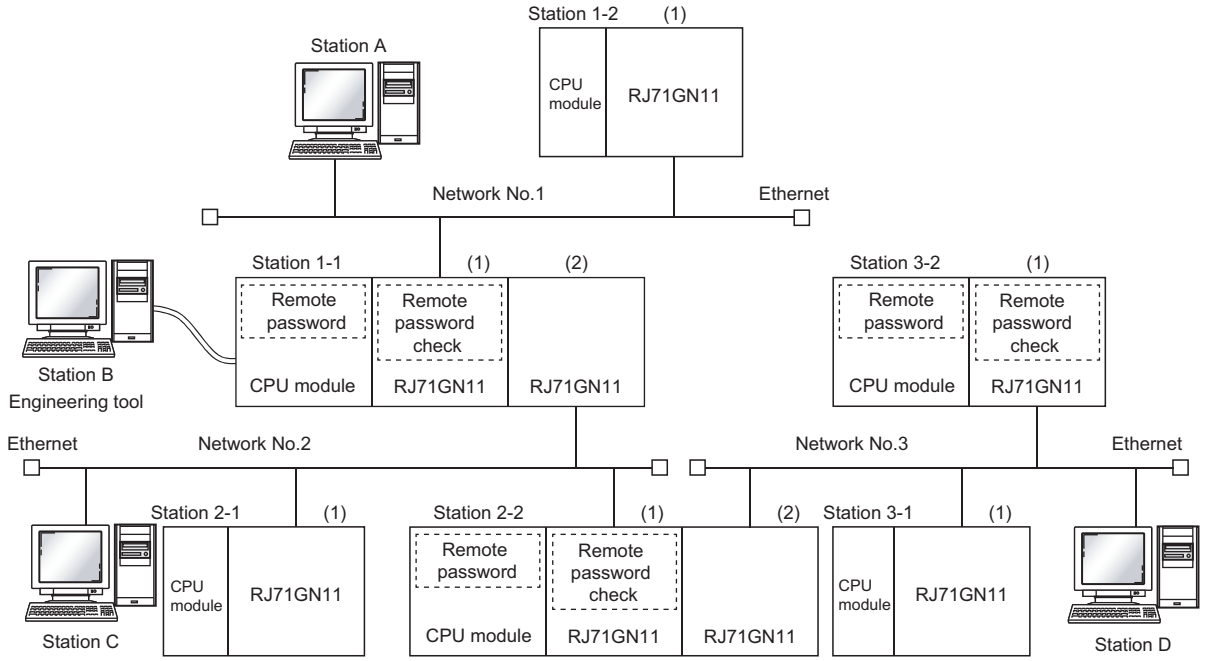
*1 Since the remote password check is set, the communication request from the external device is not accepted. If the remote password check is not set, the communication request can be accepted and data communication from the external device can be performed.

■Accessible station

The station accessible from the external device when a remote password is set for the CPU module and the station that can unlock/lock the remote password are limited to those in the same network number.

The following figure shows an example of when the remote password is set for multiple stations in the system.

Ex.



The password can be unlocked and locked by the following external devices.

- 1-1 station (1): A station only
- 2-2 station (1): C station only
- 3-2 station (1): D station only

The A station can access the ○ station after the remote password for 1-1 station (1) is unlocked. The △ station can be accessed if the communication line is open.

The B station can access the △ station if the communication line is open.

The C station can access the ○ station after the remote password for 2-2 station (1) is unlocked. The △ station can be accessed if the communication line is open.

The D station can access the ○ station after the remote password for 3-2 station (1) is unlocked. The △ station can be accessed if the communication line is open.

○: Station accessible from external device after remote password is unlocked

△: Station accessible from external device even if remote password is not unlocked

×: Station that cannot be accessed from external device

External device (Request source)	Target programmable controller (request destination)					
	1-1 station CPU	1-2 station CPU	2-1 station CPU	2-2 station CPU	3-1 station CPU	3-2 station CPU
A station	○	△	○	×	×	×
B station	△	△	△	×	×	×
C station	△	△	△	○	○	×
D station	△	△	△	△	△	○

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

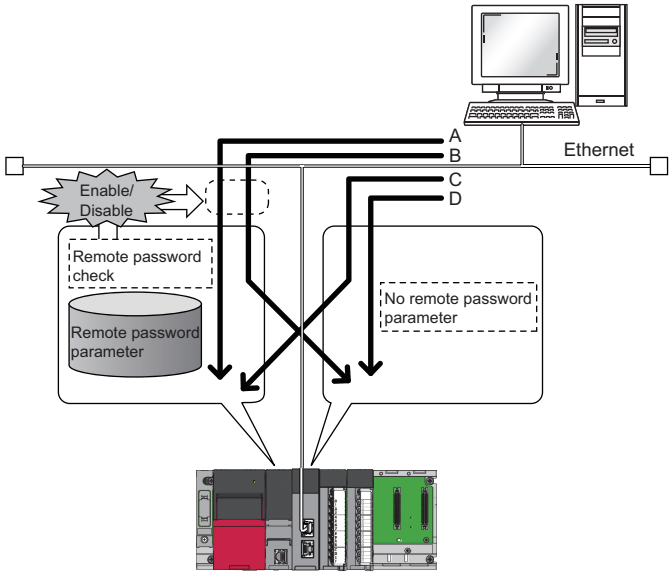
- Determine the external device to communicate with and perform data communication. (With UDP/IP, after the remote password is unlocked, data can be exchanged with devices other than the unlocked external device too. Determine the communication destination before starting use.)
- Always lock the remote 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 RJ71GN11 for which the parameters are set. When using multiple CPU modules in a multiple CPU system, set a remote password for each CPU module for requiring a remote password.



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

■Accessing the programmable controller of another station

When the external device is accessing another station's programmable controller via the RJ71GN11, it may not be possible to access the programmable controller if a remote password is set for the CPU module at the relay station or station to be accessed.

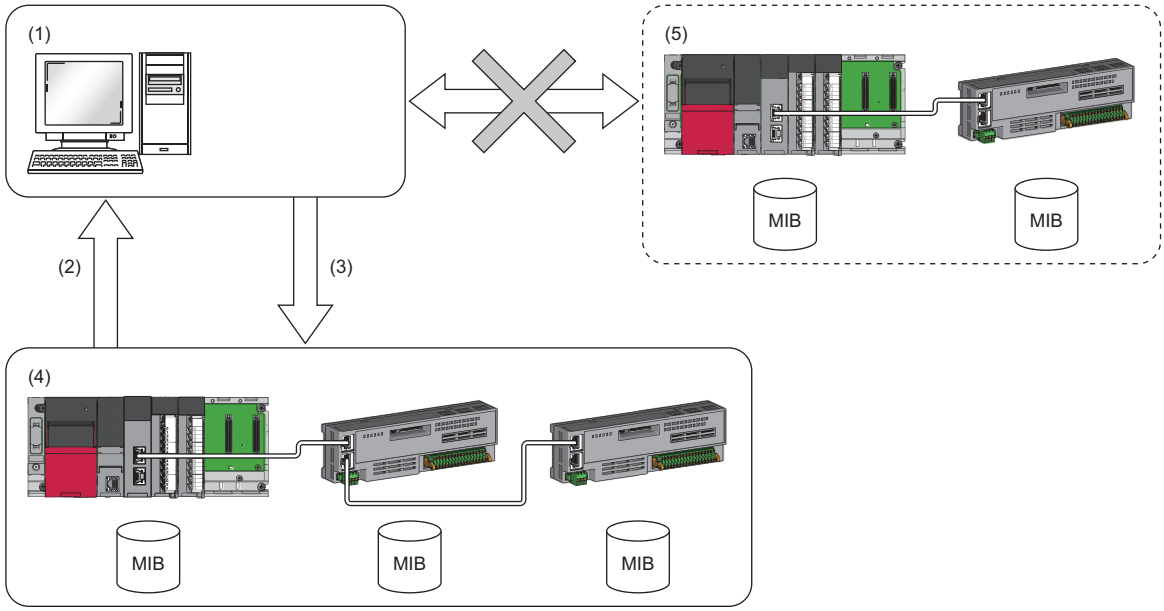
SNMP agent

SNMP (Simple Network Management Protocol) is a protocol for monitoring and controlling devices on a network.
The target devices to be monitored and controlled are called SNMP agents, and the system that manages the network is called the SNMP manager. Since SNMP agents include the master station and device stations, the RJ71GN11 operates as an SNMP agent.
An SNMP manager can monitor and control network devices characterized as SNMP agents that belong to the same group, called a community.
Also, SNMP agents only accept requests from the SNMP manager that belongs to the same community. The name used to identify this community is called the SNMP community name, and the SNMP agents can be set with any name. The SNMP manager monitors and controls network devices by accessing the information in the MIB (Management Information Base) held by the SNMP agents.

Point

The SNMP versions and MIB supported by the RJ71GN11 are shown below.

- Version: c2c
- MIB: Standard MIB



(1) SNMP manager (SNMP community name: AAA)
(2) Manages only the same SNMP community name.
(3) Sends the MIB that it holds.
(4) SNMP agent (SNMP community name: AAA)
(5) SNMP agent (SNMP community name: BBB)

Standard MIB

The following table lists the standard MIB.

○: Available, ×: Not available

Item	Master station	Local station	
		Unicast	Multicast
System group	○	○	○
Interfaces group	○	○	○
AddressTranslation group	○	○	○
IP group	○	○	○
ICMP group	○	○	○
TCP group	○	○	○
UDP group	○	○	○
EGP group	×	×	×
Transmission group	×	×	×
SNMP group	○	○	○

Point

For details on the standard MIB, refer to the following.

☞ Page 379 Standard MIB

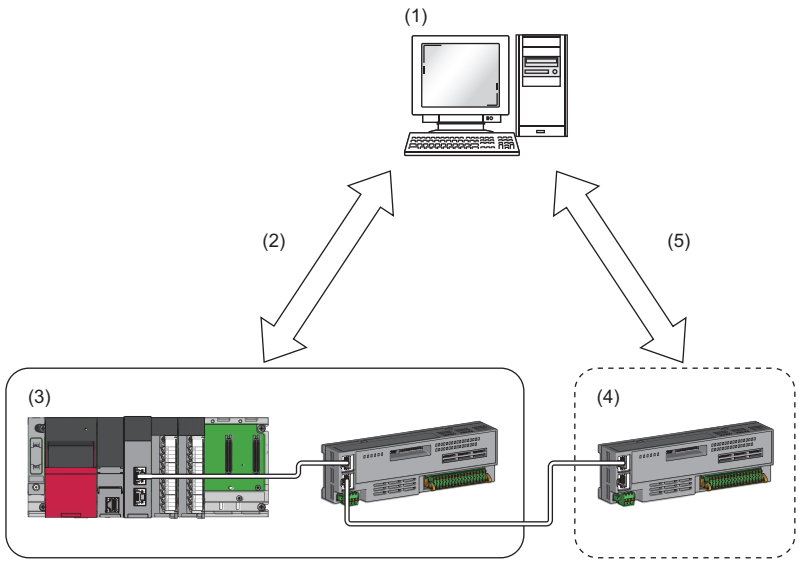
SNMP community name setting

Security when the SNMP manager and SNMP agents communicate can be improved by changing the SNMP community name from the default "public" to any name.

Point

Before using this function, check the following firmware versions.

- RJ71GN11 (☞ Page 389 Added and Enhanced Functions)
- Device station: User's manual for the device station used



(1) SNMP manager
(2) Access with the changed "aaaa"
(3) SNMP community name: aaaa
(4) SNMP community name: public (default)
(5) Access via default "public"

Setting method

The SNMP community name can be set in "SNMP Setting" under "Security" in the "Application Settings" of the master station. (☞ Page 137 Security)

Precautions

- Because the SNMP community name acts as a password, setting it to something that is difficult for a third party to guess and that does not include the default "public" is recommended.
- After the SNMP community name has been changed, a device station that supports this function will continue to operate with the set SNMP community name until the device station is powered off or reset, even if it is disconnected. If the device station is not the RJ71GN11, refer to the manual for the device station used.
- When the SNMP community name is changed using a master station that supports this function, if it is replaced with a master station that does not support this function, the SNMP community name of the device station may not revert to the default "public". A device station that supports this function operates with the set SNMP community name until the device station is powered off or reset.

1.5 RAS

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

Device station disconnection

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

Automatic return

The data link is automatically restarted when the device station that was disconnected due to an error becomes normal again.

Precautions

- When removing a device station while the system is operating, check that the device station is either performing cyclic transmission or is disconnected.
- When removing the RJ71GN11, check that the D LINK LED is either on or off.

Loopback Function

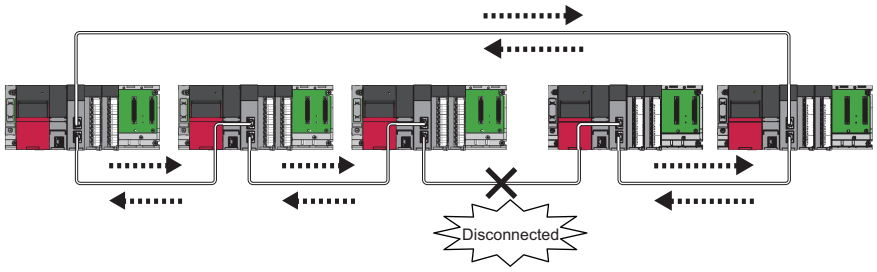
This function continues data link with normal stations even if a cable disconnection or faulty station occurs in a ring topology network configuration. All stations after the cable disconnection point or faulty station are disconnected in a line topology. By using this function with ring topology, data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

Restriction

Before using this function, check the firmware version of the RJ71GN11. (☞ Page 389 Added and Enhanced Functions)

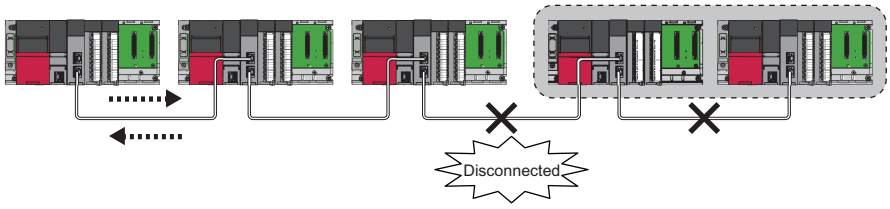
Cable disconnection

■Ring topology



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

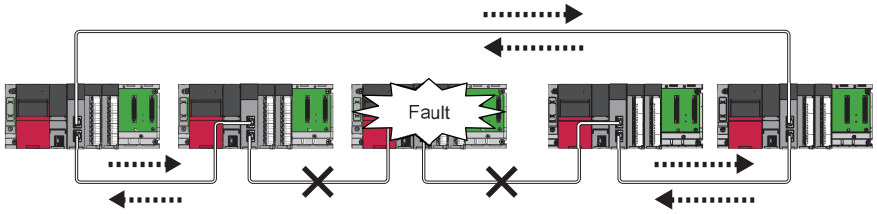
■Line topology



Stations connected after the cable disconnection point are disconnected.

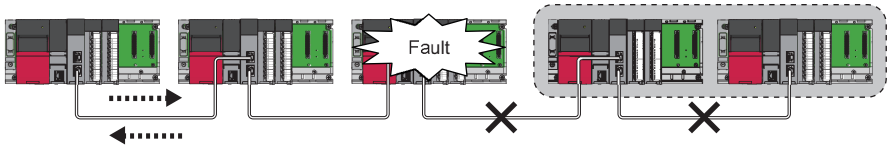
Occurrence of faulty stations

■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.

■Operations when the network topology is different between the setting and actual configuration

If "Network Topology" under "Basic Settings" does not match the actual connection status, the loopback function works as follows.

"Network Topology" (☞ Page 128 Network Topology)	Actual connection status		
	Ring topology	Line topology	Star topology or coexistence of star and line topologies
"Ring"	Normal operation	Loopback is performed, and cyclic transmission starts. • For the RJ71GN11-T2, the LED indicator of the link-down port in the loopback station, the SD/RD LED is turned off and the L ER LED is turned on. • For the RJ71GN11-SX, the LED indicator of the link-down port in the loopback station, the SD/RD LED is turned off and the L ERR LED is turned 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 of all stations • The ERR LED on the master station turns on. • 60H: Illegal ring connection is stored in 'Cause of data link stop' (SW0049).
"Line/Star"	Data link error of all stations • The ERR LED on the master station turns on. • 60H: Illegal ring connection 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.

Program that stores loopback station numbers to 'wLoopbackStationNumber_1' (D1000) and 'wLoopbackStationNumber_2' (D1001) with the RJ71GN11-T2

Classification	Label name	Description	Device
Module label	GN11_1.bSts_DataLinkError	Data link error status of own station	SB0049
	GN11_1.bOpe_Loopback	Loopback status	SB0065
	GN11_1.bSet_RingTopology	Network topology setting	SB0078
	GN11_1.wnVal_LoopbackStationNumber[1]	Loopback station number 1	SW0070
	GN11_1.wnVal_LoopbackStationNumber[2]	Loopback station number 2	SW0071
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



(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 389 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 00C62H) or Grandmaster switching (CC-Link IE TSN device) (event code 00C63H).
- For the device station parameter automatic setting, the process is completed with an error (☞ Page 117 Device station parameter automatic setting).

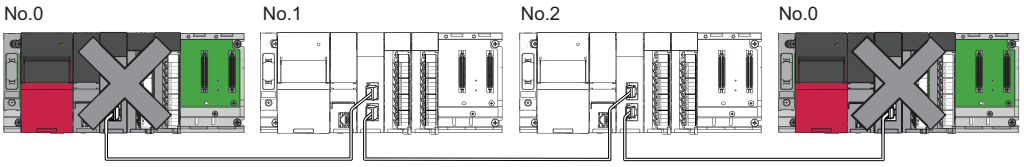
If a loopback cannot be detected correctly, any of the following information may not be correctly displayed or stored.

- Icon indication in the network map of "CC-Link IE TSN/CC-Link IE Field Diagnostics"
- Indication of Loopback occurrence (event code 00C23H)
- Values of 'Loopback status' (SB0065), 'Loopback station number 1' (SW0070), and 'Loopback station number 2' (SW0071)

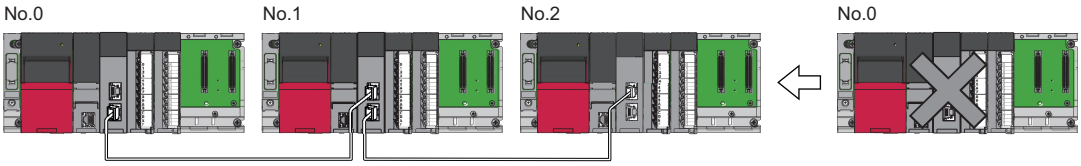
Master station duplication detection

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

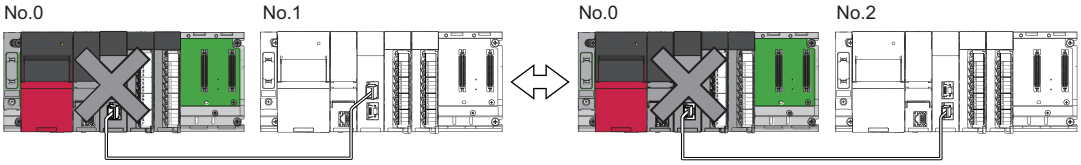
- When multiple master stations are simultaneously powered on, or when multiple master stations are simultaneously connected, Master station duplication detection (error code 300FH) is detected in all master stations and cyclic transmission cannot be performed in all stations. (Transient transmission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



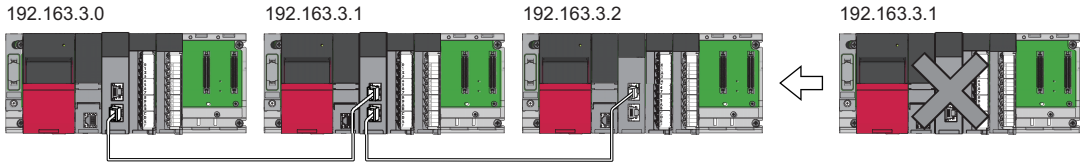
- If two networks are connected during data link, Master station duplication detection (error code 300FH) is detected in master stations on both networks and cyclic transmission cannot be performed in all stations. (Transient transmission with IP address specification is available)



IP address duplication detection

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

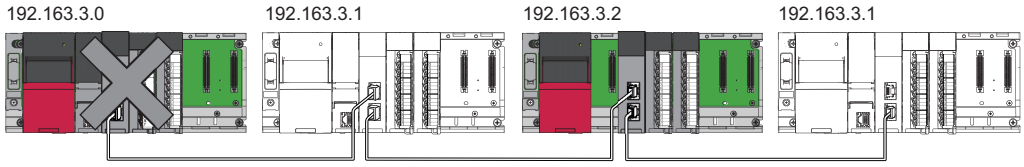
- When adding a device station, if a station with the same IP address already exists, IP address duplication detection (error code 2160H) is detected in a station to be added and data link cannot be performed. Other stations continue data link.



Precautions

When a device station, which has already been connected (linked up) with an industrial switch (CC-Link IE TSN certified), is added to the network, including the industrial switch, 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 in the network where multiple stations have a same IP address, IP address duplication detection (error code 1802H) is detected in the master station. The master station where the error was detected performs cyclic transmission with the device station that joined the network among the duplicate stations.



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

Restriction

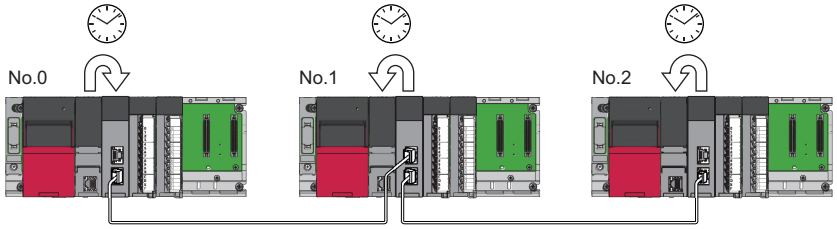
- An overlapping IP address between an Ethernet device and a CC-Link IE TSN device, and an overlapping IP address between Ethernet devices are not detected at cyclic transmission startup of the master station.
- Station number duplication is not detected.

Methods of recovery from an overlapping IP address

If IP address duplication detection (error code 1802H) is detected on the master station, change the IP address of the relevant station, and power off and on or reset the device station.

Time synchronization

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



Restriction

The MELSECWinCPU module cannot use this function.

Setting method

The setting is made in Time distribution interval setting of the CPU module (Un\G1275136), Time reflection setting to the CPU module (Un\G1275137), and Master station time distribution start setting (Un\G1275138). (☞ Page 311 Time synchronization)

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

Point

When the RJ71GN11 is used as the master station, do not connect time synchronization devices whose time synchronization priority is 0 to 15.

A priority is a value that is assigned to a time synchronization device from the devices in a network to determine the grandmaster. The smaller the value, the higher the priority.

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

Precautions

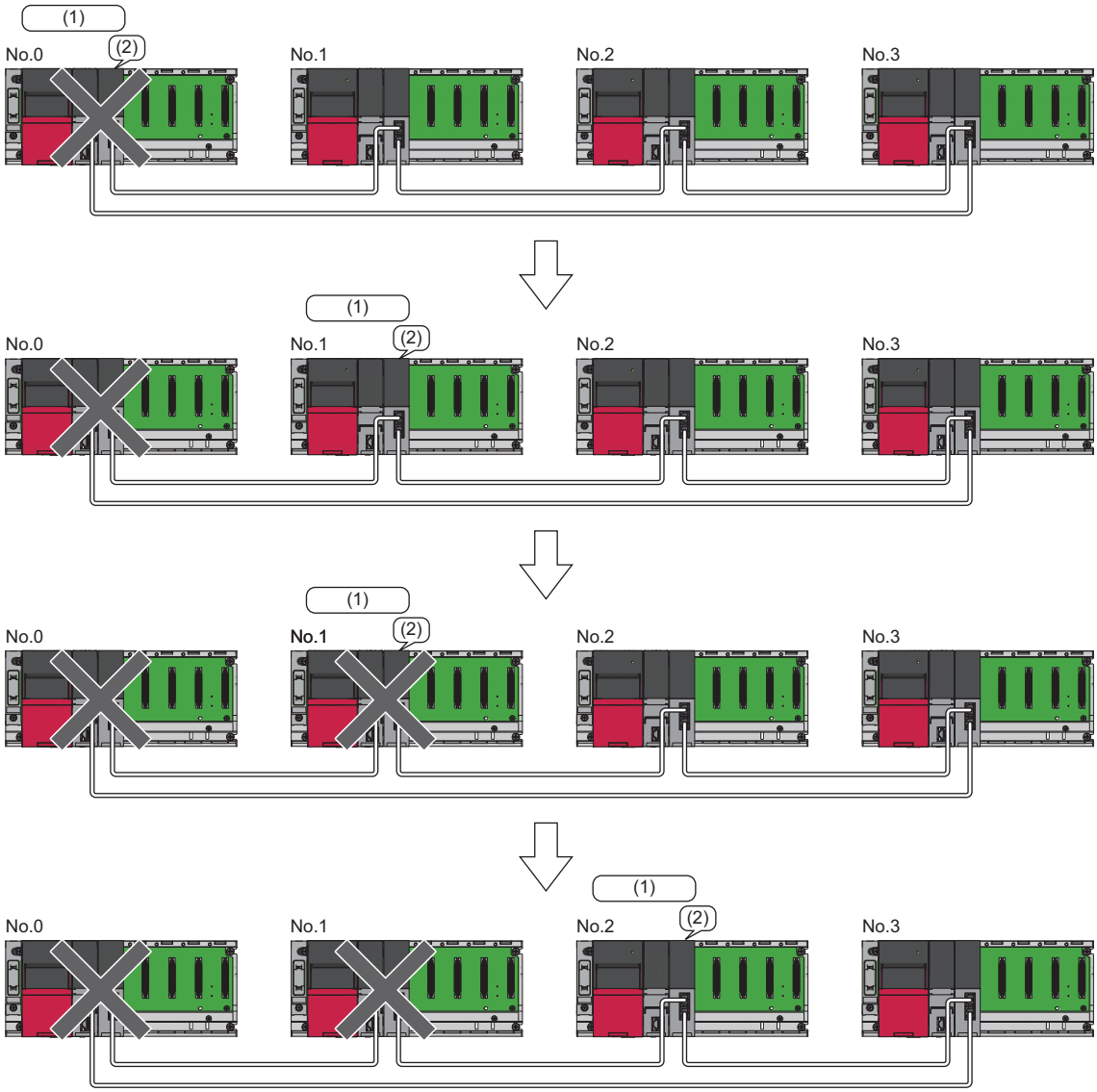
- If this function is used, the time setting function (SNTP client) of the Ethernet-equipped module cannot be used. (MELSEC iQ-R Ethernet User's Manual (Application))
- If multiple RJ71GN11s are mounted to a CPU module on the same base unit, set time synchronization for only one RJ71GN11. If time synchronization 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, even if the control CPU of the master station and local stations is a module other than CPU No.1.

Master station shift function

Even if the master station is disconnected, the local station becomes the current master station and continues to control the entire network.

Even if the current master station is further disconnected, another local station becomes the current master station.

This function prevents the entire network from going down due to disconnection of the master station.



No.0: Master station
No.1, No.2, No.3: Local station
(1) Current master station
(2) Controls the entire network.

Conditions for use

The following table lists the conditions for using this function.

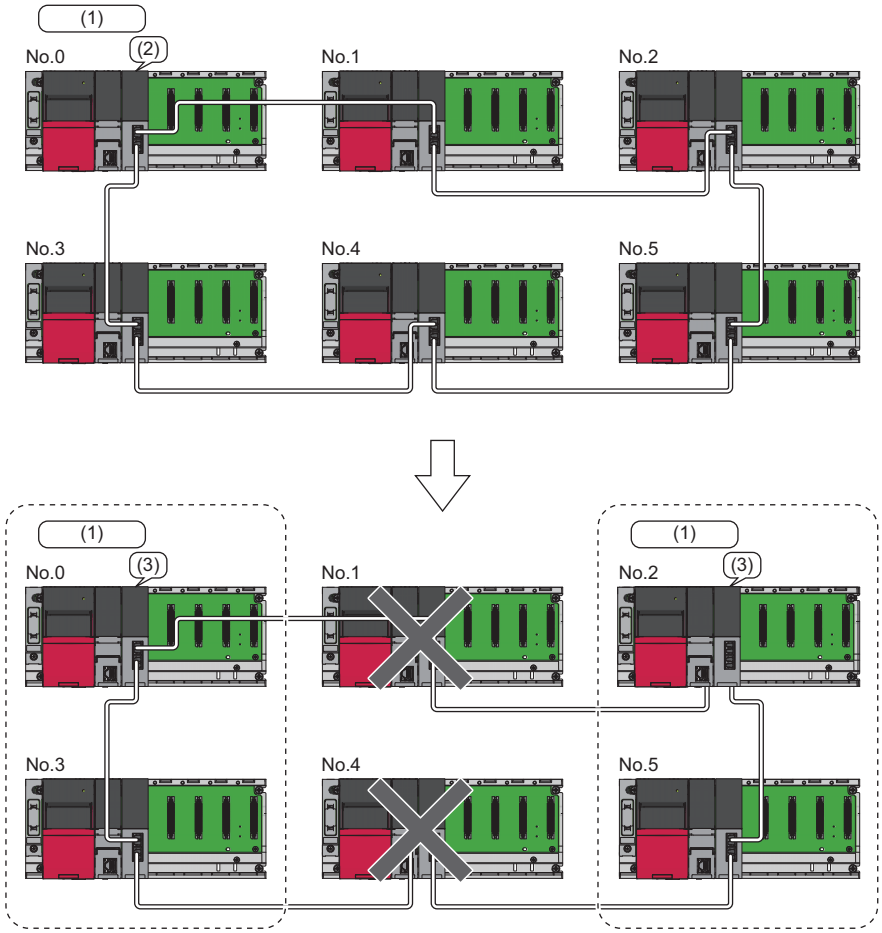
Item	RJ71GN11-T2	RJ71GN11-SX
Firmware	Version "22" or later	Version "02" or later
Engineering tool	Version 1.105K or later	Version 1.100E or later
Devices that can be connected	CC-Link IE TSN Class B local stations that support the master station shift function	
Communication speed setting	1Gbps	
Network topology	Ring topology, line topology	Ring topology
Communication mode	Multicast mode	
Unavailable functions	• Cyclic transmission using RX, RY, RWr, and RWw • CANopen communications • CC-Link IE TSN network synchronous communication function • Safety communications • CC-Link IE TSN Communication Software compatibility	• Cyclic transmission using RX, RY, RWr, and RWw • CANopen communications • CC-Link IE TSN network synchronous communication function • CC-Link IE TSN Communication Software compatibility

■Operations when the network topology is different between the setting and actual configuration

If "Network Topology" under "Basic Settings" does not match the actual connection status, the master station shift function works as follows.

"Network Topology" (☞ Page 128 Network Topology)	Actual connection status		
	Ring topology	Line topology	Star topology or coexistence of star and line topologies
"Ring"	Normal operation	Loopback (☞ Page 81 Loopback Function)	Data link error of all stations • The ERR LED on the current master station turns on. • 60H: Illegal ring connection is stored in 'Cause of data link stop' (SW0049). • If the actual connection status is changed to the ring topology or line topology, the master station becomes the current master station and performs a data link. However, the data link is not performed if no master station exists.
"Line/Star" (RJ71GN11-T2 only)	Data link error of all stations • The ERR LED on the current master station turns on. • 60H: Illegal ring connection is stored in 'Cause of data link stop' (SW0049). • If the actual connection status is changed to the line topology, the master station becomes the current master station and performs a data link. However, the data link is not performed if no master station exists.	Normal operation	Data link error of all stations • The ERR LED on the current master station turns on. • 61H: Star topology when the master station shift function is enabled, or coexistence of line and star topologies is stored in 'Cause of data link stop' (SW0049) of the current master station. • If the actual connection status is changed to the line topology, the master station becomes the current master station and performs a data link. However, the data link is not performed if no master station exists.

Even if the system is split into two systems due to a station going down, if there are multiple stations in the system, the local station will become the current master station and continue to control the network.

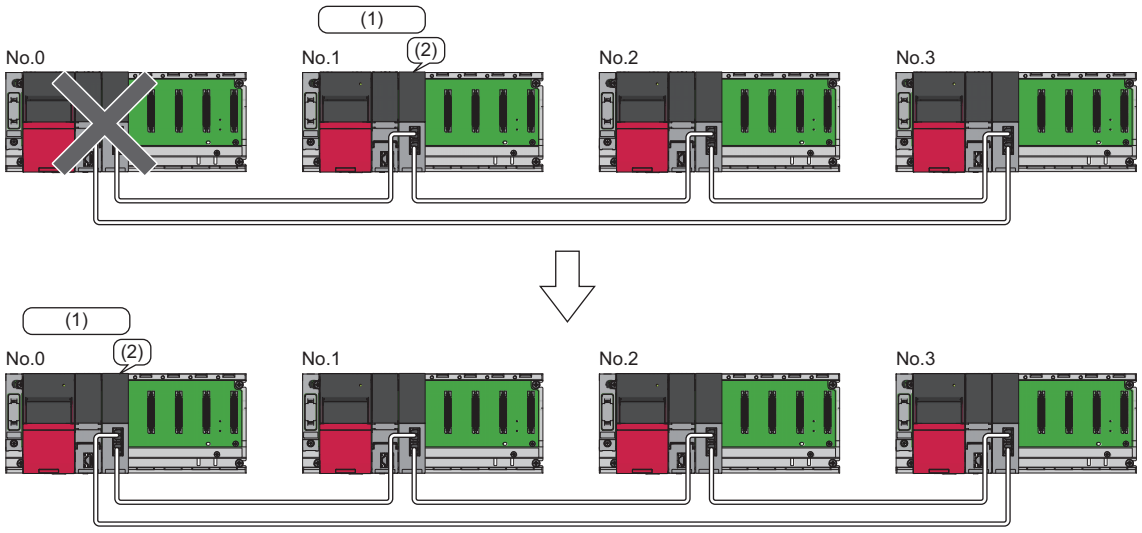


No.0: Master station
No.1, No.2, No.3, No.4, No.5: Local station
(1) Current master station
(2) Controls the entire network.
(3) Controls the network.

Operation upon return

■When a disconnected master station returns

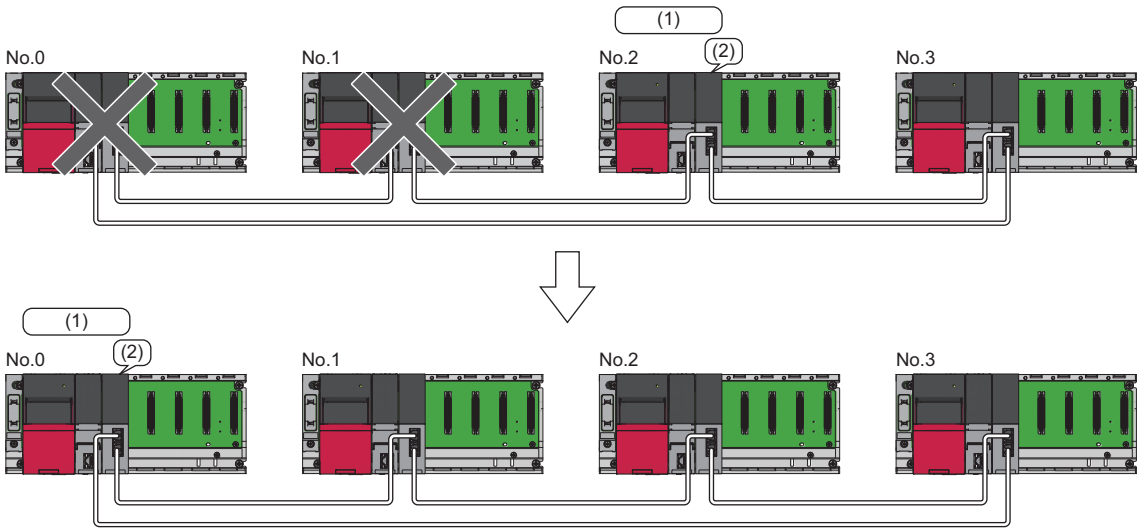
The master station becomes the current master station. At this time, the local station continues cyclic transmission.



No.0: Master station
No.1, No.2, No.3: Local station
(1) Current master station
(2) Controls the entire network.

■When a disconnected master station and location station return

The master station becomes the current master station. The returned local station performs data link with the master station.
Other local stations continue cyclic transmission.

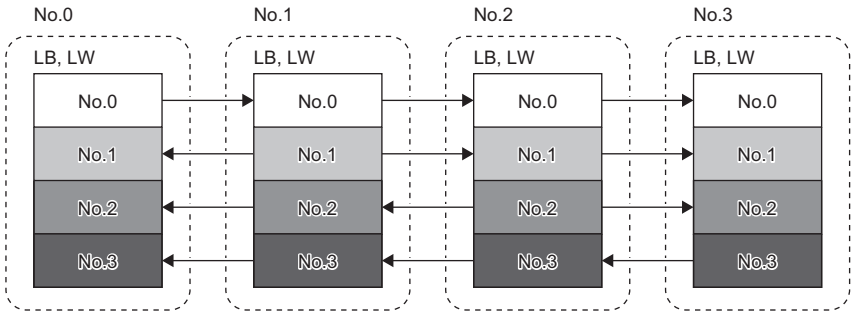


No.0: Master station
No.1, No.2, No.3: Local station
(1) Current master station
(2) Controls the entire network.

Cyclic transmission

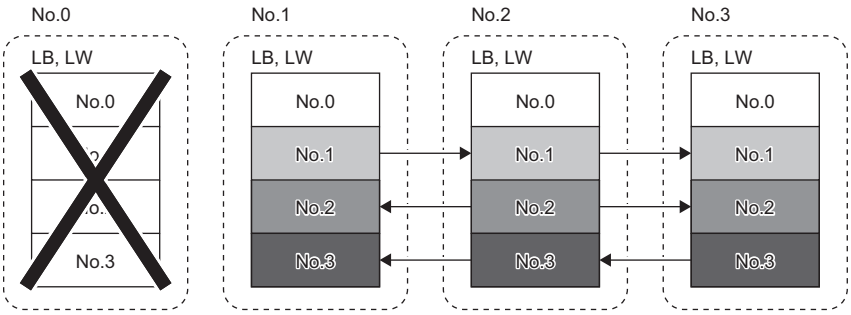
The following figure shows an example of cyclic transmission when this function is used. If the master station goes down, cyclic transmission continues between local stations.

■Normal operation



No.0: Master station
No.1, No.2, No.3: Local station

■When the master station goes down



No.0: Master station
No.1, No.2, No.3: Local station

Current master station shifting

Switching is performed under one of the conditions below.

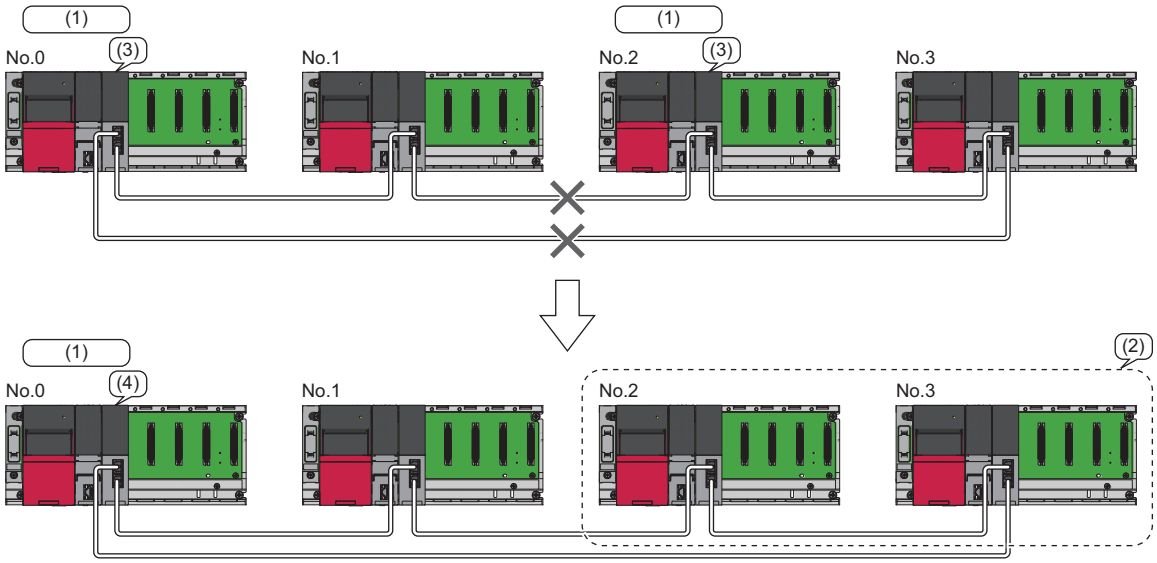
Switching condition	Description
When the master station is disconnected due to cable disconnection, power off, or module operation stoppage	The local station becomes the current master station.
When the local station is the current master station, and disconnection occurs due to cable disconnection, power off, or module operation stoppage in the master station	Another local station becomes the current master station. Cyclic transmission continues during switching.
When the master station returns	The returning master station becomes the current master station. Cyclic transmission continues during switching.

Setting method

The master station shift function is set in "Master Station Shift Setting" under "Application Settings". (☞ Page 141 Master Station Shift Setting)

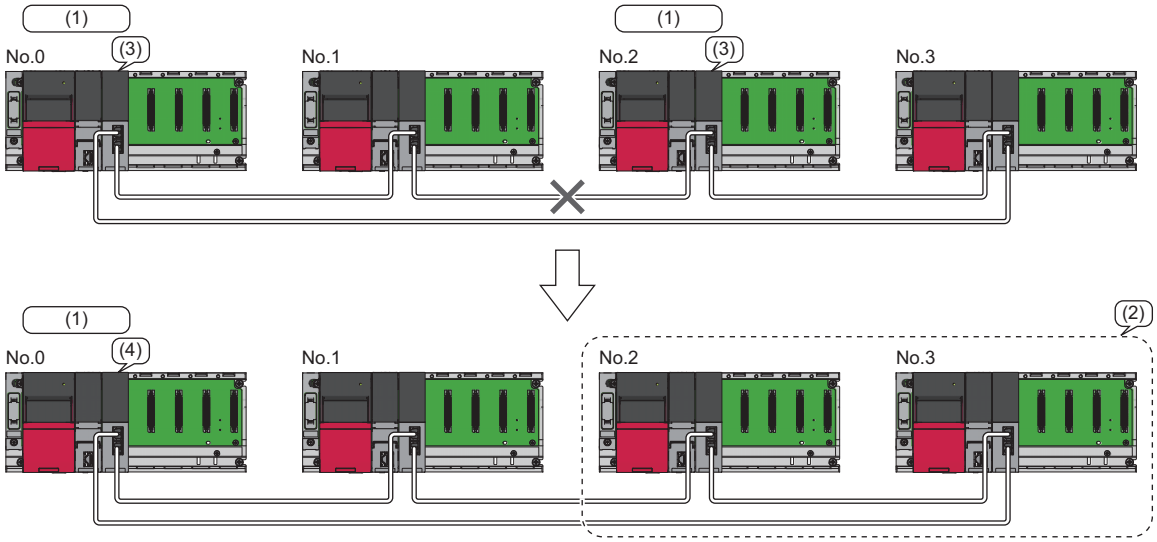
Precautions

- Transient transmission executed at the time of switching of the current master station or return of the master station may be completed with an error. In such a case, execute transient transmission again.
- If a parameter error occurs in the master station, switching of the current master station is not performed.
- A local station where a parameter error has occurred cannot become the current master station.
- If a CPU stop error is detected before the master station starts the data link, switching of the current master station is not performed.
- At the time of switching the current master station, the network map of the CC-Link IE TSN/CC-Link IE Field diagnostics is reconstructed. Therefore, if a station that exists in the parameter settings is disconnected at the same time as the master station, the disconnected stations are indicated with the "Disconnected Station" icon in the network map. Also, stations that do not exist in the parameter settings stop being displayed.
- When two systems resulting from splitting of a system due to a disconnection are connected to form one system, the data link on the system side where the master station is absent will temporarily stop and then restart.



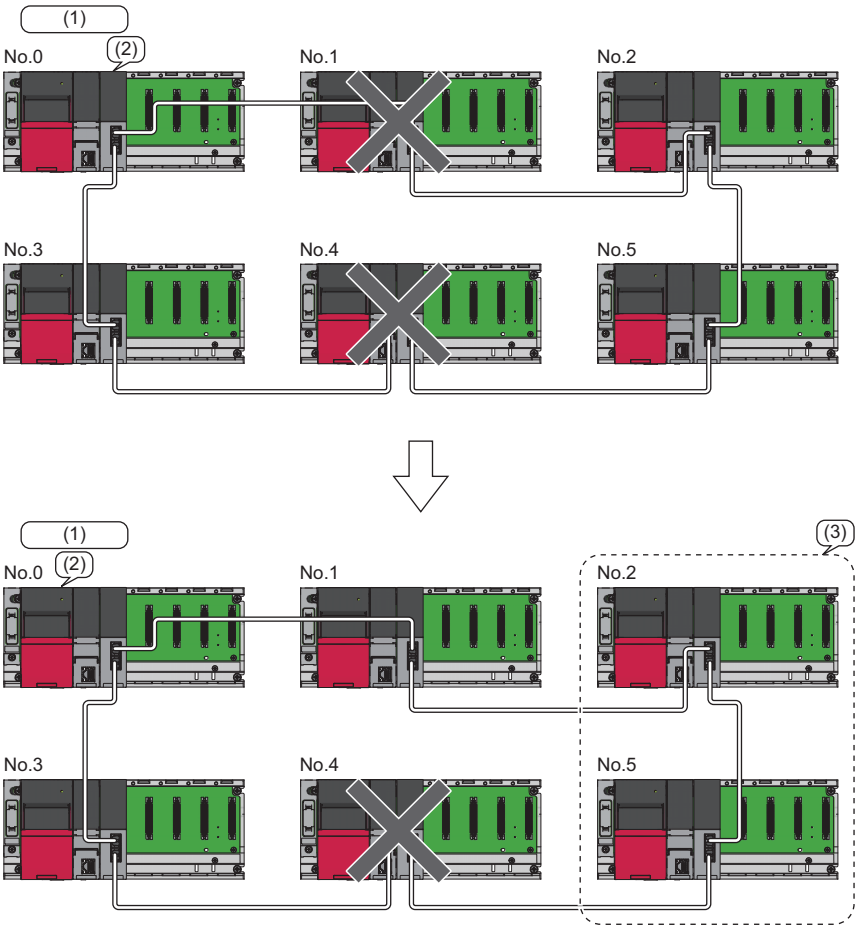
No.0: Master station
No.1, No.2, No.3: Local station
(1) Current master station
(2) Temporary data links stop.
(3) Controls the network.
(4) Controls the entire network.

• When two systems without a master station are connected to form one system, the data link of the system whose current master station has a larger IP address will temporarily stop and then restart.



No.1, No.2, No.3, No.4: Local station
(1) Current master station
(2) Temporary data links stop. (IP address of the current master station (No.1) in the system shown on the left < IP address of the current master station (No.3) in the system shown on the right)
(3) Controls the network.
(4) Controls the entire network.

- When two systems resulting from splitting of a system are connected to form one system due to the return of the disconnected local station, the stations in the system with the master station continue to perform data link, and the returned local station performs data link with the master station. The stations in the system without a master station temporarily stop the data link and then restart it.



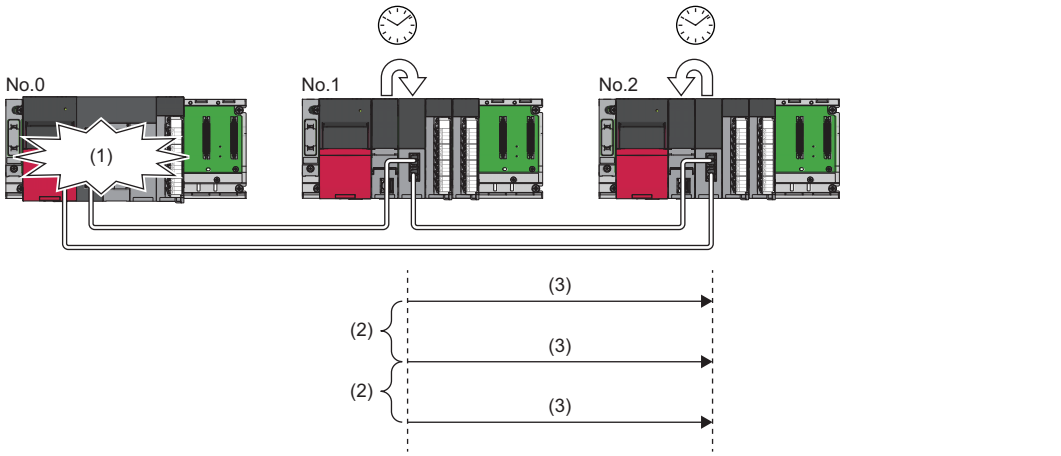
No.0: Master station
No.1, No.2, No.3, No.4, No.5: Local station
(1) Current master station
(2) Controls the entire network.
(3) Data link temporarily stops.

- If power-on occurs while CC-Link IE TSN devices other than connectable devices are connected to the network, an error occurs in all stations and data link is not performed.
- If a CC-Link IE TSN device other than a connectable device enters the network, that device will not perform data link.
- If a system with this function enabled and a system with this function disabled are connected to form a single system, duplication of master stations will occur and the network will stop. The same applies when a system where this function is enabled and the local station is the current master station and a system where this function is disabled are connected to form a single system.
- When a master station with parameters different from those of the current master station enters a system in which the local station is the current master station, the local station in the system temporarily stops data link and then restarts it with the parameters of the master station that has entered the system.
- When this function is enabled and the co-recording function is used, the co-recording trigger cannot be relayed while the master station is in a disconnected state. While the master station is disconnected, recording cannot be performed in conjunction with recording devices on the network system.
- When this function is enabled, do not connect a local station whose "Reserved/Error Invalid Station" is set to "Reserved Station" in "Network Configuration Settings" under "Basic Settings" to the network.
- If an illegal ring connection is detected at the current master station while this function is used, a data link error of all stations occurs, and 60H: Illegal ring connection is stored in 'Cause of data link stop' (SW0049) of the current master station. After the illegal ring connection is resolved, the data link is restarted with the master station working as the current master station. However, the data link is not restarted if no master station exists.

- When this function is enabled and the community name is set to any name other than "public" with the SNMP community name setting function, the local stations may not be displayed due to an SNMP community name mismatch in the selected station communication status monitor of the network diagnostics. Do not connect a master station or local station that does not support the SNMP community name setting function to the network. Additionally, ensure that a master station whose community name differs from that of the disconnected master station is not returned.

Time synchronization when the master station shift function is enabled

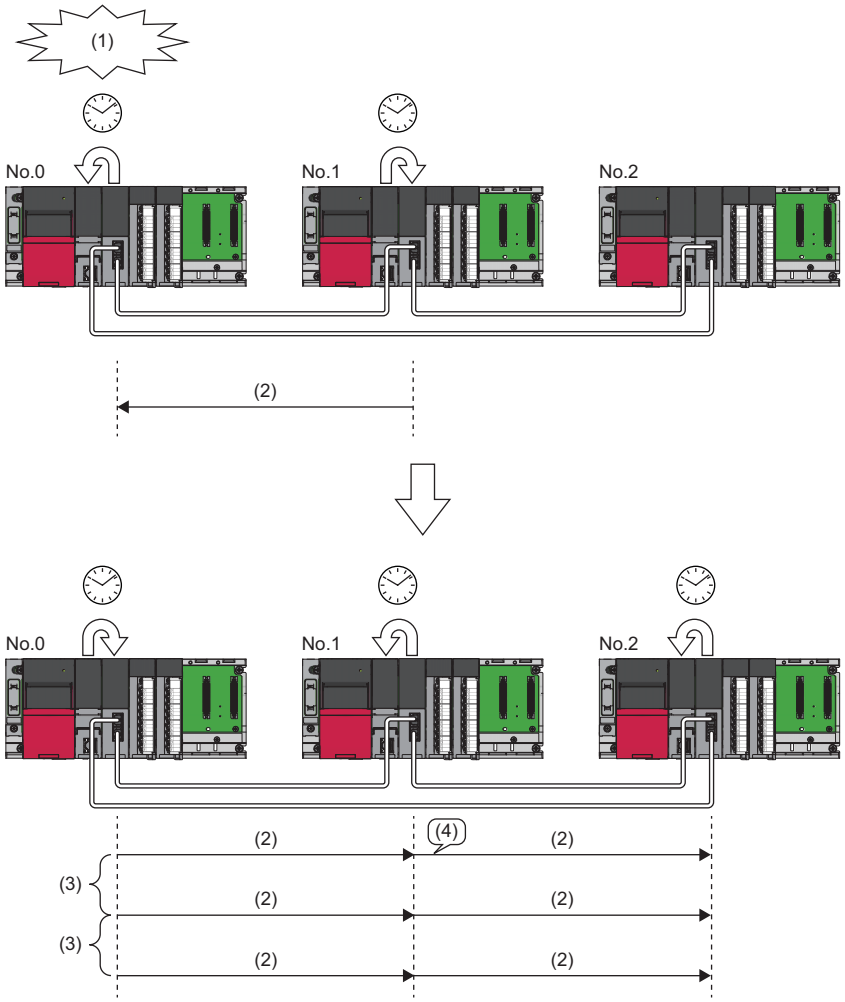
When the master station is disconnected, the time of the CPU module on the same base unit as the local station (current master station) is distributed from the local station (current master station) to the local station. The local station (current master station) can set the interval for distributing the CPU module time using 'Time distribution interval setting of the CPU module' (Un\G1275136). (☞ Page 311 Time synchronization)



No.0: Master station
No.1: Local station (current master station)
No.2: Local station
(1) Disconnection
(2) Value set in 'Time distribution interval setting of the CPU module' (Un\G1275136) of the local station (current master station)
(3) Time of the CPU module

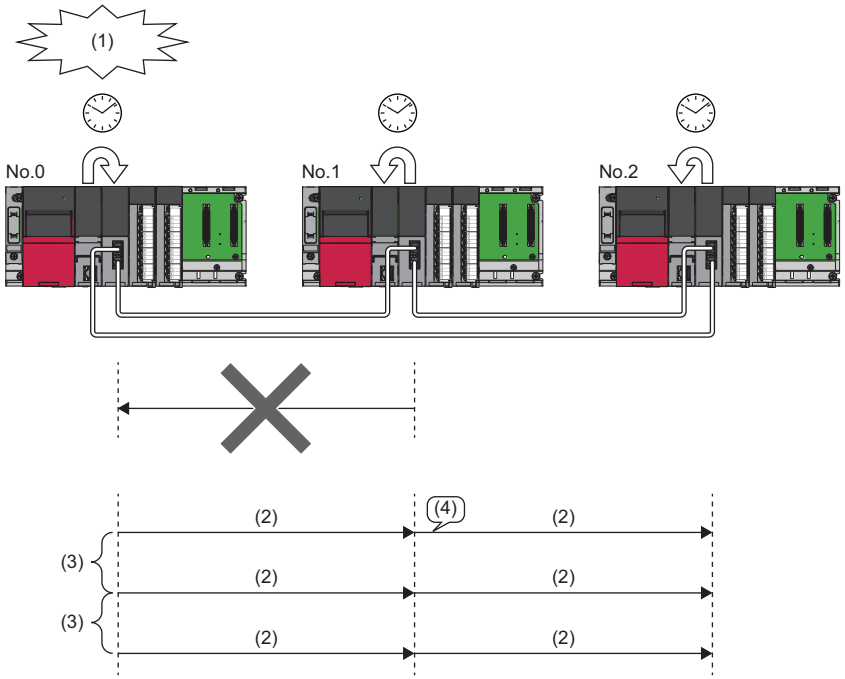
■Master station time distribution start

- When a master station with 'Master station time distribution start setting' (Un\G1275138) set to 1H returns, the master station reflects the CPU module time distributed by the local station to the CPU module on the same base unit as the master station. After that, the CPU module time is distributed at the interval set in 'Time distribution interval setting of the CPU module' (Un\G1275136). The local station that is distributing time will stop doing so when it receives the time distribution from the master station, regardless of the setting value of 'Master station time distribution start setting' (Un\G1275138).



No.0: Master station
No.1: Local station (current master station)
No.2: Local station
(1) Return
(2) Time of the CPU module
(3) Value set in 'Time distribution interval setting of the CPU module' (Un\G1275136) of the master station
(4) Stopping of time distribution from the local station

- When a master station with 'Master station time distribution start setting' (Un\G1275138) set to 0H returns, the master station does not wait for the CPU module time to be distributed from the local station, but instead distributes the CPU module time at the interval set in 'Time distribution interval setting of the CPU module' (Un\G1275136). The local station that is distributing time will stop doing so when it receives the time distribution from the master station, regardless of the setting value of 'Master station time distribution start setting' (Un\G1275138).



No.0: Master station
No.1: Local station (current master station)
No.2: Local station
(1) Return
(2) Time of the CPU module
(3) Value set in 'Time distribution interval setting of the CPU module' (Un\G1275136) of the master station
(4) Stopping of time distribution from the local station

■Precautions

- When 'Time distribution interval setting of the CPU module' (Un\G1275136) of the local station (current master station) is FFFFH and 'Master station time distribution start setting' (Un\G1275138) of the returning master station is 1H, the returning master station does not start time distribution. To start time distribution, set 'Master station time distribution start setting' (Un\G1275138) of the master station to 0H.
- To perform time synchronization, set 'Time reflection setting to the CPU module' (Un\G1275137) of all local stations to 1H.

ERR LED control

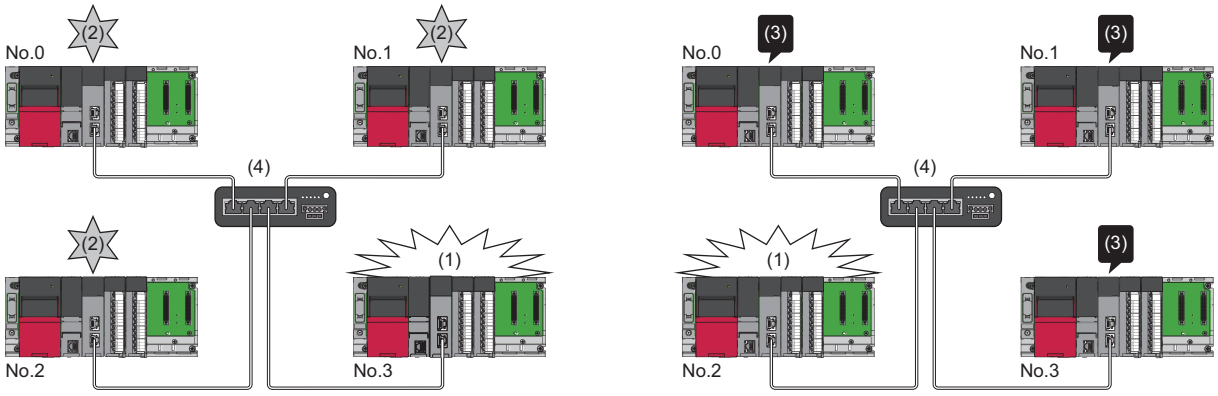
This function prevents the ERR LEDs of other normally-operating stations from flashing when a data link error occurs at the specified station.
ERR LED control information is sent from a station that is specified as the data link faulty station, which controls the flashing of ERR LEDs of other stations.

Restriction

Before using this function, check the firmware version of the RJ71GN11. (☞ Page 389 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

Depending on the settings of "Communication Mode" under "Application Settings", ERR LED control target stations and the setting procedure differ.

- 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. (☞ Page 317 Data link faulty station specification (Un\G1294384 to Un\G1294399))

■Multicast mode

1. Power on the system and then specify the data link faulty station with the buffer memory area. (☞ Page 317 Data link faulty station specification (Un\G1294384 to Un\G1294399))
2. In the buffer memory area, set the send request to 1: Send. (☞ Page 317 Send request (Un\G1294368))
3. In the buffer memory area, check whether the send status is "Send completed". (☞ Page 317 Send status (Un\G1294369))

Precautions

- If connected devices are changed due to disconnection or return after ERR LED control, re-set this function.
- This function does not work when a local station is acting as the current master station by the master station shift function.

1.6 CC-Link IE TSN Network Synchronous Communication Function

This section describes the CC-Link IE TSN network synchronous communication function.
For details, refer to the following.
📖 MELSEC iQ-R Inter-Module Synchronization Function Reference Manual

Restriction

For the firmware versions of the CPU module and RJ71GN11 compatible with the CC-Link IE TSN network synchronous communication function, refer to the following.

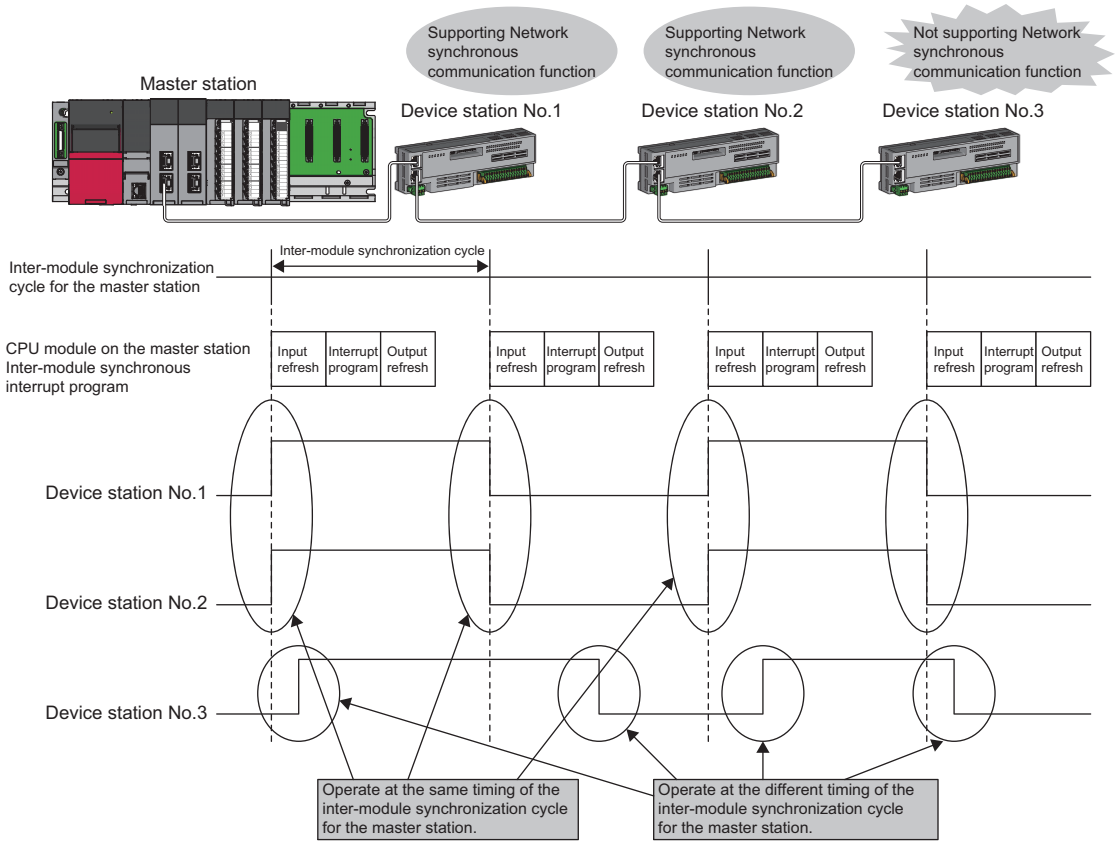
- CPU module (📖MELSEC iQ-R CPU Module User's Manual (Application))
- RJ71GN11 (☞ Page 389 Added and Enhanced Functions)

Overview

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

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.



Setting method

For the setting method, refer to the following manual.

MELSEC iQ-R Inter-Module Synchronization Function Reference Manual

■Inter-module synchronization cycle

To use the CC-Link IE TSN network synchronous communication function, set the same cycle for the following two items.

- "Fixed Scan Interval Setting" under "Inter-module Synchronization Setting" in "System Parameter".
- "Communication Period Interval Setting" under "Basic Settings" of the module parameter

Set the cycle in the following range.

0.25 to 10.0ms (in units of 0.05ms)

■How to calculate an inter-module synchronization cycle

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

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

*1 For the values obtained by the calculation formulas, refer to the following.
Execution time of the inter-module synchronous interrupt program (I44) (User's manual of the CPU module used)
Cyclic transmission time and cyclic processing time (Page 352 Communication cycle intervals)

Precautions

To use the CC-Link IE TSN network synchronous communication 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/H supported Simple Motion module nor Motion CPU can synchronize with the inter-module synchronization cycle.

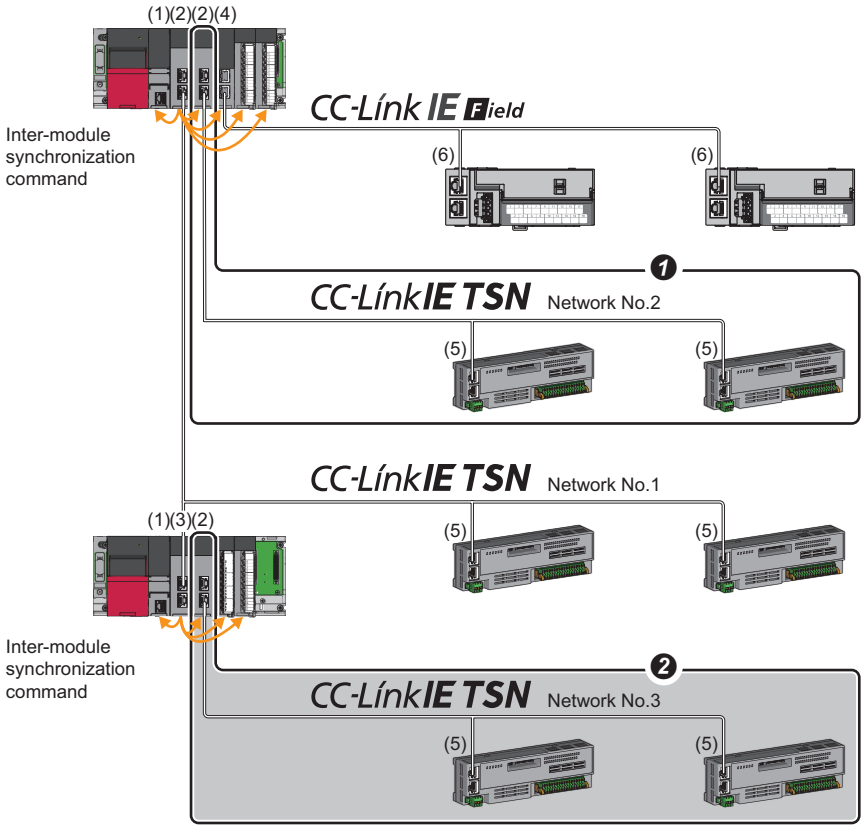
Synchronizable range

To use this function, set the master station as an 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) 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 on the RJ71GN11-T2 and the firmware version "04" or later is used on the RJ71GN11-SX, multiple CC-Link IE TSN master/local modules (master stations) on the same base unit can be synchronized with the inter-module synchronization cycle. Set the leftmost CC-Link IE TSN master/local module (master station) on the same base unit as the inter-module synchronous master.

❷ Networks after the first local station cannot be synchronized.

Compatible device

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

○: Synchronizable, ×: Not synchronizable

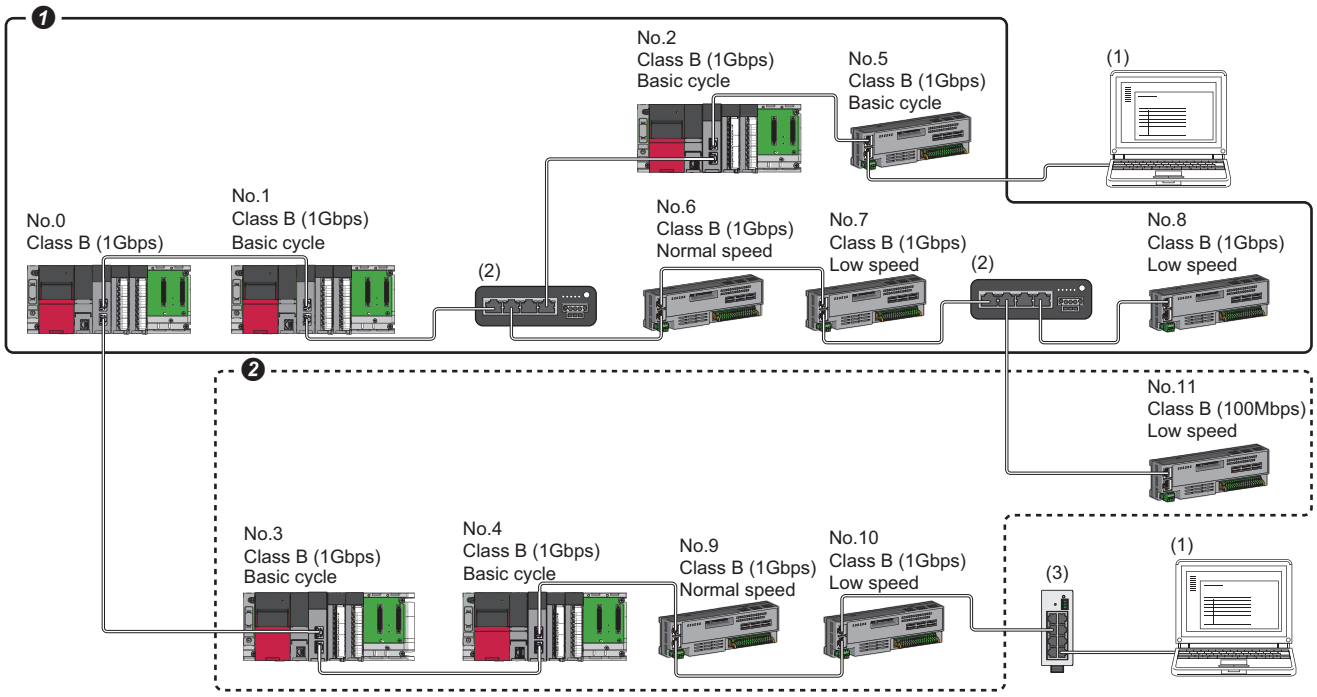
Support of the CC-Link IE TSN Network synchronous communication function	CC-Link IE TSN Class	Communication speed	Communication cycle setting	Synchronizability
Not supported	—	—	—	×
Supported	CC-Link IE TSN Class A device	—	—	×
	CC-Link IE TSN Class B device	1Gbps	Basic Period	○
			Normal-Speed	○
			Low-Speed	○
		100Mbps	Basic Period	○
			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 00C71H) 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" in 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.

