MITSUBISHI ELECTRIC

Programmable Controller

MELSEC iQ-R series

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

-RJ71EN71
-RJ71GP21-SX
-RJ71GP21S-SX
-R04ENCPU
-R08ENCPU
-R16ENCPU
-R32ENCPU
-R120ENCPU

SAFETY PRECAUTIONS

(Read these precautions before using this product.)

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

The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, refer to the MELSEC iQ-R Module Configuration Manual.

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

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

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

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

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

[Design Precautions]

⚠ WARNING

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

[Design Precautions]

⚠ WARNING

- 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.
- 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. Failure to do so may result in an accident due to an incorrect output or malfunction.

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

- The optical transmitter and receiver of the CC-Link IE Controller Network module use laser diodes (class 1 in accordance with IEC 60825-1). Do not look directly at a laser beam. Doing so may harm your eyes.

[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 undefined. The values need to be set in the buffer memory and written to the flash ROM 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 in Program" for "Open Method Setting" of "Module Parameter". If "OPEN in Program" is selected, an execution of the remote STOP function causes the communication line to close. Consequently, the CPU module cannot reopen the line, and external devices cannot execute the remote RUN function.

[Security Precautions]

⚠ WARNING

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

[Installation Precautions]

⚠ WARNING

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

[Installation Precautions]

⚠ CAUTION

- Use the programmable controller in an environment that meets the general specifications in the Safety Guidelines (IB-0800525). Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- To mount a module, place the concave part(s) located at the bottom onto the guide(s) of the base unit, and push in the module until the hook(s) located at the top snaps into place. Incorrect interconnection may cause malfunction, failure, or drop of the module.
- 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 screw, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- 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.
- Do not directly touch any conductive parts and electronic components of the module, SD memory card, extended SRAM cassette, battery-less option cassette, or connector. Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

⚠ WARNING

- Shut off the external power supply (all phases) used in the system before installation and wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.
- After installation and wiring, attach a blank cover module (RG60) to each empty slot before powering on the system for operation. Also, attach an extension connector protective cover[*1] to each unused extension cable connector as necessary. Directly touching any conductive parts of the connectors while power is on may result in electric shock.
  *1 For details, please consult your local Mitsubishi Electric representative.

[Wiring Precautions]

⚠CAUTION

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Check the rated voltage and signal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause fire or failure.
- Connectors for external devices must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered. Incomplete connections may cause short circuit, fire, or malfunction.
- Securely connect the connector to the module. Poor contact may cause malfunction.
- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact. Do not clamp the extension cables with the jacket stripped. Doing so may change the characteristics of the cables, resulting in malfunction.
- Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the module and external device.
- Tighten the terminal screws or connector screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, fire, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
- When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
- Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
- When a protective film is attached to the top of the module, remove it before system operation. If not, inadequate heat dissipation of the module may cause a fire, failure, or malfunction.
- Programmable controllers must be installed in control panels. Connect the main power supply to the power supply module in the control panel through a relay terminal block. Wiring and replacement of a power supply module must be performed by qualified maintenance personnel with knowledge of protection against electric shock. For wiring, refer to the MELSEC iQ-R Module Configuration Manual.
- For Ethernet cables to be used in the system, select the ones that meet the specifications in the user's manual for the module used. If not, normal data transmission is not guaranteed.

[Precautions for using CC-Link IE Controller Network (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 Ethernet/CC-Link IE 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
- After the first use of the product, do not insert/remove the SD memory card to/from the CPU module more than 500 times. Exceeding the limit may cause malfunction.
- Do not touch the metal terminals on the back side of the SD memory card. Doing so may cause malfunction or failure of the module.
- Do not touch the integrated circuits on the circuit board of an extended SRAM cassette or a battery-less option cassette. Doing so may cause malfunction or failure of the module.
- Do not drop or apply shock to the battery to be installed in the module. Doing so may damage the battery, causing the battery fluid to leak inside the battery. If the battery is dropped or any shock is applied to it, dispose of it without using.

[Startup and Maintenance Precautions]

⚠ CAUTION

- 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.

[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 undefined. The values need to be set in the buffer memory and written to the flash ROM again. Doing so also 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 and troubleshooting of the relevant product listed below.
Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the MELSEC iQ-R series programmable controller to handle the product correctly.
When applying the program examples provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.
Please make sure that the end users read this manual.

Relevant product

RJ71GP21-SX, RJ71GP21S-SX, RJ71EN71, RnENCPU

Point

Unless otherwise specified, the buffer memory addresses in this manual are for when using the following:

- RJ71GP21(S)-SX
- RJ71EN71 and RnENCPU in which "Port 1 Network Type" is set to "CC-Link IE Control"

For the RJ71EN71 and RnENCPU, add the following value to the buffer memory addresses when setting "Port 1 Network Type" to "Ethernet" and "Port 2 Network Type" to "CC-Link IE Control".

- Address (decimal): 2000000
- Address (hexadecimal): 1E8480H

CONTENTS

RELEVANT MANUALS

Manual name [manual number]	Description	Available form
MELSEC iQ-R CC-Link IE Controller Network User's Manual (Application) [SH-081258ENG] (this manual)	Functions, parameter settings, troubleshooting, and buffer memory of CC-Link IE Controller Network	Print book e-Manual PDF
MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup) [SH-081256ENG]	Specifications, procedures before operation, system configuration, wiring, and communication examples of Ethernet, CC-Link IE Controller Network, and CC-Link IE Field Network	Print book e-Manual PDF
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	Print book e-Manual PDF
MELSEC iQ-R Programming Manual (Module Dedicated Instructions) [SH-081976ENG]	Dedicated instructions for the intelligent function modules	e-Manual PDF

Point

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

e-Manual has the following features:

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

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Baton pass	A control mechanism in which transmission right (token) is passed around the network for data transmission.
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.
Control CPU	A CPU module that controls connected I/O modules and intelligent function modules. In a multiple CPU system, a control CPU can be set for each module.
Control station	Only one station that controls the network to which it is connected. Each station's send range for cyclic transmission is assigned to the control station.
Control system	A system that controls a redundant system and performs network communications in a redundant system
CPU module (built-in Ethernet port part)	A built-in Ethernet port part of a CPU module (CPU part for the RnENCPU) (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
Cyclic transmission	A function by which data are periodically exchanged among stations on the same network using link devices (RX, RY, RWw, and RWr)
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.
Engineering tool	A tool used for setting up programmable controllers, programming, debugging, and maintenance.
Global label	A label that is valid for all the program data when multiple program data are created 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.
I/O master station	A station that controls communications by the link devices (LX, LY). Up to two I/O master stations can be set for one network (block 1 and block 2), regardless of the status of control or normal station.
Intelligent function module	A module that has functions other than an input or output, such as an A/D converter module and D/A converter module
Link device	A device (LB, LW, LX, LY, SB, or SW) in a module on CC-Link IE Controller Network.
Link refresh	Automatic data transfer between a link device (LB, LW, LX, LY, SB, or SW) of the CC-Link IE Controller Network-equipped module and a device in a CPU module, or a link device (SB or SW) of the CC-Link IE Controller Network-equipped module and a module label in a CPU module. Link refresh is performed in the END processing of the CPU module's sequence scan.
Link scan (link scan time)	Time required for all the stations on the network to transmit data. The link scan time depends on data volume and the number of transient transmission requests.
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.
New control system	A system that has switched to control system from standby system after system switching
Normal station	A station that performs cyclic transmission and transient transmission with the control station and other normal stations
Process CPU (redundant mode)	A Process CPU operating in redundant mode. A redundant system is configured with this CPU module. Process control function blocks and the online module change function can be used even in this mode.
Redundant function module	A module to configure a redundant system by using it in combination with a process CPU (redundant mode). The redundant function module model name is R6RFM.
Redundant system	A system consisting of two systems that have same configuration (CPU module, power supply module, network module, and other modules). Even after an error occurs in one of the two system, the other system takes over the control of the entire system.
Relay station	A station that relays data link to other station with mounting more than one network modules on one programmable controller.
Reserved station	A station reserved for future use. This station is not actually connected, but counted as a connected station.
RnENCPU (CPU part)	A module on the left-hand side of the RnENCPU (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
RnENCPU (network part)	A module on the right-hand side of the RnENCPU (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
Seamless communication	Communication that allows users to access a different kind of networks without having to consider the differences as if data were exchanged within one single network
Shared group number	Number that is assigned to a station to allow it to share cyclic data with any given stations. Cyclic data can be shared only with stations of the same group.
Standby system	A backup system in a redundant system
System A	A system that is set as system A to distinguish two systems in a redundant system. It is used to distinguish connected two systems (system A and system B).

Term	Description
System B	A system that is set as system B to distinguish two systems in a redundant system. It is used to distinguish connected two systems (system A and system B).
System switching	A function which switches the systems between the control system and the standby system to continue operation of the redundant system when a failure or an error occurs in the control system
Tracking cable	An optical fiber cable used to connect two redundant function modules in a redundant system
Transient transmission	A function of communication with another station, which is used when requested by a dedicated instruction or the engineering tool
Transient transmission group number	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.

GENERIC TERMS AND ABBREVIATIONS

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

Generic term/abbreviation	Description
CC-Link IE Controller Network-equipped module	An abbreviation for the RJ71GP21-SX CC-Link IE Controller Network module, the RJ71GP21S-SX CC-Link IE Controller Network module, and the following modules when the CC-Link IE Controller Network function is used: • RJ71EN71 • RnENCPU
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
CPU module	A generic term for the MELSEC iQ-R series CPU modules
Data link	A generic term for cyclic transmission and transient transmission
Ethernet device	A generic term for the devices supporting IP communication (such as personal computers)
Ethernet-equipped module	A generic term for the following modules when the Ethernet function is used: • RJ71EN71 • CPU module
I/O module	A generic term for the input module, output module, I/O combined module, and interrupt module
MELSECNET/10	An abbreviation for the MELSECNET/10 network system
MELSECNET/H	An abbreviation for the MELSECNET/H network system
Network module	A generic term for the following modules: • Ethernet interface module • CC-Link IE Controller Network module • Module on CC-Link IE Field Network • MELSECNET/H network module • MELSECNET/10 network module • RnENCPU (network part)
Process CPU	A generic term for the R08PCPU, R16PCPU, R32PCPU, and R120PCPU
RAS	An abbreviation for Reliability, Availability, and Serviceability. This term refers to the overall usability of automated equipment.
READ	A generic term for the JP.READ and GP.READ
RECV	A generic term for the JP.RECV and GP.RECV
RECVS	A generic term for the G.RECVS and Z.RECVS
REQ	A generic term for the J.REQ, JP.REQ, G.REQ, and GP.REQ
RIRD	A generic term for the J.RIRD, JP.RIRD, G.RIRD, and GP.RIRD
RIWT	A generic term for the J.RIWT, JP.RIWT, G.RIWT, and GP.RIWT
RnENCPU	A generic term for the R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, and R120ENCPU
RRUN	A generic term for the J.RRUN, JP.RRUN, G.RRUN, GP.RRUN, Z.RRUN, and ZP.RRUN
RSTOP	A generic term for the J.RSTOP, JP.RSTOP, G.RSTOP, GP.RSTOP, Z.RSTOP, and ZP.RSTOP
RTMRD	A generic term for the J.RTMRD, JP.RTMRD, G.RTMRD, GP.RTMRD, Z.RTMRD, and ZP.RTMRD
RTMWR	A generic term for the J.RTMWR, JP.RTMWR, G.RTMWR, GP.RTMWR, Z.RTMWR, and ZP.RTMWR
SEND	A generic term for the JP.SEND and GP.SEND
SREAD	A generic term for the JP.SREAD and GP.SREAD
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
ZNRD	A generic term for the J.ZNRD and JP.ZNRD
ZNWR	A generic term for the J.ZNWR and JP.ZNWR

1 FUNCTIONS

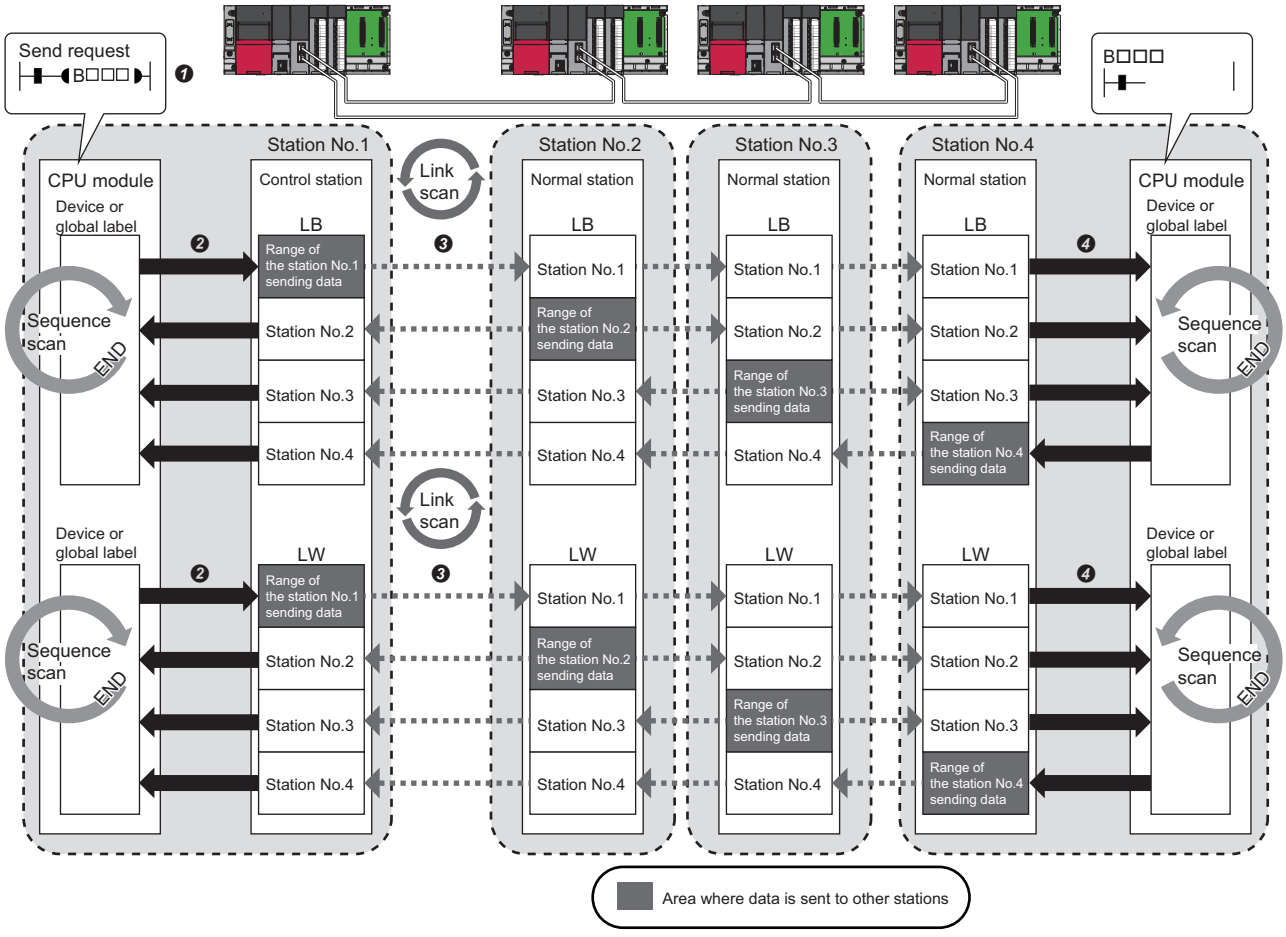
1.1 Cyclic Transmission

This function allows data to be periodically exchanged among stations on the same network using link devices.

Data flow and link device assignment

Communications using LB and LW

This function allows each station to write data to its own send range of a link device (LB, LW) to send them to all other stations on the network. The status data of the link devices (LB, LW) of the control station are stored in the link devices (LB, LW) of each normal station. The status data of the link devices (LB, LW) of normal stations are stored in the link devices (LB, LW) of the control station and the link devices (LB, LW) of other normal stations.



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

❷ The status data of the device of the CPU module on sending side are stored in the link devices (LB, LW) of the CC-Link IE Controller Network-equipped module by link refresh.

❸ The status data of the link devices (LB, LW) are stored in the link devices (LB, LW) of the receiving-side CC-Link IE Controller Network-equipped module by link refresh.

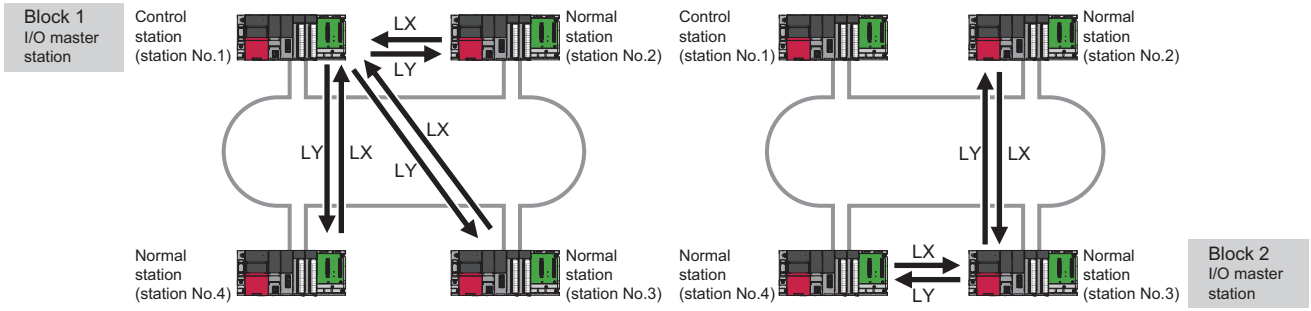
❹ The status data of the link devices (LB, LW) are stored in the devices of the CPU module on receiving side.

Communications using LX and LY

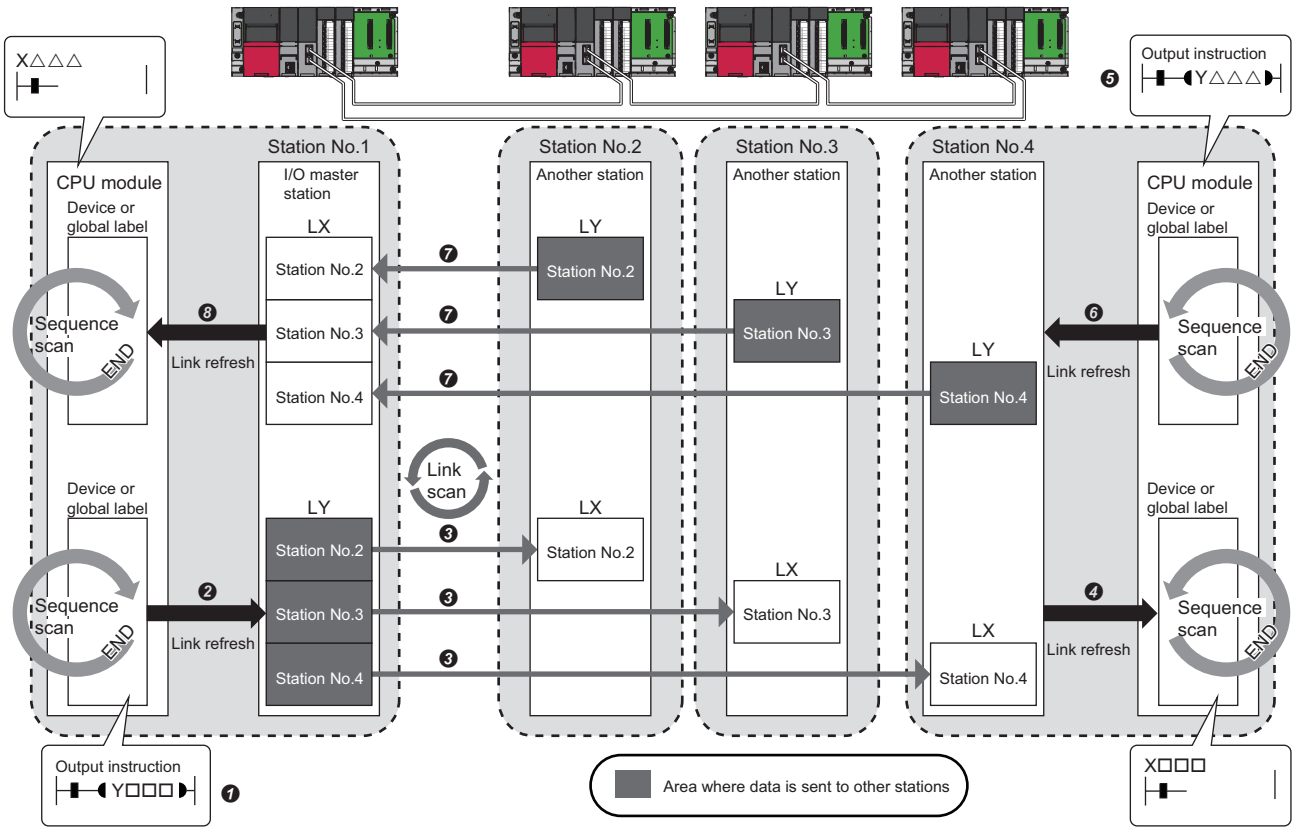
This function is used for communication between the I/O master station that controls LX and LY and another station on a one-to-one (1:1) basis.

Up to two I/O master stations can be set for one network (block 1 and block 2), regardless of the status of control or normal station.

The link input (LX) is used to receive the information input from each station in a block, and the link output (LY) is used to send the output information of the I/O master station.



The status data of the link output (LY) of the I/O master station is output to the link input (LX) of another station, and the status data of the link output (LY) of another station is stored in the link input (LX) of the I/O master station.



- Output from the I/O master station

❶ The device of the CPU module turns on.

❷ The status data of the device of the CPU module are stored in the link output (LY) of the I/O master station by link refresh.

❸ The status data of the link output (LY) of the I/O master station are stored in the link input (LX) of another station by link scan.

❹ The status data of the link input (LX) of another station are stored in the device of the CPU module by link refresh.

- Input from another station

❺ The device of the CPU module turns on.

❻ The status data of the device of the CPU module are stored in the link output (LY) of another station by link refresh.

❼ The status data of the link output (LY) of another station are stored in the link input (LX) of the I/O master station by link scan.

❽ The status data of the link input (LX) of the I/O master station are stored in the device of the CPU module by link refresh.

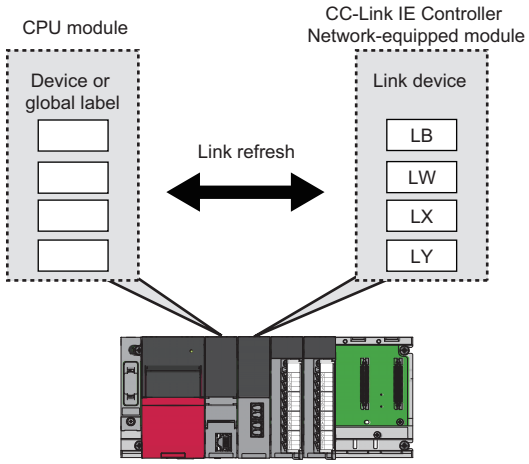
Setting method

Assign the link devices under "Network Range Assignment" in "Required Settings". (☞ Page 76 Network Range Assignment)

The link refresh is assigned under "Refresh Setting" in "Basic Settings". (☞ Page 84 Refresh Setting)

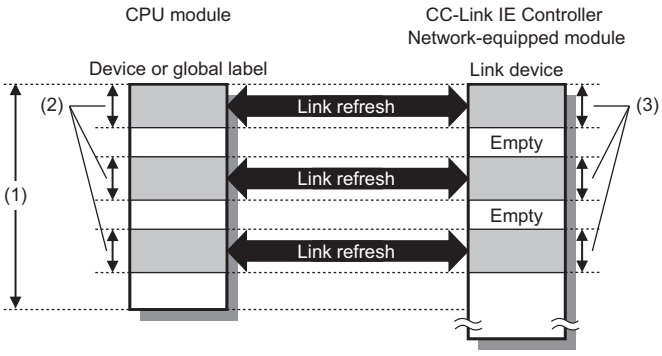
Link refresh

This function automatically transfers data between the link devices of the CC-Link IE Controller Network-equipped module and the devices of the CPU module.



Concept of the link refresh range (number of points)

The area range set under "Refresh Setting" in "Basic Settings" and also specified under "Network Range Assignment" in "Required Settings" is executed by link refresh.



(1) Range set under "Refresh Setting" in "Basic Settings"
(2) Actual link refresh range
(3) Range set under "Network Range Assignment" in "Required Settings"

Shortening the link refresh time and transmission delay time

The link refresh time and transmission delay time can be shortened by reducing the number of link refresh points to the CPU module. The following methods can be used to reduce the number of the link refresh points.

- In "Refresh Setting" under "Basic Settings", set only the link devices used in the CPU module as the link refresh range. (☞ Page 84 Refresh Setting)
- Directly access infrequently used link devices from the program, and remove the corresponding settings from the link refresh range. (☞ Page 23 Direct access to link devices)

Setting method

Assign the link refresh under "Refresh Setting" in "Basic Settings". (☞ Page 84 Refresh Setting)

Precautions

■Latched devices of the CPU module

If data in latched devices of the CPU module are cleared to zero on a program when the CPU module is turned off and on or reset, the data may be output without being cleared to zero, depending on the timing of the link scan and link refresh. Execute the actions listed in the table below not to output the data in the latched devices of the CPU module.

CPU module device	How to disable the setting
Latch relay (L), file register (R, ZR)	Use the initial device value of the CPU module to clear the device to zero.*1
CPU module device within the latch range	Delete all the latch range settings specified in "Latch Interval Operation Setting" under "Device Latch Interval Setting" in "Memory/Device Setting" of "CPU Parameter".

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

Direct access to link devices

This function allows direct access to the link devices of the CC-Link IE Controller Network-equipped module from the program.

Specify a link device (LB, LW, LX, LY, SB, SW) as the link direct device (J□\□) for direct access.

Specification method

Specify the network number and the link device of the CC-Link IE Controller Network-equipped module for reading or writing.

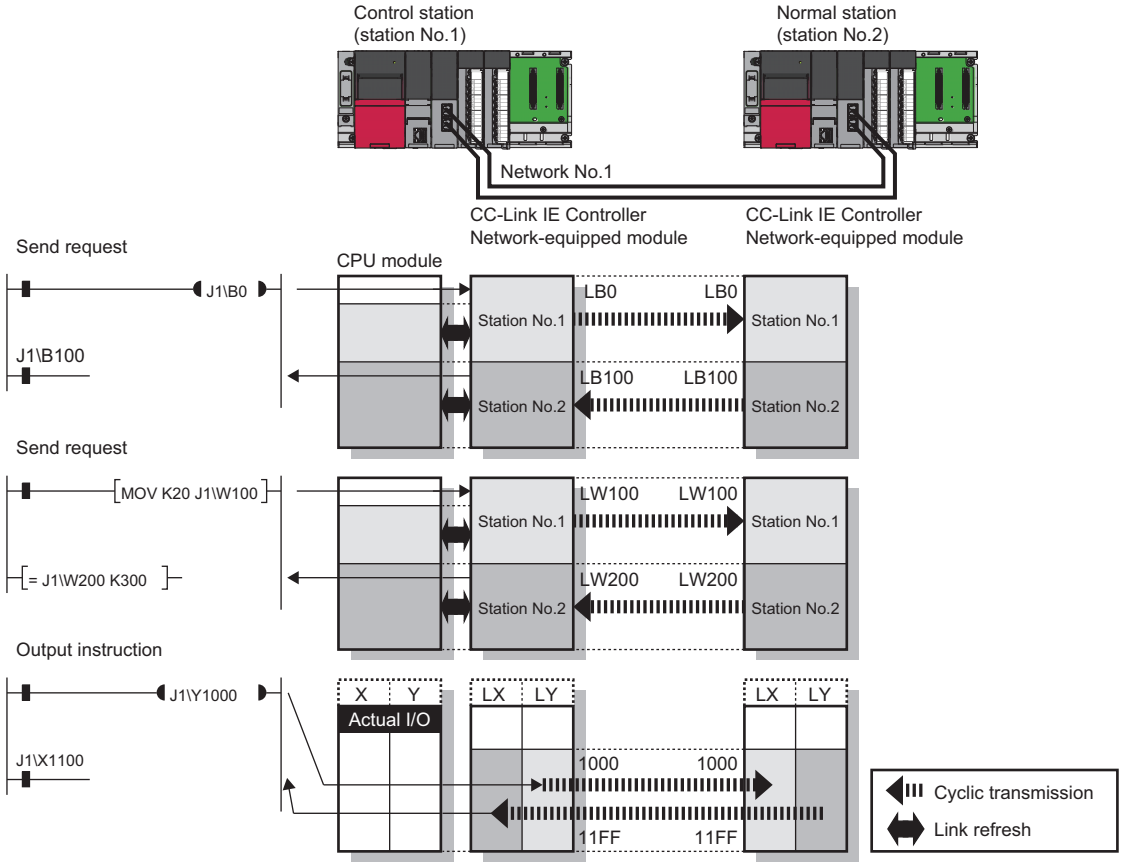
J□\□
(1) (2)

(1) Network number: 1 to 239

(2) Link relay (LB): B0 to BFFFF*1
Link register (LW): W0 to W3FFFF*1
Link input (LX): X0 to X1FFF
Link output (LY): Y0 to Y1FFF
Link special relay (SB): SB0 to SB1FF
Link special register (SW): SW0 to SW1FF

*1 When the link relay (LB) (B8000 to BFFFF) or link register (LW) (W20000 to W3FFFF) is accessed by the link direct device, use the corresponding CC-Link IE Controller Network-equipped module or CPU modules. Firmware versions that support the link points extended setting (extension of points for CC-Link IE Controller Network) are as shown below. In addition, set "Extended Mode (iQ-R Series Mode)" of "Link Direct Device Setting" in "CPU Parameter". Any link relay (LB) (B0 to B7FFF) or link register (LW) (W0 to W1FFFF) can be accessed.
· The RJ71GP21-SX or RJ71GP21S-SX with a firmware version of "36" or later
· The RJ71EN71 or RnENCPU (network part) with a firmware version of "39" or later
· CPU module: 📖User's manual (Application) for the CPU module to be used

Ex.



Readable and writable range

Data can be read or written between the CC-Link IE Controller Network-equipped module and CPU module mounted on the same base unit.

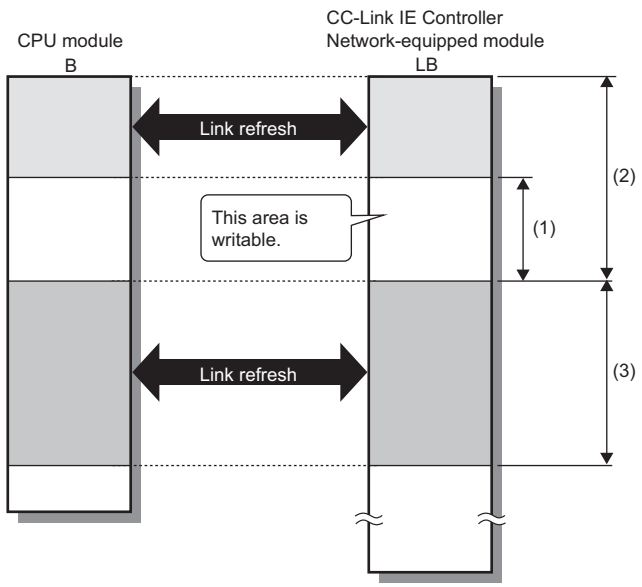
■Read

All the link devices of the CC-Link IE Controller Network-equipped module can be specified. (☞ Page 23 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 19 Data flow and link device assignment)
- Within the link device range of the CC-Link IE Controller Network-equipped module (☞ Page 23 Specification method)



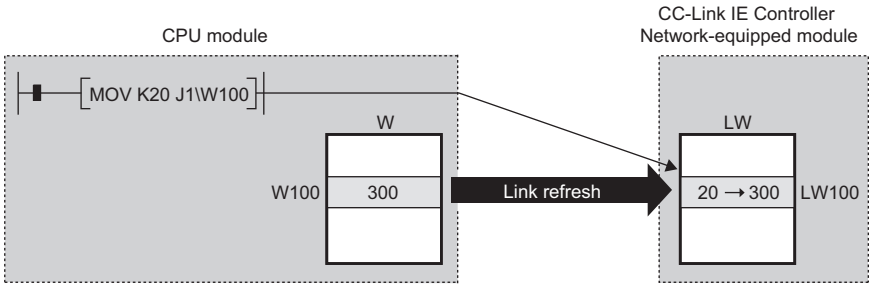
(1) Out of the link refresh range
(2) Area where data is sent to other stations
(3) Area for receiving the data from other stations

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.

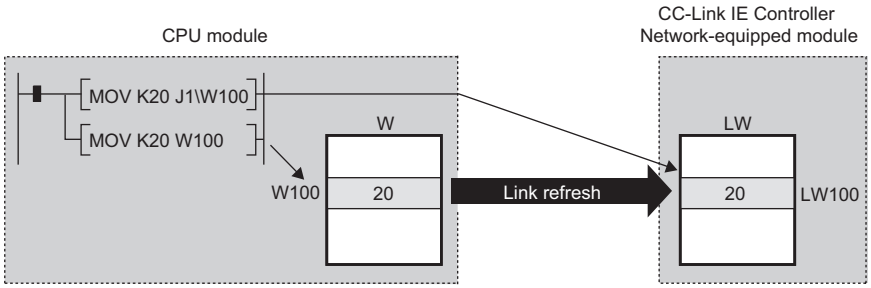
• Bad example (Only direct access to the link refresh target)

Link refresh overwrites the value.



• Good example (In addition to direct access, writing the same data to the device of the CPU module)

The value written by direct access is reflected.



Differences from link refresh

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

*1 For actual values, refer to the following.
MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

Shortening the link refresh time and transmission delay time

■Shortening the link refresh time

Remove infrequently used link devices from the link refresh range, and directly read or write the corresponding data using link direct devices. This function reduces the number of the link refresh points to the CPU module, resulting in a shorter link refresh time. (☞ Page 21 Link refresh)

■Shortening the transmission delay time

Because the link direct device allows direct reading or writing of data to the link devices of the CC-Link IE Controller Network-equipped module at the time of the instruction execution, the transmission delay time can be shortened.

Point

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

Precautions

■Cyclic data integrity assurance

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 27 Cyclic data integrity assurance)

■Mounting multiple modules of the same network number

For the precautions on mounting multiple CC-Link IE Controller Network-equipped modules of the same network number, refer to the following.

☞ Page 38 Precautions

Cyclic data integrity assurance

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

The following three methods are available for cyclic data integrity assurance.

○: Assured, ×: Not assured

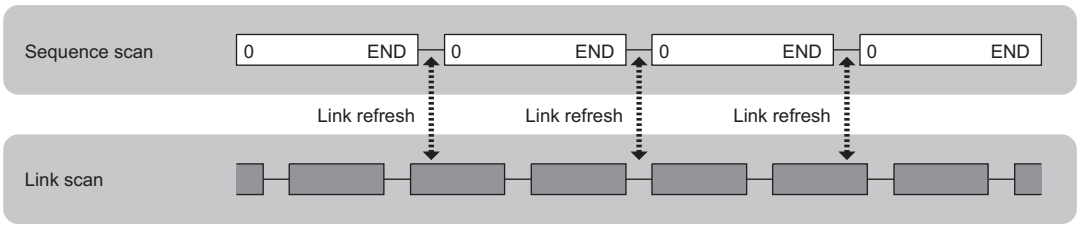
Method		Description	Availability	
			Link refresh	Direct access to link devices
32-bit data assurance		Assures data in units of 32 bits. Data is automatically assured by satisfying the assignment conditions of link devices.	○	○
Assurance of data of more than 32 bits	Station-based block data assurance	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 performing interlocks on programs.	○	○

Point

Link scans are performed asynchronously with link refresh.

Therefore, when the following cyclic data of 32 bits or more are handled, new and old data may be mixed in units of 16 bits depending on the link refresh timing.

- Floating-point data
- Present value or command speed value of a positioning module



32-bit data assurance

The link relay (LB) and link register (LW) data can be assured in units of 32 bits.

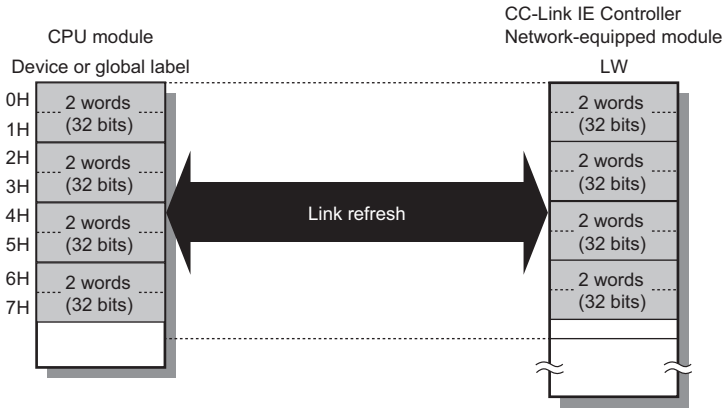
When LB and LW are set with the following four conditions met, 32-bit data assurance is automatically assured.

- The start device number of LB is a multiple of 20H.
- The number of points assigned per station in LB is a multiple of 20H.
- The start device number of LW is a multiple of 2.
- The number of points assigned per station in LW is a multiple of 2.

LB and LW are specified under "Network Range Assignment" in "Required Settings" of the control station. (☞ Page 76 Network Range Assignment)

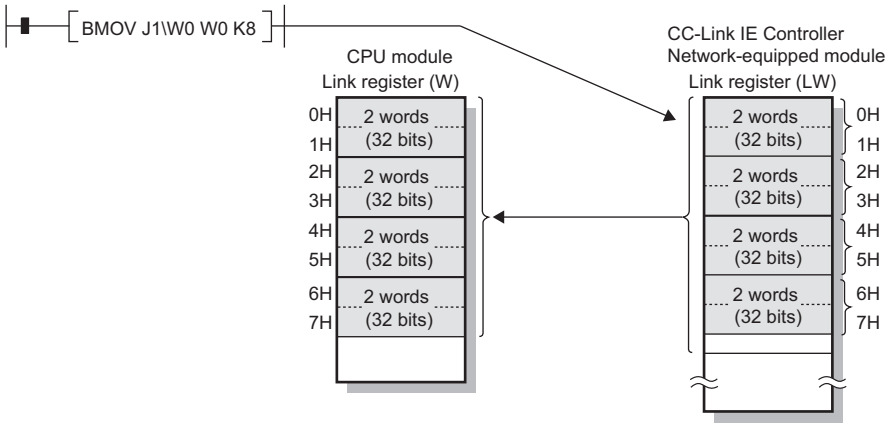
■Data assurance at the time of link refresh

Link-refreshing the link devices that satisfy the conditions for 32-bit data assurance will ensure the integrity of 32-bit data.



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

Directly accessing link devices that satisfy the conditions for 32-bit data assurance will ensure the integrity of 32-bit data.



Station-based block data assurance

Integrity of the cyclic data is assured for each station by handshake between the CPU module and CC-Link IE Controller Network-equipped module for a link refresh.

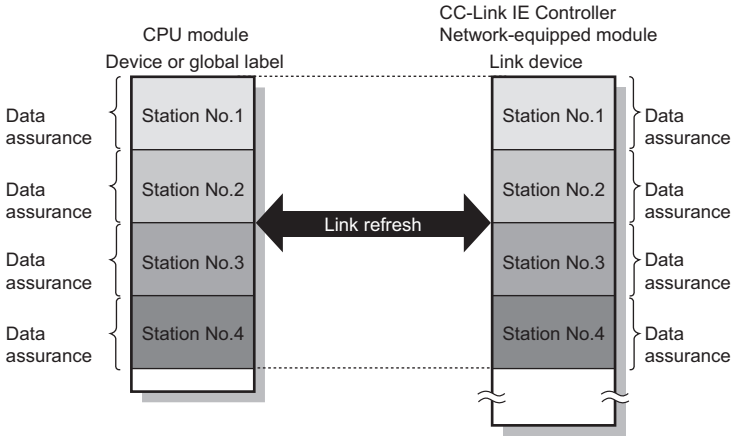
■Setting

Set station-based block data assurance under "Supplementary Cyclic Settings" in "Application Settings" of the control station.
(☞ Page 90 Supplementary Cyclic Settings)

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

■Access to link devices

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



Interlock program

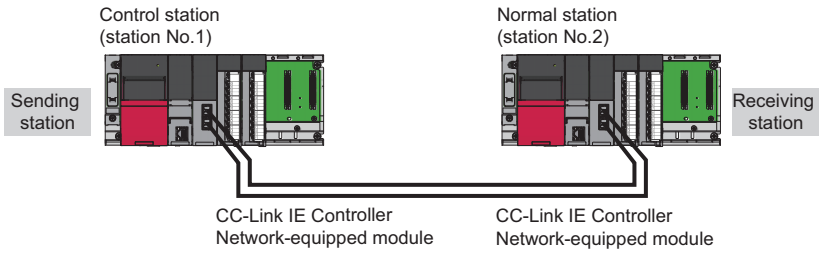
Data of more than 32 bits can be assured with the station-based block data assurance setting disabled.

Handshake using link relay (LB) data can prevent data inconsistency of the link register (LW) because link relay (LB) is sent after link register (LW).

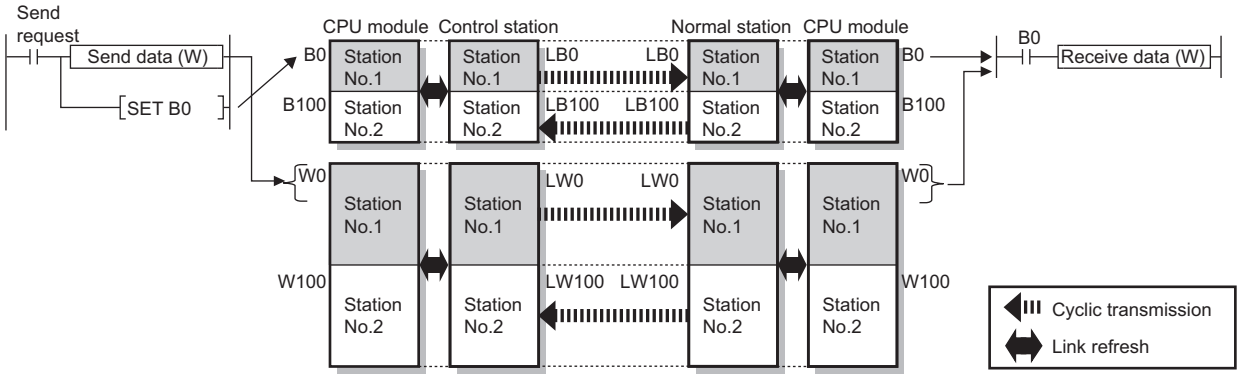
Ex.

The following shows a program example of when 'uData' (W0 to W2) of the control station is sent to 'uData' (W0 to W2) of the normal station.

Handshake is performed by turning on 'bHandShake1' (B0) in the control station and 'bHandShake2' (B100) upon completion of storing send data.



■Data flow

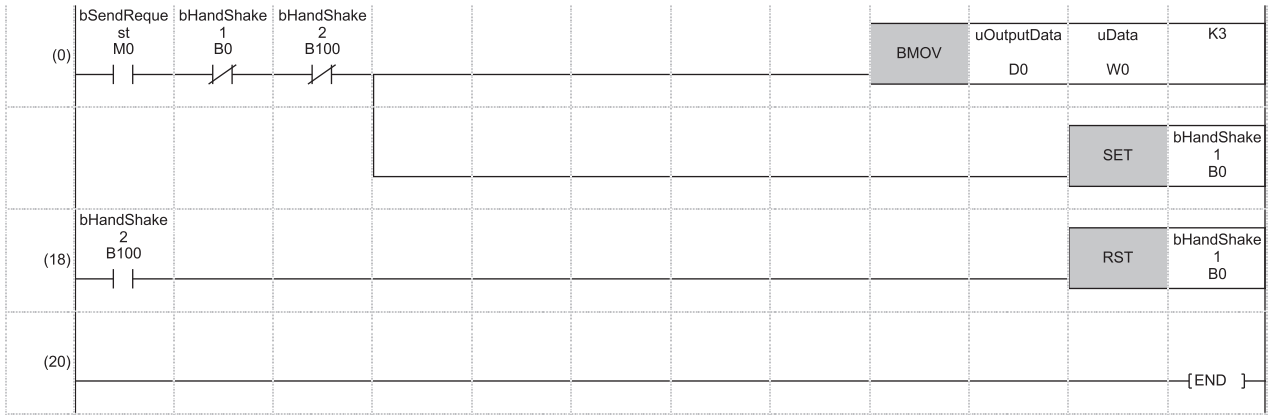


■Program

• Sending station: Control station (station No.1)

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

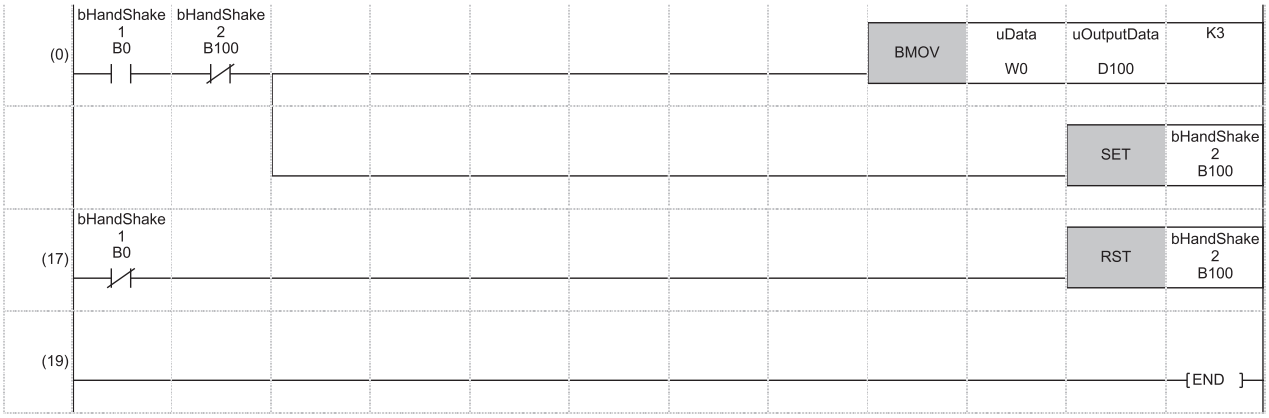
	Label Name	Data Type		Class	Assign (Device/Label)
1	bSendRequest	Bit	...	VAR_GLOBAL	M0
2	bHandShake1	Bit	...	VAR_GLOBAL	B0
3	bHandShake2	Bit	...	VAR_GLOBAL	B100
4	uOutputData	Word [Unsigned]/Bit String [16-bit](0..2)	...	VAR_GLOBAL	D0
5	uData	Word [Unsigned]/Bit String [16-bit](0..2)	...	VAR_GLOBAL	W0



• Receiving station: Normal station (station No.2)

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

	Label Name	Data Type		Class	Assign (Device/Label)
1	bHandShake1	Bit	...	VAR_GLOBAL	B0
2	bHandShake2	Bit	...	VAR_GLOBAL	B100
3	uData	Word [Unsigned]/Bit String [16-bit](0..2)	...	VAR_GLOBAL	W0
4	uOutputData	Word [Unsigned]/Bit String [16-bit](0..2)	...	VAR_GLOBAL	D100



• Program flow

❶ Sending station (0) — The 'bSendRequest' (M0) is turned on.

❷ Sending station (0) — The contents of 'uOutputData' (D0 to D2) is stored in 'uData' (W0 to W2).

❸ Sending station (0) — Upon completion of storage in 'uData' (W0 to W2), 'bHandShake1' (B0) is turned on.

❹ Receiving station (0) — Link relay (LB) is sent through cyclic transmission and 'bHandShake1 (B0) is turned on.

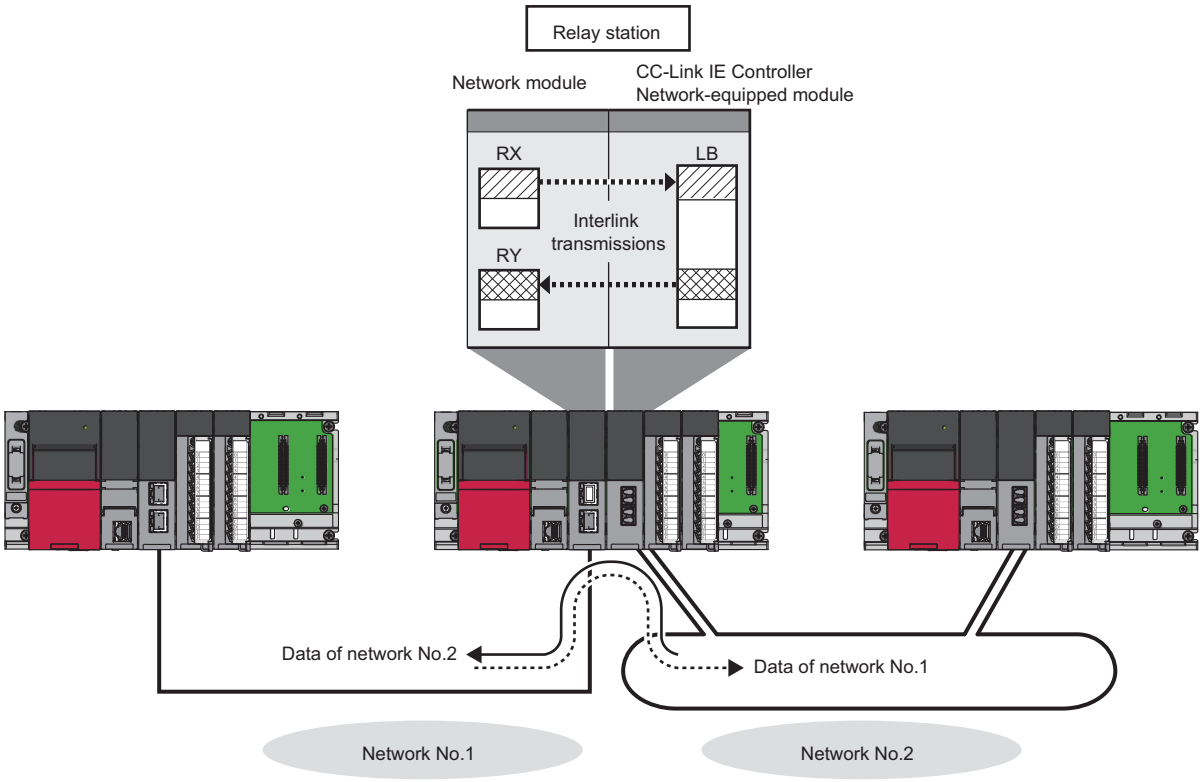
❺ Receiving station (0) — The contents of 'uData' (W0 to W2) is stored in 'uOutputData' (D100 to D102).

❻ Receiving station (0) — Upon completion of storage in 'uOutputData' (D100 to D102), 'bHandShake2' (B100) is turned on.

❼ Sending station (18) — When 'bHandShake2' (B100) in the receiving station is turned on, 'bHandShake1' (B0) is turned off.

Interlink transmission

This function transfers data in the link devices (LB, LW)of the CC-Link IE Controller Network-equipped module to another network module on a relay station.



Setting method

Set interlink transmission in "Interlink Transmission Settings" in "Application Settings". (☞ Page 97 Interlink Transmission Settings)

Precautions

For the precautions, refer to the following.

☞ Page 97 Interlink Transmission Settings

Cyclic transmission punctuality assurance

The link scan time is constant using the following methods.

Method	Description	Advantage	Disadvantage
Specification of the number of transient transmissions	Specify the number of transient transmissions within one link scan.	The link scan time can be minimized while it is kept constant.	If the network status is unstable, the link scan time may not be kept constant.
Constant link scan	Specify the link scan time.	Even If the network status is unstable or the number of transient transmissions varies, the link scan time can be kept constant.	If the actual link scan time is longer than the link scan time specified, the operation is performed based on the actual link scan time.

Point

While this function is used to keep the link scan time constant, the transmission delay time is not kept constant by this function. The transmission delay time is affected by a factor such as a prolonged sequence scan time.

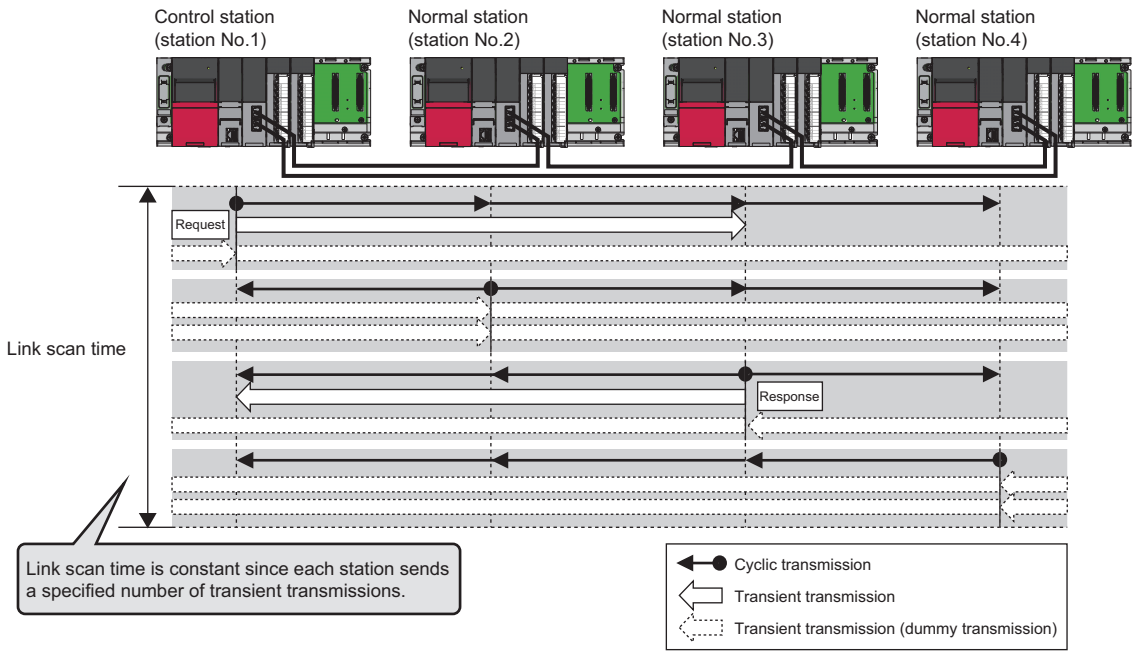
Specification of the number of transient transmissions

When the fluctuation in link scan time needs to be eliminated, the link scan time can be kept constant by performing a specified number of transient transmissions during one link scan at each station.

- When the actual number of transient transmissions is less than the specified one: Dummy data is sent to cover the shortfall.
- When the actual number of transient transmissions exceeds the specified one: They are divided and transmitted in several link scans.

Ex.

When the specified number is 2



Constant link scan

If the network status is unstable, the link scan time can be kept constant by specifying the link scan time at the control station to allow for possible fluctuations in the link scan time.

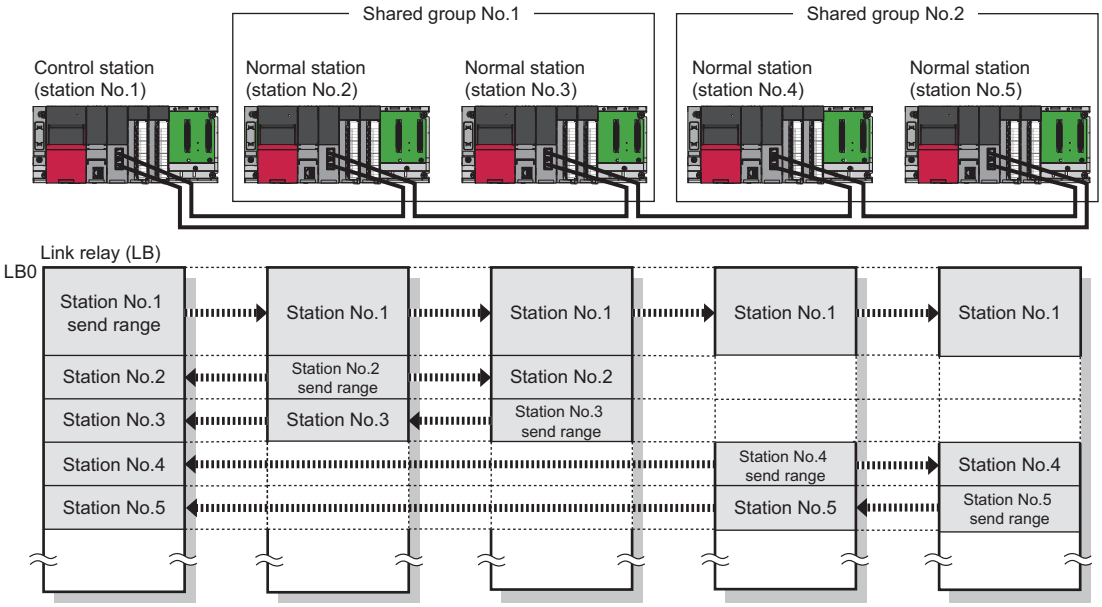
Setting method

Set cyclic transmission punctuality assurance under "Supplementary Cyclic Settings" in "Application Settings" of the control station. (☞ Page 90 Supplementary Cyclic Settings)

Group cyclic transmission

This function is used to divide the stations within the network into groups and specify the stations that share cyclic data (shared group).
This setting allows cyclic data to be shared among the stations having the same shared group number and not to be received from those having a different shared group number.
Stations having no shared group number assigned will share cyclic data with all stations.

Ex.
The station (station No.1) having no shared group number assigned will share cyclic data with all stations.
The stations (station No.2 to 5) having a shared group number assigned will share cyclic data with the stations of the same shared group number and the station without a shared group number (station No.1).



Point

Use this function for the following purposes.
- All stations need to share the data of the station controlling production lines.
- Data sharing is not desired between the stations that control different machines.

Since each station receives only the cyclic data from any given stations, the number of link refresh points can be reduced, resulting in a shorter link refresh time.

Setting method

Set the group cyclic transmission under "Network Range Assignment" in "Required Settings" of the control station. (☞ Page 76 Network Range Assignment)

Number of send points extension

The number of send points for CC-Link IE Controller Network-equipped modules can be extended by the following methods.

☞ Page 35 Number of send points extension by using extended mode
☞ Page 36 Number of send points extension by using the link points extended setting
☞ Page 37 Number of send points extension by using multiple modules

The number of link device points on parameter setting details are the following.

Parameter setting details		Number of link device points		
Station type	Link points extended setting	LB/LW	Maximum number of link points per network	Number of send points per station
Control station Normal station	Not to Extend	LB	32K points (32768 points, 4K bytes)	16K points (16384 points, 2K bytes)
		LW	128K points (131072 points, 256K bytes)	16K points (16384 points, 32K bytes)
	Extend	LB	64K points (65536 points, 8K bytes)	16K points (16384 points, 2K bytes)
		LW	256K points (262144 points, 512K bytes)	16K points (16384 points, 32K bytes)
Ext. Mode Control Station Ext. Mode Normal Station	Not to Extend	LB	32K points (32768 points, 4K bytes)	32K points (32768 points, 4K bytes)
		LW	128K points (131072 points, 256K bytes)	128K points (131072 points, 256K bytes)
	Extend	LB	64K points (65536 points, 8K bytes)	64K points (65536 points, 8K bytes)
		LW	256K points (262144 points, 512K bytes)	256K points (262144 points, 512K bytes)

Point

The number of send points extension by using extended mode or the link points extended setting allows more send points to be set than the number of send points extension by using multiple modules. Therefore, when extended the number of send points, to use extended mode or the link points extended setting is recommended. However, use the number of send points extension by using multiple modules for the following purposes.

- To add a station that requires more than the number of 16K send points in a network comprising CC-Link IE Controller Network modules that do not support extended mode or the link points extended setting.
- To replace an existing CC-Link IE Controller Network module that is configured with the number of send points extension by using multiple modules with a MELSEC iQ-R series CC-Link IE Controller Network-equipped module without changing programs

Number of send points extension by using extended mode

This function allows a CC-Link IE Controller Network-equipped module to be set to the extended mode using an engineering tool so that the number of send points per station will be extended to a maximum of 32K points for the link relay (LB) and 128K points for the link register (LW) in one module. In addition, when "Link points extended setting" is set to "Extend" in extended mode, the number of send points per station will be extended to a maximum of 64K points for the link relay (LB) and 256K points for the link register (LW) in one module.

For details, refer to the following.

☞ Page 35 Number of send points extension

■Setting method

Select "Ext. Mode Control Station" or "Ext. Mode Normal Station" in "Station Type" of "Required Settings" to extend the number of send points.

■Precautions

Set both the control station and normal stations within the same network to the extended mode. Do not mix network of stations having the extended mode enabled and having it disabled.

Number of send points extension by using the link points extended setting

This function allows a CC-Link IE Controller Network-equipped module to be set to "Extend" of "Link points extended setting" using an engineering tool so that the maximum number of link points per network will be extended to 64K points for the link relay (LB) and 256K points for the link register (LW) in one network.

For details, refer to the following.

☞ Page 35 Number of send points extension

■Setting method

Set "Extend" of "Link points extended setting" on "Application Settings" to extend the maximum number of link points per network.

■Precautions

- When the link points extended setting is used, set "Extend" of "Link points extended setting" on both the control station and normal stations within the same network. Do not mix network of stations setting both "Extend" and "Not to Extend".
- Do not mix network of stations that is unavailable for the link points extended setting.
- When "Link points extended setting" is set to "Extend" and the extended link device is specified by the link direct access, set "Extended Mode (iQ-R Series Mode)" of "Link Direct Device Setting" in "CPU Parameter".

■Combination with other functions

The following function can also be extended the setting range.

- Link refresh
- Interlink transmission
- Interrupt request to CPU module

■Supported CPU modules

For CPU modules that support the link points extended setting (extension of points for CC-Link IE Controller Network), refer to the following.

📖User's manual (Application) for the CPU module to be used

Number of send points extension by using multiple modules

This function increases the number of send points by mounting multiple CC-Link IE Controller Network-equipped modules of the same network number with one CPU module.

Mounting one additional module can increase the number of send points per station by 16K points for both the link relay (LB) and the link register (LW).

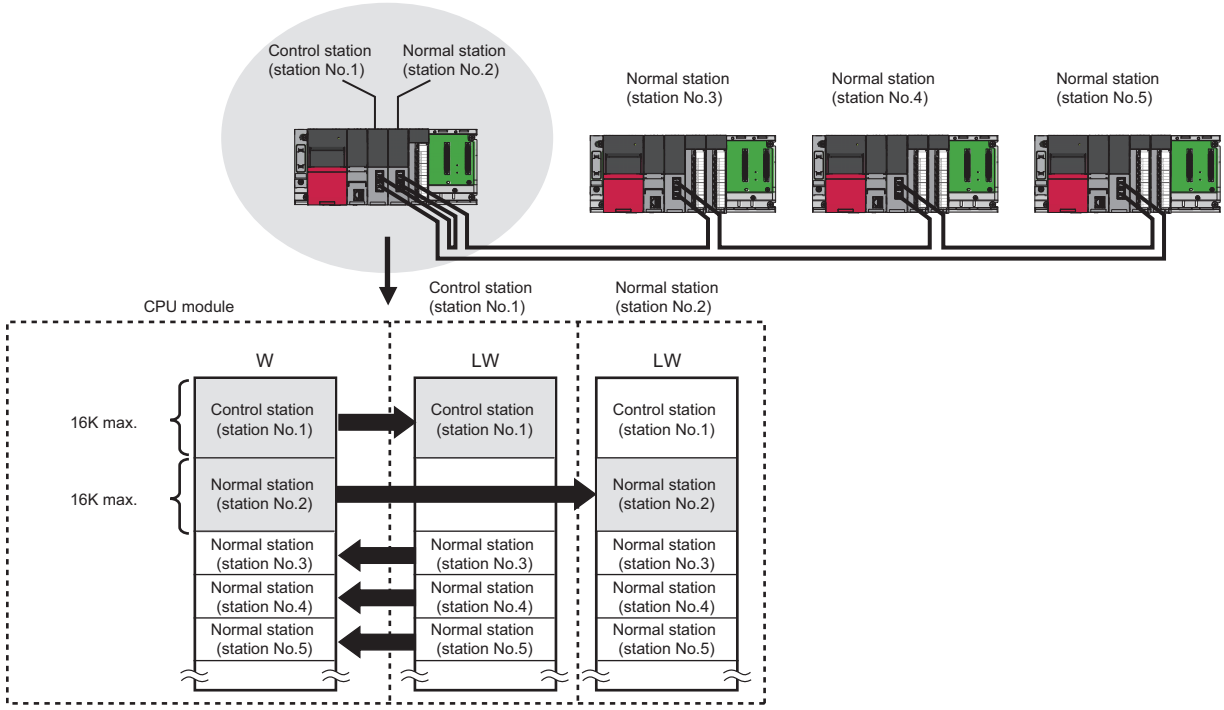
Up to eight modules can be mounted on one CPU module, allowing the number of send points per station to be extended up to 32K points for the link relay (LB) and 128K points for the link register (LW).*1

*1 Number of send points cannot exceed the maximum number of link points per network. (MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))

Ex.

When increasing the number of send points by mounting two CC-Link IE Controller Network-equipped modules (LW)

- Link relay (LB): Up to 32K points
- Link register (LW): Up to 32K points



■Network number and station number setting

Set the same network number to the modules (1st to 8th module) for which to extend the number of send points. Set a different station number to each station. (☞ Page 74 Required Settings)

■Network range assignment

Set the send range of each station in LB and LW under "Network Range Assignment" of "Required Settings" of the control station. (☞ Page 76 Network Range Assignment)

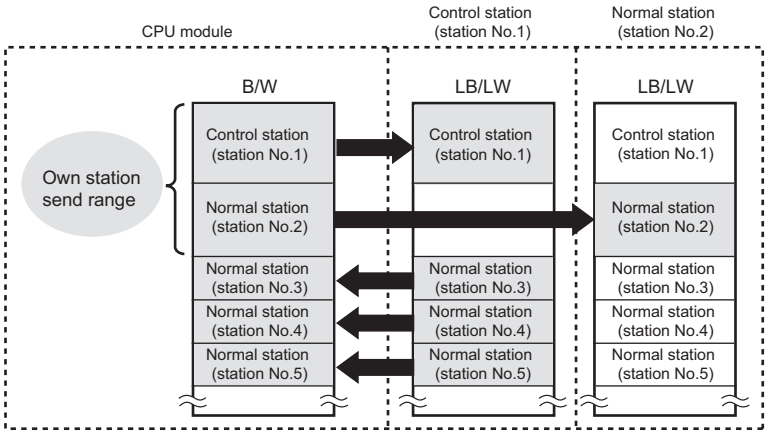
■Refresh settings

Configure the refresh settings so that within the own station send range of the CPU module, the range of up to 16K points can be link-refreshed to the first CC-Link IE Controller Network-equipped module and the range to be extended can be link-refreshed to the second and subsequent CC-Link IE Controller Network-equipped modules.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Target module ⇨ [Module Parameter] ⇨ [Basic Settings] ⇨ [Refresh Setting]

Ex.

When the own station send range is link-refreshed to the station No.1 and 2



• Network range assignment

Station No.	Station Type	LB/LW Setting (1)						Reserved Station	Pairing	Shared Group
		LB			LW					
		Points	Start	End	Points	Start	End			
1	Control Station	16	0000	000F	16	00000	0000F	No Setting	Disable	
2	Normal Station	16	0010	001F	16	00010	0001F	No Setting	Disable	
3	Normal Station	16	0020	002F	16	00020	0002F	No Setting	Disable	
4	Normal Station	16	0030	003F	16	00030	0003F	No Setting	Disable	
5	Normal Station	16	0040	004F	16	00040	0004F	No Setting	Disable	

• Refresh settings of the control station (station No.1)

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	512	00000	001FF		Module Label				
-	SW	512	00000	001FF		Module Label				
1	LB	16	00000	0000F		Device	B	16	00000	0000F
2	LW	16	00000	0000F		Device	W	16	00000	0000F
3	LB	48	00020	0004F		Device	B	48	00020	0004F
4	LW	48	00020	0004F		Device	W	48	00020	0004F

• Refresh settings of the normal station (station No.2)

No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	512	00000	001FF		Module Lab				
-	SW	512	00000	001FF		Module Lab				
1	LB	16	00010	0001F		Device	B	16	00010	0001F
2	LW	16	00010	0001F		Device	W	16	00010	0001F

Precautions

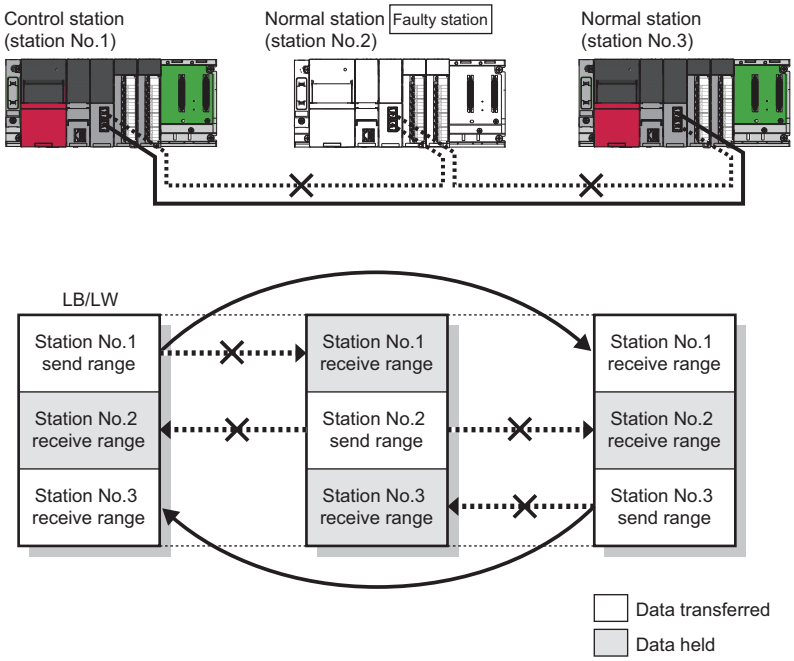
When mounting multiple modules with the same network number and using a function, such as the link direct device, that specifies a CC-Link IE Controller Network-equipped module by the network number, the execution target will be as listed below.

Item	Description
Link direct devices	The module mounted on the slot with the smallest slot number in the base unit is targeted.
Dedicated instruction	The module mounted on the slot with the smallest slot number in the base unit executes the dedicated instruction.

Reception status when an error occurs

When there is a data link faulty station on the CC-Link IE Controller Network, the link device statuses are as follows.

- Normally operating station: The data received from the faulty station holds immediately before the error.
- Faulty station: The data received from the other stations holds immediately before the error.



Cyclic transmission stop and restart

This function is used to stop the cyclic transmission during debugging and other operations. (Data reception from other stations and data sending from the own station are stopped.) Also, the stopped cyclic transmission is restarted. Transient transmission does not stop.

Cyclic transmission is stopped and restarted using the link start/stop of the CC-Link IE Controller Network diagnostics.

(☞ Page 135 Procedure when optical fiber cables are used, Page 136 Procedure when Ethernet cables are used)

1.2 Transient Transmission

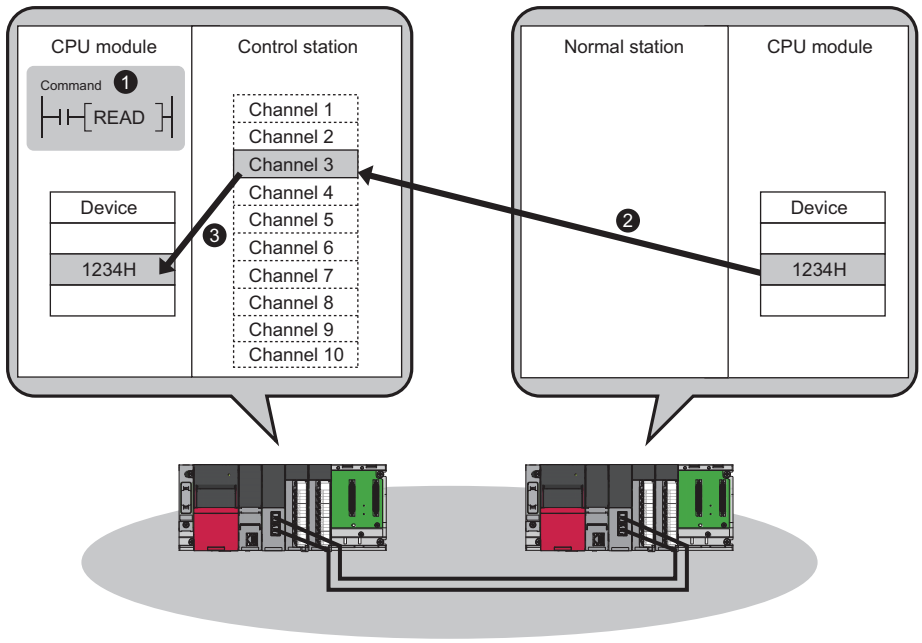
This function allows communications with other stations when a request is made by a method such as a dedicated instruction and engineering tool. Communications with different networks is also possible.

Communications within the same network

This function performs the transient transmission to other stations using dedicated instructions and the engineering tool. (📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions))

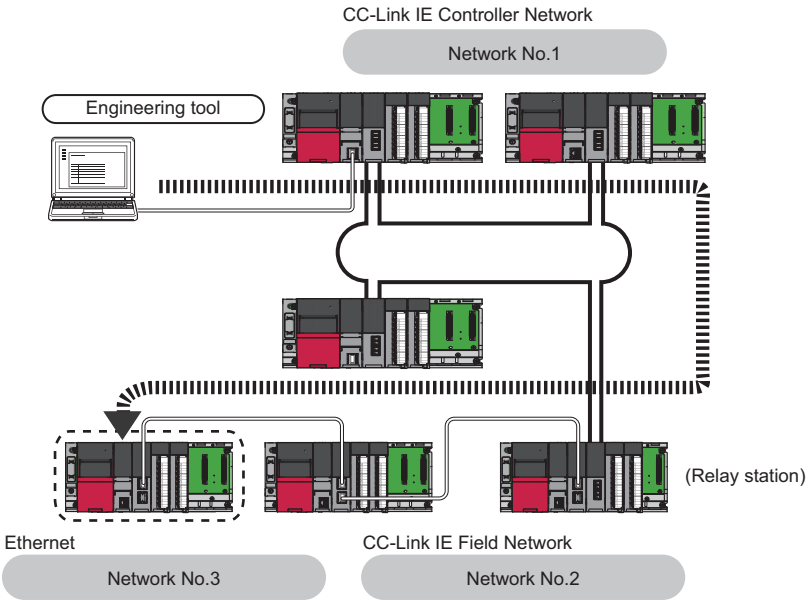
Ex.

Accessing a programmable controller of another station using the dedicated instruction (READ instruction)



Communications with different networks

This function performs the transient transmission seamlessly to stations on different networks using dedicated instructions and the engineering tool.



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 communication with the following networks of MELSEC iQ-R series.

- Ethernet
- 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 41 When the networks consist of MELSEC iQ-R series and other series)
- Communication paths cannot be automatically set to Ethernet-equipped modules connected via a router. Set communication paths manually for such modules. (☞ Page 41 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 allows communication 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))

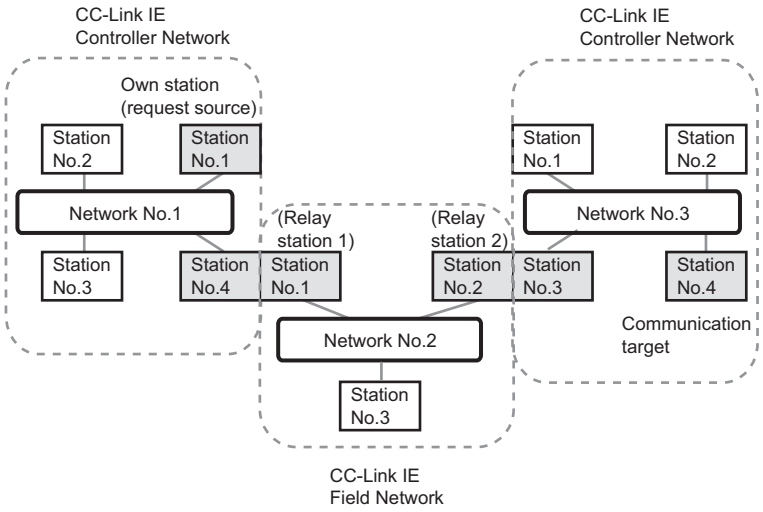
When the networks contain a redundant system

- When the communication paths are automatically set, the paths are updated if system switching occurs in a redundant system on the paths. During update of the communication paths, communications may be interrupted or data may be lost because the paths are temporarily undetermined. If an error occurs in communications, resend data from the request source.
- When the request source is a redundant system and the communication paths are automatically set, perform the transient transmission from the control system. When performing the transient transmission from the standby system, set "Routing Setting" of "CPU Parameter".
- When the request destination is a redundant system and the communication paths are automatically set, specify the control system station as the destination. When specifying the standby system as the request destination, set "Routing Setting" of "CPU Parameter".
- When relaying a redundant system and setting the communication paths manually, set the control system station as a relay station in "Routing Setting" of "CPU Parameter". If system switching occurs, the relay station needs to be changed to a station in the new control system using the RTWRITE instruction.

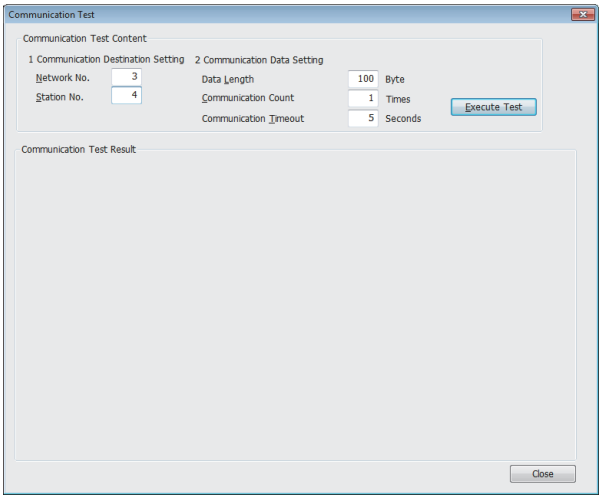
Communication test

Communication test checks if transient transmission data can be properly routed from the own station to the communication target.

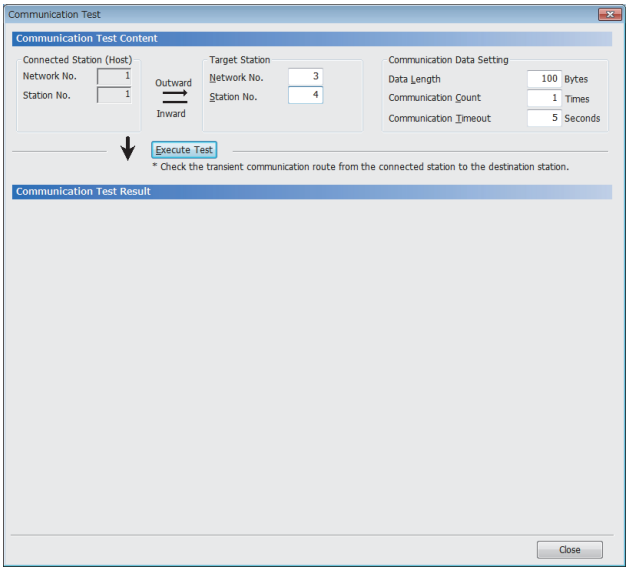
Take the following system configuration as an example of communication test procedure.



• Window when optical fiber cables are used



• Window when Ethernet cables are used



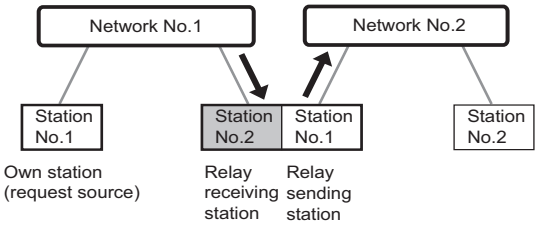
1. Open the "Communication Test" window and enter values for "Target Station" and "Communication Data Setting".