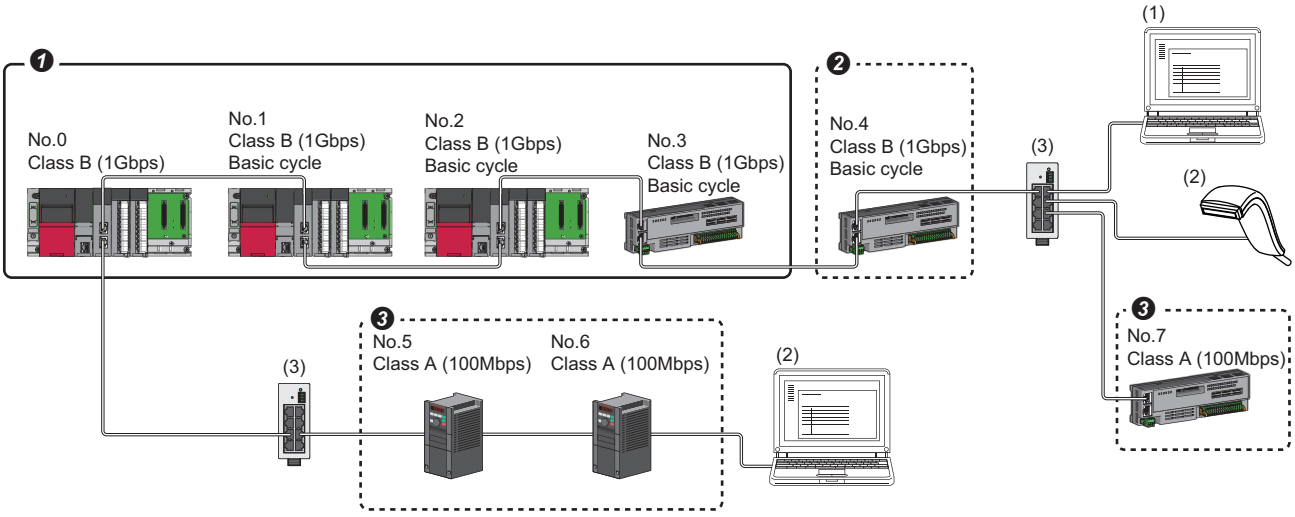
Available range of network synchronous communication

■Structure with CC-Link IE TSN Class B only



Class B: CC-Link IE TSN Class B device
No.0: Master station
No.1 and No.2: Local station (device where the network synchronous communication setting is set to "Synchronous")
No.3 and No.4: Local station (device where the network synchronous communication setting is set to "Asynchronous")
No.5, No.6, No.7, and No.8: Remote station (device where the network synchronous communication setting is set to "Synchronous")
No.9, No.10, and No.11: 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 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

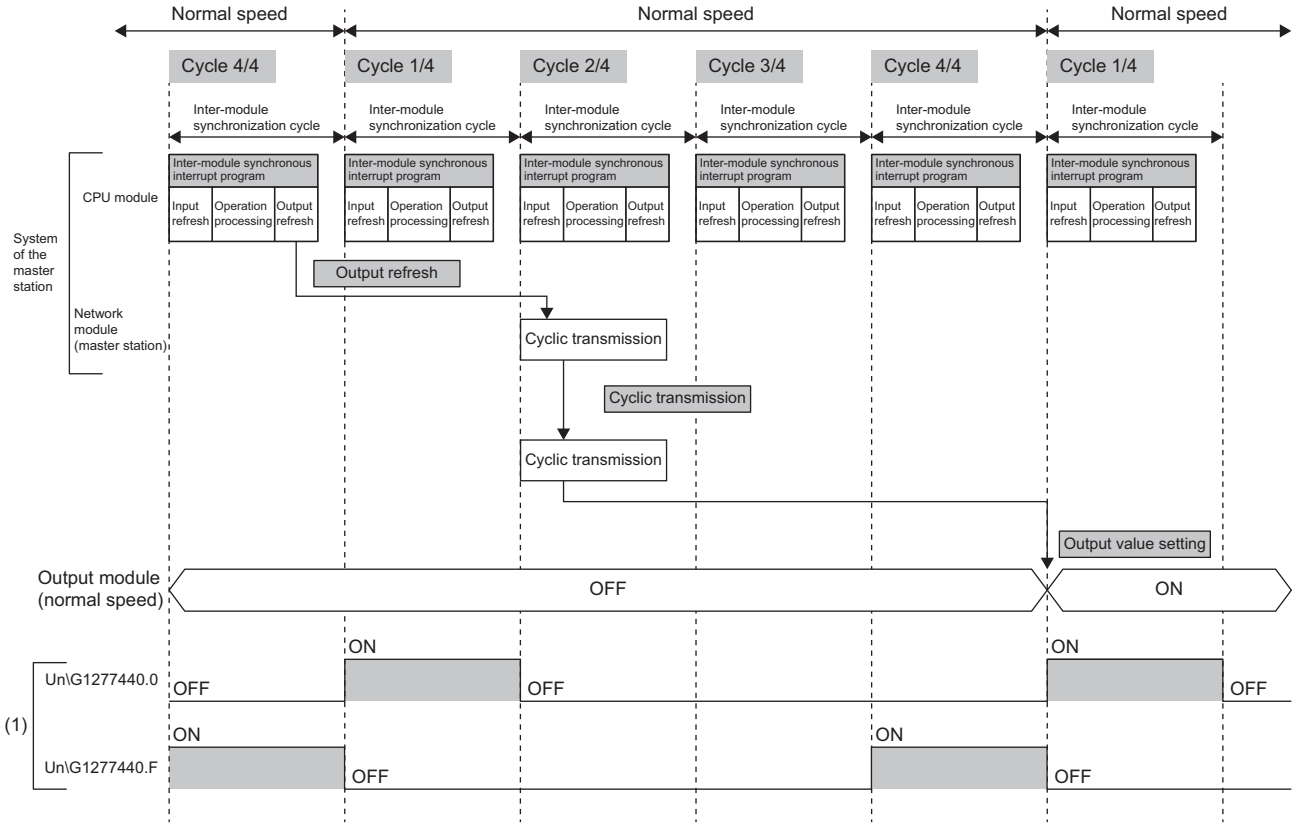


Class A: CC-Link IE TSN Class A device
Class B: CC-Link IE TSN Class B device
No.0: Master station
No.1 and No.2: Local station (device where the network synchronous communication setting is set to "Synchronous")
No.3: Remote station (device where the network synchronous communication setting is set 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 (1Gbps)
(2) Ethernet device (100Mbps)
(3) Industrial switch (CC-Link IE TSN certified)
❶ Synchronization is possible using 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 (excluding local stations) coexist, cyclic transmission between stations is performed according to the communication cycle. For the cyclic transmission of the master station and a remote station, data can be transmitted to other stations after two cycles.

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



(1) The communication cycle timing can be checked with 'Communication cycle timing' (Un\G1277440 to Un\G1277441) of the buffer memory. 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 312 Communication cycle timing)

Point

- To perform network synchronous communication when multiple cycles coexist, set "Basic Period" in "Communication Period Setting" of the local station in 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 that 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.

Point

Whether the device station is using the watchdog counter during a data link with the master station can be checked with 'Watchdog counter operation status of each station' (SW01D0 to SW01D7).

Restriction

Before using this function, check the firmware version of the RJ71GN11. (☞ Page 389 Added and Enhanced Functions)

■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 additional time (calculation value)' (SW007A).
If a value has been stored in 'Transient transmission additional 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" for "System 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 the device station used. (📖 Manual for the device station used)

Precautions

- When the RJ71GN11 is used as a local station, the watchdog counter cannot be used.
- When the RJ71GN11-T2 with the firmware version "10" or earlier is used or a device station does not use the watchdog counter, 0 is stored in 'Transient transmission additional 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 examples using the CC-Link IE TSN network synchronous communication function, refer to the following.
📖 MELSEC iQ-R Inter-Module Synchronization Function Reference Manual

Point

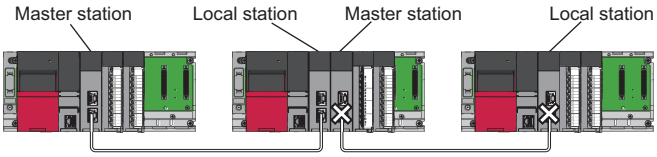
- The operating status of each station can be checked with 'Information of CC-Link IE TSN network synchronous communication function of each station' (SW01C0 to SW01C7) or 'Synchronous/asynchronous operating status information of each station' (SW01C8 to SW01CF). To perform I/O control, configure an interlock by using the corresponding bit of the special register (SW).
- When the CPU operating status of the relevant stations are currently STOP or PAUSE state, an inter-module synchronous interrupt program is not executed. At this time, the operating status of the network synchronous communication of each station ('Synchronous/asynchronous operating status information of each station' (SW01C8 to SW01CF)) stores an asynchronous setting (0) in bits of the relevant stations and bits of other stations are not changed.

Precautions

- CC-Link IE TSN Class A devices cannot synchronize using network synchronous communication. (☞ Page 105 Compatible device)
- For the number of connectable modules or order of connection for CC-Link IE TSN supported devices to be connected, refer to the following.

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

- To specify the RJ71GN11 as the target module for the inter-module synchronization, mount it to 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 CC-Link IE TSN master/local modules (master stations) 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 RJ71GN11 controlled by 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, networks 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 cannot be performed when "Network Topology" is set to "Ring". Select "Line/Star". (☞ Page 128 Network Topology)
- Do not set "Not set" for "0.05ms Unit Setting" of "Inter-module Synchronization Setting" in "System Parameter". Select "Set" for "0.05ms Unit Setting", and set a value in the range 0.25 to 10.0ms (in units of 0.05ms).
- When an industrial switch (CC-Link IE TSN certified) is used, the local station may detect an error at 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 and when the communication cycle is low speed, synchronization is possible only when "×16" is set. When multiple cycles coexist and when the communication cycle is normal speed, synchronization is possible only when "×4" is set. In "Communication Period Setting" in the "CC-Link IE TSN Configuration" window, set "Low-Speed" to "×16" and "Normal-Speed" to "×4".

Restriction of firmware version

■Number of settable modules

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

Firmware version of the RJ71GN11-T2	Number of settable modules	
	Master station	Local station
Firmware version "10"	1	1
Firmware version "11" or later	8	

■Combination of the firmware versions

- To specify the multiple RJ71GN11-T2s as the target modules for the inter-module synchronization, use the RJ71GN11-T2 with the firmware version "11" or later. Do not use the RJ71GN11-T2 with the firmware version "10" and the RJ71GN11-T2 with the firmware version "11" or later together. Doing so results in Inter-module synchronization parameter mismatch (error code 3018H) or Inter-module synchronization abnormal error (error code 360DH).

1.7 Safety Communications (RJ71GN11-T2 Only)

This section describes the safety communication function.

Restriction

The following modules are required to use the safety communications.

- The RJ71GN11-T2 with the firmware version of "10" or later, and the safety CPU and safety function module with the firmware version of "20" or later

Communications with safety stations

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

Safety data is exchanged by using the safety device of the Safety CPU set 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

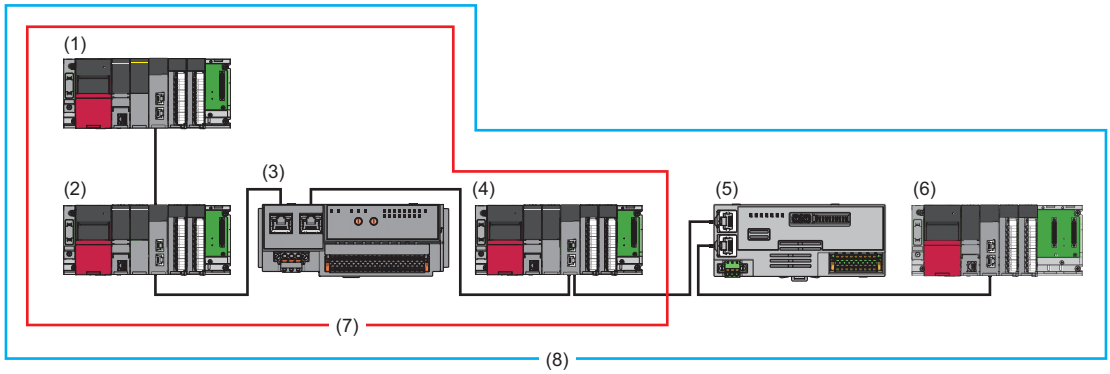
*1 Safety special register areas for the first RJ71GN11. For safety special register areas for the second or later RJ71GN11, refer to the following.

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)



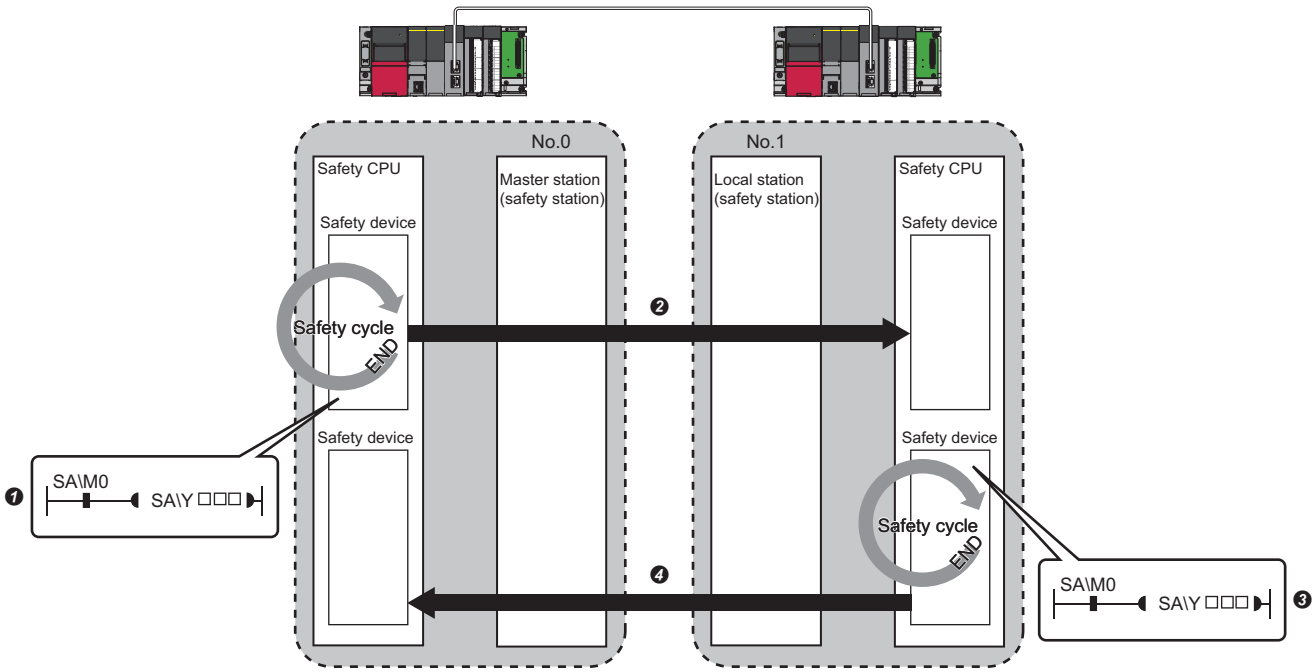
Restriction

Standard station (5) (6) can be mixed in one network for system configuration. However, safety communications (7) cannot be performed with standard stations (5) (6). Only standard communications (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.

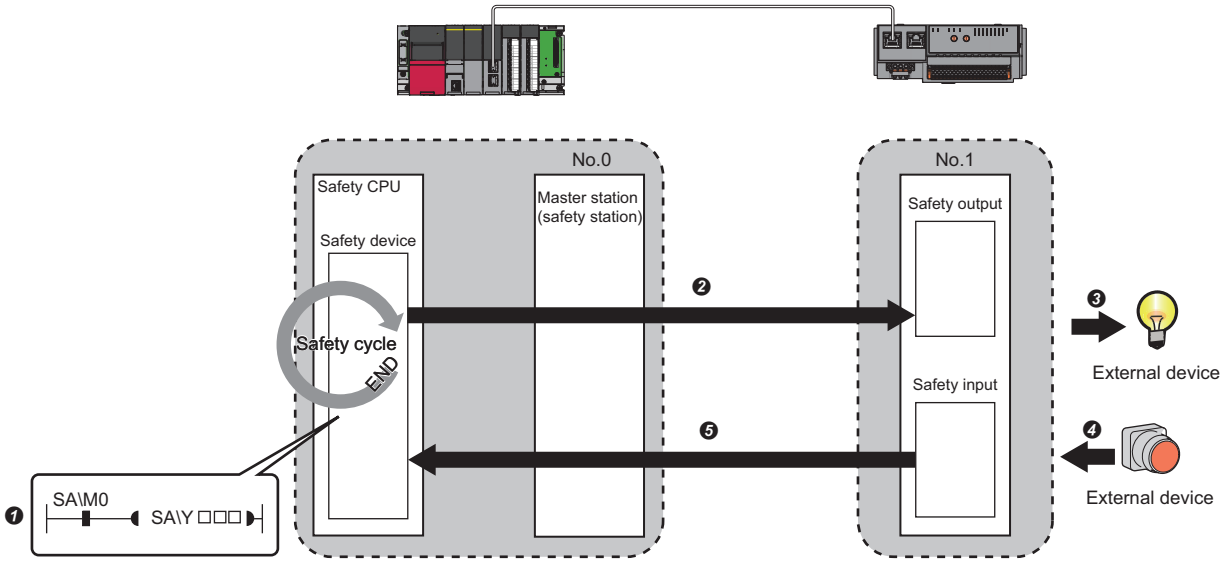
Output from the local station (safety station)

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 129 Safety Communication Setting (RJ71GN11-T2 only))

Precautions

- If an error occurs in safety communications, safety data from the faulty station is cleared.
- A safety connection with the safety station can be established only while data link is performed after configuring the "Safety Communication Setting" under "Basic Settings" of the master station. The data link status can be checked in 'Data link status of each station' (SW00B0 to SW00B7).
- Note that stations not set in 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 RJ71GN11s 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 RJ71GN11 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 as a station in the network when its number is counted. This station is reserved for future network expansion and is not actually connected. Therefore, it is not detected as a faulty station despite being not connected. (☞ Page 142 "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.

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 142 "CC-Link IE TSN Configuration" Window)

Device station parameter automatic setting

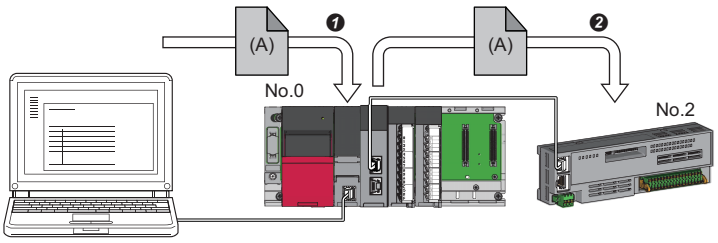
Parameters of the device station are saved in the master station, and the parameters will be automatically set when the device station is connected/returned.

Restriction

Before using this function, check the firmware version of the RJ71GN11. (☞ Page 389 Added and Enhanced Functions)

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 starts data link with the device station after parameters of the device station are automatically set.
- The device station parameter automatic setting is also executed for device stations set as reserved stations.

Setting method

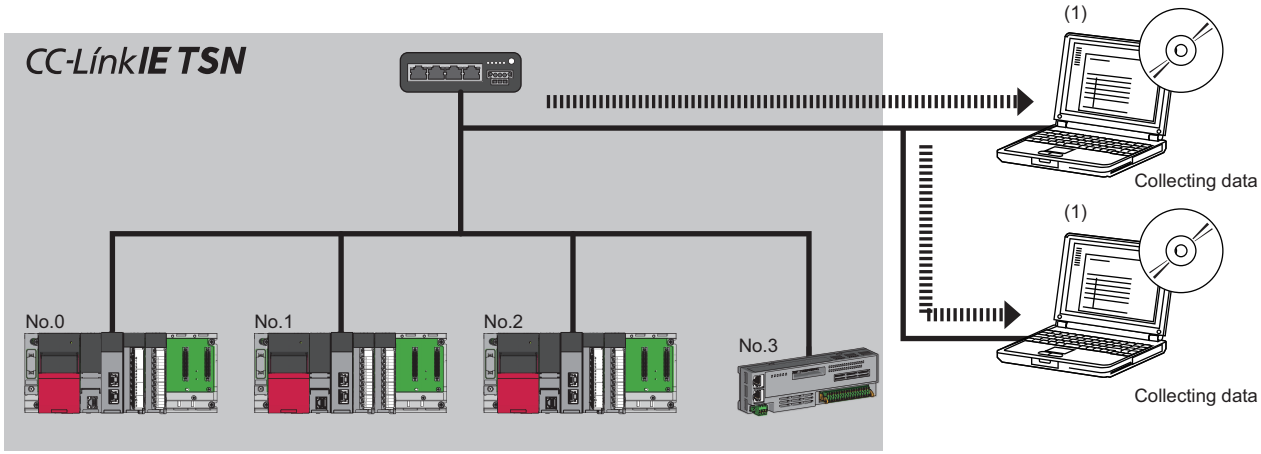
Set in the "Parameter of Device Station" window. (☞ Page 149 Parameter processing of device station)

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.
- Check if the checkbox of "Parameter Automatic Setting" of the device station is selected in the "CC-Link IE TSN Configuration" window.
- Check if the IP address of the device station in 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 CPU module.
- In the "CC-Link IE TSN Configuration" window in all master stations controlled by the CPU module, the total number of target modules for the device station parameter automatic setting including expansion modules must be set within 1024 modules.

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 RJ71GN11. (Page 389 Added and Enhanced Functions)

System configuration

For system configuration, refer to the following.
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 to the communication 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 by the "Connected/Disconnected Module Detection" in the "CC-Link IE TSN Configuration" window.

Co-recording

This function uses a recording device and saves data in the CPU module and video data captured by the network camera to a file at a specified time or the timing at which a trigger such as an error occurrence is satisfied.
The master station or the RJ71GN11 of the local station relays a co-recording trigger among the recording devices on the base unit of the own station and the recording devices of other stations, and performs co-recording on the network.
The co-recording function records, reproduces, and analyzes data in the entire system. For details, refer to the following.
MELSEC iQ-R System Recorder Co-recording Function Reference Manual

Restriction

Before using this function, check the firmware version of the RJ71GN11. (☞ Page 389 Added and Enhanced Functions)

2 PARAMETER SETTINGS

This chapter describes the parameter settings required for communications between the RJ71GN11 and other stations.

2.1 Setting Parameters

1. Add the RJ71GN11 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

3. After setting parameters, click the [Apply] button.

4. Write parameters to the CPU module using the engineering tool.

[Online] ⇨ [Write to PLC]

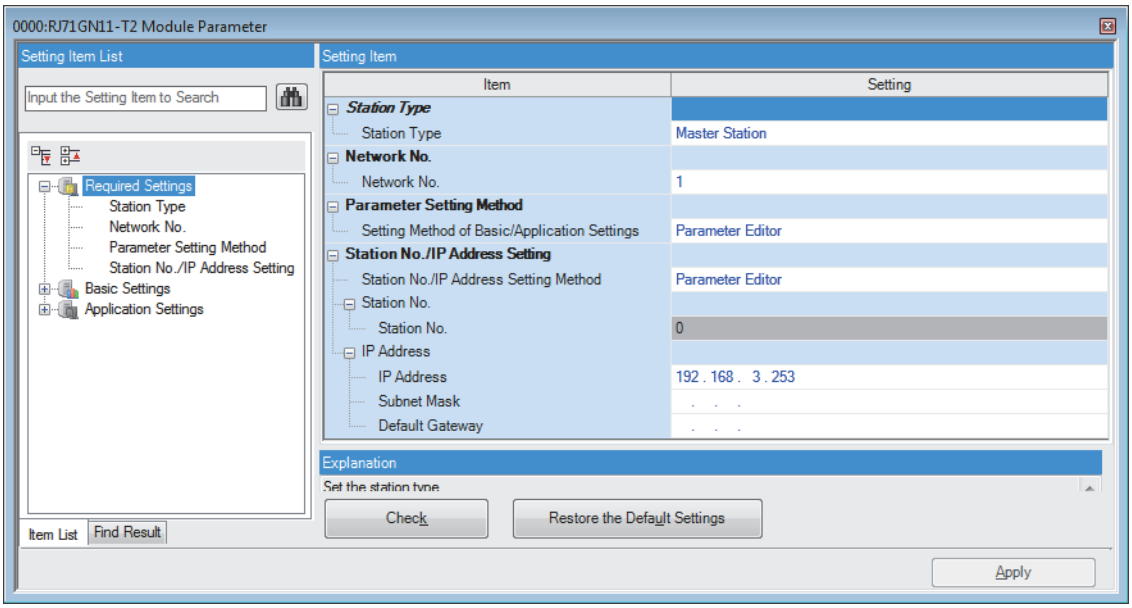
5. The parameters are reflected by resetting the CPU module or powering off and on the system.

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 RJ71GN11.



○: Can be set, ×: Cannot be set

Item	Description	Availability		Reference
		Master station	Local station	
Station Type	Set the station type of the RJ71GN11.	○	○	Page 121 Station Type
Network No.	Set the network number of the RJ71GN11.	○	○	Page 122 Network No.
Parameter Setting Method	Select whether to set "Basic Settings" and "Application Settings" items using the engineering tool or in program.	○	○	Page 123 Parameter Setting Method
Station No./IP Address Settings	Set the station number or IP address of the RJ71GN11.	○*1	○*2	Page 122 Station No./IP Address Setting

*1 Only "IP Address" can be set.
*2 This item can be set when "Parameter Editor" in "Station No./IP Address Setting Method" is selected.

Station Type

Set the station type of the RJ71GN11.

Item	Description	Setting range
Station Type	Select whether to use the RJ71GN11 as the master station or local station. Only one master station can be set in a network.	• Master Station • Local Station (Default: Station type set in the "Add New Module" window.)

Network No.

Set the network number of the own station of the RJ71GN11.

Item	Description	Setting range
Network No.	Set the network number of the RJ71GN11.	1 to 239 (Default: 1)

Precautions

Set a network number that does not overlap any other network numbers.
In particular, when using an Ethernet-equipped module (CPU module) at default, the IP address is 192.168.3.39 and the network number is the third octet of the IP address, thus 3. Because setting the network number of the RJ71GN11 to 3 causes an overlap, set another network number.

Station No./IP Address Setting

Set the station number and IP address of the own station of the RJ71GN11.

Item	Description	Setting range
Station No./IP Address Setting Method	Select whether to set the station number/IP address using the engineering tool or to set the station number/IP address using a program (UINI instruction). When selecting "Program", use the UINI instruction to set the station number/IP address. (📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)) If "Parameter Setting Method" under "Required Settings" is "Program", "Parameter Editor" cannot be selected.	• Parameter Editor • Program (Default: Parameter Editor)
Station No.	Set the station number of the RJ71GN11. This item can be set only for a local station. To set the station number in this setting, set "Station No./IP Address Setting Method" to "Parameter Editor". Set a station number different from those used in the same network.	• Master station: Fixed to "0" • Local station: 1 to 120 (Default: 1)
IP Address	Set the IP address of the own station. Set an IP address different from those used in other stations. (☞ Page 86 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: Master station 192.168.3.253, other than the master station 192.168.3.1)
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)

Parameter Setting Method

Select whether to set "Basic Settings" and "Application Settings" items using the engineering tool or in program.

Item	Description	Setting range
Setting Method of Basic/ Application Settings	■Parameter Editor Select this item to set the parameter using the engineering tool. The following are advantages. • All parameters can be easily set in the window without creating a program for setting. • The data will be automatically transferred from the link special relay (SB), link special register (SW), and link devices of the RJ71GN11 to the devices of the CPU module, the link special relay (SB), link special register (SW) of the RJ71GN11, and the module label of the CPU module. ■Program Select this item to set the parameter using the dedicated instructions (UINI instruction and CCPASETX instruction), or the dedicated instructions (UINI instruction and CCPASET instruction). • Only "Required Settings" parameters can be set using the engineering tool. • Also set "Station No./IP Address Setting Method" in "Required Settings" to "Program". The following are advantages. • Comparing with the number of modules that can be set in the engineering tool, larger numbers of the RJ71GN11 can be actually mounted. (📖 MELSEC iQ-R Module Configuration Manual)	• Parameter Editor • Program*1 (Default: Parameter Editor)

*1 When "Program" is selected, some parameters cannot be set using a dedicated instruction (CCPASET instruction).
For parameters that can be set using a dedicated instruction (CCPASET instruction), refer to the following.
📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

Station number/IP address setting of a local station

The station number/IP address of a local station can be also set using the UINI instruction. This allows project data items other than the station number/IP address to be shared. (📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions))

■When using the engineering tool for the parameter setting

The procedure for setting the station number of a local station is shown below.

1. Set "Station No./IP Address Setting Method" under "Station No./IP Address Setting" in "Required Settings" to "Program".
2. Set "Setting Method of Basic/Application Settings" under "Parameter Setting Method" in "Required Settings" to "Parameter Editor".
3. Set the station number/IP address using the UINI instruction.

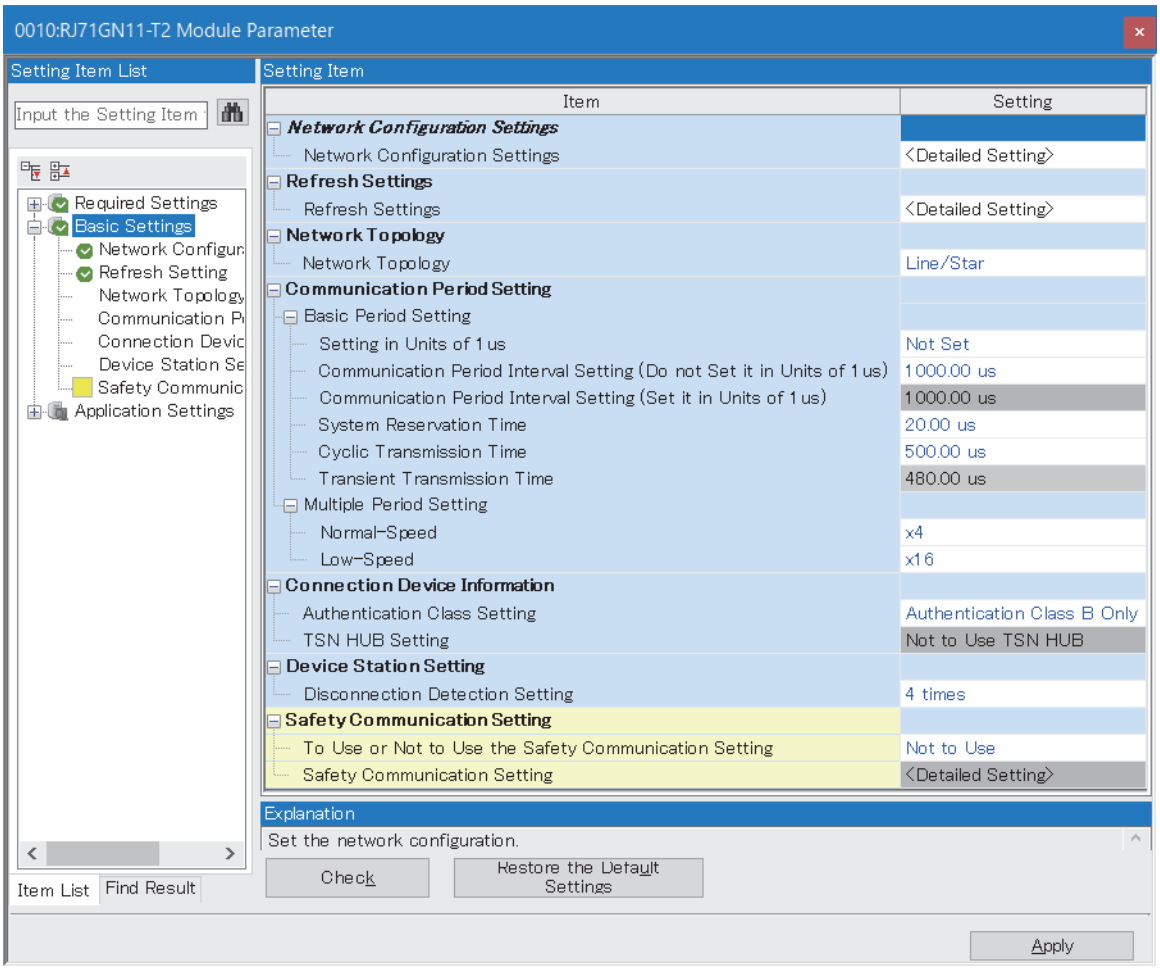
■When using the CCPASETX instruction or CCPASET instruction for the parameter setting

The procedure for setting the station number of a local station is shown below.

1. Set "Station Type" and "Network No." in "Required Settings".
2. Set "Station No./IP Address Setting Method" under "Station No./IP Address Setting" in "Required Settings" to "Program".
3. Set "Setting Method of Basic/Application Settings" under "Parameter Setting Method" in "Required Settings" to "Program".
4. Set the network parameters using the CCPASETX instruction or CCPASET instruction.
5. Set the station number/IP address using the UINI instruction.

2.3 Basic Settings

Set the network configurations, refresh settings, or other parameters for the RJ71GN11.



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

○: Can be set, ×: Cannot be set

Item	Description	Availability		Reference
		Master station	Local station	
Network Configuration Settings	Set parameters of device stations (the number of points and assignment of link devices) in the master station.	○	×	Page 142 "CC-Link IE TSN Configuration" Window
Refresh Settings	Assign link refresh ranges between the devices described below. • SB, SW of the RJ71GN11 ↔ Module label of the CPU module • SB, SW, link devices (RX, RY, RWr, RWw, LB, LW) of the RJ71GN11 ↔ Devices of the CPU module	○	○	Page 125 Refresh Settings
Network Topology	Select the network topology type according to the actual network configuration.	○	×	Page 128 Network Topology
Communication Period Setting	Set the basic cycle setting and multiple cycle setting.	○	×	Page 128 Communication Period Setting
Connection Device Information	Set the CC-Link IE TSN Class of the connected device.	○	×	Page 129 Connection Device Information
Device Station Setting	Set the number of consecutive communication failures until a device station is considered disconnected.	○	×	Page 129 Device Station Setting
Safety Communication Setting (RJ71GN11-T2 only)*1	Set whether to use the safety communication or not and set the safety connections and the transfer ranges of safety devices.	○	○	Page 129 Safety Communication Setting (RJ71GN11-T2 only)

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

Refresh Settings

Assign link refresh ranges between the devices described below.

- SB, SW of the RJ71GN11 ↔ Module label of the CPU module
- SB, SW, link devices (RX, RY, RWr, RWw, LB, LW) of the RJ71GN11 ↔ Devices of the CPU module

Setting method

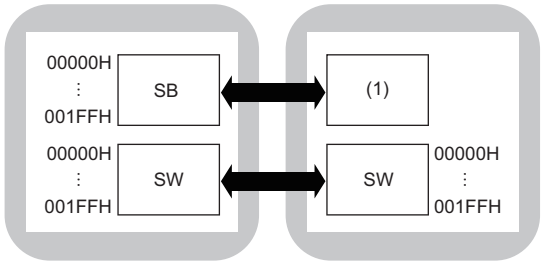
The procedure for the refresh settings is shown below.

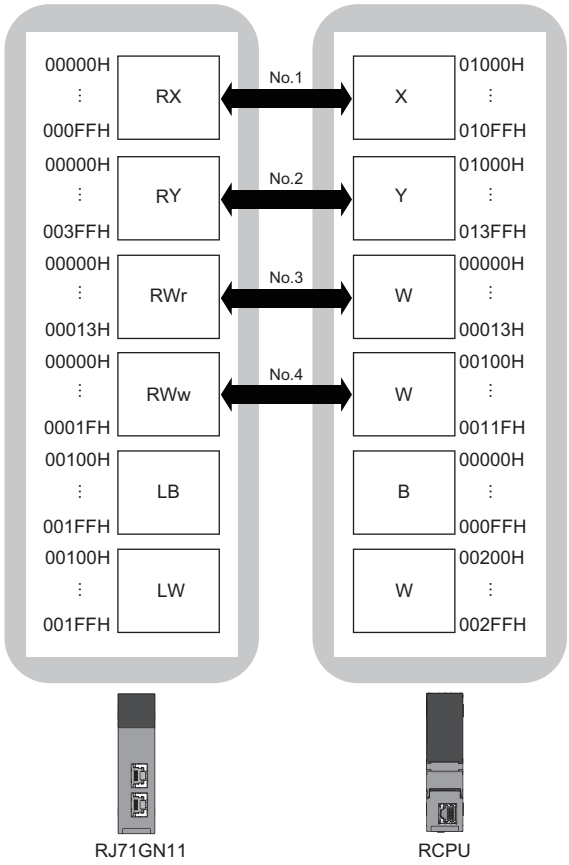
1. Set the required items.

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	4096	00000	00FFF	⇔	Module Label				
-	SW	512	00000	001FF	⇔	Specify Device	SW	512	00000	001FF
1	RX	256	00000	000FF	⇔	Specify Device	X	256	01000	010FF
2	RY	1024	00000	003FF	⇔	Specify Device	Y	1024	01000	013FF
3	RWr	20	00000	00013	⇔	Specify Device	W	20	00000	00013
4	RWw	32	00000	0001F	⇔	Specify Device	W	32	01000	0101F
5	LB	256	00100	001FF	⇔	Specify Device	B	256	00000	000FF
6	LW	32	00100	0011F	⇔	Specify Device	W	32	00200	0021F
7										

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

Setting items

Item		Description	Setting range
Device Assignment Method		Right-click in the setting window and select a link device assignment method from the "Device Assignment Method" menu. • 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 37 Link refresh) **Ex.** 	■Device Name • SB (fixed) • SW (fixed) ■Points • SB: 16 to 4096 • SW: 1 to 4096 (Default: 4096) ■Start • SB: 0H to FF0H (set in increments of 16 points) • SW: 0H to FFFH (set in increments of 1 point) (Default: 00000H) ■End • SB: FH to FFFH (set in increments of 16 points) • SW: 0H to FFFH (set in increments of 1 point) (Default: 00FFFH)
	CPU Side	 (1) Module label	■Target • Module Label • Specify Device (Default: Module Label) ■Device Name • Module Label: — • 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 • Module Label: — • Specify Device: Displayed according to setting of "Start". (Default: Grayout) ■Start • Module Label: — • Specify Device: Device range of CPU modules (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 37 Link refresh) 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 32768/16 to 131072 when extending the number of link points • LW: 1 to 16384/1 to 524288 when extending the number of link points (Default: Grayout) ■Start • RX, RY: 0H to 3FF0H (set in increments of 16 points) • RWr, RWw: 0H to 1FFCH (set in increments of 4 points) • LB: 0H to 7FF0H (set in increments of 16 points)/0H to 1FFF0H (set in increments of 16 points) when extending the number of link points • LW: 0H to 3FFFH/0H to 7FFFFH when extending the number of link points (Default: Grayout) ■End • RX, RY: FH to 3FFFH (set in increments of 16 points) • RWr, RWw: 3H to 1FFFH (set in increments of 4 points) • LB: FH to 7FFFH (set in increments of 16 points)/FH to 1FFFFH (set in increments of 16 points) when extending the number of link points • LW: 0H to 3FFFH/0H to 7FFFFH (set in increments of 16 points) when extending the number of link points (Default: Grayout)
	CPU Side		■Target • Module Label • 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 • Module Label: — • Specify Device: Displayed according to setting of "Start". (Default: Grayout) ■Start • Module Label: — • Specify 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 devices of the RJ71GN11 can be accessed from a program. (☞ Page 39 Direct access to link devices)

Precautions

■Device set to "CPU Side"

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

- "Refresh Setting" in "Basic Settings" of other network modules
- "Link Refresh Settings" in "Basic Settings" of a CC-Link master/local module
- I/O numbers used for I/O modules and intelligent function modules
- "Refresh settings" of intelligent function modules
- Module label being used (when performing refresh settings in "Refresh Settings" under "Basic Settings")
- "Refresh Setting between Multiple CPUs" of "CPU Parameter" for a 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.

■Changing link device assignment in the "CC-Link IE TSN Configuration" window

Correct the set range in "Refresh Setting" of "Basic Settings".

■Setting the parameter using the CCPASETX or CCPASET instruction

The RJ71GN11-T2 operates without setting the refresh. Access directly a link device using direct access because the link refresh cannot be executed.

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. To use the loopback function, select "Ring". (☞ Page 81 Loopback Function)	• Line/Star • Ring (Default for the RJ71GN11-T2: Line/Star. Default for the RJ71GN11-SX: Ring.)

Restriction

Network synchronous communication cannot be performed when "Network Topology" is set to "Ring". Select "Line/Star".

Communication Period Setting

Set the basic cycle setting and multiple cycle setting.

- Basic cycle setting requires calculation of the communication cycle interval and cyclic transmission time. (☞ Page 352 Communication cycle intervals)
- Multiple cycle setting is used when communication cycles coexist. (☞ Page 50 Communication cycles coexistence)

Item		Description	Setting range
Basic Period Setting	Setting in Units of 1μs	Select whether to set the basic cycle in increments of 1μs.	• Set • Not set (Default: Not set)
	Communication Period Interval Setting (Do Not Set it in Units of 1μs)*5	Select a value of the communication cycle interval.	• 125.00μs • 250.00μs • 500.00μs • 1000.00μs • 2000.00μs • 4000.00μs • 8000.00μs*1 (Default: 1000.00μs for the RJ71GN11-T2, 4000.00μs for the RJ71GN11-SX)
	Communication Period Interval Setting (Set it in Units of 1μs)*5	Enter the setting range of the communication cycle interval.	125.00μs to 10000.00μs (in increments of 1μs)*2 (Default: 1000.00μs for the RJ71GN11-T2, 4000.00μs for the RJ71GN11-SX)
	System Reservation Time	Necessary time for the system to guarantee the communication cycle interval. For the RJ71GN11-T2, when "Communication Speed" of the master station is set to 100Mbps, select 200μs.	• 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 9966.00μs (in increments of 1μs)*3 (Default: 500.00μs for the RJ71GN11-T2, 3500.00μs for the RJ71GN11-SX)
	Transient Transmission Time	The value of "Communication Period Interval Setting" minus "Cyclic Transmission Time" and "System Reservation Time" is displayed.	14.00μs to 9975.00μs (in increments of 1μs)*4 (Default: 480.00μs)
Multiple Cycle Setting	Normal-Speed	Select the "Normal-Speed" cycle for a basic cycle.	• ×2 • ×4 • ×8 (Default: ×4)
	Low-Speed	Select the "Low-Speed" cycle for a basic cycle. ×32, ×64, and ×128 can be set for the RJ71GN11-T2 or RJ71GN11-SX with a firmware version of "14" or later.	• ×16 • ×32 • ×64 • ×128 (Default: ×16)

*1 This can be used for the RJ71GN11-T2 or RJ71GN11-SX with a firmware version "04" or later.
*2 The setting range of the RJ71GN11-T2 with a firmware version "03" or earlier is from 125.00μs to 4000.00μs.
*3 The setting range of the RJ71GN11-T2 with a firmware version "03" or earlier is from 5.00μs to 3966.00μs.
*4 The setting range of the RJ71GN11-T2 with a firmware version "03" or earlier is from 14.00μs to 3975.00μs.
*5 To use the CC-Link IE TSN network synchronous communication function, set the same value as the value set in "Fixed Scan Interval Setting" of "Fixed Scan Interval Setting of Inter-module Synchronization" under "Inter-module Synchronization Setting" in the "Inter-module Synchronization Setting" tab of "System Parameter".

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 307 Timeslot information)
- Set "Communication Period Setting" according to the communication cycle supported by the device stations.

Connection Device Information

Set the information of the connected device.

Item	Description	Setting range
CC-Link IE TSN Class Settings	Set the CC-Link IE TSN Class of the connected device.	• CC-Link IE TSN Class B Only • Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only (Default: CC-Link IE TSN Class B Only)
TSN HUB Setting	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. Set "Use TSN HUB" when connecting an industrial switch (CC-Link IE TSN Class B certified).	• Not to Use TSN HUB • Use TSN HUB (Default: Not to Use TSN HUB)

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 "Network Topology" is set to "Ring", set "CC-Link IE TSN Class Setting" of "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, an error code 3016H is output.
- When "TSN HUB Setting" is set to "Not to Use TSN HUB" and an industrial switch (CC-Link IE TSN Class B certified) is connected, the device station may not perform data link. (☞ Page 249 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 (RJ71GN11-T2 only)

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 Use • Use (Default: Not Use)
Safety Communication Setting	Set the safety connections and transfer ranges of safety devices required for safety communications.	Page 130 Setting method

Restriction

Set the following items before configuring the safety communication setting.

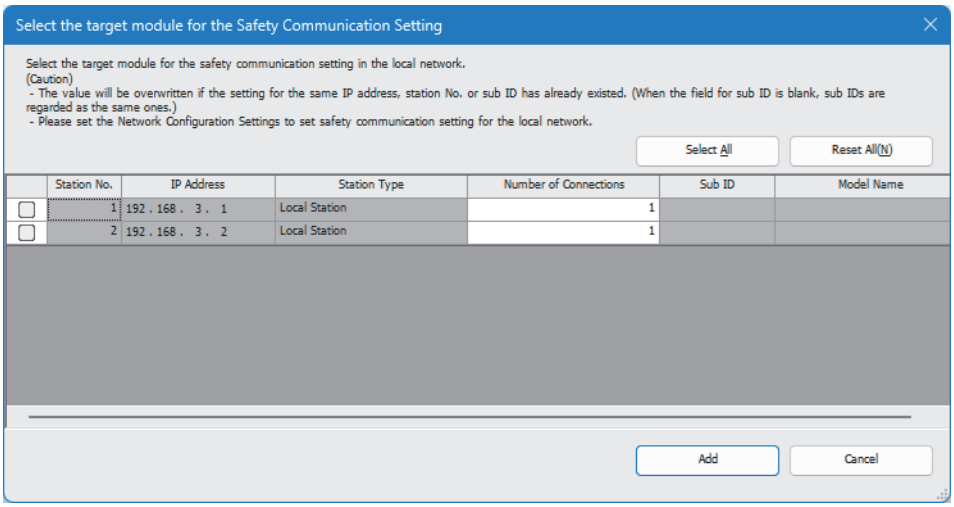
- "Network Configuration Settings" in "Basic Settings" (☞ Page 142 "CC-Link IE TSN Configuration" Window)

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.

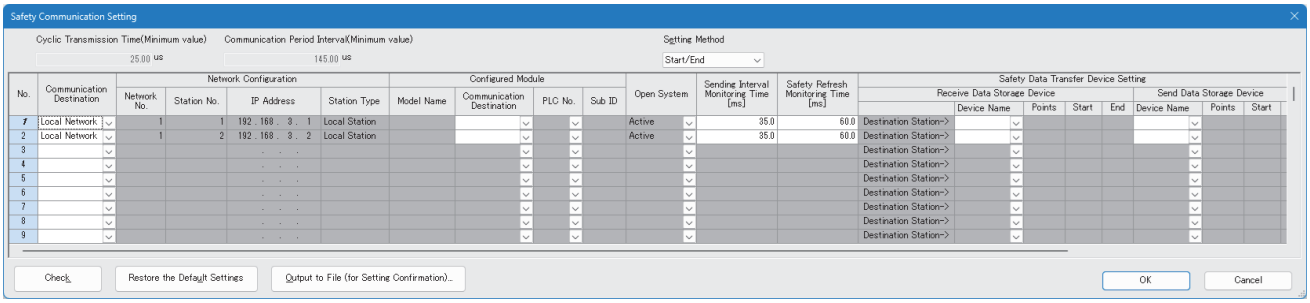
Setting method

The procedure for the safety communication setting is shown below.

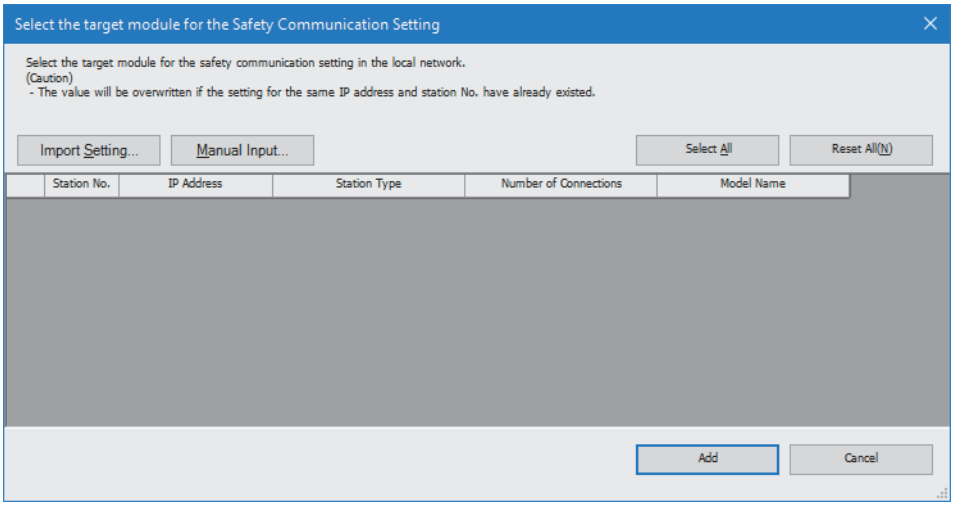
1. Set "Communication Destination" to "Local Network".
2. For the master station, select the target module of safety communications in the "Select the target module for the Safety Communication Setting" window and click the [Add] button.



3. Set the required items.



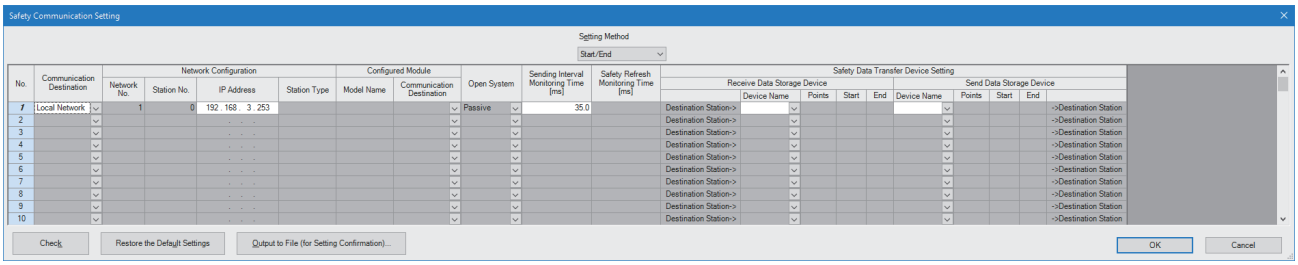
4. Click the [OK] button to finish the safety communication setting.
5. For a local station, click the [Import Setting] button in the "Select the target module for the Safety Communication Setting" window.



Point

Click the [Manual Input] button to manually configure the safety communication setting.

6. Select the project of the master station, and the safety communication setting can be imported from the master station.



Point

The data to be imported by the [Import Setting] button covers the station numbers and IP addresses in the project of the master station.

Setting items

Item	Description	Setting range
Cyclic Transmission Time (Minimum value)	The cyclic transmission time that is 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 The displayed value differs depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings" even when the number of device stations and link device points are the same. (☞ Page 352 Communication cycle intervals) 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 while the displayed value is set, 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 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 This cannot be checked when the communication speed is 1Gbps, the version of engineering tool is 1.085P or earlier, 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. Check it with 'Cyclic transmission time (calculation value)' (SW0073). (☞ Page 330 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 The displayed value differs depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings" even when the number of device stations and link device points are the same. (☞ Page 352 Communication cycle intervals) 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 This cannot be checked when the communication speed is 1Gbps, the version of engineering tool is 1.085P or earlier, 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. Check it with 'Communication cycle interval (calculation value)' (SW0072). (☞ Page 330 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)

Item		Description	Setting range
Network Configuration	Network No.	The network number of the communication destination is displayed.	—
	Station No.	When the own station is the master station: The station number of communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	—
	IP Address	When the own station is the master station: The IP address of communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	0.0.0.1 to 223.255.255.254 (Default: empty)
	Station Type	When the own station is the master station: The station type of the communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed.	—
Configured Module	Model Name	When the own station is the master station: The module model name of the communication destination selected in the "Select the target module for the Safety Communication Setting" window is displayed. (Only a 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 • CR800-R (Default: empty)
	PLC No.	When the own station is the master station: Set the CPU number of the communication destination when the CPU module of the communication destination is set to CPU module other than the Safety CPU.	2 to 4 (Default: empty)
	Sub ID	When the own station is the master station: The sub ID of the communication destination is displayed.	—
Open System		Open system of the own station is displayed.	• When the own station is the master station: Active (Fixed) • When the own station is a local station: Passive (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)*3 • 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)*3 • 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)

Item	Description	Setting range
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. When the communication destination is set to a local station, the safety approval code is masked with blank.	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)	—

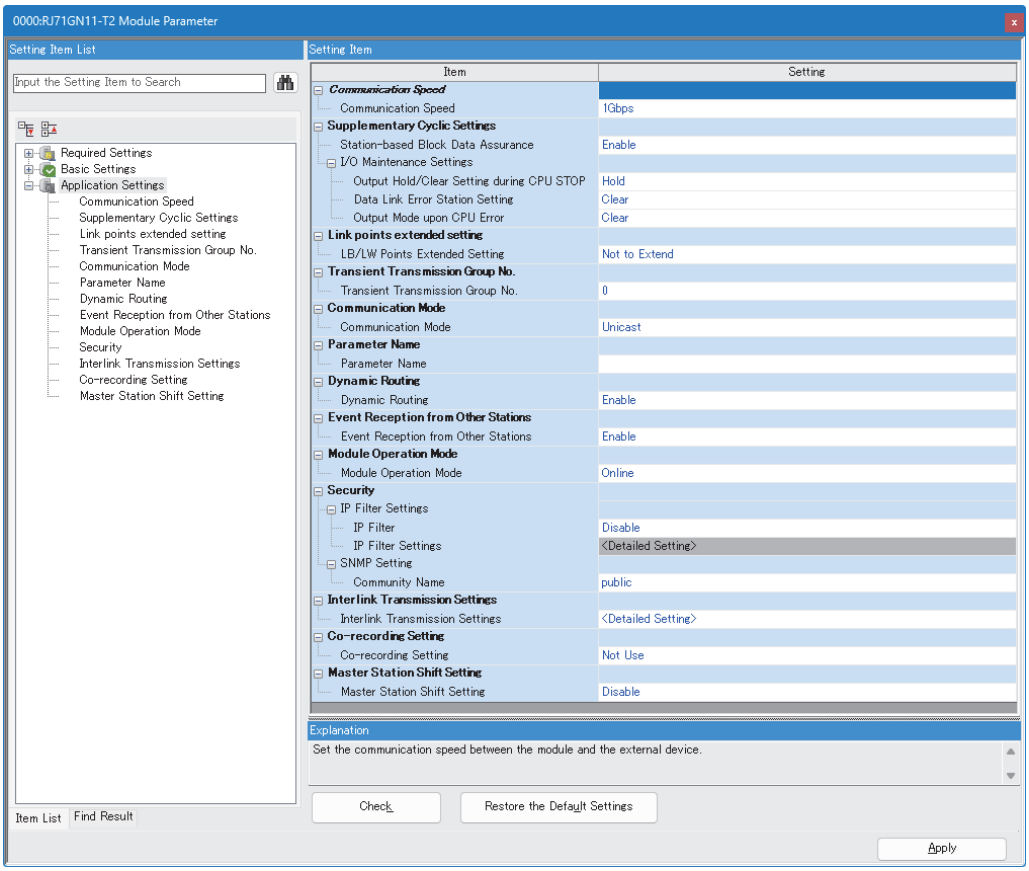
*1 When the settings cannot be determined with the module parameter and in the "CC-Link IE TSN Configuration" window, a hyphen or incorrect calculation result may be displayed.

*2 Set the safety connection number starting with 1.
Even if the safety connection is set in a random line, the unset line is deleted and the number is set starting with 1 when the [OK] button is clicked.

*3 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 supplementary cyclic settings, transient transmission group number, and other settings for the RJ71GN11.



○: Can be set, ×: Cannot be set

Item	Description	Availability		Reference
		Master station	Local station	
Communication Speed	Set the communication speed.	○	○	Page 135 Communication speed setting
Supplementary Cyclic Settings	Set the station-based block data assurance and I/O maintenance settings.	○	○*1	Page 135 Supplementary Cyclic Settings
Link points extended setting	Set whether to extend the maximum number of link points for LB/LW.	○	○	Page 135 Link points extended setting
Transient Transmission Group No. Setting	Set the transient transmission group number.	○	○	Page 135 Transient Transmission Group No. Setting
Communication Mode	Set the communication mode.	○	×	Page 136 Communication Mode
Parameter Name	Set a name for the module parameter if desired.	○	○	Page 136 Parameter Name
Dynamic Routing	Select whether to enable the dynamic routing function.	○	○	Page 136 Dynamic Routing
Event Reception from Other Stations	Select whether to obtain the events occurring in the other stations.	○	×	Page 136 Event Reception from Other Stations
Module Operation Mode	Set the module operation mode.	○	○	Page 137 Module Operation Mode
Security	Set the security measures for access to the Ethernet device.	○	○	Page 137 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 138 Interlink Transmission Settings
Co-recording Setting	Set whether to relay a co-recording trigger.	○	○	Page 141 Co-recording Setting

Item	Description	Availability		Reference
		Master station	Local station	
Master Station Shift Setting	Sets whether to enable or disable the master station shift function, which allows the local station to continue controlling the entire network in place of the master station even if the master station is disconnected.	○	×	Page 141 Master Station Shift Setting

*1 "Station-based Block Data Assurance" cannot be set.

Communication speed setting

Set the communication speed.

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

*1 This speed can be used for the RJ71GN11-T2 with a firmware version of "04" or later.

For details on the connection of modules or devices based on the communication speed setting, refer to the following.

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

Supplementary Cyclic Settings

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

Item		Description	Setting range
Station-based Block Data Assurance		Select whether to ensure integrity of the data blocks being refreshed between the CPU module and the RJ71GN11. (☞ Page 43 Cyclic data assurance)	• Enable • Disable (Default: Enable)
I/O Maintenance Settings	Output Hold/Clear Setting during CPU STOP	Select whether to hold or clear output when the status of the CPU module changes from RUN to STOP. Set it on the sending side. (☞ Page 52 I/O maintenance settings)	• Hold • Clear (Default: Hold)
	Data Link Error Station Setting	Select whether to clear or hold input from a disconnected station. Set it on the receiving side. (☞ Page 52 I/O maintenance settings)	• Clear • Hold (Default: Clear)
	Output Mode upon CPU Error	Select whether to hold or clear output when a stop error occurs in the CPU module. Set it on the sending side. (☞ Page 52 I/O maintenance settings)	• Clear • Hold (Default: Clear)

Link points extended setting

Set whether to extend the maximum number of link points per network.

Item	Description	Setting range
LB/LW Points Extended Setting	Select whether to extend the maximum number of link points per LB/LW network. This setting must be the same for the master station and the local station. If "Communication Mode" under "Application Settings" is set to "Unicast", set "Not to Extend". For the RJ71GN11-T2, when "Communication Speed" under "Application Settings" is set to "100Mbps", set "Not to Extend".	• Extend • Not to Extend (Default for the RJ71GN11-T2: Not to Extend, Default for the RJ71GN11-SX: Extend)

Transient Transmission Group No. Setting

Set the transient transmission group number.

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

Communication Mode

Set the communication mode.

Item	Description	Setting range
Communication Mode	Set the communication mode.	• Unicast • Multicast*1 (Default for the RJ71GN11-T2: Unicast, Default for the RJ71GN11-SX: Multicast)

*1 This can be used for the RJ71GN11-T2 or RJ71GN11-SX with a firmware version "04" or later.

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 RJ71GN11 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 RJ71GN11.

Item	Description	Setting range
Module Operation Mode	Online • Select this mode to connect the RJ71GN11 to the network for performing data link with other stations. Offline • Select this mode to disconnect the RJ71GN11 from the network and not perform data link with other stations. Module Communication Test • Select this mode to check the hardware of the RJ71GN11. Select this mode to check the module hardware when communication is unstable. (☞ Page 214 Module Communication Test)	• Online • Offline • Module Communication Test (Default: Online)

Restriction

The following functions are disabled when "Module Operation Mode" is set to "Offline" or "Module Communication Test". (☞ Page 20 FUNCTIONS)

- Cyclic transmission
- Transient transmission
- RAS (device station disconnection, automatic return)
- CC-Link IE TSN network synchronous communication
- Safety communication (RJ71GN11-T2 only)

In line topology, data link is not performed for stations connected after a station in offline mode.

Security

Set the security measures for access to the Ethernet device.

Item		Description	Setting range
IP Filter Settings	IP Filter	Set whether to use the IP filter.	• Not Use • Use (Default: Not Use)
	IP Filter Settings	Set the IP addresses to be allowed or denied.	—
SNMP Setting	Community Name	Set the SNMP community name. SNMP community names are case-sensitive.	A string of 1 to 32 characters (Only one-byte alphanumeric characters and underscores (_)) (Default: public)

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)

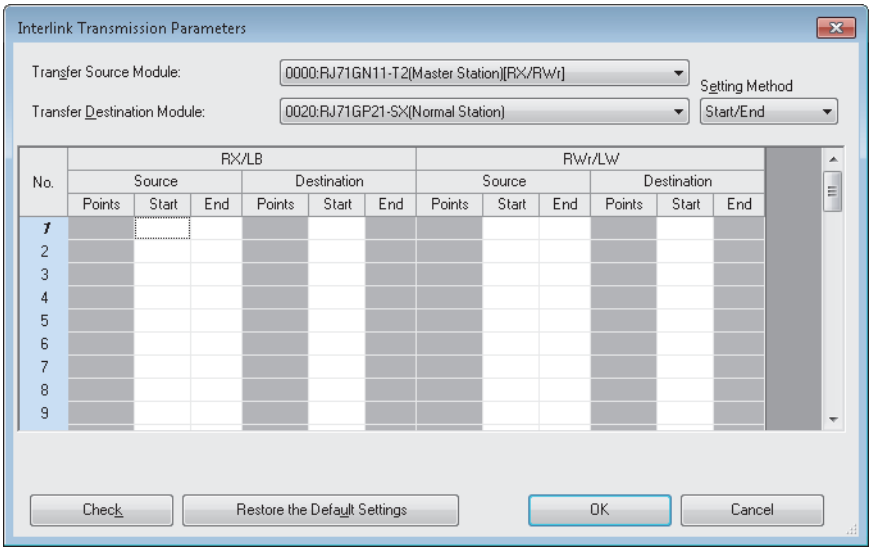
Interlink Transmission Settings

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

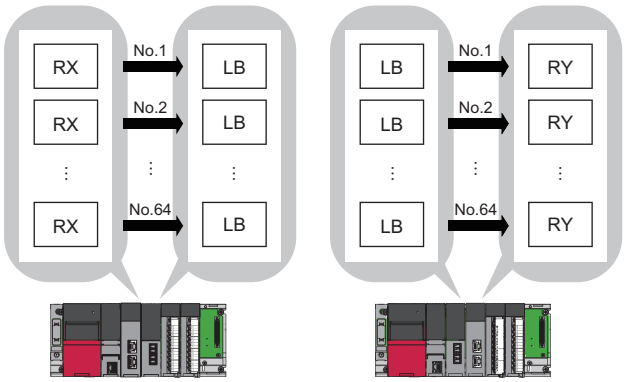
Setting method

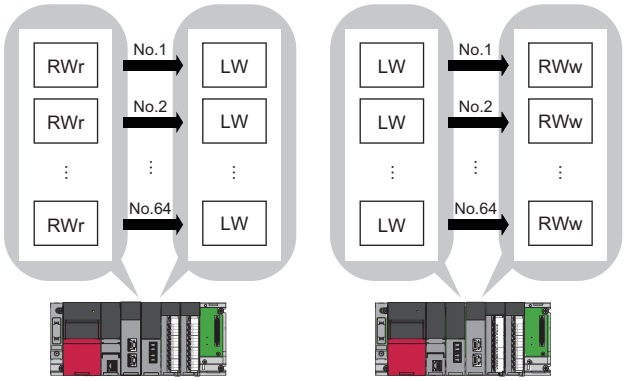
The procedure for the interlink transmission settings is shown below.

1. Select combination of modules in the "Transfer Source Module" and "Transfer Destination Module" boxes and enter setting values.



2. Click the [OK] button to finish the interlink transmission settings.

Item		Description	Setting range
Transfer Source Module		Select the combination of transfer source and transfer destination modules.	The setting varies depending on the set module.
Transfer Destination Module			
Setting method		Right-click in the "Interlink Transmission Parameters" window and select a link device setting method from the "Setting Method" menu. • 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)
RX/LB LB/RY LB/LB	Source Destination	Enter the link device range of the transfer source and destination modules. Up to 64 ranges can be set. RX, RY, and LB points can be assigned in increments of 16 (Start: □□□0H, End: □□□□FH). 	■When not extending the number of link points RX: 0H to 3FFFH RY: 0H to 3FFFH LB: 0H to 7FFFH (Default: empty) ■When extending the number of link points RX: 0H to 3FFFH RY: 0H to 3FFFH LB: 0H to 1FFFFH (Default: empty)

Item		Description	Setting range
RWr/LW LW/RWw LW/LW	Source Destination	Enter the link device range of the transfer source and destination modules. Up to 64 ranges can be set. RWr, RWw, and LW points can be assigned in increments of 4. 	■When not extending the number of link points RWr: 0H to 1FFFH RWw: 0H to 1FFFH LW: 0H to 3FFFH (Default: empty) ■When extending the number of link points RWr: 0H to 1FFFH RWw: 0H to 1FFFH LW: 0H to 7FFFFH (Default: empty)

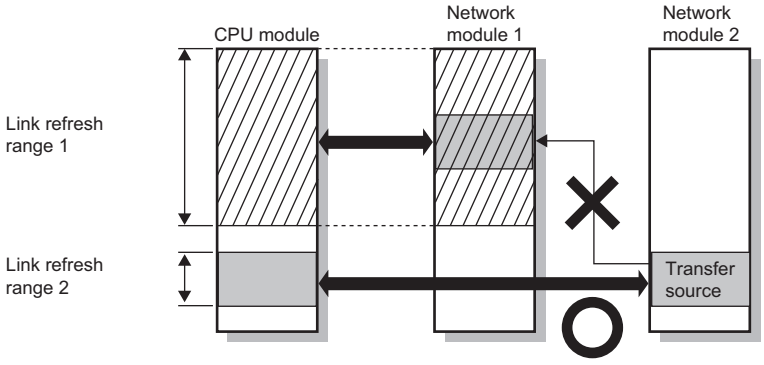
Point

Link devices set for "Source" can be overlapped. Doing so will allow transfer of the same link devices to multiple network modules.

Precautions

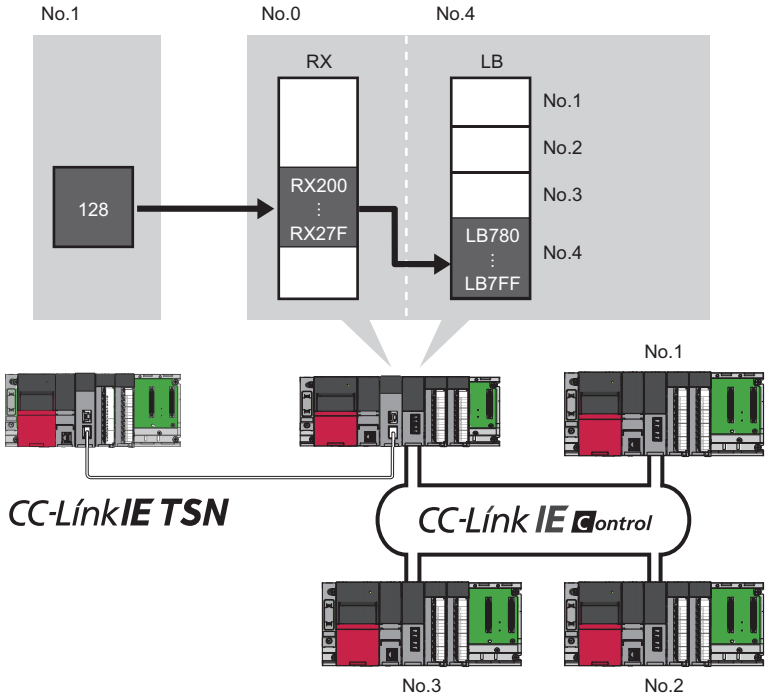
■Transfer destination link device setting

Do not use link devices set for link refresh range as a transfer destination. If doing so, transfer destination link devices will be overwritten by link refresh. To use transfer destination link device data in the CPU module, set the transfer source link device as the link refresh range.