[Diagnostics] ⇨ [CC-Link IE Control Diagnostics (Optical Cable)] or [CC-Link IE Control Diagnostics (Twisted Pair Cable)] ⇨ [Communication Test] button

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

Precautions

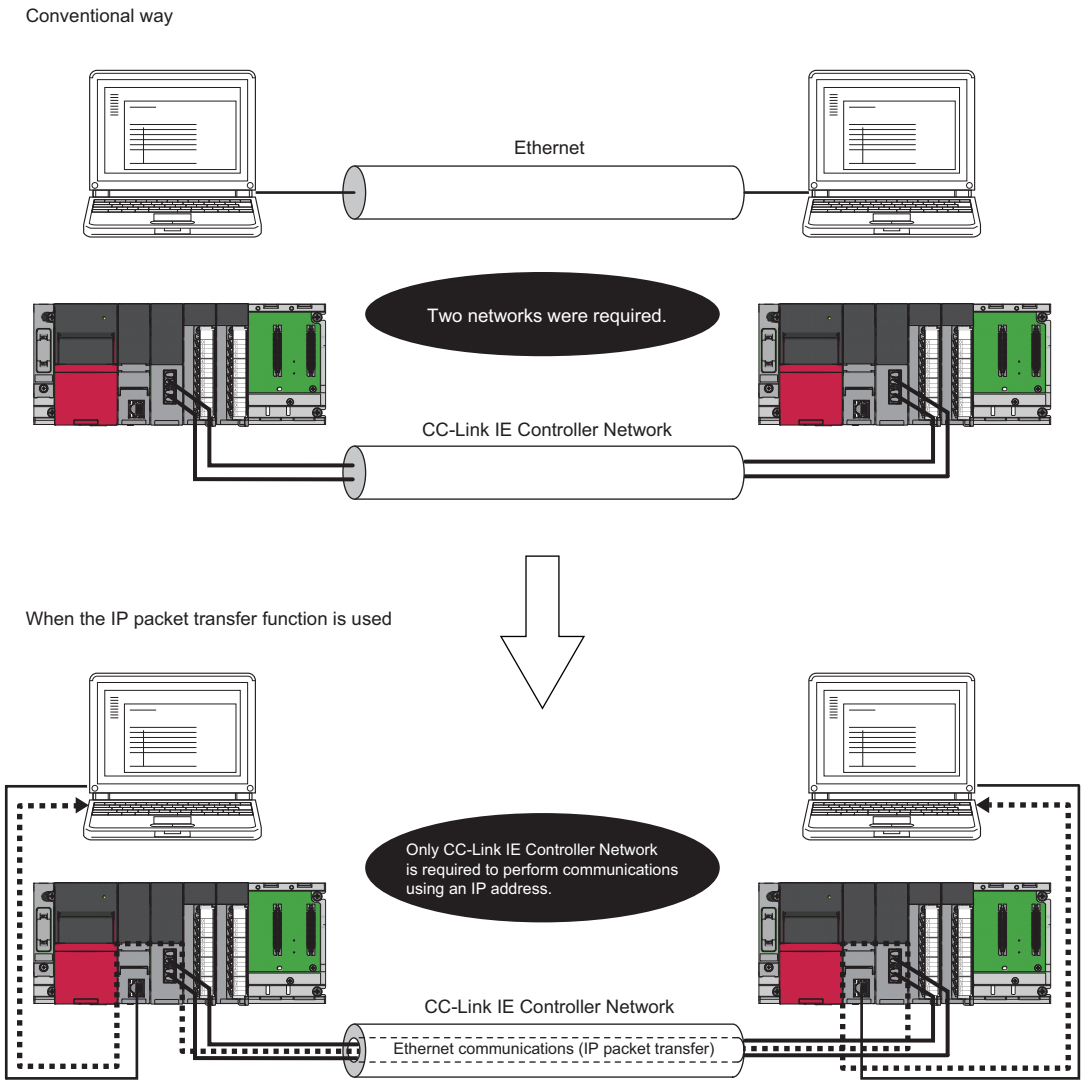
- When a relay sending station is set to "Target Station", only an error code appears without an error message. Set a relay receiving station to "Target Station".



- When a station mounted on the same base unit (main base unit and extension base unit) as the own station is set to "Target Station", only an error code appears without an error message. Set a station mounted on the different base unit to "Target Station".
- When the request source is a redundant system and the communication path has automatically been set, execute a communication test from the control system. If a communication test is executed from the standby system, it may complete with an error.
- When the request destination is a redundant system and the communication path has automatically been set, specify the control system station for "Target Station". If the standby system is set for the access destination station, a communication test may complete with an error.

1.3 IP Packet Transfer Function

This function enables communications using the specified IP address over CC-Link IE Controller Network.
For example, a personal computer can communicate with the FTP server.
With this function, two networks of CC-Link IE Controller Network and Ethernet are not required, resulting in reduced wiring cost.

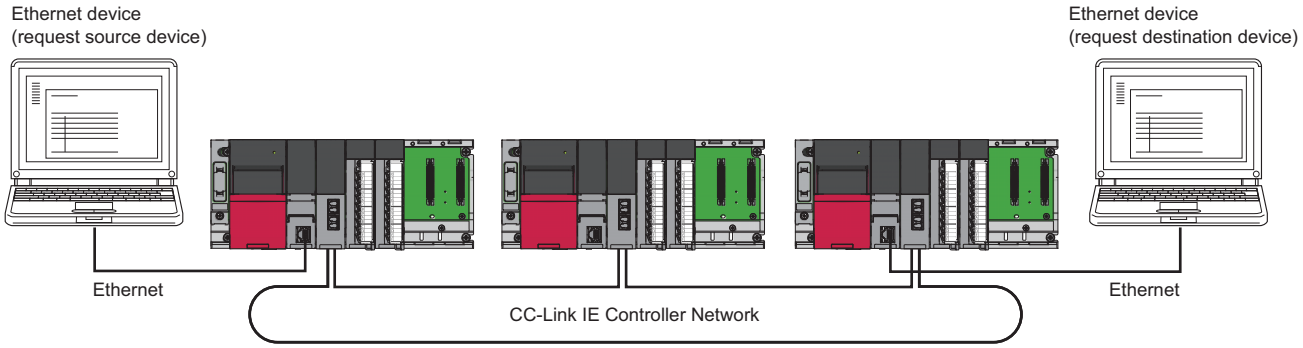


Point

The data that are communicated using the IP packet transfer function are communicated separately by the link scan of the CC-Link IE Controller Network.
Because of this, the speed of communications using the IP packet transfer function is slower than the speed of communications with the Ethernet line. (☞ Page 56 Communication speed)

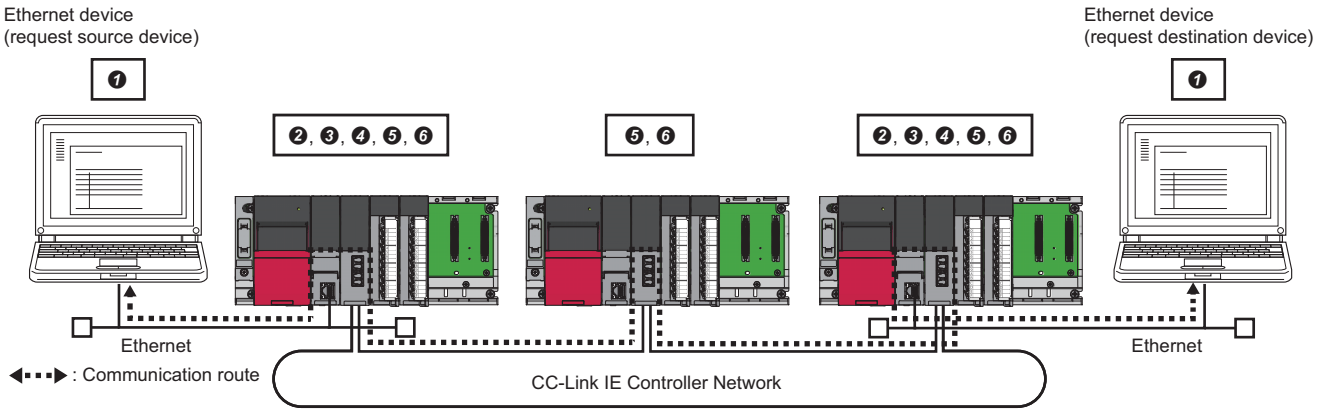
System configuration

Connect an Ethernet device to an Ethernet-equipped module.



Setting

To use the IP packet transfer function, the following items need to be set.



❶ Ethernet device gateway address setting
Set the IP address of the Ethernet-equipped module connected to an Ethernet device in the gateway address of the Ethernet device used.

❷ IP address setting of the Ethernet-equipped module (☞ Page 48 Setting in the Ethernet-equipped module)

❸ Setting of the network number and station number of the RJ71EN71 or the RnENCPU (network part) connected to the Ethernet device
When the RJ71EN71 or the RnENCPU (network part) is set for the Ethernet-equipped module connected to the Ethernet device, set "Communications by Network No./Station No." in the module parameter of the Ethernet to "Enable".

❹ IP packet transfer setting (☞ Page 48 Setting in the Ethernet-equipped module)
This setting is required for the IP packet to be passed between an Ethernet-equipped module and a CC-Link IE Controller Network-equipped module.

❺ IP address setting of the CC-Link IE Controller Network-equipped module (☞ Page 48 Setting in the control station)

❻ Routing parameter setting
When modules other than MELSEC iQ-R series exist in the communication route, communication route setting is required.
(📖 MELSEC iQ-R CPU Module User's Manual (Application))

Point

- When the Ethernet device is a personal computer (only Ethernet devices having the route command, such as Microsoft® Windows®), it is recommended to set the gateway address using the route command. If the gateway address is set in the default gateway, packets not related to the IP packet transfer are also transmitted through the CPU module. Consequently, the service processing of the CPU module drops under heavy load, causing other service processing to be slow or other problems.
- After the setting is completed, execute the IP communication test to check for an error in the communication path. (☞ Page 49 IP communication test)

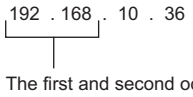
Rules for the IP address setting

IP addresses specified for the IP packet transfer function need to satisfy the following rules.

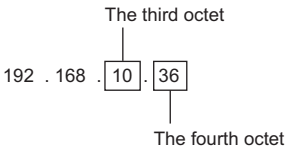
Device to be set	Setting range of the IP address		
	First and second octets	Third octet	Fourth octet
Ethernet device	❶ 0.0 to 223.255*1 (Same numbers for the request source device, request destination device, and modules between them)	❷, ❸, ❹ 1 to 239*1 (Same number for the Ethernet device and the Ethernet-equipped module)	❷ 1 to 120*1
Ethernet-equipped module connected to the Ethernet device			
CC-Link IE Controller Network-equipped module		❷, ❹ Automatically set (network number of the own station) 1 to 239	❷ Automatically set (Own station's station No.) 1 to 120
Ethernet-equipped module on the communication path (not connected to an Ethernet device)	IP address setting not required		

*1 Set the numbers according to the range applicable to the Ethernet device used. The range may not apply depending on the Ethernet device. Check the specifications of the Ethernet device used.

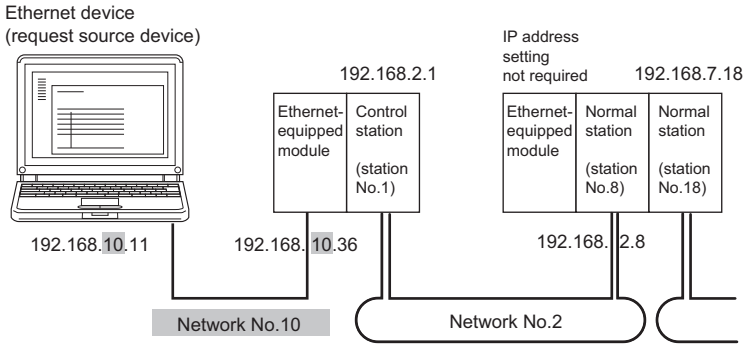
❶ Use the same numbers for the first and second octets of the IP addresses of the request source device, request destination device, and modules between them.



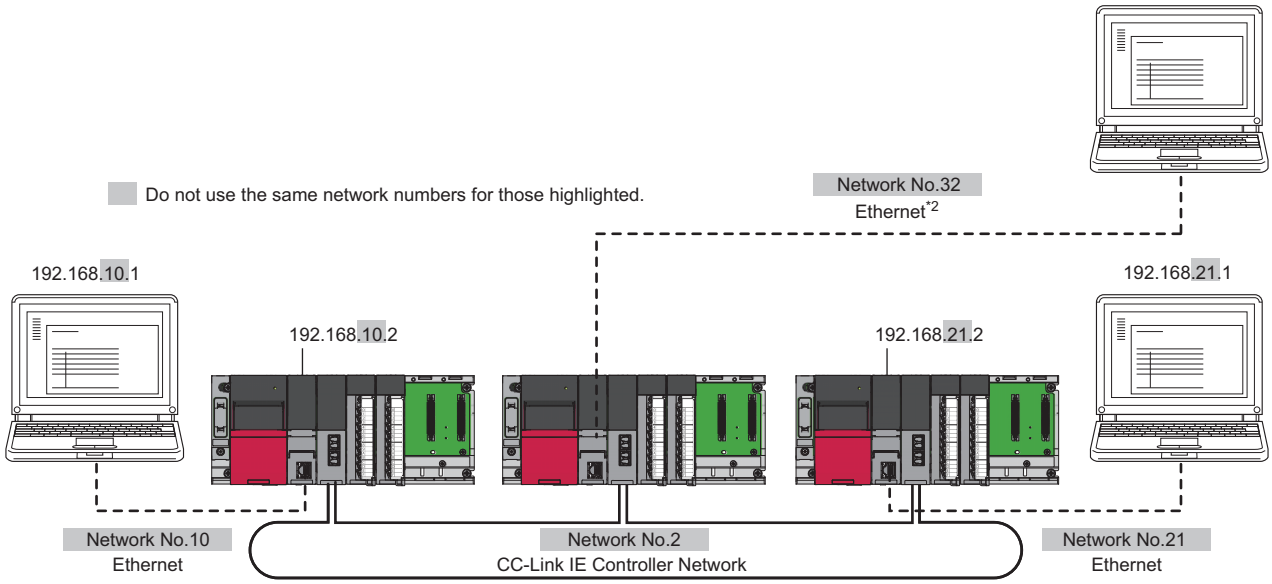
❷ For the IP addresses of the Ethernet-equipped modules, set a number between 1 and 239 for the third octet and a number between 1 and 120 for the fourth octet. The network number of the own station is automatically assigned to the third octet of the IP address of the CC-Link IE Controller Network-equipped module. The station number of the own station is automatically assigned to the fourth octet of the IP address of the master/local module.



❸ Use the same number for the third octet (network number) of the IP addresses of an Ethernet device and an Ethernet-equipped module connected to the Ethernet device.



❹ Do not use the third octet (network number) of the IP address same as that of other network modules and other CPU modules using the IP packet transfer function.



*2 Do not use the same network numbers for those of network modules other than the CC-Link IE Controller Network-equipped module.

Point

When setting the IP address in each device, do not use the IP addresses already used for other devices.

Setting method

For a communication example, refer to the following.

☞ Page 54 Example of communications using the IP packet transfer function

■Setting in the Ethernet-equipped module

1. Set the IP address of the Ethernet-equipped module in the following item.

[Navigation window] ⇨ [Parameter] ⇨ Target module ⇨ [Module Parameter] ⇨ [Basic Settings] ⇨ [Own Node Settings] ⇨ [IP Address]

Follow the rules to set the IP address. (☞ Page 47 Rules for the IP address setting)

2. Change the following setting to "Use".

[Navigation window] ⇨ [Parameter] ⇨ Target module ⇨ [Module Parameter] ⇨ [Application Settings] ⇨ [IP Packet Transfer Setting]

■Setting in the control station

1. Set the IP address of the control station in the following item.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Target module ⇨ [Module Parameter] ⇨ [Application Settings] ⇨ [IP Address]

Follow the rules to set the IP address. (☞ Page 47 Rules for the IP address setting)

■Setting in the normal stations

The IP address setting is not required for the normal stations. The same network address as the control station is automatically assigned to the first and second octets. The network number of the own station is assigned to the third octet, and the station number of the own station is assigned to the fourth octet.

Routing parameter setting

When modules other than MELSEC iQ-R series exist in the communication route, set routing parameters.

To set routing parameters, refer to the following.

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

IP communication test

This function checks whether no error occurs in the communication path within CC-Link IE Controller Network when the IP packet transfer function is used. The following can be checked using the IP communication test:

- Cables are properly connected on the communication path.
- Parameters related to the IP packet transfer function, such as an IP address and routing parameters, are correctly set on the communication path.
- All the CPU modules and CC-Link IE Controller Network modules on the communication path support the IP packet transfer function.

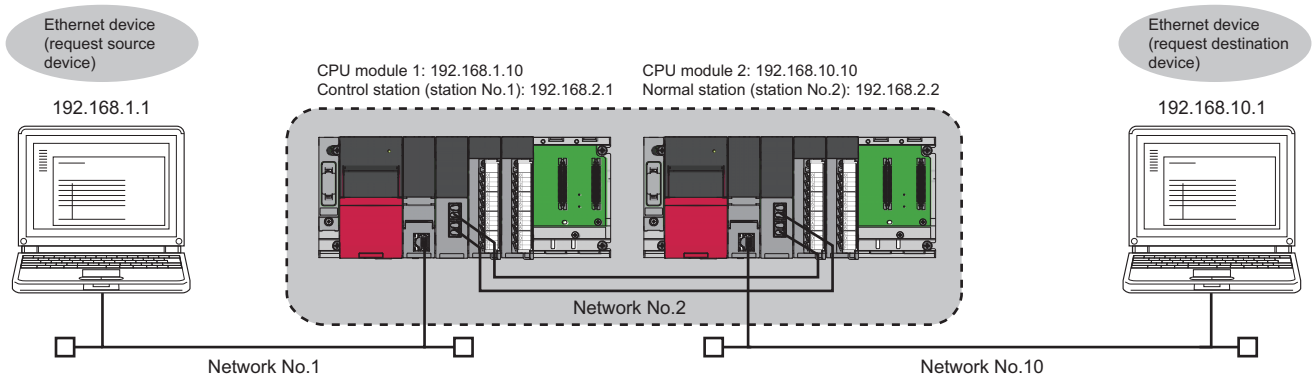
The following system configuration is used to explain the procedure of the IP communication test.

The IP communication test allows the communication paths in the dotted line above to be checked.

Restriction

The IP communication test cannot be executed if the engineering tool is connected to the RJ71EN71 or the RnENCPU (network part). Use one of the following methods to check whether no error occurs in the communication path.

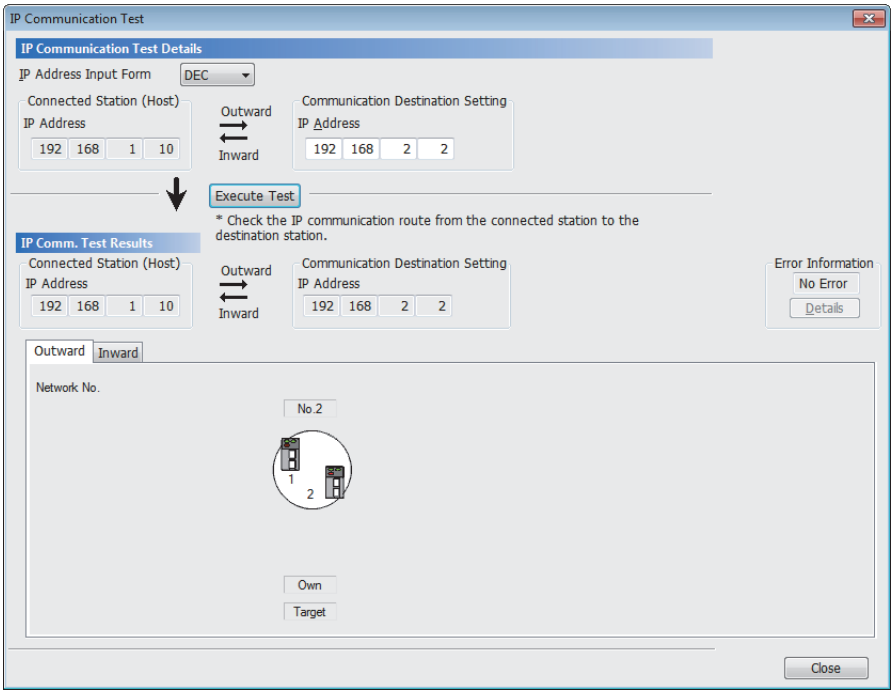
- Directly connect using the Ethernet and execute a PING test in the Ethernet diagnostics. (MELSEC iQ-R Ethernet User's Manual (Application))
- Execute a PING from the Ethernet device connected.



1. Open the "IP Communication Test" window. Enter the IP address of the CPU module 2 or the normal station (station No.2) connected to the request destination device in "Communication Target".

[Diagnostics] ⇨ [CC-Link IE Control Diagnostics (Optical Cable)] ⇨ [IP Communication Test] button

2. Click on the [Execute Test] button to execute the test. When the test is completed, the route to the device set in "Communication Target" is displayed on the underside of the window. If the test fails, click the [Details] button in the "Error Information" area to check the error information.



Point

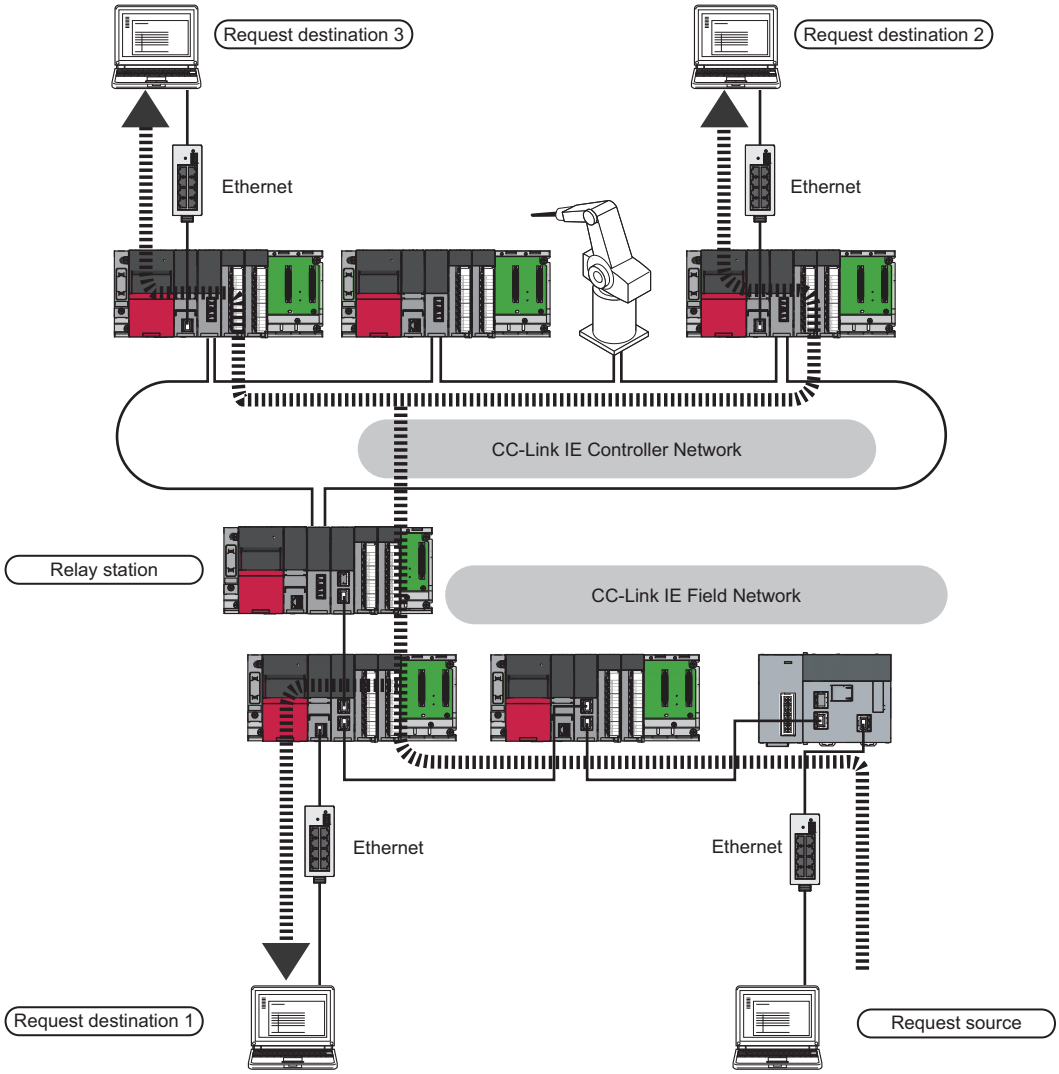
- If the cause cannot be identified from the error information after the IP communication test is executed, or communications cannot be performed even though the IP communication test is completed successfully, follow the troubleshooting instructions (on when the IP packet transfer function is used) and take corrective actions. (☞ Page 142 When IP communications cannot be performed using the IP packet transfer function)
- Up to 127 levels of modules can be connected when the IP communication test is executed.
- When an Ethernet device (request destination device) is connected to an Ethernet-equipped module, the communication path to the Ethernet-equipped module connected to the Ethernet device (request destination device) or CC-Link IE Controller Network-equipped module can be checked using the IP communication test. Setting the IP address of the Ethernet device in "Communication Target" on the "IP Communication Test" window causes an error. (Error code of the CPU module: 4A2AH)

Precautions

Communications cannot be performed via modules that do not support the IP packet transfer function such as MELSECNET/H. Only an error code appears without any information displayed in "Error Information".

Relay using CC-Link IE Field Network

The IP packet transfer function can be used through a relay from CC-Link IE Field Network to CC-Link IE Controller Network.



Point

When using the IP packet transfer function on CC-Link IE Field Network, refer to the following.

User's manual for the CC-Link IE Field Network used

Precautions

Support for the IP packet transfer function

MELSEC iQ-R series modules support the IP packet transfer function from the first release.

To check whether other modules support the IP packet transfer function, refer to the following.

📖 User's manual for the module used

Using different networks

Communications cannot be performed via modules that do not support the IP packet transfer function such as MELSECNET/H.

Communications before a baton pass is established (D LINK LED off)

The IP packet transfer function can be used after a baton pass was established. If communications are performed before that, a timeout error occurs in an Ethernet device (request source device). Whether the baton pass is established in the own station can be checked on the D LINK LED.

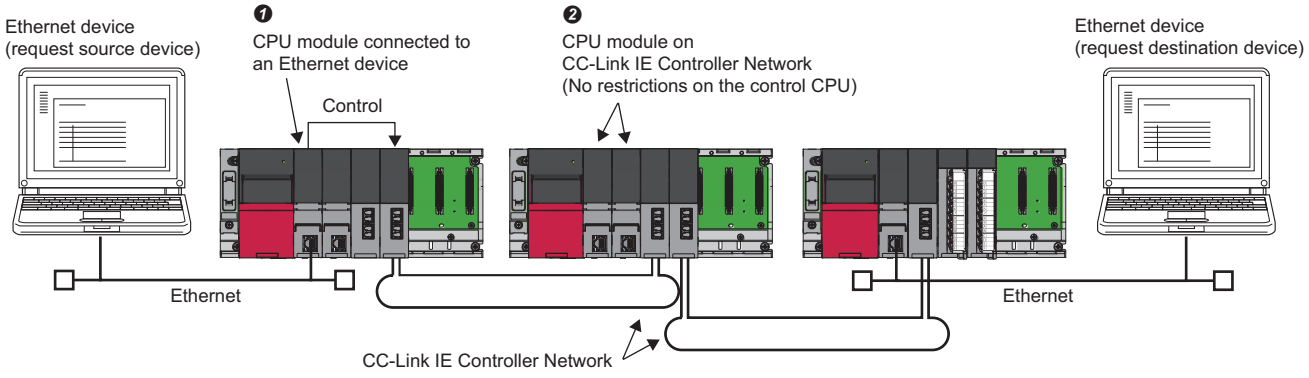
Precautions when using the UDP communication

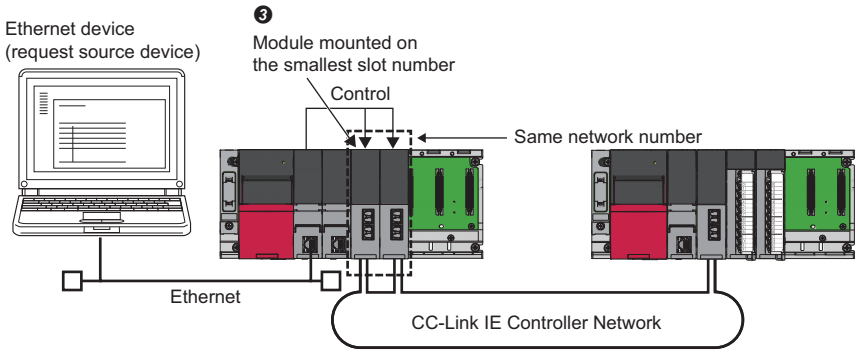
Using UDP may reduce the reliability of data communications compared to TCP, causing a problem, such as data missing and changed order of data receiving. If any problem occurs, change the protocol to TCP.

Communications of Broadcast and Multicast

Communications of Broadcast and Multicast cannot be transferred using the IP packet transfer function. Use Unicast (identifying a single request destination) instead.

Precautions when configuring a multiple CPU system





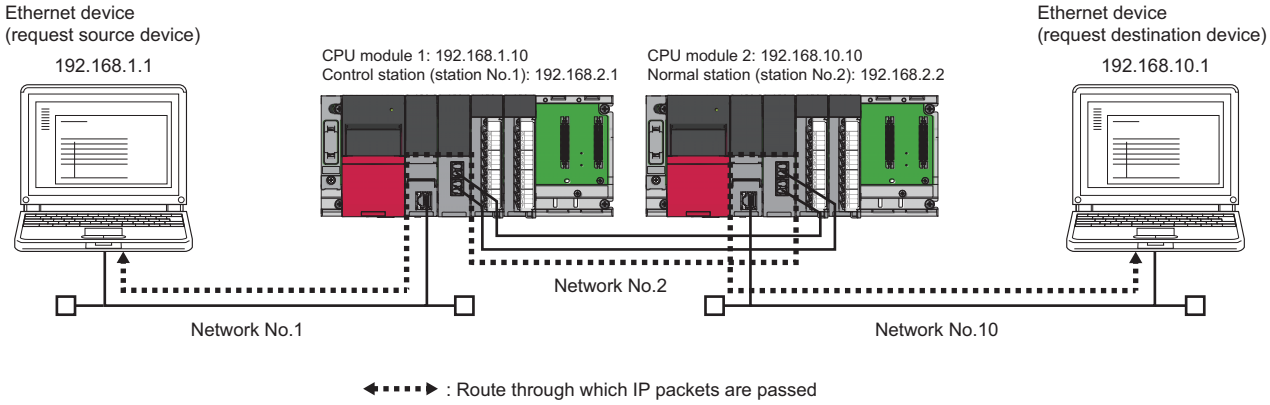
❶ Set a CPU module connected to an Ethernet device as a control CPU of the CC-Link IE Controller Network-equipped module performing the IP packet transfer.

❷ Any CPU module in a relay station on CC-Link IE Controller Network can be served as a control CPU of the CC-Link IE Controller Network-equipped module transferring the IP packet.

❸ When multiple CC-Link IE Controller Network-equipped modules with the same network number are connected to one system, the CC-Link IE Controller Network-equipped module with the smallest slot number transfers the IP packet. To transfer the IP packet, connect the Ethernet device to a control CPU of the CC-Link IE Controller Network-equipped module with the same network number and smallest slot number.

Example of communications using the IP packet transfer function

The following system configuration is used to explain an example of communications.



Setting in the CPU module 1 and control station (station No.1)

1. Set the IP address of the CPU module 1 as follows.

[Navigation window] ⇨ [Parameter] ⇨ Target module ⇨ [Module Parameter] ⇨ [Basic Settings] ⇨ [Own Node Settings] ⇨ [IP Address]

Item	Setting
Own Node Settings	
Parameter Setting Method	Parameter Editor
IP Address	
IP Address	192 . 168 . 1 . 10

2. Change the following setting to "Use" in the CPU module 1.

[Navigation window] ⇨ [Parameter] ⇨ Target module ⇨ [Module Parameter] ⇨ [Application Settings] ⇨ [IP Packet Transfer Setting]

IP Packet Transfer Setting	
IP Packet Transfer Function	Use

3. Set the IP address of the control station (station No.1) as follows.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Target module ⇨ [Module Parameter] ⇨ [Application Settings] ⇨ [IP Address]

IP Address	
IP Address	192 . 168 . 2 . 1

4. Write the set parameters to the CPU module 1. Then reset the CPU module 1 or power off and on the system.

Setting in the CPU module 2 and normal station (station No.2)

1. Set the IP address of the CPU module 2 as follows.

[Navigation window] ⇨ [Parameter] ⇨ Target module ⇨ [Module Parameter] ⇨ [Basic Settings] ⇨ [Own Node Settings] ⇨ [IP Address]

Item	Setting
Own Node Settings	
Parameter Setting Method	Parameter Editor
IP Address	
IP Address	192 . 168 . 10 . 10

2. Change the following setting to "Use" in the CPU module 2.

[Navigation window] ⇨ [Parameter] ⇨ Target module ⇨ [Module Parameter] ⇨ [Application Settings] ⇨ [IP Packet Transfer Setting]

IP Packet Transfer Setting	
IP Packet Transfer Function	Use

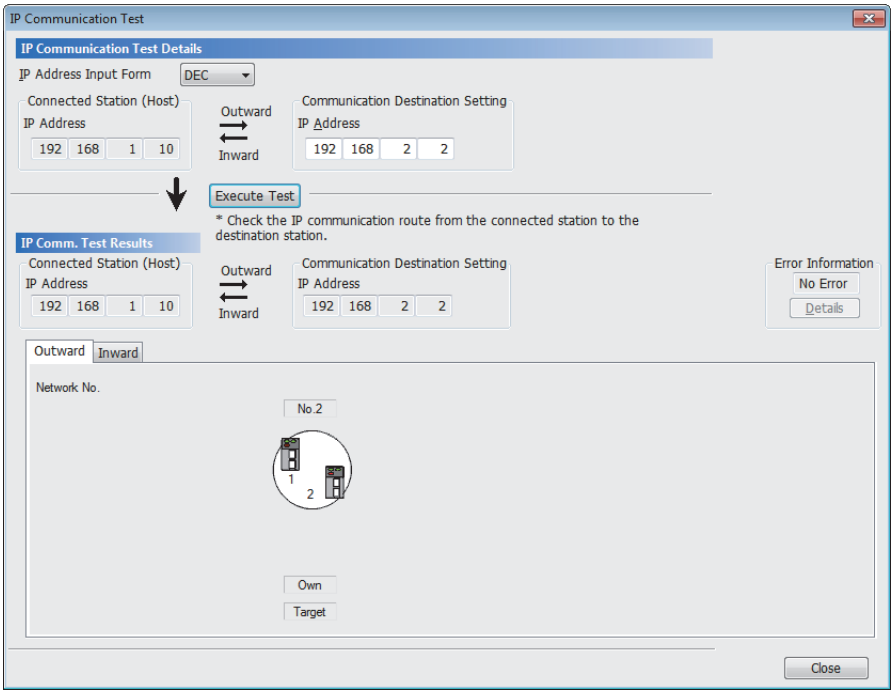
3. The normal station (station No.2) does not require an IP address.

The network address set in the control station (station No.1) is automatically assigned.

4. Write the set parameters to the CPU module 2. Then reset the CPU module 2 or power off and on the system.

Checking the status of communications

After the setting is completed in each module, execute the IP communication test to check for an error in the communication path on CC-Link IE Controller Network. (☞ Page 49 IP communication test)



Communication speed

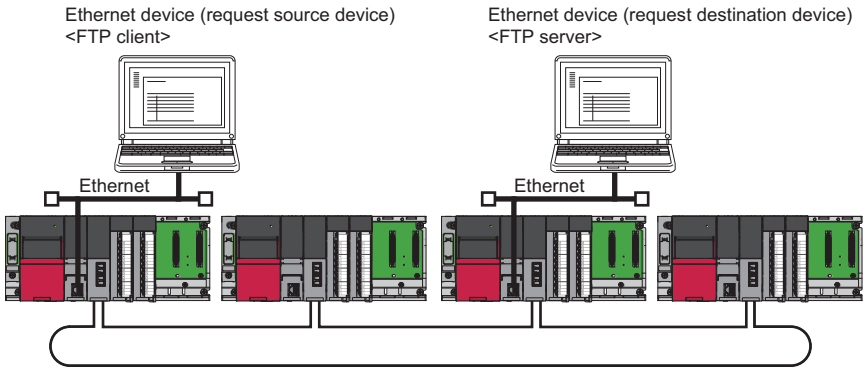
This section provides the results of communication speed measured using the IP packet transfer function. Use the results as a reference.

When request source and destination devices are connected to a CPU module

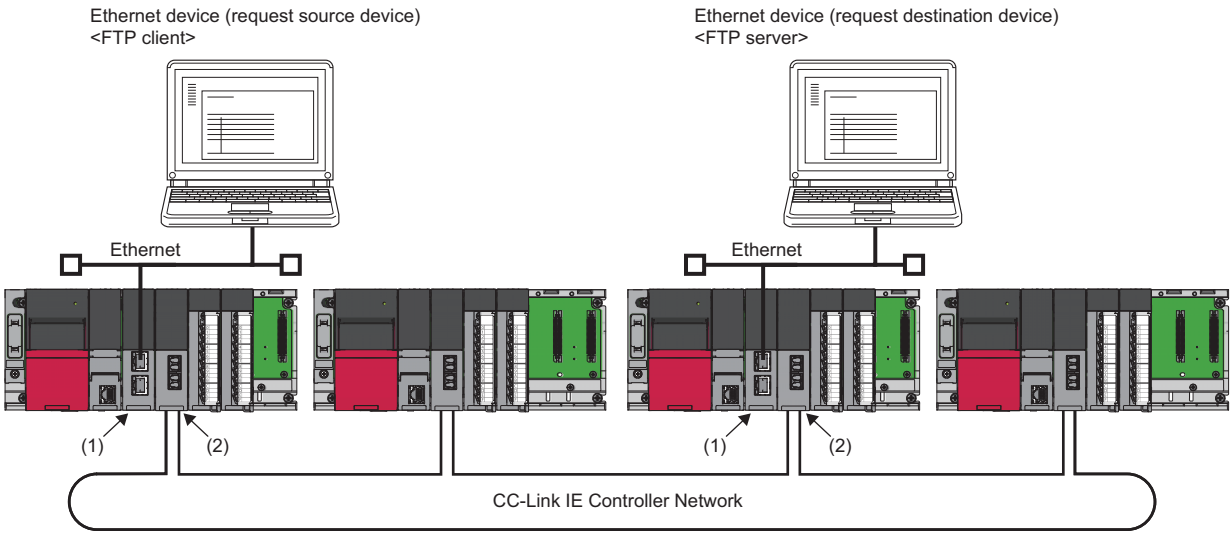
The results are based on measurement when FTP communications are performed with four RJ71GP21-SXs or RJ71EN71s connected.

■System configuration

• When optical fiber cables are used



• When Ethernet cables are used



Device	Description	
Ethernet device (request source device) <FTP client>	CPU	Intel® Core™ 2 Duo processor 2.00GHz
	OS	Microsoft® Windows® 7 Professional Operating System
	Ethernet board	1000BASE-T
	FTP client application	FFFTP
Ethernet device (request destination device) <FTP server>	CPU	Intel® Core™ i5 Duo processor 2.67GHz
	OS	Microsoft® Windows® 7 Professional Operating System
	Ethernet board	1000BASE-T
	FTP server application	FileZilla Server
Programmable controller	CPU module	• R04CPU • Sequence scan time: 1ms
	CC-Link IE Controller Network	• Cyclic transmission: 128 points assigned to each station for the LB and LW, 256 points assigned to each station for the LX and LY • Transient transmission: N/A

■Measurement result of the communication speed

The following table lists the time that takes until a file is read from a request source device to a request destination device.

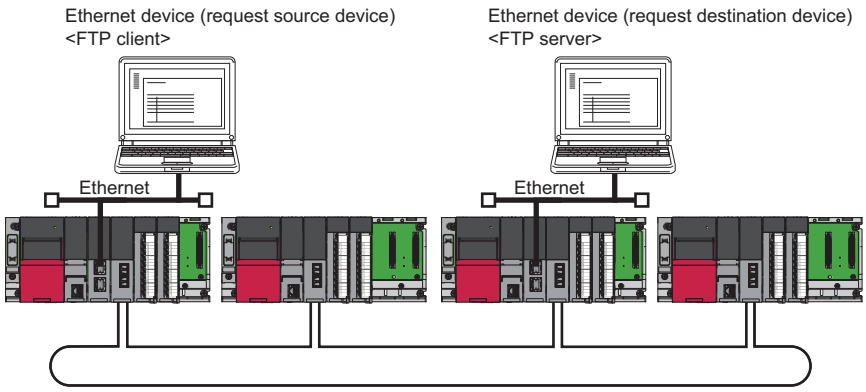
Size of a file to be communicated	Time (same as those when optical fiber cables are used and Ethernet cables are used)
1K bytes	10ms
50K bytes	300ms
100K bytes	600ms
1M bytes	4000ms

When request source and destination devices are connected to RJ71EN71

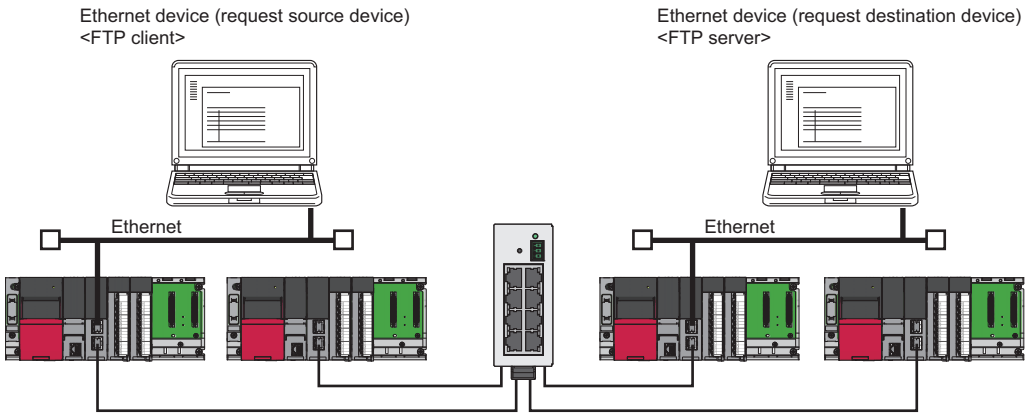
The results are based on measurement when FTP communications are performed with four RJ71GP21-SXs or RJ71EN71s connected.

■System configuration

- When optical fiber cables are used ("Port 1 Network Type" and "Port 2 Network Type" are set to "Ethernet" for the RJ71EN71.)



- When Ethernet cables are used ("Port 1 Network Type" is set to "Ethernet" and "Port 2 Network Type" is set to "CC-Link IE Control" for the RJ71EN71.)



Device	Description
Ethernet device (request source device) <FTP client>	Same as those when a request source device and a request destination device are connected to a CPU module (☞ Page 56 When request source and destination devices are connected to a CPU module)
Ethernet device (request destination device) <FTP server>	
Programmable controller	

■Measurement result of the communication speed

The following table lists the time that takes until a file is read from a request source device to a request destination device.

Size of a file to be communicated	Time (same as those when optical fiber cables are used and Ethernet cables are used)
1K bytes	10ms
50K bytes	100ms
100K bytes	200ms
1M bytes	2000ms

To increase communication speed

Communication speed can be increased by checking the following items again.

■Sequence scan of a CPU module

Shortening sequence scan time can increase communication speed.

For causes extending sequence scan time, refer to the following.

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

■Transient transmission frequency

Communications using the IP packet transfer function are performed with transient transmission. Taking one of the following actions can increase communication speed.

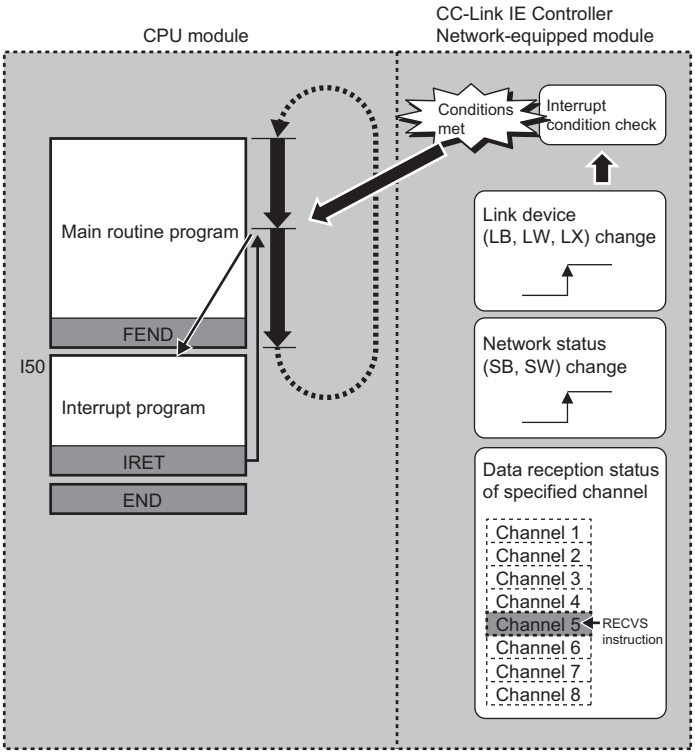
- Executing the COM instruction on a program and executing a service processing at any timing other than an END processing increase the frequency of transient transmission (the amount of processing per transient transmission). Consequently, the frequency of communications using the IP packet transfer function increases, resulting in increased communication speed. (MELSEC iQ-R Programming Manual (Module Dedicated Instructions))
- Decreasing the number of other transient transmission ensures the processing time of the IP packet transfer function; therefore, communication speed can be increased.

■Link scan time

Minimizing the number of link device points used in the cyclic transmission shortens link scan time, resulting in increased communication speed.

1.4 Interrupt Request to CPU Module

This function makes an interrupt request to the CPU module to start the interrupt program if the interrupt conditions preset using the engineering tool are met.
Interrupt conditions are based on the changes in the link devices (LB, LW, LX) and the network statuses (SB, SW) checked every link scan or the data reception status of the channel specified via the RECVS instruction.



Setting method

Set the interrupt request to the CPU module in "Interrupt Settings" under "Application Settings". (☞ Page 91 Interrupt Settings)

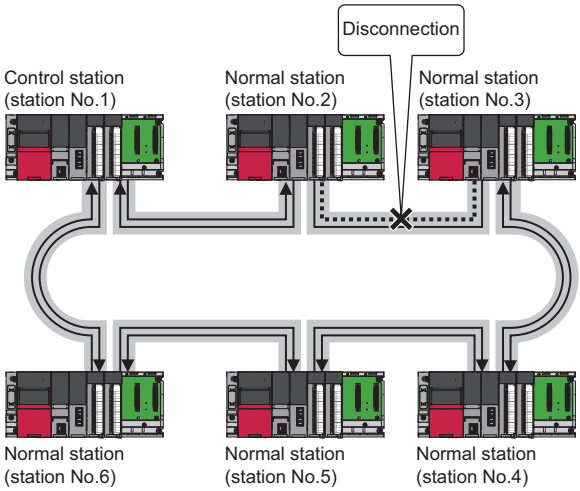
1.5 Loopback Function

When optical fiber cables are used

This function continues data link with normal stations even if a cable disconnection or faulty station occurs.

Cable disconnection

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

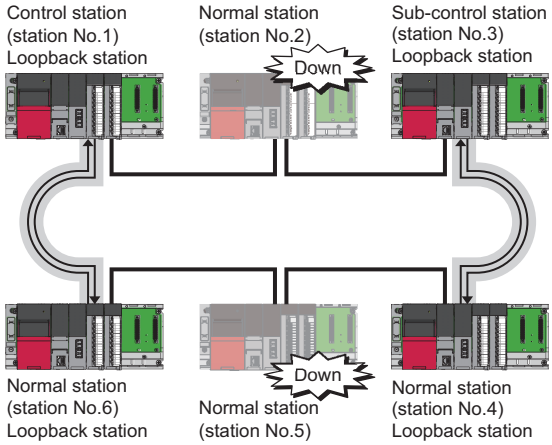


Occurrence of faulty stations

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

If two or more faulty stations occur, a station located between the faulty stations cannot perform data link.

However, when more than one station exists between the faulty stations, a normal station is changed to a sub-control station and continues data link.



Setting method

The loopback function remains effective at all times. No parameter setting is required.

Precautions

When the RJ71GP21(S)-SX fails, loopback may not be performed depending on what kind of failure occurs.
In such a case, data link may be stopped. To identify the RJ71GP21(S)-SX with a failure, perform either of the following.

- Identify a faulty station by checking the LED indications (off of RUN LED, on or flashing of ERR LED) of all RJ71GP21(S)-SXs.
- Turn off the power of all stations, then turn on the power of stations in order, starting from the control station. While doing this, check up to which station on the network loopback is normally performed. Check whether the control station and a reconnected normal station are displayed on a loopback station in the network information display of the CC-Link IE Controller Network diagnostics.

Replace the RJ71GP21(S)-SX where a failure was detected with a new one and check that data link has returned to normal status.

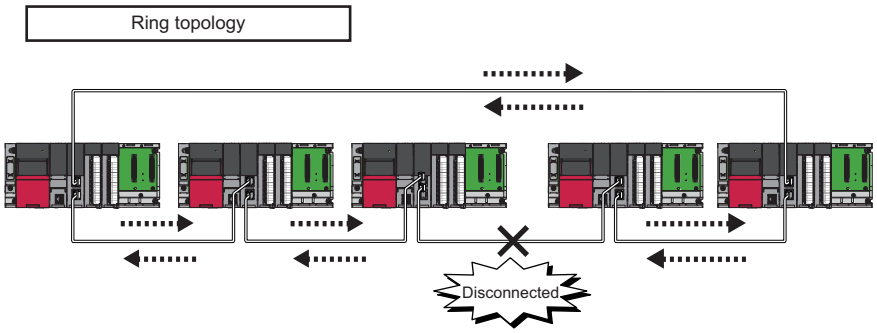
When Ethernet cables are used

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

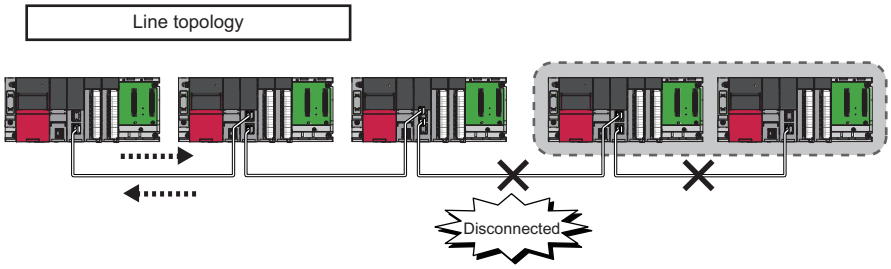
Point

The RJ71EN71 and RnENCPU can be used only when "Port 1 Network Type" is set to "CC-Link IE Control".

Cable disconnection

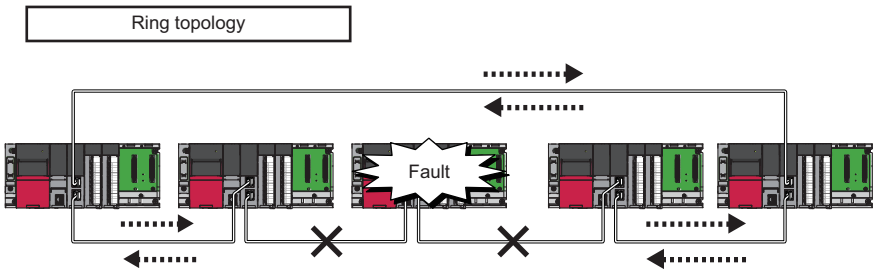


Even if a cable disconnection occurs, the system automatically performs loopback to continue the data link.

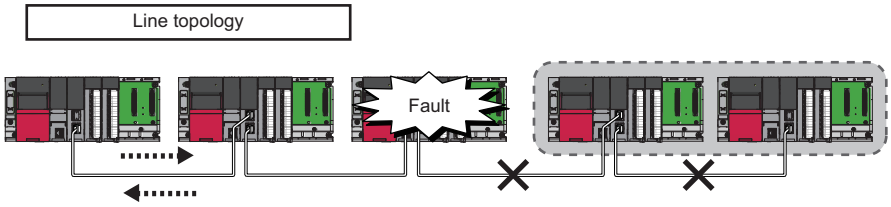


Stations connected after the cable disconnection point are disconnected.

Occurrence of faulty stations



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



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 control station.

Precautions

■Loopback function setting and network configuration

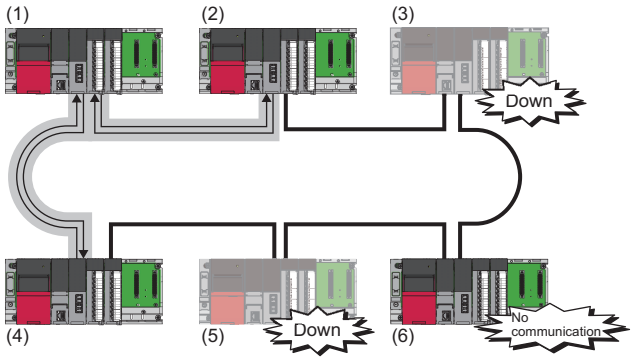
To use the loopback function, configure the network in ring topology and set "Network Topology" to "Ring" in "Basic Settings" of the control station. If "Network Topology" and the network configuration are inconsistent, an error may occur in all stations and data link cannot be performed.

1.6 External Power Supply Function

This function directly supplies the power to the RJ71GP21S-SX from an external source.
Even at power down of a CPU module, the network is not cut off at the station with the power failure, and thus data link continues on normal stations. Furthermore, if the power failure occurs on more than one station, data link continues on a station existing between faulty stations.

Without the external power supply function

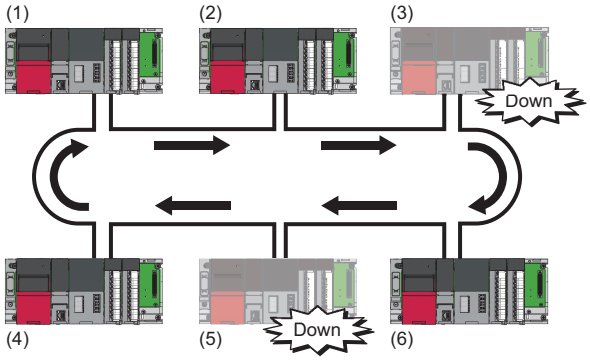
If the power failure of the CPU module occurs on the station No.3 and station No.5, loopback occurs on the station No.2 and station No.4, and data link stops on station No.6.



(1) Control station (station No.1)
(2) Normal station (station No.2): Loopback station
(3) Normal station (station No.3)
(4) Normal station (station No.4): Loopback station
(5) Normal station (station No.5)
(6) Normal station (station No.6)

With the external power supply function

Even though the power failure of the CPU module occurs on the station No.3 and station No.5, data link continues on the station No.6. Loopback does not occur on the station No.2 and station No.4.



(1) Control station (station No.1)
(2) Normal station (station No.2)
(3) Normal station (station No.3)
(4) Normal station (station No.4)
(5) Normal station (station No.5)
(6) Normal station (station No.6)

Operating precautions

If the external power supply of the RJ71GP21S-SX is turned on while the power of the CPU module is off, the RJ71GP21S-SX does not operate normally. Turn on both of the powers of CPU module and the RJ71GP21S-SX and start the operation.

1.7 Redundant System Function

The redundant system function improves system reliability by mounting CC-Link IE Controller Network-equipped modules on the base units of both systems of a redundant system so that the new control system can continue data link even if an error occurs in the control system.

Restriction

The following modules are required to use the redundant system function.

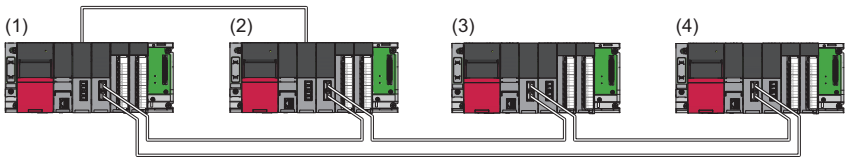
- Process CPU
- Redundant function module
- The RJ71GP21-SX or RJ71GP21S-SX with a firmware version of "12" or later

When using a redundant system, check the versions of the Process CPU and the engineering tool. (MELSEC iQ-R CPU Module User's Manual (Application))

System configuration

This section describes the system configuration of a redundant system using CC-Link IE Controller Network-equipped modules.

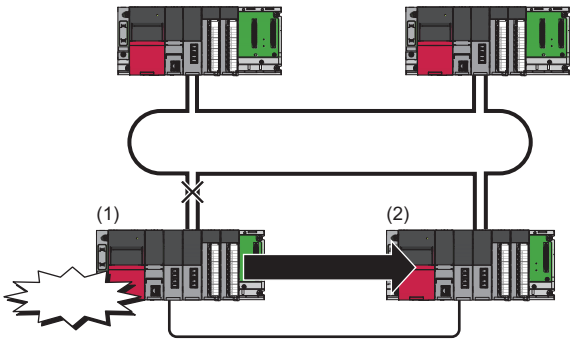
CC-Link IE Controller Network-equipped modules are mounted on the base units of both systems of a redundant system. A redundant system is configured by connecting the CC-Link IE Controller Network-equipped modules in both systems together using optical fiber cables.



(1) Control station (station No.1) as the control system (system A)
(2) Normal station (station No.2) as the standby system (system B)
(3) Normal station (station No.3)
(4) Normal station (station No.4)

System switching operation

In a redundant system, if the control system fails, the control system and the standby system are switched.
In CC-Link IE Controller Network, send data is transferred to the new control system after system switching to continue data link.
The following shows system switching operation when a communication error occurs in the control system.



1. A communication error occurs in control system (1).
2. The CC-Link IE Controller Network-equipped module of control system (1) issues a system switching request to the CPU module.
3. System switching occurs in the redundant system.
4. Standby system (2) starts operating as the new control system to continue network control.

Point

- If system switching is performed by a cause not leading to a communication error, control station switching is not performed.
- While the control is switched to a station of the new control system, the cyclic data output is held. For cyclic data holding time (output holding time) when system switching occurs, refer to the following.

☞ Page 207 Cyclic data holding time when system switching occurs

Setting method

When using the module in a redundant system, select "RJ71GP21-SX (R)" or "RJ71GP21S-SX (R)" for the module name in the "Add New Module" window.
Note that pairing needs to be set for the CC-Link IE Controller Network-equipped modules of both systems.
Pairing is set under "Network Range Assignment" in "Required Settings" of the control station. (☞ Page 76 Network Range Assignment)

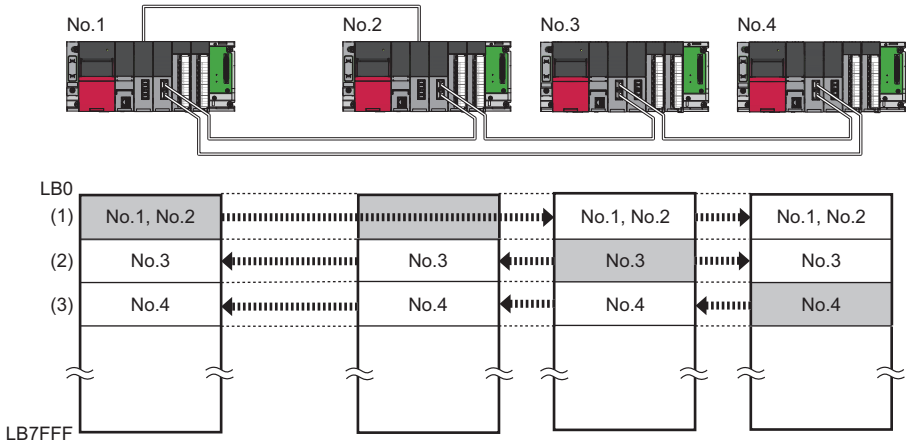
Cyclic transmission send/receive processing

When pairing is set for the CC-Link IE Controller Network-equipped modules of both systems, send data is transferred to the new control system at the time of system switching to continue cyclic transmission.

The following is the send range of cyclic transmission when pairing is set.

- The own station send ranges of the link devices (LB, LW) of both systems become the same when pairing is set.
- The station operating as the control system sends and receives cyclic data.
- The station operating as the standby system only receives cyclic data.

Each number in the figure, from No.1 to No.4, represents a station number.



Send range of station number☐

(1) From station No.1 as the control system, data in the send ranges of stations No.1 and No.2 are sent to station 3 and station 4. If system switching occurs to due to an error in station No.1, data in the send ranges of stations No.1 and No.2 are sent from station No.2, which starts operating as the new control system.

(2) Data in the send range of station No.3 is sent to all stations including station No.2 operating as the standby system.

(3) Data in the send range of station No.4 is sent to all stations including station No.2 operating as the standby system.

Precautions

■Tracking

- Of all refresh target devices (B, W) of link devices (LB, LW), tracking needs to be set for the devices in the own station send range.
- Tracking cannot be set for link direct devices.
- Do not set tracking for the link special relay areas (SB0020 to SB01FF), which are turned on/off by the system, or the link special register areas (SW0020 to SW01FF), where data is stored by the system.

Point

For details on tracking, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

■Programming

In CC-Link IE Controller Network, the network detects a temporary communication error based on the condition of power-on/off, cables, noise, and others. Create a program using CC-Link IE Controller Network in such a way that control operation is not stopped even if such a temporary communication error is detected.

■Detection of an error when another station is powered on/off

When either of the following operations is performed, a temporary data link error may be detected and a system switching request may be issued.

- Another station (including the standby system) is powered on/off.
- A personal computer equipped with a CC-Link IE Controller Network interface board boots or shuts down.

If the above system switching request is issued before the standby system starts up, the control system CPU module may detect a continuation error (system switching error). Even in this case, the control system continues to control the system normally. Create a program where control operation is not stopped due to error detection.
Before clearing the continuation error (system switching error) detected by the control system CPU module, check that the standby system and the CC-Link IE Controller Network-equipped modules operate correctly with the special register. (MELSEC iQ-R CPU Module User's Manual (Application))

System switching request to the control system CPU module

When the CC-Link IE Controller Network-equipped module mounted on the control system detects a data link error, it issues a system switching request to the control system CPU module.
However, depending on the operating status of the standby system, system switching is not executed.
For details on the operating status of the standby system and whether system switching is executable, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

System switching cause

This section describes causes that make the CC-Link IE Controller Network-equipped module issue a system switching request.

Point

For details on causes other than a system switching request from the CC-Link IE Controller Network-equipped module, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

■Moderate/major error and hardware failure

When detecting an error where the module cannot continue the processing, the CC-Link IE Controller Network-equipped module notifies the control system CPU module about the error and issues a system switching request.

■Data link error

If the data link error status (D LINK LED off) continues for the system switching monitoring time set in "Supplementary Cyclic Settings" under "Application Settings" or longer, the CC-Link IE Controller Network-equipped module issues a system switching request to the control system CPU module.

Point

When cyclic transmission is stopped using the link start/stop of the CC-Link IE Field Network diagnostics, a system switching request is not issued to the control system CPU module. (This also applies to cases in which cyclic transmission is stopped by the link special relay (SB) or link special register (SW).)

Disabling system switching

When 'Flag for disabling system switching due to data link error' (SB0017) is turned on for both systems in advance, even if a data link error is detected, a system switching request is not issued to the control system CPU module.

Point

- The disabling of system switching is a function for maintenance. Use this function to prevent system switching from occurring due to a data link error caused by faulty operation during network maintenance.
- To disable system switching, set tracking to 'Flag for disabling system switching due to data link error' (SB0017) so that 'Flag for disabling system switching due to data link error' (SB0017) is turned on for both systems.
- If a system switching request is issued due to a cause other than a data link error, system switching is executed regardless of the status of 'Flag for disabling system switching due to data link error' (SB0017).

Functions restricted in a redundant system

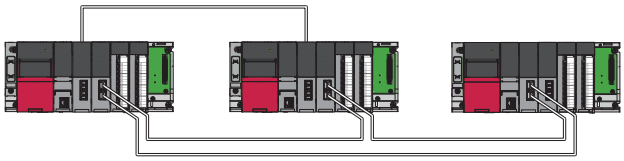
The following table lists the functions restricted when using CC-Link IE Controller Network-equipped modules in a redundant system.

Function	Restrictions
Transient transmission	• To perform the transient transmission specifying the control system or standby system, acquire the current target station address (address of the control system or standby system) by using the module FB (RedundantSystem_GetAddress) and access the acquired address. (📖 MELSEC iQ-R Ethernet, CC-Link IE, and MELSECNET/H Function Block Reference) • Precautions exist for communications with different networks when the networks contain a redundant system. (☞ Page 42 When the networks contain a redundant system) • Precautions exist for when the dedicated instructions are used to a redundant system. (☞ Page 201 Precautions for dedicated instructions)
IP packet transfer function	■IP address setting of the Ethernet-equipped module Use the IP address of the control system to maintain communications when system switching occurs. (📖 MELSEC iQ-R Ethernet User's Manual (Application)) ■Communications at the time of system switching When system switching occurs in a redundant system on a communication path, communications may be interrupted or data may be lost. Also, communications may be disabled during system switching. If an error occurs in communications, resend data from the request source. ■When the Ethernet-equipped module connecting to an Ethernet device is redundant • When using the dynamic routing, execute this function via the control system. An error occurs if transfer operation is executed via the standby system. Set "Routing Setting" of "CPU Parameter" when executing this function via the standby system. • Set "Routing Setting" of "CPU Parameter" when executing this function even when stop errors exist in the CPU modules of both systems.

Setting example

This section describes the setting details for communications in a redundant system.

System configuration example

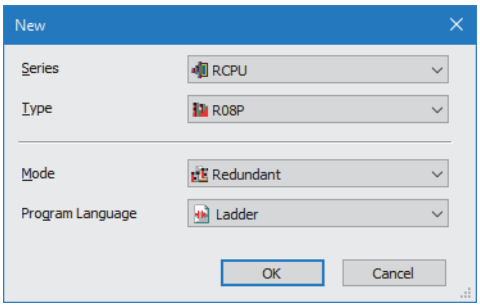


Setting in the control station

Connect the engineering tool to the CPU module to be set as the control system and set the parameters.
In a redundant system, the same program and parameter are written to both systems. A new project does not need to be created for the standby system.

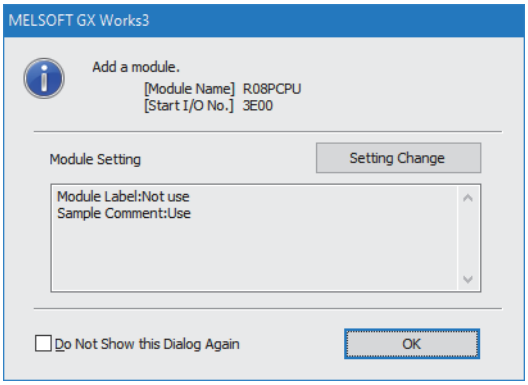
1. Set the CPU module as follows.

[Project] ⇨ [New]



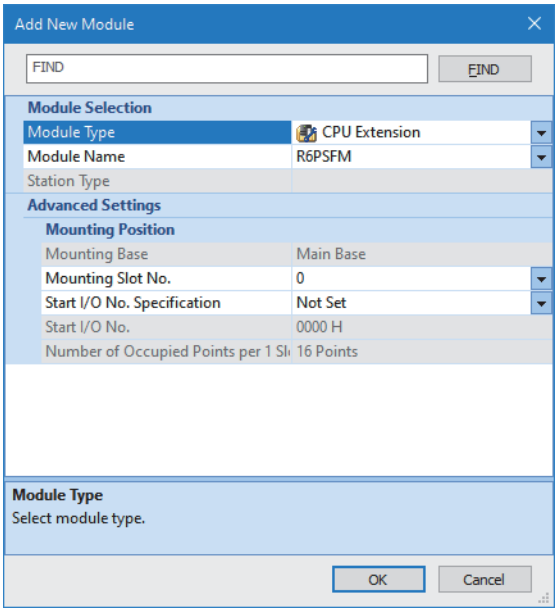
2. Click the [Setting Change] button and set to use module labels.

3. Click the [OK] button to add the module labels of the CPU module.

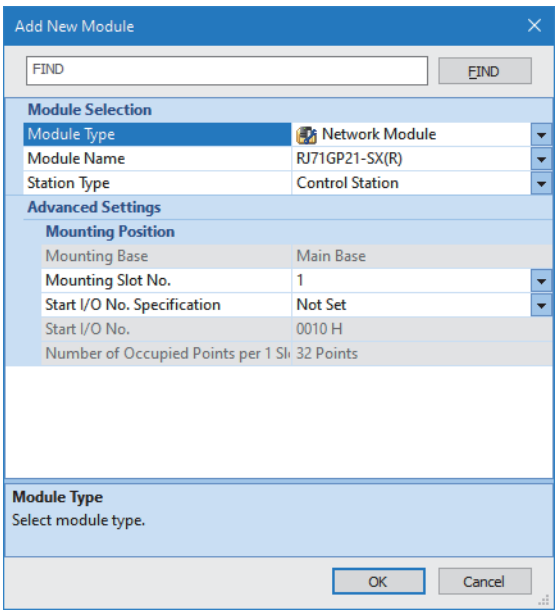


4. In the I/O assignment setting, set the redundant function module for slot No.0.

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

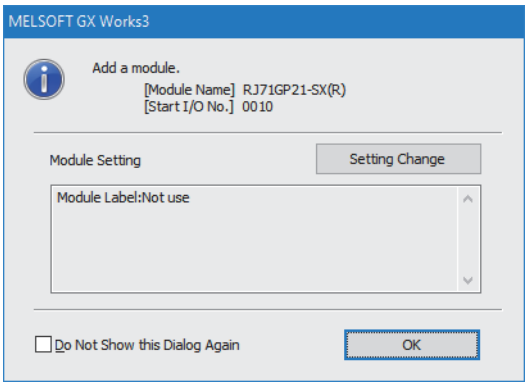


5. Set the CC-Link IE Controller Network-equipped module for slot No.1.



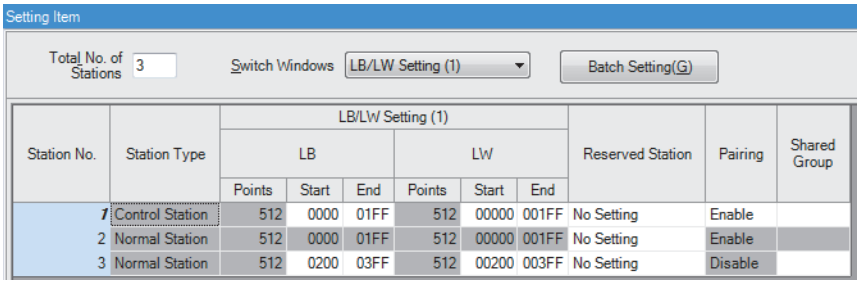
6. Click the [Setting Change] button and set to use module labels.

7. Click the [OK] button to add the module labels of the CC-Link IE Controller Network-equipped module.



8. Set the network range assignment as follows.

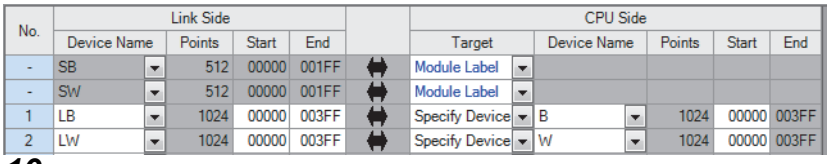
[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GP21-SX(R)] ⇨ [Module Parameter] ⇨ [Required Settings] ⇨ [Network Range Assignment]



Station No.	Station Type	LB/LW Setting (1)						Reserved Station	Pairing	Shared Group
		LB			LW					
		Points	Start	End	Points	Start	End			
1	Control Station	512	0000	01FF	512	00000	001FF	No Setting	Enable	
2	Normal Station	512	0000	01FF	512	00000	001FF	No Setting	Enable	
3	Normal Station	512	0200	03FF	512	00200	003FF	No Setting	Disable	

9. Set the refresh settings as follows.

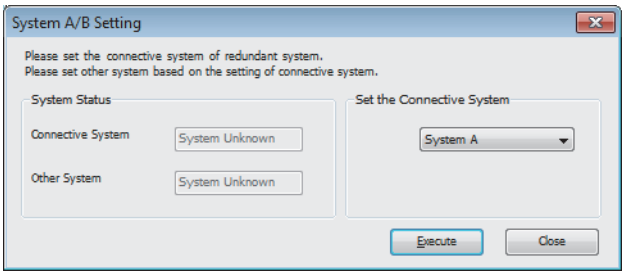
[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ [RJ71GP21-SX(R)] ⇨ [Module Parameter] ⇨ [Basic Settings] ⇨ [Refresh Setting]



No.	Link Side					CPU Side				
	Device Name	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	512	00000	001FF		Module Label				
-	SW	512	00000	001FF		Module Label				
1	LB	1024	00000	003FF		Specify Device	B	1024	00000	003FF
2	LW	1024	00000	003FF		Specify Device	W	1024	00000	003FF

10. Set the redundant function module of the own system as the system A in the "System A/B Setting" window, and reset the CPU modules of both systems or power off and on the both systems.

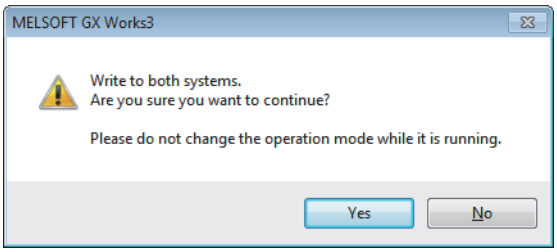
[Online] ⇨ [Redundant PLC Operation] ⇨ [System A/B Setting]



11. Write the set parameters to the system A CPU module.

[Online] ⇨ [Write to PLC]

12. Click the [Yes] button to write to the CPU modules of both systems.



13. Either reset the CPU modules of both systems or power off and on both systems.

Point

In this setting example, default settings are used for the parameters other than those described. For the parameter setting, refer to the chapter explaining the parameters in this manual. (☞ Page 74 PARAMETER SETTINGS)

2 PARAMETER SETTINGS

This chapter describes the parameter settings required for communications between the CC-Link IE Controller Network-equipped module and other stations.

2.1 Setting Parameters

1. Add the CC-Link IE Controller Network-equipped module in the engineering tool.

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

2. The required settings, basic settings, and application settings are included in the parameter settings. Select one of the settings from the tree on the window shown below and set parameters.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Target module ⇨ [Module Parameter]

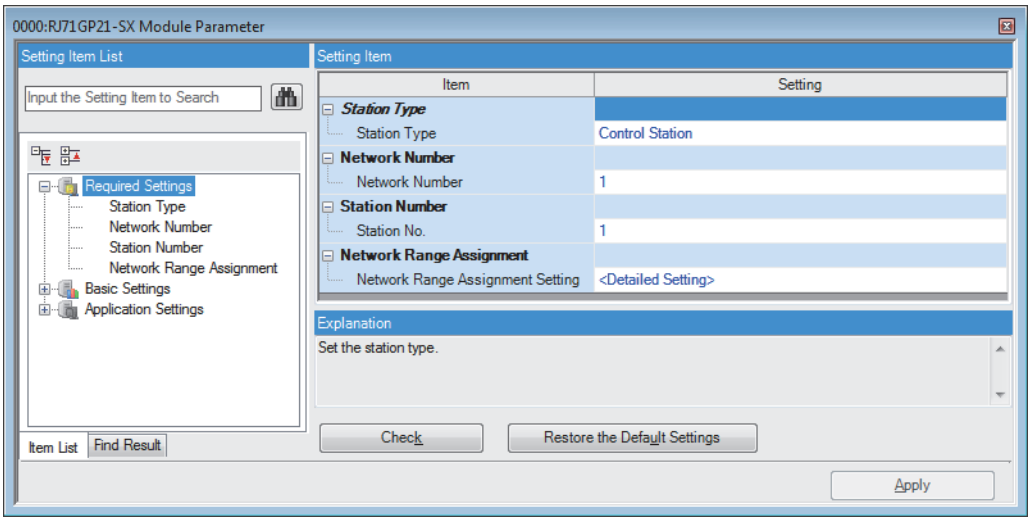
3. After setting parameters, click the [Apply] button.
4. Write the settings to the CPU module using the engineering tool.

[Online] ⇨ [Write to PLC]

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

2.2 Required Settings

Set the station type, network number, or other parameters for the CC-Link IE Controller Network-equipped module.



○: Can be set, ×: Cannot be set

Item	Description	Availability		Reference
		Control station	Normal station	
Station Type	Set the station type of the CC-Link IE Controller Network-equipped module.	○	○	Page 75 Station Type
Network Number	Set the network number of the CC-Link IE Controller Network-equipped module.	○	○	Page 75 Network Number
Station Number	Set the station number of the CC-Link IE Controller Network-equipped module.	○	○	Page 75 Station Number
Network Range Assignment	Set parameters of each stations (the number of points and assignment of link devices) in the control station.	○	×	Page 76 Network Range Assignment

Station Type

Set the station type of the CC-Link IE Controller Network-equipped module.

Item	Description	Setting range
Station Type	Select whether to use the CC-Link IE Controller Network-equipped module as the control station or a normal station. One control station can be set in a network. Send points can be extended by selecting "Ext. Mode Control Station" or "Ext. Mode Normal Station". (☞ Page 37 Number of send points extension by using multiple modules)	• Control Station • Normal Station • Ext. Mode Control Station • Ext. Mode Normal Station (Default: Station type set in the "Add New Module" window.)

Network Number

Set the network number of the CC-Link IE Controller Network-equipped module.

Item	Description	Setting range
Network number	Set the network number of the CC-Link IE Controller Network-equipped module.	1 to 239 (Default: 1)

Station Number

Set the station number of the CC-Link IE Controller Network-equipped module.

Item	Description	Setting range
Setting Method	Select whether to set the station number in parameter editor or in program (UINI instruction). This item can be set only for a normal station. When selecting "Program", use the UINI instruction to set the number. (📖 MELSEC iQ-R Programming Manual (Module Dedicated Instructions)) This item cannot be set when "RJ71GP21-SX(R)" or "RJ71GP21S-SX(R)" is selected for "Module Name". Set the number using a parameter.	• Parameter Editor • Program (Default: Parameter Editor)
Station No.	Set the station number of the CC-Link IE Controller Network-equipped module. • Station number can be set within the range set in "Total No. of Stations" in the "Network Range Assignment" window in "Required Settings" of the control station. To set the larger value, change the value in "Total No. of Stations" in the "Network Range Assignment" window beforehand. • Set a station number different from those used in the same network. To set the station number of a normal station in this setting, set "Setting Method" to "Parameter Editor".	1 to 120*1 (Default: 1 for control station, 2 for normal station)

*1 The setting range is 1 to 119 when "RJ71GP21-SX(R)" or "RJ71GP21S-SX(R)" is selected for "Module Name".

Network Range Assignment

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

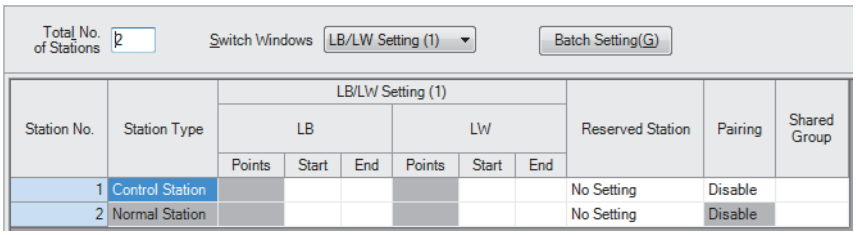
Point

- Network range assignments are set in the control station only. Normal stations perform cyclic transmission according to the range assigned at the control station.
- When "LB/LW Setting (2)" is used, link scan time will be longer compared to using "LB/LW Setting (1)" only.