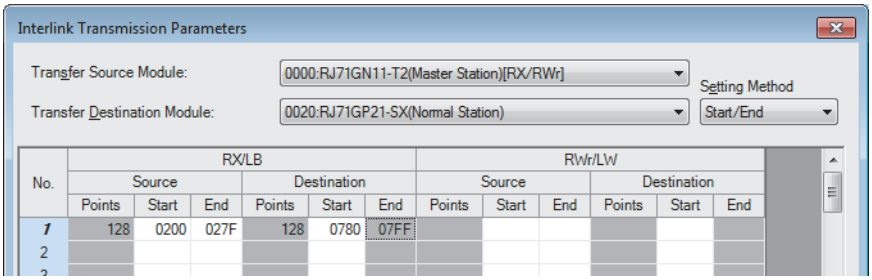


Setting example

The following is a setting example to perform interlink transmission from the master station on CC-Link IE TSN to stations on CC-Link IE Controller Network. In this example, 128-point data input from the device station (station No.1) is transferred.



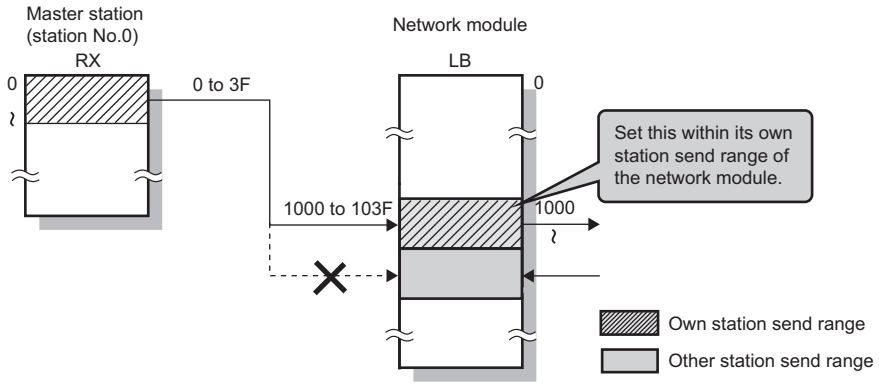
1. Select "0000: RJ71GN11-T2 (Master Station) [RX/RWr]" for "Transfer Source Module" and "0020: RJ71GP21-SX (Normal Station)" for "Transfer Destination Module", and enter the transfer ranges of link devices.



2. Click the [OK] button.

Point

If the transfer destination network module is on a network other than CC-Link IE TSN, set the transfer destination link devices within the own station send range of the network module. If the link devices are set within the send range of another station, the transferred data are overwritten with the send data of another station.



Co-recording Setting

Set whether to relay a co-recording trigger.

By changing the co-recording setting of the master station or local stations, the range of co-recording on the network can be changed.

For details on the co-recording setting, refer to the following.

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

Item	Description	Setting range
Co-recording Setting	Set whether to send/receive a co-recording trigger among own station and other stations on the same network. Even when the parameter is set to "Not Use", a co-recording trigger received from another station is sent to other stations.	• Not Use • Use (Default: Not Use)

Point

Setting the time synchronization is recommended to ensure that the reference time (JST) of the recording data among the multiple devices are the same. (☞ Page 87 Time synchronization)

Master Station Shift Setting

Set whether to enable or disable the master station shift function.

Item	Description	Setting range
Master Station Shift Setting	Sets whether to enable or disable the master station shift function, which allows the local station to become the current master station and continue controlling the entire network, even if the master station is disconnected.	• Disable • Enable (Default: Disable)

Precautions

■For Safety CPU

- When "Network Topology" is set to "Line/Star", set "Master Station Shift Setting" to "Disable".
- When "Communication Mode" is set to "Unicast", set "Master Station Shift Setting" to "Disable".
- 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", set "Master Station Shift Setting" to "Disable".
- When "Network Synchronous Communication" is set to "Synchronous", set "Master Station Shift Setting" to "Disable".
- When "To Use or Not to Use the Safety Communication Setting" is set to "Use", set "Master Station Shift Setting" to "Disable".
- For the RJ71GN11-T2, when "Communication Speed" under "Application Settings" is set to "100Mbps", set "Master Station Shift Setting" to "Disable".

■For other than Safety CPU

- When "Network Topology" is set to "Line/Star", set "Master Station Shift Setting" to "Disable".
- When "Communication Mode" is set to "Unicast", set "Master Station Shift Setting" to "Disable".
- 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", set "Master Station Shift Setting" to "Disable".
- When "Network Synchronous Communication" is set to "Synchronous", set "Master Station Shift Setting" to "Disable".
- For the RJ71GN11-T2, when "Communication Speed" under "Application Settings" is set to "100Mbps", set "Master Station Shift Setting" to "Disable".

2.5 "CC-Link IE TSN Configuration" Window

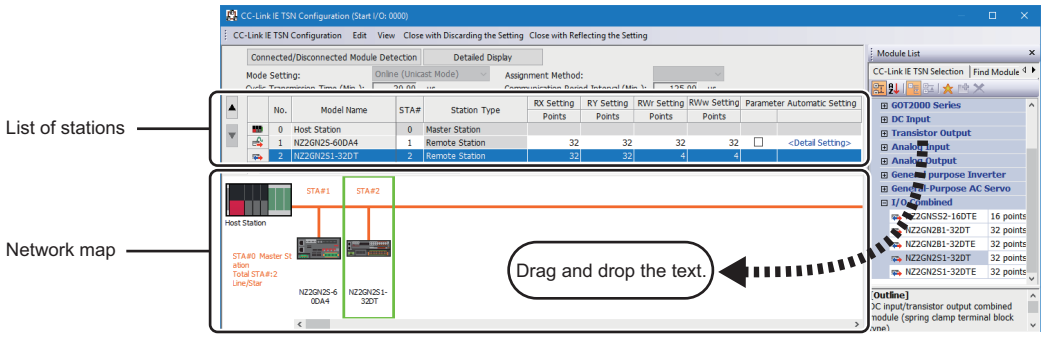
Perform the parameter setting of device stations, the detection of connected/disconnected devices, or others.

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

Parameter setting of a device station

Set parameters of device stations (such as 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]
If an error or warning message appears in the "Output" docking window, refer to the following.
MELSOFT Navigator MessageNo.

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

Precautions

In the system configuration check, the restrictions may not be checked.
Configure a network map after checking the system configuration details in the following.
MELSEC iQ-R CC-Link IE TSN User's Manual (Startup)

Setting items

- Title bar: The status of "Module Operation Mode" and "Communication Mode" is displayed like [Online (Multicast Mode)]. (☞ Page 137 Module Operation Mode, Page 136 Communication Mode)
- 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.

Item (Detailed display)	Description	Setting range
Assignment Method	Select a link device assignment method. • Points/Start: Enter the numbers of points and start numbers of link devices. • Start/End: Enter the start and end numbers of link devices.	• Points/Start • Start/End (Default: Points/Start)
Communication Period Setting (LB/LW)	Select the setting method of "Communication Period Setting LB/LW". • "Link with Master Station": "Communication Period Setting LB/LW" of stations other than the master station is interlocked with the master station settings. • Set for Each Station: "Communication Period Setting LB/LW" for stations other than the master station can be set to any desired value. ■When not extending the number of link points The setting is grayed out and fixed to "Link with RX/RY/RWr/RWw".	• Link with Master Station • Set for Each Station (Default: Link with Master Station)
No.	The number of device stations is displayed.	—
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 number of each device station connected to the network. Station numbers do not need to be set consecutively, but must be unique.	• Master station: Fixed to "0" • Device station: 1 to 120 (Default: Serial number of added stations)
Station Type	Set the station types. Select the station types same as those of the modules connected to the network.	• Master Station • Local Station • Remote Station (Default: Varies depending on the set module)
Motion Control Station	Use the profile to allow selection of target stations for motion control.	• Checked: Motion control target • Not checked: Not motion control target (Default: Not checked)
RX Setting*4 RY Setting*4	Assign RX/RY points in increments of 16. (☞ Page 21 Communications using RX, RY, RWr, and RWw) Modules with settings provided by the profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed)	• Number of points: 16 to 16384 • Start: 0H to 3FF0H • End: FH to 3FFFH (Default: Varies depending on the set module)
RWw Setting*4 RWr Setting*4	Assign RWw/RWr points in increments of 4. (☞ Page 21 Communications using RX, RY, RWr, and RWw) Modules with settings provided by the profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed)	• Number of points: 4 to 8192 • Start: 0H to 1FFCH • End: 3H to 1FFFH (Default: Varies depending on the set module)
LB Setting	Assign LB points in increments of 16 and LW points in increments of 1. (☞ Page 27 Communications using LB and LW) The setting range changes when the number of link points is extended. (☞ Page 31 Number of link points extension) Modules with settings provided by the profile are automatically set from selected models. (Excluding modules with a number of points that is not fixed)	• Number of points: 16 to 32768 • Start: 0H to 7FF0H • End: FH to 7FFFH (Default: Varies depending on the set module) ■When the number of link points is extended • Number of points: 16 to 131072 • Start: 0H to 1FFF0H • End: FH to 1FFFFH
LW Setting		• Number of points: 1 to 16384 • Start: 0H to 3FFFH • End: 0H to 3FFFH (Default: Varies depending on the set module) ■When the number of link points is extended • Number of points: 1 to 524288 • Start: 0H to 7FFFFH • End: 0H to 7FFFFH

Item (Detailed display)	Description	Setting range
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 158 PDO mapping setting)	—
IP Address	Set the IP address of a station that performs cyclic transmission.	0.0.0.1 to 223.255.255.254 (00.00.00.01 to DF.FF.FF.FE) (Default: The first to third octets have the same values as the master station, the fourth octet has a serial number from 1 to 254)
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 (00.00.00.01 to FF.FF.FF.FF) • Empty (Default: empty[*5])
Default Gateway	Set the default gateway address to connect to the external network.	• 0.0.0.1 to 223.255.255.254 (00.00.00.01 to DF.FF.FF.FE) • Empty (Default: empty)
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 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 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 • Error Invalid Station (Default: No setting, master station is fixed as empty)
Network Synchronous Communication[*2]	Set whether to synchronize each device station with network synchronous communication.	• Synchronous • Asynchronous (Default: Asynchronous)
Communication Period Setting RX/RY/RWr/RWw	When multiple communication cycles are set, set the communications cycle of each device station. (☞ Page 50 Communication cycles coexistence)	• Basic Period • Normal-Speed • Low-Speed (Default: Basic Period)
Communication Period Setting LB/LW	■When extending the number of link points Set the LB/LW communication period. (☞ Page 31 Number of link points extension)	
	■When not extending the number of link points Cannot be set. (☞ Page 31 Number of link points extension)	• Master station: Grayout • Other than master station: Grayout with indication of the same value as "Communication Period Setting RX/RY/RWr/RWw" (Default: Varies depending on the setting)
Station Information	■Alias Enter the name of a device if required. The name entered is displayed in "Network Status" of 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 module.
CC-Link IE TSN Class	Set whether each device station is a CC-Link IE TSN Class B device or a CC-Link IE TSN Class A device.[*4]	• CC-Link IE TSN Class B • CC-Link IE TSN Class A (Default: Varies depending on the device)

Item (Detailed display)		Description	Setting range
"CC-Link IE TSN Configuration Information" docking window	Cyclic Transmission Time (Min.)	The value that is calculated from the number of device stations and the number of link device points is displayed. Use the displayed value as a guide.*1*3 The displayed value differs depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings" even when the number of device stations and link device points are the same. (☞ Page 352 Communication cycle intervals) The displayed value can be used for "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings". If cyclic transmission is not performed while the displayed value is set, 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 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 (RJ71GN11-T2 only): Number of device stations × 20μs This cannot be checked when the RJ71GN11-T2 is used, the communication speed is 1Gbps, the version of engineering tool is 1.085P or earlier, 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. Check it with 'Cyclic transmission time (calculation value)' (SW0073). (☞ Page 330 List of link special register (SW))	
	Communication Period Interval (Minimum value)	The value that is calculated from the number of device stations and the number of link device points is displayed. Use the displayed value as a guide.*1*3 The displayed value differs depending on "TSN HUB Setting" of "Connection Device Information" under "Basic Settings" even when the number of device stations and link device points are the same. (☞ Page 352 Communication cycle intervals) The displayed value can be used for "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings". If cyclic transmission is not performed while the displayed value is set, set a value obtained by adding 10% as follows. • Calculation formula: Communication cycle interval (minimum value) + Cyclic transmission time (minimum value) × 0.1 This cannot be checked when the RJ71GN11-T2 is used, the communication speed is 1Gbps, the version of engineering tool is 1.085P or earlier, 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. Check it with 'Communication cycle interval (calculation value)' (SW0072). (☞ Page 330 List of link special register (SW))	

*1 When the settings cannot be determined with the module parameter and in the "CC-Link IE TSN Configuration" window, a hyphen or incorrect calculation result may be displayed.

*2 This speed can be used for the RJ71GN11-T2 with a firmware version of "10" or later. An error occurs if "Synchronous" is set for a module that does not support it.

*3 If "CC-Link IE TSN Class Setting" of a general CC-Link IE TSN module added to the list of stations in the "CC-Link IE TSN Configuration" window is set to CC-Link IE TSN Class A, and the minimum values of 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.

*4 If the number of link device points assigned to the CC-Link IE TSN Class A station exceeds the limit, a link device number of points error (error code 3160H) will occur. For the number of points that can be assigned to CC-Link IE TSN Class A device stations, refer to the following.
☞ Page 145 Number of link device points that can be assigned to a CC-Link IE TSN Class A device station

*5 If "Subnet Mask" is set in "Station No./IP Address Setting" of "Required Settings", the same value is set as default.

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.

■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.

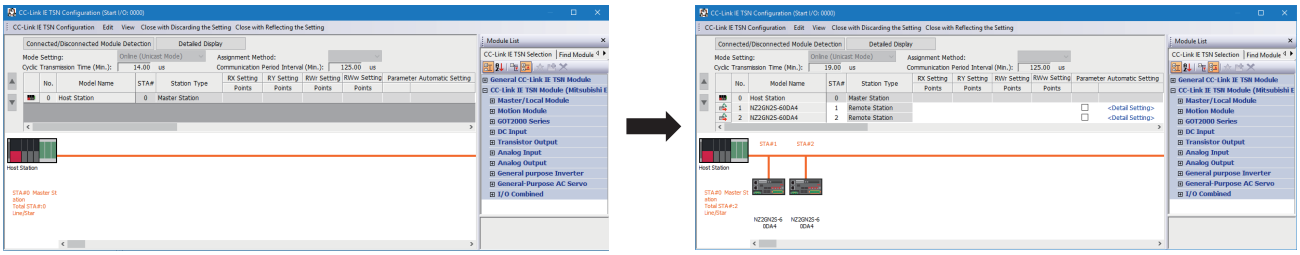
- (Number of points of "RY Setting" ÷ 8) + (Number of points of "RWw Setting" × 2) ≤ 1912
- (Number of points of "RX Setting" ÷ 8) + (Number of points of "RWr Setting" × 2) ≤ 1872

Connected/Disconnected Module Detection

Connected device stations are detected and displayed on the "CC-Link IE TSN Configuration" window.
When setting up a network system, it is easier to create parameters when changing the network system configuration.
If this function is performed immediately after a device station is connected, the information of the connected device may not be correctly read out. In this case, retry the operation.
To detect connected or disconnected devices using the RJ71GN11-SX, check the following items.

Item	RJ71GN11-SX
Firmware version	"04" or later
Engineering tool	1.110Q or later

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 143 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.

- The RJ71GN11 is not in "Online". (☞ Page 137 Module Operation Mode)
- "Link Direct Device Setting" of the CPU parameter is not "Extended Mode (iQ-R Series Mode)".
- When multiple numbers of the RJ71GN11 are mounted on the base unit, and the module that has the smallest slot number is a local station, the local station is not in the "Online", or that station is in data link error.
- The actual system configuration is incorrect. (An overlapping IP address or others)
- The version of the engineering tool is "1.082L" or earlier and the data link of the master station is incorrect.
- The firmware version of the RJ71GN11-T2 is "14" or earlier and the data link of the master station is incorrect.

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 numbers 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" When the model name and function version match and the station type does not match for devices with the following settings, the configuration set in the device is also inherited as well as the settings inherited when the model name, function version, and station type are mismatched. • Extension module configuration • AnyWireASLINK configuration under the bridge module • CC IE Field configuration under the bridge module The PDO mapping settings that were set on the device before replacement are cleared. The parameter information of "Parameter of Device Station" held by the device before replacement is cleared. If only the station number is mismatched, only the station number is reflected, and all the settings are inherited. (Note that if the station number of the detected device has not been set, the station number of the device before replacement is inherited.) The mode setting changes to the detected mode. If a device station that holds the following configuration is to be replaced, the configuration information held by the device before replacement will be cleared. • Extension module configuration • AnyWireASLINK configuration under the bridge module • CC IE Field configuration under the bridge module	The station number takes over the station number 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 number, and station type are set. (However, if the station number of the detected device has not been set, the station number is also set to the default.[*1]) The mode setting changes to the detected mode.	A station number is automatically numbered as the youngest unused station number 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 the "CC-Link IE TSN Configuration" window of the master station to the same value as the station number set for the device station.
· Change the station number of the device station to the same value as the station number set in the "CC-Link IE TSN Configuration" window of the master station.

Precautions

- When the station number is set in the device station using the CC-Link IE TSN structure and parameters are written in CPU modules, the station number 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 number 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.
- If automatic detection is performed while the CPU module is running, the scan time of the programmable controller may increase depending on the system configuration.

Point

Register the profile of the device to be detected 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.
- This function is not available for local stations.

Parameter processing of device station

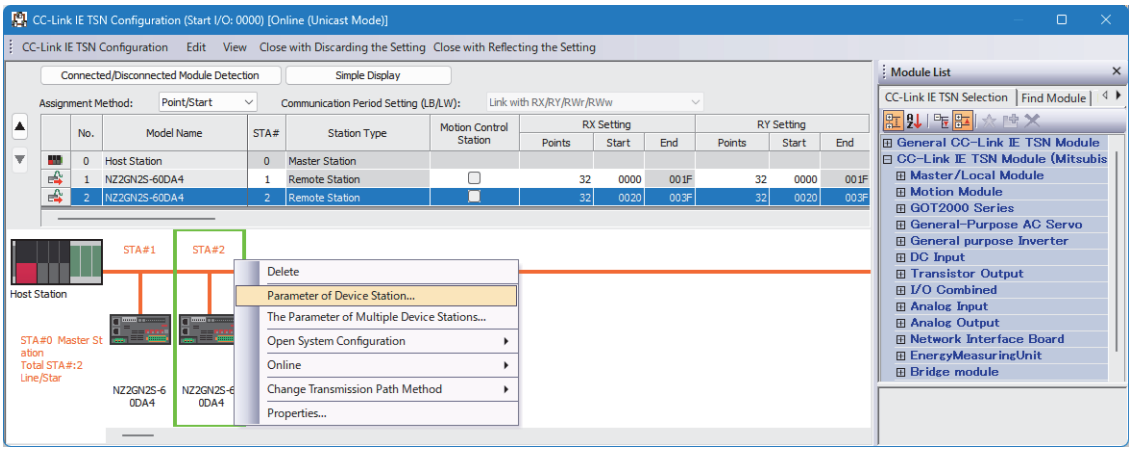
The processing is to read and save the parameters from the device station, and to write the saved parameters to the device station.

Also, it automatically sets parameters of the device station from the master station. (☞ Page 117 Device station parameter automatic setting)

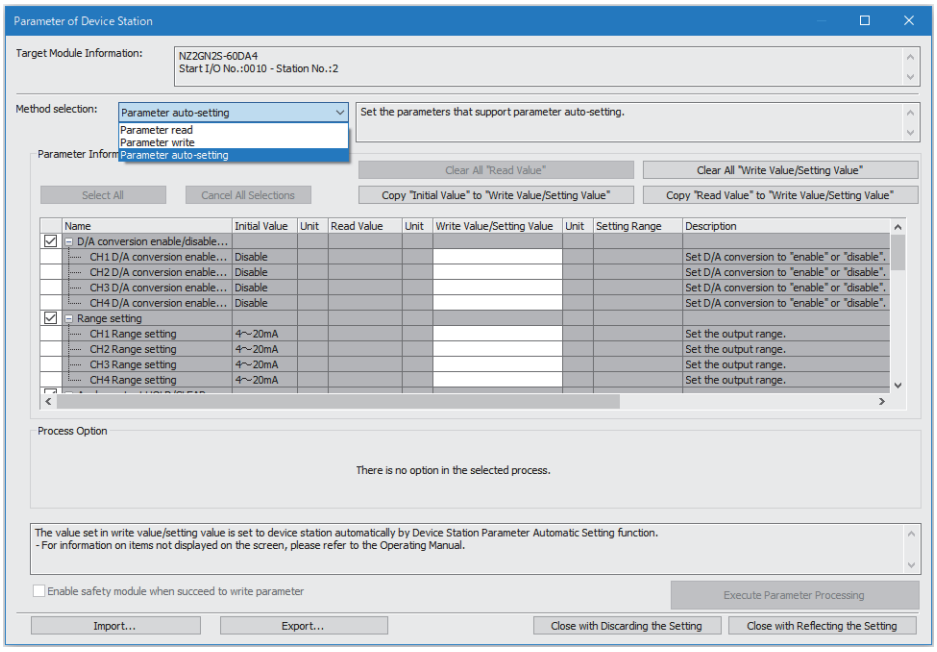
When performing parameter processing for the main module to which an extension module is connected, check the following.

Item	RJ71GN11-T2	RJ71GN11-SX
Firmware version	"12" or later	"04" or later
Engineering tool	1.080J or later	1.110Q or later

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Target module ⇨ [Basic Settings] ⇨ [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 117 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		Imports the check status of the parameter information and the read value/write value from the CSV file.
[Export] button		Exports the check status of the parameter information and the read value/write value to the 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 number that matches the saved parameters in the "CC-Link IE TSN Configuration" window, the 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 settings and apply it.	The parameters in the "CC-Link IE TSN Configuration" window return to the default settings.
	Change the "Setting Method of Basic/Application Settings" under "Parameter Setting Method" in "Required Settings" from "Parameter Editor" to "Program".	
	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 number.	Parameters are overwritten.
Navigation window	Import the data of a simple motion module to take network settings.	
MELSOFT Navigator	Reflect the parameter.	Saved parameters are cleared.

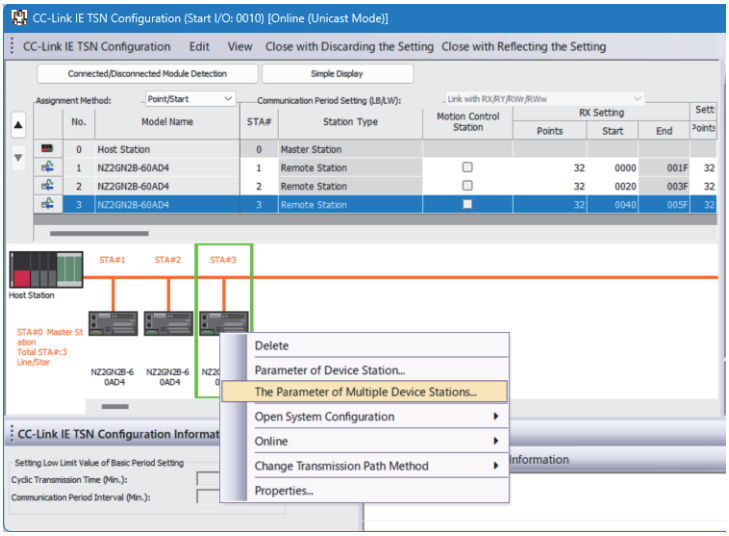
Parameter processing for multiple device stations

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

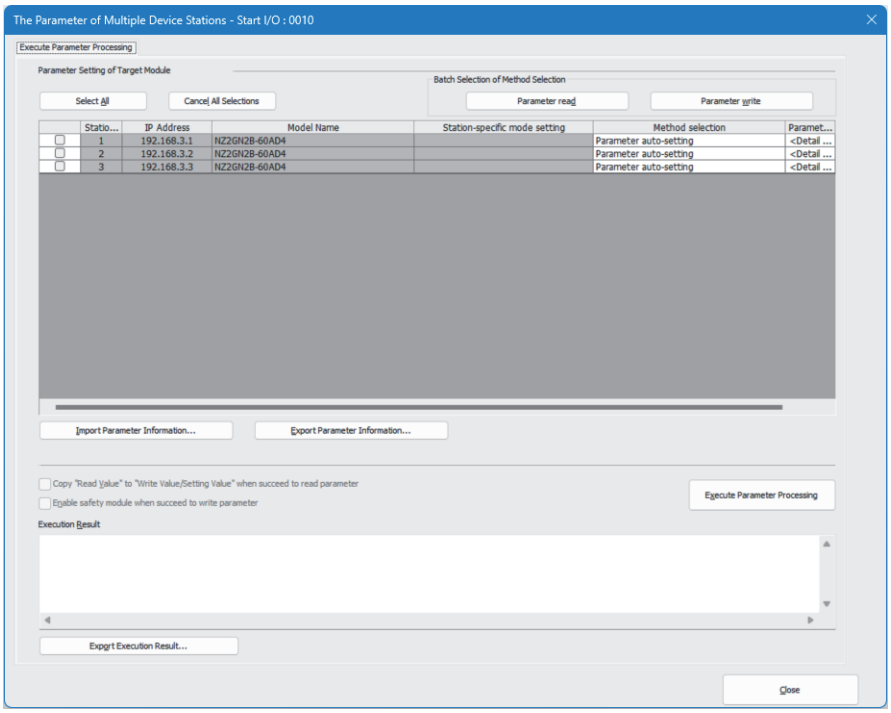
When processing parameters for multiple device stations, check the following.

Item	RJ71GN11-T2	RJ71GN11-SX
Engineering tool	1.115V or later	

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ 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	Selects all the checkboxes in the target device list.
[Cancel All Selections] button	Deselects all checkboxes in the target device list.

Item		Description
Batch Selection of Method Selection	[Parameter read] button	Sets the "Method selection" of the device stations whose checkboxes are selected in the target device list to "Parameter read".
	[Parameter write] button	Sets the "Method selection" of the device stations whose checkboxes are selected in the target device list to "Parameter write".
Target device list	Checkbox	Selects the target device stations to process parameters or import/export parameter information in CSV format.
	Station No.	The device station information is displayed.
	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 117 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	Can be checked by opening the "Parameter of Device Station" window for the device station.
[Import Parameter Information] button		Imports a CSV file that was output from the "Parameter of Device Station" window or this window to the device stations selected in the checkboxes.
[Export Parameter Information] button		Exports the parameter information of the device stations whose checkboxes are selected as a CSV file.
Copy "Read Value" to "Write Value/Setting Value" when succeed to read parameter*1		When the parameter is read, the read value of the device station is copied to the write value/setting value.
Enable safety module when succeed to write parameter*2		When parameters are written, safety module validation of the device station is performed.
Execution Result		Displays the processing result.
[Export Execution Result] button		Outputs the content displayed in "Execution Result" to a text file.

*1 This item can be selected when "Method selection" of a device station whose checkbox is selected is "Parameter read".

*2 This item can be selected when a device station whose checkbox is selected supports safety communications and "Method selection" is "Parameter write".

Procedure

1. Select the checkboxes of the device stations to execute parameter processing and select the "Method selection".
2. Set the required items.
3. Click "Execute Parameter Processing" to write the parameter information to the device station.

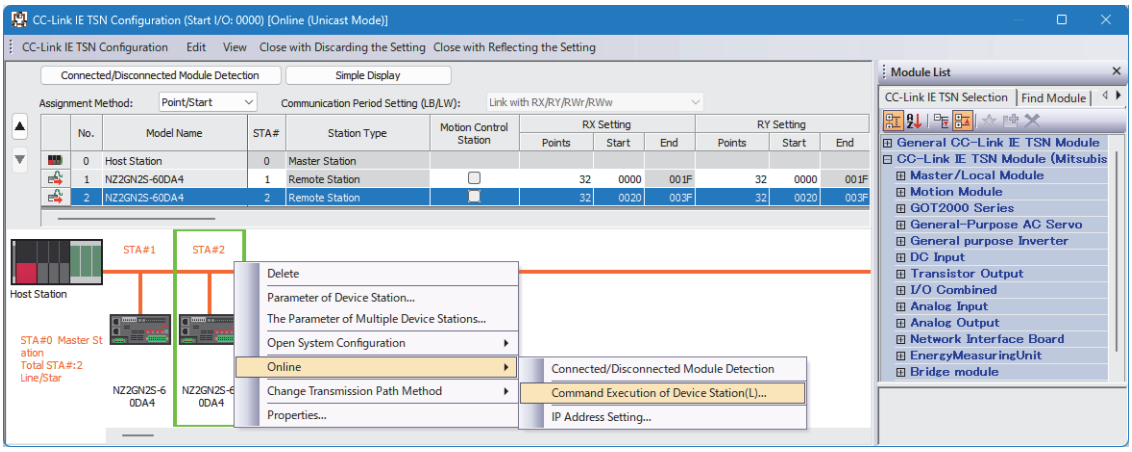
Command execution to device stations

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

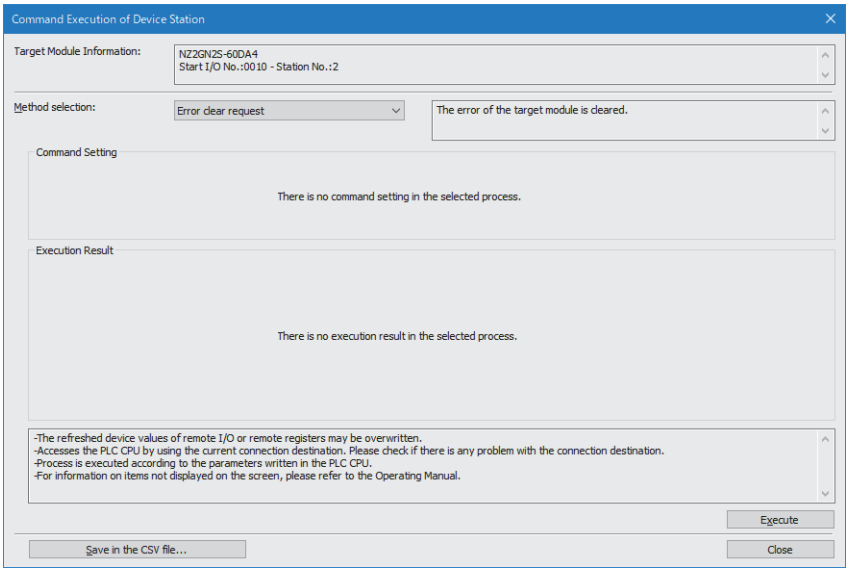
When performing command execution for the main module to which an extension module is connected, check the following.

Item	RJ71GN11-T2	RJ71GN11-SX
Firmware version	"12" or later	"04" or later
Engineering tool	1.080J or later	1.110Q or later

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



Select and right-click the device station, and 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 station

This function sets the IP address of the device station connected to the master station.

When setting the IP address of the device station and performing indicator display, check the following.

Item	RJ71GN11-T2	RJ71GN11-SX
Firmware version	"18" or later	"04" or later
Engineering tool	1.100E or later	1.110Q or later
Device station	📖User's manual for the device station used	

Point

Register the profile of the device to be detected 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

Extension-side devices that do not have an IP address are not detected and are therefore not displayed.

IP address setting

Set the IP address of the device station connected to the master station.

Indicator display

This setting allows starting and stopping the indicator display of device stations connected to the master station.

The device station that started indicator display can be checked on the LED indicator. For the status of the LED indicator, refer to the user's manual for the device station used.

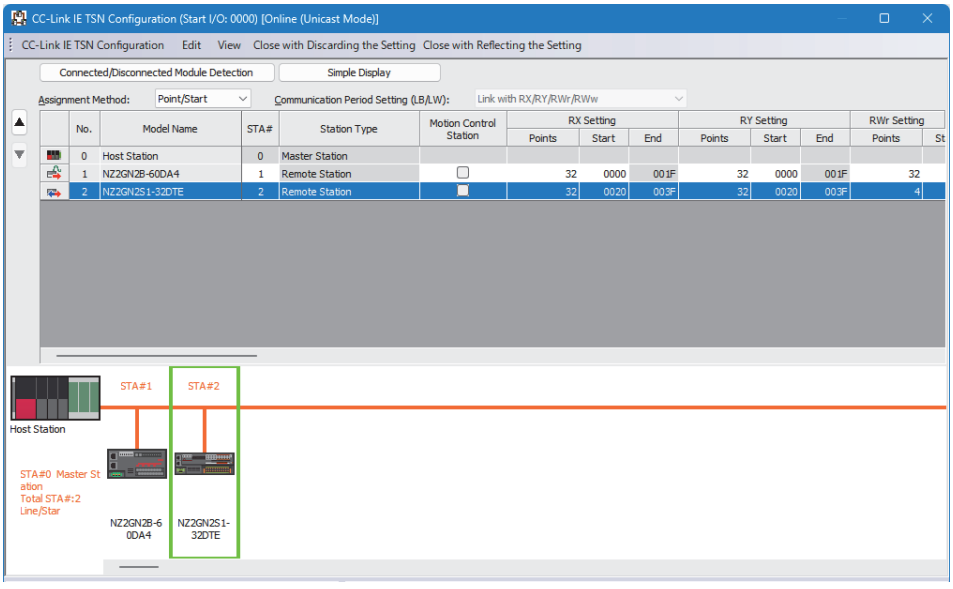
The indicator display allows checking which device station is in the actual network configuration.

Setting method

Operating procedure

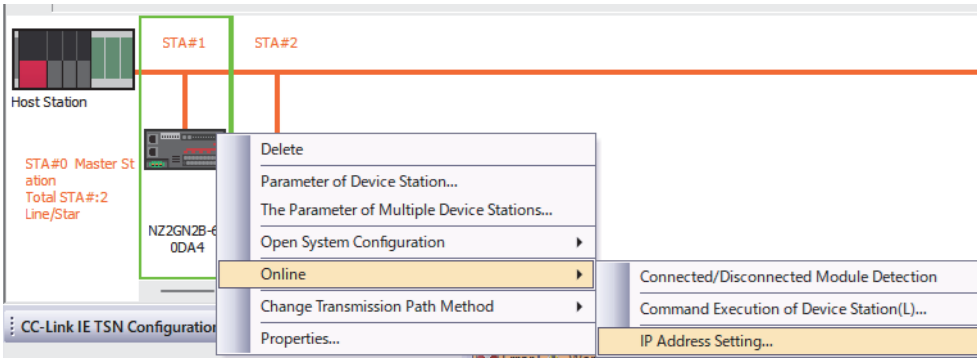
1. Connect the engineering tool to the master station. For connection to the device station port, specify the master station on the "Specify Connection Destination Connection" window in the engineering tool.
2. Open the "CC-Link IE TSN Configuration" window.

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



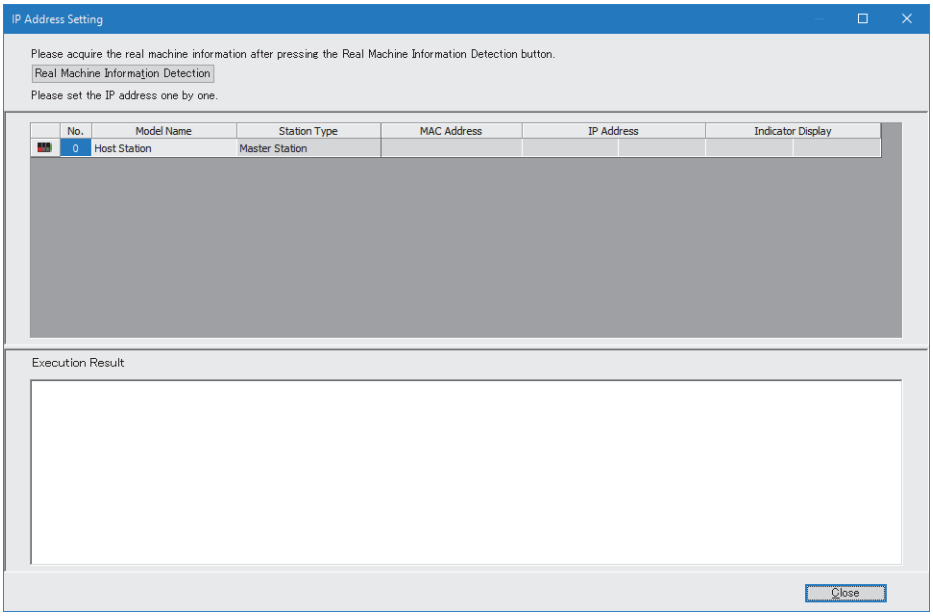
3. Open the "IP Address Setting" window.

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



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

Check whether the device station is in a state where the IP address can be set or the indicator display can be started.



5. Follow the displayed message and click the [Execute] button.

Point

In the following cases, actual device information cannot be detected.

- "Module Operation Mode Setting" under "Application Settings" of the RJ71GN11 is not in the online mode.
- In the CPU parameters of the CPU modules, "Link Direct Device Setting" of "Memory/Device Setting" is not "Extended Mode (iQ-R Series Mode)".
- When multiple numbers of the RJ71GN11 are mounted on the base unit, and the module that has the smallest slot number is a local station, check whether "Module Operation Mode Setting" under "Application Settings" of that local station is set to online mode, or that station is in data link error.
- There is a problem with the actual system configuration, such as duplication of IP addresses between the master station and device stations.

6. Follow the displayed message and click the [OK] button.

7. The actual device information of the device station connected to the master station is displayed. The execution results are displayed at the bottom of the window.

8. Set the IP address and perform indicator display.

Point

For the operation procedures for IP address setting and indicator display, refer to the following.

User's manual for the device station used

Precautions

- If, after clicking the [Real Machine Information Detection] button, the system configuration is changed and IP address setting of device stations or indicator display is performed, normal completion may not occur. If the system configuration has been changed, click the [Real Machine Information Detection] button again and then perform device station IP address setting or indicator display.
- If indicator display has been started, be sure to stop indicator display or power off and on the device station. The LED indication on the device station will continue indicating that the indicator is running until indicator display is stopped or the device station is powered off and on.

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

By combining this with parameter processing for multiple device stations, setting parameters for each device station, as well as station list information, becomes easier. (☞ Page 151 Parameter processing for 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 an extension module such as the multi-axis servo amplifier having PDO mapping information is connected to the RJ71GN11-T2, the maximum number of connectable modules varies depending on the number of axes.

Ex.
When a multi-axis servo amplifier with three axes is connected, the RJ71GN11-T2 can connect up to 40 stations which is determined by divided 120 (the maximum number of connectable stations) by 3 (the number of axes).

"Batch Setting of PDO Mapping"

Set the default PDO mapping to the target device stations at once.

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 confirmation message appeared, then click the [OK] button.
3. When the completion window of "Batch Setting of PDO Mapping" is appeared, click the [OK] button.

■Cases where the PDO mapping is not set

The PDO mapping is not set to the target device stations in the following cases:

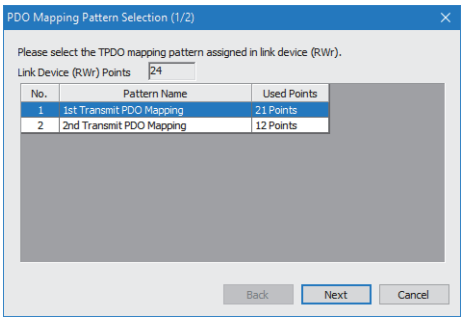
- A station that can be set the PDO mapping does not exist.
- The numbers of points of "RWr Setting" and "RWw Setting" are less than the points used in the default pattern.
- The setting is performed when "RWr Setting" and "RWw Setting" are blanks, and the checkbox of "Batch set default pattern only when PDO mapping is unset device station" is not selected.

"PDO Mapping Setting"

Set the PDO mapping of the target device stations individually.

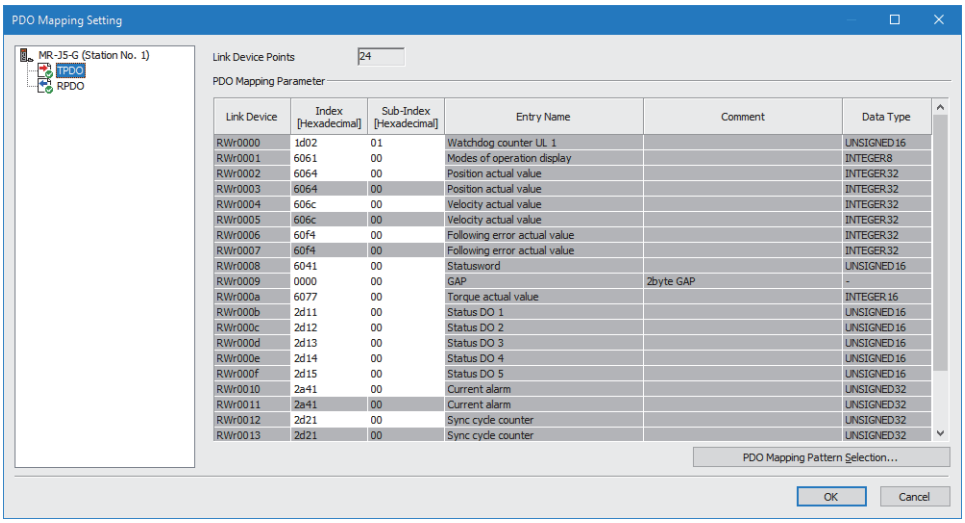
[Basic Settings] ⇨ [Network Configuration Settings] ⇨ [PDO Mapping Setting] ⇨ Double-click [Detail Setting] of the target device station.

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



2. Select a PDO mapping pattern of RPDO assigned in 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".

■Cases where the PDO mapping is not set

The PDO mapping is not set to the target device stations in the following cases:

- The number of points in "RWr Setting" is one or more points and an entry is not assigned in TPDO.
- The number of points in "RWw Setting" is one or more points and an entry is not assigned in RPDO.
- A line where "Sub-Index" is blank though a value has been entered in "Index" exists.
- Entries are assigned out of the link device range.
- The same entry is assigned to the multiple link devices.

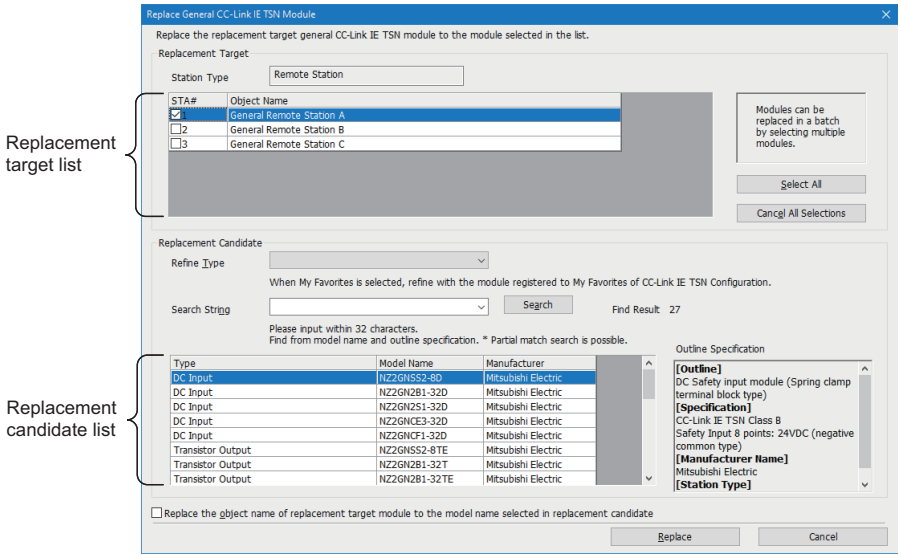
Change of module

This section describes how to replace a general CC-Link IE TSN module with a module (device station) and vice versa.

Replacement of CC-Link IE TSN module

Replace a general CC-Link IE TSN module with a module (device station).

Right-click a general CC-Link IE TSN module from the list of stations on the "CC-Link IE TSN Configuration" window. ⇨ [Change Module] ⇨ Click [Replace General CC-Link IE TSN Module].



Item		Description
Replacement Target	Station Type	The station type of the general CC-Link IE TSN module selected from the list of stations on the "CC-Link IE TSN Configuration" window is displayed.
	Replacement target list	General CC-Link IE TSN modules whose station types are the same as the general CC-Link IE TSN modules selected from the list of stations on the "CC-Link IE TSN Configuration" window are displayed. By selecting the checkboxes, multiple general CC-Link IE TSN modules can be replaced.
	[Select All] button	Selects all checkboxes in the replacement target list.
	[Cancel All Selections] button	Deselects all checkboxes in the replacement target list.
Replacement Candidate	Refine Type	Narrows the replacement candidates in the list by types.
	Search String	Searches the input character string from models and outline specifications.
	[Search] button	The replacement candidate list is displayed on conditions that set by "Refine Type" and "Search String".
	Replacement candidate list	The modules to be replaced are displayed.
	Outline Specification	The outline specifications of the module selected in the replacement candidate list are displayed.
	Replace the object name of replacement target module with the model name selected from replacement candidate	By selecting the checkbox, the object name of the replacement target module is replaced with the module model name selected from the replacement candidate.
	[Replace] button	Replaces the module selected in the replacement target list with the module selected in the replacement candidate list.
	[Cancel] button	Cancels the replacement processing and close the window.

Change of arbitrary device station

Replace a module (device station) with a general CC-Link IE TSN module of the same station type.

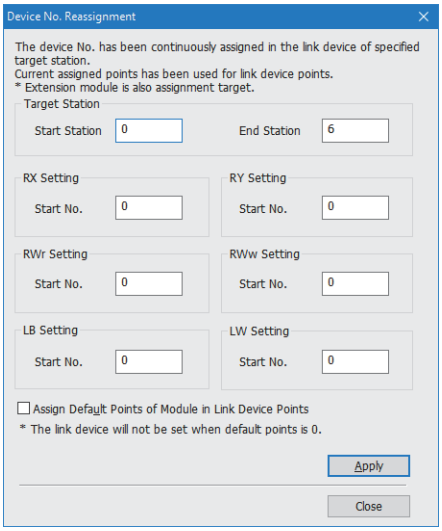
Right-click a device station in the list of stations on the "CC-Link IE TSN Configuration" window. ⇨ [Change Module] ⇨ Click [Change to General CC-Link IE TSN Module].

Device number reassignment

Assign the device numbers successively to the link device of the specified target station.
For the number of link device points, the points assigned in the list of stations on the "CC-Link IE TSN Configuration" window are used.

1. Display "Device No. Reassignment".

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



2. Enter the values in the "Device No. Reassignment" and click the [Apply] button.

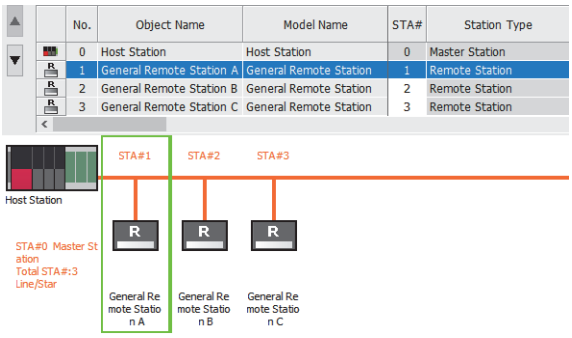
Point

When the [Apply] button is clicked with the checkbox of "Assign Default Points of Module in Link Device Points" selected, the default points of each module are reassigned. However, if a default number of points is 0, the number of points of corresponding link device is not assigned.

Object name display

The object name of the module displayed in the list of stations on the "CC-Link IE TSN Configuration" is displayed.

[View] ⇨ [Object Name Display]

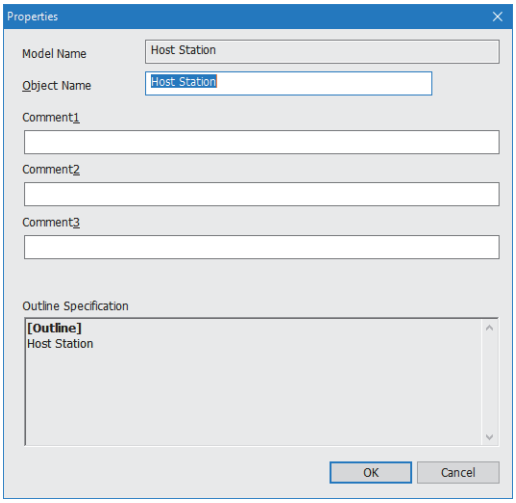


Change of object name

Object names can be changed to any desired names.

Changing object names helps users to identify each module on the "CC-Link IE TSN Configuration" window.

1. In the network map on the "CC-Link IE TSN Configuration" window, right-click the module whose object name is changed 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.

Cyclic transmission program

For a cyclic transmission program, configure an interlock with the following module labels (link special relay (SB), link special register (SW)).

- 'Data link error status of own station' (SB0049)
- 'Data link status of each station' (SW00B0 to SW00B7)

Program using safety communications

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

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

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

- Communication Example of Safety Communications (☞ Page 191 Communication Example of Safety Communication (RJ71GN11-T2))

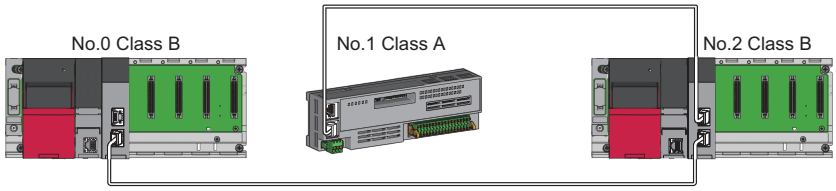
3.2 Communication Example with CC-Link IE TSN Class A Remote Station (RJ71GN11-T2)

When "Communication Mode" is set to "Multicast", the local station cannot obtain data output by the CC-Link IE TSN Class A remote station. Use the following communication examples so that the local station can obtain data output by the CC-Link IE TSN Class A remote station.

System configuration

The following is an example of communications between the CC-Link IE TSN Class B master station (station No.0), CC-Link IE TSN Class A remote station (station No.1), and local station (station No.2).

- Power supply module: R61P
- CPU module: R04CPU
- Master/local module: RJ71GN11-T2
- Remote module: CC-Link IE TSN Class A remote station



No.0: CC-Link IE TSN Class B master station (station No.0)
No.1: CC-Link IE TSN Class A remote station (station No.1)
No.2: CC-Link IE TSN Class B local station (station No.2)

Link device assignment

For RX and RWr, 256 points are assigned to each station.

For RY and RWw, 256 points are assigned to a remote station and 512 points are assigned to a local station.

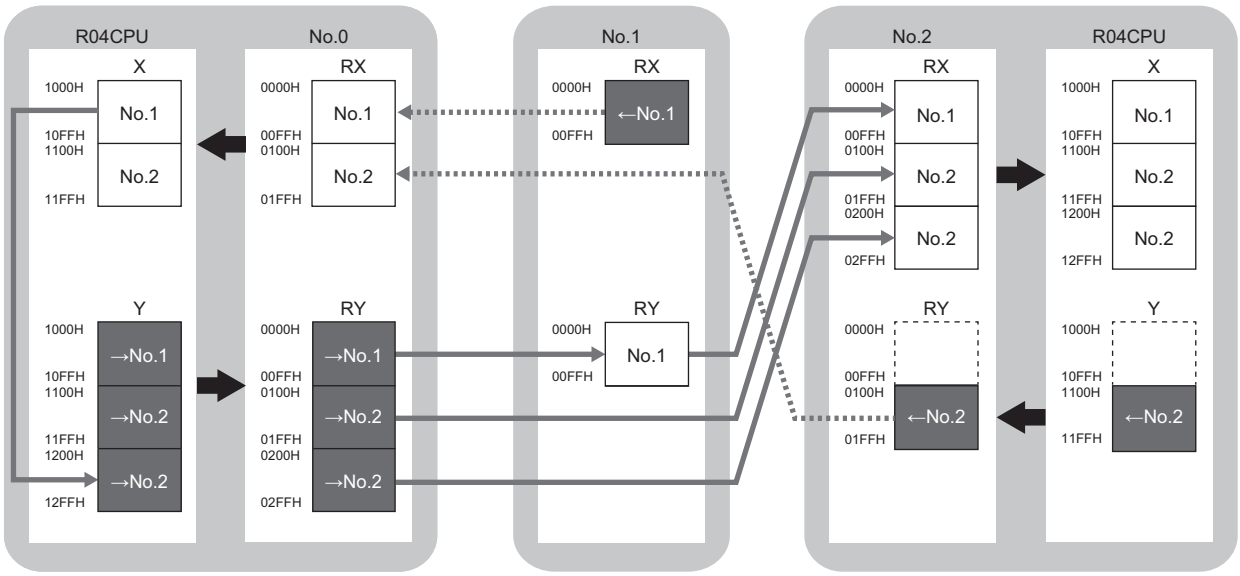
Communication Mode

In "Communication Mode" under "Application Settings", set "Multicast" (Default).

■RX/RY assignment

Each of the following No.0 to No.2 represents a station number.

- No.0: Master station (station No.0)
- No.1: Remote station (station No.1)
- No.2: Local station (station No.2)



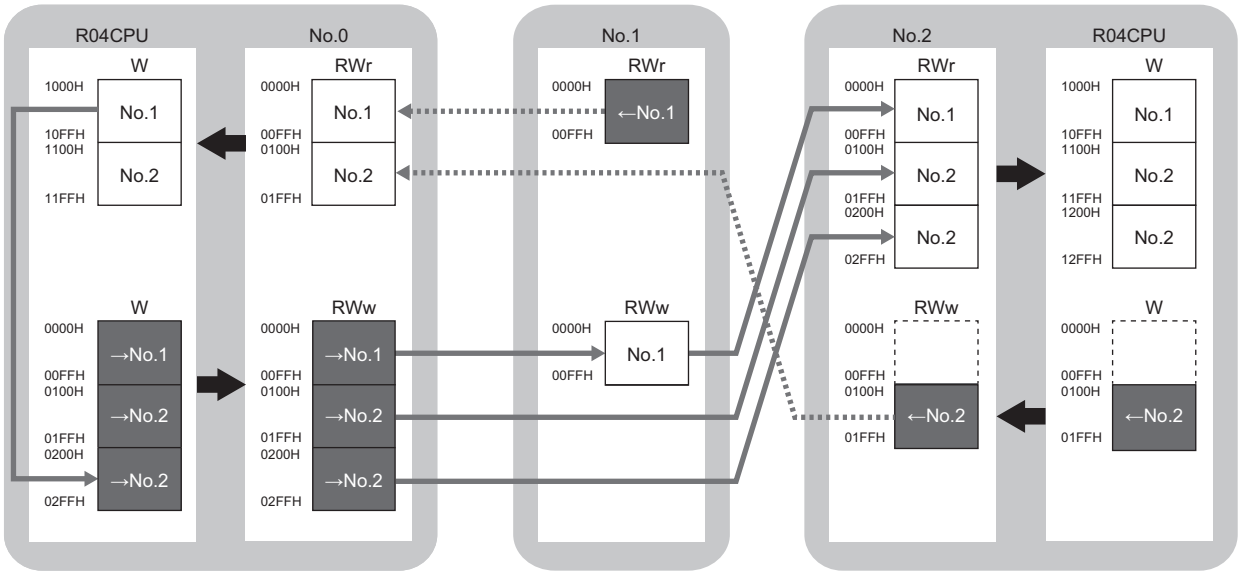
→No.1, →No.2: Send range: to station No.1, send range: to station No.2

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

■RWr/RWw assignment

Each of the following No.0 to No.2 represents a station number.

- No.0: Master station (station No.0)
- No.1: Remote station (station No.1)
- No.2: Local station (station No.2)



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

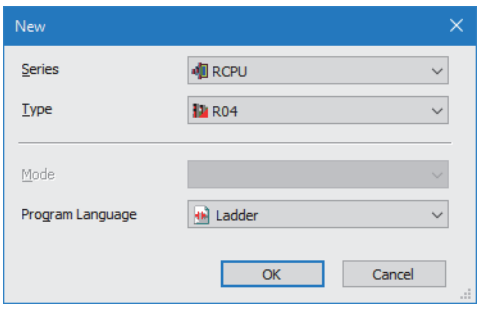
←No.1, ←No.2: Send range: from station No.1, send range: from station No.2

Setting in the master station

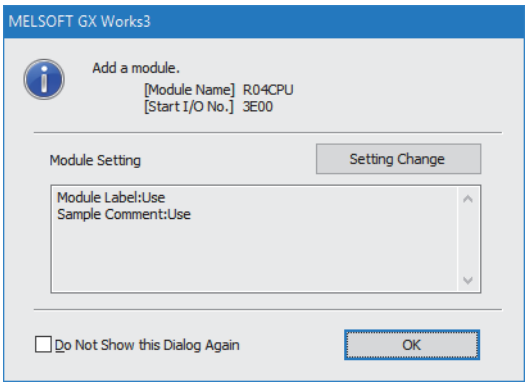
Connect the engineering tool to the CPU module on the master station and set the parameters.

1. Set the CPU module as follows.

[Project] ⇨ [New]



2. Click the [Setting Change] button to use the module label.



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

[CPU Parameter] ⇨ [Memory/Device Setting] ⇨ [Link Direct Device Setting] ⇨ [Link Direct Device Setting]

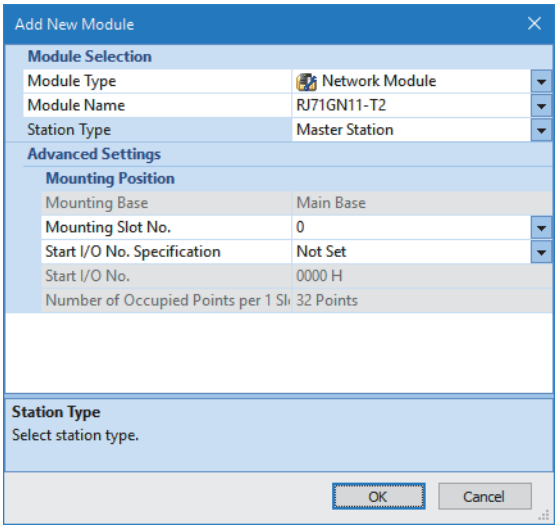
Item	Setting
Link Direct Device Setting	
Link Direct Device Setting	Extended Mode (iQ-R Series Mode)

Restriction

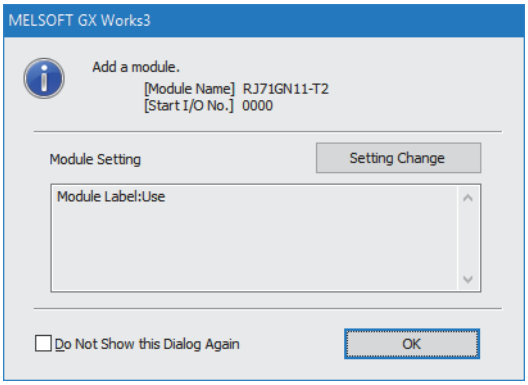
To write module parameters of the RJ71GN11-T2 on a CPU module using an engineering tool, set "Link Direct Device Setting" to "Extended Mode (iQ-R Series Mode)".
If "Link Direct Device Setting" is "Q Series Compatible Mode", "Write to PLC" cannot be executed.

4. Set the RJ71GN11-T2 as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Right-click ⇨ [Add New Module]

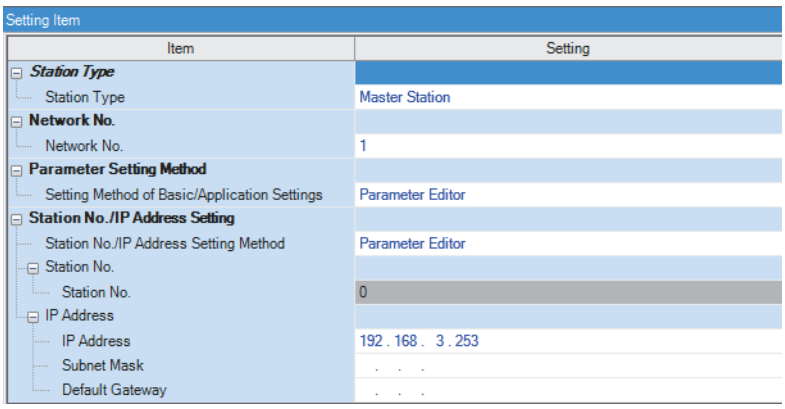


5. Click the [OK] button to add a module label of the RJ71GN11-T2.



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

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Required Settings]



7. Set the items in "Basic Settings" as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings]

Setting Item

Item	Setting
Network Configuration Settings	
Network Configuration Settings	<Detailed Setting>
Refresh Settings	
Refresh Settings	<Detailed Setting>
Network Topology	
Network Topology	Line/Star
Communication Period Setting	
Basic Period Setting	
Setting in Units of 1us	Not Set
Communication Period Interval Setting (Do not Set it in Units of 1us)	4000.00 us
Communication Period Interval Setting (Set it in Units of 1us)	1000.00 us
System Reservation Time	200.00 us
Cyclic Transmission Time	3100.00 us
Transient Transmission Time	700.00 us
Multiple Period Setting	
Normal-Speed	x4
Low-Speed	x16
Connection Device Information	
Authentication Class Setting	Mixture of Authentication Class B/A or Authentication Class A Only
TSN HUB Setting	Not to Use TSN HUB
Device Station Setting	
Disconnection Detection Setting	4 times

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

8. Set the network configuration as follows. (Set the IP address for each station.)

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Network Configuration Settings] ⇨ [Detailed Setting]

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting			RY Setting			RWr Setting			RWw Setting			LB Setting			LW Setting		
					Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End
0	Host Station	0	Master Station														512	0000	01FF	512	0000	01FF
1	General Remote Station	1	Remote Station	☐	256	0000	00FF	256	0000	00FF	256	0000	00FF	256	0000	00FF						
2	RJ71GN11-T2	2	Local Station	☐	256	0100	01FF	512	0100	02FF	256	0100	01FF	512	0100	02FF	512	0200	03FF	512	0200	03FF



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

10. Set the refresh settings as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Refresh Settings] ⇨ [Detailed Setting]

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	4096	00000	00FFF		Module Label				
-	SW	4096	00000	00FFF		Module Label				
1	RX	512	00000	001FF		Specify Device	X	512	01000	011FF
2	RY	768	00000	002FF		Specify Device	Y	768	01000	012FF
3	RWw	768	00000	002FF		Specify Device	W	768	00000	002FF
4	RWr	512	00000	001FF		Specify Device	W	512	01000	011FF
5	LB	1024	00000	003FF		Specify Device	B	1024	00000	003FF
6	LW	1024	00000	003FF		Specify Device	W	1024	01800	01BFF

11. Set the items in "Application Settings" as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Application Settings]

Setting Item

Item	Setting
Communication Speed	
Communication Speed	100Mbps
Supplementary Cyclic Settings	
Station-based Block Data Assurance	Enable
I/O Maintenance Settings	
Output Hold/Clear Setting during CPU STOP	Hold
Data Link Error Station Setting	Clear
Output Mode upon CPU Error	Clear
Transient Transmission Group No.	
Transient Transmission Group No.	0
Communication Mode	
Communication Mode	Multicast
Parameter Name	
Parameter Name	
Dynamic Routing	
Dynamic Routing	Enable
Event Reception from Other Stations	
Event Reception from Other Stations	Enable
Module Operation Mode	
Module Operation Mode	Online
Security	
IP Filter Settings	
IP Filter	Not Use
IP Filter Settings	<Detailed Setting>
Interlink Transmission Settings	
Interlink Transmission Settings	<Detailed Setting>

12. Click the [Apply] button.

13. Write the set parameters to the CPU module on the master station. Then, reset the CPU module or power off and on the system.

[Online] ⇨ [Write to PLC]

Point

In the program example, default values are used for parameters that are not shown above. For the parameters, refer to the following.

☞ Page 120 PARAMETER SETTINGS

Settings in the remote stations

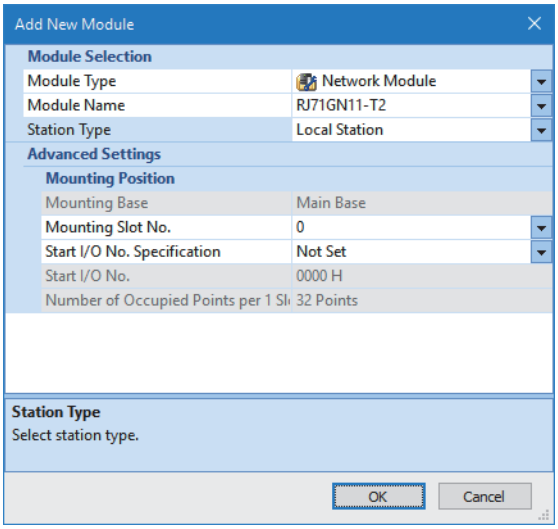
Set the setting of the IP address set in "Network Configuration Settings" of the master station.

Settings in the local stations

Connect the engineering tool to the CPU module on the local station and set parameters.

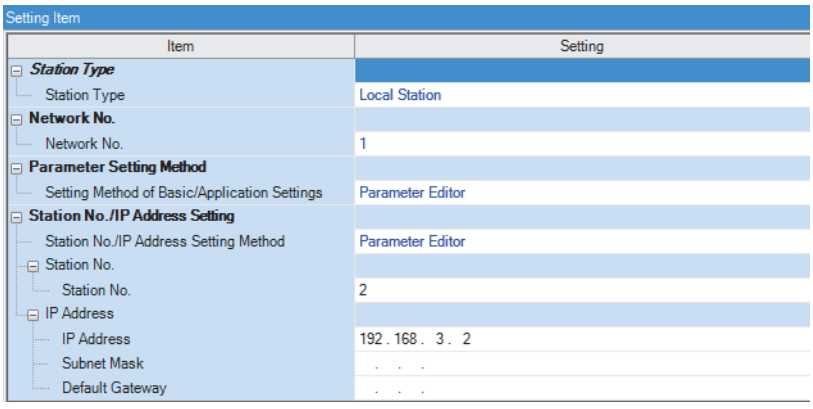
1. Set the CPU module and add the module labels of the CPU module. The setting method of the CPU module and addition method of the module label are the same as those of the master station. (☞ Page 167 Setting in the master station)
2. Set the RJ71GN11-T2 as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Right-click ⇨ [Add New Module]



3. Set to use the RJ71GN11-T2 module label. The addition method of the module label is the same as that of the master station. (☞ Page 167 Setting in the master station)
4. Set the items in "Required Settings" as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Required Settings]



5. Set the refresh settings as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Refresh Settings] ⇨ [Detailed Setting]

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	4096	00000	00FFF		Module Label				
-	SW	4096	00000	00FFF		Module Label				
1	RX	768	00000	002FF		Specify Device	X	768	01000	012FF
2	RY	512	00000	001FF		Specify Device	Y	512	01000	011FF
3	RWw	512	00000	001FF		Specify Device	W	512	00000	001FF
4	RWr	768	00000	002FF		Specify Device	W	768	01000	012FF
5	LB	1024	00000	003FF		Specify Device	B	1024	00000	003FF
6	LW	1024	00000	003FF		Specify Device	W	1024	01800	01BFF

6. Set the items in "Application Settings" as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Application Settings]

Setting Item

Item	Setting
Communication Speed	
Communication Speed	100Mbps
Supplementary Cyclic Settings	
I/O Maintenance Settings	
Output Hold/Clear Setting during CPU STOP	Hold
Data Link Error Station Setting	Clear
Output Mode upon CPU Error	Clear
Transient Transmission Group No.	
Transient Transmission Group No.	0
Parameter Name	
Parameter Name	
Dynamic Routing	
Dynamic Routing	Enable
Module Operation Mode	
Module Operation Mode	Online
Security	
IP Filter Settings	
IP Filter	Not Use
IP Filter Settings	<Detailed Setting>

7. Click the [Apply] button.

8. Write the set parameters to the CPU module on the local station. Then, reset the CPU module or power off and on the system.

[Online] ⇨ [Write to PLC]

Point

In the program example, default values are used for parameters that are not shown above. For the parameters, refer to the following.

☞ Page 120 PARAMETER SETTINGS

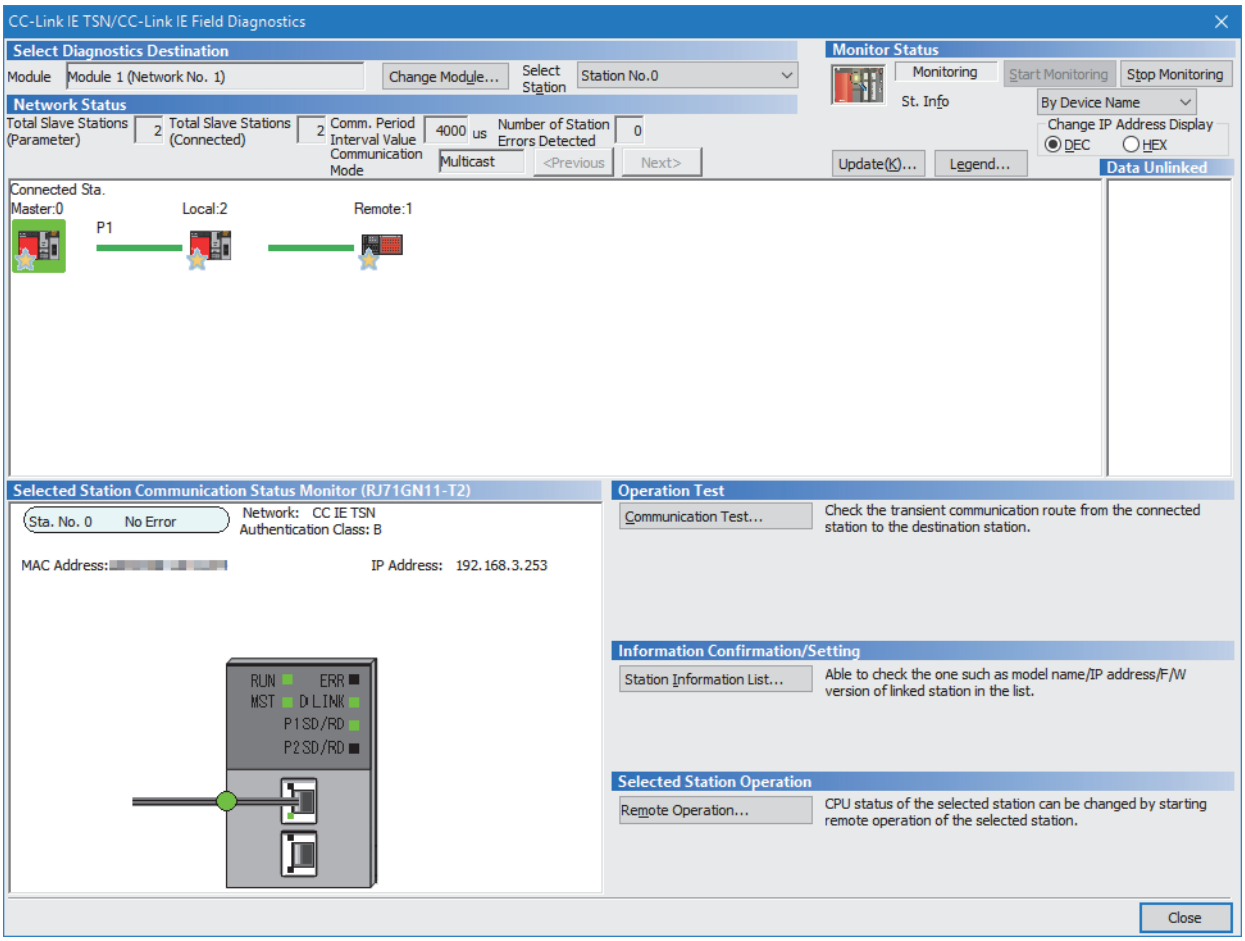
Checking the network status

After starting up the system, check whether 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 CPU module 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.