Setting procedure

The procedure for the network range assignment settings is shown below.

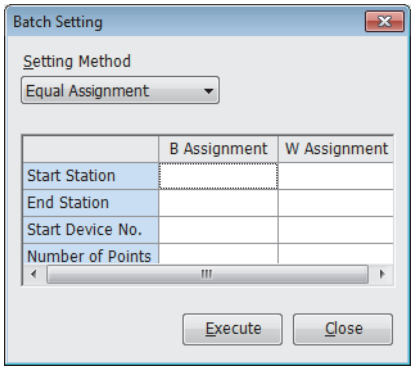
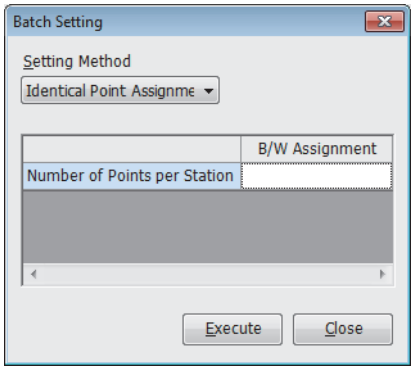
1. Set the required items.



2. Click the [Apply] button to finish the network range assignment.

Setting items

Item	Description	Setting range
Total No. Stations	When setting "Station Type" to "Control Station" or "Ext. Mode Control Station", set the total number of stations in a network. • When any reserved station is required, include the number of reserved stations. • When skipping a station number, specify the number to be skipped as a reserved station.	2 to 120 (Default: 2)
Switch Windows	Select the "LB/LW Setting" window or "LX/LY Setting" window.	• LB/LW Setting (1) • LB/LW Setting (2) • LX/LY Setting (1) • LX/LY Setting (2) (Default: LB/LW Setting (1))
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 start and end numbers of link devices.	• Start/End • Points/Start (Default: Start/End)

Item		Description	Setting range
Batch Setting	Equal Assignment	Specify the start station and end station, and equally assign link devices to stations.  • Start Station: Enter the start station number of stations for which link devices are equally assigned. • End Station: Enter the end station number of stations for which link devices are equally assigned. • Start Device No.: Enter the start number of link devices to be equally assigned. • Number of Points: Enter the total points of link devices to be equally assigned.	■Start Station: (Default: Blank) • 1 to the end station number ■End Station: (Default: Blank) • Number set to "Start Station" to the end station number ■Start Device No.: (Default: Blank) • Same as "LB/LW Setting (1)", "LB/LW Setting (2)", "LX/LY Setting (1)", or "LX/LY Setting (2)". ■Number of Points LB (Default: Blank) • 16 to 32768 (Link points extended setting: Not to Extend) • 16 to 65536 (Link points extended setting: Extend) LW (Default: Blank) • 1 to 131072 (Link points extended setting: Not to Extend) • 1 to 262144 (Link points extended setting: Extend)
	Identical Point Assignment	Assign the same points to each station's send range in LB/LW.  	(Default: Blank)

Item	Description			Setting range
LB/LW Setting (1) LB/LW Setting (2)	Assign LB/LW points. (☞ Page 19 Communications using LB and LW) Normally, setting only "LB/LW Setting (1)" is enough for communications using LB/LW. Set "LB/LW Setting (2)" in the following cases: • When extending each station's send range without changing existing assignments (When changing the LB/LW assignment, correct link refresh range of each station. (☞ Page 84 Refresh Setting)) • When intentionally dividing each station's send range into two (e.g. within and outside the link refresh range) When settings are configured with the following four conditions met, 32-bit data integrity is automatically assured. (☞ Page 27 Cyclic data integrity assurance) • The start device number of LB is a multiple of 20H. • The number of points assigned per station in LB is a multiple of 20H. • The start device number of LW is a multiple of 2. • The number of points assigned per station in LW is a multiple of 2.			(Default: Blank)
	LB	Points	Set the number of points (decimal) of LB sent by each station. (The sum of "LB/LW Setting (1)" and "LB/LW Setting (2)") Setting range can be assigned in increments of 16 points.	• 16 to 16384 (Link points extended setting: Not to Extend) • 16 to 16384 (Link points extended setting: Extend)
			When "Station Type" in "Required Settings" is set to "Ext. Mode Control Station" or "Ext. Mode Normal Station" Setting range can be assigned in increments of 16 points.	• 16 to 32768 (Link points extended setting: Not to Extend) • 16 to 65536 (Link points extended setting: Extend)
		Start	Set the start number of the LB range to be sent by each station. Setting range can be assigned in multiples of 16.	• 0000H to 7FF0H (Link points extended setting: Not to Extend) • 0000H to FFF0H (Link points extended setting: Extend)
		End	Set the end number of the LB range to be sent by each station. Setting range can be assigned in multiples of 16 -1.	• 000FH to 7FFFH (Link points extended setting: Not to Extend) • 000FH to FFFFH (Link points extended setting: Extend)
	LW	Points	Set the number of points (decimal) of LW sent by each station. (The sum of "LB/LW Setting (1)" and "LB/LW Setting (2)") Setting range can be assigned in increments of 1 point.	• 1 to 16384 (Link points extended setting: Not to Extend) • 1 to 16384 (Link points extended setting: Extend)
			When "Station Type" in "Required Settings" is set to "Ext. Mode Control Station" or "Ext. Mode Normal Station" Setting range can be assigned in increments of 1 point.	• 1 to 131072 (Link points extended setting: Not to Extend) • 1 to 262144 (Link points extended setting: Extend)
		Start	Set the start number of the LW range to be sent by each station.	• 0000H to 1FFFFH (Link points extended setting: Not to Extend) • 0000H to 3FFFFH (Link points extended setting: Extend)
		End	Set the end number of the LW range to be sent by each station.	• 0000H to 1FFFFH (Link points extended setting: Not to Extend) • 0000H to 3FFFFH (Link points extended setting: Extend)

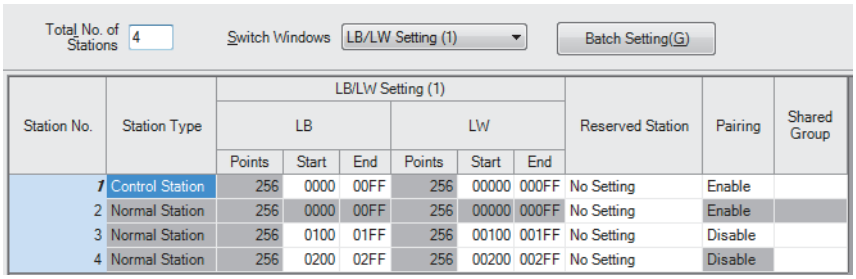
Item	Description				Setting range
LX/LY Setting (1) LX/LY Setting (2)	Assign LX/LY points. (☞ Page 20 Communications using LX and LY) Set "LX/LY Setting (1)" for block 1, and "LX/LY Setting (2)" for block 2. Avoid duplication of the LX/LY settings for each station in "LX/LY Setting (1)" and "LX/LY Setting (2)". The LX/LY data of the same I/O numbers with the actual I/O (the range where actual modules are mounted) must be refreshed to the area after the actual I/O area or to any other than X/Y in refresh settings. Refresh target CPU-side devices in refresh settings cannot overlap with the actual I/O areas. (☞ Page 84 Refresh Setting)				(Default: Blank)
	M Station → L Station	LY	Points	Set the number of points (decimal) of the output range (LY) sent from the M station (I/O master station) to the other station.	16 to 8192 (set in increments of 16 points)
			Start	Set the start number of the output range (LY) of the M station (I/O master station).	0000H to 1FF0H (multiples of 16)
			End	Set the end number of the output range (LY) of the M station (I/O master station).	000FH to 1FFFH (multiples of 16 - 1)
		LX	Points	The number of points (decimal) of the input range (LX) received by the L station (the station other than the I/O master station) from the M station is displayed.	—
			Start	Set the start number of the input range (LX) of the L station (the station other than the I/O master station).	0000H to 1FF0H (multiples of 16)
			End	The end number of the input range (LX) of the L station (the station other than the I/O master station) is displayed.	—
	M Station ← L Station	LX	Points	Set the number of points (decimal) of the input range (LX) received by the M station (I/O master station) from the other station.	16 to 8192 (set in increments of 16 points)
			Start	Set the start number of the input range (LX) of the M station (I/O master station).	0000H to 1FF0H (multiples of 16)
			End	Set the end number of the input range (LX) of the M station (I/O master station).	000FH to 1FFFH (multiples of 16 - 1)
		LY	Points	The number of points (decimal) of the output range (LY) sent from the L station (the station other than the I/O master station) to the I/O master station is displayed.	—
			Start	Set the start number of the output range (LY) of the L station (the station other than the I/O master station).	0000H to 1FF0H (multiples of 16)
			End	The end number of the output range (LY) of the L station (the station other than the I/O master station) is displayed.	—
	I/O Master Station			Set an I/O master station for each block to perform communication using LX/LY. Up to two I/O master stations can be set for one network (block 1 and block 2), regardless of the status of control or normal station.	• No Setting • I/O Master Station (Default: No Setting)
Reserved Station	Set to specify the normal station as a reserved station. • No Setting: The normal station is connected to the network. • Reserved Station: The normal station is reserved for future expansion. By reserving a normal station, link device assignment will not change even if the normal station is added or the reservation is cancelled. Therefore, the program needs not to be modified. Physical connection of the normal station is not required.				• No Setting • Reserved Station (Default: No Setting)
Pairing	When the network contains a redundant system, set a combination of stations of system A and system B. When Ethernet cables are used, it cannot be set to "Enable".				• Enable • Disable (Default: Disable)
Shared Group	Set the stations sharing cyclic data for the same shared group number. (☞ Page 81 Shared Group)				1 to 120 (Default: Blank)

Pairing

When the network contains a redundant system, set a combination of stations of system A and system B. (☞ Page 65 Redundant System Function)

■Setting method

To pair station No.1 with station No.2, set as follows:



Station No.	Station Type	LB/LW Setting (1)						Reserved Station	Pairing	Shared Group
		LB			LW					
		Points	Start	End	Points	Start	End			
1	Control Station	256	0000	00FF	256	00000	000FF	No Setting	Enable	
2	Normal Station	256	0000	00FF	256	00000	000FF	No Setting	Enable	
3	Normal Station	256	0100	01FF	256	00100	001FF	No Setting	Disable	
4	Normal Station	256	0200	02FF	256	00200	002FF	No Setting	Disable	

By setting "Enable" in the "Paring" column for station No.1, the setting values in columns other than the "Reserved Station" column for station No.2 become the same as the setting values for station No.1.

■Precautions

- Only stations with adjacent station numbers can be paired in the pairing setting.
- Pairing cannot be set in "LX/LY Setting (1)" or "LX/LY Setting (2)".

Shared Group

Set the stations that share their cyclic data to the same shared group number with any of the following procedures. (☞ Page 34 Group cyclic transmission)

- Directly entering a shared group number: Set the shared group number in each station.
- Using the shared group setting: Set the station numbers which belong to each shared group number.

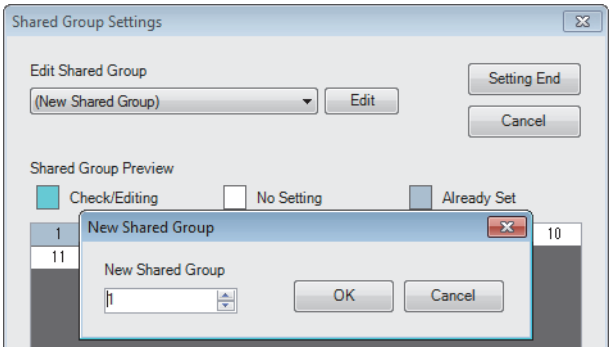
This setting is common to "LB/LW Setting (1)", "LB/LW Setting (2)" and "LX/LY Setting (1)", and "LX/LY Setting (2)".

■Directly entering a shared group number

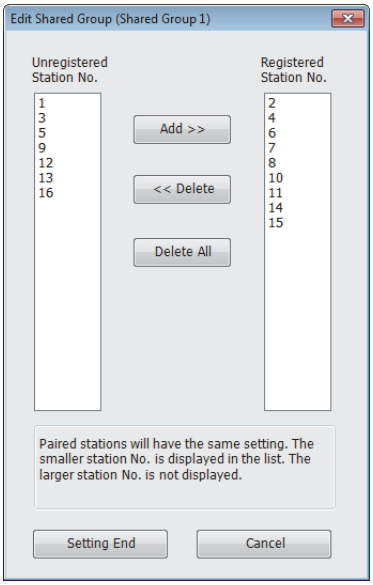
Directly enter a shared group number in the "Shared Group" area of "Network Range Assignment".

■Shared Group Settings

The following is a procedure for setting a shared group No.1 in the "Shared Group Settings" window.

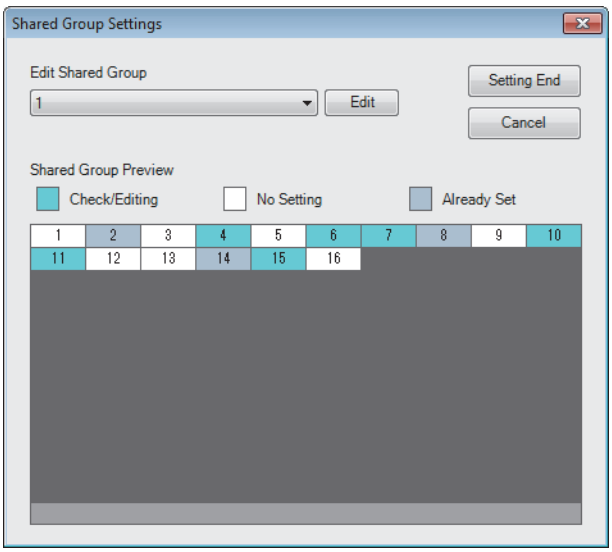


1. Clicking "Shared Group" in "Network Range Assignment" displays the "Shared Group Settings" window.
2. Select "(New Shared Group)" in "Edit Shared Group".
3. In the "New Shared Group" window, enter "1" and click the [OK] button.



4. In the "Edit Shared Group (Shared Group 1)" window, add a station number displayed in the "Unregistered Station No." area to the "Registered Station No." area in order to set it in the shared group No.1. Click the [Setting End] button.
5. Click the [Setting End] button in the "Shared Group Settings" button.
6. "1" is set in "Shared Group" in "Network Range Assignment".

To set a new shared group, repeat the above steps 2. to 4.



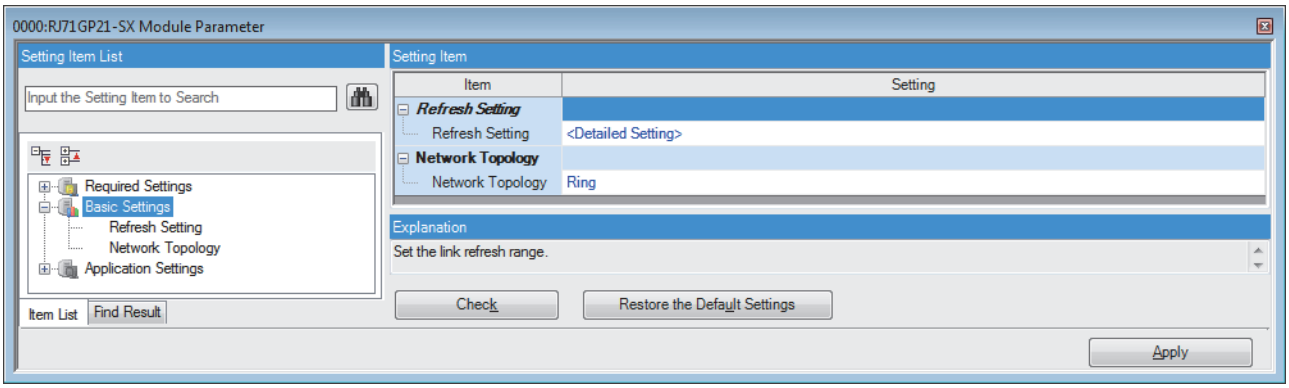
7. To edit an existing shared group, select the shared group number in "Edit Shared Group" and click the [Edit] button to perform the operation of the step 4.

■Precautions

When setting the shared group number, set "Enable" in "Station-based Block Data Assurance" under "Supplementary Cyclic Settings" in "Application Settings". When "Station-based Block Data Assurance" is set to "Enable", cyclic data of the stations in different shared groups will not be refreshed to the link devices. (☞ Page 26 Cyclic data integrity assurance)

2.3 Basic Settings

Set the link refresh settings and network topology setting for the CC-Link IE Controller Network-equipped module.



○: Can be set, ×: Cannot be set

Item	Description	Availability		Reference
		Control station	Normal station	
Refresh Setting	Set the link refresh ranges between the link devices (LB, LW, LX, LY, SB, SW) of the CC-Link IE Controller Network-equipped module and the devices of the CPU module or between the link devices (SB, SW) of the CC-Link IE Controller Network-equipped module and the module label of the CPU module.	○	○	Page 84 Refresh Setting
Network Topology	Select the topology type according to the actual network configuration.	○	×	Page 87 Network Topology

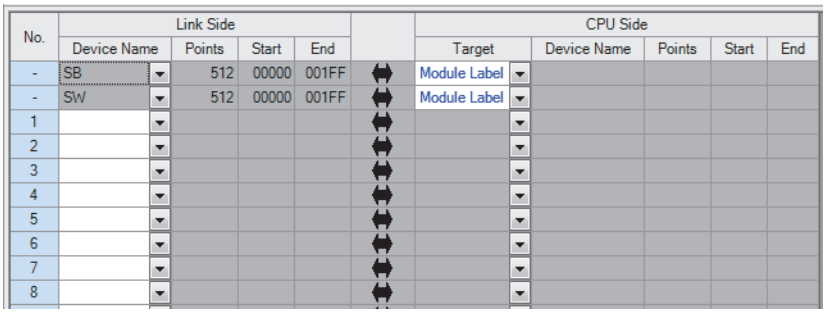
Refresh Setting

Set the link refresh ranges between the link devices (LB, LW, LX, LY, SB, SW) of the CC-Link IE Controller Network-equipped module and the devices of the CPU module or between the link devices (SB, SW) of the CC-Link IE Controller Network-equipped module and the module label of the CPU module.

Setting procedure

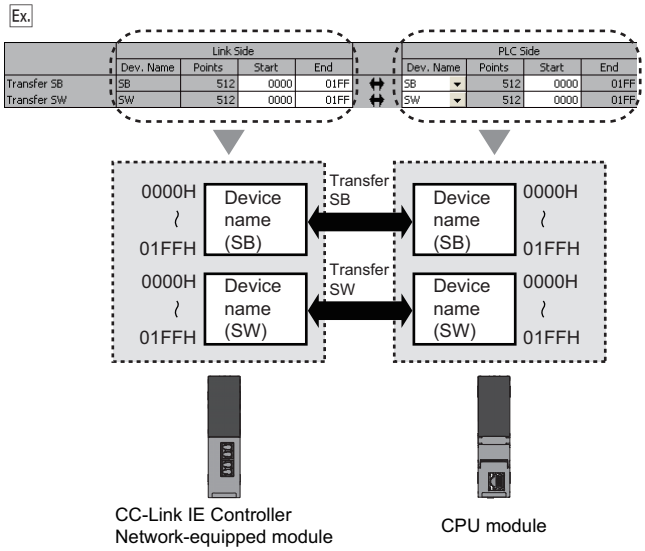
The procedure for the refresh settings is shown below.

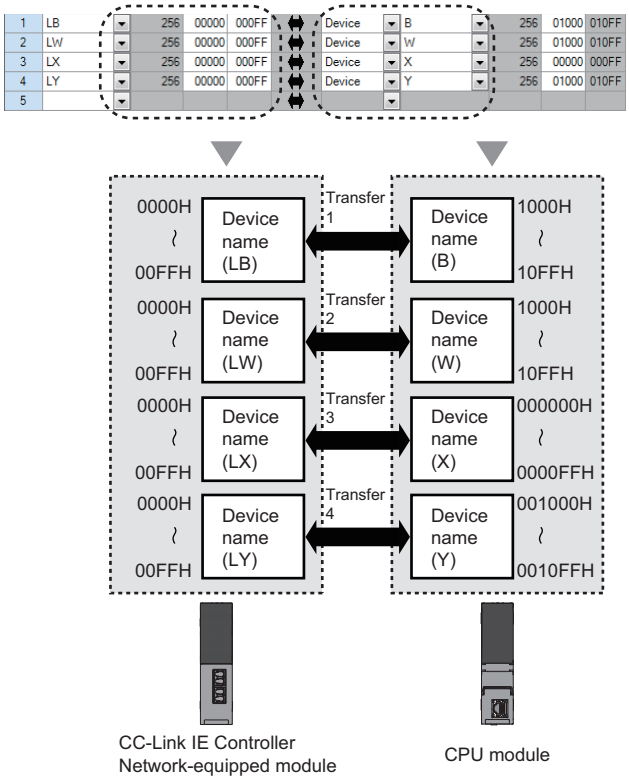
1. Set the required items.



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 start and end numbers of link devices.	• Start/End • Points/Start (Default: Start/End)
—	Link Side	Set the link refresh ranges of SB and SW. One range can be set for each SB and SW. (☞ Page 21 Link refresh) Ex.  	Device Name • SB (fixed) • SW (fixed) Points • SB (fixed): 16 to 512 • SW (fixed): 1 to 512 (Default: 512) Start • SB (fixed): 0H to 1F0H (set in increments of 16 points) • SW (fixed): 0H to 1FFH (set in increments of 1 point) (Default: 0H) End • SB (fixed): FH to 1FFH (set in increments of 16 points) • SW (fixed): 0H to 1FFH (set in increments of 1 point) (Default: 1FFH)
	CPU Side		Target • Module Label • Device (Default: Module Label) Device Name • Module Label: — • Device (when link side is SB): SB, M, L, B, D, R, ZR, RD • Device (when link side is SW): SW, M, L, B, D, R, ZR, RD (Default: Blank) Points, Start, End • Range of the device in a CPU module • Set bit devices in increments of 16 points and word devices in increments of 1 point. (Default: Blank)

Item		Description	Setting range
1 to 256	Link Side	Set the link refresh ranges of LB, LW, LX, and LY. Up to 256 ranges can be set. (☞ Page 21 Link refresh) Ex. 	Device Name • LB, LW, LX, LY (Default: Blank) ■Points (Default: Blank) LB (set in increments of 16 points) • 16 to 32768 (Link points extended setting: Not to Extend) • 16 to 65536 (Link points extended setting: Extend) LW (set in increments of 1 point) • 1 to 131072 (Link points extended setting: Not to Extend) • 1 to 262144 (Link points extended setting: Extend) LX, LY (set in increments of 16 points) • 16 to 8192 ■Start (Default: Blank) LB (set in multiples of 16) • 0 to 7FF0H (Link points extended setting: Not to Extend) • 0 to FFF0H (Link points extended setting: Extend) LW (set in increments of 1 point) • 0 to 1FFFFH (Link points extended setting: Not to Extend) • 0 to 3FFFFH (Link points extended setting: Extend) LX, LY (set in multiples of 16) • 0H to 1FF0H ■End (Default: Blank) LB (set in multiples of 16-1) • F to 7FFFH (Link points extended setting: Not to Extend) • F to FFFFH (Link points extended setting: Extend) LW (set in increments of 1 point) • 0 to 1FFFFH (Link points extended setting: Not to Extend) • 0 to 3FFFFH (Link points extended setting: Extend) LX, LY (set in multiples of 16-1) • FH to 1FFFH
	CPU Side		Target • Device (Default: Blank) Device Name • Device: X, Y, M, L, B, D, W, R, ZR, RD (Default: Blank) Points, Start, End • Range of the device in a CPU module • Set bit devices in increments of 16 points and word devices in increments of 1 point. (Default: Blank)

Point

The link devices of the CC-Link IE Controller Network-equipped module can be accessed from a program. (☞ Page 23 Direct access to link devices)

Precautions

■Device set to "CPU Side"

Set a device range that differs from 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 Setting" of intelligent function modules
- "Refresh Setting between Multiple CPU" 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 link refresh points, resulting in a shorter link refresh time.

■Changing link device assignment in the "Network Range Assignment" window of "Required Settings"

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

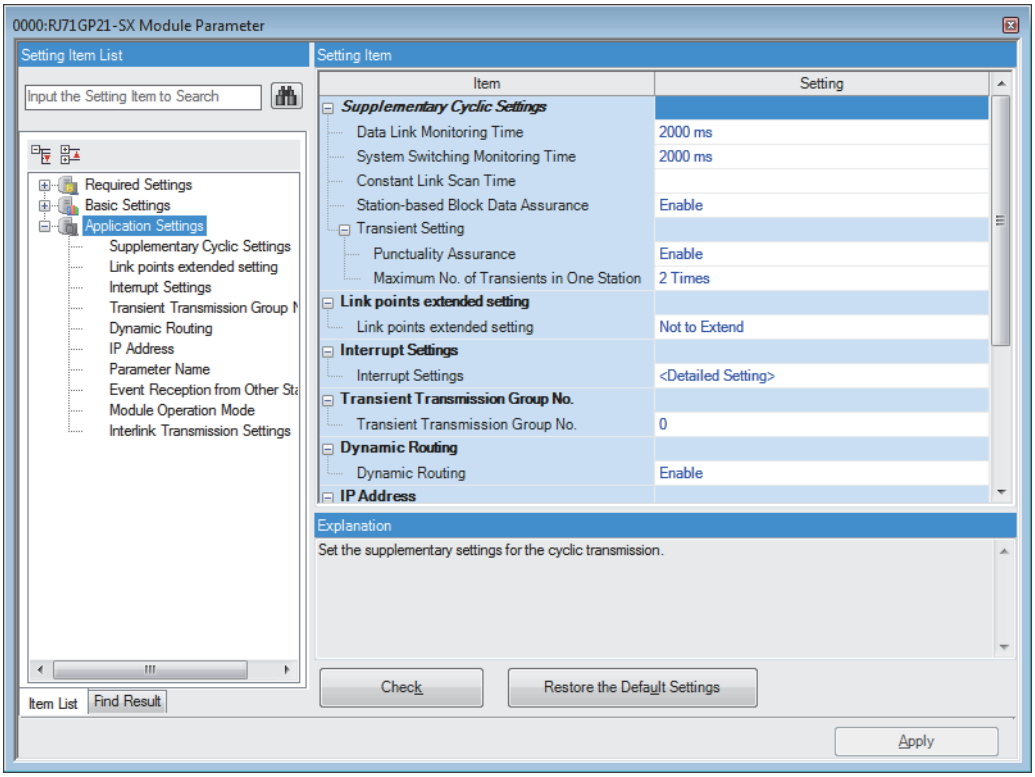
Network Topology

Select the topology type according to the actual network configuration.

Item	Description	Setting range
Network Topology	Select the topology type according to the actual network configuration. (☞ Page 60 Loopback Function) Select "Ring" in the following cases: • When the RJ71GP21(S)-SX is used • When the loopback function of the RJ71EN71 or RnENCPU is used	■When the RJ71GP21(S)-SX is used • Ring • Line/Star (cannot be set) (Default: Ring) ■When "Port 1 Network Type" is set to "CC-Link IE Control" for the RJ71EN71 or RnENCPU • Ring • Line/Star (Default: Ring) ■When "Port 1 Network Type" is set to "Ethernet" and "Port 2 Network Type" is set to "CC-Link IE Control" for the RJ71EN71 or RnENCPU • Line/Star • Ring (cannot be set) (Default: Line/Star)

2.4 Application Settings

Set the supplementary cyclic settings, interrupt settings, or other parameters for the CC-Link IE Controller Network-equipped module.



○: Can be set, ×: Cannot be set

Item	Description	Availability		Reference
		Control station	Normal station	
Supplementary Cyclic Settings	Set the data link monitoring time, system switching monitoring time, constant link scan time, station-based block data assurance, and transient transmission settings.	○	×	Page 90 Supplementary Cyclic Settings
Link points extended setting	Set whether to extend or not for the maximum number of link points per network in LB or LW.	○	○	Page 90 Link points extended setting
Interrupt Settings	Set conditions for sending an interrupt request to the CPU module.	○	○	Page 91 Interrupt Settings
Transient Transmission Group No.	Set the transient transmission group number.	○	○	Page 95 Transient Transmission Group No.
Dynamic Routing	Select whether to enable the dynamic routing function.	○	○	Page 95 Dynamic Routing
IP Address	Set the IP address of the control station to communicate with Ethernet device over CC-Link IE Controller Network.	○	×	Page 95 IP Address
Parameter Name	Set a name for the module parameter if desired.	○	○	Page 95 Parameter Name
Event Reception from Other Stations	Select whether to obtain the events occurring in the other stations.	○	○	Page 95 Event Reception from Other Stations
Module Operation Mode	Set the operation mode of the CC-Link IE Controller Network-equipped module.	○	○	Page 96 Module Operation Mode
Interlink Transmission Settings	Set link device ranges when cyclic data are transferred from a station in the own network to a station in another network.	○	○	Page 97 Interlink Transmission Settings

Item	Description	Availability		Reference
		Control station	Normal station	
Redundant System Settings	Set the operation mode for the CC-Link IE Controller Network-equipped module mounted on system B in a redundant system. This item can be set only when "RJ71GP21-SX(R)" or "RJ71GP21S-SX(R)" is selected for "Module Name".	○	○	Page 101 Redundant System Settings

Supplementary Cyclic Settings

Set the data link monitoring time, constant link scan time, station-based block data assurance, and transient transmission settings.

Item	Description	Setting range
Data Link Monitoring Time	Set the time for monitoring the link scan time in units of 5ms. Normally, it is recommended to use the default value. If the link scan time exceeds the value set in "Data Link Monitoring Time", data linking is disabled.	5ms to 2000ms (Default: 2000ms)
System Switching Monitoring Time	When the network contains a redundant system, set the time (in increments of 10ms) from data link stop ('Data link error status of own station' (SB0049) is turned on) to issuance of a system switching request. This item can be set only for the control station.	10 to 5000ms (Default: 2000ms)
Constant Link Scan Time	Set the constant link scan time. (☞ Page 33 Cyclic transmission punctuality assurance)	1ms to 500ms (Default: Blank)
Station-based Block Data Assurance	Set whether to ensure a data integrity of the data blocks being refreshed between the CC-Link IE Controller Network-equipped module and the CPU module. (☞ Page 27 Cyclic data integrity assurance)	• Enable • Disable (Default: Enable)
Transient Transmission Settings	• Punctuality Assurance: Set whether to assure the punctuality of cyclic transmissions. When the "Enable" is selected, each station performs transient transmissions for the number of times specified in "Maximum No. of Transient Transmissions", which keeps the link scan time constant. (☞ Page 33 Specification of the number of transient transmissions)	• Enable • Disable (Default: Enable)
	• Maximum No. of Transient Transmissions: Set the number of transient transmissions that one station can perform in one link scan.	1 to 10 times (Default: 2 times)

Link points extended setting

Set the link points extended setting

Item	Description	Setting range
Link points extended setting	Set whether to extend or not for the maximum number of link points per network in LB or LW. For the specifications of the maximum number of link points, refer to the following. ☞ Page 35 Number of send points extension	• Not to Extend • Extend (Default: Not to Extend)

Interrupt Settings

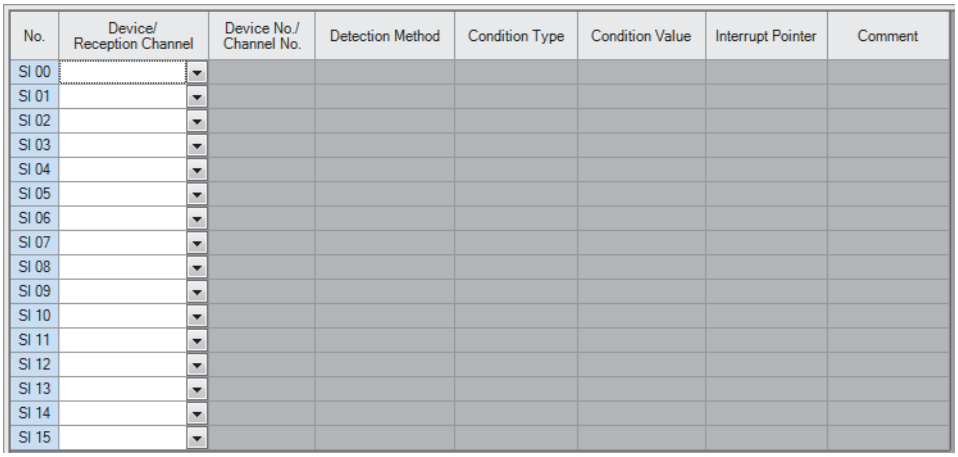
Set conditions for sending an interrupt request to the CPU module.

Setting procedure

The procedure for the interrupt settings is shown below.

1. Set the interrupt conditions.

Up to 16 interrupt conditions can be set.



No.	Device/ Reception Channel	Device No./ Channel No.	Detection Method	Condition Type	Condition Value	Interrupt Pointer	Comment
SI 00							
SI 01							
SI 02							
SI 03							
SI 04							
SI 05							
SI 06							
SI 07							
SI 08							
SI 09							
SI 10							
SI 11							
SI 12							
SI 13							
SI 14							
SI 15							

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

Setting items

Item	Description	Setting range
Word Device Setting Value Input Format	Right click in the setting window and select a format from the "Word Device Setting Value Input Format" menu.	• Decimal • Hexadecimal (Default: Decimal)
Device/Reception Channel	Set an interrupt condition device. Set the channel number when "Reception Channel" is selected in "Device/Reception Channel".	Refer to the following table.
Device No./Channel No.		
Detection Method	Select the detection timing of an interrupt generated by the device set in "Device/Reception Channel" and "Device No./Channel No.".	
Condition Type		
Condition Value	When "LW" or "SW" is selected in "Device/Reception Channel", enter a word device value that triggers an interrupt.	
Interrupt Pointer	Set an interrupt pointer (I) to be used for an interrupt program.	
Comment	Set a comment for the interrupt pointer used.	

(Setting range)

Device/Reception Channel	Device No. /Channel No.	Detection Method	Condition Type	Condition Value	Interrupt Pointer
LB	• 0 to 7FFFH (Link points extended setting: Not to Extend) • 0 to FFFFH (Link points extended setting: Extend)	Level + ON: Interrupt occurs by turning on the device. Level + OFF: Interrupt occurs by turning off the device. Edge + ON: Interrupt occurs at the rising edge of the device. Edge + OFF: Interrupt occurs at the falling edge of the device.		—	Device: I0 to I15, I50 to I1023
LX	0H to 1FFFH				
SB	0H to 1FFH				
LW	• 0 to 1FFFFH (Link points extended setting: Not to Extend) • 0 to 3FFFFH (Link points extended setting: Extend)	Level + Values Match: Interrupt occurs when values match. Level + Values Mismatch: Interrupt occurs when values do not match. Edge + Values Match: Interrupt occurs when values match (first time only). Edge + Values Mismatch: Interrupt occurs when values do not match (first time only).		0 to 65535 (0H to FFFFH)	
SW	0H to 1FFH				
Reception Channel	1 to 8	Edge (fixed)	Reception Completed (fixed)*1	—	

*1 An interrupt occurs when the channel specified in "Device No./Channel No." receives data.

Point

Using an interrupt program will eliminate the need for describing a start condition in a program. This leads to reduction in the number of steps and sequence scan time.

Precautions

■When "Detection Method" is set to "Level" and the interrupt condition is always met

If the sequence scan takes much longer than the link scan, since interrupt processing is activated in each link scan, sequence scan time may greatly increase, resulting in a watchdog timer error of the CPU module.

When "Detection Method" is set to "Level" and the interrupt condition is always met, do not use interrupt settings and correct the interrupt condition in the program.

■Before executing an interrupt program

Execute the EI instruction in a main routine program and enable an interrupt. (📖 MELSEC iQ-R CPU Module User's Manual (Application))

■When multiple interrupts have simultaneously occurred

The operation may delay.

■When the mode of the CC-Link IE Controller Network-equipped module is "Module Communication Test" or "Offline"

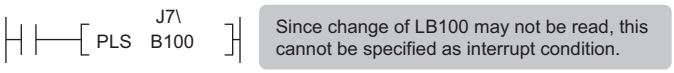
The CC-Link IE Controller Network-equipped module can send an interrupt request to the CPU module when the mode is "Offline". The module cannot send the request when the mode is "Module Communication Test" or "Offline".

■Starting an interrupt program by the rising/falling edge of the specified device

Do not use the rising/falling edge of a specified device (such as the PLS and PLF instructions) as a trigger of an interrupt program because a change in the device may fail to be read.

Ex.

Sending an interrupt request by turning on LB100 in a station in network No.7



■An interrupt cannot be generated

Changes in the interrupt condition device cannot be detected if the change is shorter than the transmission delay time.

■Using cyclic data in an interrupt program

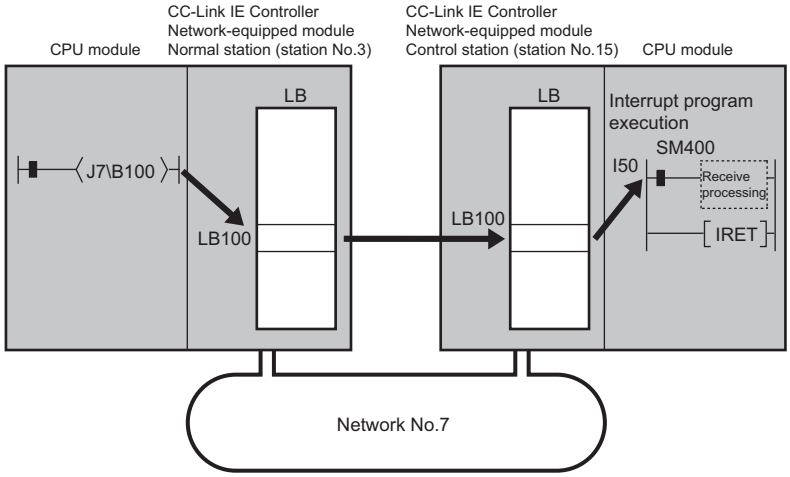
When an interrupt program is executed, the link device data is not link-refreshed to CPU module devices. Directly access the link devices of the CC-Link IE Controller Network-equipped module by direct access.

Setting examples

■Starting the interrupt program when the status of a link device changes

Ex.

The following is a setting example to execute the interrupt program corresponding to the interrupt pointer I50 of the control station (station No.15) when LB100 turns on in the normal station (station No.3).



1. Set the interrupt setting parameters for the CC-Link IE Controller Network-equipped module control station (station No.15) as follows.

No.	Device/ Reception Channel	Device No./ Channel No.	Detection Method	Condition Type	Condition Value	Interrupt Pointer	Comment
SI 00	LB	00100	Edge	ON		I50	

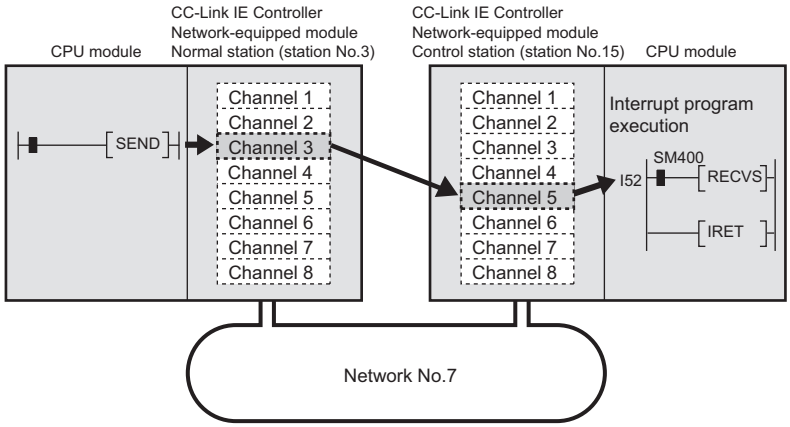
Point

By using link special relay (SB) and link special register (SW) as an interrupt condition device, an interrupt program can be started in case of data link error. (☞ Page 166 List of Link Special Relay (SB) Areas, Page 179 List of Link Special Register (SW) Areas).

■Starting the interrupt program when the channel specified in the RECVS instruction receives data sent from another station using the SEND instruction

Ex.

The following is a setting example to execute the interrupt program corresponding to the interrupt pointer I52 when the channel specified in the RECVS instruction (channel 5 of the control station (station No.15)) receives data sent from the normal station (station No.3) using the SEND instruction.



1. Set the interrupt setting parameters for the CC-Link IE Controller Network-equipped module control station (station No.15) as follows.

No.	Device/ Reception Channel	Device No./ Channel No.	Detection Method	Condition Type	Condition Value	Interrupt Pointer	Comment
SI 00	Reception Channel	5	Edge	Reception Completed		I52	

Transient Transmission Group No.

Set the transient transmission group number.

Item	Description	Setting range
Transient Transmission Group No.	Set a group number for transient transmission with group specification.	0 to 32 (0: No group specification) (Default: 0)

Dynamic Routing

Select whether to enable the dynamic routing function.

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

For details, refer to the following.

☞ Page 41 Communications with different networks

IP Address

Set the IP address of the control station to communicate with Ethernet device over CC-Link IE Controller Network. (☞ Page 46 Setting)

Item	Description	Setting range
IP Address	Only the network address part (first and second octets) of the IP address needs to be set. The network number part (third octet) and the station number part (fourth octet) are automatically set. • Set an IP address for the control station only. • Use the same network address for the request source device, request destination device, and modules among them. • Since automatically assigned, an IP address needs not to be set for normal stations. (The network address same as that of the control station is automatically set.)	First octet: 0 to 223 Second octet: 0 to 255

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: Blank)

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

Select the operation mode of the CC-Link IE Controller Network-equipped module.

For the RJ71EN71 and RnENCPU, when the "Port 1 Network Type" is set to "Ethernet" and "Port 2 Network Type" is set to "CC-Link IE Control", set both of the P1 and P2 to the same mode.

For a redundant system, select the module operation mode of system A.

For details on module communication test mode, refer to the following.

☞ Page 108 Module communication test

Item	Description	Setting range
Module Operation Mode	Online • Select this mode to connect the CC-Link IE Controller Network-equipped module to the network for performing data link with other stations. Offline • Select this mode to disconnect the CC-Link IE Controller Network-equipped module from the network for stopping data link with other stations. Module Communication Test • Select this mode to check the hardware of the CC-Link IE Controller Network-equipped module. Select this mode to check the module hardware when communication is unstable.	• 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".

- Cyclic transmission
- Transient transmission
- RAS (automatic return, loopback function, control station switching)
- Interrupt request to CPU module
- IP packet transfer function

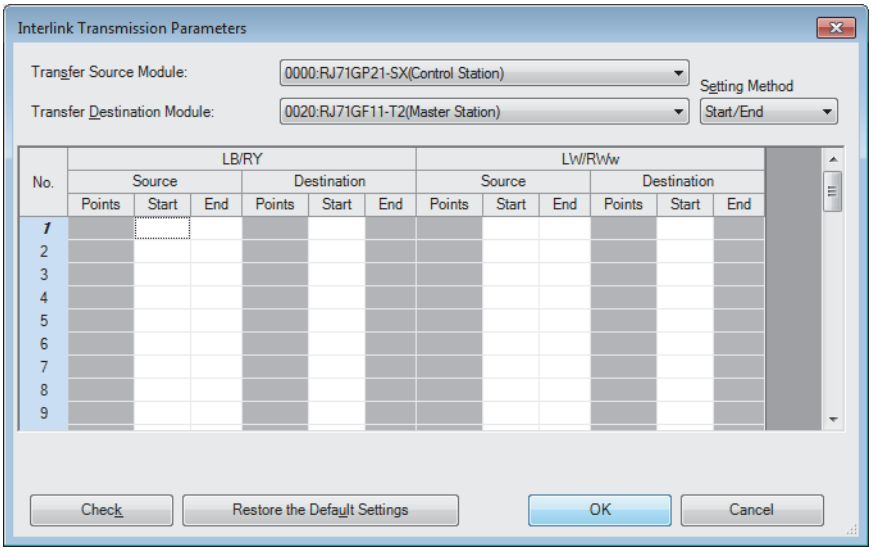
Interlink Transmission Settings

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

Setting procedure

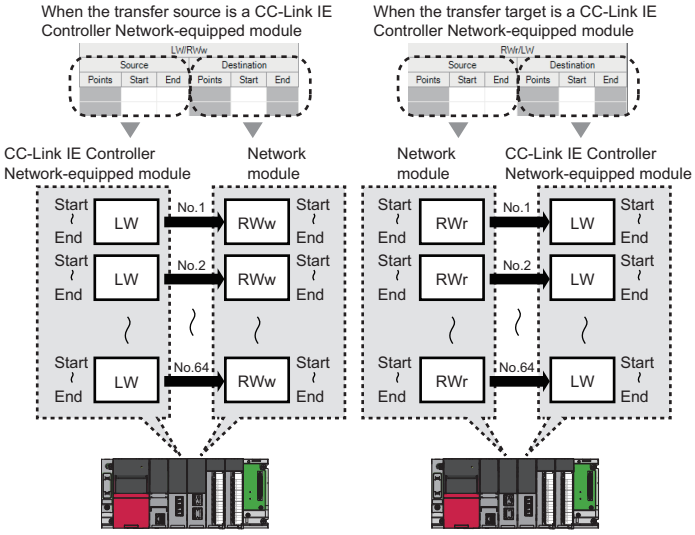
The procedure for the interlink transmission settings is shown below.

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
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 start and end numbers of link devices.	• Start/End • Points/Start (Default: Start/End)
Transfer Source Module		Select the transfer source and target modules.	The setting varies depending on the set module.
Transfer Destination Module			
LB/RY RX/LB	Source Destination	Enter the link device range of the transfer source and destination modules. Up to 64 ranges can be set. LB points can be assigned in increments of 16 (Start: □□□0H, End: □□□FH). When the transfer source is a CC-Link IE Controller Network-equipped module When the transfer target is a CC-Link IE Controller Network-equipped module CC-Link IE Controller Network-equipped module Network module Network module CC-Link IE Controller Network-equipped module Start / End LB RY RX No.1 No.2 No.64	■LB (Default: Blank) • Points: 16 to 16384 • Range: 0H to 7FFFH (Link points extended setting: Not to Extend) • Range: 0H to FFFFH (Link points extended setting: Extend)

Item		Description	Setting range
LW/RWw RWr/LW	Source Destination	Enter the link device range of the transfer source and destination modules. Up to 64 ranges can be set. LW points can be assigned in increments of 1. 	■LW (Default: Blank) • Points: 1 to 16384 • Range: 0H to 1FFFFH • Range: 0H to 3FFFFH (Link points extended setting: Extend)

Point

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

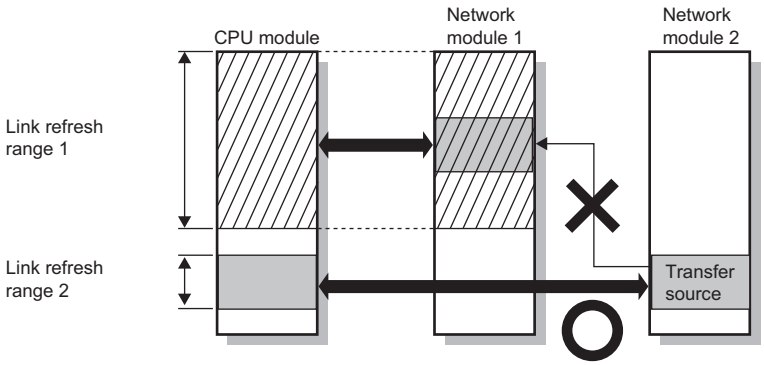
Precautions

■Modules supporting interlink transmission

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

■Transfer destination link device setting

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

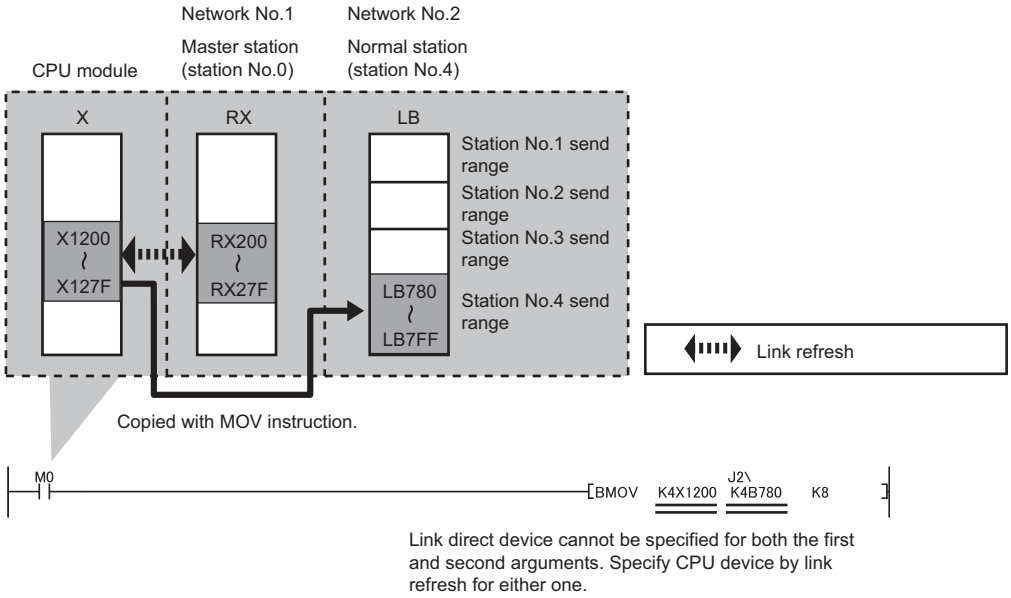


■Setting 65 or more interlink transmission ranges

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

Ex.

The following is a setting example to perform interlink transmission between the master station on Network No.1 (CC-Link IE Field Network) and the normal station on Network No.2 (CC-Link IE Controller Network).



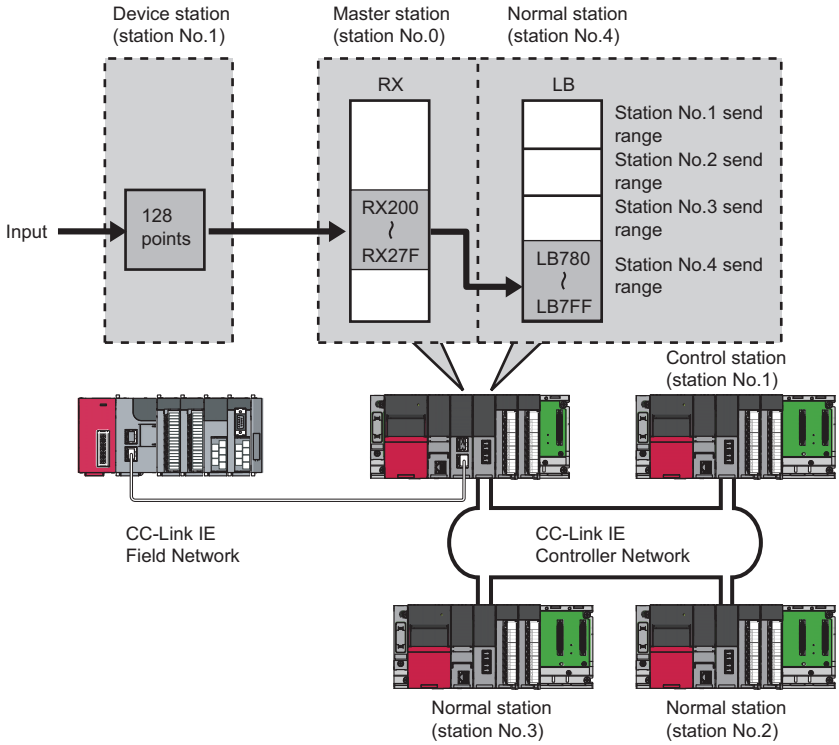
Link direct device cannot be specified for both the first and second arguments. Specify CPU device by link refresh for either one.

■Performing interlink transmission in a multiple CPU system

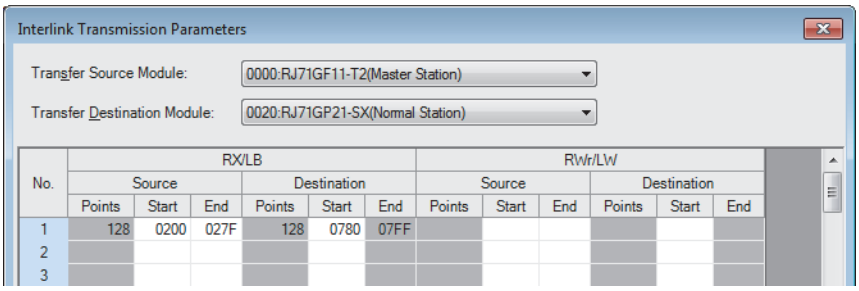
When different control CPUs are set for the network modules, interlink transmission cannot be performed using interlink transmission parameters or a program. Perform interlink transmission using data communication by the CPU buffer memory. (MELSEC iQ-R CPU Module User's Manual (Application))

Setting example

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



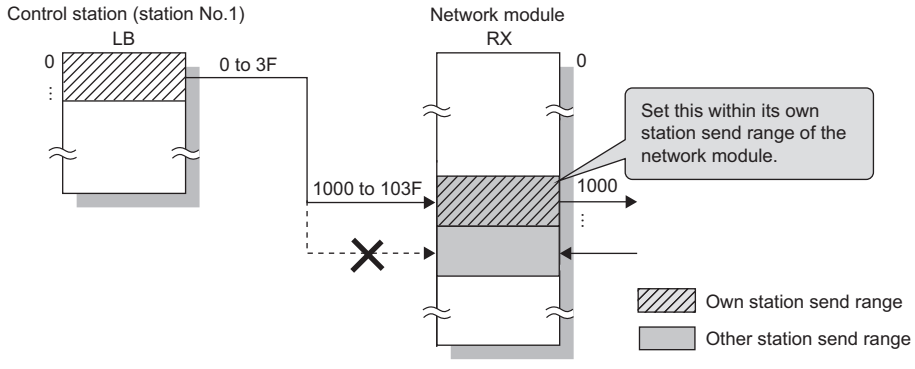
1. Select "0000: RJ71GF11-T2 (Master Station)" for "Transfer Source Module" and "0020: RJ71GP21-SX (Normal Station)" for "Transfer Destination Module", and enter the transfer ranges of link devices.



2. Click the [OK] button.

Point

If the transfer target network module is on a network other than CC-Link IE Controller Network, set the transfer target 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.



Redundant System Settings

Set the operation mode for the CC-Link IE Controller Network-equipped module mounted on system B in a redundant system.

Item	Description	Setting range
Station Number (System A)	Displays the station number set in "Station Number" under "Required Settings".	—
Module Operation Mode (System A)	Displays the module operation mode set for "Module Operation Mode" under "Application Settings".	—
Station Number (System B)	Displays the station number of system B.	—
Module Operation Mode (System B)	Set the module operation mode of system B. For details on the module operation mode, refer to the following. ☞ Page 96 Module Operation Mode	• Online • Offline • Module Communication Test (Default: Online)

3 TROUBLESHOOTING

This chapter describes troubleshooting of CC-Link IE Controller Network.

3.1 Checking with LED

This section describes troubleshooting using LED.

Error status can be determined by status of the RUN LED and the ERR LED.

RUN LED	ERR LED	Error status*1	Description
Off	On, flashing	Major error	An error such as hardware failure or memory failure. The module stops operating.
On	Flashing	Moderate error	An error, such as parameter error, which affect module operation. The module stops operating.
On	On	Minor error	An error such as communication failure. The module continues operating.

*1 When multiple errors occur, the error status is displayed in the order of major, moderate, and minor.

Point

For the RJ71EN71 or RnENCPU, whether the error occurs in the P1 or P2 can be checked with P ERR LED.

When the RUN LED turns off

When the RUN LED turns off after powering on the CC-Link IE Controller Network-equipped module, check the following.

Check item	Action
Is the CC-Link IE Controller Network-equipped module mounted correctly?	Securely mount the CC-Link IE Controller Network-equipped module on the base unit.

If the above action does not solve the problem, perform the module communication test to check for hardware failure. (☞ Page 108 Module communication test)

When the ERR LED turns on or is flashing

When the ERR LED turns on or is flashing, check the following.

Check item	Action
Does any error occur in the module diagnostics?	Take the actions displayed on the window.
Does any error occur in the CC-Link IE Controller Network diagnostics?	• Correct "Network Range Assignment" in "Basic Settings" of the control station in accordance with the normal station actually connected. • Perform troubleshooting for when the D LINK LED turns off or is flashing in the disconnected station. (☞ Page 103 When the D LINK LED turns off or is flashing)

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

- Module communication test (☞ Page 108 Module communication test)
- Cable test (☞ Page 133 Cable test (only when Ethernet cables are used))

When the D LINK LED turns off or is flashing

When the D LINK LED turns off or is flashing, check the following.

Common (when optical fiber cables and Ethernet cables are used) check item	Action
Is the control station operating normally?	• If an error has occurred in the CPU module on the control station (sub-control station), eliminate the cause of the CPU module error. (MELSEC iQ-R CPU Module User's Manual (Application)) • Check if the control station (sub-control station) are performing data link using CC-Link IE Controller Network diagnostics. (☞ Page 111 Checking the Network Status)
Is the control station connected to the network?	Check if the control station (sub-control station) are performing data link using CC-Link IE Controller Network diagnostics. (☞ Page 111 Checking the Network Status)
Does the communication cable used conform to the standard?	Replace the communication cable with one conforming to the standard. (MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within range. (MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
Does the cabling condition (bending radius) meet the specifications?	Refer to the manual for the communication cable, and correct the bending radius.
Is any communication cable disconnected?	Replace the communication cable.
Are 120 or more normal stations connected?	Change the connection of the normal stations to 119 stations or less.
Are other stations connected to the CC-Link IE Controller Network-equipped module normally?	• Check if the modules on the other stations are performing data link using CC-Link IE Controller Network diagnostics. (☞ Page 111 Checking the Network Status) • Check the operation status of modules on other stations. (User's manual for the module used)
Are station numbers unique?	Change the duplicated station number.
Is the CC-Link IE Controller Network-equipped module with the supported firmware version used when the Process CPU is used and "Link points extended setting" is set to "Extend"?	Use the CC-Link IE Controller Network-equipped module with the supported firmware version. (☞ Page 213 Added and Enhanced Functions)

Check item only when Ethernet cables are used	Action
Is a switching hub connected in ring topology?	Configure the network in ring topology without a switching hub.
Is the switching hub used operating normally?	• Check if a switching hub which conforms the standard is used. (MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • Power off and on the switching hub.
Check that the cables are not connected as described below. • Both P1 and P2 are connected to the same switching hub. • The network is configured in ring topology although "Network Topology" under "Basic Settings" of the control station is set to "Line/Star". • The network is configured in star topology although "Network Topology" under "Basic Settings" of the control station is set to "Ring". • The network is incorrectly configured in ring topology.	Correct the wiring.
	When the system does not contain a switching hub, take any of the following actions: • For line topology, disconnect an Ethernet cable (either P1 or P2) connected to any station on the network. The network topology will become a line topology and data link will start. • For ring topology, set "Network Topology" under "Basic Settings" of the control station to "Ring" and rewrite the parameters to the CPU module.
	When the system contains a switching hub, take any of the following actions: • Check if "Network Topology" under "Basic Settings" of the control station is set to "Ring". Because the network cannot be configured in ring topology which contains a switching hub, set "Network Topology" to "Line/Star" and rewrite the parameters to the CPU module. When data link starts across the entire network, this procedure is successfully completed. • Disconnect one Ethernet cable connected to the switching hub and power off and on the hub. (Repeat this operation until data link starts over the network.) • When data link starts over the network, check the network configuration using CC-Link IE Controller Network diagnostics.

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

- Module communication test (☞ Page 108 Module communication test)
- Cable test (☞ Page 133 Cable test (only when Ethernet cables are used))

When the L ERR LED turns on (when optical fiber cables are used)

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

Check item	Action
Are the communication cables used normally?	• Check if the communication cable which conforms the standard is used. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • Check if the station-to-station distance is set within range. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • Check if the communication cables are not disconnected.
Are other stations connected to the RJ71GP21(S)-SX normal?	Check if the other stations are performing data link using CC-Link IE Controller Network diagnostics. (☞ Page 111 Checking the Network Status)
Is "Module Operation Mode" under "Application Settings" of the control station set to one other than "Online"?	Set "Module Operation Mode" under "Application Settings" of the control station to "Online".

If the above actions do not solve the problem, perform troubleshooting for when communication is unstable. (☞ Page 142 When communication is unstable)

When the L ER LED turns on (when Ethernet cables are used)

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

Check item	Action
Are the Ethernet cables used normally?	• Check if the Ethernet cable which conforms the standard is used. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • Check if the station-to-station distance is set within range. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • Check if the Ethernet cables are not disconnected.
Is the switching hub used operating normally?	• Check if a switching hub which conforms the standard is used. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • Power off and on the switching hub.
Is there any source of noise near the module or cables?	Change the location of the module or cables.
Is "Network Topology" under "Basic Settings" of the control station set to "Ring"?	Check if the ring topology is correctly configured for the port where the L ER LED is on. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))

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

- Module communication test (☞ Page 108 Module communication test)
- Troubleshooting for when communication is unstable (☞ Page 142 When communication is unstable)

When the LINK LED turns off (when Ethernet cables are used)

When the LINK LED turns off, check the following.

Check item	Action
Do the used Ethernet cables conform to the Ethernet standard?	Replace the cables with the Ethernet cable which conforms the standard. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
Does the station-to-station distance meet the specifications?	Set the station-to-station distance within range. (📖 MELSEC iQ-R Ethernet/CC-Link IE 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 switching hub used operating normally?	• Check if a switching hub which conforms the standard is used. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • Power off and on the switching hub.
Are other stations connected to the RJ71EN71 and the RnENCPU (network part) normally?	• Check if the modules on the other stations are performing data link using CC-Link IE Controller Network diagnostics. (☞ Page 111 Checking the Network Status) • Check the operation status of modules on other stations. (📖 User's manual for the module used)

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

- Module communication test (☞ Page 108 Module communication test)
- Cable test (☞ Page 133 Cable test (only when Ethernet cables are used))

When the EXT PW LED turns off

When the EXT PW LED turns off, check the following.

Check item	Action
Is the external power supply connected to the RJ71GP21S-SX?	Connect the external power supply to the RJ71GP21S-SX.

If the above action does not solve the problem, the possible cause is a hardware failure of the RJ71GP21S-SX.
Please consult your local Mitsubishi representative.

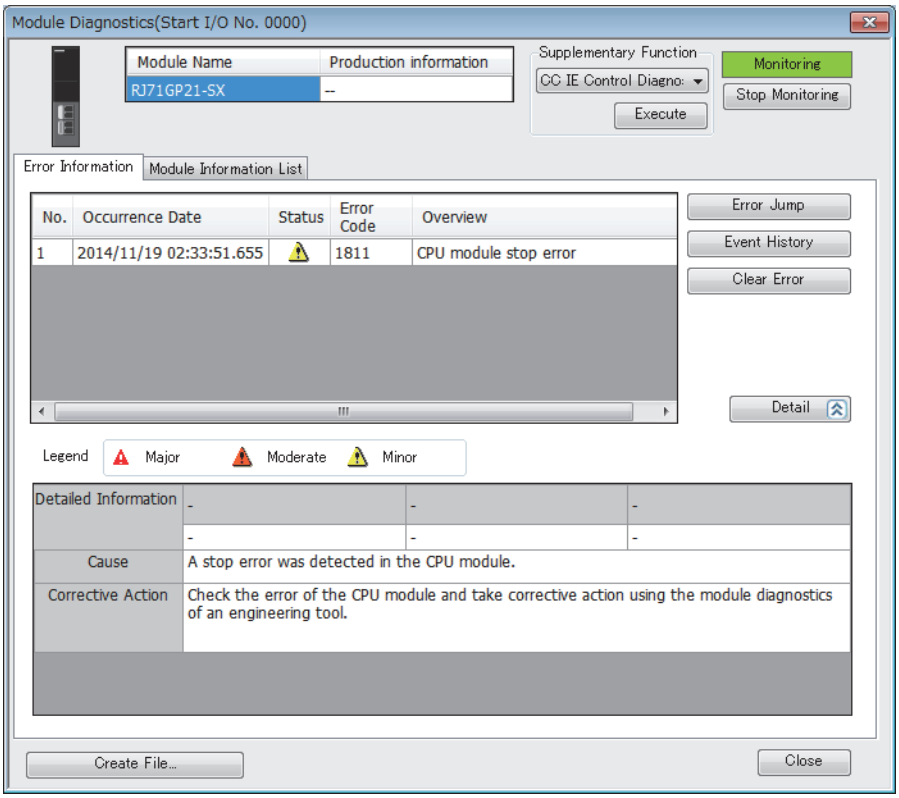
3.2 Checking the Module Status

The following items can be checked in the "Module Diagnostics" window for the CC-Link IE Controller Network-equipped module.

Item		Description
Error Information		Displays the details of the errors currently occurring. Click the [Event History] button to check the history of errors that have occurred on the network, errors detected for each module, and operations that have been executed.
Module Information List		Displays various status information of the CC-Link IE Controller Network-equipped module.
Supplementary Function	• CC IE Control Diagnostics	Enables checking the cause to resolve the problem when an error occurs in CC-Link IE Controller Network. (☞ Page 111 Checking the Network Status)

Error information

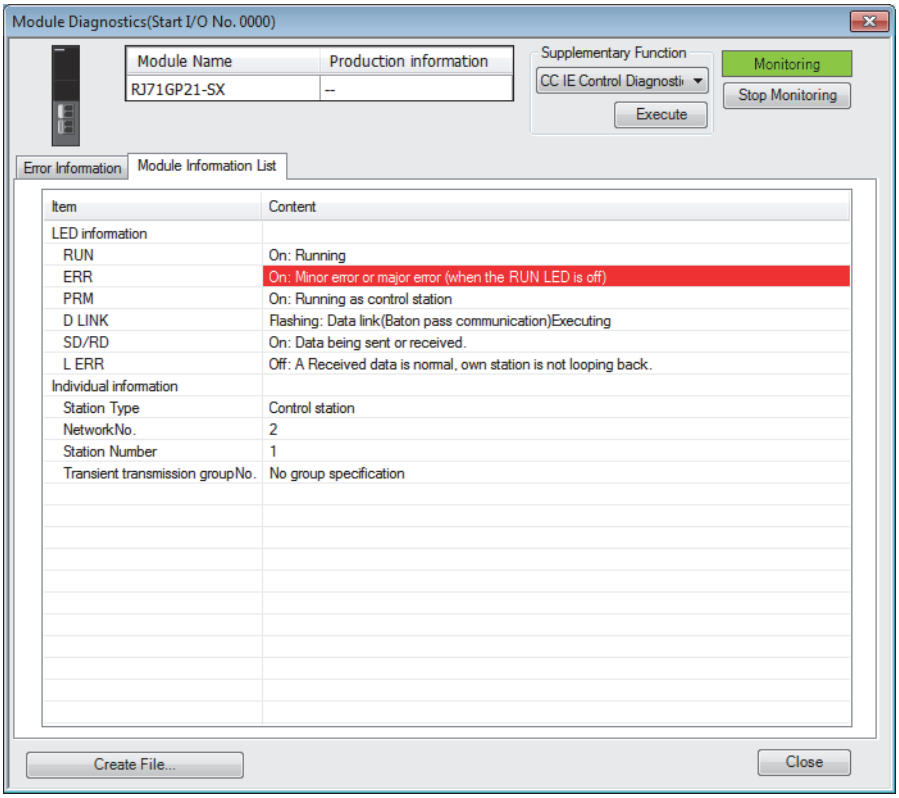
Check the details of the error currently occurring and action to remove the error.



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 affect module operation. The module stops operating.
	Minor: An error such as communication failure. The module continues operating.
Detailed Information	Displays detailed information about each error (maximum of 3 pieces).
Cause	Displays the detailed error causes.
Corrective Action	Displays the actions to eliminate the error causes.

Module information list

Switch to the [Module Information List] tab to check various status information of the CC-Link IE Controller Network-equipped module.



Item		Description
LED information		Displays the LED status of the CC-Link IE Controller Network-equipped module.
Individual information	Station Type	Displays the station type set for the module selected.
	Network No.	Displays the network number set for the module selected.
	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.

Module communication test

The module communication test checks the hardware of the CC-Link IE Controller Network-equipped module. When the communication using the CC-Link IE Controller Network-equipped module is unstable, whether a hardware failure occurs or not can be checked.

The following list 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.

■Procedure (for a system other than a redundant system)

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

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

2. Perform the following.

- For the RJ71GP21(S)-SX: Connect IN connector and OUT connector with optical fiber cables.
- For the RJ71EN71: Connect the P1 and P2 with an Ethernet cable.
- For the RnENCPU: Connect the P1 and P2 with an Ethernet 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 another station may failed.
- For the RJ71EN71 or RnENCPU, when "Port 1 Network Type" is set to "Ethernet" and "Port 2 Network Type" is set to "CC-Link IE Control", set both of the P1 and P2 to "Module Communication Test".

■Procedure (for a redundant system)

To perform a module communication test for a redundant system, set the operation mode to separate mode. Before execution, perform system switching in advance so that the module communication test target station operates as the standby system.

The following describes a procedure for executing a module communication test for the RJ71GP21(S)-SX of system B.

1. Set the module operation mode of system A to online mode in the following item.

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

2. Set the module operation mode of system B to module communication test mode in the following item.

[Navigation window] ⇨ [Parameter] ⇨ [Module Information] ⇨ Target module ⇨ [Module Parameter] ⇨ [Application Settings] ⇨ [Redundant System Settings] ⇨ [Module Operation Mode (System B)]

3. Connect the IN connector and OUT connector of the RJ71GP21(S)-SX of system B together using optical fiber cables.
4. Set the system B CPU module to the STOP state.
5. Write the module parameters to the system B CPU module.
6. Reset or power off and on the system B CPU module to start a module communication test.

Point

- To perform a module communication test on system A, set the module operation mode of system A to module communication test mode and the module operation mode of system B to online mode.
- When returning the module to a normal operation state after the test, reconnect the optical fiber cable as before the test, and then execute the CPU module memory copy to transfer the parameters of the control system to the standby system. (MELSEC iQ-R CPU Module User's Manual (Application))
- Do not perform a module communication test while connected to another station. The operation of another station may failed.

■Checking the status and result of module communication test.

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

Test status	LED indication
Test in progress	The dot matrix LED indicates "UCT".
Completed normally	The dot matrix LED indicates "OK".
Abnormal end	The ERR LED turns on and the dot matrix LED indicates "ERR" and error number alternately at intervals of 1 second.

- When optical fiber cables are used, the error number when the test abnormally ended is indicated in the dot matrix LED as shown below.

Error No.	Error detection connector	Description	Action
1_1	IN connector	Internal self-loopback test failure	Please consult your local Mitsubishi representative.
2_1	OUT connector		
1_2	IN connector	External self-loopback test connection error	Check the optical fiber cable connection or replace the cable, and perform the test again. If the test fails again, Please consult your local Mitsubishi representative.
2_2	OUT connector		
1_3	IN connector	External self-loopback test communication error	Replace the optical fiber cable and perform the test again. If the test fails again, Please consult your local Mitsubishi representative.
2_3	OUT connector		

- When Ethernet cables are used, the dot matrix LED indicates the error number with the form of "Port number Error number". For example, "1 3" is displayed when error No.3 occurs in P1.

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

3.3 Checking the Network Status

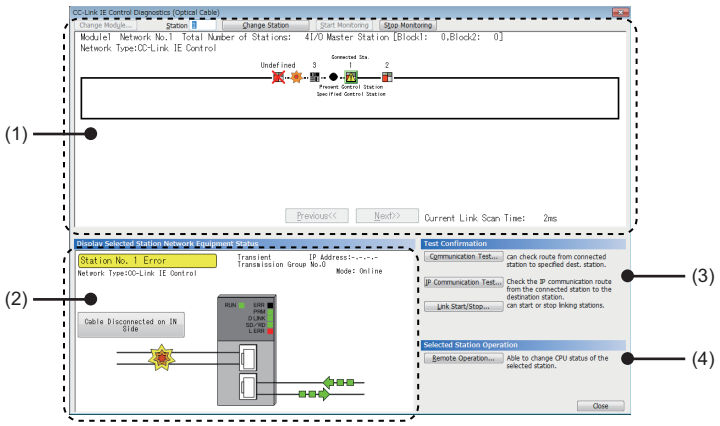
Perform the CC-Link IE Controller Network diagnostics to check the network status and error details or to perform an operation test for troubleshooting.

When optical fiber cables are used

This section describes the CC-Link IE Controller Network diagnostics when optical fiber cables are used.

Diagnostic items

The following table lists items that can be diagnosed by the CC-Link IE Controller Network diagnostics.



○: Diagnosed, ×: Not diagnosed

Item			"Other Station Setting" on the "Specify Connection Destination Connection" window		Restrictions	Reference
			"No Specification"	Other than "No Specification"*1		
(1)	Network information display	Network map and error status	○	○	—	Page 116 Diagnostics window
		Cable disconnection and disconnected station	○	○		
(2)	Display Selected Station Network Equipment Status	Status of the selected station and the error definition	○	○		
(3)	Test Confirmation	Communication Test	○	×	This can be selected when the selected station is an engineering tool connected station (own station). This cannot be selected when the selected station is another station.	Page 43 Communication test
		IP Communication Test	○	×	—	Page 49 IP communication test
		Link Start/Stop	○	×	This can be selected when the selected station is an engineering tool connected station (own station). This cannot be selected when the selected station is another station.	Page 134 Link Start/Stop
(4)	Selected Station Operation	Remote Operation	○	○	When the selected station is other than MELSEC iQ-R series, this function cannot be executed.	Page 138 Remote Operation

*1 When starting the CC-Link IE Controller Network diagnostics with a setting other than "No Specification" in "Other Station Setting" on the "Specify Connection Destination Connection" window, use the engineering tool of the version 1.035M or later.

Starting diagnostics

This section describes how to use the CC-Link IE Controller Network 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 normal station cannot be monitored due to an error such as cable disconnection, directly connect the engineering tool to the normal station.

2. Start the CC-Link IE Controller Network diagnostics.

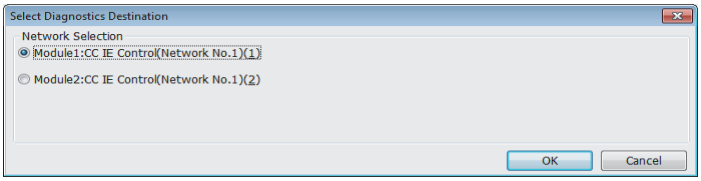
[Diagnostics] ⇨ [CC-Link IE Control Diagnostics (Optical Cable)]

Point

In a redundant system, the CC-Link IE Controller Network diagnostics cannot be started when a system has been specified in "Specify Redundant CPU" of "Target System" in the "Specify Connection Destination Connection" window. Directly connect the engineering tool to the station to be diagnosed, and specify the own remote head module (set "Not Specified" in "Specify Redundant CPU"), and start the CC-Link IE Controller Network diagnostics.

3. When the following window opens, select the RJ71GP21(S)-SX to be diagnosed and click the [OK] button to start the CC-Link IE Controller Network diagnostics.

Modules are listed in the order configured in module information.

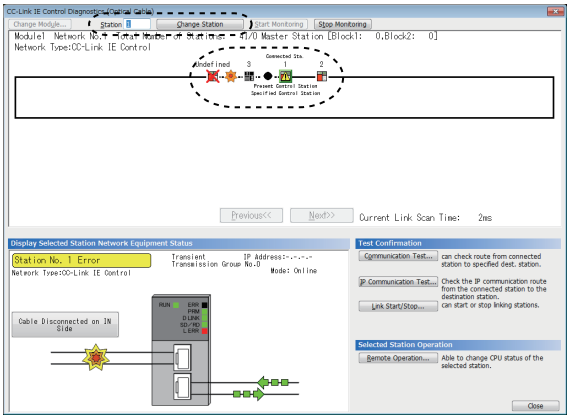


Point

When multiple CC-Link IE Controller Network-equipped modules of the same network number are mounted on the same base unit, the module with the smallest start I/O number is always diagnosed, regardless of setting.

4. Select the station to be diagnosed from "Selected Station" or "Network information display".

- An icon indicating an error is displayed on the station icon of the station where an error occurs.
- A disconnected station that has performed data link is indicated with the icon in the disconnected station.
- An icon is displayed on the cable where a communication error occurs. To check the details of the communication error, click the neighboring stations of the icon of the communication error.



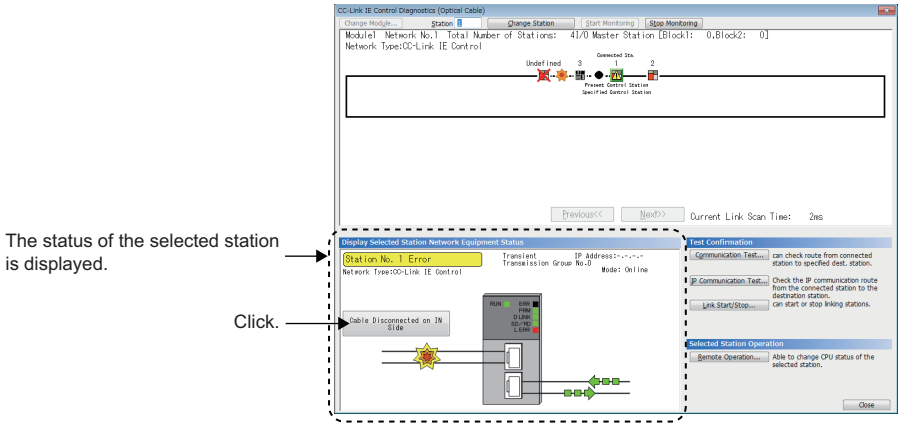
Point

When the station to be diagnosed cannot be selected, the status of network number disparity, control station duplication, or station number duplication cannot be checked using the CC-Link IE Controller Network diagnostics. Check the error details by directly connecting the engineering tool to the CPU module where an error occurs, and opening the "System Monitor" window.

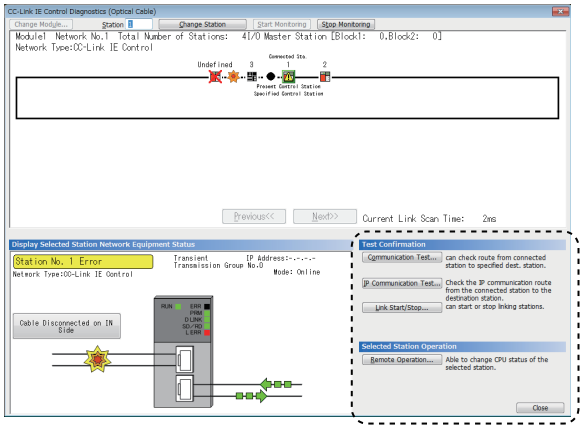
5. The status of a station selected in "Network information display" is displayed in "Display Selected Station Network Equipment Status". (☞ Page 119 Select station network device status display)

The station status is displayed on the top of "Display Selected Station Network Equipment Status".

If an error occurs, a button indicating the error such as [Cable Disconnected on OUT Side] is displayed in "Display Selected Station Network Equipment Status". Click the button to check the error details and actions.



6. Various tests and operations can be performed by clicking the "Test Confirmation" or "Selected Station Operation" on the bottom left of the window. (☞ Page 134 Procedure to Page 138 Precautions)



Various tests and operations can be performed.

■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.

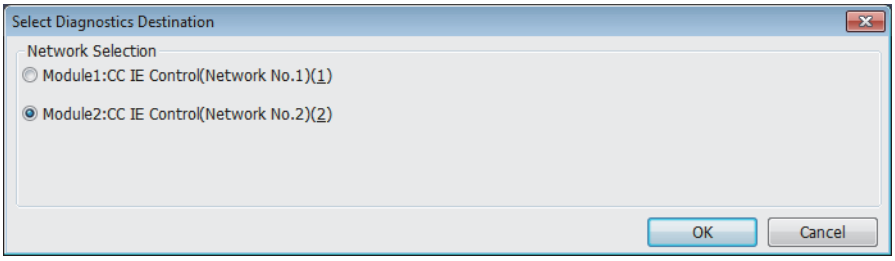
2. Start the CC-Link IE Controller Network diagnostics.