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

If an error icon appears in "Network Status" area, use the CC-Link IE TSN/CC-Link IE Field diagnostics to identify the cause of the error and take corrective actions. (☞ Page 215 Checking the Network Status)

Program example

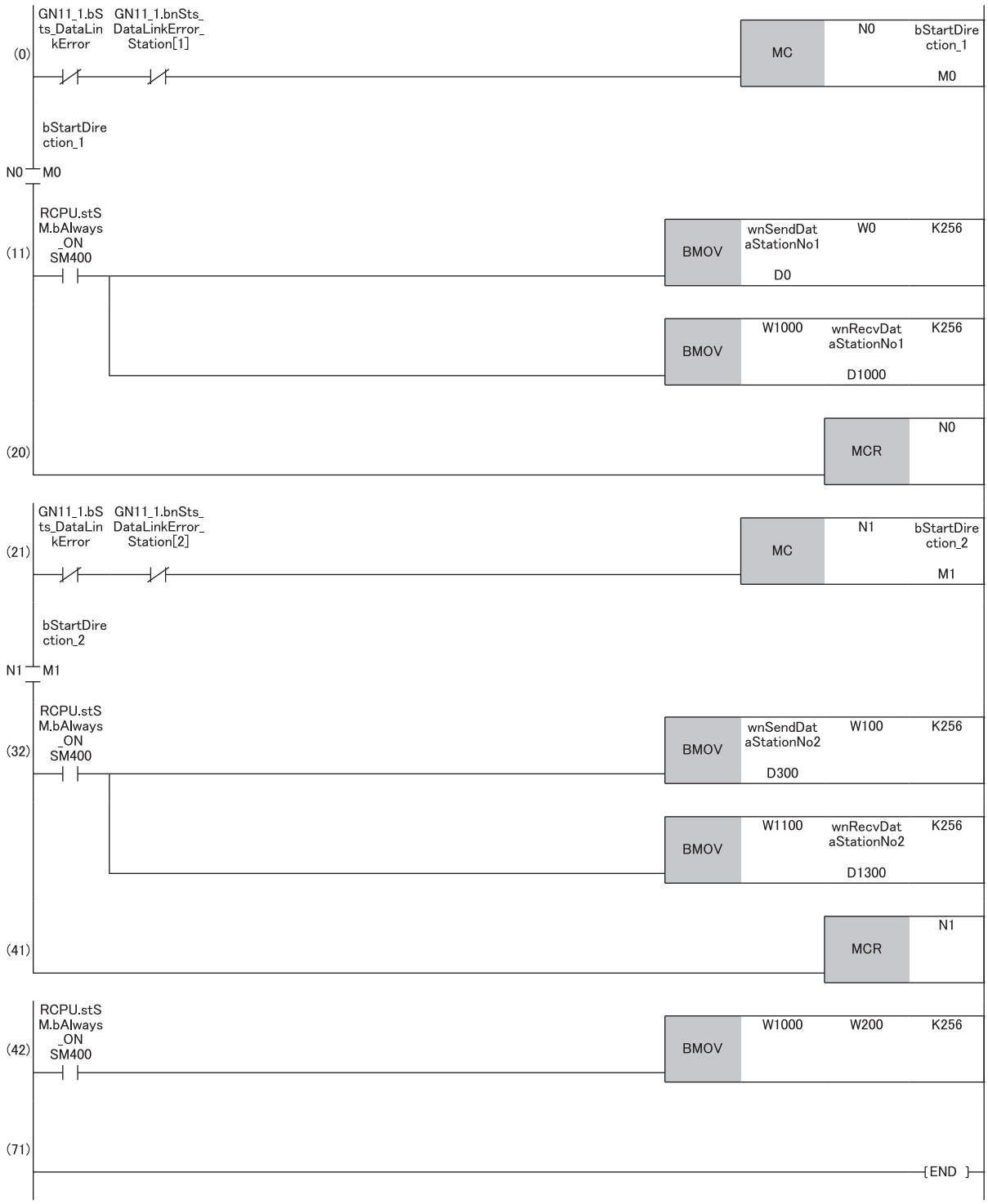
The following is a program example of communications between the CC-Link IE TSN Class B master station (station No.0), CC-Link IE TSN Class A remote station (station No.1), and local station (station No.2).

Master station (station No.0)

Classification	Label name	Description	Device
Module label	GN11_1.bSts_DataLinkError	Data link error status of own station	SB0049
	GN11_1.bnSts_DataLinkError_Station[1]	Data link status of each station (station No.1)	SW00B0.0
	GN11_1.bnSts_DataLinkError_Station[2]	Data link status of each station (station No.2)	SW00B0.1
Label to be defined	Define global labels as shown below:		

Label Name	Data Type		Class	Assign (Device/Label)
bStartDirection_1	Bit	...	VAR_GLOBAL	M0
bStartDirection_2	Bit	...	VAR_GLOBAL	M1
wnSendDataStationNo1	Word [Signed]	...	VAR_GLOBAL	D0
wnRecvDataStationNo1	Word [Signed]	...	VAR_GLOBAL	D1000
wnSendDataStationNo2	Word [Signed]	...	VAR_GLOBAL	D300
wnRecvDataStationNo2	Word [Signed]	...	VAR_GLOBAL	D1300

■Master station (station No.0)



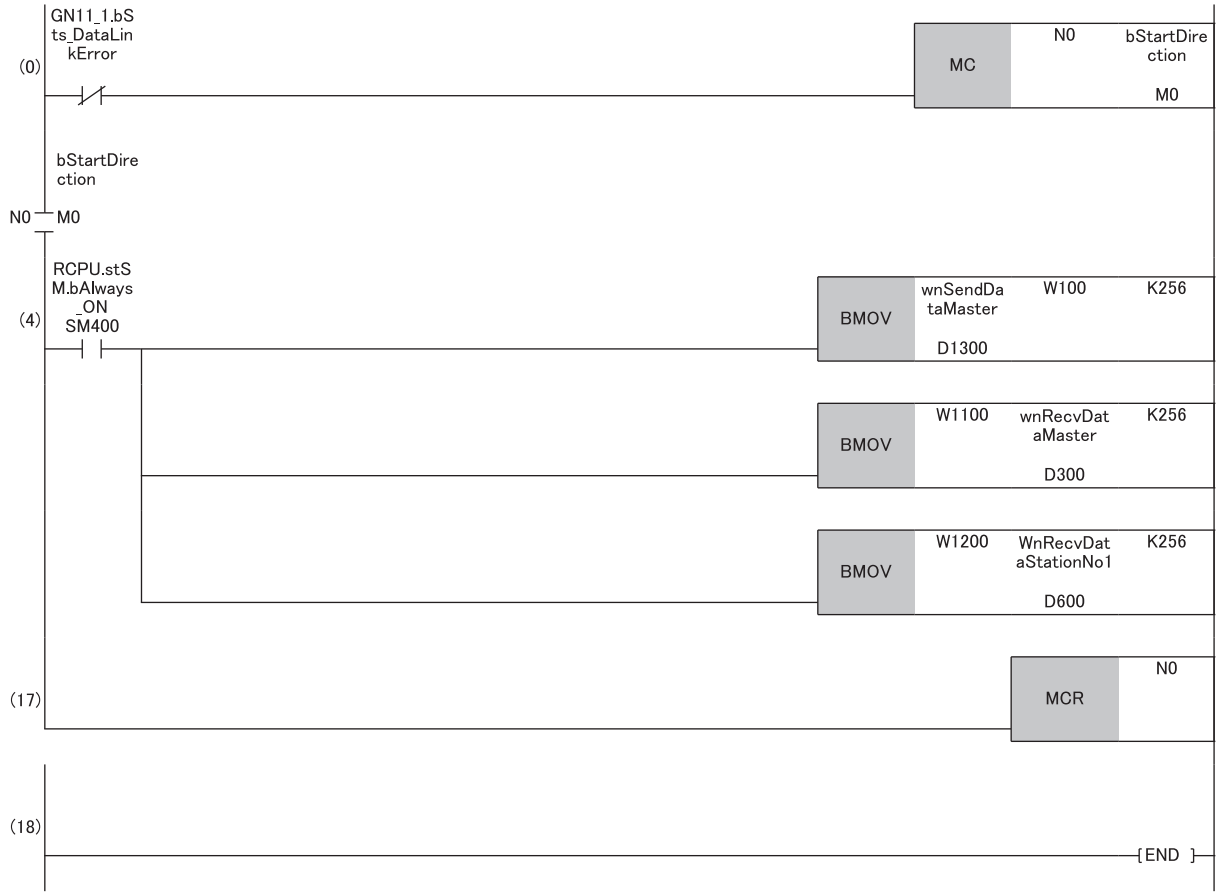
(11)Communication program with a remote station (station) No.1
(32)Communication program with a local station (station No.2)
(42)Program that sends the data received from a remote station (station No.1) to a local station (station No.2)

Local station (station No.2)

Classification	Label name	Description	Device
Module label	GN11_1.bSts_DataLinkError	Data link error status of own station	SB0049
Label to be defined	Define global labels as shown below: • Local station (station No.2)		

Label Name	Data Type		Class	Assign (Device/Label)
bStartDirection	Bit	...	VAR_GLOBAL	M0
wnSendDataMaster	Word [Signed]	...	VAR_GLOBAL	D1300
wnRecvDataMaster	Word [Signed]	...	VAR_GLOBAL	D300
WnRecvDataStationNo1	Word [Signed]	...	VAR_GLOBAL	D600

■Local station (station No.2)



(4) Communication program with the master station (station No.0) and a remote station (station No.1)

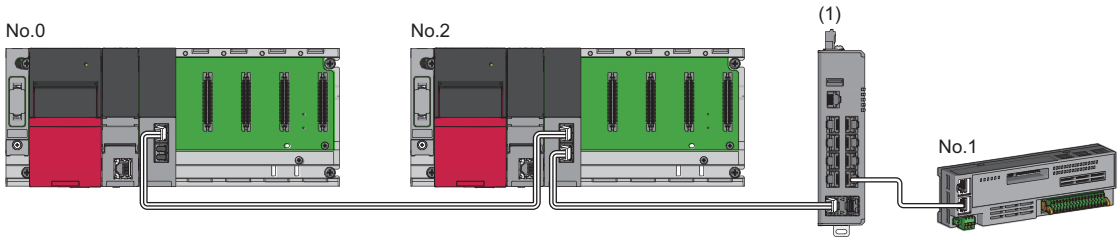
3.3 Communication Example with CC-Link IE TSN Class A Remote Station (RJ71GN11-SX)

When "Communication Mode" is set to "Multicast", the local station cannot obtain data output by the CC-Link IE TSN Class A remote station. Use the following communication examples so that the local station can obtain data output by the CC-Link IE TSN Class A remote station.

System configuration

The following is an example of communications between the CC-Link IE TSN Class B master station (station No.0), CC-Link IE TSN Class A remote station (station No.1), and local station (station No.2).

- Power supply module: R61P
- CPU module: R04CPU
- Master/local module: RJ71GN11-SX (Firmware version of "04" or later only)
- Remote module: CC-Link IE TSN Class A remote station
- HUB: Industrial switch (CC-Link IE TSN Class B certified)



(1) Industrial switch (CC-Link IE TSN Class B certified)

Link device assignment

For RX and RWr, 256 points are assigned to each station.

For RY and RWw, 256 points are assigned to a remote station and 512 points are assigned to a local station.

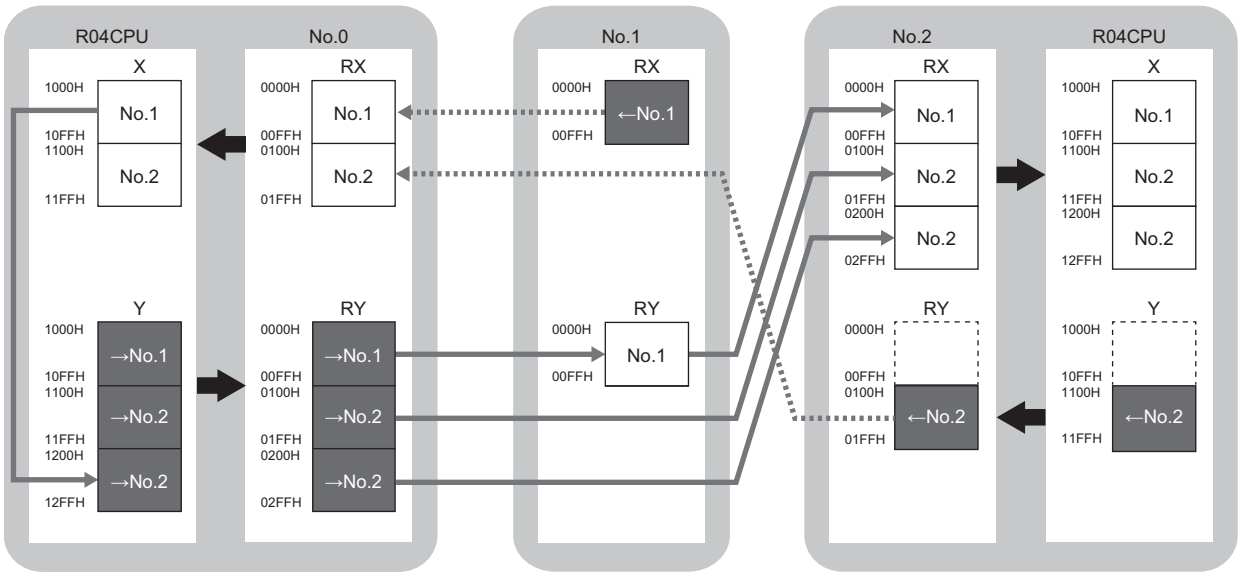
Communication Mode

In "Communication Mode" under "Application Settings", set "Multicast" (Default).

■RX/RY assignment

Each of the following No.0 to No.2 represents a station number.

- No.0: Master station (station No.0)
- No.1: Remote station (station No.1)
- No.2: Local station (station No.2)



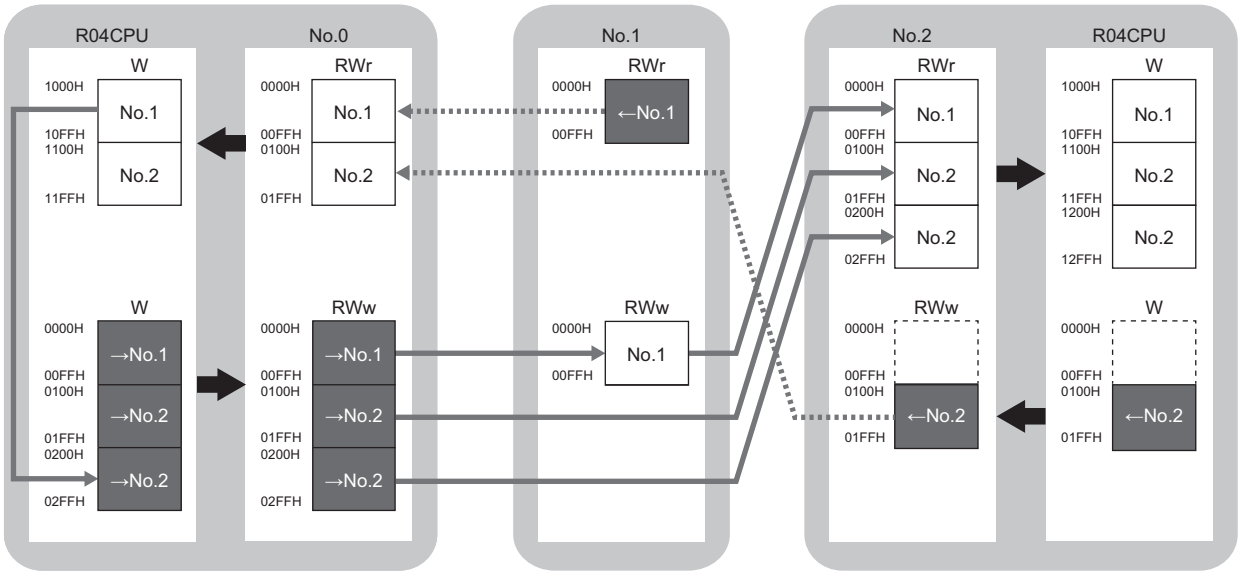
→No.1, →No.2: Send range: to station No.1, send range: to station No.2

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

■RWr/RWw assignment

Each of the following No.0 to No.2 represents a station number.

- No.0: Master station (station No.0)
- No.1: Remote station (station No.1)
- No.2: Local station (station No.2)



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

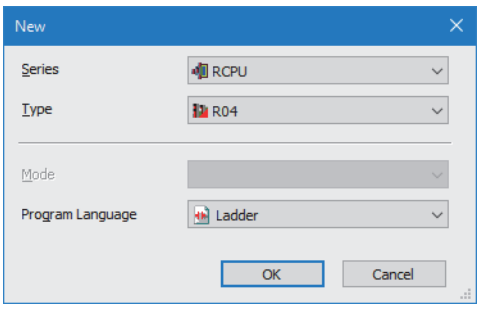
←No.1, ←No.2: Send range: from station No.1, send range: from station No.2

Setting in the master station

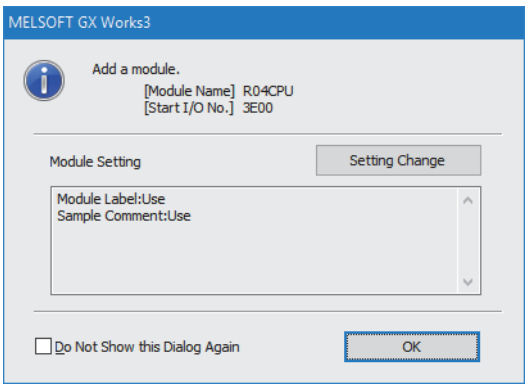
Connect the engineering tool to the CPU module on the master station and set the parameters.

1. Set the CPU module as follows.

[Project] ⇨ [New]



2. Click the [Setting Change] button to use the module label.



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

[CPU Parameter] ⇨ [Memory/Device Setting] ⇨ [Link Direct Device Setting] ⇨ [Link Direct Device Setting]

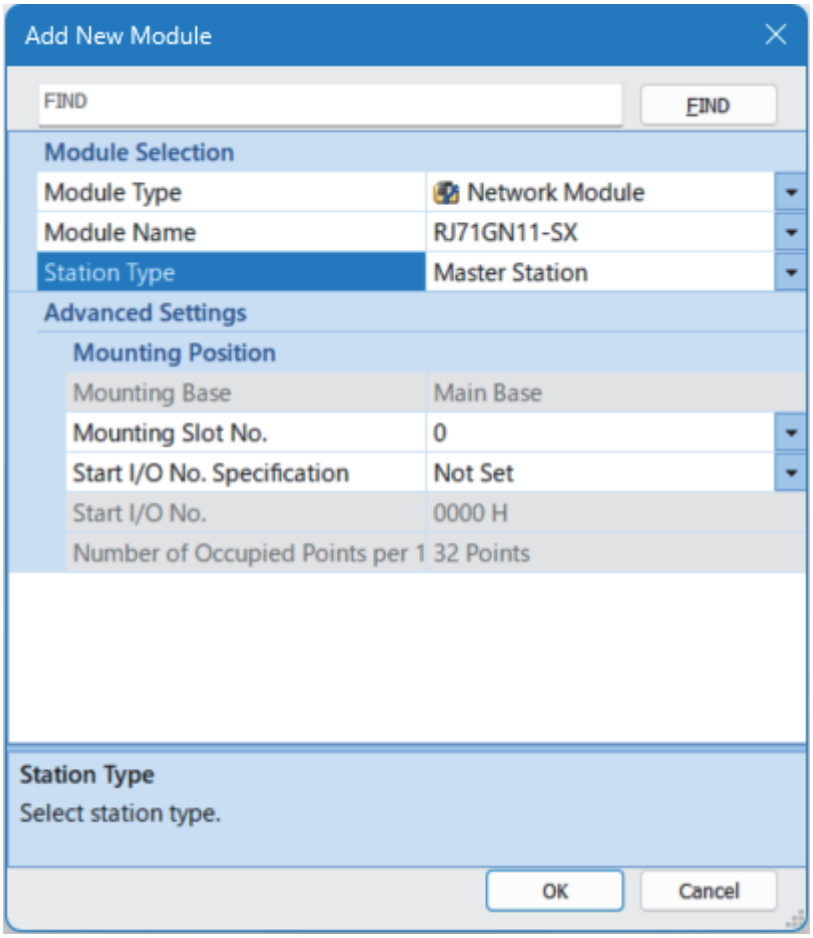
Item	Setting
Link Direct Device Setting	
Link Direct Device Setting	Extended Mode (iQ-R Series Mode)

Restriction

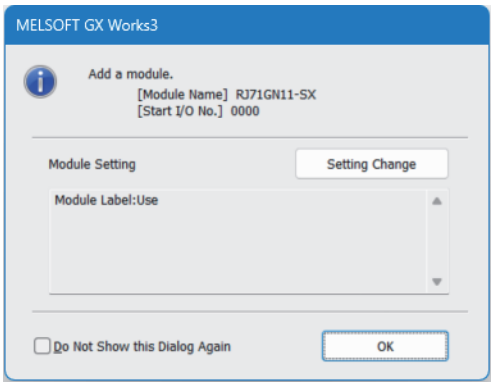
To write module parameters of the RJ71GN11-SX on a CPU module using an engineering tool, set "Link Direct Device Setting" to "Extended Mode (iQ-R Series Mode)".
If "Link Direct Device Setting" is "Q Series Compatible Mode", "Write to PLC" cannot be executed.

4. Set the RJ71GN11-SX as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Right-click ⇨ [Add New Module]

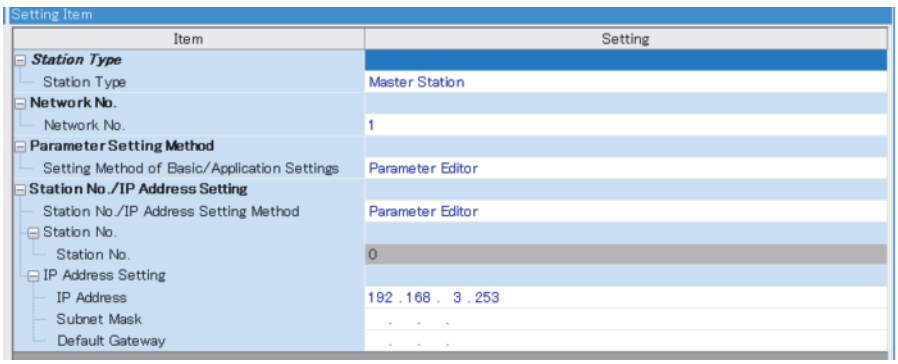


5. Click the [OK] button to add a module label of the RJ71GN11-SX.



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

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Required Settings]



7. Set the items in "Basic Settings" as follows.

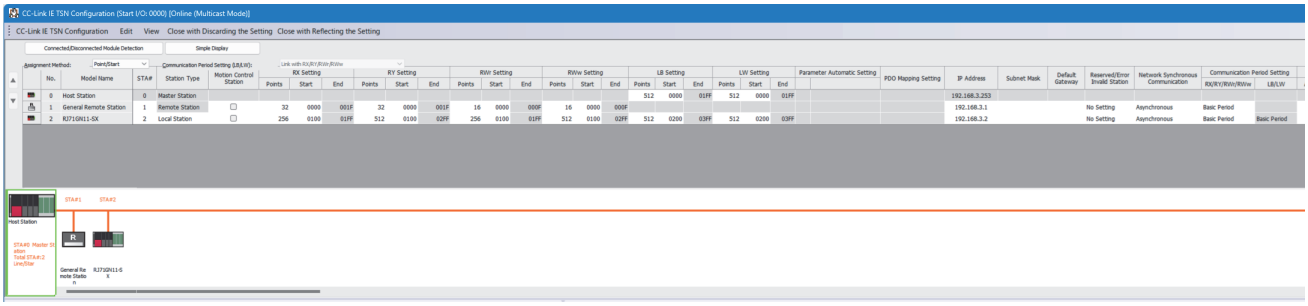
[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Basic Settings]

Setting Item

Item	Setting
Network Configuration Settings	
Network Configuration Settings	<Detailed Setting>
Refresh Settings	
Refresh Settings	<Detailed Setting>
Network Topology	
Network Topology	Line/Star
Communication Period Setting	
Basic Period Setting	
Setting in Units of 1 us	Not Set
Communication Period Interval Setting (Do not Set it in Units of 1 us)	4000.00 us
Communication Period Interval Setting (Set it in Units of 1 us)	4000.00 us
System Reservation Time	200.00 us
Cyclic Transmission Time	3100.00 us
Transient Transmission Time	700.00 us
Multiple Period Setting	
Normal-Speed	x4
Low-Speed	x16
Connection Device Information	
CC-Link IE TSN Class Setting	Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only
TSN HUB Setting	Use TSN HUB
Device Station Setting	
Disconnection Detection Setting	4 times

8. Set the network configuration as follows. (Set the IP address for each station.)

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Basic Settings] ⇨ [Network Configuration Settings] ⇨ [Detailed Setting]



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

10. Set the refresh settings as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Basic Settings] ⇨ [Refresh Settings] ⇨ [Detailed Setting]

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	4096	00000	00FFF		Module Label				
-	SW	4096	00000	00FFF		Module Label				
1	RX	512	00000	001FF		Specify Devi	X	512	01000	011FF
2	RY	768	00000	002FF		Specify Devi	Y	768	01000	012FF
3	RWw	768	00000	002FF		Specify Devi	W	768	00000	002FF
4	RWr	512	00000	001FF		Specify Devi	W	512	01000	011FF
5	LB	1024	00000	003FF		Specify Devi	B	1024	00000	003FF
6	LW	1024	00000	003FF		Specify Devi	W	1024	01800	01BFF

11. Set the items in "Application Settings" as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Application Settings]

Setting Item

Item	Setting
Communication Speed	
Communication Speed	1Gbps
Supplementary Cyclic Settings	
Station-based Block Data Assurance	Enable
I/O Maintenance Settings	
Output Hold/Clear Setting during CPU STOP	Hold
Data Link Error Station Setting	Clear
Output Mode upon CPU Error	Clear
Link points extended setting	
LB/LW Points Extended Setting	Not to Extend
Transient Transmission Group No.	
Transient Transmission Group No.	0
Communication Mode	
Communication Mode	Multicast
Parameter Name	
Parameter Name	
Dynamic Routing	
Dynamic Routing	Enable
Event Reception from Other Stations	
Event Reception from Other Stations	Enable
Module Operation Mode	
Module Operation Mode	Online
Security	
IP Filter Settings	
IP Filter	Disable
IP Filter Settings	<Detailed Setting>
Interlink Transmission Settings	
Interlink Transmission Settings	<Detailed Setting>
Co-recording Setting	
Co-recording Setting	Not Use
Master Station Shift Setting	
Master Station Shift Setting	Disable

12. Click the [Apply] button.

13. Write the set parameters to the CPU module on the master station. Then, reset the CPU module or power off and on the system.

[Online] ⇨ [Write to PLC]

Point

In the program example, default values are used for parameters that are not shown above. For the parameters, refer to the following.

☞ Page 120 PARAMETER SETTINGS

Settings in the remote stations

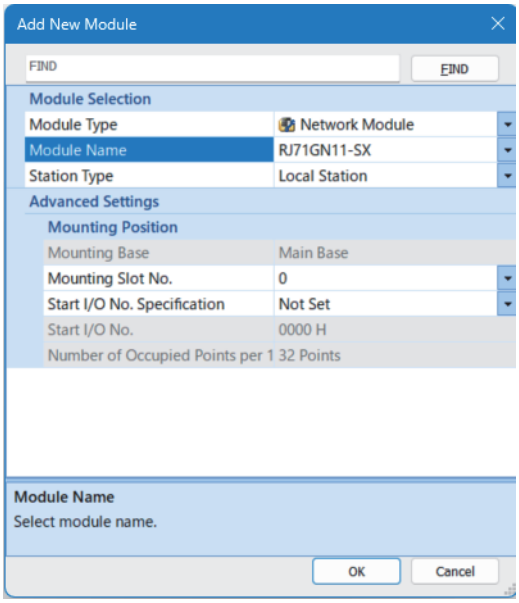
Set the setting of the IP address set in "Network Configuration Settings" of the master station.

Settings in the local stations

Connect the engineering tool to the CPU module on the local station and set parameters.

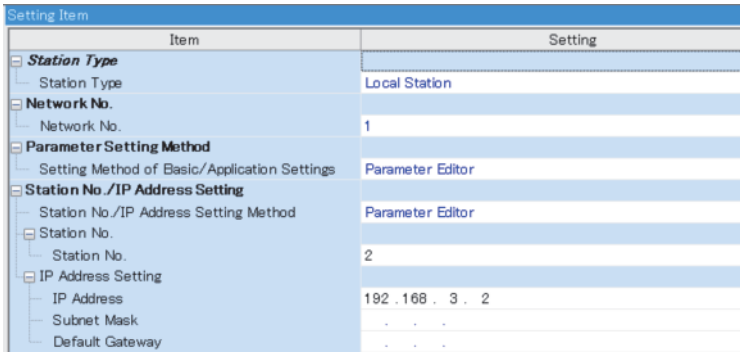
1. Set the CPU module and add the module labels of the CPU module. The setting method of the CPU module and addition method of the module label are the same as those of the master station. (☞ Page 180 Setting in the master station)
2. Set the RJ71GN11-SX as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Right-click ⇨ [Add New Module]



3. Set to use the RJ71GN11-SX module label. The addition method of the module label is the same as that of the master station. (☞ Page 180 Setting in the master station)
4. Set the items in "Required Settings" as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Required Settings]



5. Set the refresh settings as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Basic Settings] ⇨ [Refresh Settings] ⇨ [Detailed Setting]

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
–	SB	4096	00000	00FFF		Module Label				
–	SW	4096	00000	00FFF		Module Label				
1	RX	768	00000	002FF		Specify Devi	X	768	01000	012FF
2	RY	512	00000	001FF		Specify Devi	Y	512	01000	011FF
3	RWw	512	00000	001FF		Specify Devi	W	512	00000	001FF
4	RWr	768	00000	002FF		Specify Devi	W	768	01000	012FF
5	LB	1024	00000	003FF		Specify Devi	B	1024	00000	003FF
6	LW	1024	00000	003FF		Specify Devi	W	1024	01800	01BFF
7										

6. Set the items in "Application Settings" as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-SX] ⇨ [Application Settings]

Setting Item

Item	Setting
Communication Speed	
Communication Speed	1Gbps
Supplementary Cyclic Settings	
I/O Maintenance Settings	
Output Hold/Clear Setting during CPU STOP	Hold
Data Link Error Station Setting	Clear
Output Mode upon CPU Error	Clear
Link points extended setting	
LB/LW Points Extended Setting	Not to Extend
Transient Transmission Group No.	
Transient Transmission Group No.	0
Parameter Name	
Parameter Name	
Dynamic Routing	
Dynamic Routing	Enable
Module Operation Mode	
Module Operation Mode	Online
Security	
IP Filter Settings	
IP Filter	Disable
IP Filter Settings	<Detailed Setting>
Interlink Transmission Settings	
Interlink Transmission Settings	<Detailed Setting>
Co-recording Setting	
Co-recording Setting	Not Use

7. Click the [Apply] button.

8. Write the set parameters to the CPU module on the local station. Then, reset the CPU module or power off and on the system.

[Online] ⇨ [Write to PLC]

Point

In the program example, default values are used for parameters that are not shown above. For the parameters, refer to the following.

☞ Page 120 PARAMETER SETTINGS

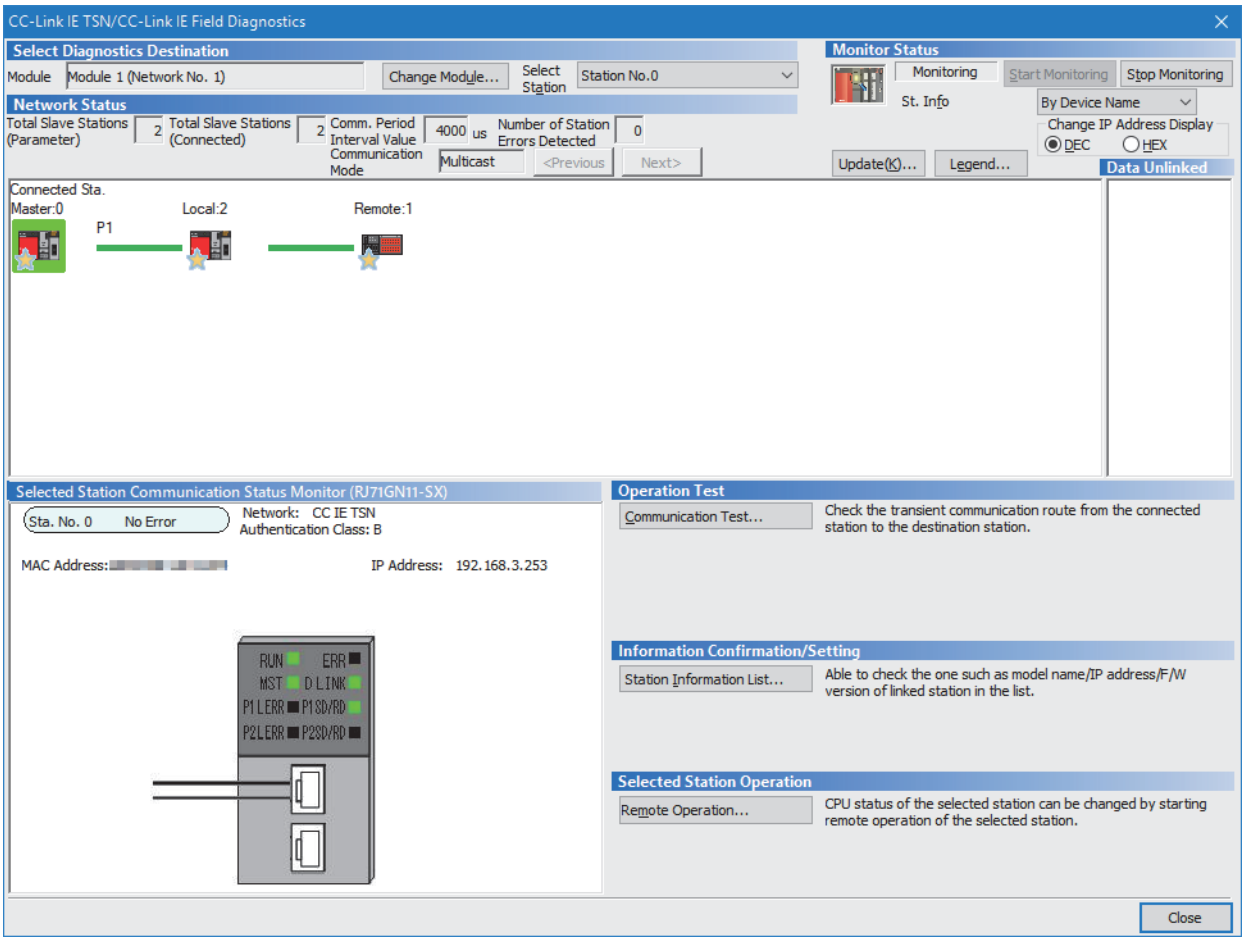
Checking the network status

After starting up the system, check whether 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 CPU module 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, use the CC-Link IE TSN/CC-Link IE Field diagnostics to identify the cause of the error and take corrective actions. (☞ Page 215 Checking the Network Status)

Program example

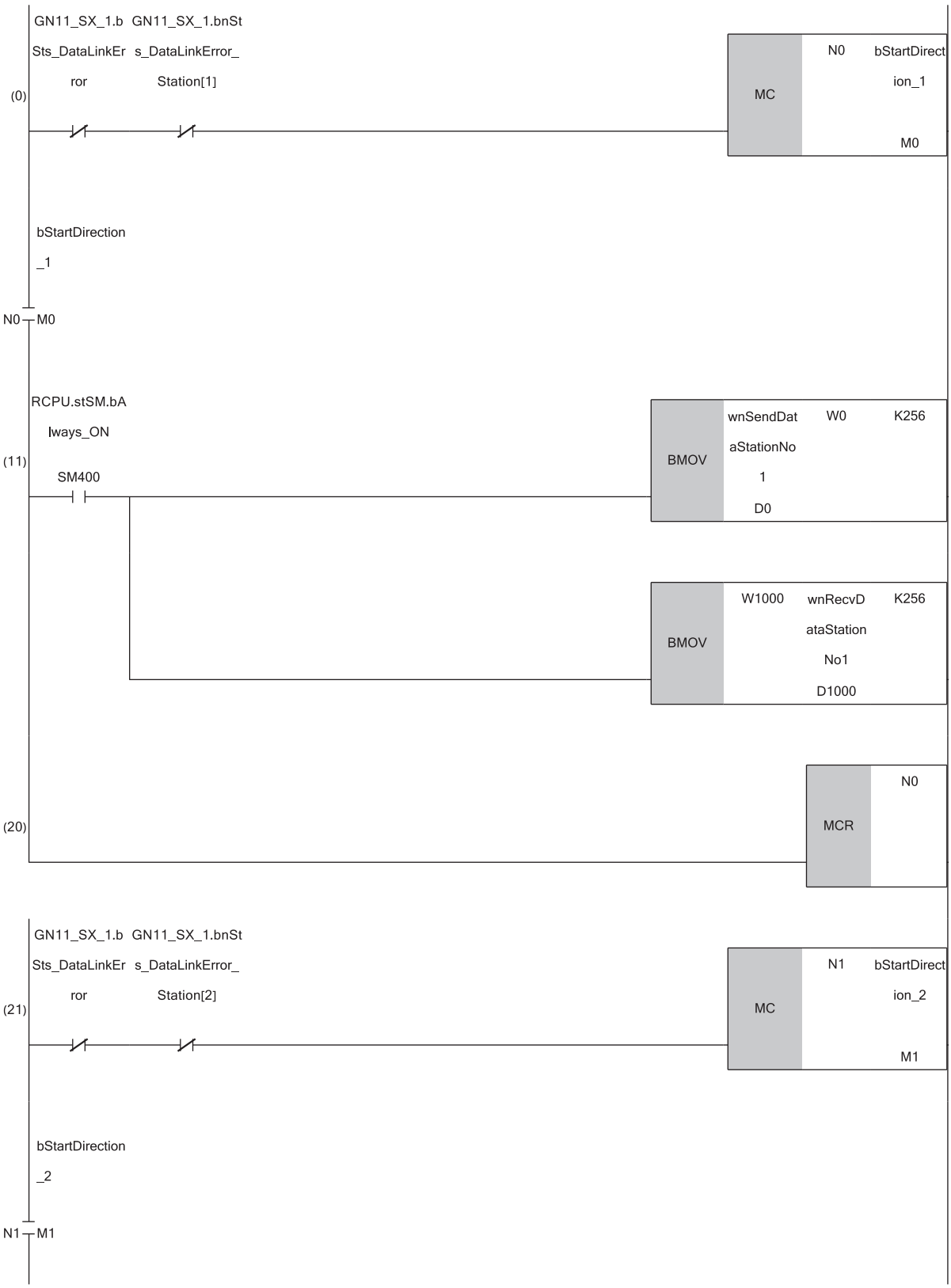
The following is a program example of communications between the CC-Link IE TSN Class B master station (station No.0), CC-Link IE TSN Class A remote station (station No.1), and local station (station No.2).

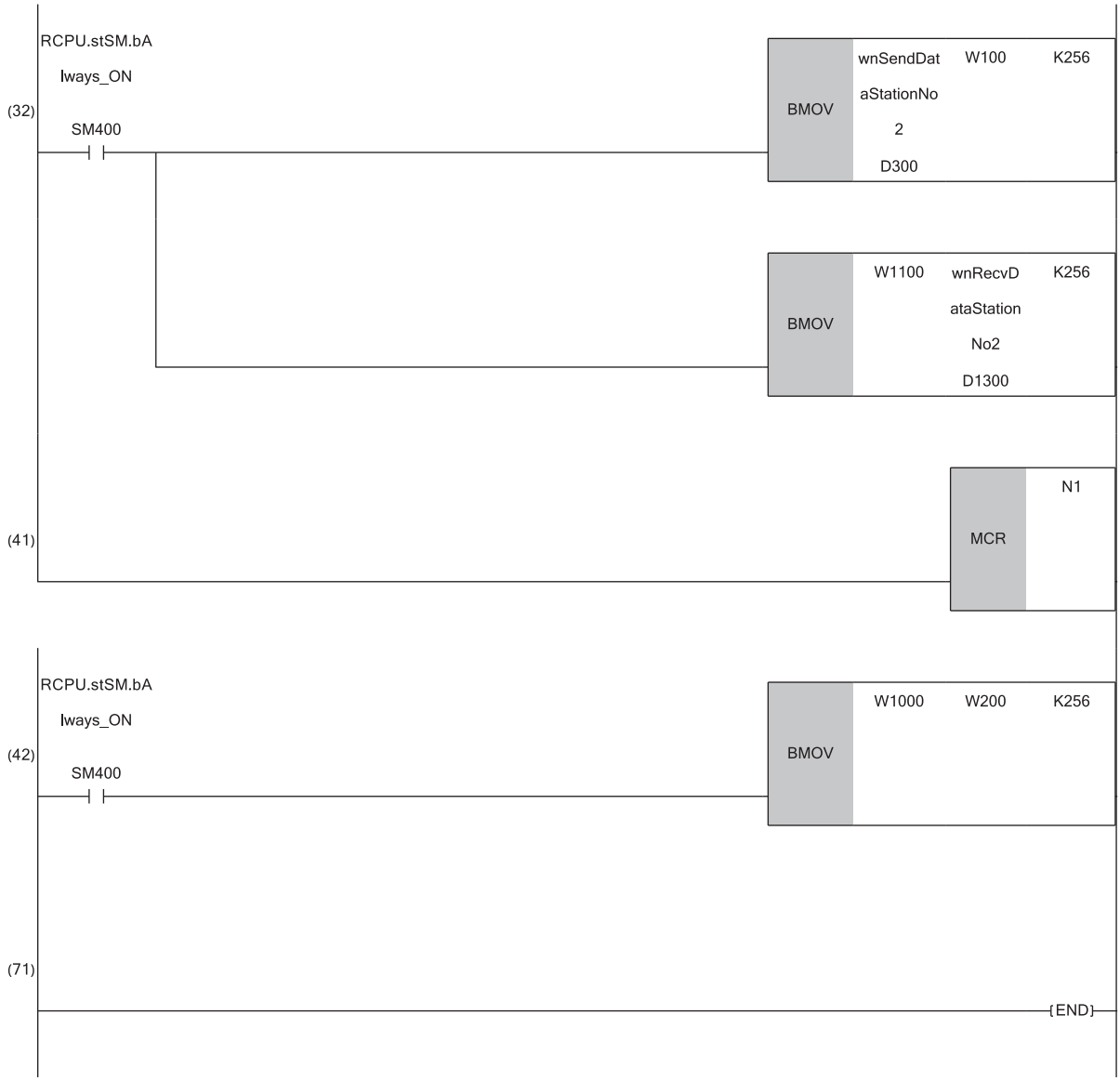
Master station (station No.0)

Classification	Label name	Description	Device
Module label	GN11_SX_1.bSts_DataLinkError	Data link error status of own station	SB0049
	GN11_SX_1.bnSts_DataLinkError_Station[1]	Data link status of each station (station No.1)	SW00B0.0
	GN11_SX_1.bnSts_DataLinkError_Station[2]	Data link status of each station (station No.2)	SW00B0.1
Label to be defined	Define global labels as shown below:		

	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartDirection_1	Bit		VAR_GLOBAL	M0
2	bStartDirection_2	Bit		VAR_GLOBAL	M1
3	wnSendDataStationNo1	Word [Signed]		VAR_GLOBAL	D0
4	wnRecvDataStationNo1	Word [Signed]		VAR_GLOBAL	D1000
5	wnSendDataStationNo2	Word [Signed]		VAR_GLOBAL	D300
6	wnRecvDataStationNo2	Word [Signed]		VAR_GLOBAL	D1300

■Master station (station No.0)





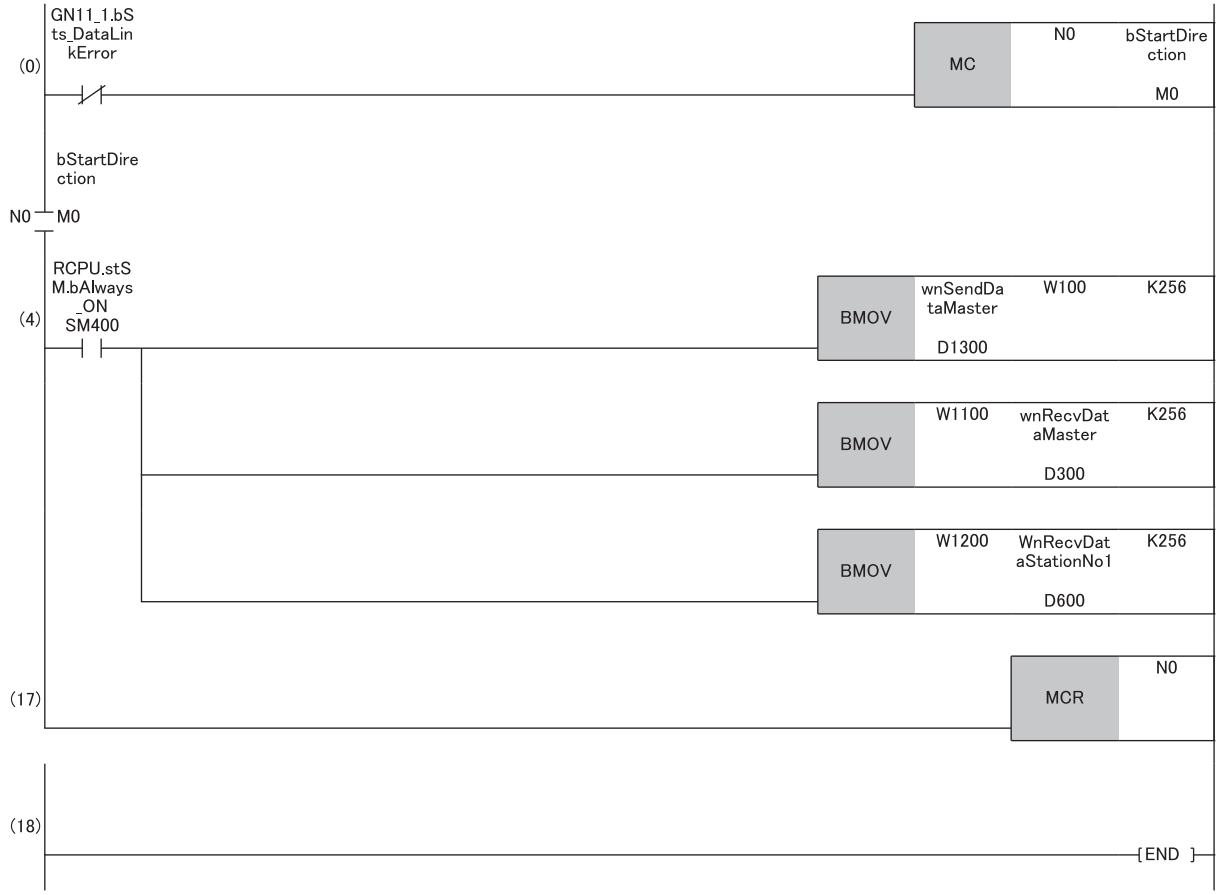
(11)Communication program with a remote station (station No.1)
(32)Communication program with a local station (station No.2)
(42)Program that sends the data received from a remote station (station No.1) to a local station (station No.2)

Local station (station No.2)

Classification	Label name	Description	Device
Module label	GN11_SX_1.bSts_DataLinkError	Data link error status of own station	SB0049
Label to be defined	Define global labels as shown below: • Local station (station No.2)		

	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartDirection	Bit	...	VAR_GLOBAL	M0
2	wnSendDataMaster	Word [Signed]	...	VAR_GLOBAL	D1300
3	wnRecvDataMaster	Word [Signed]	...	VAR_GLOBAL	D300
4	WnRecvDataStationNo1	Word [Signed]	...	VAR_GLOBAL	D600

■Local station (station No.2)



(4) Communication program with the master station (station No.0) and a remote station (station No.1)

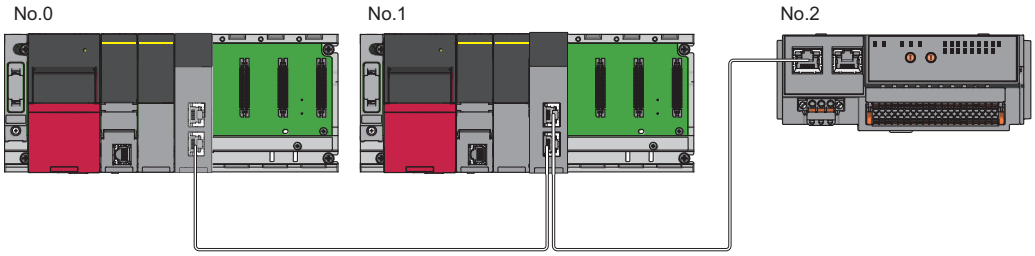
3.4 Communication Example of Safety Communication (RJ71GN11-T2)

This section describes an example of a program that performs safety communications between the master station (safety station), remote station (safety station), and local station (safety station).
The safety device status of the Safety CPU on the master station (safety station) is reflected to the safety output (SA\Y) of the remote station (safety station), and the safety input (SA/X) status from the remote station (safety station) is stored into the safety device of the master station (safety station). In addition, the safety device status is mutually stored between the Safety CPU on the master station (safety station) and the Safety CPU on the local station (safety station).

System configuration

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

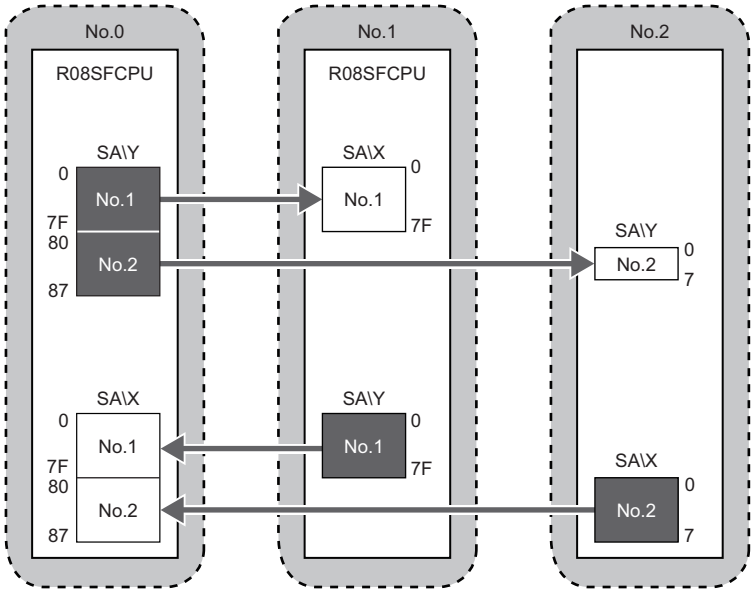
- Power supply module: R61P
- Safety CPU: R08SFCPU
- Safety function module: R6SFM
- Master/local module: RJ71GN11-T2
- Remote I/O module with safety functions: NZ2GNSS2-16DTE



In this program example, I/O devices are connected to X0, X1 (double input) and Y0, Y1 (double output) of the remote station.

Safety device assignment

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

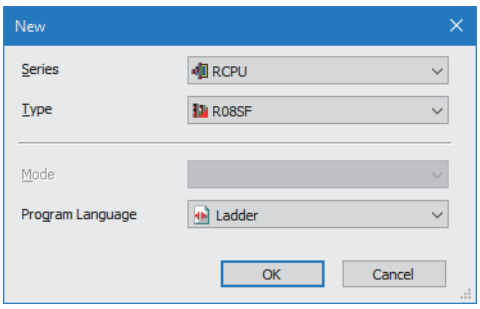


Setting in the master station

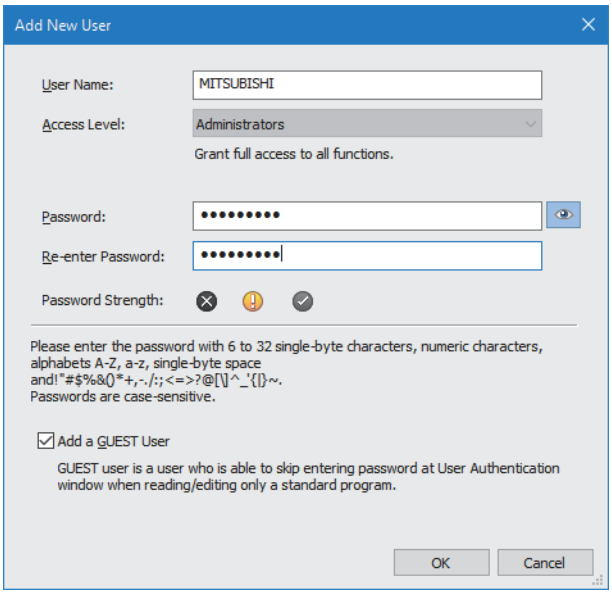
Connect the engineering tool to the Safety CPU of the master station and set parameters.

1. Set the Safety CPU as follows.

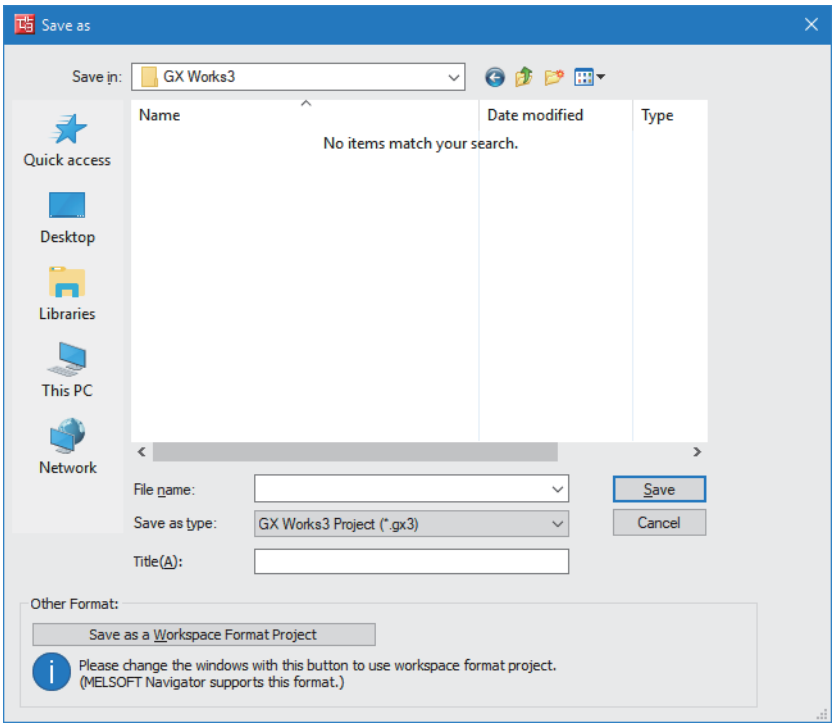
[Project] ⇨ [New]



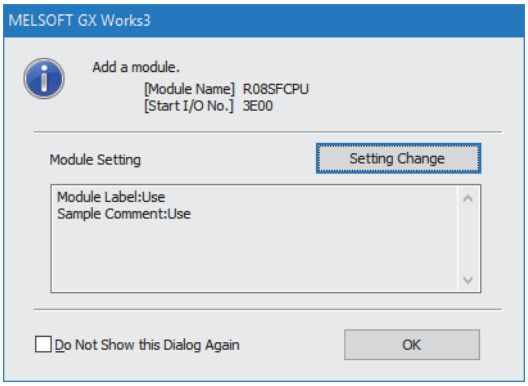
2. In the following window, enter a password and re-enter password, and click the [OK] button.



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

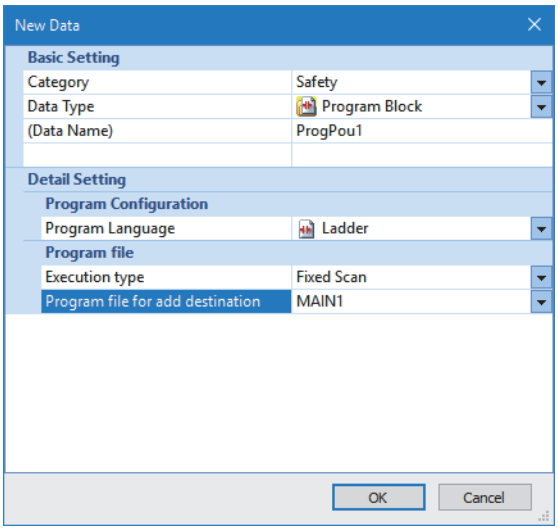


4. Click the [Setting Change] button to use the module labels of the CPU module.



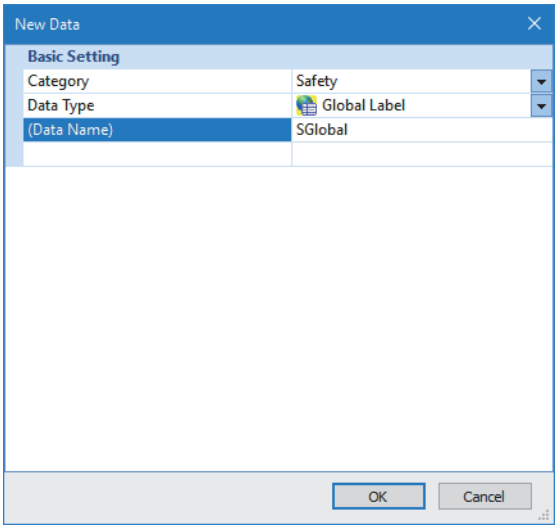
5. Add the safety program in the following.

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



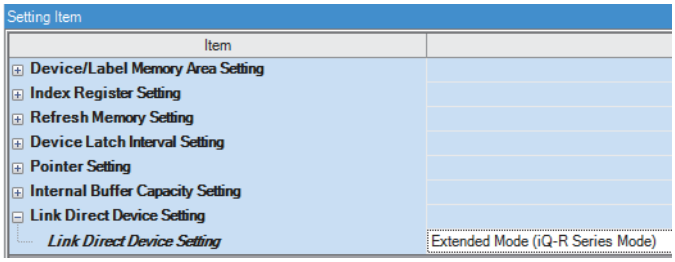
6. Add the safety global label in the following.

[Navigation window] ⇨ [Label] ⇨ [Global Label] ⇨ Right-click ⇨ [Add 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]

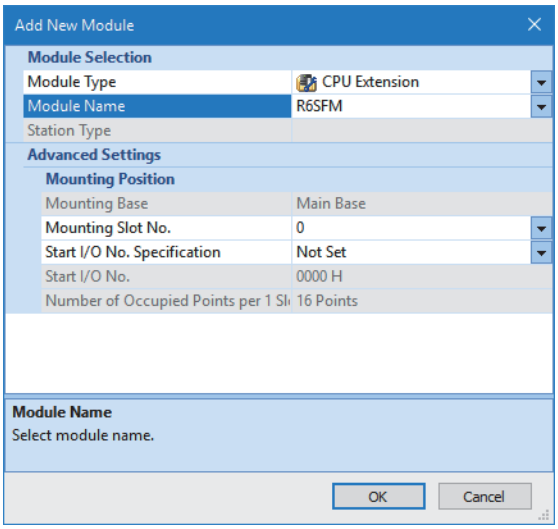


Point

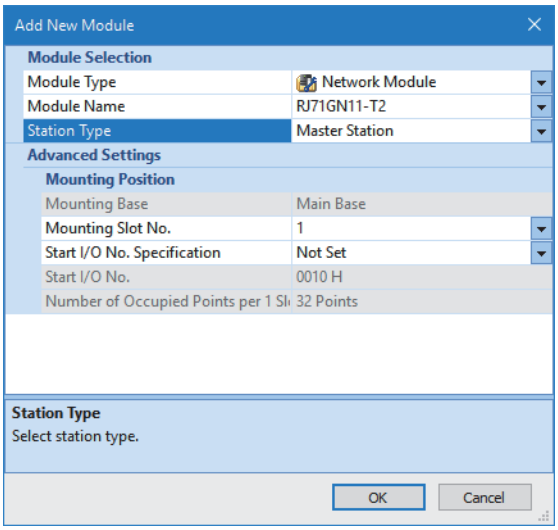
To write module parameters of the RJ71GN11-T2 to a Safety CPU using an engineering tool, set "Link Direct Device Setting" to "Extended Mode (iQ-R Series Mode)".
If "Link Direct Device Setting" is "Q Series Compatible Mode", "Write to PLC" cannot be executed.

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

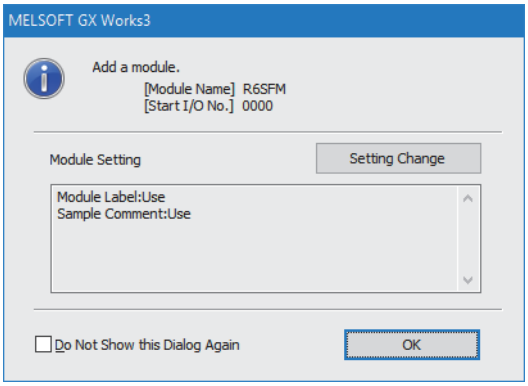
[Navigation window] ⇨ [Parameter] ⇨ [System Parameter] ⇨ [I/O Assignment] tab ⇨ [I/O Assignment Setting]



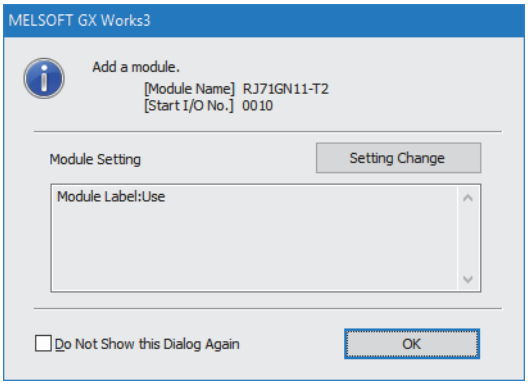
9. Set the master/local module for slot No.1.



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



11. Click the [OK] button to use the module labels of the master/local module.



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

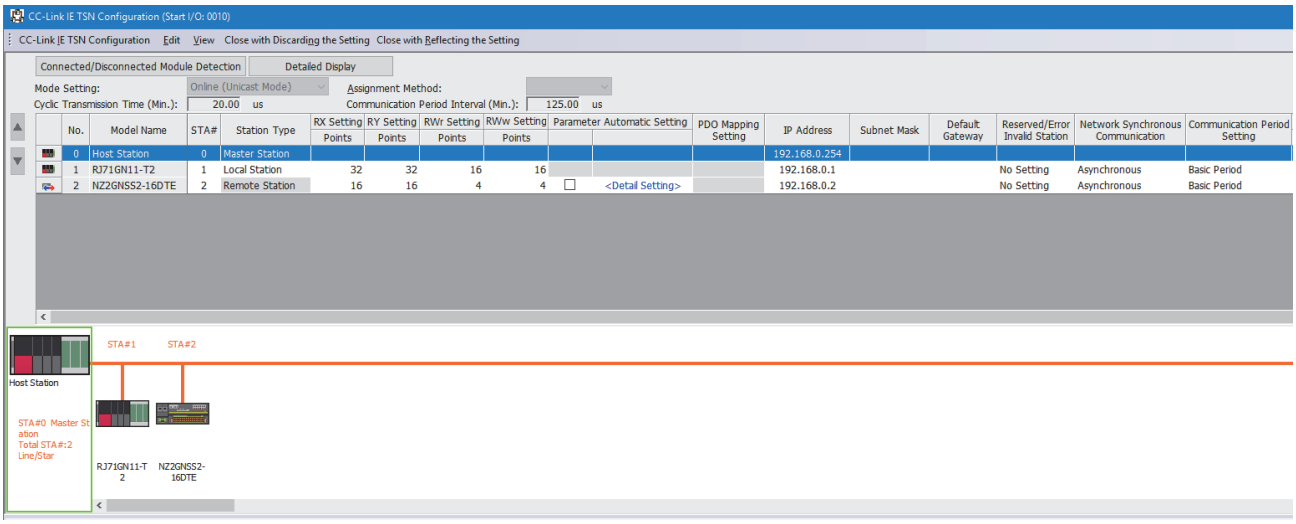
[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Required Settings]

Setting Item

Item	Setting
Station Type	
Station Type	Master Station
Network No.	
Network No.	1
Parameter Setting Method	
Setting Method of Basic/Application Settings	Parameter Editor
Station No./IP Address Setting	
Station No./IP Address Setting Method	Parameter Editor
Station No.	
Station No.	0
IP Address	
IP Address	192 . 168 . 0 . 254
Subnet Mask	. . .
Default Gateway	. . .

13. Set the network configuration as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Network Configuration Settings] ⇨ [Detailed Setting]



- RX/RY and RWw/RWr settings of the local station are for standard communications.
- RX/RY setting of the remote station is used as a remote control and monitor input signal in standard communications.

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] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Refresh Settings] ⇨ [Detailed Setting]

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	4096	00000	00FFF		Module Label				
-	SW	4096	00000	00FFF		Module Label				
1	RX	48	00000	0002F		Specify Device	X	48	01000	0102F
2	RY	48	00000	0002F		Specify Device	Y	48	01000	0102F
3	RWr	20	00000	00013		Specify Device	W	20	00000	00013
4	RWw	20	00000	00013		Specify Device	W	20	01000	01013
5										

The refresh settings are for standard communications.

16. Log on to the programmable controller.

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

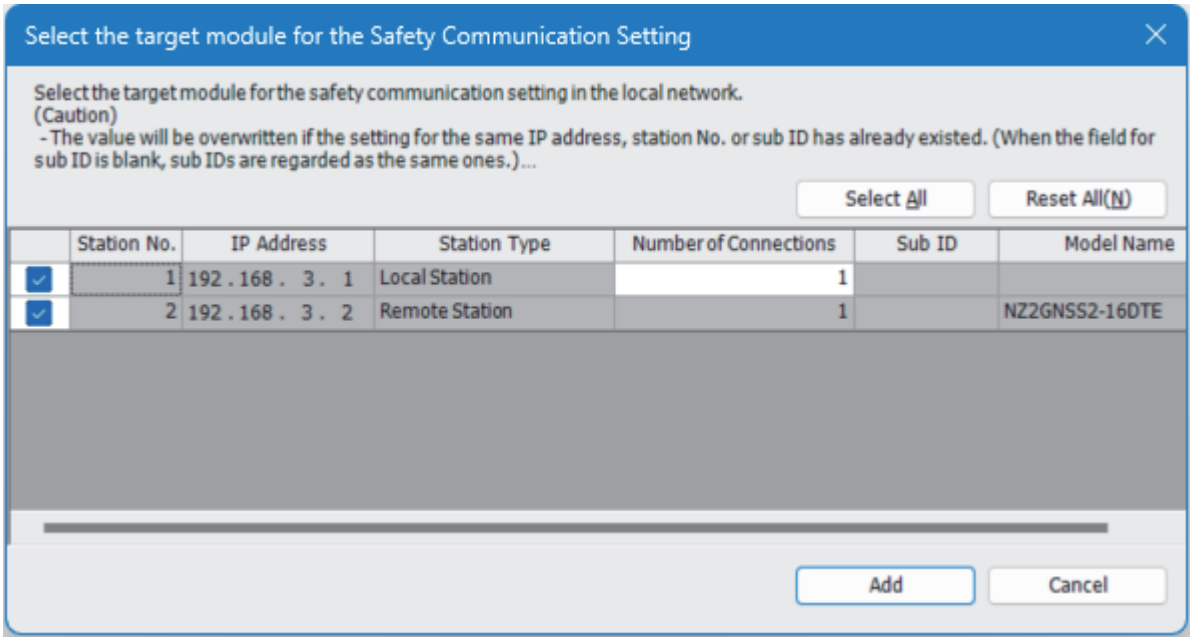
If logon fails, writing user information or initializing all information of the programmable controller is required. (GX Works3 Operating Manual)

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

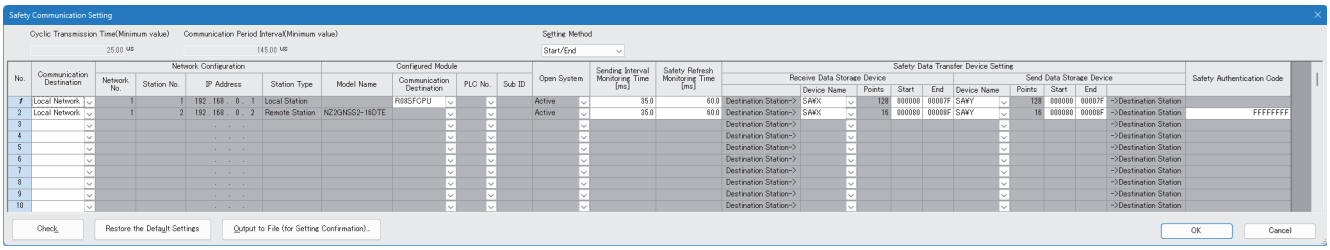
[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Safety Communication Setting] ⇨ [To Use or Not to Use the Safety Communication Setting]

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] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Safety Communication Setting] ⇨ [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.

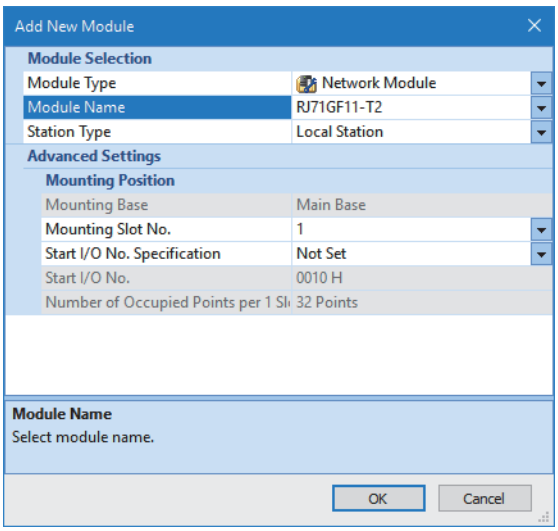
GX Works3 Operating Manual

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

Settings in the local stations

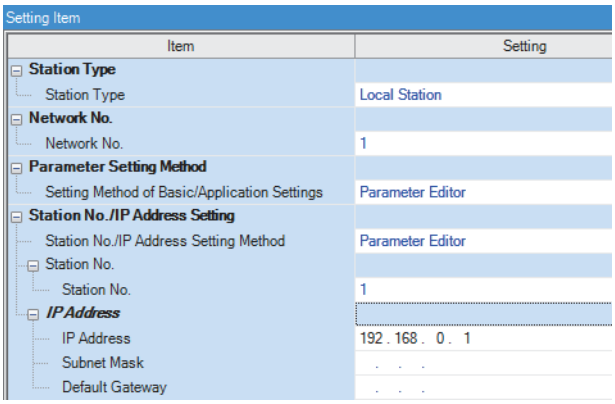
Connect the engineering tool to the Safety CPU of the local station and set parameters.

1. Set the Safety CPU and add the module label. Then, add the safety program and safety global label. The setting method is the same as that of the master station. (☞ Page 192 Setting in the master station)
2. Set "Link Direct Device Setting" in "CPU Parameter" to "Extended Mode (iQ-R Series Mode)". The setting method of "Extended Mode (iQ-R Series Mode)" is the same as that of the master station. (☞ Page 192 Setting in the master station)
3. Set the safety function module. Follow the same procedure as that for the master station. (☞ Page 192 Setting in the master station)
4. In the I/O assignment setting, set the master/local module for slot No.1.



5. Add the module labels of the safety function module and master/local module. The addition method of the module label is the same as that of the master station. (☞ Page 192 Setting in the master station)
6. Set the items in "Required Settings" as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Required Settings]

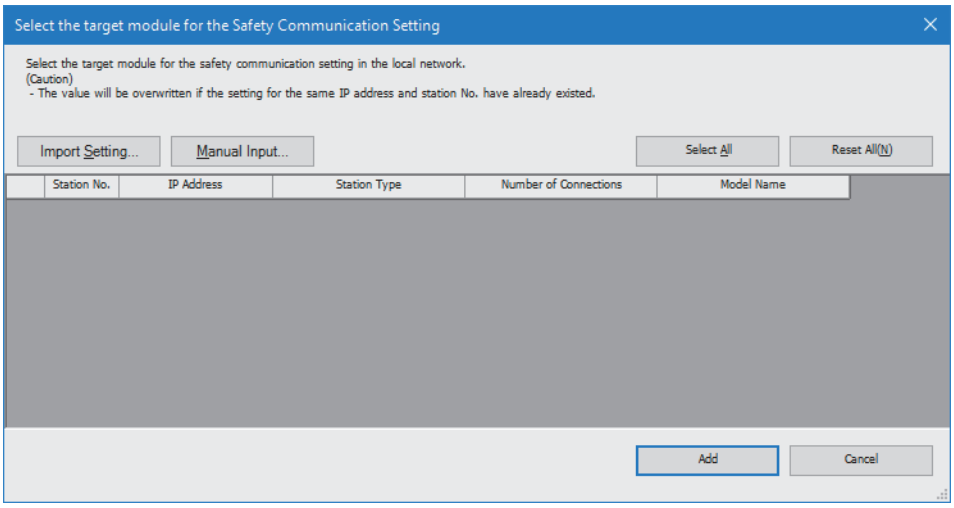


7. Set the refresh parameters. Set the same refresh parameters as those set for the master station. (☞ Page 192 Setting in the master station)
8. Click the [Apply] button.
9. Set "To Use or Not to Use the Safety Communication Setting" to "Use".

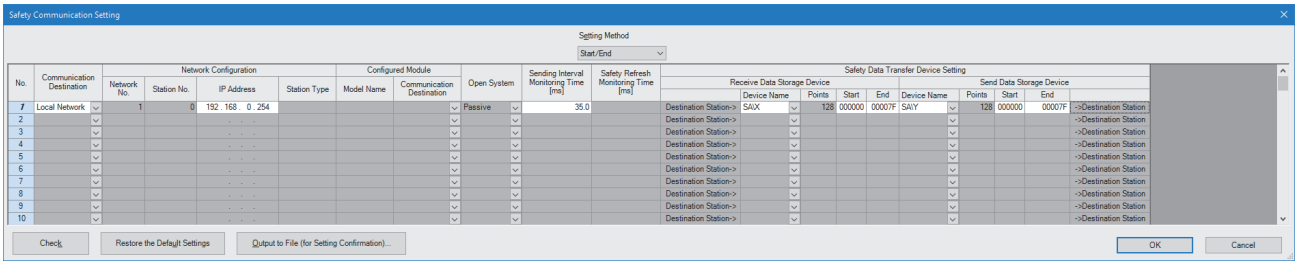
[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Safety Communication Setting] ⇨ [To Use or Not to Use the Safety Communication Setting]

10. Select "Local Network" from "Communication Destination" in "Safety Communication Setting" window and click the [Import Setting] button in "Select the target module for the Safety Communication Setting" window.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Safety Communication Setting] ⇨ [Safety Communication Setting] ⇨ [Detailed Setting]



11. To select the project of the master station, the safety communication setting can be imported from the master station and the local station.



12. 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)

13. Click the [Apply] button.

14. Write the set parameters to the Safety CPU on the local station.

[Online] ⇨ [Write to PLC]

15. 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

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

Point

- When changing the safety communication settings of the master station and importing the new settings to local stations, save the project of the master station once. "Import Setting" allows for the safety communication settings at the time of saving to take effect.
- In the program example, default values are used for parameters that are not shown above. For the parameter setting, refer to the chapter explaining the parameters in this manual. (☞ Page 120 PARAMETER SETTINGS)

Settings in the remote stations

Set the setting of the IP address set in "Network Configuration Settings" of the master station.
Connect the engineering tool to the Safety CPU of the master station and set parameters of the remote stations.

1. Set the parameters of the remote station in the "CC-Link IE TSN Configuration" window as shown below and write the parameters.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Network Configuration Settings] ⇨ Select the NZ2GNSS2-16DTE in the list of stations ⇨ Right-click ⇨ [Parameter of Device Station]

Name	Write value
Wiring selection of input X0	1: Safety double wiring (NC/NC)
Wiring selection of input X1	1: Safety double wiring (NC/NC)
Wiring selection of output Y0	1: Safety double wiring (Source/Source)
Wiring selection of output Y1	1: Safety double wiring (Source/Source)

- For items other than above, write the initial value.
- Select [Close with Reflecting the Setting] to close the "CC-Link IE TSN Configuration" window after writing parameters of the remote station.

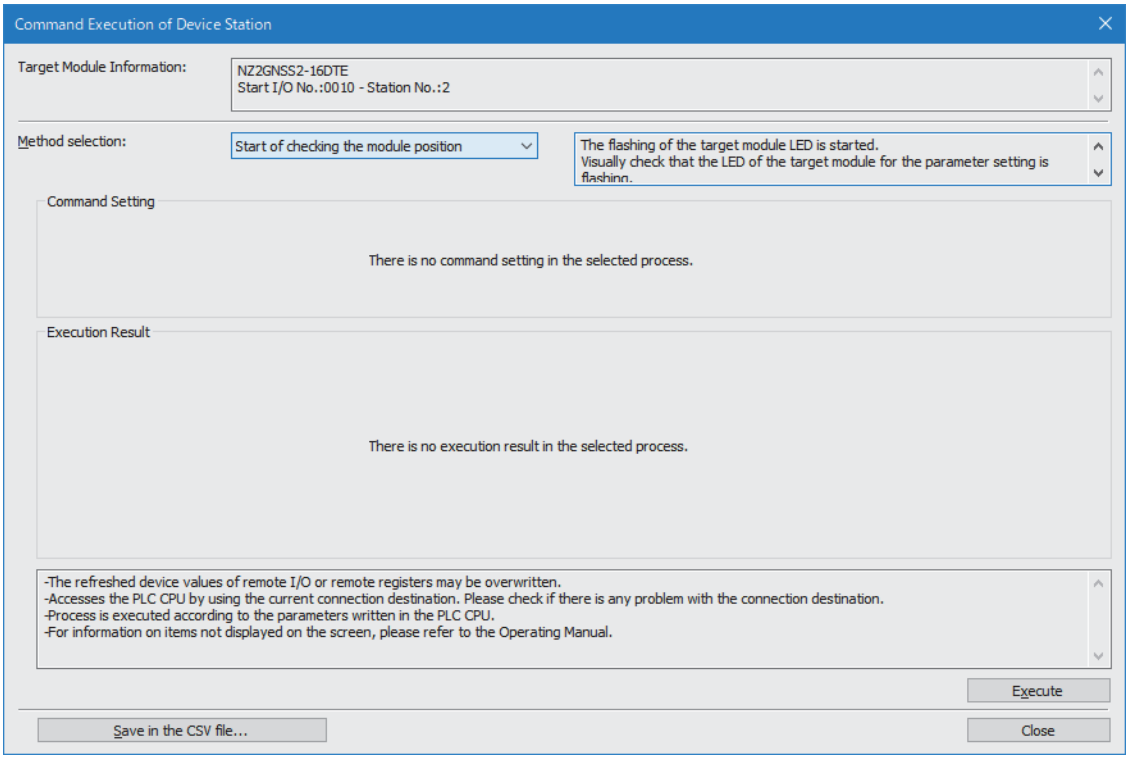
2. Visually check if the parameter of the remote station is correctly written after writing parameters. For how to check the parameters, refer to the following.

GX Works3 Operating Manual

3. Open the "Command Execution of Device Station" window in the "CC-Link IE TSN Configuration" window.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GN11-T2] ⇨ [Basic Settings] ⇨ [Network Configuration Settings] ⇨ Select the NZ2GNSS2-16DTE in the list of stations ⇨ Right-click ⇨ [Online] ⇨ [Command Execution of Device Station]

4. Select "Start of checking the module position" in "Method selection" and click the [Execute] button.



5. The SAFETY LED of the NZ2GNSS2-16DTE flashes. Check if the NZ2GNSS2-16DTE on which the SAFETY LED flashes has been installed on the desired position.

6. After checking the position of the module, select "Stop of checking the module position" in "Method selection" in the "Command Execution of Device Station" window and click the [Execute] button.

7. The flashing of the SAFETY LED of the NZ2GNSS2-16DTE stops.

8. Select "Safety module validation" in "Method selection" and click the [Execute] button.

Point

- In the program example, default values are used for parameters that are not shown above. For the parameter setting, refer to the chapter explaining the parameters in this manual. (☞ Page 120 PARAMETER SETTINGS)
- Depending on the lapse of time after logon to the Safety CPU, user authentication may be required again.

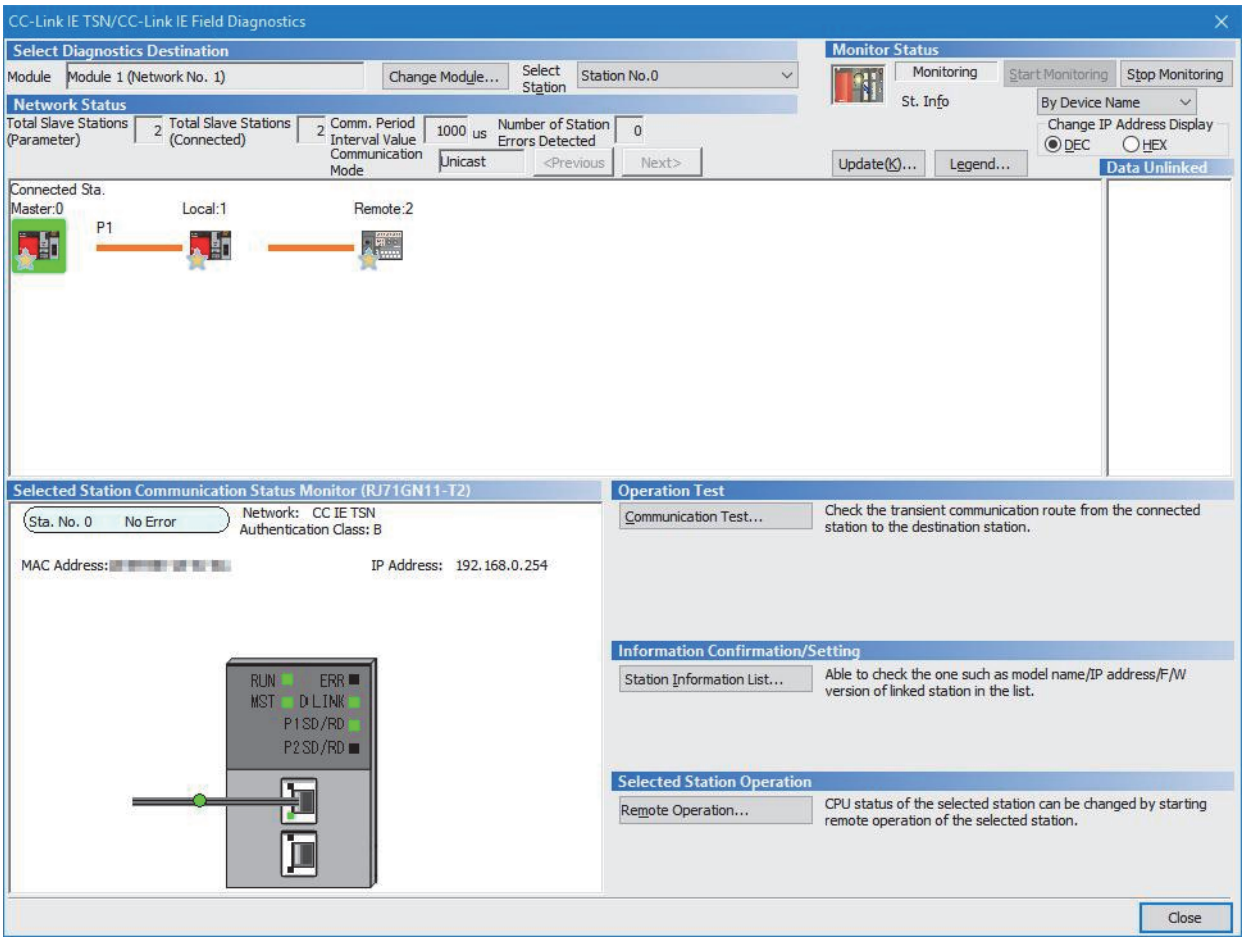
Checking the network status

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.



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

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 215 Checking the Network Status)

Program example

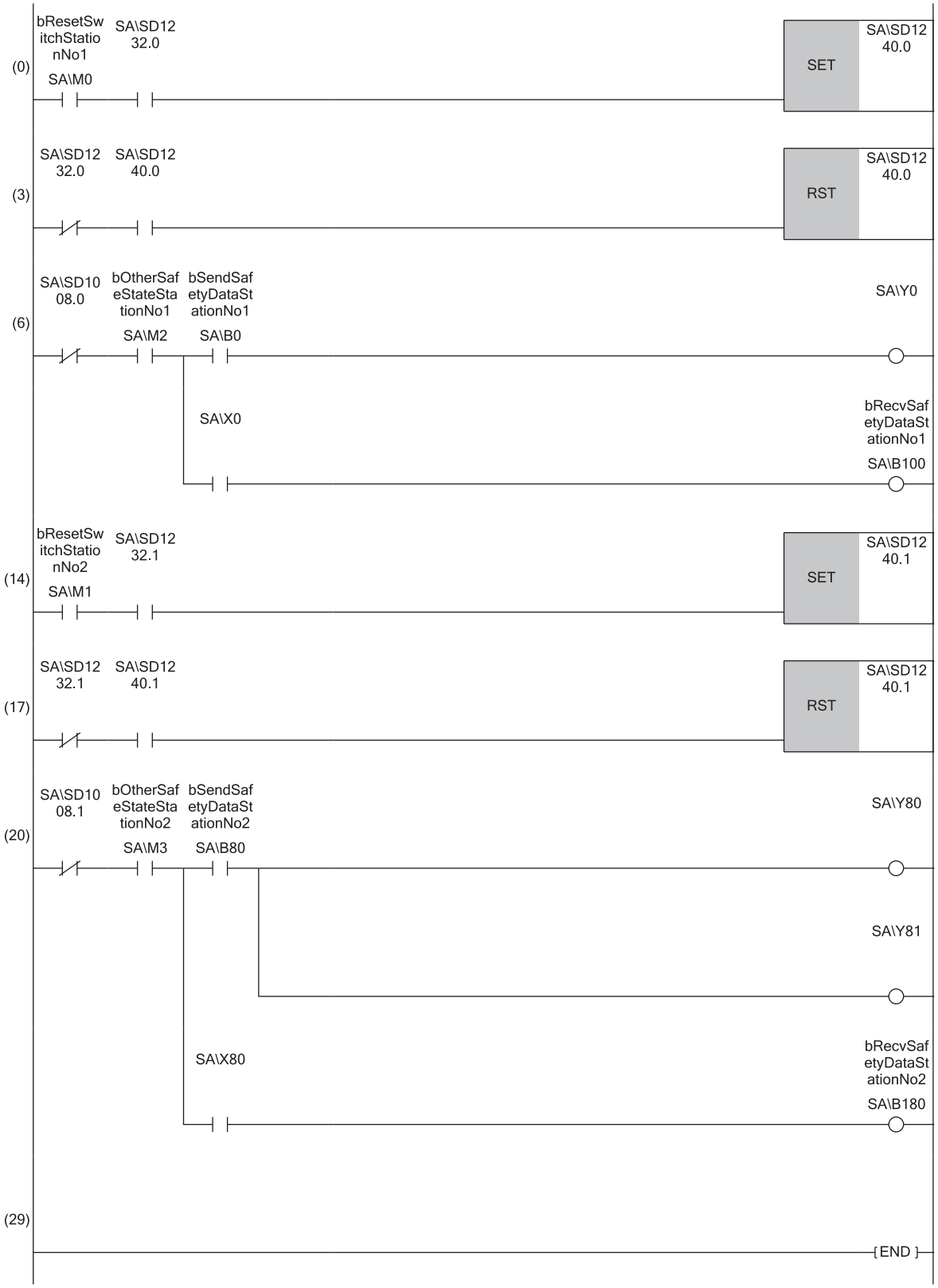
The following shows a program example of each station when the safety program and safety global device are used.

Master station (station No.0)

Classification	Device	Description
Safety special register	SA\SD1008.0	Safety refresh communication status of each safety connection (1st module) (safety connection No.1)
	SA\SD1008.1	Safety refresh communication status of each safety connection (1st module) (safety connection No.2)
	SA\SD1232.0	Interlock status of each safety connection (1st module) (safety connection No.1)
	SA\SD1232.1	Interlock status of each safety connection (1st module) (safety connection No.2)
	SA\SD1240.0	Interlock release request for each safety connection (1st module) (safety connection No.1)
	SA\SD1240.1	Interlock release request for each safety connection (1st module) (safety connection No.2)
Label to be defined	Define safety global labels as shown below:	

	Label Name	Data Type		Class	Assign (Device/Label)
1	bResetSwitchStationNo1	Bit	...	VAR_GLOBAL	SA\M0
2	bResetSwitchStationNo2	Bit	...	VAR_GLOBAL	SA\M1
3	bOtherSafeStateStationNo1	Bit	...	VAR_GLOBAL	SA\M2
4	bOtherSafeStateStationNo2	Bit	...	VAR_GLOBAL	SA\M3
5	bSendSafetyDataStationNo1	Bit	...	VAR_GLOBAL	SA\B0
6	bRecvSafetyDataStationNo1	Bit	...	VAR_GLOBAL	SA\B100
7	bSendSafetyDataStationNo2	Bit	...	VAR_GLOBAL	SA\B80
8	bRecvSafetyDataStationNo2	Bit	...	VAR_GLOBAL	SA\B180

■Master station (station No.0)



(0) This processing is used to release the safety station interlock status in safety communications with station No.1. Turning on bResetSwitchStationNo1 releases the safety station interlock status of safety connection No.1.

(6) Communication program with station No.1. When the safety refresh communication status with safety connection number No.1 is normal and bOtherSafeStateStationNo1 is on, safety output data is sent to the station number No.1 by turning on bSendSafetyDataStationNo1. bRecvSafetyDataStationNo1 is also turned on when safety input data is received from the station number No.1.

(14) This processing is used to release the safety station interlock status in safety communications with station No.2. Turning on bResetSwitchStationNo2 releases the safety station interlock status of safety connection number No.2.

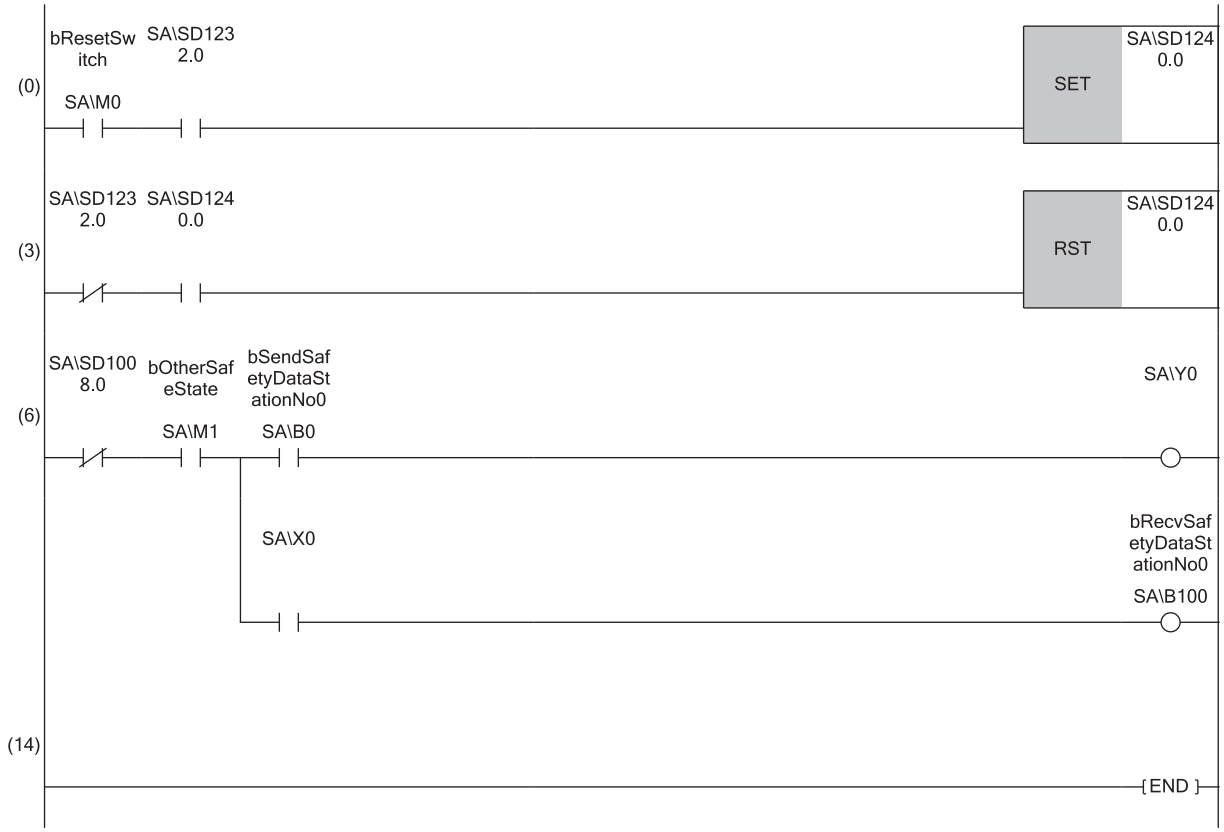
(20) Communication program with station No.2. When the safety refresh communication status with safety connection No.2 is normal and bOtherSafeStateStationNo2 is on, safety output data is sent to the station number No.2 by turning on bSendSafetyDataStationNo2. bRecvSafetyDataStationNo2 is also turned on when safety input data is received from the station number No.2.

Local station (station No.1)

Classification	Device	Description
Safety special register	SA\SD1008.0	Safety refresh communication status of each safety connection (1st module) (safety connection No.1)
	SA\SD1232.0	Interlock status of each safety connection (1st module) (safety connection No.1)
	SA\SD1240.0	Interlock release request for each safety connection (1st module) (safety connection No.1)
Label to be defined	Define safety global labels as shown below:	

	Label Name	Data Type		Class	Assign (Device/Label)
1	bResetSwitch	Bit	...	VAR_GLOBAL	SA\M0
2	bOtherSafeState	Bit	...	VAR_GLOBAL	SA\M1
3	bSendSafetyDataStationNo0	Bit	...	VAR_GLOBAL	SA\B0
4	bRecvSafetyDataStationNo0	Bit	...	VAR_GLOBAL	SA\B100

■Local station (station No.1)



(0) This processing is used to release the safety station interlock status in safety communications with station No.0 (master station). Turning on bResetSwitch releases the safety station interlock status of safety connection No.1.

(6) Communication program with station No.0 (master station). When the safety refresh communication status with safety connection number No.1 is normal and bOtherSafeState is on, safety output data is sent to the station number No.0 by turning on bSendSafeDataStationNo0. bRecvSafeDataStationNo0 is also turned on when safety input data is received from the station number No.0.

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 RJ71GN11.

The RUN LED turns off

When the RUN LED turns off after powering on the RJ71GN11, check the following.

Check item	Action
Is the RJ71GN11 mounted correctly?	Securely mount the RJ71GN11 on the base unit.

If the above action does not solve the problem, perform the module communication test to check for hardware failure. (☞ Page 214 Module Communication Test)

The ERR LED turns on or is flashing

Check the following.

Check item	Action
Does any error occur in the module diagnostics?	Take the actions displayed on the window.
Is a data link faulty station displayed on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window?	• 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 209 The D LINK LED turns off or is flashing) • 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 Initialization failure (parameter mismatch between master and device stations) (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 of the master station?	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 event history of the master station?	• 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. • For the RJ71GN11-T2 with firmware version "15" or later, set 'Protocol setting' (Un\G1294018) of the master station to '1: Protocol version 1.0 fixed'. (☞ Page 315 Protocol information (Un\G1294016 to Un\G1294031)) • After powering on the device stations and the devices on the communication path, power on the master station.
When "Master Station Shift Setting" under "Application Settings" of the master station is set to "Enable", is event code 00C2AH registered in the event history of the master station or the local station that is the current master station?	Take one of the following actions. • Update the firmware to the version corresponding to the master station shift function for the device station whose IP address is displayed in the detailed information of the event. Alternatively, replace with device stations that support protocol version 2.0. • Set "Master Station Shift Setting" under "Application Settings" of the master station to "Disable".

Check item	Action
When "Master Station Shift Setting" under "Application Settings" of the master station is set to "Enable", is a device station that does not support the master station shift function connected?	Take one of the following actions. • Check 'Master station shift each station supporting information' (SW0530 to SW0537) of the master station and update the firmware of all device stations to a version that supports the master station shift function. Alternatively, replace with device stations that support protocol version 2.0. • Set "Master Station Shift Setting" under "Application Settings" of the master station to "Disable".
(RJ71GN11-T2 only) When "Master Station Shift Setting" under "Application Settings" of the master station is set to "Enable", is an industrial switch (CC-Link IE TSN Class B certified) used?	Take one of the following actions. • Remove the industrial switch (CC-Link IE TSN Class B certified). • Set "Master Station Shift Setting" under "Application Settings" of the master station to "Disable".
(RJ71GN11-T2 only) When "Master Station Shift Setting" under "Application Settings" of the master station is set to "Enable", is the star topology configured?	Take one of the following actions. • Configure the network in ring topology if "Network Topology" of the master station is set to "Ring". When "Line/Star" is set, configure line topology. • Set "Master Station Shift Setting" under "Application Settings" of the master station to "Disable".
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.

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

• Module communication test (☞ Page 214 Module Communication Test)

■If the RJ71GN11-T2 with a firmware version of "11" or earlier is used

Also check the following:

Check item	Action
Is a data link faulty station displayed on the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window?	■When the communication speed of the data link faulty station is 100Mbps, and the communication speed of the master station is 1Gbps Take either of the following actions for wiring and setting. • Use either P1 or P2 of the master station. • Connect the data link faulty station to a multicast filter supported device and activate the multicast mode. (📖 Manual of the device used)

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 RJ71GN11 in the master station, take action according to the module diagnosis procedure. (Page 212 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 or optical fiber cables conform to the standard?	Replace the cable with one conforming to the standard. (MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
(If the RJ71GN11-SX is used, this item applies only to the firmware version of "04" or later.) 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. (MELSEC iQ-R CC-Link IE TSN 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. (MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
Does the cabling condition (bending radius) meet the specifications?	Refer to the manual for the cable, and correct the bending radius.
Is any Ethernet cable or optical fiber cable disconnected?	Replace the cable.
Is the connection different from the one set for "Network Topology" under "Basic Settings" of the master station?	Correct the wiring according to "Network Topology" under "Basic Settings" of the master station. (Page 128 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 connected stations operating normally?	• Check if the other stations are performing data link using CC-Link IE TSN/CC-Link IE Field diagnostics. (Page 215 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. (MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
Are station numbers unique?	Change the overlapped station number.
Is the IP address overlapped with another station?	Change the IP address of the overlapped station.
Are 121 or more device stations connected?	Change the connection of the device stations to 120 stations or less.
(RJ71GN11-T2 only) Are Ethernet devices properly connected to a network line?	Correct the mixed structure of the Ethernet device. (MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
(RJ71GN11-SX only) Are a CC-Link IE TSN device and an Ethernet device coexisted?	Correct the wiring. (MELSEC iQ-R CC-Link IE TSN 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?	

Check item	Action
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 industrial switch (CC-Link IE TSN Class B certified).
	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.
When "Master Station Shift Setting" under "Application Settings" of the master station is set to "Enable", is event code 00C2AH registered in the event history of the master station or the local station that is the current master station?	Take one of the following actions. • Update the firmware to the version corresponding to the master station shift function for the device station whose IP address is displayed in the detailed information of the event. Alternatively, replace with device stations that support protocol version 2.0. • Set "Master Station Shift Setting" under "Application Settings" of the master station to "Disable".
When "Master Station Shift Setting" under "Application Settings" of the master station is set to "Enable", is a device station that does not support the master station shift function connected?	Take one of the following actions. • Check 'Master station shift each station supporting information' (SW0530 to SW0537) of the master station and update the firmware of all device stations to a version that supports the master station shift function. Alternatively, replace with device stations that support protocol version 2.0. • Set "Master Station Shift Setting" under "Application Settings" of the master station to "Disable".
(RJ71GN11-T2 only) When "Master Station Shift Setting" under "Application Settings" of the master station is set to "Enable", is an industrial switch (CC-Link IE TSN certified) used?	Take one of the following actions. • Disconnect the industrial switch (CC-Link IE TSN certified). • Set "Master Station Shift Setting" under "Application Settings" of the master station to "Disable".
(RJ71GN11-T2 only) When "Master Station Shift Setting" under "Application Settings" of the master station is set to "Enable", is the star topology configured?	Take one of the following actions. • Configure the network in ring topology if "Network Topology" of the master station is set to "Ring". When "Line/Star" is set, configure line topology. • Set "Master Station Shift Setting" under "Application Settings" of the master station to "Disable".
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.

The L ER LED turns on (RJ71GN11-T2)

Check the following.

Check item	Action
Do the used Ethernet cables conform to the Ethernet standard?	Replace the cable with one conforming to the standard. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within range. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
Is any Ethernet cable disconnected?	Replace the 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. (📖 MELSEC iQ-R CC-Link IE TSN 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.
Is the connection different from the one set for "Network Topology" under "Basic Settings" of the master station?	Correct the wiring to be a proper ring topology.

The LINK LED turns off (RJ71GN11-T2)

Check the following.

Check item	Action
Do the used Ethernet cables conform to the Ethernet standard?	Replace the cables with Ethernet cables which conform to the standard. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within range. (📖 MELSEC iQ-R CC-Link IE TSN 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. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup)) • Power off and on the industrial switch (CC-Link IE TSN certified).
Are other connected stations operating normally?	Check the manual of the module used for the other stations and take action accordingly. (📖 User's manual for the module used)
Does the communication speed of the connected device match the communication speed set in "Communication Speed"?	Connect the device with the communication speed set in "Communication Speed".
If the RJ71GN11-T2 with a firmware version of "03" or earlier is used, 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 and local station to connect a device with a communication speed of 100Mbps, is the auto-negotiation of the device valid?	Enable the auto-negotiation of the connected device. Or, connect a device with auto-negotiation enabled.

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

- Module communication test (☞ Page 214 Module Communication Test)

The L ERR LED turns on or is flashing (RJ71GN11-SX)

Check the following.

Check item	Action
Does the optical fiber cable used conform to the standard?	Replace the optical fiber cable with one conforming to the standard. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within 550m.
Is any optical fiber cable disconnected?	Replace the optical fiber cable.
If the RJ71GN11-SX with a firmware version of "04" or later is used, 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. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup)) • Power off and on the industrial switch (CC-Link IE TSN certified).
Are other connected stations operating normally?	Check if the other stations are performing data link using CC-Link IE TSN/CC-Link IE Field diagnostics. (☞ Page 215 Checking the Network Status)
Is the connection different from the one set for "Network Topology" under "Basic Settings" of the master station?	Correct the wiring to be a proper ring topology.
Is the optical fiber cable surely connected to a port of the module?	• Lightly pull the optical fiber cable connector to check if it is surely connected. If the cable is not connected properly, disconnect the optical fiber cable once and then push its connector into the port of the module until it clicks. • When the L ERR LED does not turn off even the above actions are taken, reset all stations or turn off and on the system.

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.

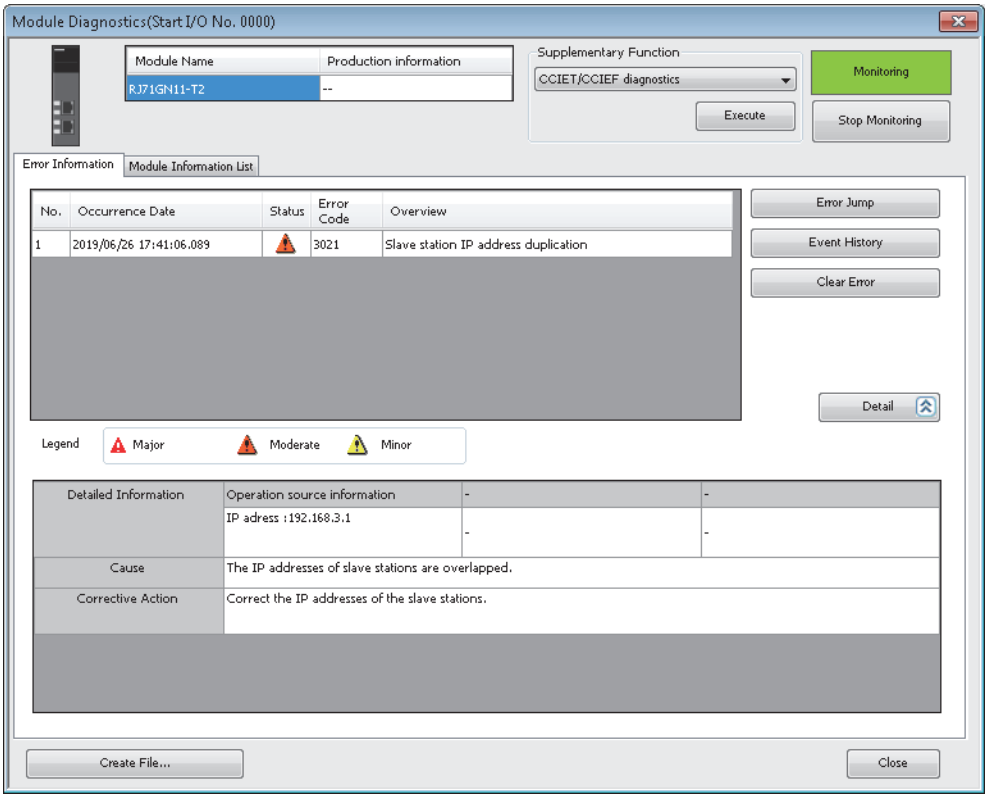
Module Diagnostics

The following items can be checked in the "Module Diagnostics" window for the RJ71GN11.

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 occurrence date, click the [Event History] button and refer to the event history.
[Module Information List] tab		Displays the LED information and individual information of the RJ71GN11.
Supplementary Function	CCIET/CCIEF diagnostics	Enables checking the cause to resolve the problem when an error occurs in the CC-Link IE TSN. (☞ Page 215 Checking the Network Status)

Error Information

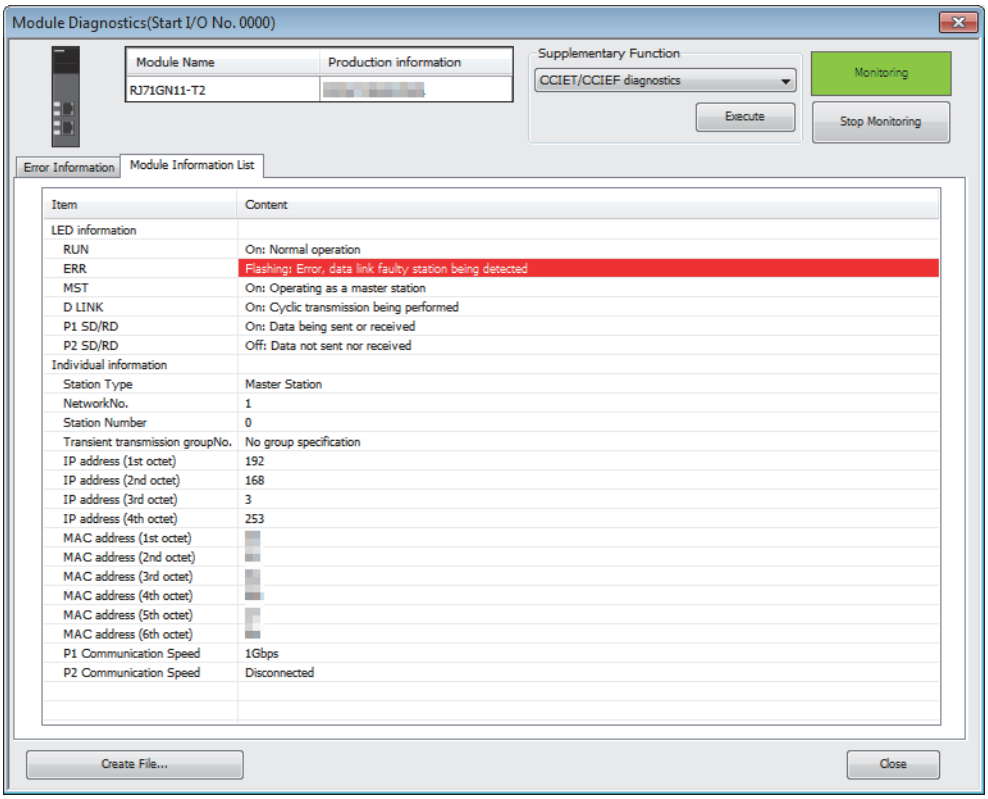
The details of the errors currently occurring and the corrective actions for these errors are displayed in the [Error Information] tab.



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 253 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 287 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 285 List of Parameter Numbers)
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 RJ71GN11 are displayed in the [Module Information List] tab.



Item		Description
LED information		Displays the LED status of the RJ71GN11.
Individual information	Station Type	Displays the station type set for the selected module.
	Network No.	Displays the network number set for the selected module.
	Station Number	Displays the station number set for the selected module.
	Transient transmission group No.	Displays the transient transmission group number 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	
Function Configuration Information	LB/LW Points Extended Setting	Displays the settings for the number of link points extension of the selected module.

Module Communication Test

This function checks the module hardware when communication using the RJ71GN11 is unstable.
Connect the P1 and P2 of the RJ71GN11-T2 with an Ethernet cable or the P1 and P2 of the RJ71GN11-SX with an optical fiber cable.
The following table lists the tests performed.

Test item	Description
Internal self-loopback test	Checks whether the communication function of the module can be performed normally.
External self-loopback test	Checks whether the communication can be performed normally with the cable connected between two connectors of the module.

Procedure

1. Set the module operation mode to module communication test mode in the following item.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Target module ⇨ [Application Settings] ⇨ [Module Operation Mode]

2. Connect the P1 and P2 of the RJ71GN11 with a cable.
3. Write the module parameters to the CPU module.
4. Reset or power off and on the CPU module to start the module communication test.

Point

Do not perform a module communication test while connected to another station. The operation of the other station may fail.

Checking the status and result

The test status and result can be checked with the LED indications of the module.

Test status	LED indication
Test in progress	The dot matrix LED displays "UCT".
Normal completion	The dot matrix LED displays "OK".
Completed with an error	The ERR LED turns on and the dot matrix LED indicates "ERR" and error number alternately at intervals of 1 second.

■Error number when the test completed with an error

The dot matrix LED indicates an error with the form of "P1 or P2_Error number".
For example, "1_3" is displayed when error No.3 occurs in P1.
If the module communication test is completed with an error, check the following.

Error number	Description	Action
1	Internal selfloopback test error	Please consult your local Mitsubishi representative.
2	External self-loopback test connection error	Check the cable connection or replace the cable, and perform the test again. If the test results in an error again, please consult your local Mitsubishi representative.
3	External self-loopback test communication error	Replace the cable and perform the test again. If the test results in an error again, please consult your local Mitsubishi representative.

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 RJ71GN11 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 Operation Mode Setting" under "Application Settings" of the RJ71GN11 is not in the online mode.
- The error code 20E0H occurs.
- The engineering tool is not connected to a station with the same communication speed as the master station.
- The network topology of the diagnostics destination does not support the version of the engineering tool or module.
- In the network where the master station shift function is enabled, a supported version of the engineering tool is not used.

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 ×: Not diagnosed

Item		Overview	Connection destination of engineering tool		Reference
			Master station	Local 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 220 "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 225 Communication Test
Information Confirmation/Setting	Station Information List	Check information of the device stations which are performing data link in list form.	○	○	Page 227 Station Information List
Selected Station Operation	Remote Operation	Operate remotely from the engineering tool to device stations.	△*1	△*1	Page 228 Remote Operation

*1 If the setting on the "Specify Connection Destination Connection" window of the engineering tool is as follows, remote operation cannot be executed with "All Stations Specified".
Connection via Ethernet with the selections "Ethernet Board" for the personal computer-side I/F and "CC IE TSN/Field Module" for the programmable controller-side I/F

Restriction

When starting the CC-Link IE TSN/CC-Link IE Field diagnostics by specifying "Other Station (Single Network)" or "Other Station (Co-existence Network)" in "Other Station Setting" on the "Specify Connection Destination Connection" window, the following restrictions apply.

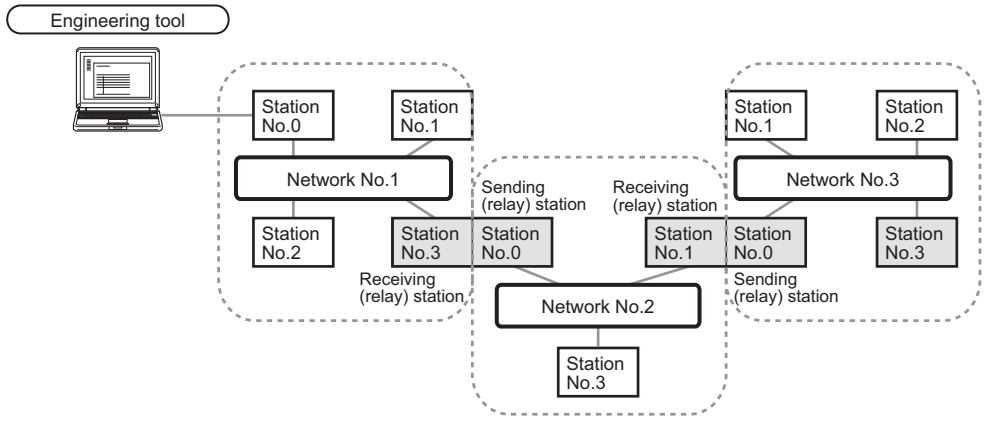
- A communication test cannot be used.
- A station information list cannot be used.
- If MELSECNET/H, multidrop connection of serial communication modules, an interface board for personal computer, a GOT (FA transparent function used), or network modules of the MELSEC-Q/L series are included in the communication path, diagnostics cannot start.

When "Other Station (Co-existence Network)" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window and "CC-Link" or "C24" is specified in "Co-existence Network Route", diagnostics cannot start.

Point

When starting the CC-Link IE TSN/CC-Link IE Field diagnostics by specifying "Other Station (Single Network)" or "Other Station (Co-existence Network)" in "Other Station Setting" on the "Specify Connection Destination Connection" window, specify the network number and station number of the relay receiving station or relay sending station for "Network No." and "Station No." in "Network Communication Route" on the "Specify Connection Destination Connection" window.

For example, to start the CC-Link IE TSN/CC-Link IE Field diagnostics of the network number 2, specify the network number 1 and station number 3, or the network number 2 and station number 0 in "Network No." and "Station No.".



- Although the CC-Link IE TSN/CC-Link IE Field diagnostics of the network to which the relay sending station belongs can be started, that of the network to which the relay receiving station belongs cannot be started.
- The CC-Link IE TSN/CC-Link IE Field diagnostics can be started for stations of up to eight networks ahead (number of relay stations: 7) including the station directly connected to the engineering tool.

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.

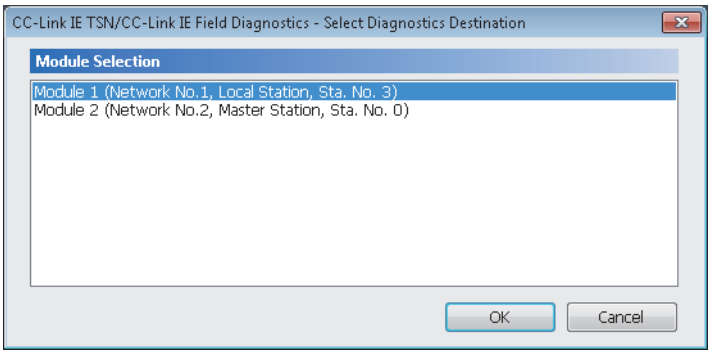
If a device station cannot be monitored due to an error such as cable disconnection, directly connect the engineering tool to the device station.

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 RJ71GN11 to be diagnosed and click the [OK] button to start the CC-Link IE TSN/CC-Link IE Field diagnostics.

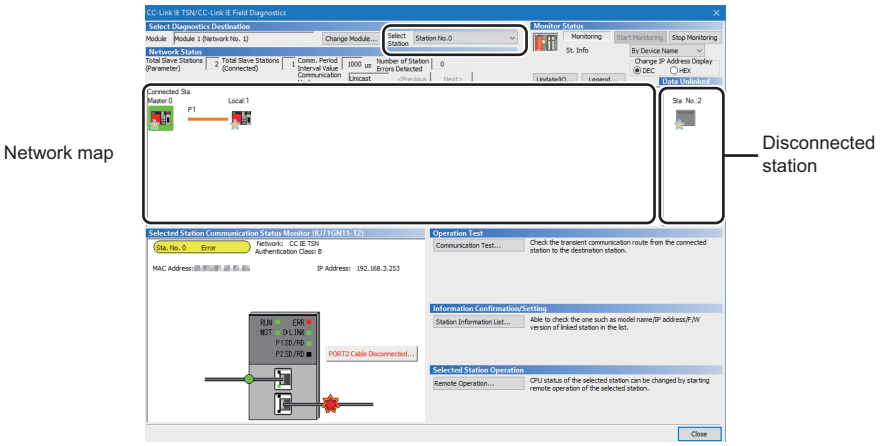
Modules are listed in the order configured in module information.



Point

When multiple RJ71GN11s with the same network number are mounted on the same base unit, the module with the smallest slot number on that base unit is always diagnosed, regardless of setting. However, when the master station or current master station exists on the same base unit, the master station or current master station with the smallest slot number on that base unit will be diagnosed even if any modules are selected. In addition, if data link error occurs in the module with the smallest slot number on that base unit, the network map is not displayed if the local station is selected.

4. Select the station to be diagnosed from "Select Station" or in the network map.



In this manual, "Authentication Class" is described 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 number 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 220 "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 225 Communication Test, Page 228 Remote Operation)

■When a setting other than "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window

1. Connect the engineering tool to the CPU module.
2. Start the CC-Link IE TSN/CC-Link IE Field diagnostics.

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

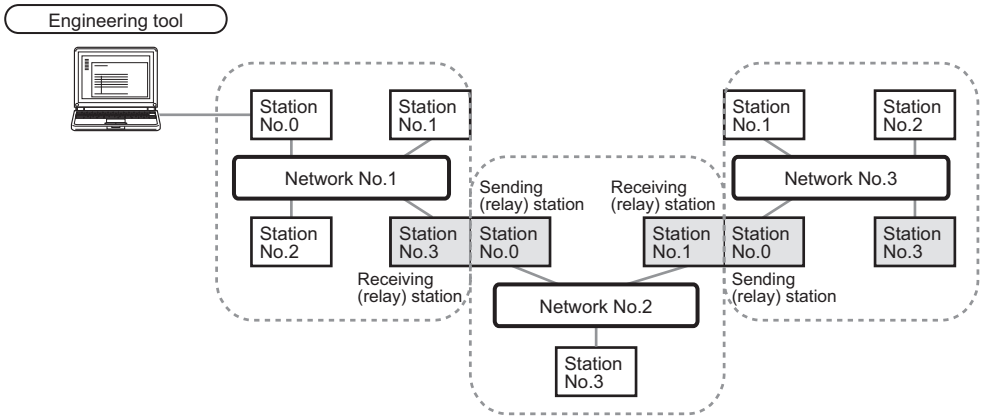
Point

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

3. Select the RJ71GN11 of the network number to be diagnosed and click the [OK] button to start the CC-Link IE TSN/CC-Link IE Field diagnostics.

Point

- Although the CC-Link IE TSN/CC-Link IE Field diagnostics of the network to which the relay sending station belongs can be started, that of the network to which the relay receiving station belongs cannot be started.
- To start the CC-Link IE TSN/CC-Link IE Field diagnostics, specify the network number and station number of the relay receiving station or relay sending station for "Network No." and "Station No." in "Network Communication Route" on the "Specify Connection Destination Connection" window. For example, to start the CC-Link IE TSN/CC-Link IE Field diagnostics of the network number 2, specify the network number 1 and station number 3, or the network number 2 and station number 0 in "Network No." and "Station No.".

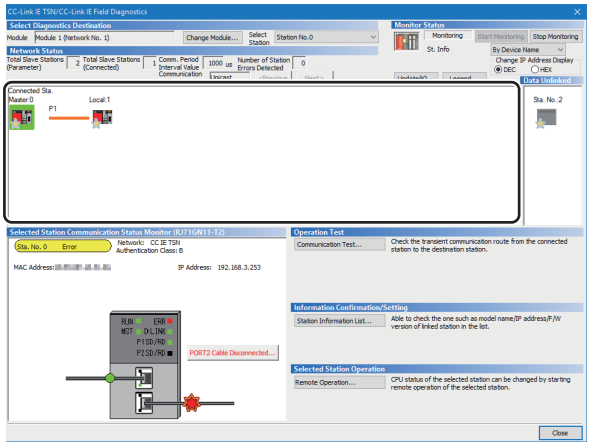


- The CC-Link IE TSN/CC-Link IE Field diagnostics can be started for stations of up to eight networks ahead (number of relay stations: 7) including the station directly connected to the engineering tool.
- The selected station communication status monitor of the RJ72GF15-T2 cannot be executed in the CC-Link IE TSN/CC-Link IE Field diagnostics for the stations of five networks ahead (number of relay stations: 4) or later.

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 217 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 described as "CC-Link IE TSN Class".

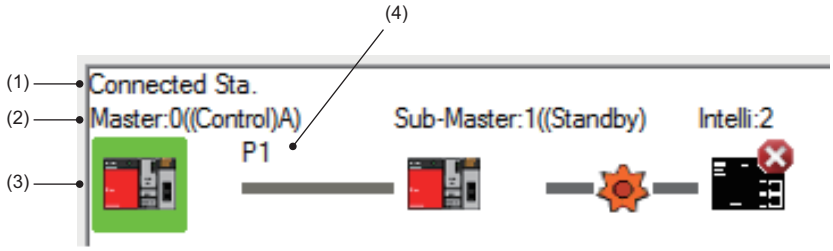
Item		Description
Select Diagnostics Destination	Module	The RJ71GN11 under diagnostics is displayed.
	[Change Module] button	Allows to change the target RJ71GN11 when multiple RJ71GN11s are mounted. However, when multiple RJ71GN11s with the same network number are mounted on the same base unit, the module with the smallest slot number on that base unit is always diagnosed, regardless of setting.
	Select Station	Selects the station number 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.
Network Status	Total Linked Stations (Parameter)	Displays the total number of device stations set in "Network Configuration Settings" under "Basic Settings".
	Total Linked Stations (Connected)	Stores the total number of device stations that are actually connected by data link in the 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 222 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 or 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 number 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.

Item		Description
Selected Station Communication Status Monitor		Status of the station selected in "Network Status" is displayed. (☞ Page 224 Selected Station Communication Status Monitor)
Operation Test	[Communication Test] button	Performs a communication test. (☞ Page 225 Communication Test)
Information Confirmation /Setting	[Station Information List] button	Displays information of the device stations which are performing data link in list form. (☞ Page 227 Station Information List)
Selected Station Operation	[Remote Operation] button	Performs remote operation (such as RUN, STOP, or RESET operations) to the CPU module. (☞ Page 228 Remote Operation)

Network map

■Icon

The module type and station number are displayed with an icon.

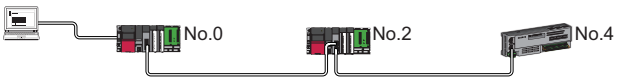
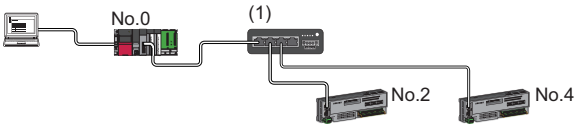
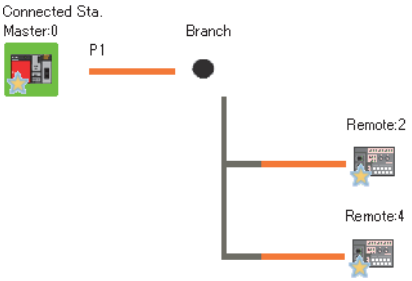
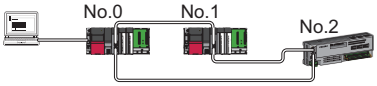
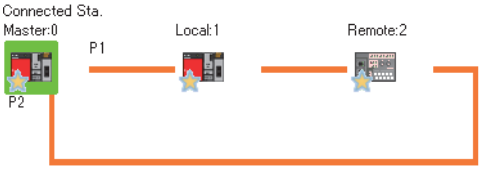
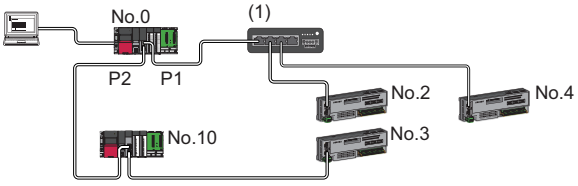
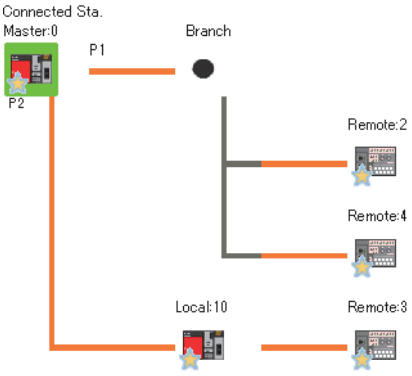


- Click: Selection
- Right-click: Executes tests or debugging.
- ↑ ↓ ← → keys on the keyboard: Move the focus to the module to be diagnosed, and determine it with the Space key.

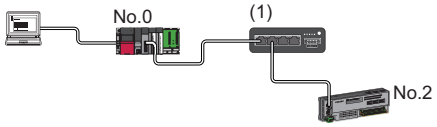
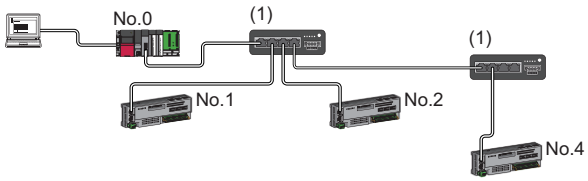
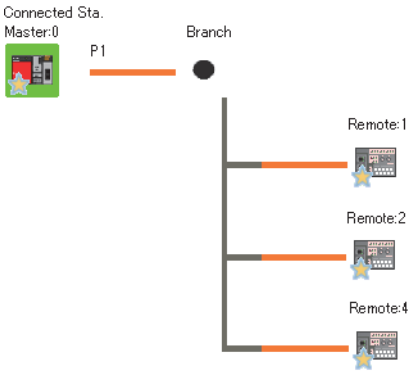
No.	Description
(1)	Displays the station (own station) where the engineering tool is connected.
(2)	Displays the station type and station number. "?" is displayed when a station number has not been set. When the background of the text if colored, the relevant station may have been set as a reserved station or an error invalid station. Click the [Legend] button to check the meaning of the background colors.
(3)	Module status is displayed. Click the [Legend] button to check the meaning of the icon. When the "Error (Illegal ring connection detected)" icon is displayed, take actions displayed in "Troubleshooting" of "Error details". (☞ Page 224 Selected Station Communication Status Monitor)
(4)	P1 or P2 to which an Ethernet cable or optical fiber cable is connected is displayed.

■Network map

A network map is displayed according to the connection status. (For the RJ71GN11-SX with a firmware version of "03" or earlier, only the ring topology is supported.)

Connection status	Display of the network map
Line topology 	
Star topology  (1) Industrial switch	
Ring topology 	
Coexistence of line and star topologies  (1) Industrial switch	

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

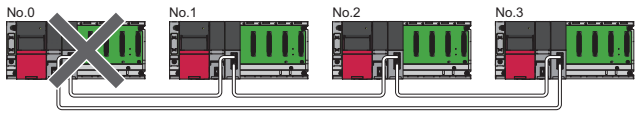
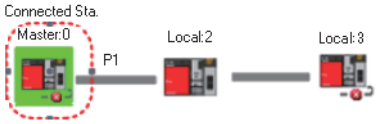
Connection status	Display of the network map
Two stations are connected through an industrial switch.  (1) Industrial switch	Branches are not displayed in the network map. 
Industrial switches are in cascade connection.  (1) Industrial switch	Only one branch is displayed. 

Precautions

- Stations in offline mode are not displayed in the network map. In line topology, stations connected after a station in offline mode are not displayed because they are disconnected.
- If a station whose connection information cannot be obtained exists in a line topology, the network map will be displayed as a star topology.
- Stations whose connection order has not been set in a ring topology will be displayed in ascending order of the IP addresses.

■Display during use of the master station shift function

When the master station shift function is used, the network map displays the current master station at the upper left. When the current master station is switched, the map displays the local station that has become the current master station at the upper left.

Connection status	Display of the network map
 	

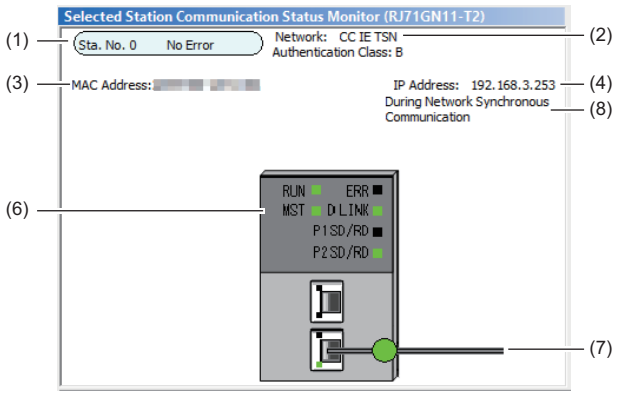
Precautions

- If the local station is the current master station and "By Device Name" is selected in "St. Info", the station type will be displayed instead of the device name.
- If master station shifting occurs while the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window is being displayed, an error message will be displayed and monitoring may stop. To restart monitoring, click the [Start Monitoring] button. However, the time may take to start monitoring depending on the number of connected modules, and an error message may be displayed again.
- If master station shifting occurs while the "CC-Link IE TSN/CC-Link IE Field Diagnostics" window is being displayed, the display may temporarily differ from the actual system.
- When the master station returns, the network map changes to display the master station that is the current master station in the center. However, it may take some time for the returning master station to detect local stations and perform data links with all local stations. Therefore, it may take some time for the local stations to be displayed as a normally operating stations in the network map.

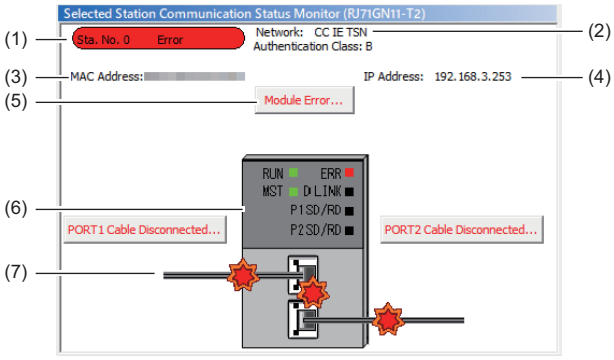
Selected Station Communication Status Monitor

Displays status of the station selected in "Network Status". The RJ71GN11-T2 window is used for the explanation.

■Normal operation



■Error status



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

No.	Description
(1)	Indicates the station number and operating status. ■Normal operation • Station number No error (light blue): Normal operation ■Error status • Station number Error (yellow): Error (Data link is continued) • Station number 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 is displayed. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
(7)	The status of the Ethernet cables or optical fiber cables connected to P1 and P2 is displayed.
(8)	The operating status of the network synchronous communications is displayed.*2*3

*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. When the master station does not perform the network synchronous communications, "During Network Synchronous Communication" is displayed in a device station while the device station is performing the network synchronous communications.

*3 If the RJ71GN11-SX is used, the status is displayed if the firmware version is "04" or later.

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

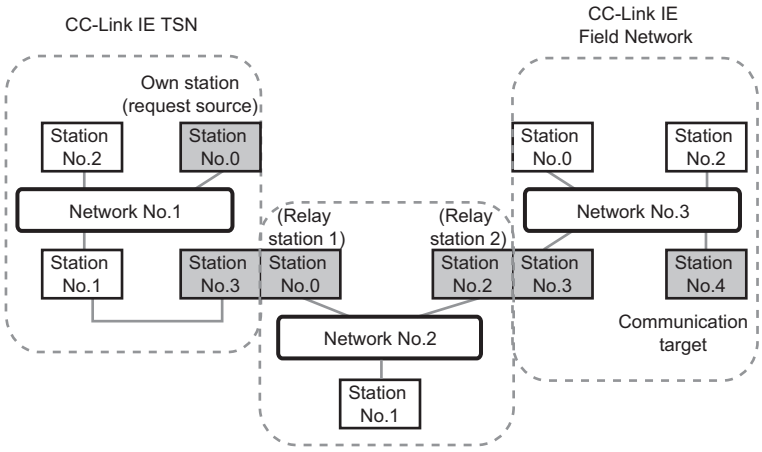
The information of devices are not displayed. The "Error details" window (detailed information, error factor, troubleshooting) is displayed.

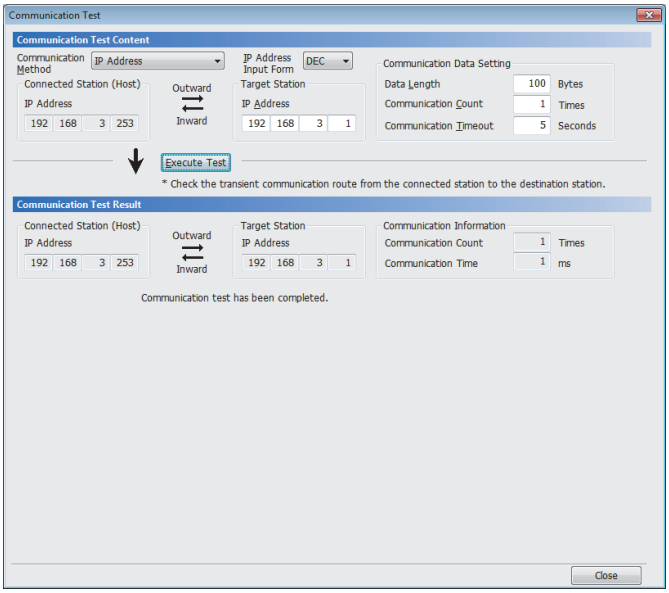
Communication Test

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	Stations on the other network
Network No./Station No.	○ Available for check	○ Available for check (relay stations to be transmitted through can also be checked)
IP Address	○ Available for check	× Not available for check

The following system configuration is used to explain the procedure of the communication test.





1. Display the "Communication Test" window and select "Network No./Station No." or "IP Address" from "Communication Method".

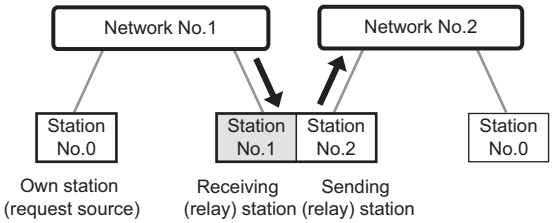
[Diagnostics] ⇨ [CC-Link IE TSN/CC-Link IE Field Diagnostics] ⇨ [Communication Test] button

2. Enter values for "Target Station" and "Communication Data Setting".

3. Click the [Execute Test] button to execute the communication test. If an error occurs, take corrective actions according to the error message.

Precautions

- When a relay sending station is set to "Target Station", the communication test ends with an error. Set a relay receiving station to "Target Station".

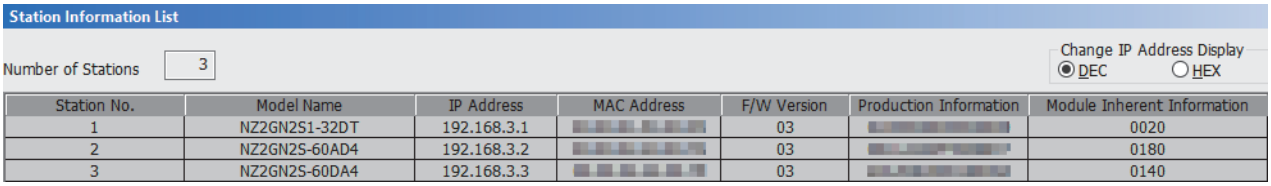


- When "Network No./Station No." is selected for "Communication Method" and a station mounted on the same base unit (main base unit and extension base unit) is set to "Target Station", the communication test ends with an error.
- Since this function uses PING, a communication test target station communication error (error code D919H) occurs if the communication target does not respond to PING. When executing this function, check that the security setting (such as a firewall) of the communication target is set to respond to PING. Moreover, be aware that it may take some time for a timeout error to be displayed on the engineering tool if the target is not set to respond to PING. 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 information of the device stations which are performing data link in list form.



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

- The station information list displays only the device stations which are performing data link.
- If the engineering tool does not have information of the relevant device station, "—" is displayed for each item.
- If the relevant device station is an unsupported module, "Other Modules" is displayed.