[Diagnostics] ⇨ [CC-Link IE Control Diagnostics (Optical Cable)]

Point

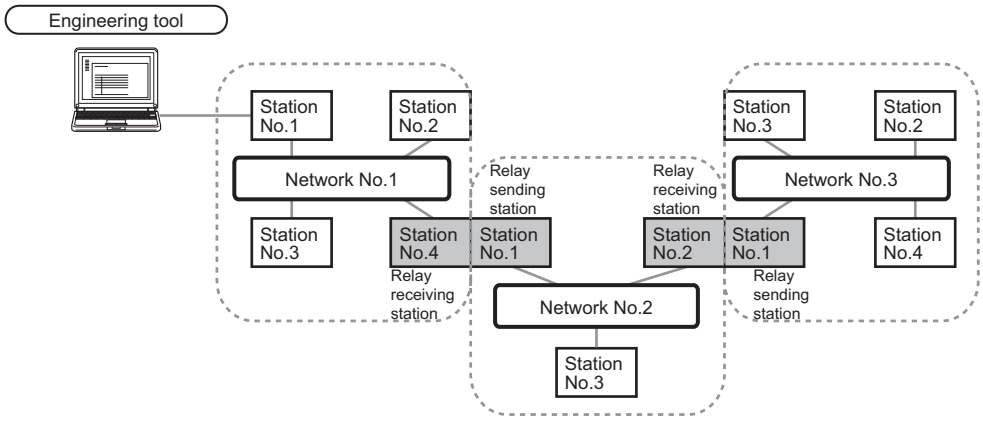
- In a redundant system, the CC-Link IE Controller Network diagnostics cannot be started when a system has been specified in "Specify Redundant CPU" of "Target System" in the "Specify Connection Destination Connection" window. Directly connect the engineering tool to the station to be diagnosed, and specify the own remote head module (set "Not Specified" in "Specify Redundant CPU"), and start the CC-Link IE Controller Network diagnostics.
- The CC-Link IE Controller Network 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 RJ71GP21(S)-SX of the diagnostics-target network number and click the [OK] button to start the CC-Link IE Controller Network diagnostics.



Point

- Although the CC-Link IE Controller Network 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 Controller Network 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 Controller Network diagnostics of the network number 2, specify the network number 1 and station number 4, or the network number 2 and station number 1 in "Network No." and "Station No.".



- The CC-Link IE Controller Network 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. However, for the stations of five networks ahead (number of relay stations: 4) or later, it can be started only when the firmware version of the RJ71GP21-SX or RJ71GP21S-SX is "18" or later.

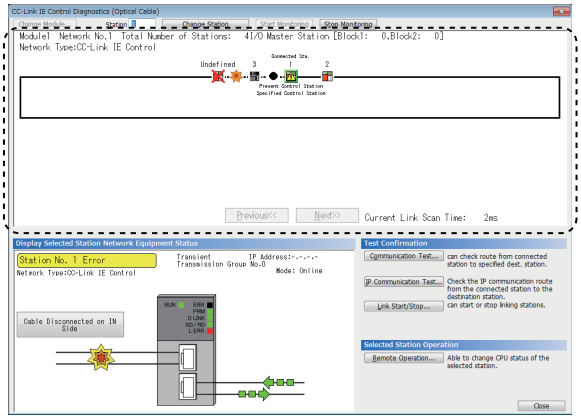
4. Step 4 and later is the same procedure as when "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window. (☞ Page 112 When "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window)

Precautions

If the communication path includes the following items, the CC-Link IE Controller Network diagnostics cannot be started.

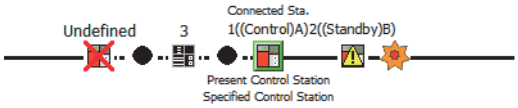
- MELSECNET/H
- Multidrop connection with a serial communication module
- Interface board for a personal computer
- GOT (when the transparent function is used)
- MELSEC-Q/L series network module

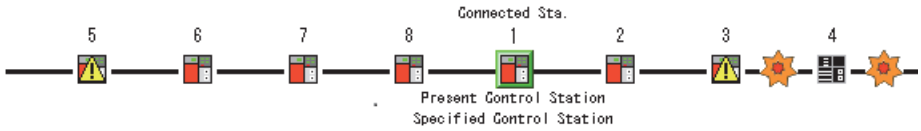
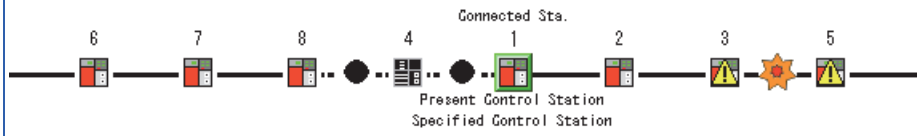
Diagnostics window



Network information display

Item		Description
[Change Module] button		Changes the CC-Link IE Controller Network-equipped module to be diagnosed when multiple CC-Link IE Controller Network-equipped modules are mounted. However, when multiple CC-Link IE Controller Network-equipped modules of the same network number are mounted on the same base unit, the module with the smallest start I/O number is always diagnosed, regardless of setting.
Selected Station		Specifies the station number of the station to be diagnosed. A station to be diagnosed can also be selected by clicking the station icon displayed in "Network information display".
[Change Station] button		Clicking the station number in "Selected Station" will change the select station.
[Start Monitoring] button		Starts monitoring of the CC-Link IE Controller Network diagnostics.
[Stop Monitoring] button		Stops monitoring of the CC-Link IE Controller Network diagnostics.
Network information display	Module□	Displays the module number of the network being diagnosed.

Item			Description	
Network information display	Network No.		Displays the network number of the network being diagnosed.	
	Total Number of Stations		Indicates the total number of stations (sum of control stations and normal stations) set in "Network Range Assignment" of "Required Settings".	
	I/O Master Station	Block 1:	Indicates the station number of the I/O master station of block 1.	
		Block 2:	Indicates the station number of the I/O master station of block 2.	
	Network Type		Displays "CC-Link IE Control Extended Mode" or "CC-Link IE Control".	
	Icon		Indicates the network map and the status of each station.  If the status is not displayed, check that there is only one control station in the system and no station number is overlapped.	
			Station number	1 to 120: The station number of the CC-Link IE Controller Network-equipped module is displayed. Control/Standby: The stations of the control system and standby system of a redundant system is displayed.*1 A/B: The stations of system A and system B of a redundant system is displayed. Undefined: The station for which parameters have not been set or station No. is not assigned is displayed.
			Connected station	Displayed the station (own station) where the engineering tool is connected.
			Current control station	Displayed to the station actually operating as control station.
			Specified control station	Displayed for the station set as the control station by module parameters.
			Icon	The station icons that may be displayed are listed below.
				Normally operating station
				Faulty station (A fault has occurred on a module and cable while cyclic transmission is performed.) If a station that is not cleared an error is to be a connected station, the icon at the station that is cleared an error still indicates as a faulty station even after the following error information is cleared at a faulty station. • 'Clear IN-side transmission error count' (SB0007) • 'Clear OUT-side transmission error count' (SB0008) When error information is cleared at a connected station, the icon at the station that is cleared an error will indicate as a normally operating station.
				Faulty station (Cyclic transmission is stopped.)
				Station in a different shared group (No cyclic data are received.)
				Disconnected station (black)
				Reserved station (gray)
				Selected station (station icon edged with green) • This can be selected by clicking a station icon or moving a focus and holding down a space bar. • The station status is displayed at "Display Selected Station Network Equipment Status". • Disconnected station and reserved station cannot be selected.
				Focusing (station icon edged with dotted line) • This can be selected by holding down a space bar. • Disconnected station and reserved station cannot be selected.
				Communication error • If the station adjacent to the one where a communication error occurs is selected, the station status is displayed at "Display Selected Station Network Equipment Status".

Item		Description
Network information display	Display position of a disconnected station	■When normal connection information has been obtained (☞ Page 118 Acquisition of normal connection information) The disconnected station (station No.4) is displayed in the position where it was connected when normal.  ■When normal connection information has not been obtained The disconnected station (station No.4) is displayed on the IN side of the engineering tool connected station. 
	[Previous] button	When the total number of stations is 61 or more, the window prior to "Network information display" is displayed by clicking this button.
	[Next] button	When the total number of stations is 61 or more, the window next to "Network information display" is displayed by clicking this button.
	Current link scan time	Indicates the link scan time of the displayed network.
Display Selected Station Network Equipment Status		Indicates status of the station selected in "Network information display". For details on "Display Selected Station Network Equipment Status", refer to the following. ☞ Page 119 Select station network device status display
Test Confirmation	[Communication Test] button	Performs a communication test. (☞ Page 43 Communication test)
	[IP Communication Test] button	Performs an IP communication test. (☞ Page 49 IP communication test)
	[Link Start/Stop] button	Starts or stops cyclic transmission. (☞ Page 134 Procedure)
Selected Station Operation	[Remote Operation] button	Performs remote operation (such as RUN, STOP, or RESET operations) to the CPU module. (☞ Page 138 Precautions)

*1 When a stop error occurs in the CPU modules of both systems, both systems are displayed as the standby system.

■Acquisition of normal connection information

The normal connection information is network configuration data that the CC-Link IE Controller Network-equipped module on the engineering tool connected station stores in its memory when all stations are normal.

When all of the following conditions are met, the normal connection information can be obtained. Also, after any of the conditions became unsatisfied, if all of them are met again, the normal connection information will be updated.

- Data link status is all stations normal. ('Data link error status of each station' (SB00B0) is off.)
- No loopback station ('Loopback status' (SB0065) is off.)
- No station has a parameter error. ('Parameter error status of each station' (SB00E0) is off.)
- The number of actually connected stations is the same as the total of stations that is set for the control station (except reserved stations).

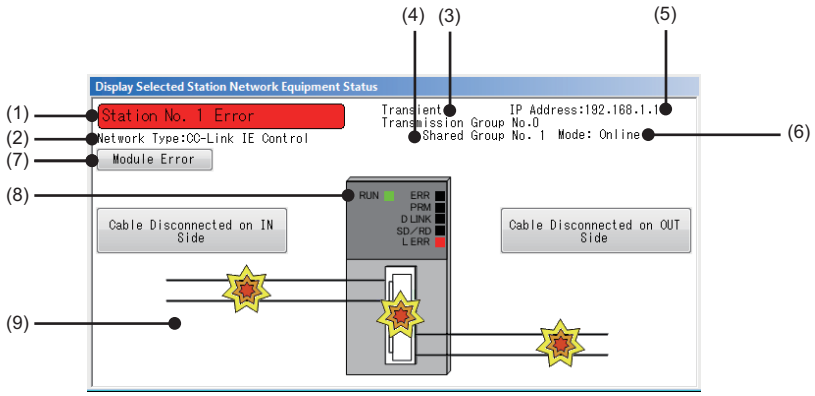
Point

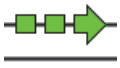
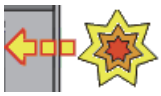
When multiple stations on the same system have the same network number, if a station other than those on the system is selected while a station of the lowest start I/O number has a baton pass error, a transient execution error (no baton passing on the own station) (E504H) will occur.
Execute again after correcting the baton pass error.

Select station network device status display

Indicates status of the station selected in "Network information display".

■When a station where an error has occurred is selected

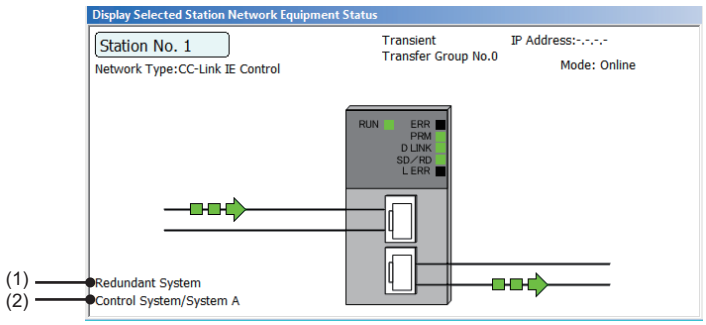


No.	Description
(1)	Indicates the operating status. • Station No.□: Normal operation • Station No.□ Error (yellow): Error (Data link is continued.) • Station No.□ Error (red): Error (Data link is stopped.)
(2)	The network type is displayed.
(3)	The transient transmission group number of the selected station is displayed.
(4)	The shared group number of the selected station is displayed.
(5)	An IP address is displayed. (only when it is set).
(6)	Mode is displayed.
(7)	Click this button to check error details. Take actions following the description displayed in "Error Factor" and "Troubleshooting".
(8)	The LED status of a module and communication status of IN connector and OUT connector is displayed. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
(9)	Communication status • Properly connected  • Error (cable disconnection)  • Error (other than cable disconnection)  • Module error (CC-Link IE Controller Network parameter setting error or transient transmission error) 

Point

- When a transient transmission error occurs, check the error description in error code and take action.
- When multiple stations on the same system have the same network number: If a station other than those on the system is selected while a station of the lowest start I/O number has a baton pass error, a transient execution error (no baton passing on the own station) (E504H) will occur. Execute again after correcting the baton pass error.

■When a redundant system station is selected



No.	Description
(1)	Indicates that the station is set as a redundant system.
(2)	The status of the selected station in a redundant system (control system/standby system and system A/system B) is displayed.*1

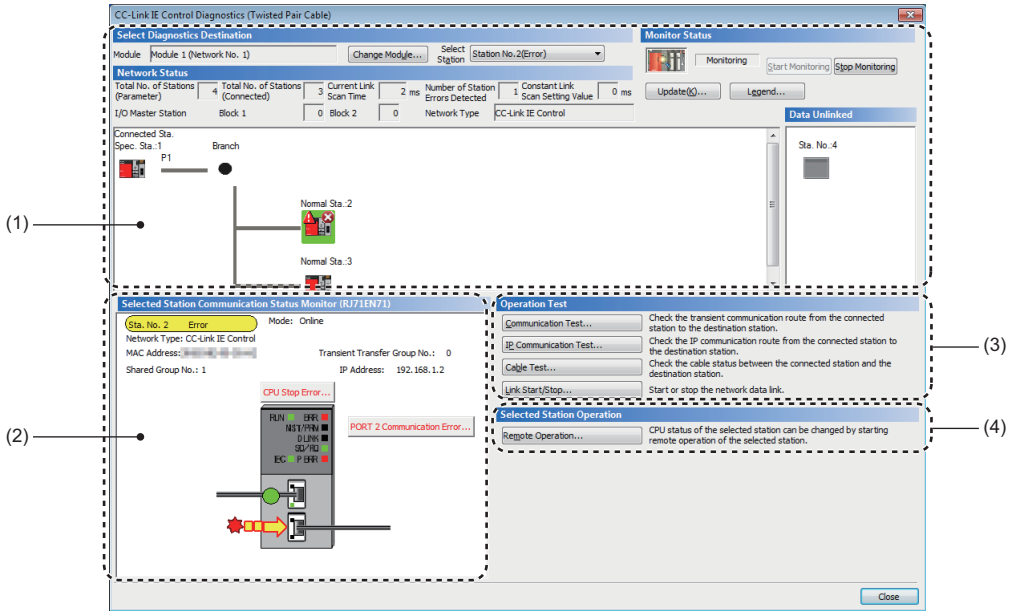
*1 When a stop error occurs in the CPU modules of both systems, both systems are displayed as the standby system.

When Ethernet cables are used

This section describes the CC-Link IE Controller Network diagnostics when Ethernet cables are used.

Diagnostic items

The following table lists items that can be diagnosed by the CC-Link IE Controller Network diagnostics.



○: Diagnosed, ×: Not diagnosed

Item			"Other Station Setting" on the "Specify Connection Destination Connection" window		Reference
			"No Specification"	Other than "No Specification"*1	
(1)	Network information display	Network map and error status	○	○	Page 126 Diagnostics window
		Cable disconnection and disconnected station	○	○	
(2)	Selected Station Communication Status Monitor (RJ71EN71)	Status of the selected station and the error definition	○	○	
(3)	Operation Test	Communication Test	○	×	Page 43 Communication test
		IP Communication Test	○	×	Page 49 IP communication test
		Cable Test	○	×	Page 133 Cable test (only when Ethernet cables are used)
		Link Start/Stop	○	×	Page 134 Link Start/Stop
(4)	Selected Station Operation	Remote Operation	○	○	Page 138 Remote Operation

*1 When starting the CC-Link IE Controller Network diagnostics with a setting other than "No Specification" in "Other Station Setting" on the "Specify Connection Destination Connection" window, use the engineering tool of the version 1.035M or later.

Starting diagnostics

This section describes how to use the CC-Link IE Controller Network 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.

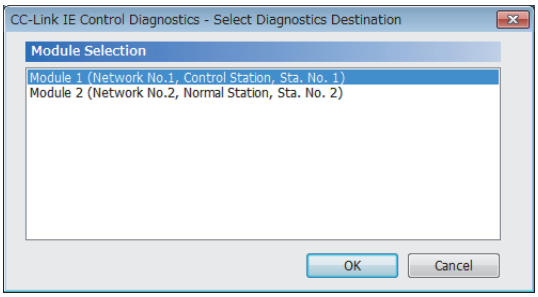
If a normal station cannot be monitored due to an error such as cable disconnection, directly connect the engineering tool to the normal station.

2. Start the CC-Link IE Controller Network diagnostics.

[Diagnostics] ⇨ [CC-Link IE Control Diagnostics (Twisted Pair Cable)]

3. When the following window opens, select the module to be diagnosed and click the [OK] button to start the CC-Link IE Controller Network diagnostics.

Modules are listed in the order configured in module information.



Point

However, when multiple RJ71EN71s and RnENCPUs of the same network number are mounted on the same base unit, the module with the smallest start I/O number is always diagnosed, regardless of setting.

4. Select the station to be diagnosed from "Select Station" or in "Network Status".

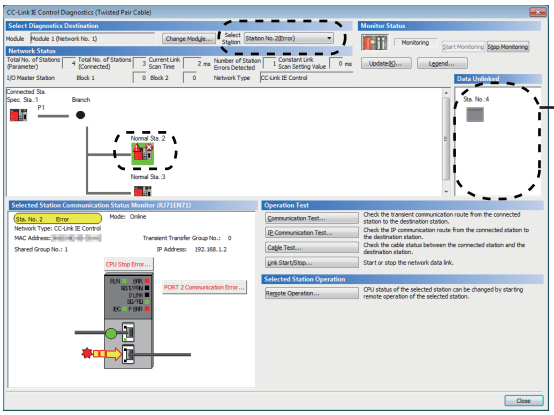
- An icon indicating an error is displayed on the module icon of the station where an error occurs.
- A disconnected station that has performed data link is indicated with the "Disconnected Station" icon in the network map. However, a disconnected station in following case is displayed on the right end 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.
- The "Error (Illegal loop connection detected)" icon is displayed if the network is configured in ring topology although "Network Topology" of "Basic Settings" of the control station is set to "Line/Star".
- The "Error (Illegal loop connection detected)" icon is displayed if the network is configured in star topology although "Network Topology" of "Basic Settings" of the control station is set to "Ring".

• The "Error (Illegal loop connection detected)" icon is displayed if the network is incorrectly configured in ring topology.



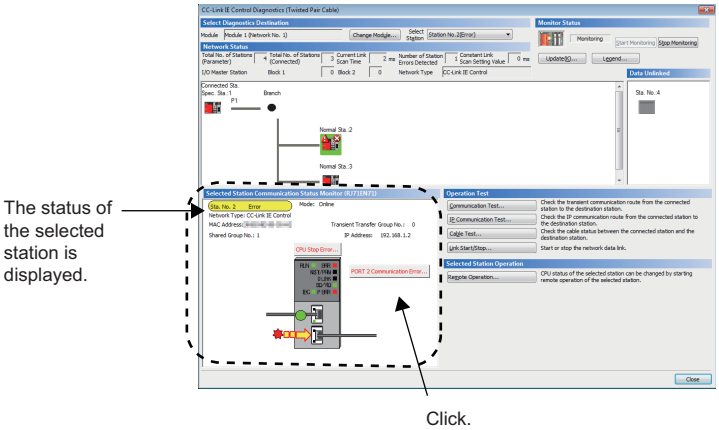
Point

When the station to be diagnosed cannot be selected, the status of network number disparity, control station duplication, or station number duplication cannot be checked using the CC-Link IE Controller Network diagnostics. Check the error details by directly connecting the engineering tool to the CPU module where an error occurs, and opening the "System Monitor" window.

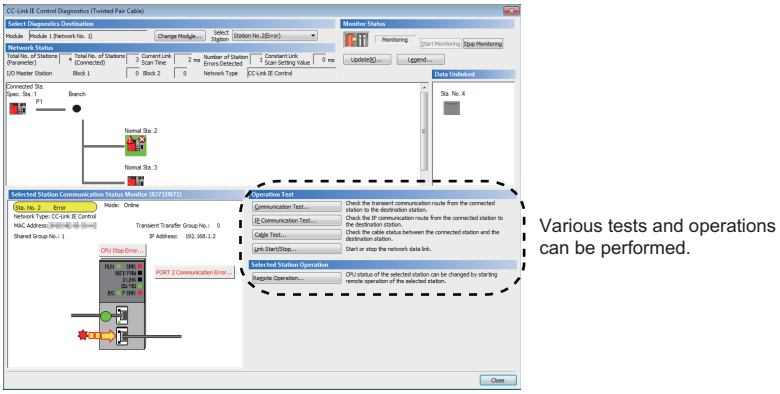
5. The status of a station selected in "Network Status" is displayed in "Selected Station Communication Status Monitor". (☞ Page 126 Diagnostics window)

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 134 Link Start/Stop to Page 138 Remote Operation)



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

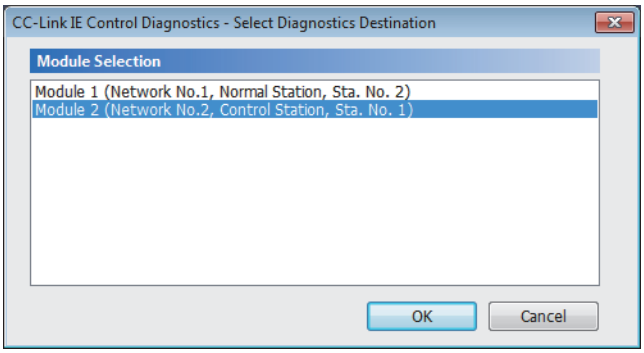
1. Connect the engineering tool to the CPU module.
2. Start the CC-Link IE Controller Network diagnostics.

[Diagnostics] ⇨ [CC-Link IE Control Diagnostics (Twisted Pair Cable)]

Point

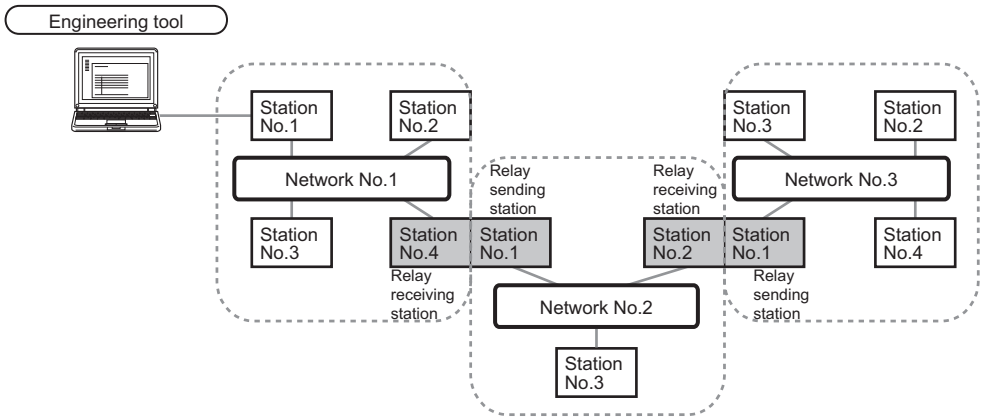
The CC-Link IE Controller Network diagnostics cannot be started when "Other Station (Co-existence Network)" has been specified in "Other Station Setting" on the "Specify Connection Destination Connection" window and "CC-Link" or "C24" has been specified in "Co-existence Network Route".

3. Select the module of the diagnostics-target network number and click the [OK] button to start the CC-Link IE Controller Network diagnostics.



Point

- Although the CC-Link IE Controller Network 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 Controller Network diagnostics of the network to which the relay sending station belongs, 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 Controller Network diagnostics of the network number 2, specify the network number 1 and station number 4, or the network number 2 and station number 1 in "Network No." and "Station No.".



- The CC-Link IE Controller Network 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. However, for the stations of five networks ahead (number of relay stations: 4) or later, it can be started only when the firmware version of the RJ71EN71 is "18" or later.

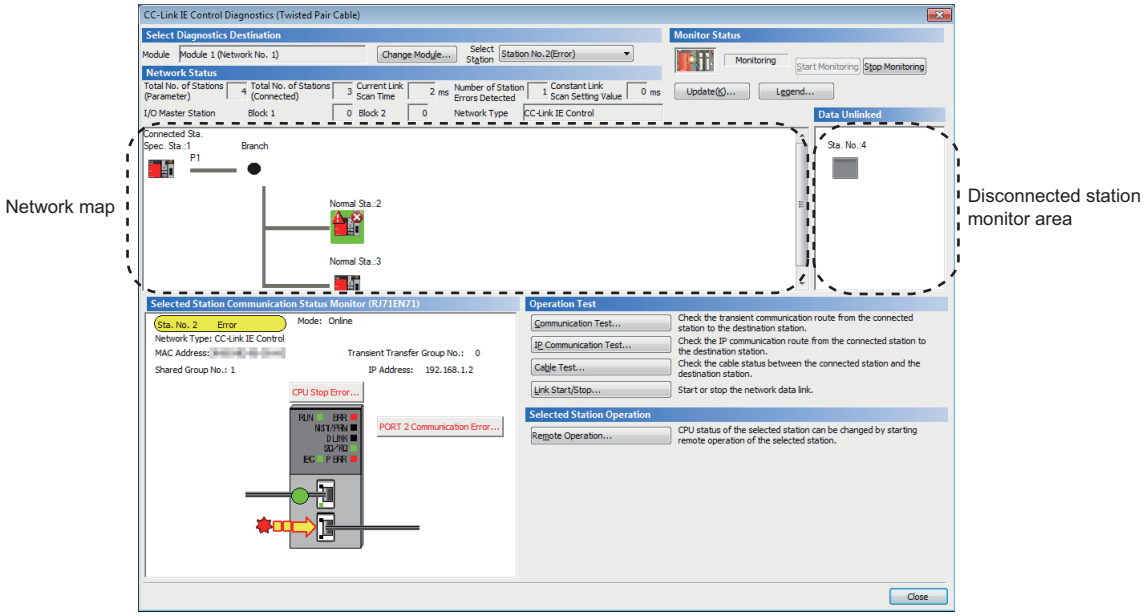
4. Step 4 and later is the same procedure as when "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window. (☞ Page 122 When "No Specification" is specified in "Other Station Setting" on the "Specify Connection Destination Connection" window)

Precautions

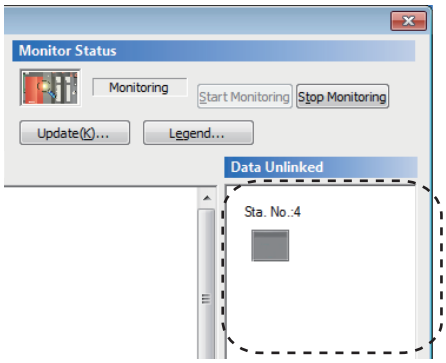
If the communication path includes the following items, the CC-Link IE Controller Network diagnostics cannot be started.

- MELSECNET/H
- Multidrop connection with a serial communication module
- Interface board for a personal computer
- GOT (when the transparent function is used)
- MELSEC-Q/L series network module

Diagnostics window



Item		Description
Select Diagnostics Destination	Module	Displays the RJ71EN71 or the RnENCPU (network part) being diagnosed.
	[Change Module] button	Changes the RJ71EN71 or the RnENCPU (network part) to be diagnosed when multiple modules are mounted. However, when multiple RJ71EN71s or the RnENCPUs (network part) of the same network number are mounted on the same base unit, the module with the smallest start I/O number is always diagnosed, regardless of setting.
	Selected 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 of the CC-Link IE Controller Network diagnostics.
	[Stop Monitoring] button	Stops monitoring of the CC-Link IE Controller Network diagnostics.
[Update] button		• When the firmware version of the control station is "05" or later: If the actual network configuration and network map of the diagnostic window are inconsistent with each other, clicking this button executes the network map update to make them match. (MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • When the firmware version of the control station is "04" or earlier: Deletes a disconnected station displayed in the network map. The deleted station is displayed in the disconnected station monitor area.
[Legend] button		Indicates the meaning of icons displayed in the CC-Link IE Controller Network diagnostics.

Item			Description
Network Status	Total Number of Stations (Parameter)		Indicates the total number of stations (sum of control stations and normal stations) set in "Network Range Assignment" of "Required Settings".
	Total Number of Stations (Connected)		Indicates the total number of stations (sum of control stations and normal stations) during data link on CC-Link IE Controller Network.
	Current link scan time		Indicates the link scan time of the displayed network.
	Number of Station Errors Detected		Indicates the number of error stations in the displayed network.
	Constant Link Scan Setting Value		Indicates the setting value of the "Constant Link Scan" under "Supplementary Cyclic Settings" of "Application Settings".
	I/O Master Station	Block 1	Indicates the station number of the I/O master station of block 1.
		Block 2	Indicates the station number of the I/O master station of block 2.
	Network map		Indicates the network map and the status of each station. If the status is not displayed, check that there is only one control station in the system and no station number is overlapped. For details on the network map, refer to the following. ☞ Page 129 Network map
	Disconnected station monitor area		Displays a disconnected station that has been set in "Network Range Assignment" of "Required Settings" but has not yet performed data link. However, even if a disconnected station had performed data link, it is displayed in this area in the following cases. • 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 "Other Modules" icon indicates a station that has not yet performed data link. Icons other than "Other Modules" icon indicate stations that had performed data link before disconnection. For details on the displayed icon, click the [Legend] button.
Selected Station Communication Status Monitor			Displays status of the station selected in "Network Status". For details on "Selected Station Communication Status Monitor", refer to the following. ☞ Page 132 Selected Station Communication Status Monitor
Operation Test	[Communication Test] button		Performs a communication test. (☞ Page 43 Communication test)
	[IP Communication Test] button		Performs an IP communication test. (☞ Page 49 IP communication test)
	[Cable Test] button		Performs a cable test. (☞ Page 133 Cable test (only when Ethernet cables are used))
	[Link Start/Stop] button		Starts or stops cyclic transmission. (☞ Page 134 Link Start/Stop)
Selected Station Operation	[Remote Operation] button		Performs remote operation (such as RUN, STOP, or RESET operations) to the CPU module. (☞ Page 138 Remote Operation)

When "Error (Illegal loop connection detected)" icon is displayed

When "Error (Illegal loop connection detected)" icon is displayed in "Network Status", take following actions.

■When the system does not contain a switching hub

The network is configured in ring topology although "Network Topology" of "Basic Settings" of the control station is set to "Line/Star".

Take any of the following actions.

Action
Disconnect an Ethernet cable connected to any station on the network (either P1 or P2). The network topology will become a line topology and data link will start.
To configure the network in a ring topology, set "Network Topology" under "Basic Settings" of the control station to "Ring" and rewrite the parameters to the CPU module.

■When the system contains a switching hub

The "Error (Illegal loop connection detected)" icon is displayed due to any of the following causes.

- The network is configured in ring topology although "Network Topology" of "Basic Settings" is set to "Line/Star".
- The network is configured in star topology although "Network Topology" under "Basic Settings" is set to "Ring".
- The switching hub is connected with "Network Topology" under "Basic Settings" of the control station being set to "Ring".

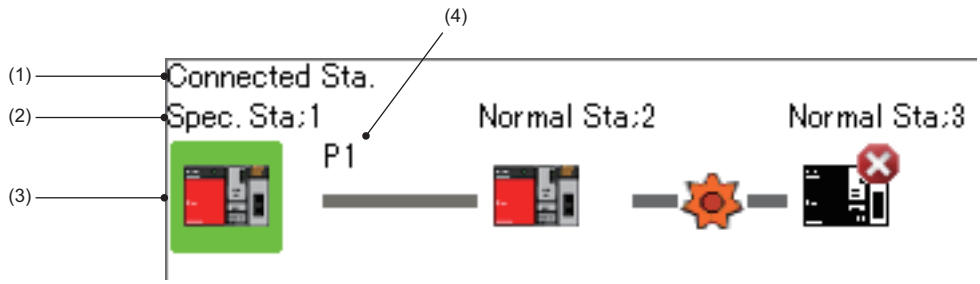
Take the following actions.

Action
1. Check if "Network Topology" under "Basic Settings" of the control station is different from the network configuration. If so, correct "Network Topology" and rewrite it to the CPU module. When data link starts across the entire network, this procedure is successfully completed. If data link does not start, perform step 2 and 3. ***2.*** When "Network Topology" of "Basic Settings" of the control station is set to "Line/Star", take the following actions. • Disconnect one Ethernet cable connected to the switching hub and power off and on the hub. (Repeat this operation until data link starts over the network.) • When data link starts over the network, check the network configuration using CC-Link IE Controller Network diagnostics. The procedure is successfully completed. (☞ Page 111 Checking the Network Status) ***3.*** When "Network Topology" of "Basic Settings" of the control station is set to "Ring", take the following actions. • Configure the network in ring topology without a switching hub. Connecting a switching hub will cause a problem such as data link failure. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))

Network map

■Icon

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

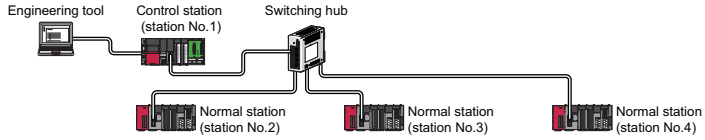
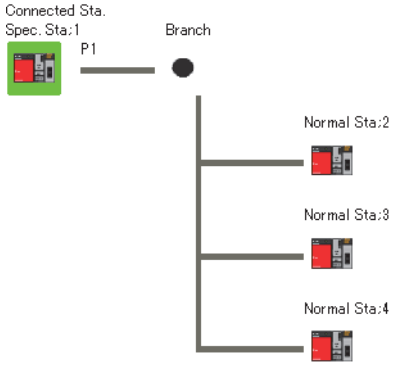
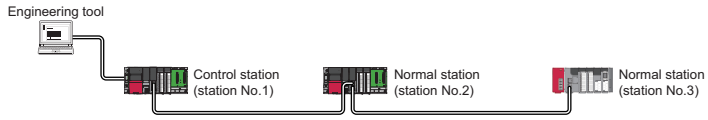
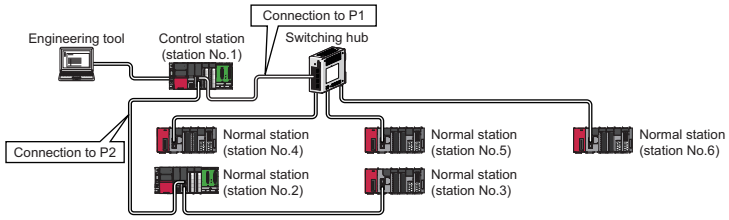
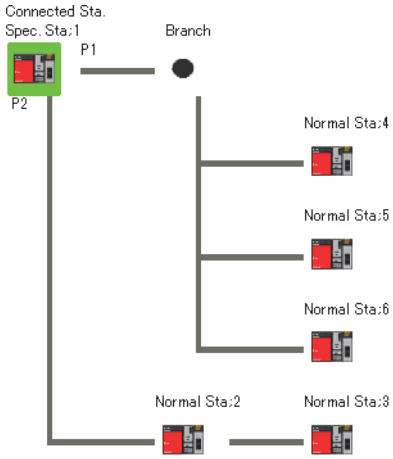
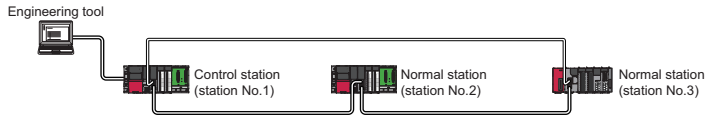
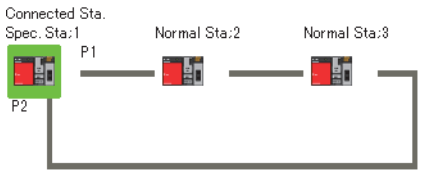


- Click: Selection
- Right-click: Test or debug execution.
- ↑ ↓ ← → keys on the keyboard: Move the focus to the module to be diagnosed, and determine it with the Space key.

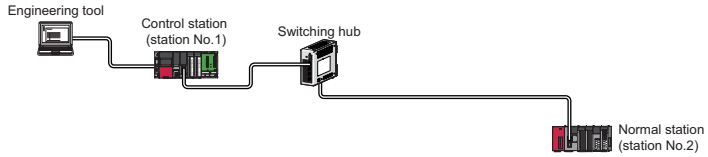
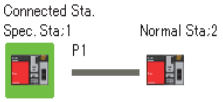
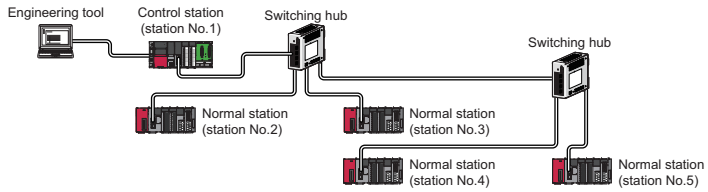
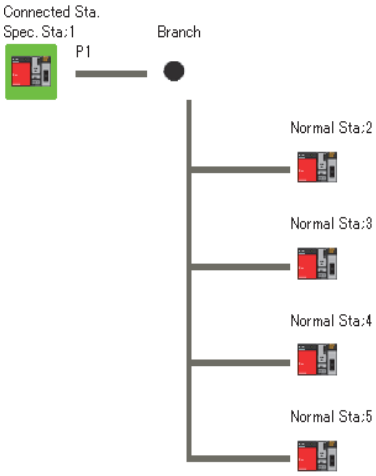
No.	Description
(1)	Displayed the station (own station) where the engineering tool is connected.
(2)	Displayed the station type and station number. "?" is displayed when a station number has not been set. When the background of the text if colored, the relevant station may have been set as a reserved 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 "Error (Illegal loop connection detected)" icon is displayed, take actions displayed in "Troubleshooting" of "Error Details". (☞ Page 132 When a station where an error has occurred is selected)
(4)	A port to which an Ethernet cable is connected is displayed.

■Network map

A network map is displayed according to the connection status.

System configuration	Display of the network map
Star topology 	
Line topology 	
Star and line mixed 	
Ring topology 	

In the following cases, the network map that is different from the actual system configuration is displayed.

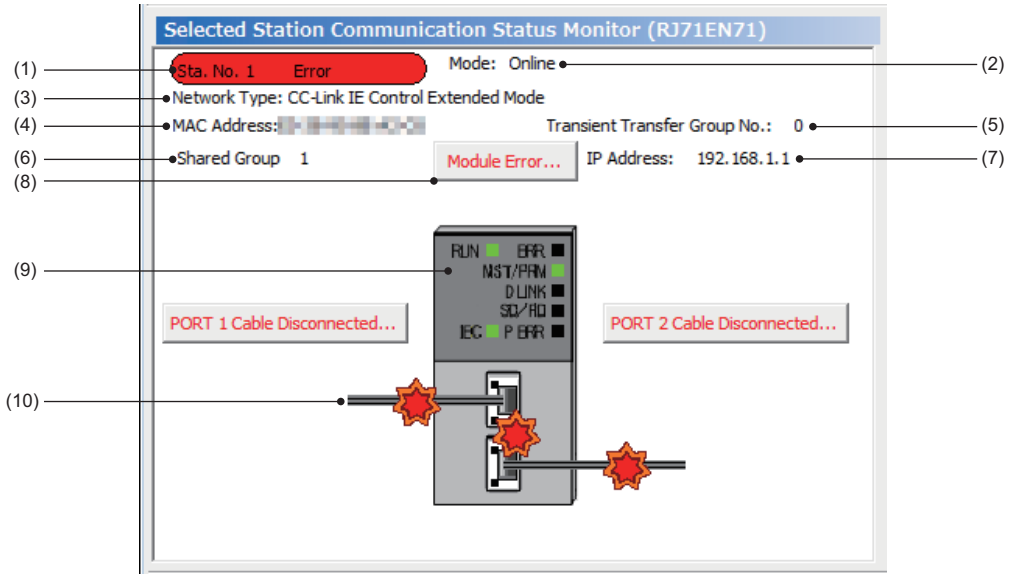
System configuration	Display of the network map
Two stations are connected through a switching hub. 	Branches are not displayed in the network map. 
Switching hubs are in cascade connection. 	Only one branch is displayed. 