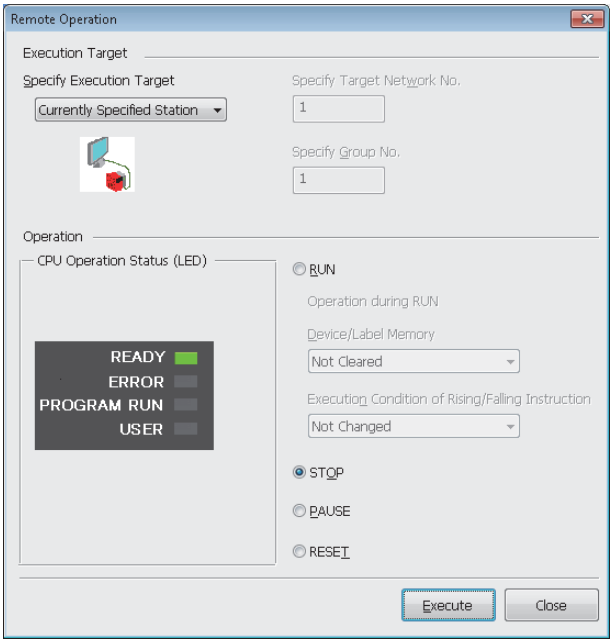
Remote Operation

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 RJ71GN11 selected, refer to the manual for the module used.

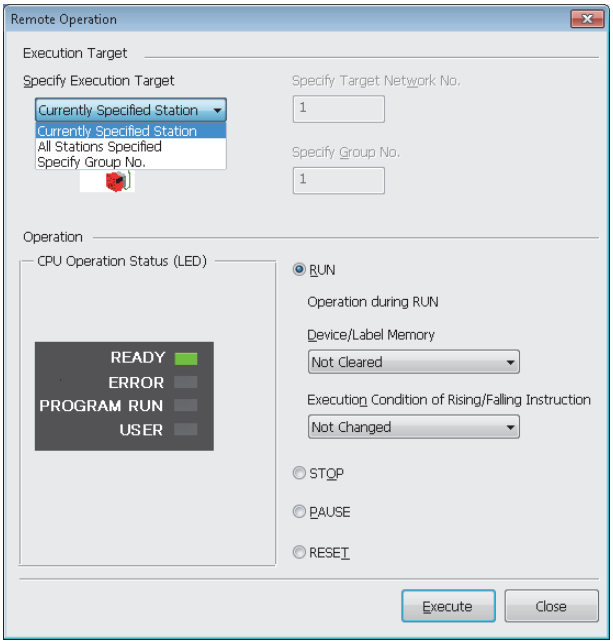
Procedure

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 number 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 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 RJ71GN11.

If an error has occurred in the RJ71GN11, identify the error cause using the engineering tool. (☞ Page 215 Checking the Network Status)

- ☞ Page 230 Cyclic transmission failed
- ☞ Page 235 Transient transmission failed
- ☞ Page 240 Station is disconnected from the network
- ☞ Page 240 Station is repeatedly disconnected and reconnected (RJ71GN11-T2),Page 242 Station is repeatedly disconnected and reconnected (RJ71GN11-SX)
- ☞ Page 244 Communications are unstable
- ☞ Page 244 SLMP communications failed
- ☞ Page 245 The control CPU of the local station is not synchronized with the time
- ☞ Page 245 Communications with Ethernet devices failed
- ☞ Page 246 Although the data link is normal, communications for the link device failed
- ☞ Page 246 Desynchronization with CC-Link IE TSN network synchronous communication function
- ☞ Page 247 Safety communications failed (RJ71GN11-T2 only)
- ☞ Page 247 Cannot be monitored using the CC-Link IE TSN Communication Software
- ☞ Page 248 Cannot be displayed properly in "CC-Link IE TSN/CC-Link IE Field Diagnostics" window
- ☞ Page 248 The selected station communication status monitor is not displayed properly
- ☞ Page 249 CC-Link IE TSN Class A device cannot perform data link
- ☞ Page 251 The master station shift function does not properly work (RJ71GN11-T2 only)
- ☞ Page 251 ERR LED control does not properly work
- ☞ Page 251 Improper information is displayed
- ☞ Page 251 Detection of connected/disconnected devices does not properly work
- ☞ Page 251 The IP address setting function does not properly work
- ☞ Page 251 Device station parameter processing does not properly work
- ☞ Page 252 Parameter processing for multiple device stations does not properly work
- ☞ Page 252 Command execution to device stations does not properly work
- The co-recording function does not operate properly. (📖MELSEC iQ-R System Recorder Co-recording Function Reference Manual)

Cyclic transmission failed

Check the following.

Check item		Action
Is the D LINK LED turned on?		Perform troubleshooting for when the D LINK LED turns off or is flashing. (☞ Page 209 The D LINK LED turns off or is flashing)
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 switching hub delay time according to the industrial switch (CC-Link IE TSN Class B certified) used. (☞ Page 352 Communication cycle intervals) For the switching hub delay time, refer to the manual for the industrial switch (CC-Link IE TSN Class B certified) used.
(RJ71GN11-T2 only) When "Communication Speed" under "Application Settings" 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 20μs?		Set "System Reservation Time" to 200μs.
Is "— — —" displayed on the dot matrix LED?		• Set the module parameters. • Check the firmware version of the RJ71GN11. When module parameters that are not supported are set, upgrade the firmware version or correct the module parameters.
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 the 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"	■For the RJ71GN11-T2 with firmware version "13" 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 a CC-Link IE TSN Class B device other than the master station connected via a switch other than an industrial switch (CC-Link IE TSN Class B certified) in a 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 the star topology. • Connect CC-Link IE TSN Class B devices to an industrial switch (CC-Link IE TSN Class B certified).
	Are the master station and CC-Link IE TSN Class B devices connected via 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 in a line topology without 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 to an industrial switch (CC-Link IE TSN Class B certified).
	■For RJ71GN11-T2 with firmware version "13" or earlier In multicast mode, is the CC-Link IE TSN Class A remote station connected to the master station?	• 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, is the CC-Link IE TSN Class A remote station connected to a local station or remote station that does not support the multicast filter?	
	In multicast mode, are a local station and a CC-Link IE TSN Class A remote station 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 frames (with multicast MAC addresses 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 used?	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).
	■For RJ71GN11-T2 with firmware version "14" 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.
	(RJ71GN11-T2 only) If the device stations being used support protocol version 2.0, is the master station that does not support protocol version 2.0 being used?	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.

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 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. • For firmware version "15" or later, set 'Protocol setting' (Un\G1294018) of the master station to '1: Protocol version 1.0 fixed'. (☞ Page 315 Protocol information (Un\G1294016 to Un\G1294031)) • 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. • For RJ71GN11-T2 with firmware version "15" or later, set 'Protocol setting' (Un\G1294018) of the master station to '1: Protocol version 1.0 fixed'. (☞ Page 315 Protocol information (Un\G1294016 to Un\G1294031)) • 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 protocol version 2.0 connected to an industrial switch (CC-Link IE TSN Class A certified)?	Check whether the VLAN function of the industrial switch (CC-Link IE TSN Class A certified) is set to "Enable". If it is set to "Enable", set 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 the device is connected via a switch other than an industrial switch (CC-Link IE TSN Class B certified), replace the industrial switch (CC-Link IE TSN Class A certified) with 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 249 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.

Check item		Action
If the stations are connected in a line topology, do "Communication Speed" for the stations match one another?		Correct "Communication Speed" under "Application Settings" for the stations so that the communication speeds match one another.
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?	■For RJ71GN11-T2 Disconnect the Ethernet switch.
		■For RJ71GN11-SX with firmware version "04" or later 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.
	■For RJ71GN11-T2 with firmware version "13" or earlier Is a device not set in "Network Configuration Settings" of the master station connected?	Disconnect the device not set in "Network Configuration Settings" of the master station.
Is the minimum value for communication cycle interval set to both "Communication Period Interval Setting" and "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" of the module parameter?		Set "Cyclic Transmission Time" to a value obtained by the following formula: Minimum value of cyclic transmission time + Greatest value among the two values shown below. • 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, then reset the master station.
(RJ71GN11-T2 only) When "Communication Speed" of the master station is 1Gbps, has the cyclic data size exceeded 2K bytes in total for all device stations on the CC-Link IE TSN Class B device side with the communication speed of 100Mbps at the boundary between CC-Link IE TSN Class B devices (except for the master station) with the communication speed of 1Gbps and CC-Link IE TSN Class B device with the communication speed of 100Mbps?		• Restrict the number of the connected stations so that the cyclic data size of the devices with communication speed of 100Mbps does not exceed 2K bytes in total. • Connect the device with communication speed of 100Mbps to the master station.
■For RJ71GN11-T2 with firmware version "14" 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 firmware version of the master station to "15" 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 352 Communication cycle intervals)

If the above actions do not solve the problem, perform the module communication test to check for hardware failure. (☞ Page 214 Module Communication Test)

■If the RJ71GN11-T2 with a firmware version of "03" or earlier is used

Also 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 connected in line topology?	• Check the connected device and do not connect the CC-Link IE TSN Class A device in line topology. • When connecting a CC-Link IE TSN Class B device and a CC-Link IE TSN Class A device, connect them via an industrial switch (CC-Link IE TSN certified).
	In a line topology plus star topology, are CC-Link IE TSN Class A devices connected to the master station in a 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.
	Is a CC-Link IE TSN Class A device connected between the master station and CC-Link IE TSN Class B devices?	• Check the connected device and connect the master station and a CC-Link IE TSN Class B device without a switch other than an industrial switch (CC-Link IE TSN Class B certified). • When connecting a CC-Link IE TSN Class A device, use an industrial switch (CC-Link IE TSN certified).
	Are the master station and CC-Link IE TSN Class A devices connected in a line topology?	Check the connected devices, and if connecting the master station and CC-Link IE TSN Class A devices, connect them using an industrial switch (CC-Link IE TSN Class B 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 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 a switch other than an industrial switch (CC-Link IE TSN Class B certified) connected 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 turned off?		If turned off, perform troubleshooting for when the D LINK LED turns off or is flashing. (☞ Page 209 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 215 Checking the Network Status)
Is the following control data of the module FB or dedicated instruction correct? • CPU type of the target module • Target network number • Target station number • Target IP address		Correct the control data of the module FB or dedicated instruction.
Is the network number overlapped on the network?		Change the overlapped network number.
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.
Is "— — —" displayed on the dot matrix LED?		• Set the module parameters. • Check the firmware version of the RJ71GN11. When module parameters that are not supported are set, upgrade the firmware version or correct the module parameters.
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 the 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"	■For the RJ71GN11-T2 with firmware version "13" 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 a CC-Link IE TSN Class B device other than the master station connected via a switch other than an industrial switch (CC-Link IE TSN Class B certified) in a 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 the star topology. • Connect CC-Link IE TSN Class B devices to an industrial switch (CC-Link IE TSN Class B certified).
	Are the master station and CC-Link IE TSN Class B devices connected via 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 in a line topology without 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 to an industrial switch (CC-Link IE TSN Class B certified).
	■For RJ71GN11-T2 with firmware version "13" or earlier In multicast mode, is the CC-Link IE TSN Class A remote station connected to the master station?	• 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, is the CC-Link IE TSN Class A remote station connected to a local station or remote station that does not support the multicast filter?	
	In multicast mode, are a local station and a CC-Link IE TSN Class A remote station 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 frames (with multicast MAC addresses 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 used?	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).
	■For RJ71GN11-T2 with firmware version "14" or later Is the event code 00C81H registered in the event history?	Change "CC-Link IE TSN Class" under "Network Configuration Settings" or CC-Link IE TSN Class settings on the device station side so that the CC-Link IE TSN Class settings match.
	(RJ71GN11-T2 only) If the device stations being used support protocol version 2.0, is the master station that does not support protocol version 2.0 being used?	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. • For firmware version "15" or later, set 'Protocol setting' (Un\G1294018) of the master station to '1: Protocol version 1.0 fixed'. (☞ Page 315 Protocol information (Un\G1294016 to Un\G1294031)) • 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 '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. • For firmware version "15" or later, set 'Protocol setting' (Un\G1294018) of the master station to '1: Protocol version 1.0 fixed'. (☞ Page 315 Protocol information (Un\G1294016 to Un\G1294031)) • 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.
		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 the device is connected via an industrial switch (CC-Link IE TSN Class A certified), replace the industrial switch (CC-Link IE TSN Class A certified) with 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 249 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.
	■For the RJ71GN11-T2 with firmware version "14" Is a CC-Link IE TSN Class A device that supports the CANopen profile with the protocol version 2.0 connected?		Update the firmware version of the master station to "15" or later.
If the stations are connected in a line topology, do "Communication Speed" for the stations match one another?			Correct "Communication Speed" under "Application Settings" for the stations so that the communication speeds match one another.
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.

Check item		Action
(RJ71GN11-T2 only) In multicast mode, are a local station and a CC-Link IE TSN Class A remote station 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 frames (with multicast MAC addresses 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.
	■For RJ71GN11-T2 with firmware version "13" or earlier Is a device not set in "Network Configuration Settings" of the master station connected?	Disconnect the device not set in "Network Configuration Settings" of the master station.
Is the minimum value for communication cycle interval set to both "Communication Period Interval Setting" and "Cyclic Transmission Time" in "Communication Period Setting" under "Basic Settings" of the module parameter?		Set "Cyclic Transmission Time" to a value obtained by the following formula: Minimum value of cyclic transmission time + Greatest value among the two values shown below. • 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, then reset the master station.
When "Communication Speed" of the master station is 1Gbps, has the cyclic data size exceeded 2K bytes in total for all device stations on the CC-Link IE TSN Class B device side with the communication speed of 100Mbps at the boundary between CC-Link IE TSN Class B devices (except for the master station) with the communication speed of 1Gbps and CC-Link IE TSN Class B device with the communication speed of 100Mbps?		• Restrict the number of the connected stations so that the cyclic data size of the devices with communication speed of 100Mbps does not exceed 2K bytes in total. • Connect the device with communication speed of 100Mbps to the master station.
■For RJ71GN11-T2 with firmware version "14" 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 firmware version of the master station to "15" 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 352 Communication cycle intervals)
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 84 Precautions)
Has the communication path using dynamic routing been determined?		• Power on the system, and then start transient transmission after a while. • When "Dynamic Routing" is set to "Disable" for the stations on the communication path, change the settings to "Enable".
Do the relay stations on the communication path support dynamic routing?		If relay stations which do not support dynamic routing exist, set "Routing Setting" in "CPU parameter" to all stations on the communication path.
Is the routing parameter for the sending source of transient transmission correct?		Correct the "Routing Setting" of "CPU Parameters" if there is an error.
Have the routing parameters of the relay station correctly been set?		Correct the "Routing Setting" of "CPU Parameters" if there is an error.
Is the line congested due to other transient transmission?		• Execute the transient transmission again after lowering the transient transmission usage frequency. • Increase the "Transient Transmission Time" setting value.
Is any Ethernet cable or optical fiber cable disconnected?		Replace the cable.

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

- Module communication test (☞ Page 214 Module Communication Test)
- Communication test (☞ Page 225 Communication Test)

■If the RJ71GN11-T2 with a firmware version of "03" or earlier is used

Also 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 connected in line topology?	• Check the connected device and do not connect the CC-Link IE TSN Class A device in line topology. • When connecting a CC-Link IE TSN Class B device and a CC-Link IE TSN Class A device, connect them via an industrial switch (CC-Link IE TSN certified).
	In a line topology plus star topology, are CC-Link IE TSN Class A devices connected to the master station in a 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.
	Is a CC-Link IE TSN Class A device connected between the master station and CC-Link IE TSN Class B devices?	• Check the connected device and connect the master station and a CC-Link IE TSN Class B device without a switch other than an industrial switch (CC-Link IE TSN Class B certified). • When connecting a CC-Link IE TSN Class A device, use an industrial switch (CC-Link IE TSN certified).
	Are the master station and CC-Link IE TSN Class A devices connected in a line topology?	Check the connected devices, and if connecting the master station and CC-Link IE TSN Class A devices, connect them using 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.
Other than the master station, is a dedicated instruction executed for the station with a communication speed different from the master station?		Execute it on the master station.
Are multiple dedicated instructions simultaneously executed for the station with a communication speed different from the master station?		Shift the execution timing of the dedicated instructions.

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.

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

- Module communication test (☞ Page 214 Module Communication Test)

Station is repeatedly disconnected and reconnected (RJ71GN11-T2)

The following lists the actions to be taken when a station in data link to RJ71GN11-T2 is repeatedly disconnected and reconnected.

Check item		Action
Do the used Ethernet cables conform to the Ethernet standard?		Replace the cable with one conforming to the standard. (📖 MELSEC iQ-R CC-Link IE TSN 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 cable, and if the bending radius exceeds the specified range, correct the bending radius.
Is any Ethernet cable disconnected?		If a cable is disconnected, replace it.
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. (📖 MELSEC iQ-R CC-Link IE TSN 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 20μs?		Set "System Reservation Time" to 200μs.
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, 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 disconnect and return repeatedly 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 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 frames (with multicast MAC addresses 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 the device is connected via an industrial switch (CC-Link IE TSN Class A certified), replace the industrial switch (CC-Link IE TSN Class A certified) with 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))

Check item	Action
■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 249 CC-Link IE TSN Class A device cannot perform data link
Does any of the stations break the restrictions of the industrial switch (CC-Link IE TSN Class B certified)?	Comply with the restrictions of the industrial switch (CC-Link IE TSN Class B certified). For the restrictions, refer to the manual for the industrial switch (CC-Link IE TSN Class B certified) used.
When "Communication Speed" of the master station is 1Gbps, has the cyclic data size exceeded 2K bytes in total for all device stations on the CC-Link IE TSN Class B device side with the communication speed of 100Mbps at the boundary between CC-Link IE TSN Class B devices (except for the master station) with the communication speed of 1Gbps and CC-Link IE TSN Class B device with the communication speed of 100Mbps?	• Restrict the number of the connected stations so that the cyclic data size of the devices with communication speed of 100Mbps does not exceed 2K bytes in total. • Connect the device with communication speed of 100Mbps to the master station.
Has the cyclic data size exceeded 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 (except for the master station) and CC-Link IE TSN Class A devices?	• Correct 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.
In multicast mode, is the CC-Link IE TSN Class A remote station connected to a local station or 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.
■For firmware version "14" Is a CC-Link IE TSN Class A device that supports the CANopen profile with the protocol version 2.0 connected?	Update the firmware version of the master station to "15" or later.

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

- Module communication test (☞ Page 214 Module Communication Test)

■If the RJ71GN11-T2 with a firmware version of "13" or earlier is used

Also check the following:

Check item	Action
In multicast mode, is the CC-Link IE TSN Class A remote station connected to the master station?	• Connect the local station or remote station supporting the multicast filter to the CC-Link IE TSN Class A remote station. • Set unicast mode.

■If the RJ71GN11-T2 with a firmware version of "11" or earlier is used

Also check the following:

Check item	Action
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, does the station disconnect and return repeatedly even if "Communication Period Setting" is set to "Low-Speed"?	Take either of the following actions for wiring and setting. • Use either P1 or P2 of the master station. • Connect the data link faulty station to a multicast filter supported device and activate the multicast mode. (📖 Manual of the device used)

Station is repeatedly disconnected and reconnected (RJ71GN11-SX)

The following lists the actions to be taken when a station in data link to RJ71GN11-SX is repeatedly disconnected and reconnected.

Check item		Action
Do the optical fiber cables or Ethernet cables used conform to the standard?		Replace the cable with one conforming to the standard. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
Is the station-to-station distance 550m or less?		Change the station-to-station distance to 550m or less.
Does the cabling condition (bending radius) meet the specifications?		Refer to the manual for the cable, and if the bending radius exceeds the specified range, correct the bending radius.
Is any optical fiber cable or Ethernet cable disconnected?		If a cable is disconnected, replace it.
Is the industrial switch (CC-Link IE TSN Class B certified) used operating normally?		• Use an industrial switch (CC-Link IE TSN Class B certified) that conforms to the standard. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup)) • Power off and on the industrial switch (CC-Link IE TSN Class B 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 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, 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 disconnect and return repeatedly 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)
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 the device is connected via an industrial switch (CC-Link IE TSN Class A certified), replace the industrial switch (CC-Link IE TSN Class A certified) with 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)) • Connect the CC-Link IE TSN Class A device to the master station.
Is "TSN HUB Setting" set to "Use TSN HUB"?	Is a CC-Link IE TSN Class A device connected to a switch other than an industrial switch (CC-Link IE TSN Class B certified)?	• Replace the switch with 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 the industrial switch (CC-Link IE TSN Class B certified).
	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 an industrial switch (CC-Link IE TSN Class A certified), replace the industrial switch (CC-Link IE TSN Class A certified) with 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)) • Connect the CC-Link IE TSN Class A device to the master station.
Is "TSN HUB Setting" set to "Not to Use TSN HUB"?	Is an industrial switch (CC-Link IE TSN Class B certified) connected?	• Disconnect the industrial switch (CC-Link IE TSN Class B certified). • Set "TSN HUB Setting" to "Use TSN HUB".
Does any of the stations break the restrictions of the industrial switch (CC-Link IE TSN Class B certified)?		Comply with the restrictions of the industrial switch (CC-Link IE TSN Class B certified). For the restrictions, refer to the manual for the industrial switch (CC-Link IE TSN Class B certified) used.
Has the cyclic data size exceeded 2K bytes in total for all device stations on the CC-Link IE TSN Class B device side (100Mbps) at the boundary between CC-Link IE TSN Class B devices (1Gbps) and CC-Link IE TSN Class B devices (100Mbps)?		• Restrict the number of the connected stations so that the cyclic data size of the devices with communication speed of 100Mbps does not exceed 2K bytes in total. • Connect the device with communication speed of 100Mbps to the master station.

Check item	Action
In multicast mode, is the CC-Link IE TSN Class A remote station connected to a local station or 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.

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

• Module communication test (☞ Page 214 Module Communication Test)

■If the RJ71GN11-SX with a firmware version of "03" or earlier is used

Check item	Action
Does the optical fiber cable used conform to the standard?	Replace the cable with one conforming to the standard. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))
Is the station-to-station distance 550m or less?	Change the station-to-station distance to 550m or less.
Does the cabling condition (bending radius) meet the specifications?	Refer to the manual for the cable, and if the bending radius exceeds the specified range, correct the bending radius.
Is any optical fiber cable disconnected?	If a cable is disconnected, replace it.
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.

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

• Module communication test (☞ Page 214 Module Communication Test)

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
■RJ71GN11-T2 Is the L ER LED turned on?	If turned on, perform troubleshooting for a case when the L ER LED is turned on. (☞ Page 210 The L ER LED turns on (RJ71GN11-T2))
■RJ71GN11-SX Is the L ERR LED turned on?	If turned on, perform troubleshooting for a case when the L ERR LED is turned on. (☞ Page 211 The L ERR LED turns on or is flashing (RJ71GN11-SX))
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 module communication test. (☞ Page 214 Module Communication 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.

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 RJ71GN11.
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 remote station that does not support the multicast filter?	• Connect the Ethernet device to a local station or 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 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 frames (with multicast MAC addresses 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.

If the above actions do not solve the problem, perform the module communication test to check for hardware failure. (☞ Page 214 Module Communication Test)

*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 number.

■If the RJ71GN11-T2 with a firmware version of "13" or earlier is used

Also check the following:

Check item	Action
In multicast mode, is an Ethernet device connected to the master station?	• Connect the Ethernet device to a local station or 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.

The control CPU of the local station is not synchronized with the time

Check the following.

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

Communications with Ethernet devices failed

Check the following.

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 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 remote station that does not support the multicast filter?	• Connect the Ethernet device to a local station or 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 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 frames (with multicast MAC addresses 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.

📖 GX Works3 Operating Manual

If the above actions do not solve the problem, perform the module communication test to check for hardware failure. (☞ Page 214 Module Communication Test)

Although the data link is normal, communications for the link device failed

When the link device cannot communicate although the data link is normal (D LINK LED is on), 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" overlapped 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".

Desynchronization with CC-Link IE TSN network synchronous communication function

When 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 "Inter-Module Synchronization Setting" 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 of the device station set in the network configuration settings of the master station?	By using "Network Configuration Settings" under "Basic Settings" of the module parameter, set "Network Synchronous Communication" of the device station to "Synchronous".
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, either update the firmware of the CPU module or change the CPU module to a CPU module supporting that function.

Safety communications failed (RJ71GN11-T2 only)

Check the following.

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 142 "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 375 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 376 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 375 Transmission interval monitoring time) • Correct the setting value of "Safety Refresh Monitoring Time" in "Safety Communication Setting" under "Basic Settings". (☞ Page 376 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 a standard station set for the IP address of the communication destination in "Safety Communication Setting" under "Basic Settings" in the local station?	Set a safety station for the IP address of the communication destination in "Safety Communication Setting" under "Basic Settings".
Is "Safety Data Transfer Device Setting" in "Safety Communication Setting" under "Basic Settings" correctly set?	Correct "Safety Data Transfer Device Setting" set in "Safety Communication Setting" under "Basic Settings" among safety stations that perform safety communications.
When safety communications are performed with the remote station (safety station), has the safety module validation been performed?	Perform the safety module validation. (📖 Manual for the remote station used)
Is the CPU number set correctly when the CPU module whose CPU number is set to the communication destination is selected in "Safety Communication Setting" of "Basic Settings" of the master station?	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)

If the above actions do not solve the problem, perform the module communication test to check for hardware failure. (☞ Page 214 Module Communication Test)

Cannot be monitored using the CC-Link IE TSN 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 the 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 the CC-Link IE TSN Class B device or an industrial switch (CC-Link IE TSN Class B certified).
Does the CC-Link IE TSN Communication Software reconnect within 20 seconds of disconnecting?	Before reconnecting the CC-Link IE TSN Communication Software, wait more than 20 seconds.
Is "LB/LW Points Extended Setting" under "Application Settings" of the master station set to "Extend"?	Correct the setting for the master station and change it to "Not to Extend".
Is "Master Station Shift Setting" under "Application Settings" of the master station set to "Enable"?	Correct the setting for the master station and change it to "Disable".

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

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

Cannot be displayed properly in "CC-Link IE TSN/CC-Link IE Field Diagnostics" window

If the network map in "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

The selected station communication status monitor is not displayed properly

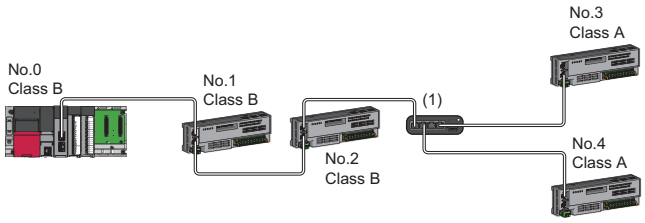
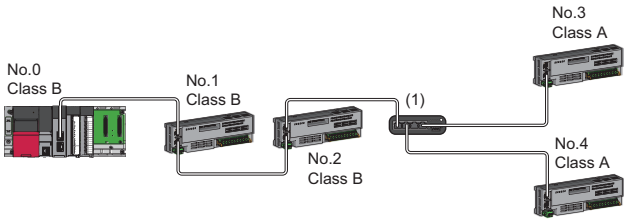
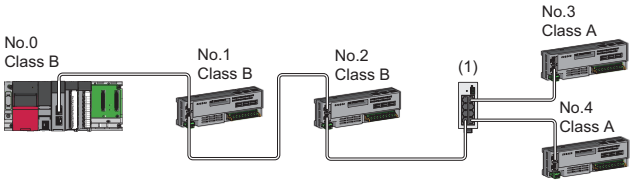
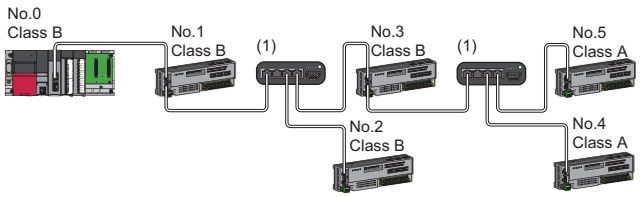
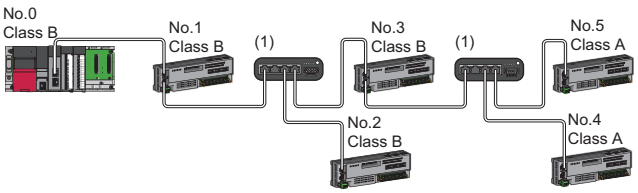
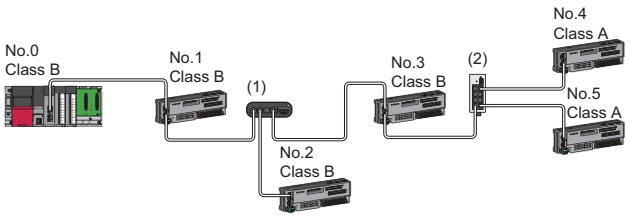
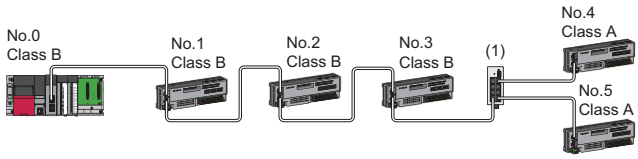
If the selected station communication status monitor is not displayed properly when the SNMP community name is set, check the following.

Check item	Action
Is an engineering tool that supports SNMP community name setting being used?	Update the engineering tool to the latest version.
Does the master station or the local station that is the current master station being used support SNMP community name setting?	Update the firmware version of the master station or the local station that is the current master station to a version that supports SNMP community name setting. Or, replace the master station or the local station that is the current master station with a device that supports SNMP community name setting. (☞ Page 389 Added and Enhanced Functions) Afterward, use the engineering tool to set "Community Name" under "Security" in the "Application Settings" of the master station.
Is the community name of the returned master station different from that of the disconnected master station?	Set the same community name for the returned master station as the disconnected master station.
Is the SNMP community name set properly to the device station?	• Check that the SNMP community name is set for the device station. • If the device station is the RJ71GN11, check whether event code 14001 is registered in the event history. If it is not registered, reset the power or disconnect and reconnect the cable, and then check that event code 14001 is registered. • If the device station is not the RJ71GN11, refer to the manual for the device station used and take the corrective actions.

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

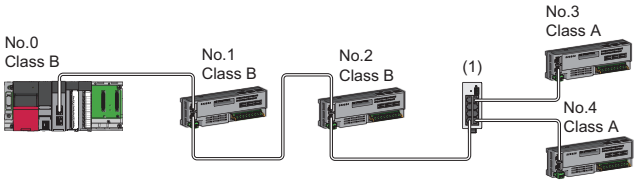
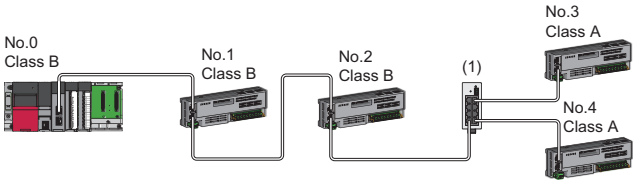
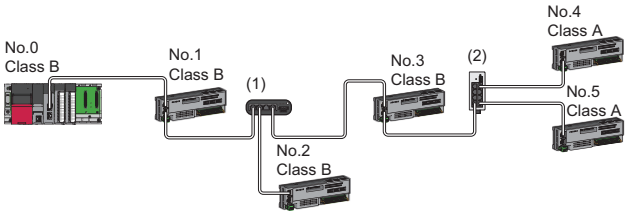
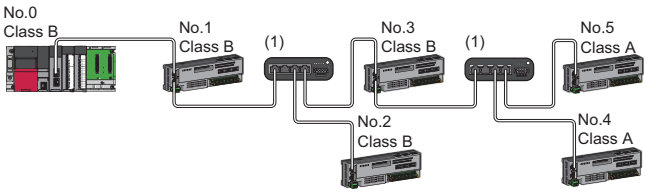
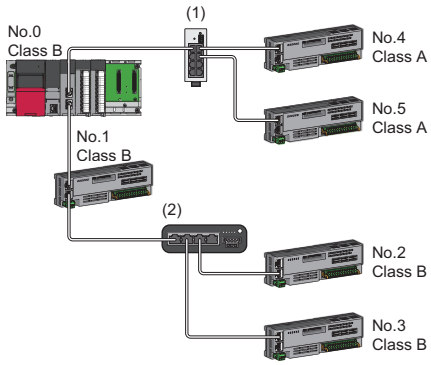
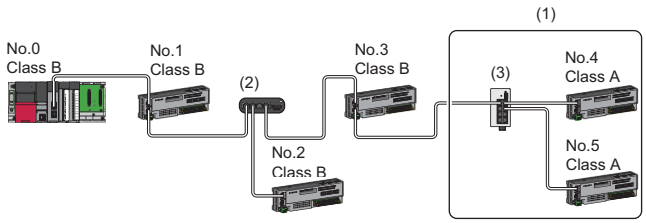
■When set to "Not to Use TSN HUB"

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

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 it 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 the 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 the 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 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.

Check item	Action
Are the CC-Link IE TSN Class B device and 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 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. Or connect the device 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)

The master station shift function does not properly work (RJ71GN11-T2 only)

If the master station shift function is used but the master station cannot be correctly shifted or a data link error occurs after the master station is shifted, check the following.

Check item	Action
Is an industrial switch (CC-Link IE TSN Class B certified) used?	Remove the industrial switch (CC-Link IE TSN Class B certified).

ERR LED control does not 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.
The event code 00523H is not registered in the event history of the device station.	• Check that the industrial switch (CC-Link IE TSN Class B certified) and the cables have no abnormalities. (☞ Page 210 The L ER LED turns on (RJ71GN11-T2)) • Change Send request (Un\G1294368) from 0 to 1.
Is the station type of the current master station a local station?	This function cannot be executed if the current master station is a local station.
Do the master station and local stations support ERR LED control?	Refer to the manuals of the master station and local stations and check that they support ERR LED control. 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.

Detection of connected/disconnected devices does not properly work

If detection of connected/disconnected devices does not properly work when setting the SNMP community name, check the following.

Check item	Action
Is an engineering tool that supports SNMP community name setting being used?	Update the engineering tool to the latest version.
Is the SNMP community name set properly to the device station?	If the device station is not the RJ71GN11, refer to the manual for the device station used and take the corrective actions.

The IP address setting function does not properly work

If the IP address setting function does not properly work when the SNMP community name is set, check the following.
☞ Page 251 Detection of connected/disconnected devices does not properly work

Device station parameter processing does not properly work

If the parameter processing of the device station does not properly work when the SNMP community name is set, check the following.

Check item	Action
Is an engineering tool that supports SNMP community name setting being used?	Update the engineering tool to the latest version.
Is the SNMP community name set properly to the device station?	If the device station is not the RJ71GN11, refer to the manual for the device station used and take the corrective actions.

Parameter processing for multiple device stations does not properly work

If parameter processing for multiple device stations does not properly work when the SNMP community name is set, check the following.

☞ Page 251 Device station parameter processing does not properly work

Command execution to device stations does not properly work

If command execution to a device station does not properly work when the SNMP community name is set, check the following.

☞ Page 251 Device station parameter processing does not properly work

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 RJ71GN11 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 RJ71GN11. (☞ Page 212 Error Information)

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
1080H	The number of writes to the flash ROM has exceeded 100000.	Replace the module.	—
1082H	Writing failed because it was performed continuously to the same sector of the flash ROM within 90 seconds.	Wait for at least 90 seconds before writing to the same sector.	
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 number is incorrect.	Correct the port number.	—
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 switch (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 Ethernet cable or optical fiber cable is connected properly. • Check that the industrial switch (CC-Link IE TSN certified) is connected properly. • Execute the communication test, and if the test was completed with an error, take corrective action.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
1802H	• At startup of a data link, an overlapping IP address among device stations has been detected. • 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)
1803H	Over the number of stations that can be connected.	■When the firmware version of the RJ71GN11-T2 is "04" or later • 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. Do one or both of the following: • Update the master station to a version that supports CC-Link IE TSN protocol version 2.0. • Update the firmware of the CC-Link IE TSN Class A device to the latest version, or replace it with a device that supports CC-Link IE TSN protocol version 2.0. ■When the firmware version of the RJ71GN11-T2 is "03" or earlier • Configure the system with the total number of stations to 31 (master station: 1, device station: 30) or less. • Configure the system with the number of CC-Link IE TSN Class B devices to eight or less for each port of the master station. ■When the firmware version of the RJ71GN11-SX is "04" or later • 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. • Update the firmware of the CC-Link IE TSN Class A device to the latest version, or replace it with a device that supports CC-Link IE TSN protocol version 2.0.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
1804H	During a 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. • (For the RJ71GN11-T2 only) With the master station with a communication speed of 100Mbps, a station with a communication speed of 1Gbps is connected. • (For the RJ71GN11-T2 only) 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". • With the master station with a communication speed of 1Gbps, "Communication Period Setting" of the station with a communication speed of 100Mbps is set to "Basic Period" or "Normal-Speed" (×4). • The communication speed of the master station and local station are not matched. ■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. • When the master station with a communication speed of 1Gbps, both stations with a communication speed of 1Gbps and 100Mbps are connected on the end side 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 the CC-Link IE TSN Class A station further on the end side than the CC-Link IE TSN Class B station. • If the master station has a communication speed of 1Gbps, connect the station with a communication speed of 1Gbps on the master station side rather than on the side where a station with a communication speed of 100Mbps is connected. • (For the RJ71GN11-T2 only) If the master station has a communication speed of 100Mbps, set the communication speed of the device station to 100Mbps. • (For the RJ71GN11-T2 only) If the master station has a communication speed of 100Mbps, set "Communication Period Setting" of the CC-Link IE TSN Class B station with a communication speed of 100Mbps to "Basic Period" or "Normal-Speed" (×4). • If the master station has a communication speed of 1Gbps, set "Communication Period Setting" to "Low-Speed" for the station with a communication speed of 100Mbps. • Set the same communication speed for the master station and local station. ■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. • If the master station has a communication speed of 1Gbps, do not connect both stations with a communication speed of 1Gbps and 100Mbps on the end side 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
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. • Set the total cyclic data size of all device stations on the 100Mps side at the boundary between stations with a 1Gbps communication speed and stations with a 100Mbps communication speed so that it does not exceed 2K bytes. For calculation of the total cyclic data size, refer to the following. (📖 MELSEC iQ-R CC-Link IE TSN User's Manual (Startup))	■Own station information • I/O No. • Network No. • Station No. • IP address ■Target station information • Network No. • Station No. • IP address
1806H	• When "TSN HUB Setting" is set to "Not to Use TSN HUB", connection of the CC-Link IE TSN Class B devices in a star topology has been detected. • A CC-Link IE TSN Class B device is connected further on the end side than a CC-Link IE TSN Class A device.	• Remove 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 the CC-Link IE TSN Class A device further on the end side than the CC-Link IE TSN Class B device.	■Own station information • I/O No. • Network No. • Station No. • IP address ■—
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 lower the transient transmission usage frequency.	—
1845H	Too much processing of transient transmission (link dedicated instruction) and cannot perform transient transmission.	Correct the transient transmission (link dedicated instruction) execution count.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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 is not 0 in 'Transient transmission additional time (calculation value)' (SW007A), add the value (in units of μs) 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 a few times even after taking the above action, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.	— —
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 "Inter-module Synchronization Setting" 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 is not 0 in 'Transient transmission additional time (calculation value)' (SW007A), add the value (in units of μ) to "Communication Period Interval Setting" and "Transient Transmission Time". • Refer to the manual for the device stations used and if they do not support the communication cycle of "Normal-Speed" and "Low-Speed", set "Network Configuration Setting" to "Basic Period" under "Basic Settings" of the master station. • Do not perform the online change in the CPU module. • Check that 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	A co-recording trigger was received but then discarded because the trigger was not supported.	Check the firmware versions of the network module and the co-recording trigger source device. If the combination is incorrect, update the firmware version of the network module or co-recording trigger source device, whichever the older version is used.	■Source information • I/O No. • Network No. • Station No. • IP address ■—
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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
2220H	• Parameters that are not supported by the firmware version of the network module have been set. • The parameter setting is corrupted. • The parameter is set for using the link points extended function. However, the CPU module does not support the link points extended function.	• Check the firmware version of the network module. If a parameter that is not supported is set, update the firmware or correct the 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. • When using the link points extended function, use a CPU module with a firmware version that supports the function. • When not using the link point extended function, set "Link points extended setting" under "Application Settings" to "Not to Extend".	■Parameter information • Parameter type ■—
2221H	• The set value is out of the range. Or the setting values of the master station and local stations are not consistent. • When executing the CCPASETX instruction, CCPASET instruction, or M_RJ71GN11_SetParameterX, the settings of the master station and device stations in the network configuration setting data are not consistent. • Parameters that are not supported by the firmware version of the network module have been set. • The engineering tool does not support the parameters that are required to execute the set functions. • "Link points extended setting" under "Application Settings" is set to "Extend" for the own station, but set to "Not to Extend" for the master station. Or the master station does not support extending the number of link points. • "Link points extended setting" under "Application Settings" is set to "Not to Extend" for the own station, but set to "Extend" for the master station.	• 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 number. • After reviewing whether the settings of the master station and device stations are consistent in the network configuration setting data, execute the CCPASETX instruction, CCPASET instruction, or M_RJ71GN11_SetParameterX again. • Check the firmware version of the network module. If parameters that are not supported are set, update the firmware version or correct the parameters. • Update the version of the engineering tool, and then retry the operation. • Make "Link points extended setting" under "Application Settings" the same between the own station and the master station. If the master station does not support extending the number of link points, set "Link points extended setting" of the own station to "Not to Extend".	■Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—
2222H	A parameter error was detected.	Check the firmware version of the network module. If parameters that are not supported are set, update the firmware version or correct the parameters.	■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 action, 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. ■—
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 action, 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 action, 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
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 action, 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 action, 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". • Change 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 is not 0 in 'Transient transmission additional time (calculation value)' (SW007A), add the value (in units of μ) 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 action, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3000H	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. • "Station No./IP Address Setting Method" in "Required Settings" is set to "Program". • "Setting Method of Basic/Application Settings" under "Parameter Setting Method" in "Required Settings" is set to "Program". • "Network Topology" in "Basic Settings" is set to "Ring". • Although a device station in which "Network Synchronous Communication" in "Network Configuration Settings" of "Basic Settings" is set to "Synchronous" exists, the master/local module is not set as a synchronization target module in "Inter-module Synchronization Setting" in "System Parameter". • The control CPU of a master/local module is a CPU module in which the inter-module synchronization function cannot be used.	• Correct the parameters shown in cause. • Check that the control CPU is CPU No.1. Update the firmware version of the CPU module to a version that supports the inter-module synchronization function with CC-Link IE TSN, or replace the CPU module.	■Parameter information • Parameter type • I/O No. • Parameter No. ■—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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. Correct the parameter settings described below so that 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" becomes within 16ms. • "Communication Period Interval Setting" in "Basic Settings" • "Communication Period Setting" of the relevant device station in "Network Configuration Settings" Set a value to "Communication Period Setting" of device stations by selecting a multiple value on "Multiple Period Setting" of "Communication Period Setting" under "Basic Settings".	■— ■Target station information • Station Number • IP address
300AH	• The combination of the local station firmware version and the master station firmware version is incorrect. • The set value is out of the range. Or the setting values of the master station and local stations are not consistent.	• Check the firmware versions of the master station and local station. If the combination is incorrect, update the firmware version of the local station or the master station, whichever the older version is used. • Check the detailed information of the error by executing module diagnostics using the engineering tool, and correct the parameter setting of the master station corresponding to the displayed parameter number. • 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 RJ71GN11 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 RJ71GN11 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 RJ71GN11 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.	Set the same parameter setting values for "Network No." and "Station No." of the local station to the setting values of 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

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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)
3012H	The RJ71GN11 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 firmware version to "11" 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", in the "Network Configuration Settings" of the "Basic Settings", "Communication Period Setting" of the local station is set to "Normal-Speed" or "Low-Speed".	• 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 Number • 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 "Inter-module Synchronization Setting" in "System Parameter", a master/local module mounted to an extension base unit is set as a synchronization target module.	Correct the parameters shown in cause.	■Parameter information • Parameter type • I/O No. • Parameter No. ■—
3016H	When "Network Topology" under "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. ■—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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. ■—
3018H	• A network module with the firmware version in which the use of multiple modules as inter-module synchronization targets is not allowed 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 master/local modules or more are set for "Select Inter-module Synchronization Target Module" under "Inter-module Synchronization Setting" in "System Parameter".	• Update the firmware version to "11" or later. • Set the module which is set as a synchronization target in "Inter-module Synchronization Setting" in "System Parameter" as an inter-module synchronous master. • Set only one master/local 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 Ethernet-equipped module or the external device. • If the same error occurs again even after taking the above action, 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 firmware version to "11" 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 action, 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 octet, 2nd octet) • MAC address (3rd octet, 4th octet) • MAC address (5th octet, 6th octet) ■—
3135H	Over the number of stations that can be connected.	• Configure the system with 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.	—
3136H	An illegal ring topology was detected.	Set a line topology or star topology, and turn off and on or reset all stations.	—
3137H	When positioning operation was performed in profile position mode or point table mode, a servo amplifier with a firmware version that cannot perform positioning at the target position correctly was detected.	Update the servo amplifier firmware to B9 or later.	—
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
3180H	The set value is out of the range.	• Write again from the buffer memory, and reset the CPU module or turn the power off and on. • If the same error occurs again even after writing again, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
3181H	• Parameter was not written correctly. • Turned off during parameter writing.	• Write again from the buffer memory, and reset the CPU module or turn the power off and on. • If the same error occurs again even after writing again, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
31ABH	It is not possible to guarantee the send/receive of cyclic data of device stations set to "Low-Speed" in "Communication Period Setting" within the "Low-Speed" cycle.	• Set "Low-Speed" of "Multiple Period Setting" in "Communication Period Setting" under "Basic Settings" to a value equal to or greater than the value displayed in 'Multiple cycle setting (low speed)' (Un\G1277442). • Set "Communication Period Interval Setting" under "Basic Period Setting" to a value greater than or equal to the value displayed in 'Communication cycle interval (calculation value)' (Un\G1277443).	■Parameter information • Parameter type ■—
31ACH	The settings of "CC-Link IE TSN Class" for the device stations set in "Network Configuration Settings" do not match "CC-Link IE TSN Class Setting" of "Connection Device Information" under "Basic Settings".	Set "CC-Link IE TSN Class" in "Network Configuration Settings" of the device stations to "CC-Link IE TSN Class B". Alternatively, set "CC-Link IE TSN Class Setting" in "Connection 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 ■—
31ADH	"Network Synchronous Communication" in "Network Configuration Settings" under "Basic Settings" is set to "Synchronous".	To use the master station shift function, set "Network Synchronous Communication" in "Network Configuration Settings" under "Basic Settings" to "Asynchronous".	■Parameter information • Parameter type ■—
31AEH	In the "Network Configuration Settings" under "Basic Settings", RX, RY, RWr, and RWw of the local station are set to one or more points.	To use the master station shift function, set blanks for RX, RY, RWr, and RWw of the local station in "Network Configuration Settings" under "Basic Settings".	■Parameter information • Parameter type ■—
31B0H	"CC-Link IE TSN Class Setting" in "Connection Device Information" under "Basic Settings" is set to "Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A Only".	To use the master station shift function, set "CC-Link IE TSN Class Setting" in "Connection Device Information" under "Basic Settings" to "CC-Link IE TSN Class B Only".	■Parameter information • Parameter type ■—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
31B1H	"To Use or Not to Use the Safety Communication Setting" under "Basic Settings" is set to "Use".	To use the master station shift function, set "To Use or Not to Use the Safety Communication Setting" under "Basic Settings" to "Not to Use".	■Parameter information • Parameter type ■—
31B2H	"Communication Mode" under "Application Settings" is set to "Unicast".	To use the master station shift function, set "Communication Mode" under "Application Settings" to "Multicast".	■Parameter information • Parameter type ■—
31B3H	The PDO mapping is set in "Network Configuration Setting" under "Basic Settings".	To use the master station shift function, clear the PDO mapping setting in "Network Configuration Setting" under "Basic Settings".	■Parameter information • Parameter type ■—
31B4H	"Communication Speed" under "Application Settings" is set to "100Mbps".	To use the master station shift function, set "Communication Speed" under "Application Settings" to "1Gbps".	■Parameter information • Parameter type ■—
31B5H	"Communication Speed" under "Application Settings" is set to "100Mbps".	To extend the number of link points, set "Communication Speed" under "Application Settings" to "1Gbps".	■Parameter information • Parameter type ■—
31B8H	The total of the total number of points in RX, RY, RWr, and RWw, and the LB/LW setting points for each station ÷ "Communication Period Setting LB/LW", exceeds 556K bytes.	Set the total of the total number of points in RX, RY, RWr, and RWw, and the LB/LW setting points for each station ÷ "Communication Period Setting LB/LW" so that it does not exceed 556K bytes.	■Parameter Information • Parameter type ■—
31B9H	Parameters that are not supported by the firmware version of the network module have been set.	• 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 number. • Check the firmware version of the network module. If parameters that are not supported are set, update the firmware version or correct the parameters. • Update the version of the engineering tool, and then retry the operation.	■Parameter Information • Parameter type • I/O No. • Parameter No. • Network No. • Station No. ■—
31BAH	"Communication Mode" under "Application Settings" is set to "Unicast".	When "Link points extended setting" is set to "Extend", set "Communication Mode" in "Application Settings" to "Multicast".	■Parameter information • Parameter type ■—
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" 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 network module is set in "Fixed Scan Interval Setting of Inter-module Synchronization" 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 network module.	■Parameter information • 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 local station.	Change the parameter so that the setting of "Select Inter-module Synchronization Target Module" under "Inter-module Synchronization Setting" is the same as the setting of "Network Synchronous Communication" under "Network Configuration Settings" in the "Basic Settings".	■Parameter information • Parameter type • I/O No. • Parameter No. ■—
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 that 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 stations where the error was detected. • If the error occurs again even after taking the above action, 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 on 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".	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
3604H	A module to operate as an inter-module synchronous master could not output an inter-module synchronization signal.	• Check that 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 the multiple RJ71GN11s (local station) detect this error, power off and on or reset the RJ71GN11s (local station) close to the master station in connection order.	■— ■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 the "IP Filter Settings" under "Application Settings". • Check that 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 the multiple RJ71GN11s (local station) detect this error, power off and on or reset the RJ71GN11s (local station) close to the master station in connection order.	■— ■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 action, 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 action, 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 action, 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 action, 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 action, 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 action, the possible cause is a hardware failure of the module or base unit. Please consult your local Mitsubishi representative.	—
360DH	• (For the RJ71GN11-T2 only) When multiple network modules are set as the target modules for inter-module synchronization, the network module with the firmware version that cannot be set as the inter-module synchronous master is used. • An error has been detected in the inter-module synchronization function.	• (For the RJ71GN11-T2 only) Update the firmware version of the network module which is set for the inter-module synchronous master to "11" or later. • Take measures to reduce noise. • Reset the CPU module, and run it again. If the same error occurs again even after taking the above action, 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
3C00H	A hardware failure has been 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 action, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3C01H	A hardware failure has been 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 action, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3C02H	A hardware failure has been 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 action, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3C0FH	A hardware failure has been 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 action, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3C10H	A hardware failure has been 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 action, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3C13H	A hardware failure has been detected.	Reset the CPU module, and run it again. If the same error occurs again even after doing so, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.	—
3C14H	A hardware failure has been detected.	Reset the CPU module, and run it again. If the same error occurs again even after doing so, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.	—
3C2FH	An error was detected in the memory.	Reset the CPU module, and run it again. If the same error occurs again even after taking the above action, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
3E01H	Network type of the own station is unexpected setting.	Rewrite the module parameter using the engineering tool. If the same error occurs again even after taking the above action, 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.	—

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 number of the external device is not set correctly.	Correct the port number of the external device.	—
C012H	The port number used in a connection already opened is set. (For TCP/IP)	Correct the port numbers of the CC-Link IE TSN-equipped module and the external device.	—
C013H	The port number used in a connection already opened is set. (For UDP/IP)	Correct the port numbers 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.	• 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.	—
C038H	Data was not sent correctly with UDP/IP.	• Check that the external device (including an industrial switch (CC-Link IE TSN certified)) has no error in the connection setting, operation (an error and being in a reset state, or others), and connection (error such as a connection cable being 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 number and station number or IP address of the target station of the dedicated instruction.	—
C039H	Data was not sent correctly via TCP/IP.	• Check that the external device (including an industrial switch (CC-Link IE TSN certified)) has no error in the connection setting, operation (an error and being in a reset state, or others), and connection (error such as a connection cable being 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.	—
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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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 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 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 SLMP 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 number or request destination station number. • If the access destination is a module with a different network number, correct the routing parameter setting. • If the access destination is a module with a different network number, check if the network number is not in use.	—
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 number 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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
C06FH	The network number of request destination specified by the SLMP request message is not available for communications with the station number 121 or larger.	• If the 3E or 4E frame is used at SLMP, check that there is no error for the network number of the request destination and station number. • If the station number extension frame is used at SLMP, check that there is no error for the network number of the request destination and station number.	—
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 the CC-Link IE TSN-equipped module mounted station and R/Q/QnACPU via CC-Link IE Controller Network, MELSECNET/H, or MELSECNET/10.	—
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 array points or number of read/write points and send the SLMP message to the CC-Link IE TSN-equipped module again. • Correct the number of abbreviated points and send the SLMP message to the CC-Link IE TSN-equipped module again. • Correct the label name length and send the SLMP message to the CC-Link IE TSN-equipped module again. • Shorten the label name and send the SLMP message to the CC-Link IE TSN-equipped module again. • Correct the read/write data length 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 number ↔ IP information setting. • Check if the network or station number of the external device is correctly specified by using control data of the dedicated instruction. • Check if the Ethernet cable is connected properly.	—
C0B2H	There is insufficient space in the receive buffer or the 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 setting value of the timer setting 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 number or request destination station number.	—

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 number/station number) 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 number ↔ 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 number 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 number specified by SLMP message. • Check the version of the target device.	—
C1A7H	The specified network number is incorrect.	Correct the specified network number.	—
C1A9H	The specified device number is incorrect.	Correct the specified device number.	—
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 the instruction again after correcting the request data to be within the range. • If the error occurs again even after taking the above action, 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. • Execute the module communication test, and check that there is no failure in the module.	—
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. • Execute the module communication test, and check that there is no failure in the module.	—
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. • Execute the module communication test, and check that there is no failure in the module.	—
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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
C815H	Remote password authentication has failed when required.	Set a correct password and perform password authentication again 60 minutes later.	—
C816H	The security function was activated and remote password authentication cannot be performed.	Set a correct password and perform password authentication again after a certain period of time.	—
C842H	The routing setting is not set to reach to the destination network number.	• Execute the link dedicated instruction again after correcting the target network number/station number. • When the dynamic routing is used, check that communication path to the destination network number is set. • 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.	—
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 action, 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. • If the master station supports the SNMP community name setting function, authentication of the SNMP community name may have failed. Refer to the description of SNMP community names in the manuals for the master station and device stations.	—
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 communication speed of the external device. • Check if the cables are properly connected and that 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 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 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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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.	—
D03BH	The operating status of the CPU module is not in STOP state (excluding a stop error), and enabling remote device test function failed.	Switch the operating status of the CPU module to STOP state (excluding a stop error), and enable the remote device test function.	—
D03CH	The own station is not set as a master station and enabling remote device test function failed.	Enable the remote device test function in the master station.	—
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 number of transient data, and retry the operation. • When the access destination is a module with a different network number, check if "Routing Setting" of "CPU Parameter" is correctly set.	—
D0B0H	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 switching hub. • 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.	—
D0B1H	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 switching hub. • Check if the Ethernet cable is connected properly.	—
D0B2H	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 switching hub. • 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.	—
D0B3H	The target device does not support the IP address setting function or indicator display function.	• Connect the engineering tool to the master station. • Check whether the function executed is supported by the target device. • Check the version of the target device.	—
D0B4H	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.	—
D0B5H	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 switching hub. • 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 number of transient transmission is incorrect.	Execute the instruction again after correcting the target station number at the transient request source.	—
D20AH	The target station number of transient transmission is incorrect.	Execute the instruction again after correcting the target station number at the transient request source.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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 number 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 number 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.	—
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.	—
D211H	Transient transmission was performed when the station number/IP address of the own station had not been set yet.	Set the station number/IP address using the UINI instruction, and perform transient transmission again.	—
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 module at the connection destination 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 for the module at the connection destination and check the status of support for this function. If not supported, update the firmware version to the one that supports 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 action, 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. • If the request source is on another network, check if "Routing Settings" of CPU parameters are set correctly, and take action.	—
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. • If the request source is on another network, check if "Routing Settings" of CPU parameters are set correctly, and take action.	—
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. • If the request source is on another network, check if "Routing Settings" of CPU parameters are set correctly, and take action.	—
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. • If the request source is on another network, check if "Routing Settings" of CPU parameters are set correctly, and take action.	—
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 action, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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. • If the request source is on another network, check if "Routing Settings" of CPU parameters are set correctly, and take action.	—
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. • If the request source is on another network, check if "Routing Settings" of CPU parameters are set correctly, and take action.	—
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. • If the request source is on another network, check if "Routing Settings" of CPU parameters are set correctly, and take action.	—
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 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.	—
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 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.	—
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. • If the request source is on another network, check if "Routing Settings" of CPU parameters are set correctly, and take action.	—
D24DH	The channel specified in the dedicated instruction is incorrect.	• Set 1 to 8 for the target channel number in the control data when executing the SEND instruction. • (For the RJ71GN11-T2 only) Set 1 to 32 for the channel number when executing the REMFR/REMTO/REMFRD/REMTOD instruction. • Execute the instruction again after correcting the channel number used by own station in the control data.	—
D24EH	The target station setting in the dedicated instruction is incorrect.	• The value set for the control block of the dedicated instruction is out of range. Execute the instruction again after correcting the value. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D24FH	The dedicated instruction was executed when the station number/IP address of the own station had not been set yet.	• Specify the station number/IP address using the UINI instruction, and execute the instruction again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
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. • For the REQ instruction, the specified request type is incorrect.	• Execute the dedicated instruction again after changing the execution type in the control data to no arrival check. • For the REQ instruction, execute it again after correcting request type. • If the error occurs again even after taking the above action, 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.	• 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" in "Application Settings" is set to "Enable", check the 'Communication path determination status' (Un\G1260544 to Un\G1260559) 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 action, 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 action, 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 action, 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 action, 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 action, please consult your local Mitsubishi representative.	—
D258H	The control station does 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 action, please consult your local Mitsubishi representative.	—
D25AH	The dedicated instruction was executed specifying the channel in use.	• Retry the operation after a while. • Change the channels used by own station or the target station storage channel in the control data.	—
D25BH	The dedicated instruction was executed specifying the channel in use.	Change the channels used by 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 action, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D25FH	A remote instruction was executed from the module with a station type which cannot execute it.	Stations other than the master station cannot execute a remote instruction. Modify the program so that remote instructions are not executed from stations that cannot use them.	—
D260H	A remote instruction was executed from the module with a station type which cannot execute it.	Stations other than the master station cannot execute a remote instruction. Modify the program so that remote instructions are not executed from stations that cannot use them.	—
D262H	The total number of device stations specified in the CCPASET instruction is incorrect.	• Execute the instruction again after correcting the total number of device stations in the control data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D263H	The constant link scan time setting of the CCPASET instruction is incorrect.	• Execute the instruction again after correcting the constant link scan time in the control data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D264H	The station number setting of the CCPASET instruction is incorrect.	• Execute the instruction again after correcting the station number in the network configuration setting data so it is within 1 to 120. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D265H	The station number specified for the CCPASET instruction is already in use.	• Execute the instruction again after correcting the station number in the network configuration setting data to a unique value. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D266H	The number of occupied stations specified in the CCPASET instruction is incorrect.	• Execute the instruction again after correcting the number of occupied stations in the network configuration setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D267H	The station type of the CCPASET instruction is incorrect.	• Execute the instruction again after correcting the station type in the network configuration setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D268H	The link device range assignment specified for each station in the CCPASET instruction is incorrect.	• Execute the instruction again after correcting the offset or the number of points of link devices in the network configuration setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
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.	—
D26BH	The network number setting of the CCPASET instruction executing station is incorrect.	Set "Network No." under "Network No." of "Required Settings" to between 1 and 239.	—
D26CH	The station type and station number of the CCPASET instruction executing station are incorrect.	Rewrite the module parameter using the engineering tool. If the same error occurs again even after taking the above action, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
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 action, please consult your local Mitsubishi representative.	—
D275H	Other dedicated instructions are in execution, and the executed instruction cannot be processed.	• Execute the instruction again after a while. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D27AH	The own station number set in the UINI instruction is incorrect.	• Set the station number of the own station in the control data to a value from 1 to 120, and retry the operation. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D27BH	The IP address set in the UINI instruction is incorrect.	• Execute the instruction again after correcting the IP address in the control data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D27CH	The network topology setting of the CCPASET instruction is incorrect.	• Correct the network topology setting in the control data, and retry the operation. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D27FH	The own station IP address specified in the control data is not set.	Execute the UINI instruction, and execute the CCPASETX instruction.	—
D2C0H	The network number setting of the CCPASETX instruction executing station is incorrect.	Set "Network No." under "Network No." of "Required Settings" to between 1 and 239.	—
D2C1H	The station type and station number of the CCPASETX instruction executing station are incorrect.	Rewrite the module parameter using the engineering tool. If the same error occurs again even after taking the above action, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
D2C2H	Multiple submaster stations are set in the CCPASETX instruction.	When executing the CCPASETX instruction, set one submaster station in the station type in device station setting information (control data).	—
D2C3H	A submaster station is specified in the reserved station setting of the CCPASETX instruction.	When executing the CCPASETX instruction, do not set a submaster station number in reserved station specification (control data).	—
D2C4H	A submaster station is specified in the error invalid station setting of the CCPASETX instruction.	When executing the CCPASETX instruction, do not set a submaster station number in error invalid station setting (control data).	—
D2C5H	The IP address of the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the IP address of the device station in the network configuration setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2C6H	The communication cycle setting of the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the communication cycle setting of the device station in the network configuration setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2C7H	The number of occupied stations specified in the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the number of occupied stations in the network configuration setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2C8H	The station type of the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the station type in the network configuration setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2C9H	The station number setting of the CCPASETX instruction is incorrect.	• When "Station Type" in the network configuration setting data is set to "Master Station", correct "Station Number" to 0 and when "Station Type" is set to the type other than "Master Station", correct "Station Number" to a value within 1 to 120. Then, execute the instruction again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2CAH	The total number of device stations specified in the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the total number of device stations in the control data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2CBH	The network topology setting of the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the network topology setting in the control data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2CCH	The disconnection detection setting of the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the disconnection detection setting in the control data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D2CDH	The communication mode of the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the communication mode in the control data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2CEH	The communication cycle setting of the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting "Setting in Units of 1μs", "Communication Period interval setting", "System Reservation time", "Cyclic Transmission time", "Normal-Speed", and "Low-Speed" in the communication cycle setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2D0H	The station number specified for the CCPASETX instruction is already in use.	• Execute the instruction again after correcting the station number in the network configuration setting data to a unique value. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2D1H	The link device range assignment specified for each station in the CCPASETX instruction is incorrect.	• Execute the instruction again after correcting the offset or the number of points of link devices in the network configuration setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D2D2H	The IP address/port number of the target station is incorrect.	• Execute again after correcting the port number of the target station in the setting data. • If the error occurs again even after taking the above action, 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 number, correct the routing parameter setting.	—
D2D8H	The communication speed setting of the CCPASETX instruction is incorrect.	When executing the CPASETX instruction, specify 0: 1Gbps for the communication speed setting.	—
D602H	Parameter error	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above action, 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 action, please consult your local Mitsubishi representative.	—
D60BH	Parameter error (device overlap error (LB))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset or size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D60CH	Parameter error (device overlap error (LW))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset or size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D60DH	Parameter error (each station device range assignment error (LB))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D60EH	Parameter error (each station device range assignment error (LB))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D60FH	Parameter error (each station device range assignment error (LW))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D610H	Parameter error (each station device range assignment error (LW))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D611H	Parameter error (each station device range assignment error (RWw))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D612H	Parameter error (each station device range assignment error (RWw))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D613H	Parameter error (each station device range assignment error (RWr))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D614H	Parameter error (each station device range assignment error (RWr))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D615H	Parameter error (each station device range assignment error (RY))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D616H	Parameter error (each station device range assignment error (RY))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D617H	Parameter error (each station device range assignment error (RX))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D618H	Parameter error (each station device range assignment error (RX))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D619H	Parameter error	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D61AH	Parameter error	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D61BH	Parameter error (device overlap error (RWw))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset or size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D61CH	Parameter error (device overlap error (RWr))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset or size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D61DH	Parameter error (device overlap error (RY))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset or size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D61EH	Parameter error (device overlap error (RX))	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the offset or size of the link device of the device station in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D61FH	Parameter setting by the CCPASET/CCPASETX instruction has failed.	• Execute the instruction again after setting "Setting Method of Basic/Application Settings" under "Parameter Setting Method" in "Required Settings" to "Program". • (For the RJ71GN11-SX only) If "Program" is not displayed in "Setting Method of Basic/Application Settings" under "Parameter Setting Method" in "Required Settings", update the engineering tool to the latest version before the execution.	—
D621H	Parameter error	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D622H	Parameter error (error in the total number of device stations)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the total number of device stations. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D625H	Parameter error (station-based block data assurance setting error)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the station-based block data assurance setting. • If the error occurs again even after taking the above action, 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 action, please consult your local Mitsubishi representative.	—
D629H	Parameter error (station number range error)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the station number in the setting data so it is within 1 to 120. • If it occurs during a firmware update, place the module according to the configuration displayed on the "Update Firmware" window, write to the CPU module, and then update again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D62AH	Parameter error (data link faulty station setting error)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the data link faulty station setting. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D62BH	Parameter error (output setting error during CPU STOP)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the output settings during CPU STOP. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D630H	Parameter setting of a local station by the CCPASET/CCPASETX instruction has failed.	Execute the instruction again after setting "Setting Method of Basic/Application Settings" under "Parameter Setting Method" in "Required Settings" to "Program".	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D637H	The UINI instruction was executed at a station where the station number/IP address has been already set by parameter.	Execute the instruction again after setting "Station No./IP Address Setting Method" under "Station No./IP Address Setting" in "Required Settings" to "Program".	—
D639H	After setting a station number/IP address with the UINI instruction, the instruction was executed again.	Station number/IP address setting with the UINI instruction is limited to one time only. Reset the CPU module, and retry the operation.	—
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 action, 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 action, 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 action, please consult your local Mitsubishi representative.	—
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 action, 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 action, 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 action, 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 action, 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 action, 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 action, 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 action, 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 action, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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 action, 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 action, 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 action, 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 action, please consult your local Mitsubishi representative.	—
D653H	Parameter error (transient transmission group setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the transient transmission group setting in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D654H	Parameter error (dynamic routing setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the dynamic routing setting in the setting data. • If the error occurs again even after taking the above action, 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.	—
D656H	Parameter error (CANopen communications)	Update the version of the engineering tool that supports the CANopen communication function, then write parameters to the CPU module again.	—
D657H	Parameter error (station sub-ID)	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D658H	Parameter error (multidrop number)	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D659H	Parameter error (CANopen communication)	The CANopen communication function cannot be used. Clear the PDO mapping setting in the engineering tool, and write the parameter to the CPU module again.	—
D65AH	Parameter error (maximum number of connectable stations)	• Parameters are set over the maximum number of connectable stations. Correct the parameter so that the number of device stations is 120 or less, then write parameters to the CPU module again. Note that a PDO-mapped extension module (for example, a multi-axis servo amplifier) to which a station number is not set is counted as one station. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D65BH	Parameter error (CC-Link IE TSN Class setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting "CC-Link IE TSN Class Setting" in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D65CH	Parameter error (TSN hub setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting "TSN HUB Setting" in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D65DH	Parameter error (multiple period setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting "Multiple Period Setting" in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D65EH	Parameter error (co-recording setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the co-recording setting. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D65FH	Parameter error (Link points extended setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting link points extended setting in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D662H	Parameter error (master station shift setting)	• Write the network parameter to the CPU module again. • Execute the instruction again after correcting the master station shift setting in the setting data. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
D720H	Link startup/stop direction is incorrect.	Check the setting and stop or startup of data link.	—
D721H	Link startup/stop was requested by another station during link startup/stop processing.	Retry the operation after the stop or restart of data link is completed.	—
D722H	Link startup/stop was requested by own station during link startup/stop processing.	Retry the operation after the stop or restart of data link is completed.	—
D723H	System link startup/stop was requested during link startup/stop processing.	Retry the operation after the stop or restart of data link is completed.	—
D724H	Link startup/stop station specification is incorrect.	Check the setting and stop or startup of data link.	—
D725H	Requested system link startup/stop from local station.	For local stations, data link cannot be started or stopped for all or multiple stations. Execute data link startup/stop of all or multiple stations on the master station.	—
D727H	Link startup was requested from a station other than the one requesting the link stop.	• Data link startup was instructed from a station other than the one that instructed the data link stop during data link startup. Ensure that the station that instructs the data link startup is the same as the one that instructs the data link stop. • The procedure during data link startup is different from the procedure that instructed the data link stop. Please instruct the data link startup using the same procedure as the one that instructed the data link stop. (Example: The data link was stopped by the CC-Link IE Field Network diagnostics, and the data link was started from a program) • Failed data link startup in the past. Restart by performing forced data link startup.	—
D728H	A data link startup instruction was given to a station that is performing data link.	Please give data link startup instructions to stations where data link is stopped.	—
D729H	Link stop for own station was instructed to a station where the station number/IP address is not set.	Specify the station number/IP address using the UINI instruction, and execute the link stop again.	—
D812H	Parameter error	• Write the network parameter to the CPU module again. • If the error occurs again even after taking the above action, please consult your local Mitsubishi representative.	—
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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
D842H	• Routing information to the destination network number 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 number 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.	—
D843H	The module operation mode is set to a mode in which transient transmission cannot be executed.	After completion of the module communication test, retry the transient transmission.	—
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.	—
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 action, 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. • 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 is more than 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).	—
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.	—

Error code	Error definition and causes	Action	Detailed information 1 Detailed information 2
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 number, station number, 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.	—
DA1AH	After parameters were set using the CCPASETX instruction/CCPASET instruction, the CCPASETX instruction/CCPASET instruction were executed again.	Parameter setting with the CCPASETX or CCPASET instruction is limited to one time only. Execute the instruction again after resetting the CPU module.	—
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	The station numbers of 121 stations or more are specified.	Check station numbers.	—
DC00H	The setting value is incorrect.	Execute the write instruction again after correcting the setting value.	—
DC01H	The setting value was not written correctly.	Execute the write instruction again. Please consult your local Mitsubishi representative.	—

4.6 List of Parameter Numbers

This section lists the parameter numbers displayed in the module diagnostics.

If there is an error in the parameter settings and the parameter number 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 RJ71GN11.

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Item					Parameter No.	
					RJ71GN11-T2	RJ71GN11-SX
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	Setting Method of Station No./IP Address Setting Method			7100H	
		Station No.	Station No.		7100H	
		IP Address	IP Address		A012H	
			Subnet Mask		A012H	
			Default Gateway		A013H	
	Parameter Setting Method		Setting Method of Basic/Application Settings		7100H	
Basic Settings	Network Configuration Settings	Total number of stations			A100H	
		Detailed Display	STA#		A104H	
			Station Type		A104H	
			RX Setting		A101H[*1] A10BH[*1] A10FH[*2]	A10FH
			RY Setting		A101H[*1] A10BH[*1] A10FH[*2]	A10FH
			RWr Setting		A101H[*1] A10BH[*1] A10FH[*2]	A10FH
			RWw Setting		A101H[*1] A10BH[*1] A10FH[*2]	A10FH
			LB Setting		A101H[*1] A10BH[*1] A10FH[*2]	A10FH
			LW Setting		A101H[*1] A10BH[*1] A10FH[*2]	A10FH
			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 RX/RY/RWr/RWw		A108H[*1], A10EH[*2]	A10EH
			Communication Period Setting LB/LW		A10EH	
			Station Information	Alias	A011H	
				Comment	A011H	
				Station-specific mode setting	A106H	
			CC-Link IE TSN Class		A104H	
			Motion Control Station		A104H	—

Item					Parameter No.	
					RJ71GN11-T2	RJ71GN11-SX
Basic Settings	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 Period Setting	Normal-Speed		A108H*1, A10EH*2	A10EH
			Low-Speed		A108H*1, A10EH*2	A10EH
	Connection Device Information		CC-Link IE TSN Class settings		A100H	
			TSN HUB Setting		A100H	
	Device Station Setting		Disconnection Detection Setting		A100H	
	Safety Communication Setting		To Use or 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*3, A112H*4	A112H
			Data Link Error Station Setting		A110H*3, A112H*4	A112H
			Output Mode upon CPU Error		7101H	
	Link points extended setting		LB/LW Points Extended Setting		7100H	
	Transient Transmission Group No.		Transient Transmission Group No.		A010H	
	Communication Mode		Communication Mode		A110H*3, A112H*4	A112H
	Parameter Name		Parameter Name		7310H, 7311H	
	Dynamic Routing		Dynamic Routing		A110H*3, A112H*4	A112H
	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	
		SNMP	Community Name		A0EFH	
	Interlink Transmission Settings		Interlink Transmission Settings		7500H	
	Co-recording Setting		Co-recording Setting		A112H	
	Master Station Shift Setting		Master Station Shift Setting		A112H	

*1 When the link points extended setting is set to "Not to Extend" or the engineering tool does not support extending the number of link points

*2 When the link points extended setting is set to "Extend"

*3 When the co-recording setting is set to "Not Use" and the master station shift setting is set to "Disable"

*4 When the co-recording setting is set to "Use" or the master station shift setting is set to "Enable"

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 when the [Event History] button in the [Error Information] tab in the "Module Diagnostics" window of the RJ71GN11 is clicked. (☞ Page 212 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.
00173H	Co-recording trigger sending/receiving	The co-recording trigger received from a CPU module 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 CPU module.
00175H	Co-recording trigger sending/receiving	The co-recording trigger received from another station has been sent to the network.
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 instruction	ERR LED control information is instructed to a device station.
00523H	ERR LED control setting reception	ERR LED control information is received from the master station.
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.
00603H	Own station: Occurrence of switching to the current master station	Switching of the current master station occurred due to the current master station being down.
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	An IP assembly timeout error has occurred since the transient transmission load is high or transient transmission time is not enough. (The remaining part of the divided data could not be received and a timeout has occurred.)
00909H	TCP specification port number error	The port number used in a connection already opened is set. (For TCP/IP)
0090AH	UDP specification port number error	The port number 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.
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.

Event code	Overview	Cause
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.
00C2AH	Detection of a device station that does not support the master station shift function	In a network where the master station shift function is enabled, a device station that does not support the master station shift function has been detected.
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 parameter is different from the setting of the memory card parameter.
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.
00C54H	Initialization failure	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 number error	There was a request for a port number not open from the external device.
00C5AH	Specification IP address error	Sending was performed while the "IP Address" setting of the device station set in "Network Configuration Settings" under "Basic Settings" of the master station was 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.
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 industrial switch (CC-Link IE TSN certified), Ethernet cable, or optical fiber cable error has occurred. • 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 industrial switch (CC-Link IE TSN certified), Ethernet cable, or optical fiber cable error has occurred. • Congestion of packets on the line

Event code	Overview	Cause
00C60H	IP address of the external device acquisition error	Target IP address could not be acquired from the network number and station number.
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 failure (parameter mismatch between master and device stations)	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, and then retry the operation.
00C75H	Another station: Parameter error occurrence	A network parameter error has occurred in another station.
00C76H	<<Own station>> Parameter mismatch (during data link)	In a network where the master station shift function is enabled, parameters different from those currently in operation were received.
00C80H	A 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 settings mismatch	A mismatch was detected between the parameter of the master station and the CC-Link IE TSN Class of the device stations.

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.
14000H	SNMP community name setting instruction	The device station was instructed to set the SNMP community name.
14001H	SNMP community name setting reception	The SNMP community name setting was received from the master station.
14002H	SNMP community name mismatch	The access request from the SNMP manager was discarded because the community name did not match.

Operation

Event code	Overview	Cause
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	Remote device test function was enabled.
24301H	Own station: Failure in enabling remote device test function (Programmable controller CPU is not in STOP state (excluding a stop error))	The operating status of the programmable controller CPU is not in STOP state (excluding a stop error), and enabling remote device test function failed.
24302H	Own station: Failure in enabling remote device test function (Own station is not set as a master station.)	The own station is not set as a master station and enabling remote device test function failed.
24303H	Own station: Disabling remote device test function (SB0016 is turned off.)	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 (Programmable controller CPU is in RUN or PAUSE state).	Remote device test function was disabled because operating status of the programmable controller CPU has been changed to RUN or PAUSE state.
24305H	Own station: Disabling remote device test function (Programmable controller CPU indicates a stop error.)	Remote device test function was disabled because a stop error has occurred in the programmable controller CPU.
24307H	Network number, station number, IP address setting/ change execution	Setting or change of the network number, station number, or IP address of the own station was executed.
24F00H	Another station: CPU operating status change detection	Operating status of the CPU module on another station was changed.

APPENDICES

Appendix 1 Module Label

The I/O signals, buffer memory, link special relay (SB), and link special register (SW) of the RJ71GN11 can be set using module label.

Structure of the module label

The module label name is defined with the following structure.

"Instance name"_"Module number"."Label name"

"Instance name"_"Module number"."Label name"_D

Ex.

GN11_1.bSts_DataLinkError

■Instance name

The following is the instance name of the RJ71GN11.

Module name	Instance name
RJ71GN11-T2	GN11
RJ71GN11-SX	GN11_SX

■Module number

A sequential number starting with "1" for identifying a module from the one with the same instance name.

■Label name

A label name unique to the module.

■_D

This symbol indicates that the module label is for direct access. The label without "_D" is for link refresh. The following are the differences between link refresh and direct access.

Type	Description	Access timing
Link refresh	The values read/written from/to the module labels are reflected to the module at link refresh. The execution time of the program can be shortened.	At link refresh
Direct access	The values read/written from/to the module labels are reflected to the module immediately. Although the execution time of the program is longer than the one at the link refresh, the responsiveness is improved.	At writing to or reading from the module label

Point

When multiple RJ71GN11s with the same network number are mounted and the module labels of link special relay (SB) and link special register (SW) are used for direct access, the access target is the module having the smallest slot number on the base unit.

Appendix 2 I/O Signals

This section describes the I/O signals for the CPU module. The I/O signal assignment for when the start I/O number of the RJ71GN11 is "0" is listed below.

List of I/O signals

The following table lists I/O signals. The device X is an input signal from the RJ71GN11 to the CPU module. The device Y is an output signal from the CPU module to the RJ71GN11.

Input signals

Device number	Signal name
X0	Module failure
X1	Own station data link status
X2	Use prohibited
X3	Other stations data link status (use prohibited in a local station)
X4 to XE	Use prohibited
XF	Module READY
X10 to X1F	Use prohibited

Output signals

Device number	Signal name
Y0 to Y1F	Use prohibited

Point

Do not use (turn on) any "use prohibited" signals as an input or output signal to the CPU module. Doing so may cause the programmable controller system to malfunction.

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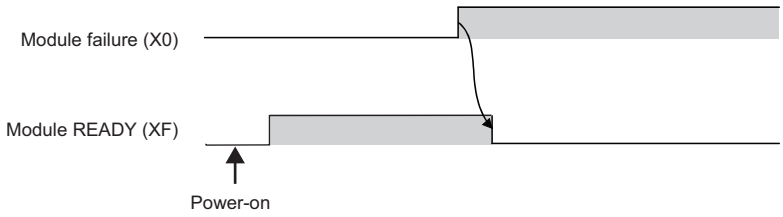
Details of I/O signals

Module failure (X0)

This signal is used to check the status of the RJ71GN11.

- Off: Module normal
- On: Module failure



Own station data link status (X1)

This signal is used to check the data link status of the own station.

- Off: Data link stop
- On: Data link in progress

'Data link error status of own station' (SB0049) has the same signal, but when using it in a program, use either X1 or 'Data link error status of own station' (SB0049) only. Also note that the on/off conditions for X1 and SB0049 are reversed.

If an error occurs, the cause of the fault can be checked by CC-Link IE TSN/CC-Link IE Field diagnostics or 'Cause of data link stop' (SW0049).

Other stations data link status (X3)

This signal is used to check the data link status of other stations.

- Off: All stations normal
- On: Faulty station exists

'Data link error status of each station' (SB00B0) has the same signal, but when using it in a program, use either X3 or 'Data link error status of each station' (SB00B0) only.

If an error occurs, the faulty station can be checked by CC-Link IE TSN/CC-Link IE Field diagnostics or with 'Data link status of each station' (SW00B0 to SW00B7).

Module READY (XF)

This signal is used to check the status of module operation preparation.

- Off: Not available for module operation
- On: Available for module operation

For the module READY timing chart, refer to Module failure (X0). (☞ Page 292 Module failure (X0))

Appendix 3 Buffer Memory

The buffer memory is used to exchange data between the RJ71GN11 and the CPU module.
Buffer memory values are reset to default (initial values) 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)	0	Read, write
59392 to 67583	E800H to 107FFH	←			Remote register (RWw)	0	Read, write
67584 to 75775	10800H to 127FFH	←			Remote register (RWr)	0	Read
75776 to 92159	12800H to 167FFH	←			Link register (LW)	0	Read, write
92160 to 94207	16800H to 16FFFH	←			Link relay (LB)	0	Read, write
94208 to 94463	17000H to 170FFH	←			Link special relay (SB)	0	Read, write
94464 to 98559	17100H to 180FFH	←			Link special register (SW)	0	Read, write
98560 to 98561	18100H to 18101H	←		Link points extended device area	Extended RX start offset	18200H	Read
98562 to 98563	18102H to 18103H	←			Extended RX size	400H	Read
98564 to 98565	18104H to 18105H	←			Extended RY start offset	18600H	Read
98566 to 98567	18106H to 18107H	←			Extended RY size	400H	Read
98568 to 98569	18108H to 18109H	←			Extended RWw start offset	18A00H	Read
98570 to 98571	1810AH to 1810BH	←			Extended RWw size	2000H	Read
98572 to 98573	1810CH to 1810DH	←			Extended RWr start offset	1AA00H	Read
98574 to 98575	1810EH to 1810FH	←			Extended RWr size	2000H	Read
98576 to 98577	18110H to 18111H	←			Extended LW start offset	1CA00H	Read
98578 to 98579	18112H to 18113H	←			Extended LW size	80000H	Read
98580 to 98581	18114H to 18115H	←			Extended LB start offset	9CA00H	Read
98582 to 98583	18116H to 18117H	←			Extended LB size	2000H	Read
98584 to 98815	18118H to 181FFH	←			System area		
98816 to 649727	18200H to 9E9FFH	←			Extended device (RX/RY/RWw/RWr/LW/LB) area	0	Read, write
649728 to 1245439	9EA00H to 1300FFH	←		System area			

A

P1		P2		Name		Initial value	Read Write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1245440 to 1245441	130100H to 130101H	←		Timeslot 0 information	Cycle start offset (ns unit)	0	Read
1245442	130102H	←			Cycle start offset (s unit)	0	Read
1245443	130103H	←			System area		
1245444 to 1245445	130104H to 130105H	←			Cycle end offset (ns unit)	0	Read
1245446	130106H	←			Cycle end offset (s unit)	0	Read
1245447 to 1245451	130107H to 13010BH	←			System area		
1245452	13010CH	←			VID (VLAN Identifier)	0	Read
1245453	13010DH	←			PCP (Priority Code Point)	0	Read
1245454	13010EH	←			EtherType	0	Read
1245455	13010FH	←			System area		
1245456 to 1245567	130110H to 13017FH	←		Timeslot 1 to 7 information	Same as Timeslot 0 information	0	Read
1245568 to 1245695	130180H to 1301FFH	←		System area			
1245696 to 1245697	130200H to 130201H	←		RX offset/size information	Station No.0 RX offset	0	Read
1245698 to 1245699	130202H to 130203H	←			Station No.0 RX size	0	Read
⋮		←			⋮		
1246176 to 1246177	1303E0H to 1303E1H	←			Station No.120 RX offset	0	Read
1246178 to 1246179	1303E2H to 1303E3H	←			Station No.120 RX size	0	Read
1246180 to 1246719	1303E4H to 1305FFH	←			System area		
1246720 to 1246721	130600H to 130601H	←		RY offset/size information	Station No.0 RY offset	0	Read
1246722 to 1246723	130602H to 130603H	←			Station No.0 RY size	0	Read
⋮		←			⋮		
1247200 to 1247201	1307E0H to 1307E1H	←			Station No.120 RY offset	0	Read
1247202 to 1247203	1307E2H to 1307E3H	←			Station No.120 RY size	0	Read
1247204 to 1247743	1307E4H to 1309FFH	←			System area		
1247744 to 1247745	130A00H to 130A01H	←		RWw offset/size information	Station No.0 RWw offset	0	Read
1247746 to 1247747	130A02H to 130A03H	←			Station No.0 RWw size	0	Read
⋮		←			⋮		
1248224 to 1248225	130BE0H to 130BE1H	←			Station No.120 RWw offset	0	Read
1248226 to 1248227	130BE2H to 130BE3H	←			Station No.120 RWw size	0	Read
1248228 to 1248767	130BE4H to 130DFFH	←			System area		

P1		P2		Name		Initial value	Read Write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1248768 to 1248769	130E00H to 130E01H	←		RWr offset/size information	Station No.0 RWr offset	0	Read
1248770 to 1248771	130E02H to 130E03H	←			Station No.0 RWr size	0	Read
⋮		←			⋮		
1249248 to 1249249	130FE0H to 130FE1H	←			Station No.120 RWr offset	0	Read
1249250 to 1249251	130FE2H to 130FE3H	←			Station No.120 RWr size	0	Read
1249252 to 1249791	130FE4H to 1311FFH	←			System area		
1249792 to 1249793	131200H to 131201H	←		LB offset/size information	Station No.0 LB offset	0	Read
1249794 to 1249795	131202H to 131203H	←			Station No.0 LB size	0	Read
⋮		←			⋮		
1250272 to 1250273	1313E0H to 1313E1H	←			Station No.120 LB offset	0	Read
1250274 to 1250275	1313E2H to 1313E3H	←			Station No.120 LB size	0	Read
1250276 to 1250815	1313E4H to 1315FFH	←			System area		
1250816 to 1250817	131600H to 131601H	←		LW offset/size information	Station No.0 LW offset	0	Read
1250818 to 1250819	131602H to 131603H	←			Station No.0 LW size	0	Read
⋮		←			⋮		
1251296 to 1251297	1317E0H to 1317E1H	←			Station No.120 LW offset	0	Read
1251298 to 1251299	1317E2H to 1317E3H	←			Station No.120 LW size	0	Read
1251300 to 1252095	1317E4H to 131AFFH	←			System area		
1252096	131B00H	←		Own station (network card) information	Manufacturer code	0	Read
1252097	131B01H	←			Model type	1*1	Read
1252098	131B02H	←			Model code (lower 2 bytes)	F	Read
1252099	131B03H	←			Model code (upper 2 bytes)	5000	
1252100	131B04H	←			Version	2	Read
1252101 to 1252103	131B05H to 131B07H	←			MAC address	(MAC address setting value)	Read

A

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	0	Read
1252106	131B0AH	←			Model type	0	Read
1252107	131B0BH	←			Model code (lower 2 bytes)	0	Read
1252108	131B0CH	←			Model code (upper 2 bytes)		
1252109	131B0DH	←			Version	0	Read
1252110 to 1252119	131B0EH to 131B17H	←			Model name string	0	Read
1252120 to 1252121	131B18H to 131B19H	←			Vendor-specific device information	0	Read
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 1275135	133C10H to 1374FFH	←		System area			
1275136	137500H	←		Time distribution interval setting of the CPU module		0	Read, write
1275137	137501H	←		Time reflection setting to the CPU module		0	Read, write
1275138	137502H	←		Time distribution start setting in the master station		0	Read, write
1275139 to 1275903	137503H to 1377FFH	←		System area			
1275904	137800H	←		Grandmaster information	Grandmaster	0	Read
1275905 to 1275906	137801H to 137802H	←			System area		
1275907 to 1275909	137803H to 137805H	←			Grandmaster MAC address	0	Read
1275910 to 1275932	137806H to 13781CH	←		System area			
1275933	13781DH	←		Time synchronization setting	PTP frame send source check enable/ disable	0	Read, write
1275934	13781EH	←			PTP frame send source check result (P1)	0	Read
1275935	13781FH	←			PTP frame send source check result (P2)	0	Read
1275936 to 1277439	137820H to 137DFFH	←		System area			
1277440	137E00H	←		Communication cycle timing	Normal speed (1st/N cycle during N cycles)	0	Read
1277441	137E01H	←			Low speed (1st/N cycle during 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

P1		P2		Name		Initial value	Read Write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
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			
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 to 1277649	137ED0H to 137ED1H	←		PDO information (Multidrop No.0 of the station No.1)	Start offset of link device using RPDO	0	Read
1277650 to 1277651	137ED2H to 137ED3H	←			RPDO size	0	Read
1277652 to 1277653	137ED4H to 137ED5H	←			Start offset of link device using TPDO	0	Read
1277654 to 1277655	137ED6H to 137ED7H	←			TPDO size	0	Read
1277656 to 1277703	137ED8H to 137F07H	←		⋮			

P1		P2		Name		Initial value	Read Write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1277704 to 1277705	137F08H to 137F09H	←		PDO information (Multidrop No.7 of the station No.1)	Start offset of link device using RPDO	0	Read
1277706 to 1277707	137F0AH to 137F0BH	←			RPDO size	0	Read
1277708 to 1277709	137F0CH to 137F0DH	←			Start offset of link device using TPDO	0	Read
1277710 to 1277711	137F0EH to 137F0FH	←			TPDO size	0	Read
1277712 to 1285263	137F10H to 139C8FH	←		⋮			
1285264 to 1285265	139C90H to 139C91H	←		PDO information (Multidrop No.0 of the station No.120)	Start offset of link device using RPDO	0	Read
1285266 to 1285267	139C92H to 139C93H	←			RPDO size	0	Read
1285268 to 1285269	139C94H to 139C95H	←			Start offset of link device using TPDO	0	Read
1285270 to 1285271	139C96H to 139C97H	←			TPDO size	0	Read
1285272 to 1285319	139C98H to 139CC7H	←		⋮			
1285320 to 1285321	139CC8H to 139CC9H	←		PDO information (Multidrop No.7 of the station No.120)	Start offset of link device using RPDO	0	Read
1285322 to 1285323	139CCAH to 139CCBH	←			RPDO size	0	Read
1285324 to 1285325	139CCCH to 139CCDH	←			Start offset of link device using TPDO	0	Read
1285326 to 1285327	139CCEH to 139CCFH	←			TPDO size	0	Read
1285328 to 1294015	139CD0H to 13BEBFH	←		System area			
1294016	13BEC0H	←		Protocol information	Protocol operating status	0	Read
1294017	13BEC1H	←			Write request	0	Read, write
1294018	13BEC2H	←			Protocol setting	0	Read, write
1294019	13BEC3H	←			Write implementation status	0	Read
1294020	13BEC4H	←			Setting result	0	Read
1294021	13BEC5H	←			Protocol setting status	0	Read
1294022 to 1294031	13BEC6H to 13BECFH	←			System area		
1264032 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
⋮		←			⋮		
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 1294351	13BFE1H to 13C00FH	←		System area			

P1		P2		Name		Initial value	Read Write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
1294352 to 1294353	13C010H to 13C011H	←		Master station shift information	Current master station IP address	0	Read
1294354 to 1294367	13C012H 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	P1: Own node setting status storage area P2: System area	System area		
2097156 to 2097157	200004H to 200005H	4194308 to 4194309	400004H to 400005H		Own node IP address	0	Read
2097158 to 2097165	200006H to 20000DH	4194310 to 4194317	400006H to 40000DH		System area		
2097166 to 2097167	20000EH to 20000FH	4194318 to 4194319	40000EH to 40000FH		Subnet mask	0	Read
2097168 to 2097169	200010H to 200011H	4194320 to 4194321	400010H to 400011H		System area		
2097170 to 2097171	200012H to 200013H	4194322 to 4194323	400012H to 400013H		Default gateway IP address	0	Read
2097172 to 2097179	200014H to 20001BH	4194324 to 4194331	400014H to 40001BH		System area		
2097180 to 2097182	20001CH to 20001EH	4194332 to 4194334	40001CH to 40001EH		Own node MAC address	0	Read
2097183	20001FH	4194335	40001FH		Own node network number	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			

P1		P2		Name		Initial value	Read Write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
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		
2098152 to 2098153	2003E8H to 2003E9H	4195304 to 4195305	4003E8H to 4003E9H	P1: System port latest error code storage area P2: System area	System area		
2098154	2003EAH	4195306	4003EAH		Auto-open UDP port latest error code	0	Read
2098155	2003EBH	4195307	4003EBH		MELSOFT transmission port (UDP/IP) latest error code	0	Read
2098156	2003ECH	4195308	4003ECH		MELSOFT transmission port (TCP/IP) latest error code	0	Read
2098157	2003EDH	4195309	4003EDH		SLMP transmission port (UDP/IP) latest error code	0	Read
2098158	2003EEH	4195310	4003EEH		SLMP transmission port (TCP/IP) latest error code	0	Read
2098159	2003EFH	4195311	4003EFH		SLMPSND instruction latest error code	0	Read
2098160 to 2102151	2003F0H to 201387H	4195312 to 4199303	4003F0H to 401387H	System area			
2102152 to 2102153	201388H to 201389H	4199304 to 4199305	401388H to 401389H	Status for each protocol (IP packet)	Received packet total count	0	Read
2102154 to 2102155	20138AH to 20138BH	4199306 to 4199307	40138AH to 40138BH		Received packet checksum error discard count	0	Read
2102156 to 2102157	20138CH to 20138DH	4199308 to 4199309	40138CH to 40138DH		Sent packet total count	0	Read
2102158 to 2012173	20138EH to 20139DH	4199310 to 4199325	40138EH to 40139DH		System area		
2102174 to 2102175	20139EH to 20139FH	4199326 to 4199327	40139EH to 40139FH		Simultaneous transmission error detection count (receive buffer full count)	0	Read
2102176 to 2102180	2013A0H to 2013A4H	4199328 to 4199332	4013A0H to 4013A4H		System area		
2102181	2013A5H	4199333	4013A5H		Receive abort count	0	Read
2102182 to 2102191	2013A6H to 2013AFH	4199334 to 4199343	4013A6H to 4013AFH		System area		

P1		P2		Name		Initial value	Read Write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
2102192 to 2102193	2013B0H to 2013B1H	4199344 to 4199345	4013B0H to 4013B1H	Status for each protocol (ICMP packet)	Received packet total count	0	Read
2102194 to 2102195	2013B2H to 2013B3H	4199346 to 4199347	4013B2H to 4013B3H		Received packet checksum error discard count	0	Read
2102196 to 2102197	2013B4H to 2013B5H	4199348 to 4199349	4013B4H to 4013B5H		Sent packet total count	0	Read
2102198 to 2102199	2013B6H to 2013B7H	4199350 to 4199351	4013B6H to 4013B7H		Received echo request total count	0	Read
2102200 to 2102201	2013B8H to 2013B9H	4199352 to 4199353	4013B8H to 4013B9H		Sent echo reply total count	0	Read
2102202 to 2102203	2013BAH to 2013BBH	4199354 to 4199355	4013BAH to 4013BBH		Sent echo request total count	0	Read
2102204 to 2102205	2013BCH to 2013BDH	4199356 to 4199357	4013BCH to 4013BDH		Received echo reply total count	0	Read
2102206 to 2102231	2013BEH to 2013D7H	4199358 to 4199383	4013BEH to 4013D7H		System area		
2102232 to 2102233	2013D8H to 2013D9H	4199384 to 4199385	4013D8H to 4013D9H	Status for each protocol (TCP packet)	Received packet total count	0	Read
2102234 to 2102235	2013DAH to 2013DBH	4199386 to 4199387	4013DAH to 4013DBH		Received packet checksum error discard count	0	Read
2102236 to 2102237	2013DCH to 2013DDH	4199388 to 4199389	4013DCH to 4013DDH		Sent packet total count	0	Read
2102238 to 2102271	2013DEH to 2013FFH	4199390 to 4199423	4013DEH to 4013FF		System area		
2102272 to 2102273	201400H to 201401H	4199424 to 4199425	401400H to 401401H	Status for each protocol (UDP packet)	Received packet total count	0	Read
2102274 to 2102275	201402H to 201403H	4199426 to 4199427	401402H to 401403H		Received packet checksum error discard count	0	Read
2102276 to 2102277	201404H to 201405H	4199428 to 4199429	401404H to 401405H		Sent packet total count	0	Read
2102278 to 2102340	201406H to 201444H	4199430 to 4199492	401406H to 401444H		System area		
2102341	201445H	4199493	401445H	P1: Own node operation status storage area (LED on/off status) P2: System area		0	Read
2102342	201446H	4199494	401446H	System area			
2102343	201447H	4199495	401447H	Own node operation 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 operation 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	FFFFFFFFFFFFH	Read
2102356 to 2102358	201454H to 201456H	4199508 to 4199510	401454H to 401456H		MAC address of the station with the IP address already used	FFFFFFFFFFFFH	Read
2102359 to 2102452	201457H to 2014B4H	4199511 to 4199604	401457H to 4014B4H	System area			

A

P1		P2		Name		Initial value	Read Write
Address (decimal)	Address (hexadecimal)	Address (decimal)	Address (hexadecimal)				
2102452	2014B4H	4199604	4014B4H	P1: Sending/ receiving instructions area 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 Initial value: Follow the remote password setting.	See a column on the left.	Read
2102783 to 2108735	2015FFH to 202D3FH	4199935 to 4205877	4015FFH to 402D3FH	System area			
2108736 to 2108799	202D40H to 202D7FH	4205888 to 4205951	402D40H to 402D7FH	Remote password function monitoring area	System area		
2108800	202D80H	4205952	402D80H		Auto-open UDP port continuous unlock failure count	0	Read
2108801	202D81H	4205953	402D81H		MELSOFT transmission port (UDP/IP) continuous unlock failure count	0	Read
2108802	202D82H	4205954	402D82H		MELSOFT transmission port (TCP/IP) continuous unlock failure count	0	Read
2108803 to 2108804	202D83H to 202D84H	4205955 to 4205956	402D83H to 402D84H		System area		
2108805	202D85H	4205957	402D85H		SLMP transmission port (UDP/IP) continuous unlock failure count	0	Read
2108806	202D86H	4205958	402D86H		SLMP transmission port (TCP/IP) continuous unlock failure count	0	Read
2108807 to 2108821	202D87H to 202D95H	4205959 to 4205973	402D87H to 402D95H		System area		
2108822 to 2162686	202D96H to 20FFFEH	4205974 to 4259838	402D96H to 40FFFEH	System area			
2162687	20FFFFH	4259839	40FFFFH	P1: Network type information area (Network type information) P2: System area		5	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 16777215	60001FH to FFFFFFH	←		System area			

*1 The value is set to 1 when the firmware version of the RJ71GN11-T2 is "3" or earlier.

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).

A

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 RX start number and number of points for each station number can be checked by the RX offset/size information (Un\G1245696 to Un\G1246179). (☞ Page 307 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 RY start number and number of points for each station number can be checked by the RY offset/size information (Un\G1246720 to Un\G1247203). (☞ Page 308 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 RWw start number and number of points for each station number can be checked by the RWw offset/size information (Un\G1247744 to Un\G1248227). (☞ Page 308 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 RWr start number and number of points for each station number can be checked by the RWr offset/size information (Un\G1248768 to Un\G1249251). (☞ Page 308 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 LW start number and number of points for each station number can be checked by the LW offset/size information (Un\G1250816 to Un\G1251299). (☞ Page 309 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 relay (LB) (Un\G92160 to Un\G94207)

The LB value is stored. The LB start number and number of points for each station number can be checked by the LB offset/size information (Un\G1249792 to Un\G1250275). (☞ Page 309 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	SW1FFF															

A

Link points extended device area

When link points are not extended, values are 0 and this area is invalid. Use the link device area. (☞ Page 304 Link device area)

■Start offset and size of link device when link points are extended (Un\G98560 to Un\G98583)

The start offset and size of RX, RY, RWw, RWr, LB, and LW with "LB/LW Points Extended Setting" under "Application Settings" set to "Extend" are stored.

Address	Description
Un\G98560 to Un\G98561	RX start offset when link points are extended
Un\G98562 to Un\G98563	RX size when link points are extended (in units of words)
Un\G98564 to Un\G98565	RY start offset when link points are extended (in units of words)
Un\G98566 to Un\G98567	RY size when link points are extended (in units of words)
Un\G98568 to Un\G98569	RWw start offset when link points are extended
Un\G98570 to Un\G98571	RWw size when link points are extended (in units of words)
Un\G98572 to Un\G98573	RWr start offset when link points are extended
Un\G98574 to Un\G98575	RWr size when link points are extended (in units of words)
Un\G98576 to Un\G98577	LW start offset when link points are extended
Un\G98578 to Un\G98579	LW size when link points are extended (in units of words)
Un\G98580 to Un\G98581	LB start offset when link points are extended
Un\G98582 to Un\G98583	LB size when link points are extended (in units of words)

■Link device area when link points are extended (Un\G98816 to Un\G649727)

The values of RX, RY, RWw, RWr, LB, and LW with "LB/LW Points Extended Setting" under "Application Settings" set to "Extend" are stored.

For the start offset and size of each link device, refer to the start offset and size when link points are extended (Un\G98560 to Un\G98583).

Address	Description
Un\G98816 to Un\G649727	The values of RX, RY, RWw, RWr, LB, and LW when link points are extended

Timeslot information

■Timeslot 0 information (Un\G1245440 to Un\G1245455)

Cycle start offset (ns, s unit) and cycle end offset (ns, s unit) or other information on timeslot 0 are stored.

Address	Name	Description
Un\G1245440 to Un\G1245441	Cycle start offset (ns unit)	The ns digits of cycle start offset are stored. Stored range: 0 to 999999999 (ns)
Un\G1245442	Cycle start offset (s unit)	The s digits of cycle start offset are stored. Stored range: 0 to 65535 (s)
Un\G1245443	System area	
Un\G1245444 to Un\G1245445	Cycle end offset (ns unit)	The ns digits of cycle end offset are stored. Stored range: 0 to 999999999 (ns)
Un\1245446	Cycle end offset (s unit)	The s digits of cycle end offset are stored. Stored range: 0 to 65535 (s)
Un\G1245447 to Un\G1245451	System area	
Un\G1245452	VID (VLAN Identifier)	Stores the VID of Timeslot 0. Storage range: 1 to 4094, 65535 (do not use VID or judge frames to be relayed from VID)
Un\G1245453	PCP (Priority Code Point)	Stores the PCP of Timeslot 0. Storage range: 0 to 7, 65535 (do not use PCP or judge frames to be relayed from PCP)
Un\G1245454	EtherType	Stores the EtherType of the frame to be relayed in Timeslot 0. Timeslot 0 stores 65535. Storage range: EtherType value of the frame to be relayed, 65535 (Do not judge frames to be relayed from EtherType)
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 the number of points of RX for each station are stored.

Address	Description
Un\G1245696 to Un\G1245697	Station No.0 offset
Un\G1245698 to Un\G1245699	Station No.0 size (in units of words)
Un\G1245700 to Un\G1245701	Station No.1 offset
Un\G1245702 to Un\G1245703	Station No.1 size (in units of words)
⋮	
Un\G1246176 to Un\G1246177	Station No.120 offset
Un\G1246178 to Un\G1246179	Station No.120 size (in units of words)

The buffer memory address for the offset and size of each station number can be calculated using the following formulas:

- Offset buffer memory address = 1245696 + (station No.) × 4
- Size buffer memory address = 1245698 + (station No.) × 4

RY offset/size information

■RY offset/size information (Un\G1246720 to Un\G1247203)

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

Address	Description
Un\G1246720 to Un\G1246721	Station No.0 offset
Un\G1246722 to Un\G1246723	Station No.0 size (in units of words)
Un\G1246724 to Un\G1246725	Station No.1 offset
Un\G1246726 to Un\G1246727	Station No.1 size (in units of words)
⋮	
Un\G1247200 to Un\G1247201	Station No.120 offset
Un\G1247202 to Un\G1247203	Station No.120 size (in units of words)

The buffer memory address for the offset and size of each station number can be calculated using the following formulas:

- Offset buffer memory address = 1246720 + (station No.) × 4
- Size buffer memory address = 1246722 + (station No.) × 4

RWw offset/size information

■RWw offset/size information (Un\G1247744 to Un\G1248227)

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

Address	Description
Un\G1247744 to Un\G1247745	Station No.0 offset
Un\G1247746 to Un\G1247747	Station No.0 size (in units of words)
Un\G1247748 to Un\G1247749	Station No.1 offset
Un\G1247750 to Un\G1247751	Station No.1 size (in units of words)
⋮	
Un\G1248224 to Un\G1248225	Station No.120 offset
Un\G1248226 to Un\G1248227	Station No.120 size (in units of words)

The buffer memory address for the offset and size of each station number can be calculated using the following formulas:

- Offset buffer memory address = 1247744 + (station No.) × 4
- Size buffer memory address = 1247746 + (station No.) × 4

RWr offset/size information

■RWr offset/size information (Un\G1248768 to Un\G1249251)

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

Address	Description
Un\G1248768 to Un\G1248769	Station No.0 offset
Un\G1248770 to Un\G1248771	Station No.0 size (in units of words)
Un\G1248772 to Un\G1248773	Station No.1 offset
Un\G1248774 to Un\G1248775	Station No.1 size (in units of words)
⋮	
Un\G1249248 to Un\G1249249	Station No.120 offset
Un\G1249250 to Un\G1249251	Station No.120 size (in units of words)

The buffer memory address for the offset and size of each station number can be calculated using the following formulas:

- Offset buffer memory address = 1248768 + (station No.) × 4
- Size buffer memory address = 1248770 + (station No.) × 4

LB offset/size information

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

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

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

The buffer memory address for the offset and size of each station number can be calculated using the following formulas:

- Offset buffer memory address = 1249792 + (station No.) × 4
- Size buffer memory address = 1249794 + (station No.) × 4

LW offset/size information

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

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

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

The buffer memory address for the offset and size of each station number can be calculated using the following formulas:

- Offset buffer memory address = 1250816 + (station No.) × 4
- Size buffer memory address = 1250818 + (station No.) × 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 RJ71GN11 information of the own station is stored.
Un\G1252106	Model type	
Un\G1252107	Model code (lower 2 bytes)	
Un\G1252108	Model code (upper 2 bytes)	
Un\G1252109	Version	
Un\G1252110 to Un\G1252119	Model name string	
Un\G1252120 to Un\G1252121	Vendor-specific device information	

Communication path determination status

■Communication path determination status (Un\G1260544 to Un\G1260559)

The determination information on the communication path for each network 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\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 numbers.

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.

When "Master Station Shift Setting" in "Application Settings" is set to "Enable", set the interval at which the time of the CPU module on the same base unit as the local station (current master station) is distributed from the local station (current master station) to the local station.

- 0000H: 10s
- 0001H to FFFEH: Send using the set time interval (second)
- FFFFH: Distribution stop

(Default: 0000H)

■Time reflection setting to the CPU module (Un\G1275137)

Whether the time of the CPU module distributed from the master station is reflected to the CPU module in the local station is set(CPU No.1 when the multiple CPU system is used). This setting is set to the buffer memory of the local station.*1

- 0000H: Do not reflect the time to the CPU module.*2
- 0001H: Reflect the time to the CPU module.

(Default: 0000H)

*1 If 0001H is set to the buffer memory of the master station, the time distributed is not reflected to the CPU module in the local station (CPU No.1 when the multiple CPU system is used).

*2 The time that was set to the CPU module on the local station is used for operation.

■Time distribution start setting in the master station (Un\G1275138)

The time distribution interval complies with the time distribution interval setting in the CPU module (Un\G1275136).

- 0000H: Start time distribution without waiting for time distribution reception from the local station.
- 0001H: Start time distribution after time distribution reception from the local station.*1*2

(Default: 0000H)

*1 This operates when the master station shift function is enabled and the master station is reconnected.

*2 If the master station shift function is disabled, the setting is invalid.

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 communication cycle timing is stored.

This area can be used by an inter-module synchronous interrupt program (I44). In unicast mode, this area cannot be used in a local station.

■Normal speed (Un\G1277440)

"1" is stored at the timing of the start (1st cycle during N cycles)/end (N cycle during N cycles) of the basic cycle intervals during normal speed cycles.

[b0]

- 1: Start (1st cycle during N cycles)
- 0: Other than the start

[bF]

- 1: End (N cycle during N cycles)
- 0: Other than the end

■Low speed (Un\G1277441)

"1" is stored at the timing of the start (1st cycle during N cycles)/end (N cycle during N cycles) of the basic cycle intervals during low speed cycles.

[b0]

- 1: Start (1st cycle during N cycles)
- 0: Other than the start

[bF]

- 1: End (N cycle during N cycles)
- 0: Other than the 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. *1

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

*1 This value is stored when both of the following conditions are satisfied.
·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"
·When 'Protocol setting' (Un\G1294018) is set to Automatic setting (0) or Protocol version 2.0 fixed (2)

■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 intervals that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

Stores the communication cycle interval of protocol version 2.0 regardless of the setting value of 'Protocol setting' (Un\G1294018). When 'Protocol setting' (Un\G1294018) is set to '1: Protocol version 1.0 fixed', if devices supporting protocol version 1.0 and devices supporting protocol version 2.0 are mixed, refer to the value in this buffer memory, and set the appropriate value to "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings".

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

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

Stores the cyclic transmission times that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

Stores the cyclic transmission times of protocol version 2.0 regardless of the setting value of 'Protocol setting' (Un\G1294018). When 'Protocol setting' (Un\G1294018) is set to '1: Protocol version 1.0 fixed', if devices supporting protocol version 1.0 and devices supporting protocol version 2.0 are mixed, refer to the value in this buffer memory, and set the appropriate value to "Communication Period Interval Setting" in "Communication Period Setting" under "Basic Settings".

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

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

Stores the transient transmission times that are calculated by the number of device stations and the number of link device points set in "Network Configuration Settings" under "Basic Settings".

Stores the transient transmission times of protocol version 2.0 regardless of the setting value of 'Protocol setting' (Un\G1294018). When 'Protocol setting' (Un\G1294018) is set to '1: Protocol version 1.0 fixed', if devices supporting protocol version 1.0 and devices supporting protocol version 2.0 are mixed, refer to the value in this buffer memory, and set the appropriate value to "Communication Period Interval Setting" in "Communication Period Setting" 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 to Un\G1277649	Multidrop No.0 of the station No.1	Start offset of link device using RPDO	The link device start offset using RPDO is stored. (Master station: RWw, local station: RWr)
Un\G1277650 to Un\G1277651		RPDO size	The RPDO size is stored in units of words.
Un\G1277652 to Un\G1277653		Start offset of link device using TPDO	The link device start offset using TPDO is stored. (Master station: RWr, local station: RWw)
Un\G1277654 to Un\G1277655		TPDO size	The TPDO size is stored in units of words.
⋮			
Un\G1277704 to Un\G1277711	Multidrop No.7 of the station No.1		Same as the multidrop No.0 of the station No.1
⋮			
Un\G1285264 to Un\G1285271	Multidrop No.0 of the station No.120		Same as the multidrop No.0 of the station No.1
⋮			
Un\G1285320 to Un\G1285327	Multidrop No.7 of the station No.120		Same as the multidrop No.0 of the 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	Write request	Write the protocol settings to RJ71GN11. 0: Do not write 1: Write
Un\G1294018	Protocol setting	Set the operating protocol. 0: Automatic setting*1 1: Protocol version 1.0 fixed 2: Protocol version 2.0 fixed
Un\G1294019	Write implementation status	Stores the writing implementation status to RJ71GN11. 0: Writing not implemented or in progress 1: Writing completed
Un\G1294020	Setting result	Stores the setting result. 0: Completed successfully Other than 0: Completed with an error (error code)
Un\G1294021	Protocol setting status	Stores the protocol settings held by RJ71GN11. 0: Automatic setting (factory default) 1: Protocol version 1.0 fixed 2: Protocol version 2.0 fixed
Un\G1294022 to Un\G1294031	System area	—

*1 Sets the protocol automatically according to the system settings.
While the system is operating with the protocol version 2.0, if a device that supports protocol version 1.0 attempts to join, the joining station does not establish a data link.

Firmware version		With/without connection to CC-Link IE TSN Class A devices		Operating protocol version
RJ71GN11-T2	RJ71GN11-SX	Protocol version 1.0	Protocol version 2.0	
"15" or later	"04" or later	Available	—	1.0
		Not available	—	2.0
"14"	—	—	Not available	1.0
		Available	Available	1.0
		Not available	Available	2.0

A

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 The value is set to 1 when 'Protocol operating status' (Un\G1294016) is '1: Operating with the protocol version 1.0'.

Master station shift information

■Current master station IP address (Un\G1294352 to Un\G1294353)

When 'Data link error status of own station' (SB0049) is off and 'Master station shift setting status' (SB0195) is on, the IP address of the current master station is stored.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G1294352	Third octet								Fourth octet							
Un\G1294353	First octet								Second octet							

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) has 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.

Own node setting status storage area

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

The setting values of the IP address are stored.

Range: 1H to DFFFFFFEH

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

The setting values of the subnet mask are stored.

Range: 1H to FFFFFFFFH

0: No setting

■Default gateway IP address (Un\G2097170 to Un\G2097171)

The setting values of the default gateway are stored.

Range: 1H to DFFFFFFEH

0: No setting

■Own node MAC address (Un\G2097180 to Un\G2097182)

The own node MAC addresses are stored.

- Un\G2097180: 5th byte, 6th byte of the MAC address
- Un\G2097181: 3rd byte, 4th byte of the MAC address
- Un\G2097182: 1st byte, 2nd byte of the MAC address

■Own node network number (Un\G2097183)

The setting value of the network number is stored.

Range: 1 to 239

0: Network number not set

■Station number (Un\G2097184)

The setting value of the station number is stored.

Range: 1 to 120, 125

1 to 120: Local station

125: Master station

■Transient transmission group No. (Un\G2097185)

The setting value of the transient transmission group number is stored.

Range: 1 to 32

0: No group specification

■Auto-open UDP port port number (Un\G2097189)

The port number used for the auto-open UDP port is stored.

■MELSOFT transmission port (TCP/IP) port number (Un\G2097190)

The port number used for the MELSOFT transmission port (TCP/IP) is stored.

■MELSOFT transmission port (UDP/IP) port number (Un\G2097191)

The port number for the MELSOFT transmission port (UDP/IP) is stored

■SLMP transmission port (TCP/IP) port number (Un\G2097193)

The port number used for the SLMP transmission port (TCP/IP) is stored.

■SLMP transmission port (UDP/IP) port number (Un\G2097194)

The port number used for the SLMP transmission port (UDP/IP) is stored.

Connection status storage area

■Latest error code after the 2nd connection of MELSOFT transmission port (TCP/IP) (Un\G2097380 to Un\G2097386)

The latest error code of the 2nd to 8th connection of the MELSOFT transmission port (TCP/IP) is stored.

■Latest error code after the 2nd connection of SLMP transmission port (TCP/IP) (Un\G2097508 to Un\G2097514)

The latest error code of the 2nd to 8th connection of the SLMP transmission port (TCP/IP) is stored.

System port latest error code storage area

■Auto-open UDP port latest error code (Un\G2098154)

The latest error code of the auto-open UDP port is stored.

■MELSOFT transmission port (UDP/IP) latest error code (Un\G2098155)

The latest error code of the MELSOFT transmission port (UDP/IP) is stored.

■MELSOFT transmission port (TCP/IP) latest error code (Un\G2098156)

The latest error code of the MELSOFT transmission port (TCP/IP) is stored.

■SLMP transmission port (UDP/IP) latest error code (Un\G2098157)

The latest error code of the SLMP transmission port (UDP/IP) is stored.

■SLMP transmission port (TCP/IP) latest error code (Un\G2098158)

The latest error code of the SLMP transmission port (TCP/IP) is stored.

■SLMPSND instruction latest error code (Un\G2098159)

The latest error code of the SLMPSND instruction is stored.

Status for each protocol (IP packet)

■Received packet total count (Un\G2102152 to Un\G2102153, Un\G4199304 to Un\G4199305)

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

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

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

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

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

■Simultaneous transmission error detection count (receive buffer full count) (Un\G2102174 to Un\G2102175, Un\G4199326 to Un\G4199327)

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

■Receive abort count (Un\G2102181, Un\G4199333)

The status is counted from 0 to 65535 (FFFFH).

Status for each protocol (ICMP packet)

■Received packet total count (Un\G2102192 to Un\G2102193, Un\G4199344 to Un\G4199345)

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

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

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

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

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

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

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

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

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

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

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

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

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

Status for each protocol (TCP packet)

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

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

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

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

■Sent packet total count (Un\G2102236 to Un\G2102237, Un\G4199388 to Un\G4199389)

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

Status for each protocol (UDP packet)

■Received packet total count (Un\G2102272 to Un\G2102273, Un\G4199424 to Un\G4199425)

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

■Received packet checksum error discard count (Un\G2102274 to Un\G2102275, Un\G4199426 to Un\G4199427)

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

■Sent packet total count (Un\G2102276 to Un\G2102277, Un\G4199428 to Un\G4199429)

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

Own node operation status storage area (LED on/off status)

■Own node operation status storage area (LED on/off status) (Un\G2102341)

ERR LED (b0)

- 1: On/flashing
- 0: Off

Own node operation 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

■The number of disconnection (Un\G2102346, Un\G4199498)

The number of times the cable was disconnected is stored.

Own node operation 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 RJ71GN11 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\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

A

Appendix 4 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.

Refresh of link special relay (SB)

To use link special relay (SB), set them in "Refresh Setting" in "Basic Settings" so that they are refreshed to the devices or labels of the CPU module. (☞ Page 125 Refresh Settings)

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 or off areas whose numbers are not on the following list or ranges turned on/off by the system. Doing so may cause malfunction of the programmable controller system.

○: Available, ×: Not available, T2: RJ71GN11-T2, SX: RJ71GN11-SX

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SB0006	Clear communication error count	Clears the link special register areas related to communication errors (SW0074 to SW0077, SW007C to SW007F) 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	Enables the remote device test function. Off: No request On: Request issued	○	×	×
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	○	○	○

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SB0036	RECV execution request flag CH7	Stores the data reception status of own station channel 7. Off: No data received On: Data received	○	○	○
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	○	○	○*1
SB0046	Station number setting status of own station	Stores the station number setting status. Off: Station number set On: Station number not set If parameters are set using the engineering tool, this relay is always off.	○	○	○
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 if set as an 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	○	○	○
SB004F	Station number status of the operating station	Stores the station number setting method as follows when the station type of the own station is local station. Off: Set by parameters On: Set by program Remote stations Off: Set by parameters On: Set by the CC-Link IE Field Network diagnostics (including cases with no parameter and when the parameter is default (empty))	×	○	○
SB0063	Link points extended setting	Shows the description of the link points extended setting. Off: Not to Extend On: Extend	○	×	○

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
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. • Stations that surpass the maximum station number are ignored. (Also used in the CLPA conformance test.) (Updated even if set as an error invalid station.) (Updated even if set as a 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.	○	×	○*2
SB006A	PORT1 link-down status of own station	Stores the link-down status of the own station P1 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 if set as an error invalid station.) (Updated even if set as a 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 if set as an error invalid station.) (Updated even if set as a 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	○	×	○*1
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	○	×	○*1
SB0077	Parameter reception status	Stores the status of parameter reception from the master station. Off: Reception completed On: Reception not completed	×	○	○
SB0078	Network topology setting	Stores the setting status of "Network Topology" for the own station (current master station). Off: Line topology, star topology, or coexistence of star and line topologies On: Ring topology	○	×	○*2
SB007B	Input data status of data link faulty station	Stores the setting status of "Data Link Error Station Setting" under "I/O Maintenance Settings" in "Supplementary Cyclic Settings" of "Application Settings" for the own station. Off: Clear On: Hold	○	○	○

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SB007D	Hold/clear status setting for CPU STOP	Stores the setting status of "Output Hold/Clear Setting during CPU STOP" under "I/O Maintenance Settings" in "Supplementary Cyclic Settings" of "Application Settings" for the own station. Off: Hold On: Clear	○	○	○
SB007E	Type of IP Address	Stores the type of IP address. Off: IPv4 On: IPv6	○	○	○
SB007F	IP address setting status	Stores the status of the IP address setting by parameter. Off: No setting On: Set	○	○	○
SB0086	Remote device forced output request accept	Stores the acceptance status of the remote device test function. Off: Not accepted On: Accepted	○	×	×
SB0087	Remote device forced output status	Stores the operating status of the remote device test function. Off: Not completed On: Completed	○	×	×
SB00B0	Data link error status of each station	Stores the data link status of each station. Off: All stations normal On: Faulty station exists When this relay is turned on, the status of each station can be checked with 'Data link status of each station' (SW00B0 to SW00B7) 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 when multicast mode is active, the CC-Link IE TSN Class A remote station is reflected as a normally operating station, even if an error occurs at that station. (Conditions) Reserved stations and stations that surpass the maximum station number are ignored.	○	×	○*1
SB00B1	Data link error status of master station	Stores the data link status of the master station. Off: Normal On: Error	○	×	○*1
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.	○	×	○*1
SB00D0	Error invalid station setting current status	Set 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.	○	×	○*1
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.	○	×	○*1

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SB00F0	CPU operating status of each station	Stores the operating status of the CPU module on each station. Off: All stations are at RUN or PAUSE state On: Station at STOP 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.	○	×	○*1
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	○	×	○*1
SB0100	CPU moderate/major error status of each station	For local stations, the moderate/major error occurrence status of the CPU module on each station is stored. For remote stations, the moderate/major error occurrence status of each station is 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.	○	×	○*1
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	○	×	○*1
SB0110	CPU minor error status of each station	For local stations, the minor error occurrence status of the CPU module on each station is stored. For remote stations, the minor error occurrence status of each station is 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 serious error occurring" is reflected to the CC-Link IE TSN Class A remote station.	○	×	○*1
SB0111	CPU minor error status of master station	Stores the minor error status of the CPU module on the master station. Off: No minor error or a moderate/major error On: Minor error	○	×	○*1
SB0195	Master station shift setting status	Stores the master station shift status. Off: No setting On: Set	○	×	○
SB0196	Current master/local station status of own station	Stores the status of the own station. Off: Local station On: Current master station (Conditions) This relay is enabled when 'Own station setting 1' (SB0044) is off and 'Master station shift setting status' (SB0195) is on.	×	×	○
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	○	×	×

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
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.	○	○	○
SB0252	Parameter reception status	Stores the status of parameter reception. Stores the status of parameter reception from the CPU module, in the master station. Stores the status of parameter reception from the master station, in a local station. Off: Reception completed On: Reception not completed	T2: × SX: ○	T2: × SX: ○	T2: × SX: ○
SB0253	Transient communication status	Stores the status of transient transmission. Off: Transient transmission by the master station On: Transient transmission by the current master station	T2: × SX: ○	T2: × SX: ○	T2: × SX: ○
SB0254	Connection error status of the own station	Stores the transmission path status of the own station. When this relay is turned on, the definition can be checked with Connection status of own station (SW0066). Off: Normal On: Error	T2: × SX: ○	T2: × SX: ○	T2: × SX: ○
SB04E0	SNMP community name setting function support status	Stores the support status of the SNMP community name setting function for each station. Off: All stations not supported On: Some stations supported When supported stations are present, the support status of each station can be checked by the SNMP community name setting function support status (SW04E0 to SW04E7) of each station.	○	×	○*2
SB04E1	SNMP community name setting function support status of own station	Stores the support status of the SNMP community name setting function of the own station. Off: Not supported On: Supported	○	○	○
SB0500	Co-recording device station supporting information	Stores the supporting information on a device station. Off: No stations are available for co-recording. On: Stations that are available for co-recording exist. For "Stations that are available for co-recording exist." (On) status, 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 a device station. Off: No stations use co-recording. On: Stations that are available for co-recording exist. For "Stations that are available for co-recording exist." (On) status, each setting information can be checked with 'Co-recording each station setting information' (SW0510 to SW0517).	○	×	×

*1 If the station is communicating in multicast mode, this item is enabled when 'Data link error status of own station' (SB0049) is off.

*2 If the station is communicating in multicast mode, this item is enabled when 'Current master/local station status of own station' (SB0196) is on.

Appendix 5 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.

Refresh of link special register (SW)

To use link special register (SW), set them in "Refresh Settings" under "Basic Settings" so that they are refreshed to the devices or labels of the CPU module. (☞ Page 125 Refresh Settings)

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)

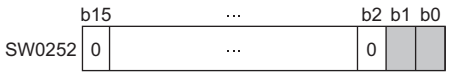
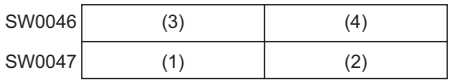
The following table lists the link special register areas (SW) when they are assigned from SW0000 to SW0FFF.

Point

Do not write any data to an area whose number 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, T2: RJ71GN11-T2, SX: RJ71GN11-SX

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast 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 number	Stores the network number of the own station. Range: 1 to 239	○	○	○
SW0042	Station number	Stores the station number 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	○	○	○*1

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SW0045	Module type	Stores the hardware status of the own station.  ■b0 to b1: Model type 00: Module 01: Board 10: HMI (Human Machine Interface) ■b2: Connector type 0: RJ45 connector 1: Duplex LC connector	○	○	○
SW0046 to SW0047	IPv4 address	Indicates the IP address (IPv4) set in the own station.  (1): First octet (2): Second octet (3): Third octet (4): Fourth 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 1EH: Detection of a device station that does not support the master station shift function 20H: CPU module moderate error, major error 60H: Illegal ring connection 61H: Star topology when the master station shift function is enabled, or coexistence of star and line topologies (RJ71GN11-T2 only) (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	○	○	○
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 (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 the RJ71GN11-T2 communicates in multicast mode, the CC-Link IE TSN Class A remote station is reflected as a station performing normal data link.	○	×	○*1

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SW005B	Maximum data link station number	Stores the maximum station number 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. • This register is enabled when 'Data link error status of own station' (SB0049) is off.	○	×	○*1
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 "Cyclic Transmission Time" of "Basic Settings". (Unit: μs)	○	○	○
SW0063	Transient transmission time	Stores the setting value of "Transient Transmission Time" of "Basic Settings". (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), stores only when the RJ71GN11-T2 is used 04H: Normal (loopback communication in progress on P1, cable disconnected on P2) 10H: Normal (cable disconnected on P1, communication in progress on P2), stores only when the RJ71GN11-T2 is used 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.	○	×	○*2
SW0071	Loopback station number 2				
SW0072	Communication cycle intervals (calculation value)	Stores the communication cycle intervals 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)	○	×	×
SW0073	Cyclic transmission time (calculation value)	Stores the cyclic 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)	○	×	×
SW0074	PORT1 cable disconnection detection count	Stores the cumulative count that was detected for cable disconnections at the P1 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.	○	○	○

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SW0075	PORT1 receive error detection count	Stores the cumulative count that error data was received at the P1 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 that data was received at the P1 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	Watchdog counter processing time (calculation value)	Stores the processing time required for the watchdog counter to monitor cyclic communications. The processing time is calculated according to the settings of the device station actually connected. (Unit: μs)	○	×	×
SW007A	Transient transmission additional time (calculation value)	Stores the additional time required for "Communication Period Interval Setting" and "Transient Transmission Time" of "Communication Period Setting" under "Basic Settings". (Unit: μs)	○	×	×
SW007C	PORT2 cable disconnection detection count	Stores the cumulative count that was detected for cable disconnections at the P2 side. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared. When FFFFH (maximum value 65535) is counted, the value returns to 0 and the module continues to count.	○	○	○
SW007D	PORT2 receive error detection count	Stores the cumulative count that error data was received at the P2 side. The count stores only error data that is not transmitted to all stations. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared. When FFFFH (maximum value 65535) is counted, counting stops.	○	○	○
SW007E	PORT2 total number of received data (lower 1 word)	Stores the cumulative count that data was received at the P2 side. When 'Clear communication error count' (SB0006) is turned on, the stored count is cleared. When FFFFFFFFH (maximum value 4294967295) is counted, counting stops.	○	○	○
SW007F	PORT2 total number of received data (upper 1 word)				
SW0080 to SW009F	REMFR/REMTO instruction execution status	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.)	○	○	○

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th>Master station</th><th colspan="2">Local station</th></tr>
<tr><th></th><th></th><th></th><th></th><th>Unicast mode</th><th>Multicast mode</th></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 reconnected to the network one by one per 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 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. For local stations disconnected from the master station, however, the status of the CC-Link IE TSN Class A remote station is "1: Data link faulty 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 number in the table represents a station number.
— is fixed to 0.
(Conditions)
• Stations that surpass the maximum station number are ignored.
(Also used in the CLPA conformance test.)</td><td>○</td><td>×</td><td>○*1</td></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>Each number in the table represents a station number.
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</table>

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<tr><th>No.</th><th>Name</th><th>Description</th><th>Master station</th><th colspan="2">Local station</th></tr>
<tr><th></th><th></th><th></th><th></th><th>Unicast mode</th><th>Multicast mode</th></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>

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(Conditions)
• Stations that surpass the maximum station number are ignored.</td><td>○</td><td>×</td><td>○*1</td></tr>
<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>

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><td>○*1</td></tr>
<tr><td>SW00E8
to
SW00EF</td><td>Station type match status</td><td>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

<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>SW00E8</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW00E9</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW00EA</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW00EB</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW00EC</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW00ED</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW00EE</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW00EF</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>

Each number in the table represents a station number.
— is fixed to 0.</td><td>○</td><td>×</td><td>○*1</td></tr>
</table>

A

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th>Master station</th><th colspan="2">Local station</th></tr>
<tr><th></th><th></th><th></th><th></th><th>Unicast mode</th><th>Multicast mode</th></tr>
<tr><td>SW00F0 to SW00F7</td><td>CPU operating status of each station</td><td>Stores the CPU operating status of each station.
0: RUN, PAUSE
1: STOP or moderate/major error
<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>SW00F0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00F1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00F2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00F3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW00F4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW00F5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW00F6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW00F7</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents a station number.
— is fixed to 0.
(Conditions)
• Reserved stations and stations that surpass the maximum station number 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.</td><td>○</td><td>×</td><td>○*1</td></tr>
<tr><td>SW0100 to SW0107</td><td>CPU moderate/major error status of each station</td><td>For local stations, the moderate/major error occurrence status of the CPU module on each station is stored.
For remote stations, the moderate/major error occurrence status of each station is stored.
0: No moderate/major error
1: Moderate/major 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>SW0100</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0101</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0102</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0103</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW0104</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW0105</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW0106</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW0107</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents a station number.
— is fixed to 0.
(Conditions)
• If an error occurs, data prior to error is held.
• Reserved stations and stations that surpass the maximum station number 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.</td><td>○</td><td>×</td><td>○*1</td></tr>
</table>

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th>Master station</th><th colspan="2">Local station</th></tr>
<tr><th></th><th></th><th></th><th></th><th>Unicast mode</th><th>Multicast mode</th></tr>
<tr><td>SW0110 to SW0117</td><td>CPU minor error status of each station</td><td>For local stations, the minor error occurrence status of the CPU module on each station is stored.
For remote stations, the minor error occurrence status of each station is stored.
0: Normal, or a moderate or serious 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 number in the table represents a station number.
— is fixed to 0.
(Conditions)
• Reserved stations and stations that surpass the maximum station number 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: Normal, or a moderate or serious error occurring" is reflected to the CC-Link IE TSN Class A remote station.</td><td>○</td><td>×</td><td>○*1</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 number in the table represents a station number.
— is fixed to 0.</td><td>○</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><td>×</td></tr>
<tr><td>SW0195</td><td>Station number of current master station</td><td>Stores the station number of the station that is actually operating as the current master station.
Range: 0 to 120
When the master station shift function is disabled or is not supported, the value is 0.
(Conditions)
This register is enabled when 'Data link error status of own station' (SB0049) is off and 'Master station shift setting status' (SB0195) is on.</td><td>○</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><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th rowspan="2">Master station</th><th colspan="2">Local station</th></tr>
<tr><th>Unicast mode</th><th>Multicast mode</th></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><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><td>○</td></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><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><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><td>○</td></tr>
<tr><td>SW019E</td><td>Link dedicated instructions processing result CH9</td><td>Stores the processing results of the link dedicated instruction that used channel 9 of the own station.
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>T2: ×
SX: ○</td><td>T2: ×
SX: ○</td><td>T2: ×
SX: ○</td></tr>
<tr><td>SW019F</td><td>Link dedicated instructions processing result CH10</td><td>Stores the processing results of the link dedicated instruction that used channel 10 of the own station.
0: Completed successfully
1 or greater: Completed with an error (Error code is stored.)</td><td>T2: ×
SX: ○</td><td>T2: ×
SX: ○</td><td>T2: ×
SX: ○</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><td>×</td></tr>
</table>

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SW01C0 to SW01C7	Information of CC-Link IE TSN Network synchronous communication function of each station	Stores the information about support or non-support of the CC-Link IE TSN Network synchronous communication function for each station. 0: Not supported 1: Supported Each number in the table represents a station number. — is fixed to 0. (Conditions) • Stations that surpass the maximum station number are ignored.	○	×	×

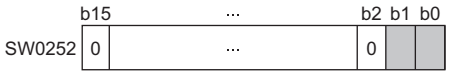
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW01C0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW01C1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW01C2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW01C3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW01C4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW01C5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW01C6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW01C7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SW01C8 to SW01CF	Synchronous/ asynchronous operating status information of each station	Stores the information about operating status of the CC-Link IE TSN Network synchronous communication function for each station. 0: Asynchronous setting 1: Synchronous setting Stations which are not executing an inter-module synchronous interrupt program because the CPU operating status is currently STOP or PAUSE (the status under which the program cannot be executed) are also treated as asynchronous setting (0). Each number in the table represents a station number. — is fixed to 0. (Conditions) • Stations that surpass the maximum station number are ignored.	○	×	×

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW01C8	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW01C9	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW01CA	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW01CB	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW01CC	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW01CD	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW01CE	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW01CF	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113

No.	Name	Description	Master station	Local station	
				Unicast mode	Multicast mode
SW01D0 to SW01D7	Watchdog counter operating status information for each station	Stores the watchdog counter operating status information for each station in CC-Link IE TSN communications. (Station number: 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. Each number in the table represents a station number. — is fixed to 0. (Conditions) • Stations that surpass the maximum station number are ignored.	○	×	×

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
SW01D0	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SW01D1	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
SW01D2	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
SW01D3	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
SW01D4	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
SW01D5	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
SW01D6	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
SW01D7	—	—	—	—	—	—	—	—	120	119	118	117	116	115	114	113

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th>Master station</th><th colspan="2">Local station</th></tr>
<tr><th></th><th></th><th></th><th></th><th>Unicast mode</th><th>Multicast mode</th></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><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 Inter-module synchronization. (Unit: μs)
"0" is stored when the inter-module synchronization function is not used.</td><td>○</td><td>×</td><td>×</td></tr>
<tr><td>SW0250</td><td>Transient transmission group number</td><td>Stores the transient transmission group number of the own station.
0: No group specification
1 to 32: Transient transmission group No.</td><td>T2: ×
SX: ○</td><td>T2: ×
SX: ○</td><td>T2: ×
SX: ○</td></tr>
<tr><td>SW0252</td><td>Parameter Information</td><td>Stores parameter information.
(Conditions)
• This register is enabled when 'Received parameter error' (SB004D) is off.

■b0 Network Range Assignment
0: Not available
1: Available
■b1: Refresh parameter
0: Not available
1: Available</td><td>T2: ×
SX: ○</td><td>T2: ×
SX: ○</td><td>T2: ×
SX: ○</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: Not completed
If not completed, 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><td>×</td></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><td>×</td></tr>
<tr><td>SW04A0</td><td>Time synchronization method</td><td>Stores the synchronization method.
0: IEEE 1588
1: IEEE802.1AS</td><td>○</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 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><td>×</td></tr>
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<tr><th>No.</th><th>Name</th><th>Description</th><th>Master station</th><th colspan="2">Local station</th></tr>
<tr><th></th><th></th><th></th><th></th><th>Unicast mode</th><th>Multicast mode</th></tr>
<tr><td>SW04E0 to SW04E7</td><td>SNMP community name setting function support status of each station</td><td>Stores the support status of the SNMP community name setting function for each device 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>SW04E0</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>SW04E1</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>SW04E2</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>SW04E3</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>SW04E4</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>SW04E5</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>SW04E6</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>SW04E7</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><td>○*2</td></tr>
<tr><td>SW0500 to SW0507</td><td>Co-recording each station supporting information</td><td>Stores the supporting information on 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><td>×</td></tr>
<tr><td>SW0510 to SW0517</td><td>Co-recording each station setting information</td><td>Stores the setting information on 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><td>×</td></tr>
</table>

A

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th>Master station</th><th colspan="2">Local station</th></tr>
<tr><th></th><th></th><th></th><th></th><th>Unicast mode</th><th>Multicast mode</th></tr>
<tr><td>SW0530 to SW0537</td><td>Master station shift each station supporting information</td><td>Stores the supporting information on each station. (Station number: 1 to 120)
0: Master station shift not supported
1: Master station shift 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>SW0530</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>SW0531</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>SW0532</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>SW0533</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>SW0534</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>SW0535</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>SW0536</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>SW0537</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><td>×</td></tr>
</table>

*1 If the station is communicating in multicast mode, this item is enabled when 'Data link error status of own station' (SB0049) is off.

*2 If the station is communicating in multicast mode, this item is enabled when 'Current master/local station status of own station' (SB0196) is on.

Appendix 6 Dedicated Instruction

This section describes dedicated instructions that can be used in the RJ71GN11 and the transient transmission ranges.

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.

■When the dedicated instruction is not completed

Check whether the module operation mode setting is online.

A dedicated instruction cannot be executed when the mode is offline or module communication test.

Link dedicated instructions

The following table lists the instructions used for transient transmission to or from programmable controllers on other stations.

Each link dedicated instruction allows access to a station on a network other than CC-Link IE TSN.

Instruction	Description	RJ71GN11-T2	RJ71GN11-SX
READ	Reads the data in units of words from devices in the programmable controller of another station.	○	○
SREAD	Reads the data in units of words from devices in the programmable controller of another station. 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 controller of another station.	○	○
SWRITE	Writes the data in units of words to devices in the programmable controller of another station. When writing of the data is completed, another station devices are turned on.	○	○
SEND	Sends data to the programmable controller of another station.	○	○
RECV	Reads the data received from the programmable controller of another station. (For a main routine program)	○	○
REQ	Requests the remote RUN/STOP to the programmable controller of another station.	○	○
	Reads/writes clock data from/to the programmable controller of another station.		

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.

○: Available, ×: Not available

Instruction	Description	RJ71GN11-T2	RJ71GN11-SX
REMFR[*1]	Reads data in units of words from the buffer memory in the remote station. (16-bit address specification)	○	○[*3]
REMFRD[*1]	Reads data in units of words from the buffer memory in the remote station. (32-bit address specification)	○	○[*3]
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)	○	○[*3]
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)	○	○[*3]
REMTO[*2]	Writes data in units of words to the buffer memory in the remote station. (16-bit address specification)	○	○[*3]
REMTOD[*2]	Writes data in units of words to the buffer memory in the remote station. (32-bit address specification)	○	○[*3]
REMTOIP[*2]	Writes data in units of words to the buffer memory in the remote station. (Target station IP address specification) (16-bit address specification)	○	○[*3]
REMTODIP[*2]	Writes data in units of words to the buffer memory in the remote station. (Target station IP address specification) (32-bit address specification)	○	○[*3]

*1 Firmware version "04" or later: When "Communication Mode" is set to "Multicast", the instruction can be executed on the master and local station. When "Communication Mode" is set to "Unicast", the instruction cannot be executed on the local station.
Firmware version "03" or earlier: The instruction cannot be executed on the local station. Execute it on the master station.

*2 The instruction cannot be executed on the local station. Execute it on the master station.

*3 This instruction can be used for the firmware version "04" or later.

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 labels.

- '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	RJ71GN11-T2	RJ71GN11-SX
SLMPSND	Send an SLMP message to the SLMP-compatible device in the same network.	○	○

Other dedicated instructions

The following table lists the dedicated instructions used to set parameters for the own station.

○: Available, ×: Not available

Instruction	Description	RJ71GN11-T2	RJ71GN11-SX
CCPASET	Set parameters. (Only partial parameters)	○	○*1
CCPASETX	Set parameters.	○	○*1
UINI	Set the IP address to the own station for which the station number and IP address are not set.	○	○

*1 This instruction can be used for the firmware version "04" or later.

Transient transmission ranges

Access to the own station only is possible.

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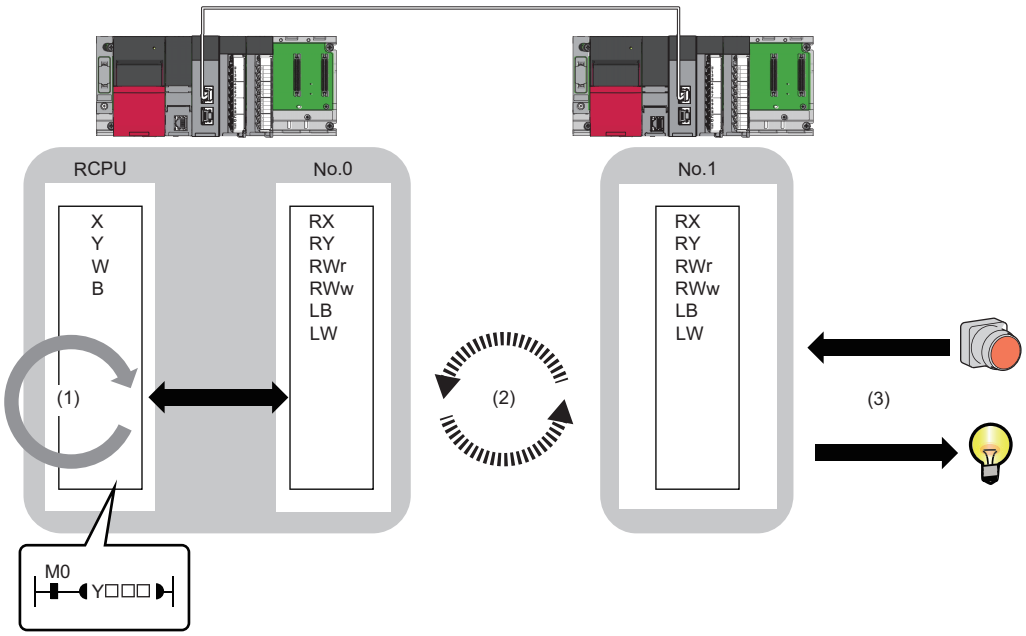
Appendix 7 Processing Time

The transmission delay time of CC-Link IE TSN consists of the time components below. (☞ Page 346 Cyclic transmission delay time)

(1) Master station sequence scan time + (2) Communication cycle interval (cyclic data transfer processing time) + (3) Device station processing time



- Master station sequence scan time: 📖MELSEC iQ-R CPU Module User's Manual (Application)
- Communication cycle interval (cyclic data transfer processing time): ☞ Page 352 Communication cycle intervals
- Device station processing time: 📖 Manual for the device station used

Cyclic transmission delay time

The transmission delay time of CC-Link IE TSN refers to the following.

- 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

Point

When "Communication Period Setting" of the communication destination in "Network Configuration Settings" is set to an option other than "Basic Period", multiply the 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 (☞ Page 347 Details of n by which communication cycle intervals are multiplied) specified in "Multiple Period Setting" in "Communication Period Setting" under "Basic Settings"

Details of n by which communication cycle intervals are multiplied

In "Network Configuration Settings" of the master station, when "CC-Link IE TSN Class" is set to "CC-Link IE TSN Class A" and "Communication Period Setting" of the communication destination is set to "Low-Speed", multiply the communication cycle intervals by the multiplier × n specified in "Multiple Period Setting" under "Communication Period Setting".

This n can be checked with 'Device station cyclic transmission information' (Un\G1294304). (☞ Page 316 Device station cyclic transmission information)

Moreover, 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, and the number n is determined by the number of the groups.

The algorithm for determining n is shown.

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 "STA#" 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 or greater No.11	—	Check device stations with "STA#" 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 or greater No.10	Up to a total of 2K bytes can be assigned to a group, and determine which group number (1 to 120) is assigned to i-th station starting from 1. (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 that the master station already assigned to the jth group receives from device stations, determine whether the following condition is met. GSsj + DSsi≤2044
8	Update the data size (GMsj, GSsj) of the assigned group.	—	—			The values of GMsj and GSsj are updated when both the conditions No.6 and No.7 are satisfied.
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	—	—	—	—	—

• Variables used by the algorithm above

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 When the calculation result of n3i is 2 or greater, add 1 to n4i.
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

Transmission delay time of master station ← remote station

The following table lists the calculation formulas for 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

SM: Master station sequence scan time [μs]
LS: Communication cycle intervals (can be checked in the SW0060) [μs]
n1: Round up the calculated value to the nearest integer of (SM ÷ LS)
Rio: Processing time of the remote station [μs]

Transmission delay time of master station → remote station

The following table lists the calculation formulas for 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 × 2) + (LS × 2) + Rio

SM: Master station sequence scan time [μs]
n2: Round up the calculated value to the nearest integer of (LS ÷ SM)
LS: Communication cycle intervals (can be checked in the SW0060) [μs]
Rio: Processing time of the remote station [μs]

Transmission delay time of the master station ← local station

The following tables list the calculation formulas for the cases listed below:

- Master station (RX) ← local station (RY)
- Master station (RWr) ← local station (RWw)
- Master station (LB) ← local station (LB)
- Master station (LW) ← local station (LW)

■When not extending the number of link points

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)

LS: Communication cycle intervals (can be checked in the SW0060) [μs]
SL: Local station sequence scan time [μs]
SM: Master station sequence scan time [μs]
n1: Round up the calculated value to the nearest integer of (SM ÷ LS)

■When extending the number of link points

"Communication Period Setting LB/LW" of sending station	Calculation value	Station-based block data assurance	No station-based block data assurance
Basic Period	Same as when link points are not extended.		
• Normal-Speed • Low-Speed	Normal value	When LS × DV < SL and LS × DV < SM: SM + LS + (LS × DV × n1d) + SL	(SM×1)+[LS×(DV+1)]+(SL×1)
		When LS × DV < SL and LS × DV ≥ SM: SM + [LS × (DV + 1)] + SL	
		When LS × DV ≥ SL and LS × DV < SM: SM + LS + [LS × DV × (n1d + 1)]	
		When LS × DV ≥ SL and LS × DV ≥ SM: SM + [LS × (DV × 2 + 1)]	
	Maximum value	When LS × DV < SL and LS × DV < SM: SM × 2 + LS + (LS × DV × n1d) + SL	(SM×2)+[LS×(DV+2)]+(SL×1)
		When LS × DV < SL and LS × DV ≥ SM: SM × 2 + [LS × (DV + 2)] + SL	
		When LS × DV ≥ SL and LS × DV < SM: SM × 2 + [(LS × DV) × (n1d + 1)] + SL	
		When LS × DV ≥ SL and LS × DV ≥ SM: SM × 2 + [LS × (DV × 2 + 1)] + SL	

LS: Communication cycle intervals (can be checked in the SW0060) [μs]

DV: The number of divided cyclic data portions (1 for RX/RY/RWr/RWw, and, for LB/LW, 1 when "Communication Period Setting LB/LW" of the sending station is set to "Basic Period" or a number in multiples as specified in "Multiple Period Setting" under "Basic Settings" when set to "Normal-Speed" or "Low-Speed")

SL: Local station sequence scan time [μs]

SM: Master station sequence scan time [μs]

n1d: Round up the calculated value to the nearest integer of [SM ÷ (LS × DV)]

Transmission delay time of the master station → local station

The following tables list the calculation formulas for the cases listed below:

- Master station (RY) → local station (RX)
- Master station (RWw) → local station (RWr)
- Master station (LB) → local station (LB)
- Master station (LW) → local station (LW)

■When not extending the number of link points

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 × 1) + (LS × 3) + (SL × 2)

LS: Communication cycle intervals (can be checked in the SW0060) [μs]

SM: Master station sequence scan time [μs]

n3: Round up the calculated value to the nearest integer of (SL ÷ LS)

SL: Local station sequence scan time [μs]

■When extending the number of link points

"Communication Period Setting LB/LW" of sending station	Calculation value	Station-based block data assurance	No station-based block data assurance
Basic Period	Same as when link points are not extended.		
• Normal-Speed • Low-Speed	Normal value	When LS × DV < SL and LS × DV < SM: SM + LS + (LS × DV × n3d) + SL	(SM×1)+[LS×(DV+1)]+(SL×1)
		When LS × DV < SL and LS × DV ≥ SM: SM + [LS × (DV + 1)] + SL	
		When LS × DV ≥ SL and LS × DV < SM: LS + [LS × DV × (n3d + 1)] + SL	
		When LS × DV ≥ SL and LS × DV ≥ SM: [LS × (DV × 2 + 1)] + SL	
	Maximum value	When LS × DV < SL and LS × DV < SM: SM + LS + (LS × DV × n3d) + SL × 2	(SM×1)+[LS×(DV+2)]+(SL×2)
		When LS × DV < SL and LS × DV ≥ SM: SM + [LS × (DV + 2)] + SL × 2	
		When LS × DV ≥ SL and LS × DV < SM: SM + [(LS × DV) × (n3d + 1)] + SL × 2	
		When LS × DV ≥ SL and LS × DV ≥ SM: SM + [LS × (DV × 2 + 1)] + SL × 2	

LS: Communication cycle intervals (can be checked in the SW0060) [μs]

DV: The number of divided cyclic data portions (1 for RX/RY/RWr/RWw, and, for LB/LW, 1 when the setting value in "Communication Period Setting LB/LW" of the cyclic data sending station is "Basic Period" or a number in multiples as specified in Multiple Period Setting" under "Basic Period Settings" when set to "Normal-Speed or "Low-Speed")

SL: Local station sequence scan time [μs]

SM: Master station sequence scan time [μs]

n3d: Round up the calculated value to the nearest integer of [SL ÷ (LS × DV)]

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Communication cycle intervals

The minimum value of the communication cycle interval (cyclic data transfer processing time) is calculated by the following calculation formula.

Communication mode	Master station communication speed	Calculation formula references
Unicast mode	1Gbps	☞ Page 354 Communication cycle interval: Unicast/1Gbps
	100Mbps (RJ71GN11-T2 only)	☞ Page 358 Communication cycle interval: Unicast/100Mbps (RJ71GN11-T2 only)
Multicast mode	1Gbps	☞ Page 361 Communication cycle interval: Multicast/1Gbps
	100Mbps (RJ71GN11-T2 only)	☞ Page 366 Communication cycle interval: Multicast/100Mbps (RJ71GN11-T2 only)

Precautions

■When cyclic transmission cannot be performed by setting a calculation value

The minimum values for communication cycle interval and cyclic transmission time calculated by the formulas serve as a guide. If cyclic transmission cannot be performed by setting a calculation value, 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 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

Each calculation value obtained from the calculation formulas mentioned above are stored in the following SW.

- SW0072: Communication cycle intervals (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 module diagnostics. Correct each set value of "Basic Period Setting" 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.

How to count modules to be used in variables

The number of modules to be used in variables in a calculation formula for communication cycle intervals is counted in "Network Configuration Settings".

When not specifying whether to count main modules or extension modules, the number is the total count of the both.

Ex.

	No.	Model Name	STA#	Station Type	RX Setting Points	RY Setting Points	RWr Setting Points	RWw Setting Points	LB Setting Points	LW Setting Points
	0	Host Station	0	Master Station					16	16
	1	RJ71GN11-T2	1	Local Station	32	32	16	16	32	48
	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		
	7	MR-J5W3-G_BC_Axis	-	-			24	20		

Item	No.	Number of modules	Remarks
Main module (with a "STA#")	No.1, No.2, No.4	3	—
Extension module (without a "STA#")	No.3, No.5, No.6, No.7	4	—
Local station	No.1	1	—
Remote station (extension module not included)	No.2, No.4	2	—
Device station (extension module not included)	No.1, No.2, No.4	3	—

Communication cycle interval: Unicast/1Gbps

The calculation formula of the communication cycle interval [ns] for the RJ71GN11-T2 is $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$ or 125000, whichever is larger.

The calculation formula of the communication cycle interval [ns] for the RJ71GN11-SX is $\alpha c + \alpha p$ or 125000, whichever is larger.

Round up values of α_c, α_p, α_{sc}, α_{sp} that are less than 1μs.

■Cyclic transmission time

Cyclic transmission time [ns] is $\alpha c + \alpha sc$ for the RJ71GN11-T2, αc for the RJ71GN11-SX.

- α_c: Varies in the following cases.

Item	Calculation formula
When a CC-Link IE TSN Class A device station set to "Basic Period" 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 to "Basic Period" 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 for main module A1: {(50 × n1) + (16 × n2) + ndm} × 8 + (Sn - 1) × 830 + 14000 + nh + nrp
		Calculation formula for extension module A2: {(50 × en1) + (16 × en2) + endm} × 8
No.2	B1+B2	Calculation formula for main module B1: {(30 × n1) + (16 × n2) + ndm} × 4 + (1661 × n1) + (Sn - 1) × 830 + 14300 + nh + nrp
		Calculation formula for extension module B2: {(30 × en1) + (16 × en2) + endm} × 4 + (1661 × en1)
No.3	C1+C2	Calculation formula for main module C1: {(50 × n3) + (20 × n4) + nds} × 8 + 14000 + nh + nrp
		Calculation formula for extension module C2: {(50 × en3) + (20 × en4) + ends} × 8
No.4	D1+D2	Calculation formula for main module D1: {(50 × n5) + (20 × n6) + ndl} × 8 + (Sn - 1) × 830 + 14000 + nh + nrp
		Calculation formula for extension module 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 times during the time-managed polling of the CC-Link IE TSN Class A device stations set to "Basic Period" or "Normal-Speed"	

Point

For the maximum response time during the 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 $\alpha p + \alpha sp$ for the RJ71GN11-T2, αp for the RJ71GN11-SX.

- α_p: p1 + p2 + p3 + kp + kuu
- α_{sp}: p4

■Variable

For each variable to be used, round it up to one decimal point before assigning to the calculation formula.

The parts enclosed in double quotation marks (" ") in the description are the setting values for "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: The number of connections of "Safety Communication Setting" in "Basic Settings" set in 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) × Ln + ((Number of points of "LW Setting" set in the master station) × 2) × Ln

Name of variable	Description
sndm	The number of connections of "Safety Communication Setting" in "Basic Settings" set in 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 main modules of the device station[*2] to be used as the maximum number of link points RWrl: Number of points of "RWr Setting" of main modules 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, when $endm_i$ is 0, $en1_i$ is 0. When $mf_i > 16$, $k_i = 1$, and when $mf_i \leq 16$, $k_i = 0$. 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, the value is 0 when the calculation result of mf_i is 1488. i: Station number mRy_i: Number of points of "RY Setting" of main modules with station No.i/8 $mRWw_i$: Number of points of "RWw Setting" of main modules with station No.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, when $endm_i$ is 0, $en2_i$ is 0. i: Station number $eRyn_i$: 0 (fixed) $eRWwn_i$: Total number of extension modules with station No.i whose number of points of "RWw Setting" is more 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 extension modules with station No.i

A

Name of variable	Description
en3	$\sum_{i=1}^{120} en3_i$ $en3_i = ((ends_i + en4_i \times 20)/1488)^{*3} - k_i$ 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 $\{((mRx_i + (mRx_i/1468)^{*3} \times 20) + (mRWr_i + (mRWr_i/1468)^{*3} \times 20))/1488\}$ 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	$\sum_{i=1}^{120} en4_i$ $en4_i = eRxn_i + eRWrn_i + ((ends_i + (eRxn_i + eRWrn_i) \times 20)/1488)^{*3} - 1$ 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	$((endl + 20 \times en6)/1488)^{*3} - k_i$ 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 $\{((mRx_i + (mRx_i/1468)^{*3} \times 20) + (mRWr_i + (mRWr_i/1468)^{*3} \times 20))/1488\}$ However, the value is 0 when the calculation result of sf_i is 1488. i: Station number of the device station[*2] 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	$eRxln_i + eRWrln_i + ((endl + (eRxln_i + eRWrln_i) \times 20)/1488)^{*3} - 1$ However, when endl is 0, the value for en6 is 0. i: Station number of the device station[*2] 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[*2] 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[*2] 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"))/8 + ((Total number of points of "RWr Setting") + (Total number of points of "RWw Setting")) × 2} × 5 + (Sn × 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, 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) × 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 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.
kp	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, then kuu=0.

*1 The switching hub delay time changes depending on the industrial switch (CC-Link IE TSN certified) models and settings.

*2 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.

*3 Calculate by rounding up each calculation result in 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/100Mbps (RJ71GN11-T2 only)

The calculation formula of the communication cycle interval [ns] is $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$.

Round up values of α_c, α_p, α_{sc}, α_{sp} that are less than 1μs.

■Cyclic transmission time

Cyclic transmission time [ns] is $\alpha_c + \alpha_{sc}$.

- α_c: Varies in the following cases.

Item	Calculation formula
When a CC-Link IE TSN Class A device station set to "Basic Period" 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 to "Basic Period" 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 for main module A1: {(42 × n1) + (16 × n2) + ndm} × 80 + (Sn - 1) × 5150 + 14000 + nh + nrp
		Calculation formula for extension module A2: {(42 × en1) + (16 × en2) + endm} × 80
No.2	B1+B2	Calculation formula for main module B1: {(42 × n3) + (20 × n4) + nds} × 80 + 14000 + nh + nrp
		Calculation formula for extension module B2: {(42 × en3) + (20 × en4) + ends} × 80
No.3	C1+C2	Calculation formula for main module C1: {(42 × n5) + (20 × n6) + ndl} × 80 + (Sn - 1) × 5150 + 14000 + nh + nrp
		Calculation formula for extension module C2: {(42 × en5) + (20 × en6) + ndl} × 80
No.4	D×n7	D: (Sn-1)×5150+187440
No.5	The largest value among the maximum response times during the time-managed polling of the CC-Link IE TSN Class A device stations set to "Basic Period" or "Normal-Speed"	

Point

For the maximum response time when the RJ71GN11-T2 is used during the 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 + p2 + p3 + kp + kuu
- α_{sp}: p4

■Variable

For each variable to be used, round it up to one decimal point before assigning to the calculation formula.

The parts enclosed in double quotation marks (" ") in the description are the setting values for "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	The number of connections of "Safety Communication Setting" in "Basic Settings" set in 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: 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: The number of connections of "Safety Communication Setting" in "Basic Settings" set in 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) + (LBl/8) + (LWl×2) + 8 RXl: Number of points of "RX Setting" of main modules of the device station*2 to be used as the maximum number of link points RWrl: Number of points of "RWr Setting" of main modules 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, when $endm_i$ is 0, $en1_i$ is 0. When $mf_i > 16$, $k_i = 1$, and when $mf_i \leq 16$, $k_i = 0$. $mf_i = 1488 - mod$ mod: Remainder of $\{((mRy_i + (mRy_i/1472)^{*3} \times 16) + (mRWw_i + (mRWw_i/1472)^{*3} \times 16))/1488\}$ However, the value is 0 when the calculation result of mf_i is 1488. i: Station number mRy_i: Number of points of "RY Setting" of main modules with station No.i/8 $mRWw_i$: Number of points of "RWw Setting" of main modules with station No.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, when $endm_i$ is 0, $en2_i$ is 0. i: Station number $eRyn_i$: 0 (fixed) $eRWwn_i$: Total number of extension modules with station No.i whose number of points of "RWw Setting" is more 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 extension modules with station No.i
en3	$\sum_{i=1}^{120} en3_i$ $en3_i = ((ends_i + en4_i \times 20)/1488)^{*3} - k_i$ 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 $\{((mRx_i + (mRx_i/1468)^{*3} \times 20) + (mRWr_i + (mRWr_i/1468)^{*3} \times 20))/1488\}$ 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

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, 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	$((endl+20 \times en6)/1488)^{*3} - k_i$ 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 $\{((mRx_i + (mRx_i/1468)^{*3} \times 20) + (mRWr_i + (mRWr_i/1468)^{*3} \times 20))/1488\}$ However, the value is 0 when the calculation result of sf_i is 1488. i: Station number of the device station*2 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	$eRxln_i + eRWrln_i + ((endl + (eRxln_i + eRWrln_i) \times 20)/1488)^{*3} - 1$ However, when endl is 0, the value for en6 is 0. i: Station number of the device station*2 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*2 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*2 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"))/8 + ((Total number of points of "RWr Setting") + (Total number of points of "RWw Setting")) × 2} × 5 + (Sn × 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, 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) × 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 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.
kp	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, then kuu=0.

*1 The switching hub delay time changes depending on the industrial switch (CC-Link IE TSN certified) models and settings.

*2 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.

*3 Calculate by rounding up each calculation result in 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/1Gbps

The calculation formula of the communication cycle interval [ns] for the RJ71GN11-T2 is $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$ or 125000, whichever is larger.

The calculation formula of the communication cycle interval [ns] for the RJ71GN11-SX is $\alpha c + \alpha p$ or 125000, whichever is larger.

Round up values of α_c, α_p, α_{sc}, α_{sp} that are less than 1μs.

■Cyclic transmission time

Cyclic transmission time [ns] is $\alpha_c + \alpha_{sc}$.

- α_c: Varies in the following cases.

Item	Calculation formula
When a CC-Link IE TSN Class A device station set to "Basic Period" 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 to "Basic Period" or "Normal-Speed" exists	The larger of No.1 or No.2 + No.5 + No.6

Calculation formula		
No.1	A1 + A2 + (No.3 or No.4, whichever is larger)	Calculation formula for main module A1: {(50 × (n1r + n1l)) + (16 × (n2r + n2l)) + (ndmr + ndml)} × 8 + (Sn - 1) × 830 + 14000 + nh + nrp
		Calculation formula for extension module A2: {(50 × en1r) + (16 × en2r) + endmr} × 8
No.2	B1 + B2 + (No.3 or No.4, whichever is larger)	Calculation formula for main module B1: {(30 × (n1r + n1l)) + (16 × (n2r + n2l)) + (ndmr + ndml)} × 4 + (1661 × (n1r + n1l)) + (Sn - 1) × 830 + 14300 + nh + nrp
		Calculation formula for extension module B2: {(30 × en1r) + (16 × en2r) + endmr} × 4 + (1661 × en1r)
No.3	C1+C2	Calculation formula for main module C1: {(50 × n3) + (20 × n4) + nds} × 8 + 14000 + nh
		Calculation formula for extension module C2: {(50 × en3) + (20 × en4) + ends} × 8
No.4	D1+D2	Calculation formula for main module D1: {(50 × n5) + (20 × n6) + ndl} × 8 + (Sn - 1) × 830 + 14000 + nh
		Calculation formula for extension module 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 times during the time-managed polling of the CC-Link IE TSN Class A device stations set to "Basic Period" or "Normal-Speed"	

Point

For the maximum response time during the time-managed polling for the device stations, refer to the user's manual for the device station used.

- α_{sc}: {(30 × (sn1r + sn1l)) + (16 × (sn2r + sn2l)) + (sndmr + sndml)} × 4 + (1661 × (sn1r + sn1l))

■Cyclic processing time

Cyclic processing time [ns] is αp + αsp for the RJ71GN11-T2, αp for the RJ71GN11-SX.

- α_p: p1 + p2 + p3 + p5 + kp + kum
- α_{sp}: p4

A

■Variable

For each variable to be used, round it up to one decimal point before assigning to the calculation formula.

The parts enclosed in double quotation marks (" ") in the description are the setting values for "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 + Dlm 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 rounded up to the nearest multiple of two of [(Number of points of "LB Setting" set in the master station)/8/BWCm]/1472 rounded up to the nearest integer LWmb: {Value rounded up to the nearest multiple of two of [(Number of points of "LW Setting" set in the master station) × 2/BWCm]/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"[*2]) × 2] + [(Number of points of "LB Setting" set in the master station)/8]/Value rounded up to the nearest multiple of two of BWCm + [(Number of points of "LW Setting" set in the master station) × 2]/Value rounded up to the nearest multiple of two of BWCm + 24 + Dlm × 8
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
BWCm	"Multiple Period Setting" for "Communication Period Setting LB/LW" on the master station When link points are not extended, or when "Communication Period Setting LB/LW" is set to "Basic Period" during an extension of link points: 1
BWCs(i)	"Multiple Period Setting" for "Communication Period Setting LB/LW" on station number i When link points are not extended, or when "Communication Period Setting LB/LW" is set to "Basic Period" during an extension of link points: 1
Dlm	When "Communication Period Setting LB/LW" on the master station is set to "Normal-Speed" or "Low-Speed" during an extension of link points: 1 Other than the above: 0
Dls	When extending link points: The number of device stations whose "Communication Period Setting LB/LW" is "Normal-Speed" or "Low-Speed" Other than the above: 0
Dlb	When "Communication Period Setting LB/LW" on the device station[*3] with the maximum number of link points is set to "Normal-Speed" or "Low-Speed" during an extension of link points: 8 Other than the above: 0
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

Name of variable	Description
n4	Sn × (RXb + RWrb) + Ln × (LBxmb + LWxmb) + Sn + DIs 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 the following formula rounded up to the nearest integer $\{\sum_{i=1}^{120}$ [Value rounded up to the nearest multiple of two of (Number of points of "LB Setting" in station number i / 8 / BWCs(i))]} / (1468 × Ln) LWxmb: Value of the following formula rounded up to the nearest integer $\{\sum_{i=1}^{120}$ [Value rounded up to the nearest multiple of two of (Number of points of "LW Setting" in station number i × 2 / BWCs(i))]} / (1468 × Ln)
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 rounded up to the nearest multiple of two of [(Number of points of "LB Setting" in the station number i) / 8 / BWCs(i)]} $+ \{\sum_{i=1}^{120}$ Value rounded up to the nearest multiple of two of [(Number of points of "LW Setting" in the station number i) × 2 / BWCs(i)]} +Sn×8 + DIs×8
n5	(ndl + 20×n6)/1488
n6	[ndl - (8 + DIb)] / 1468 + 1 + DIsm DIsm: When "Communication Period Setting LB/LW" on the device station*3 with the maximum number of link points is set to "Normal-Speed" or "Low-Speed" during an extension of link points: 1 Other than the above: 0
ndl	(RXl/8) + (RWrl×2) + LBl + LWl + 8 + DIb RXl: Number of points of "RX Setting" of main modules of the device station*3 with the maximum number of link points RWrl: Number of points of "RWr Setting" of main modules of the device station*3 with the maximum number of link points LBl: Value of "LB Setting" points of the device station*3 with the maximum number of link points/8/Value rounded up to the nearest multiple of two of BWCs (i) (i: the station number of the device station with the maximum number of link points) LWl: Value of "LW Setting" points of the device station*3 with the maximum number of link points × 2/Value rounded up to the nearest multiple of two of BWCs (i) (i: the station number of the device station with 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	$\sum_{i=1}^{120} en1r_i$ $en1r_i = ((endmr_i + en2r_i \times 16)/1488)^{*4} - kr_i$ 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	$\sum_{i=1}^{120} en2r_i$ $en2r_i = eRyrn_i + eRWwrn_i + ((endmr_i + (eRyrn_i + eRWwrn_i) \times 16)/1488)^{*4} - 1$ 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	$\sum_{i=1}^{120} endmr_i$ $endmr_i = eRyrAll_i/8 + eRWwrAll_i \times 2$ 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

Name of variable	Description
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 + (Sn × 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.

Name of variable	Description
p2: LB/LW processing time	■When not extending the number of link points {[(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 the both Total number of points of "LB Setting" and Total number of points of "LW Setting" is 0, then p2 = 0. ■When extending the number of link points $< \sum_{i=1}^{120}$ {Value rounded up to the nearest multiple of two of [(Number of points of "LB Setting" in the station number i) / 8 / BWCs(i)][*6]} $+ \sum_{i=1}^{120}$ {Value rounded up to the nearest multiple of two of [(Number of points of "LW Setting" in the station number i) × 2 / BWCs(i)][*6]} + Value rounded up to the nearest multiple of two of [(Number of points of "LB Setting" set in the master station)/8/BWCm][*6] + Value rounded up to the nearest multiple of two of [(Number of points of "LW Setting" set in the master station) × 2 / BWCm][*6]> ×5 + {[(Total number of points of "LB Setting" except in the master station)/8] + [(Total number of points of "LW Setting" except in the 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 × px) However, if the both Total number of points of "LB Setting" and Total number of points of "LW Setting" is 0, then p2 = 0. px: 6000 when "Communication Period Setting LB/LW" is set to "Basic Period", and 9500 when other settings are configured.
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.
p5: Division information processing time	■When not extending the number of link points 0 ■When extending the number of link points The number of stations whose "Communication Period Setting LB/LW" is "Normal-Speed" or "Low-Speed" × 40
kp	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 industrial switch (CC-Link IE TSN certified) models and settings.

*2 Total number of points is the smallest value set in "Start" to the largest value set in "End" of "Network Configuration Settings".

*3 As a result of totaling the five values below for each device station (including extension modules), this is the station with the largest total value. (Calculation including extension modules is only applicable to the RJ71GN11-T2)
· "RX Setting"/8
· "LB Setting"/8/Value rounded up to the nearest multiple of two of BWCs (i)
· "RWr Setting" × 2
· "LW Setting" × 2/Value rounded up to the nearest multiple of two of BWCs (i)
· When "Communication Period Setting LB/LW" on the applicable station is set to "Normal-Speed" or "Low-Speed" during an extension of link points: 8, otherwise 0

*4 Calculate by rounding up each calculation result in 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".

*6 Set the value to 0 when "Communication Period Setting LB/LW" of the applicable station is "Basic Period".

Communication cycle interval: Multicast/100Mbps (RJ71GN11-T2 only)

The calculation formula of the communication cycle interval [ns] is $\alpha_c + \alpha_p + \alpha_{sc} + \alpha_{sp}$.

Round up values of α_c, α_p, α_{sc}, α_{sp} that are less than 1μs.

■Cyclic transmission time

Cyclic transmission time [ns] is $\alpha_c + \alpha_{sc}$.

- α_c: Varies in the following cases.

Item	Calculation formula
When a CC-Link IE TSN Class A device station set to "Basic Period" or "Normal-Speed" does not exist	No.1 + No.4
When a CC-Link IE TSN Class A device station set to "Basic Period" 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 for main module A1: {(42 × (n1r + n1l)) + (16 × (n2r + n2l)) + (ndmr + ndml)} × 80 + (Sn - 1) × 5150 + 14000 + nh + nrp
		Calculation formula for extension module A2: {(42 × en1r) + (16 × en2r) + endmr} × 80
No.2	B1+B2	Calculation formula for main module B1: {(42 × n3) + (20 × n4) + nds} × 80 + 14000 + nh
		Calculation formula for extension module B2: {(42 × en3) + (20 × en4) + ends} × 80
No.3	C1+C2	Calculation formula for main module C1: {(42 × n5) + (20 × n6) + ndl} × 80 + (Sn - 1) × 5150 + 14000 + nh
		Calculation formula for extension module 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 times during the time-managed polling of the CC-Link IE TSN Class A device stations set to "Basic Period" or "Normal-Speed"	

Point

For the maximum response time when the RJ71GN11-T2 is used during the 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

Calculation formula
{(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_{sc}: p4

■Variable

For each variable to be used, round it up to one decimal point before assigning to the calculation formula.

The parts enclosed in double quotation marks (" ") in the description are the setting values for "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
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

Name of variable	Description
en1r	$\sum_{i=1}^{120} en1r_i$ $en1r_i = ((endmr_i + en2r_i \times 16)/1488)^{*4} - kr_i$ 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}×16) + (mRWwr$_i$ + (mRWwr$_i$/1472)^{*4}×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	$\sum_{i=1}^{120} en2r_i$ $en2r_i = eRyrn_i + eRWwrn_i + ((endmr_i + (eRyrn_i + eRWwrn_i) \times 16)/1488)^{*4} - 1$ 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	$\sum_{i=1}^{120} endmr_i$ $endmr_i = eRyrAll_i/8 + eRWwrAll_i \times 2$ 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}×20) + (mRWr$_i$ + (mRWr$_i$/1468)^{*4}×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}×20) + (mRWr$_i$ + (mRWr$_i$/1468)^{*4}×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	$eRxln_i+eRWrln_i+((endl+(eRxln_i+eRWrln_i)\times20)/1488)$[*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	$eRxlAll_i/8+eRWrlAll_i\times2$ 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 + (Sn × 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	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.
kp	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 industrial switch (CC-Link IE TSN certified) models and settings.

*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 Calculate by rounding up each calculation result in 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(×10^{-3})
Source	Destination	
Main base unit	Main base unit	0.175
Main base unit	Extension base unit	0.202
Extension base unit	Main base unit	0.242
Extension base unit	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 (RJ71GN11-T2 only)

The following are the formulas to calculate transmission delay time of safety communications.

Point

- When "Communication Period Setting" of the communication destination in "Network Configuration Settings" has been 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".
- When "Communication Destination" is set to "CR800-R" in "Safety Communication Setting" under "Basic Settings" of the master station, the formula to calculate the transmission delay time of safety communications differs. In this case, refer to the manual of the communication destination.

Calculation formula for 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 [ms] of the sending station (MELSEC iQ-R CPU Module User's Manual (Application))
LS: Communication cycle intervals [μs] (can be checked in SW0060, but need to be converted into [ms]) (Page 352 Communication cycle intervals)
SCrcv: Safety cycle time [ms] of the receiving station (MELSEC iQ-R CPU Module User's Manual (Application))
TMsnd: Transmission interval monitoring time [ms] of the sending station (Page 374 Monitoring time for safety communications (RJ71GN11-T2 only))

■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 [ms] of the master station (safety station) (MELSEC iQ-R CPU Module User's Manual (Application))
LS: Communication cycle intervals [μs] (can be checked in SW0060, but need to be converted into [ms]) (Page 352 Communication cycle intervals)
SRref: Safety remote station refresh response processing time [ms] (Manual for the remote station used)
TMrmt: Transmission interval monitoring time [ms] of the remote station (safety station) (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 [ms] of the master station (safety station) (📖 MELSEC iQ-R CPU Module User's Manual (Application))

LS: Communication cycle intervals [μs] (can be checked in SW0060, but need to be converted into [ms]) (☞ Page 352 Communication cycle intervals)

SRref: Safety remote station refresh response processing time [ms] (📖 Manual for the remote station used)

TMmst: Transmission interval monitoring time [ms] of the master station (safety station) (☞ Page 374 Monitoring time for safety communications (RJ71GN11-T2 only))

SRout: Safety remote station output response time [ms] (📖 Manual for the remote station used)

Safety response time (RJ71GN11-T2 only)

The safety response time is the maximum value of the time between a safety input of the remote station (safety station) turning off and a safety output of the remote station (safety station) turning off (including an error detection time).
For calculation method of the safety response time, refer to the following.
📖 Mitsubishi Safety Programmable Controller MELSEC iQ-R Series Machinery Directive (2006/42/EC) Compliance

Point

When "Communication Destination" is set to "CR800-R" in "Safety Communication Setting" under "Basic Settings" of the master station, the formula to calculate the safety response time differs. In this case, refer to the manual of the communication destination.

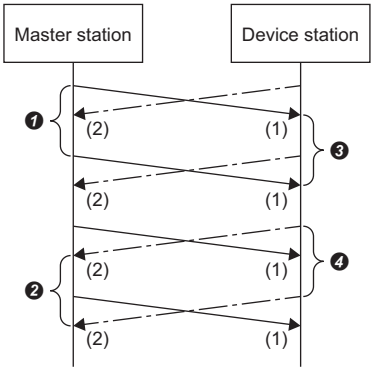
Monitoring time for safety communications (RJ71GN11-T2 only)

This section describes the monitoring time for the safety communications.

The monitoring time is set for each safety connection. If the time exceeds the monitoring time, a safety communication timeout is detected and the safety communications are stopped.

Setting station	Item	Description	Station using setting time
Master station	Transmission Interval Monitoring Time	• A device station monitors the transmission interval ❶ that the master station sends safety data. • The master station sends data to the device station at the start of the safety communications. • The transmission time information with safety data received on the device station is monitored as compared with the last value.	Device station
	Safety Refresh Monitoring Time*1	The master station monitors the receiving interval ❷ that safety data is received from a device station.	Master station
		• A device station monitors the receiving interval ❸ that safety data is received from the master station. • The master station sends data to the device station at the start of the safety communications.	Device station
Device station	Transmission Interval Monitoring Time	• The master station monitors the transmission interval ❹ of safety data sent by a device station. • The device station sends data to the master station at the start of the safety communications. • The transmission time information with safety data received on the master station is monitored as compared with the last value.	Master station

*1 The safety refresh monitoring time uses a common value between the master station and device stations.



(1) Safety data sent from the master station to a device station
(2) Safety data sent from a device station to the master station
❶ to ❹: Transmission/receiving intervals of safety data

Transmission interval monitoring time

The value of transmission interval monitoring time set in the master/local 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

SCown: Safety cycle time [ms] of the own station (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 SW0060, but need to be converted into [ms]) (Page 352 Communication cycle intervals)

SRref: Safety remote station refresh response processing time [ms] of the communication destination (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 376 Safety refresh monitoring time)
- 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".

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) ↔ local 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 [ms] of the Active side (☞ Page 375 Transmission interval monitoring time)

TMpas: Transmission interval monitoring time [ms] of the Passive side (☞ Page 375 Transmission interval monitoring time)

LS: Communication cycle intervals [μs] (can be checked in SW0060, but need to be converted into [ms]) (☞ Page 352 Communication cycle intervals)

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 value is rounded up to a multiple of safety cycle time (10ms) which is greater than 12, so "b" will be 20.

Ex.

Calculation example of d 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 "d" will be 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.
- When "Communication Destination" is set to "CR800-R" in "Safety Communication Setting" under "Basic Settings" of the master station, the formula to calculate the safety refresh monitoring time differs. In this case, refer to the manual of the communication destination.
- The Safety CPU may detect a safety communication timeout if the safety communications are affected by noise. If required, add an integral multiple of ((TMact ÷ 2) + (TMpas ÷ 2)) to the safety refresh monitoring time.
- 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".

Setting examples of the monitoring times

The following table lists setting examples of the transmission interval monitoring time and the safety refresh monitoring time of the communication cycle intervals when the safety cycle time of the master station is set to 10ms and the safety remote station refresh response processing time of the safety remote I/O module is set to 2.3ms.

Condition			Setting value in the master station		Setting value in the Device station
Safety cycle time of the master station	Safety remote station refresh response processing time of the device station (safety remote I/O module)*1	Actual communication cycle interval*2	Transmission interval monitoring time*3	Safety refresh monitoring time*3	Transmission interval monitoring time*4
10ms	2.3ms	4ms	35ms	60ms	35ms
		8ms	50ms	80ms	50ms
		16ms	60ms	100ms	60ms
		32ms	100ms	300ms	100ms

*1 A local station uses the safety cycle time.

*2 Actual communication cycle intervals indicate actual intervals of the communications with the target device station. Each interval is determined by multiplying the value set in "Communication Period Interval Setting" by the value set in "Multiple Period Setting".
When "Communication Period Interval Setting" is set to 2ms and the communications with the target device station are performed at a normal speed (× 4)
Actual communication cycle interval [ms] = 2 × 4 = 8ms

*3 For the calculation method of the monitoring time to be set to the master station, refer to the following.
Transmission interval monitoring time ☞ Page 375 Transmission interval monitoring time
Safety refresh monitoring time ☞ Page 376 Safety refresh monitoring time

*4 For the calculation method of the transmission interval monitoring time to be set to 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

- Note that the given setting values are reference values. Set the setting values greater than the calculation values.
- The greater the setting value, the lower the probability of a safety communication time out occurring due to noise or other factors.

Appendix 8 Port Number

A port number for the system cannot be specified.

Use a port number according to the content of and the method for communications with the communication destination.

Port number		Applications
Decimal	Hexadecimal	
20 to 21	14H to 15H	For system
161 to 162	A1H to A2H	For system
5000	1388H	Auto-open UDP port (Used for connection with an SLMP-compatible device using UDP/IP)
5001	1389H	MELSOFT transmission port (UDP/IP) (Used for connection with a MELSOFT product and GOT using UDP/IP)
5002	138AH	MELSOFT transmission port (TCP/IP) (Used for connection with a MELSOFT product and GOT using TCP/IP)
5003 to 5009	138BH to 1391H	For system
5010	1392H	SLMP transmission port (UDP/IP) (Used for connection with an SLMP-compatible device using UDP/IP)
5011	1393H	SLMP transmission port (TCP/IP) (Used for connection with an SLMP-compatible device using TCP/IP)
45237 to 45239	B0B5H to B0B7H	For system
61440 to 61442	F000H to F002H	For system
61448	F008H	For system
61460 to 61464	F014H to F018H	For system
61500 to 61501	F03CH to F03DH	For system
62000 to 65534	F230H to FFFEH	For system

Appendix 9 Standard MIB

The following tables list the details on the standard MIB.

System group (1.3.6.1.2.1.1.)

R: Read, W: Write

Classification	Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—	sysDescr	.1	DisplayString	R	Device information	■For the RJ71GN11-T2 "RJ71GN11-T2" ■For the RJ71GN11-SX "RJ71GN11-SX"
	—	.2	—	—	—	—
	sysUpTime	.3	TimeTicks	R	Time elapsed since system start (in units of 10ms)	Elapsed time
	sysContact	.4	DisplayString	R/W	Administrator contact	Set by customer
	sysName	.5	DisplayString	R/W	Administrative name	Set by customer
	sysLocation	.6	DisplayString	R/W	System installation location	Set by customer
	sysServices	.7	INTEGER	R	Services provided by the system (OSI reference layer) • 7: Application layer • 6: Presentation layer • 5: Session layer • 4: Transport layer • 3: Network layer • 2: Data link layer • 1: Physical layer	78 (b2, b3, b4, b7 turned on)

A

Interface group (1.3.6.1.2.1.2.)

R: Read

Classification		Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—		ifNumber	.1	INTEGER	R	Number of interfaces	1
ifTable		ifTable	.2	SEQUENCE OF IfEntry	—	Interface entity table	—
ifTable	'ifEntry	'ifEntry	.2.1	IfEntry	—	Each entry is identified by the ifIndex value.	—
		ifIndex	.2.1.1	INTEGER	R	Interface number	1
		ifDescr	.2.1.2	DisplayString	R	Interface name	CC-Link IE TSN
		ifType	.2.1.3	INTEGER	R	Interface type (☞ Page 387 List of interface types)	6: ethernet-csmacd
		ifMtu	.2.1.4	INTEGER	R	Maximum length of an IP datagram that an interface can send or receive	1500
		ifSpeed	.2.1.5	Gauge	R	Transfer speed	Communication speed setting
		ifPhysAddress	.2.1.6	PhysAddress	R	Physical address	MAC address
		ifAdminStatus	.2.1.7	INTEGER	R	Ideal interface status • 1: up • 2: down • 3: testing	1: up
		ifOperStatus	.2.1.8	INTEGER	R	Current interface status • 1: up • 2: down • 3: testing	1: up
		ifLastChange	.2.1.9	TimeTicks	R	The time when ifOperStatus of the interface last changed (sysUpTime value of the agent)	0
		ifInOctets	.2.1.10	Counter	R	Total number of octets received through the interface	Counter value
		ifInUcastPkts	.2.1.11	Counter	R	Number of subnet unicast packets delivered to the upper protocol	Counter value
		ifInNUcastPkts	.2.1.12	Counter	R	Number of subnet broadcast or multicast packets delivered to the upper protocol	Counter value
		ifInDiscards	.2.1.13	Counter	R	Number of received packets discarded due to factors such as resource limitation	Counter value
		ifInErrors	.2.1.14	Counter	R	Number of received packets that could not be delivered to the upper protocol due to an error	Counter value
		ifInUnknownProtos	.2.1.15	Counter	R	Number of received packets discarded due to an unknown or undefined protocol	Counter value
		ifOutOctets	.2.1.16	Counter	R	Total number of octets sent from the interface	Counter value
		ifOutUcastPkts	.2.1.17	Counter	R	Number of packets sent to the subnet unicast addresses requested by the upper protocol	Counter value
		ifOutNUcastPkts	.2.1.18	Counter	R	Number of packets sent to the subnet broadcast or multicast addresses requested by the upper protocol	Counter value
		ifOutDiscards	.2.1.19	Counter	R	Number of output packets discarded due to factors such as resource limitation	Counter value
		ifOutErrors	.2.1.20	Counter	R	Number of received packets that could not be sent due to an error	Counter value
		ifOutQLen	.2.1.21	Counter	R	Output packet queue length (in units of packets)	Fixed to 0
		ifSpecific	.2.1.22	OBJECTIDENTIFIER	R	MIB fixed pointer	Fixed to 0.0

AddressTranslation group (1.3.6.1.2.1.3.)

R: Read

Classification		Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
atTable		atTable	.1	SEQUENCE OF IfEntry	—	Information table for conversion information of each address	—
atTable	atEntry	atEntry	.1.1	IfEntry	—	Each entry is identified by the atIfIndex and atNetAddress values.	—
		atIfIndex	.1.1.1	INTEGER	R	ifIndex value of the corresponding interface number	1
		atPhysAddress	.1.1.2	PhysAddress	R	Physical address	MAC address
		atNetAddress	.1.1.3	IpAddress	R	Physically corresponding IP address	IP address

IP group (1.3.6.1.2.1.4.)

R: Read

Classification	Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—	ipForwarding	.1	INTEGER	R	Whether to operate as a forwarding gateway • 1: forwarding • 2: not-forwarding	2: not-forwarding
—	ipDefaultTTL	.2	INTEGER	R	Default Time-To-Live value for IP packets	64
—	ipInReceives	.3	Counter	R	Number of datagrams received from the interface	Counter value
—	ipInHdrErrors	.4	Counter	R	Number of input datagrams discarded due to IP header error	Counter value
—	ipInAddrErrors	.5	Counter	R	Number of datagrams discarded due to misdelivery	Counter value
—	ipForwDatagrams	.6	Counter	R	Number of input datagrams whose final IP transmission destination is not this entity	Counter value
—	ipInUnknownProtos	.7	Counter	R	Number of datagrams discarded due to an unknown or undefined protocol	Counter value
—	ipInDiscards	.8	Counter	R	Number of input datagrams discarded due to factors such as resource limitation	Fixed to 0
—	ipInDelivers	.9	Counter	R	Number of input datagrams successfully delivered to IP user protocols	Counter value
—	ipOutRequests	.10	Counter	R	Number of IP datagrams supplied by an IP user protocol	Counter value
—	ipOutDiscards	.11	Counter	R	Number of output IP datagrams discarded due to factors such as resource limitation	Fixed to 0
—	ipOutNoRoutes	.12	Counter	R	Number of IP datagrams discarded due to not finding the transfer route to the transmission destination	Counter value
—	ipReasmTimeout	.13	INTEGER	R	Maximum number of seconds that an incoming fragment is held, waiting to be reassembled	64

Classification		Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—		ipReasmReqds	.14	Counter	R	Number of IP fragments that require reassembly	Counter value
—		ipReasmOKs	.15	Counter	R	Number of IP fragments successfully reassembled	Counter value
—		ipReasmFails	.16	Counter	R	Number of failures detected during reassembly	Counter value
—		ipFragOKs	.17	Counter	R	Number of IP datagrams successfully fragmented	Counter value
—		ipFragFails	.18	Counter	R	Number of IP datagrams discarded because they could not be fragmented	Counter value
—		ipFragCreates	.19	Counter	R	Number of IP datagram fragments generated by fragmentation	Counter value
ipAddrTable		ipAddrTable	.20	SEQUENCE OF IfEntry	—	Addressing information table related to IP addresses	—
ipAddrTable	ipAddrEntry	ipAddrEntry	.20.1	IpAddrEntry	—	Each entry is identified by the IpAdEndAddr value.	—
		ipAdEntAddr	.20.1.1	IpAddress	R	Addressing information IP address	IP address
		ipAdEntIfIndex	.20.1.2	INTEGER	R	ifIndex value of the corresponding interface number	1
		ipAdEntNetMask	.20.1.3	IpAddress	R	Subnet mask related to IP address	Subnet mask
		ipAdEntBcastAddr	.20.1.4	INTEGER	R	Value of the least significant bit in the IP broadcast address used to send through the interface where the IP address is assigned	1
		ipAdEntReasmMaxSize	.20.1.5	INTEGER	R	Maximum IP datagram length for received IP datagram fragments that can be reassembled	1500
ipRouteTable		ipRouteTable	.21	SEQUENCE OF IpRouteEntry	—	IP routing table related to IP addresses	—

Classification		Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
ipRouteTable	ipRouteEntry	ipRouteEntry	.21.1	IpRouteEntry	—	Each entry is identified by the ipRouteDest value.	—
		ipRouteDest	.21.1.1	IpAddress	R	Destination IP address of this route	IP address
		ipRouteIfIndex	.21.1.2	INTEGER	R	ifIndex value of the corresponding interface number	1
		ipRouteMetric1	.21.1.3	INTEGER	R	1st routing path for the destination IP address -1 when not used	0
		ipRouteMetric2	.21.1.4	INTEGER	R	2nd routing path for the destination IP address -1 when not used	-1
		ipRouteMetric3	.21.1.5	INTEGER	R	3rd routing path for the destination IP address -1 when not used	-1
		ipRouteMetric4	.21.1.6	INTEGER	R	4th routing path for the destination IP address -1 when not used	-1
		ipRouteNextHop	.21.1.7	IpAddress	R	Next hop IP address	IP address
		ipRouteType	.21.1.8	INTEGER	R	Route status • 1: other • 2: invalid • 3: direct • 4: indirect	3: direct
		ipRouteProto	.21.1.9	INTEGER	R	Routing protocol to use (☞ Page 387 List of routing protocols)	2: local
		ipRouteAge	.21.1.10	INTEGER	R	Elapsed time since the route was last updated	0
		ipRouteMask	.21.1.11	IpAddress	R	Subnet mask for the destination IP address	Subnet mask
		ipRouteMetric5	.21.1.12	INTEGER	R	5th routing path for the destination IP address -1 when not used	-1
		ipRouteInfo	.21.1.13	OBJECT IDENTIFIER	R	Object ID that points to the MIB of the specified routing protocol	Fixed to 0.0
ipNetToMediaTable		ipNetToMediaTable	.22	SEQUENCE OF IpNetToMediaEntry	—	IP address conversion table	—
ipNetToMediaTable	ipNetToMediaEntry	ipNetToMediaEntry	.22.1	IpNetToMediaEntry	—	Each entry is identified by the ipNetToMediaIfIndex and ipNetToMediaNetAddress values.	—
		ipNetToMediaIfIndex	.22.1.1	INTEGER	R	ifIndex value of the corresponding interface table	1
		ipNetToMediaPhysAddress	.22.1.2	DisplayString	R	Physical address of the corresponding interface	MAC address
		ipNetToMediaNetAddress	.22.1.3	IpAddress	R	Corresponding IP address	IP address
		ipNetToMediaType	.22.1.4	INTEGER	R	Conversion type and status • 1: other • 2: invalid • 3: dynamic • 4: static	Conversion type and status
—		ipRoutingDiscards	.23	Counter	R	Number of discarded routing entries	Fixed to 0

A

ICMP group (1.3.6.1.2.1.5.)

R: Read

Classification	Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—	icmpInMsgs	.1	Counter	R	Total number of ICMP messages received	Counter value
	icmpInErrors	.2	Counter	R	Total number of ICMP error messages received	Counter value
	icmpInDestUnreachs	.3	Counter	R	Number of ICMP transmission destination unreachable messages received	Counter value
	icmpInTimeExcds	.4	Counter	R	Number of ICMP time exceeded messages received	Counter value
	icmpInParmProbs	.5	Counter	R	Number of ICMP parameter failure messages received	Counter value
	icmpInSrcQuenchs	.6	Counter	R	Number of ICMP Source Quench messages received	Counter value
	icmpInRedirects	.7	Counter	R	Number of ICMP redirect messages received	Counter value
	icmpInEchos	.8	Counter	R	Number of ICMP echo request messages received	Counter value
	icmpInEchoReps	.9	Counter	R	Number of ICMP echo response messages received	Counter value
	icmpInTimestamps	.10	Counter	R	Number of ICMP timestamp request messages received	Counter value
	icmpInTimestampReps	.11	Counter	R	Number of ICMP timestamp response messages received	Counter value
	icmpInAddrMasks	.12	Counter	R	Number of ICMP address mask request messages received	Counter value
	icmpInAddrMaskReps	.13	Counter	R	Number of ICMP address mask response messages received	Counter value
	icmpOutMsgs	.14	Counter	R	Total number of ICMP messages sent	Counter value
	icmpOutErrors	.15	Counter	R	Number of ICMP error messages sent	Fixed to 0
	icmpOutDestUnreachs	.16	Counter	R	Number of ICMP transmission destination unreachable messages sent	Counter value
	icmpOutTimeExcds	.17	Counter	R	Number of ICMP time exceeded messages sent	Counter value
	icmpOutParmProbs	.18	Counter	R	Number of ICMP parameter failure messages sent	Counter value
	icmpOutSrcQuenchs	.19	Counter	R	Number of ICMP Source Quench messages sent	Counter value
	icmpOutRedirects	.20	Counter	R	Number of ICMP redirect messages sent	Counter value
	icmpOutEchos	.21	Counter	R	Number of ICMP echo request messages sent	Counter value
	icmpOutEchoReps	.22	Counter	R	Number of ICMP echo response messages sent	Counter value
	icmpOutTimestamps	.23	Counter	R	Number of ICMP timestamp request messages sent	Counter value
	icmpOutTimestamp	.24	Counter	R	Number of ICMP timestamp response messages sent	Counter value
	icmpOutAddrMasks	.25	Counter	R	Number of ICMP address mask request messages sent	Counter value
	icmpOutAddrMask Reps	.26	Counter	R	Number of ICMP address mask response messages sent	Counter value

TCP group (1.3.6.1.2.1.6.)

R: Read

Classification		Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—		tcpRtoAlgorithm	.1	INTEGER	R	Algorithm used to determine the resend timeout value • 1: other • 2: constant • 3: rsre • 4: vanj	2: constant
—		tcpRtoMin	.2	INTEGER	R	Minimum resend timeout time (ms)	10000
—		tcpRtoMax	.3	INTEGER	R	Maximum resend timeout time (ms)	10000
—		tcpMaxConn	.4	INTEGER	R	Maximum number of TCP connections that can be open at one time	16
—		tcpActiveOpens	.5	Counter	R	Number of times a TCP connection has transitioned from the CLOSE to SYN-SENT state	Counter value
—		tcpPassiveOpens	.6	Counter	R	Number of times a TCP connection has transitioned from the LISTEN to SYN-SENT state	Counter value
—		tcpAttemptFails	.7	Counter	R	Number of state transitions from SYS-SENT or SYN-RCVD to CLOSE plus the number of state transitions from SYN-RCVD to LISTEN	Counter value
—		tcpEstabResets	.8	Counter	R	Number of state transitions from ESTABLISHED or CLOSE-WAIT to CLOSE	Fixed to 0
—		tcpCurrEstab	.9	Gauge	R	Number of TCP connections currently in ESTABLISHED or CLOSE-WAIT state	Number of active connections
—		tcpInSegs	.10	Counter	R	Total number of segments received	Counter value
—		tcpOutSegs	.11	Counter	R	Total number of segments sent	Counter value
—		tcpRetransSegs	.12	Counter	R	Total number of segments resent	Counter value
tcpConnTable		tcpConnTable	.13	SEQUENCE OF TcpConnEntry	—	TCP connection information table	—
tcpConnTable	tcpConnEntry	tcpConnEntry	.13.1	TcpConnEntry	—	Each entry is identified by the tcpConnLocal Address, tcpConnLocalPort, tcpConnRem Address, and tcpConnRemPort values.	—
		tcpConnState	.13.1.1	INTEGER	R	Connection status (☞ Page 387 List of connection statuses)	Depends on the connection status
		tcpConnLocal Address	.13.1.2	IpAddress	R	Local IP address of the TCP connection For connections in the "listen" state, use 0.0.0.0.	IP address
		tcpConnLocalPort	.13.1.3	INTEGER	R	Local port number of the TCP connection	Port number
		tcpConnRem Address	.13.1.4	IpAddress	R	Remote IP address number of the TCP connection	IP address
		tcpConnRemPort	.13.1.5	INTEGER	R	Remote port number of the TCP connection	Port number
—		tcpInErrs	.14	Counter	R	Total number of TCP segments received in error	Counter value
—		tcpOutRsts	.15	Counter	R	Number of TCP segments sent with the RST (reset) flag on	Counter value

UDP group (1.3.6.1.2.1.7.)

R: Read

Classification		Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—		udpInDatagrams	.1	Counter	R	Number of UDP datagrams delivered to UDP users	Counter value
—		udpNoPorts	.2	Counter	R	Number of UDP datagrams with no application at the transmission destination port	Counter value
—		udpInErrors	.3	Counter	R	Number of UDP datagrams not delivered for reasons other than having no application at the transmission destination port	Counter value
—		udpOutDatagrams	.4	Counter	R	Number of UDP datagrams delivered	Counter value
udpTable		udpTable	.5	SEQUENCE OF UdpEntry	—	UDP listener information table	—
udpTable	udpEntry	udpEntry	.5.1	UdpEntry	—	Each entry is identified by the udpLocalAddress and udpLocalPort values.	—
		udpLocalAddress	.5.1.1	IpAddress	R	Local IP address of the UDP listener	IP address
		udpLocalPort	.5.1.2	INTEGER	R	Local port number of the UDP listener	Port number

SNMP group (1.3.6.1.2.1.11.)

R: Read

Classification	Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—	snmpInPkts	.1	Counter	R	Total number of SNMP messages received from TP (transport service)	Counter value
—	snmpOutPkts	.2	Counter	R	Total number of SNMP messages sent to TP	Counter value
—	snmpInBadVersions	.3	Counter	R	Number of received messages where an undefined protocol version was detected	Counter value
—	snmpInBadCommunity Names	.4	Counter	R	Number of received SNMP messages where an unknown community was detected	Counter value
—	snmpInBadCommunityUses	.5	Counter	R	Number of received SNMP messages where an unauthorized community was detected	Counter value
—	snmpInASNParseErrs	.6	Counter	R	Number of received SNMP messages that caused an ASN.1 parsing error	Counter value
—	snmpInTooBigs	.8	Counter	R	Number of received SNMP messages with error-status 'tooBig'	Fixed to 0
—	snmpInNoSuchNames	.9	Counter	R	Number of received SNMP messages with error-status 'noSuchName'	Fixed to 0
—	snmpInBadValues	.10	Counter	R	Number of received SNMP messages with error-status 'BadValueno'	Fixed to 0
—	snmpInReadOnlys	.11	Counter	R	Number of received SNMP messages with error-status 'ReadOnly'	Fixed to 0
—	snmpInGenErrs	.12	Counter	R	Number of received SNMP messages with error-status 'GenErr'	Fixed to 0
—	snmpInTotalReqVars	.13	Counter	R	Number of MIB variables in all received GetRequest-PDU and GetNextRequest-PDU	Counter value
—	snmpInTotalSetVars	.14	Counter	R	Number of MIB variables in all received SetRequest-PDU	Counter value
—	snmpInGetRequests	.15	Counter	R	Number of GetRequest-PDU received	Counter value
—	snmpInGetNexts	.16	Counter	R	Number of GetNextRequest-PDU received	Counter value

Classification	Name	OID (SubTree)	SYNTAX	ACCESS	Description	Specifications
—	snmpInSetRequests	.17	Counter	R	Number of SetRequest-PDU received	Counter value
—	snmpInGetResponses	.18	Counter	R	Number of GetResponse-PDU received	Fixed to 0
—	snmpInTraps	.19	Counter	R	Number of Trap-PDU received	Fixed to 0
—	snmpOutTooBigs	.20	Counter	R	Number of sent SNMP messages with error-status 'tooBig'	Counter value
—	snmpOutNoSuchNames	.21	Counter	R	Number of sent SNMP messages with error-status 'noSuchName'	Counter value
—	snmpOutBadValues	.22	Counter	R	Number of sent SNMP messages with error-status 'BadValueno'	Counter value
—	snmpOutGenErrs	.24	Counter	R	Number of sent messages with error-status 'GenErr'	Counter value
—	snmpOutGetRequests	.25	Counter	R	Number of GetRequest-PDU sent	Fixed to 0
—	snmpOutGetNexts	.26	Counter	R	Number of SetRequest-PDU sent	Fixed to 0
—	snmpOutSetRequests	.27	Counter	R	Number of SetRequest-PDU sent	Fixed to 0
—	snmpOutGetResponses	.28	Counter	R	Number of GetResponse-PDU sent	Counter value
—	snmpOutTraps	.29	Counter	R	Number of Trap-PDU sent	Counter value
—	snmpEnableAuthenTraps	.30	INTEGER	R	Whether the agent can send authentication failure traps • 1: enabled • 2: disabled	2: disabled

Reference information

■List of interface types

No.	Interface name	No.	Interface name	No.	Interface name	No.	Interface name
1	other	2	regular1822	3	hdh1822	4	ddn-x25
5	rfc877-x25	6	ethernet-csmacd	7	iso88023-csmacd	8	iso88024-tokenBus
9	iso88025-tokenRing	10	iso88026-man	11	starLan	12	proteon-10Mbit
13	proteon-80Mbit	14	hyperchannel	15	fddi	16	lapb
17	sdlc	18	ds1	19	e1	20	basicISDN
21	primaryISDN	22	propPointToPointSerial	23	ppp	24	softwareLoopback
25	eon	26	ethernet-3Mbit	27	nsip	28	slip
29	ultra	30	ds3	31	sip	32	frame-relay

■List of routing protocols

No.	Protocol name	No.	Protocol name	No.	Protocol name	No.	Protocol name
1	other	2	local	3	netmgmt	4	icmp
5	egp	6	ggp	7	hello	8	rip
9	is-is	10	es-is	11	cisco-lgrp	12	bbnSpfIgp
13	ospf	14	bgp	—		—	

■List of connection statuses

No.	Status name	No.	Status name	No.	Status name	No.	Status name
1	closed	2	listen	3	synSent	4	synReceived
5	established	6	finWait1	7	finWait2	8	closeWait
9	lastAck	10	closing	11	timeWait	12	deleteTCB

Appendix 10 Software Licenses and Copyright

This section describes the licenses and copyrights to the software used in this product.

MD5 Message-Digest Algorithm

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Appendix 11 Added and Enhanced Functions

The following table lists the added and enhanced functions in the RJ71GN11.

RJ71GN11-T2

Added and enhanced functions	Firmware version
Updated the firmware using the engineering tool*1	"01" or later
Multicast function to the communication mode under the application settings	"04" or later
Communication speed of 100Mbps	"04" or later
TSN hub	"05" or later
CC-Link IE TSN network synchronous communication function*2	"10" or later
Safety communications in a system using the Safety CPU*2	"10" or later
Station information list	"10" or later
Loopback function	"10" or later
Remote device test	"10" or later
Ring topology	"10" or later
CANopen communications	"11" or later
Watchdog counter	"11" or later
Increase in the number of inter-module synchronization target modules	"11" or later
CC-Link IE TSN Communication Software	"12" or later
Restriction cancellation on CC-Link IE TSN Class A devices/Ethernet devices in multicast mode	"14" or later
Protocol version 2.0	"14" or later
Improvement of detection of connected/disconnected devices function	"15" or later
Connection with a CC-Link IE TSN Class A device that supports the CANopen profile with the protocol version 2.0	"15" or later
Co-recording	"17" or later
IP address setting of the device station	"18" or later
Number of link points extension	"22" or later
Master station shift function	"22" or later
Interlink transmission with local stations	"22" or later
ERR LED control	"22" or later
Safety communications with a safety station using the sub ID	"28" or later
SNMP agent	"28" or later

*1 For details on firmware update, refer to the following.
MELSEC iQ-R Module Configuration Manual

*2 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)

RJ71GN11-SX

Added and enhanced functions	Firmware version
Updated the firmware using the engineering tool*1	"01" or later
Master station shift function	"02" or later
IP address setting of the device station	"04" or later
ERR LED control	"04" or later
Remote device test	"04" or later
CANopen communications	"04" or later
Protocol version 2.0	"04" or later
Detection of connected/disconnected devices	"04" or later
Device station parameter automatic setting	"04" or later
CC-Link IE TSN Network synchronous communication function	"04" or later
CC-Link IE TSN Communication Software	"04" or later
Ethernet connection	"04" or later
Line and star topologies	"04" or later
SNMP agent	"07" or later

*1 For details on firmware update, refer to the following.
MELSEC iQ-R Module Configuration Manual

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MEMO

REVISIONS

*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Description
May 2019	SH(NA)-082129ENG-A	First edition
August 2019	SH(NA)-082129ENG-B	Error correction
November 2019	SH(NA)-082129ENG-C	■Added or modified parts Section 1.1, 2.3, 2.4, 2.5, Chapter 3, 4, Appendix 3, 4, 5, 6, 7, 9
December 2019	SH(NA)-082129ENG-D	■Added or modified part Chapter 4
May 2020	SH(NA)-082129ENG-E	■Added function CC-Link IE TSN network synchronous communication function, safety communications, loopback function, remote device test, ring topology ■Added or modified parts TERMS, Section 1.1, 1.4, 1.5, 1.6, 1.8, 2.3, 2.4, 2.5, 4.1, 4.3, 4.4, 4.5, 4.6, 4.7, Appendix 3, 4, 5, 7, 9
July 2020	SH(NA)-082129ENG-F	■Added function CANopen communications ■Added or modified parts SAFETY PRECAUTIONS, GENERIC TERMS AND ABBREVIATIONS, Section 1.1, 1.5, 1.6, 2.5, 4.1, 4.3, 4.4, 4.5, 4.7, Appendix 3, 5, 7, 9
November 2020	SH(NA)-082129ENG-G	■Added function CC-Link IE TSN Communication Software ■Added or modified parts Section 1.1, 1.4, 1.6, 1.8, 4.4, 4.5, 4.7, Appendix 3, 5, 9
May 2021	SH(NA)-082129ENG-H	■Added or modified parts GENERIC TERMS AND ABBREVIATIONS, Section 1.4, 2.3, Appendix 7
October 2021	SH(NA)-082129ENG-I	■Added or modified parts Section 2.3, 2.5, 4.4, 4.5, Appendix 7
May 2022	SH(NA)-082129ENG-J	■Added or modified parts SAFETY PRECAUTIONS, INTRODUCTION, TERMS, GENERIC TERMS AND ABBREVIATIONS, Section 1.1, 1.3, 1.4, 1.5, 1.6, 2.3, 2.5, 3.2, 3.3, 4.1, 4.3, 4.4, 4.5, 4.6, 4.7, Appendix 3, 4, 5, 7, 9, 10
November 2022	SH(NA)-082129ENG-K	■Added function Co-recording ■Added or modified parts RELEVANT MANUAL, Section 1.8, 2.4, 4.4, 4.5, 4.6, 4.7, Appendix 4, 5, 7, 10
May 2023	SH(NA)-082129ENG-L	■Added model RJ71GN11-SX ■Added or modified parts SAFETY PRECAUTIONS, GENERIC TERMS AND ABBREVIATIONS, Section 1.1, 1.3, 1.6, 1.7, 1.8, Chapter 2, 4, Appendix 1, 3, 4, 5, 6, 7, 10
October 2023	SH(NA)-082129ENG-M	■Added functions Master station shift function (RJ71GN11-SX), IP address setting of a device station (RJ71GN11-T2) ■Added or modified parts TERMS, Section 1.5, 1.6, 1.9, 2.4, 4.1, 4.3, 4.5, 4.7, Appendix 3, 4, 5, 10
May 2024	SH(NA)-082129ENG-N	■Added functions ERR LED control (RJ71GN11-T2), extension of the number of link points (RJ71GN11-T2), master station shift function (RJ71GN11-T2) ■Added or modified parts TERMS, Section 1.1, 1.5, 2.3, 2.4, 2.5, Chapter 4, Appendix 3, 4, 5, 7, 10
November 2024	SH(NA)-082129ENG-O	■Added functions IP address setting of a device station (RJ71GN11-SX), ERR LED control (RJ71GN11-SX), remote device test (RJ71GN11-SX), CANopen communications (RJ71GN11-SX), detection of connected/disconnected devices (RJ71GN11-SX), device station parameter automatic setting (RJ71GN11-SX), CC-Link IE TSN network synchronous communication function (RJ71GN11-SX), CC-Link IE TSN Communication Software (RJ71GN11-SX), Ethernet connection (RJ71GN11-SX), line topology, star topology (RJ71GN11-SX) ■Added or modified parts RELEVANT MANUALS, TERMS, Section 1.1, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.2, 2.3, 2.4, 2.5, 3.1, 3.3, 3.4, 4.1, 4.3, 4.4, 4.5, Appendix 3, 4, 5, 6, 7, 10

Revision date	*Manual number	Description
May 2025	SH(NA)-082129ENG-P	■Added functions Safety communications with a safety station using the sub ID (RJ71GN11-T2), SNMP agent ■Added or modified parts SAFETY PRECAUTIONS, RELEVANT MANUALS, TERMS, GENERIC TERMS AND ABBREVIATIONS, Section 1.4, 2.3, 2.4, 2.5, 3.4, 4.4, Appendix 4, 5, 7, 9, 11

Japanese manual number: SH-082128-R

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

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. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

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