Selected Station Communication Status Monitor

Displays status of the station selected in "Network Status".

When the network type of the RJ71EN71 is set to "E+CCIEC" or the network type of the RnENCPU is set to "E+IEC", status of P1 is not displayed.

■When a station where an error has occurred is selected



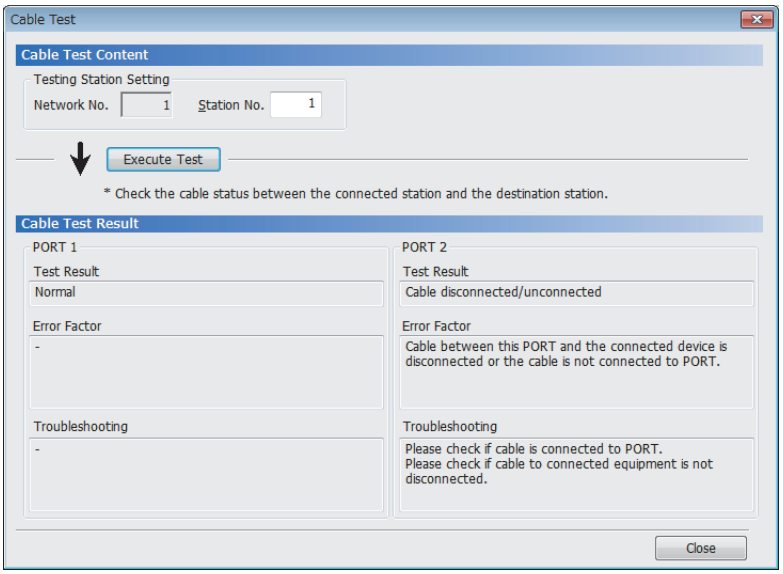
No.	Description
(1)	The operating status is displayed. • Station No.□: Normal operation • Station No.□ Error (yellow): Error (Data link is continued.) • Station No.□ Error (red): Error (Data link is stopped.)
(2)	Mode is displayed.
(3)	The network type is displayed.
(4)	A MAC address is displayed.
(5)	The transient transmission group number is displayed.
(6)	The shared group number is displayed. (only when the shared group number is set)
(7)	An IP address is displayed. (only when it is set).
(8)	Click this button to check error details. Take actions following the description displayed in "Error Factor" and "Troubleshooting".
(9)	The LED status of a module and communication status of P1 and P2 is displayed. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
(10)	Status of the cables connected to P1 and P2 is displayed.

Cable test (only when Ethernet cables are used)

Cable test checks if the Ethernet cables are properly connected.

Only the Ethernet cable connected to the P1 or P2 of the target station is tested. For the whole network status, check the network map or "Selected Station Communication Status Monitor" of the CC-Link IE Controller Network diagnostics. (☞ Page 111 Checking the Network Status)

Procedure



1. Start the CC-Link IE Controller Network diagnostics.

[Diagnostics] ⇨ [CC-Link IE Control Diagnostics (Twisted Pair Cable)]

2. Click the [Cable Test] button in the "CC-Link IE Control Diagnostics" window.

"Cable Test" window is displayed.

3. Enter a station number and click the [Execute Test] button to operate the test.

If an error occurs, take actions according to the error message.

Link Start/Stop

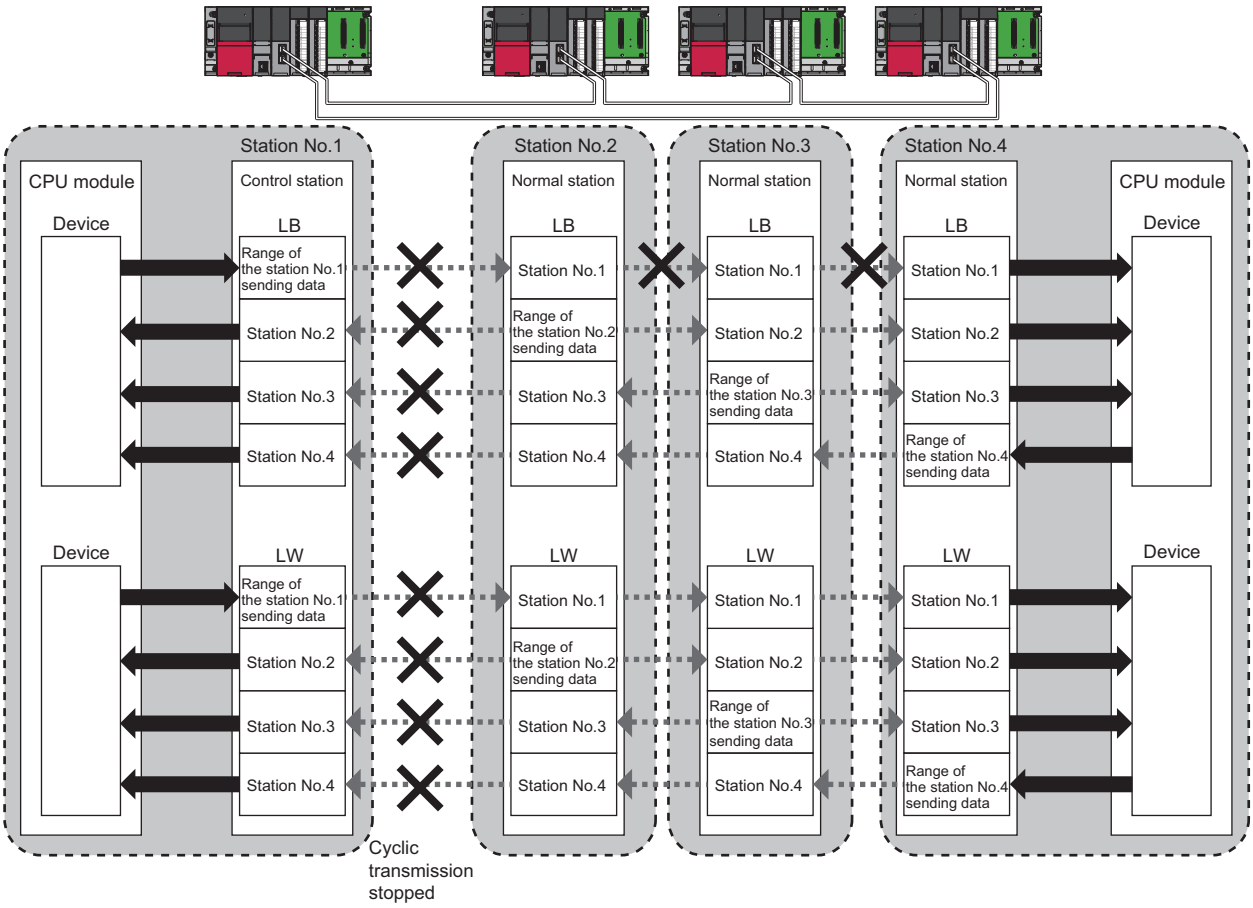
This function stops the cyclic transmission during debugging and other operations. (Data reception from other stations and data sending from the own station are stopped.)

Also, the stopped cyclic transmission is restarted. This function does not stop or restart transient transmission.

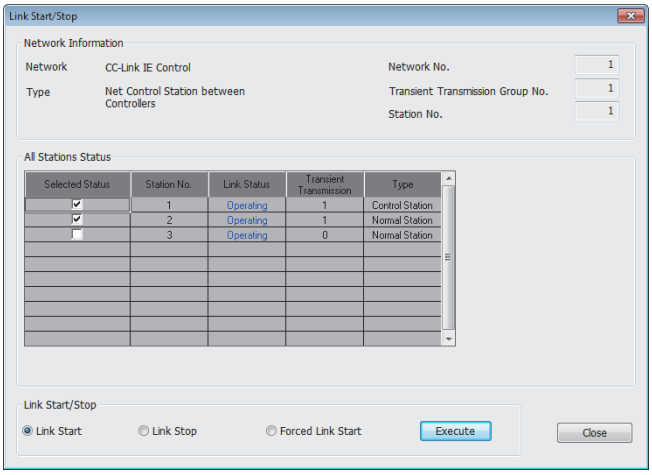
Point

Cyclic transmission can be started and stopped using link special relay (SB) and link special register (SW).

(☞ Page 166 List of Link Special Relay (SB) Areas, Page 179 List of Link Special Register (SW) Areas)



Procedure when optical fiber cables are used



1. Click the [Link Start/Stop] button in the "CC-Link IE Control Diagnostics" window. Or right-click a station icon in "Network information display" and click [Link Start/Stop].

"Link Start/Stop" window is displayed.

2. Select a target station for starting or stopping cyclic transmission in "Selected Status".

When the engineering tool is connected to a normal station, only the own station can be selected. The station to which the engineering tool is connected can be checked in "Network information display".

3. Select whether to start or stop cyclic transmission in "Link Start/Stop".

Selecting "Forced Link Start" will forcibly start cyclic transmission of the station where cyclic transmission was stopped by a command from another station or by link special relay (SB) or link special register (SW).

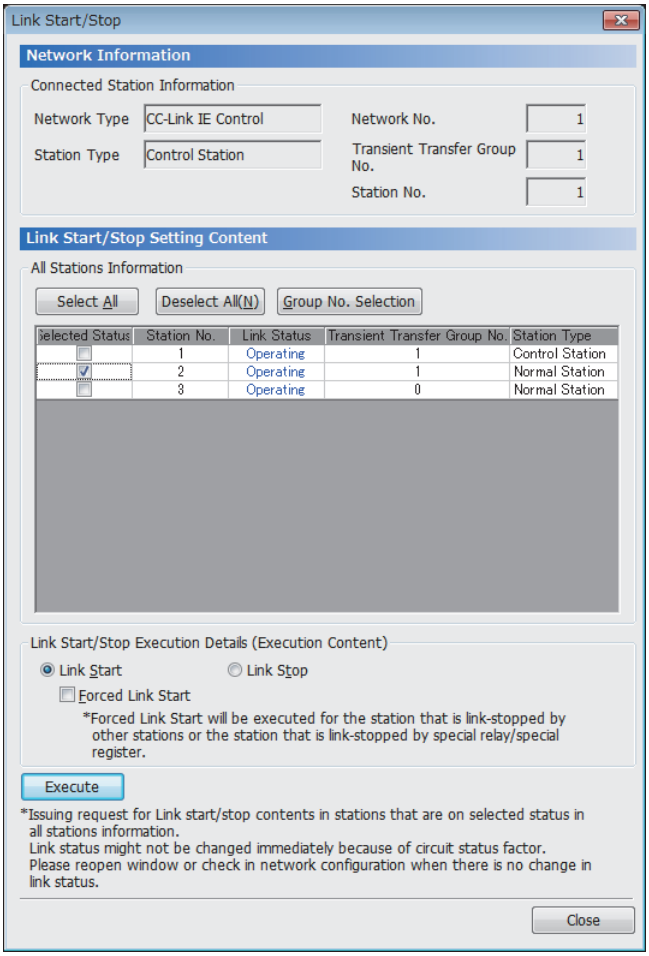
4. Click the [Execute] button.

The execution status of cyclic transmission can be checked in "Link Status".

■When target stations are collectively specified

- Group specification: Right-click on the line of "Transient Transmission Group No.", and select "Group Selection".
- All stations specification: Right-click on the "All Stations Status" area, and select "Select All". Also, selecting "Deselect All" will cancel all the selection.

Procedure when Ethernet cables are used



1. Click the [Link Start/Stop] button in the "CC-Link IE Control Diagnostics" window. Or right-click a module icon in "Network Status" and click "Link Start/Stop".

"Link Start/Stop" window is displayed.

2. Select a station for starting or stopping cyclic transmission in "Selected Status".
3. Select whether to start or stop cyclic transmission in "Link Start/Stop".

Selecting "Forced Link Start" will forcibly start cyclic transmission of the station where cyclic transmission was stopped by a command from another station or by link special relay (SB) or link special register (SW).

4. Click the [Execute] button.

■When target stations are collectively specified

- Group specification: Select the line of which "Transient Transmission Group No." is not 0 and click the [Group No. Selection] button.
- All stations specification: Click the [Select All] button. Also, clicking the [Deselect All] button will cancel all the selection.

When the CPU module is reset or the system is powered off and on

Even if cyclic transmission has been stopped by this function, it will restart.

Stations to which the link start cannot be executed

The link start cannot be executed to the following stations.

- Link startup/stop processing station[*1]

The conditions that the link startup cannot execute due to the link startup/stop processing
When the link startup/stop is executed at the same station while the link startup/stop is being executed.
When the link startup/stop is executed at a station that either of the following link special relay (SB) is on. • 'Link startup of own station' (SB0000) • 'Link stop of own station' (SB0001) • 'System link startup' (SB0002) • 'System link stop' (SB0003)

- Station where cyclic transmission was stopped due to an error
- Station where link was stopped by a command from another station[*1]
- Station where link was stopped by link special relay (SB) or link special register (SW)[*1]

*1 Performing Forced Link Start will start the link.

Precautions

When "Link Start" is executed, the cyclic transmission is not restarted and the error definition is not stored in 'System link startup result' (SW0051) in the following cases. Check if the data link is being performed normally using the CC-Link IE Controller diagnostics and 'Data link status of each station' (SW00B0 to SW00B7) after the cyclic transmission is restarted by executing Forced Link Start, resetting the CPU module, or powering off and on the system.

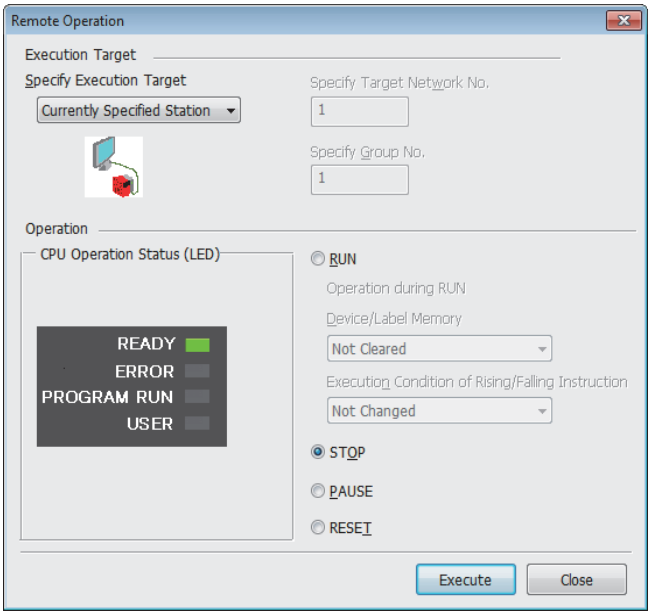
- When executing "Link Start/Stop" from another station to the station where cyclic transmission was stopped by executing "Link Start" in the own station or 'Link stop of own station' (SB0001).
- When executing "Link Start" from another station C to the station A where "Link Stop" was executed from another station B (including when "Link Start" for the own station and station A is executed by specifying multiple stations)

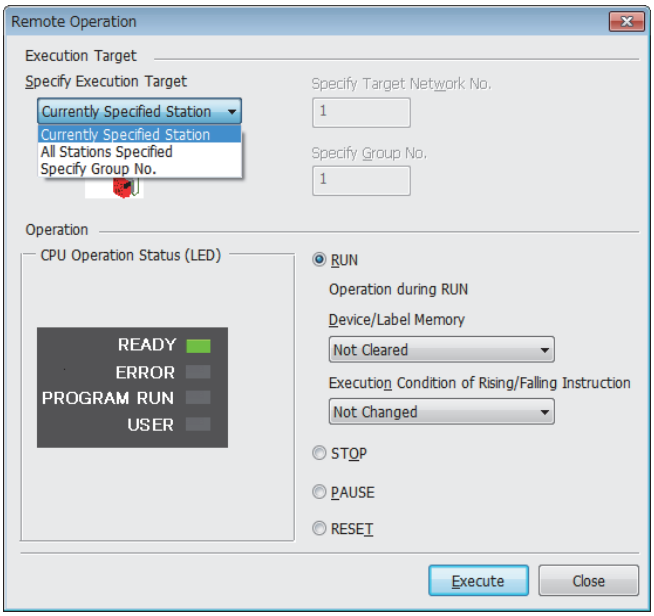
Remote Operation

This function executes remote operations (such as RUN, STOP, and RESET operations) to the station selected on the "CC-Link IE Control Diagnostics" window, from the engineering tool.

Procedure

To perform remote operation, follow the steps below.





1. Select the module where the remote operations are performed in the CC-Link IE Controller Network diagnostics.

2. Click the [Remote Operation] button in the "CC-Link IE Control Diagnostics" window. Or right-click a station icon in the "Network information display" and click [Remote Operation].

"Remote Operation" window is displayed.

3. Specify the target station in "Specify Execution Target".

- "Currently Specified Station": A remote operation is executed only to the CPU module on the station selected in the CC-Link IE Controller Network diagnostics.
- "All Stations Specified": A remote operation is performed on all stations on the network specified by "Specify Execution Target".
- "Specify Group No.": A remote operation is performed only on stations with the specified group number on the network specified by "Specify Execution Target".

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, preset "Remote Reset Setting" under "Operation Related Setting" to "Enable" in the CPU Parameters.

Point

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

3.4 Troubleshooting by Symptom

This section describes troubleshooting method by symptom. Perform these troubleshooting if data link cannot be performed even though no error is detected in the CC-Link IE Controller Network-equipped module.
If an error has occurred in the CC-Link IE Controller Network-equipped module, identify the error cause using the engineering tool. (☞ Page 111 Checking the Network Status)

When cyclic transmission cannot be performed

The following lists the actions to be taken if cyclic transmission cannot be performed.

Check item	Action
Is the D LINK LED of the control or normal station turned off or flashing?	Perform troubleshooting for when the D LINK LED turns off or is flashing. (☞ Page 103 When the D LINK LED turns off or is flashing)
Is a target station specified as a reserved station in "Network Range Assignment" of "Required Settings" of the control station?	Cancel the reserved station setting. (☞ Page 76 Network Range Assignment)
Has "Network Range Assignment" of "Required Settings" of the control station been set?	Set "Network Range Assignment" of "Required Settings" of the control station. (☞ Page 76 Network Range Assignment)
Is there any station which exceed total number of stations set in "Network Range Assignment" of "Required Settings" of the control station?	Correct station numbers. (☞ Page 75 Station Number)
Are station numbers unique?	Change the duplicated station number. (☞ Page 75 Station Number)
Is the range set in "Refresh Setting" of "Basic Settings" correct?	Correct the range setting in "Refresh Setting" of "Basic Settings" (☞ Page 84 Refresh Setting)
Is any refresh target device in "Refresh Setting" of "Basic Settings" overlapped with that of another network module?	Correct the range setting in "Refresh Setting" of "Basic Settings". (☞ Page 84 Refresh Setting)
Are the transfer ranges set in "Interlink Transmission Settings" of "Application Settings" correct?	Correct the transfer ranges set in "Interlink Transmission Settings" of "Application Settings". (☞ Page 97 Interlink Transmission Settings)
Are the source and destination modules set in "Interlink Transmission Settings" of "Application Settings" correct?	Correct the source and destination modules set in "Interlink Transmission Settings" of "Application Settings". (☞ Page 97 Interlink Transmission Settings)
Are the shared group numbers correctly set for the target station?	Correct the shared group numbers same as those for the target station. (☞ Page 81 Shared Group)
Is the setting value of data link monitoring time shorter than that of actual link scan time?	Increase the monitoring time value. (☞ Page 90 Supplementary Cyclic Settings)

If the above action does not solve the problem, perform the module communication test to check for hardware failure. (☞ Page 108 Module communication test)

When transient transmission cannot be performed

The following lists the actions to be taken if transient transmission cannot be performed with the target station, and the engineering tool cannot perform monitoring.

Check item	Action
Is the D LINK LED of the control or normal station turned off or flashing?	Perform troubleshooting for when the D LINK LED turns off or is flashing. (☞ Page 103 When the D LINK LED turns off or is flashing)
Is the baton pass status of the destination normal?	In the CC-Link IE Controller Network diagnostics, identify the cause of the error and take action. (☞ Page 111 Checking the Network Status)
Are the following control data of the dedicated instruction correct? • CPU type of the target module • Target network number • Target station number	Correct the control data of the dedicated instruction.
Is the setting of the station number in the normal station correct?	Correct station numbers. (☞ Page 75 Station Number)
Is the network number duplicated on the network?	Change the duplicated network number.
Is a communication path by the dynamic routing function is determined?	• Power on the system and start transient transmission after a while. • When "Dynamic Routing" under "Application Settings" of the station on the communication path is set to "Disable", change it to "Enable".
Does the relay station to be passed support the dynamic routing function?	If the relay station to be passed does not support the dynamic routing function, set all the stations on the communication path in "Routing Setting" of "CPU Parameter".
Is the routing parameter for the sending source of transient transmission correct?	Correct the "Routing Setting" of "CPU Parameters". (📖 MELSEC iQ-R CPU Module User's Manual (Application))
Have the routing parameters of the relay station correctly been set?	Correct the "Routing Setting" of "CPU Parameters". (📖 MELSEC iQ-R CPU Module User's Manual (Application))
Are multiple link dedicated instructions with same channel setting executed simultaneously?	• Set different channel to each instructions. • Shift the execution timing of the link dedicated instructions.

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

- Module communication test (☞ Page 108 Module communication test)
- Communication Test (☞ Page 43 Communication test)

When a 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 within the specified range?	Keep the ambient temperature within the specified range by taking action such as removing heat source.

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

- Module communication test (☞ Page 108 Module communication test)
- Cable test (☞ Page 133 Cable test (only when Ethernet cables are used))

When a station is repeatedly disconnected and reconnected

The following lists the actions to be taken when a station in data link is repeatedly disconnected and reconnected.

Common (when optical fiber cables and Ethernet cables are used) check item	Action
Does the communication cable used conform to the standard?	Replace the communication cable with one conforming to the standard. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
Does the length of the communication cable meet the specifications?	Set the length of the communication cable within range. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup))
Does the cabling condition (bending radius) meet the specifications?	Refer to the manual for the communication cable, and correct the bending radius.

Check item only when Ethernet cables are used	Action
Is any Ethernet cable disconnected?	Replace the Ethernet cable.
Is the switching hub used operating normally?	• Check if a 1000BASE-T-compliant switching hub is used. (📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)) • Power off and on the switching hub.

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

- Module communication test (☞ Page 108 Module communication test)
- Cable test (☞ Page 133 Cable test (only when Ethernet cables are used))

When communication is unstable

The following lists the actions to be taken when link scan time or transmission delay time is long or when a transient transmission timeout occurred.

Common (when optical fiber cables and Ethernet cables are used) check item	Action
■When Ethernet cables are used Is the L ER LED of the control or normal station on? ■When optical fiber cables are used Is the L ERR LED of the control or normal station on?	■When Ethernet cables are used Perform troubleshooting for when the L ER LED turns on. (☞ Page 104 When the L ER LED turns on (when Ethernet cables are used)) ■When optical fiber cables are used Perform troubleshooting for when the L ERR LED turns on. (☞ Page 104 When the L ERR LED turns on (when optical fiber cables are used))
Is the ambient temperature for the module within the specified range?	Keep the ambient temperature within the specified range by taking action such as removing heat source.

Check item only when Ethernet cables are used	Action
Is there any noise affecting the system?	Check the wiring condition.

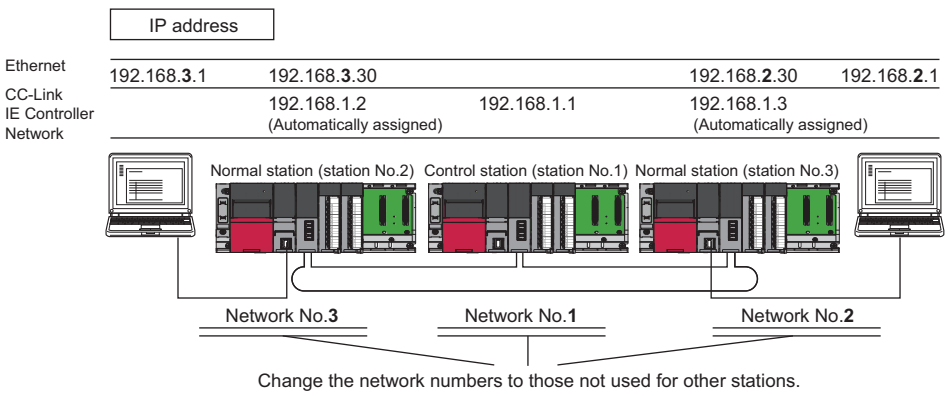
If the above actions do not solve the problem, perform the following tests to check for an error.

- Module communication test (☞ Page 108 Module communication test)
- Cable test (☞ Page 133 Cable test (only when Ethernet cables are used))

When IP communications cannot be performed using the IP packet transfer function

Before troubleshooting the problem as listed below, perform the IP communication test and take actions according to the error code. (☞ Page 49 IP communication test)

If the problem cannot be solved using the IP communication test, take actions listed below.

Check item	Action
Is the IP address of the connected Ethernet device correct?	Set an IP address meeting the IP address setting rules. (☞ Page 47 Rules for the IP address setting)
Is the IP address already in use?	• For the Ethernet device, set the IP address different from that of other devices on the network, such as an Ethernet-equipped module and CC-Link IE Controller Network-equipped module. • Disconnect the Ethernet device from the line and execute the Ping command to the IP address of the disconnected Ethernet device. If a response is received even though the device is disconnected, the IP address is already in use. Change the IP address.
Has a communication time over error occurred in the IP communication test?	• When "Dynamic Routing" under "Application Settings" is set to "Disable", correct "Relay Station Network Number" in "Routing Setting" of the CPU parameters. • When "Dynamic Routing" under "Application Settings" is set to "Enable", check 'Communication path determination status' (Un\G12080 to Un\G12095) to check that the communication path to the destination station network number which is set in the third octet of the Ethernet device IP address is determined.
Have the routing parameters correctly been set? (Only when "Dynamic Routing" under "Application Settings" is set to "Disable")	• Correct the "Routing Setting" of "CPU Parameters". • When the first and second octets of the IP address are the same for the request source device, request destination device, and modules between them, set the routing parameters so that the third octet of the IP address of the Ethernet device is used as "Target Station Network Number".
Is the network number of the Ethernet device side (the third octet of the IP address) the same as that of modules and another Ethernet device? (This applies only when the request source external device, request destination external device, and modules between them have the same first and second octets of the IP address.)	Change the network number of the Ethernet device side (the third octet of the IP address) to the one different from that of modules and another Ethernet device. 

Check item	Action
Are settings configured in modules connected to the Ethernet device correct? • First and second octets of the IP address • Subnet mask pattern • Default router IP address	Check and correct the setting in the module connected to the Ethernet device.
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) enabled?
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) enabled in the firewall settings?
When the Ethernet device has two or more Ethernet ports, have different default gateway settings been configured for each Ethernet port?	• Set the same IP address in the default gateway of each Ethernet port. • Set the communication route on the Ethernet device side using the route command so that communications using the IP packet transfer function can be transmitted to the Ethernet device through the module connected to the Ethernet device. (This applies only to Ethernet devices that have the route command, such as Microsoft® Windows®.) When the gateway setting is completed, execute the Ping command from the Ethernet device to check whether communications can be performed.
Is the switching hub used operating normally?	• If an error has occurred in the switching hub, eliminate the error cause. • If communications cannot be performed although no error has occurred in the switching hub, replace the switching hub.*1
Has any device on the line, such as an Ethernet device, Ethernet-equipped module, and switching hub, been replaced? (This applies only when the device has been replaced by the one having the same IP address.)	Reset the device on the line.*2

*1 When the device has been reconnected to the switching hub, or the switching hub has been replaced, it may take some time to read the MAC address. If so, retry communication from the Ethernet device again after a while or power on the switching hub again.

*2 A device on Ethernet has a table of IP addresses and their corresponding MAC address, called ARP cache. When a device on the line is replaced by the one having the same IP address, the MAC address in the ARP cache is different from that of the replaced device; therefore, communications may not be normally performed. The ARP cache is updated by resetting the device or after a while. The time varies depending on the device.

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

- Module communication test (☞ Page 108 Module communication test)
- Cable test (☞ Page 133 Cable test (only when Ethernet cables are used))

When redundant system function is used

■An error occurs in a CPU module

When a redundant system is configured, if an error occurs in a CPU module, check the following items.

Check item	Action
Is pairing set to the CC-Link IE Controller Network-equipped modules?	Set pairing in "Network Range Assignment" of "Required Settings". (☞ Page 76 Network Range Assignment)
Do the CC-Link IE Controller Network-equipped modules being used support the redundant system function?	Use CC-Link IE Controller Network-equipped modules supporting the redundant system function. (☞ Page 213 Added and Enhanced Functions)

■System switching cannot be performed

When system switching cannot be performed by a system switching cause of CC-Link IE Controller Network-equipped modules, check the following.

Check item	Action
Is the power supply module, CPU module, or redundant function module of the standby system operating normally?	Perform troubleshooting on the power supply module, CPU module, or redundant function module of the standby system. 📖 MELSEC iQ-R CPU Module User's Manual (Application)
Is any cable for the CC-Link IE Controller Network-equipped module of the standby system disconnected?	Check the wiring condition and put the network of the standby system in normal condition.
Is 'Flag for disabling system switching due to data link error' (SB0017) turned on?	Turn 'Flag for disabling system switching due to data link error' (SB0017) off.

■Cyclic data is turned off when system switching occurs.

If cyclic data is turned off or momentarily turned off when system switching occurs, check whether the cyclic data communication range is included in the tracking target. (📖 MELSEC iQ-R CPU Module User's Manual (Application))

■Data link is not performed with the pairing-set normal station

If data link is not performed with the pairing-set normal station, check whether the pairing-set normal station supports the redundant system function. (☞ Page 213 Added and Enhanced Functions)

3.5 List of Error Codes

This section lists the error codes, error details and causes, and action for the errors occur in the processing for data communication between CC-Link IE Controller Network-equipped module and external devices or caused by processing requests from the CPU module on the own station.

Error codes are classified into major error, moderate error, and minor error, and can be checked in the "Error Information" tab in the "Module Diagnostics" window. (☞ Page 106 Error information)

Error code	Error details and causes	Action	Detailed information
1080H	The number of writes to the flash ROM has exceeded 100000.	Replace the module.	—
1800H	A connection failure was detected in the network.	Correct the wiring status.	—
1811H	An error was 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 upper limit of simultaneously processable requests.	Lower the transient transmission usage frequency, and then perform again.	—
1845H	Too many processings of transient transmission (link dedicated instruction) and cannot perform transient transmission.	Correct the transient transmission execution count.	—
1860H	Baton pass stops with an error of communication line or CC-Link IE Controller Network-equipped module.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
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.	—
2220H	The parameter is set for extending the link points extended setting, however the CPU module and network modules do not support the link points extended setting.	• When the link points extended setting is used, use a CPU module and network modules with the firmware version supported the link points extended setting. • When the link points extended setting is not used, set "Not to Extend" of "Link points extended setting" on "Application Settings".	Parameter information • Parameter type
	The parameter setting is corrupted.	Check the detailed information of the error by executing module diagnostics using the engineering tool, and write the displayed parameter. If the error occurs again even after taking the above, the possible cause is a hardware failure of the module. Please consult your local Mitsubishi representative.	
2221H	The network number set on the own station is different from one on the control station	Set the same network number as the own station and the control station.	Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No.
	The own station is set to extended mode, however, the control station is set to normal mode. Or, the own station is set to normal mode and the control station is set to extended mode.	Set the same mode as the own station and the control station.	
	The own station is set to "Extend" of "Link points extended setting" in "Application Settings", however, the control station is set to "Not to Extend". Or, the own station is set to "Not to Extend" and the control station is set to "Extend".	Set the same setting of "Link points extended setting" in "Application Settings" to the own station and the control station.	
	The set value is out of the range.	Check the detailed information of the error by executing module diagnostics using the engineering tool, and correct the parameter setting corresponding to the displayed number.	

Error code	Error details and causes	Action	Detailed information
24C0H to 24C3H	An error was detected on the system bus.	• Take measures to reduce noise. • Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	System configuration information • I/O No. • Base No. • Slot No. • CPU No.
24C6H	An error was detected on the system bus.	• Take measures to reduce noise. • Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3001H	• A station with the same station number was found in the same network. • Multiple control stations were detected in the same network.	Correct the station number or station type of the station where the error was detected. After taking the above actions, power off and on or reset all stations where the error was detected.	Parameter information • Parameter type • I/O No. • Parameter No. • Parameter item No.
3006H	Pairing is not set to the stations in a redundant system.	Check the pairing setting in "Network Range Assignment" of "Required Settings" of the control station.	Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No.
3007H	Pairing is set to the stations not included in a redundant system.	Check the pairing setting in "Network Range Assignment" of "Required Settings" of the control station.	Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No.
3008H	• "RJ71GP21-SX" or "RJ71GP21S-SX" is selected for the module name in a redundant system.	• When using the module in a redundant system, select "RJ71GP21-SX (R)" or "RJ71GP21S-SX (R)" for the module name in the "Add New Module" window.	Parameter information • Parameter type • I/O No. • Parameter No. • Network No. • Station No.
	• "RJ71GP21-SX (R)" or "RJ71GP21S-SX (R)" is selected for the module name in a system other than a redundant system.	• When using the module in a system other than a redundant system, select "RJ71GP21-SX" or "RJ71GP21S-SX" for the module name in the "Add New Module" window.	
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.	—
3C00H to 3C03H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3C0FH	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3C10H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
	A function which is not supported was used. (When Ethernet cables are used)	Check that firmware version of the RJ71EN71 supports the function to be used.	—

Error code	Error details and causes	Action	Detailed information
3C11H	A hardware failure has been detected.	• Take measures to reduce noise. • Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the module, base unit, or extension cable. Please consult your local Mitsubishi representative.	—
3C14H	A hardware failure has been detected.	Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the error module or CPU module. Please consult your local Mitsubishi representative.	—
3C2FH	An error was detected in the memory.	Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
3E00H	An error was detected in the network module.	Reset the CPU module, and run it again. If the error occurs again even after taking the above, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
3E01H	Network type of the own station is unexpected setting.	Rewrite the module parameter using the engineering tool. If the error occurs again even after taking the above, the possible cause is a hardware failure of the error module. Please consult your local Mitsubishi representative.	—
4000H to 4FFFH	Errors detected by the CPU module (📖 MELSEC iQ-R CPU Module User's Manual (Application))		
E006H	The receive queue is full.	• Pause the transient transmission temporarily, and retry the operation. • Lower the transient transmission usage frequency, and then perform again. • Use the COM instruction to increase the frequency of transient transmission. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E102H	The own station is set as a reserved station.	Cancel the reserved station setting in "Network Range Assignment" of "Required Settings" of the control station. Or change the own station number to the one that is not specified as a reserved station.	—
E103H	The own station number set is out of the range of total stations.	Increase the number of total stations in "Network Range Assignment" of "Required Settings" of the control station. Or change the own station number to the one that is within the number of total stations.	—
E120H	The UINI instruction was executed at the control station.	The station number of the control station cannot be set by the UINI instruction. Set it in "Station No." of "Required Settings".	—
E121H	The UINI instruction was executed when "Parameter Editor" is selected for "Setting Method" under "Station Number" of "Required Settings".	Execute again after setting "Setting Method" under "Station Number" in "Required Settings" of the normal station to "Program".	—
	The UINI instruction was executed in a redundant system.	The station number cannot be set by the UINI instruction in a redundant system.	
E122H	The station number set for the own station by the UINI instruction is already used for the other station.	• Execute again after changing the own station number setting in the control data. • Execute again after changing the station number of other station which is duplicated.	—
E123H	After setting a station number with the UINI instruction, the instruction was executed again.	Station number setting with the UINI instruction is limited to one time only. Execute again after resetting the CPU module.	—
E160H	'Link startup/stop direction' (SW0000) is not set properly.	Check the setting and stop or restart cyclic transmission.	—
E162H	Re-execution was attempted during the processing of cyclic transmission stop/restart.	Retry the operation after the stop or restart of cyclic transmission is completed.	—
E163H	Re-execution was attempted during the processing of cyclic transmission stop/restart.	Retry the operation after the stop or restart of cyclic transmission is completed.	—
E164H	Re-execution was attempted during the processing of cyclic transmission stop/restart.	Retry the operation after the stop or restart of cyclic transmission is completed.	—
E165H	'Link startup/stop station specification' (SW0001 to SW0008) is not set properly.	Check the setting and stop or restart cyclic transmission.	—

Error code	Error details and causes	Action	Detailed information
E166H	'Link startup/stop group specification' (SW0012 to SW0013) is not set properly.	Check the setting and stop or restart cyclic transmission.	—
E170H to E172H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E173H	During execution of the communication test, the test was retried.	After completion of the communication test, retry the operation.	—
E174H	The maximum number of transmission completion signal retries was reached.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool, and retry the operation. • Check if "Routing Setting" in "CPU Parameter" is correctly set.	—
E175H	No response has been returned within the communication monitoring time.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool, and retry the operation. • Check if "Routing Setting" in "CPU Parameter" is correctly set.	—
E176H	Timeout has occurred without transmission completion.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool, and retry the operation. • Check if "Routing Setting" in "CPU Parameter" is correctly set.	—
E177H to E179H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E17AH	The response data have been received two times or more.	Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool, and retry the operation.	—
E17BH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E17CH	The target station specified for the communication test is incorrect.	• Correct "Target Station" of communication test, and retry the operation. • The own station, relay sending station, and the station which is mounted on the same base unit (main base unit and extension base unit) cannot be specified as the communication test target.	—
E17DH	The IP address of the own station cannot be obtained when an IP communication test is performed.	Check the destination IP address of the IP communication test.	—
E17EH	The same numbers are not used for the first and second octets of the IP addresses set in the IP communication test destination setting in the network of the request source device, request destination device, and modules between them.	Check the destination IP address of the IP communication test.	—
E17FH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E180H	During execution of the cable test, the test was retried. (only when Ethernet cables are used)	After completion of the cable test, retry the operation.	—
E181H	The IP packet transfer function is not supported.	The transfer destination of the IP data does not support the IP packet transfer function.	—
E182H	During execution of the IP communication test, the test was retried.	Retry the operation after a while.	—
E183H	Transient transmission failed.	• Lower the transient transmission usage frequency, and then perform again. • Check if the switching hub is connected properly. (only when Ethernet cables are used) • Check if the cables are connected properly.	—
E184H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E185H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E186H	The IP address of the standby system is set for "Connected Station (Host)" or "Communication Destination Setting" for the IP communication test.	Check the IP address set for "Connected Station (Host)" or "Communication Destination Setting" for the IP communication test.	—
E201H	The same transient data have been received two times or more.	Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool. Although the error occurs, the second or later received transient data is discarded in the module.	—

Error code	Error details and causes	Action	Detailed information
E203H	The send buffer is full.	• Pause the transient transmission temporarily, and retry the operation. • Lower the transient transmission usage frequency, and then perform again. • Use the COM instruction to increase the frequency of transient transmission. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E204H	The specified number of resends has been reached.	Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool.	—
E205H	The receive buffer is full.	• Pause the transient transmission temporarily, and retry the operation. • Lower the transient transmission usage frequency, and then perform again. • Use the COM instruction to increase the frequency of transient transmission. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E206H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E207H	Although the target station of transient transmission is connected in the same network, different network number is set.	Correct "Network No." in "Required Settings". When the parameter is not set, network number is set to 1 (default). Correct the network number of the other station.	—
E208H	The target station number specified for transient send/receive is out of range.	• Correct the target station number at the own station, and retry the operation. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E20BH	In transient transmission, the number of relay to other networks exceeded seven.	• Change the system configuration so that the number of relay stations may be seven or less. • Check if "Routing Setting" in "CPU Parameter" is correctly set.	—
E20AH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E20FH	The target station number is set to zero in transient transmission using protocols such as SLMP.	• Correct the target station number at the own station, and retry the operation. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E211H	When there was no control station, "Specified Control Station" was specified for transient transmission using protocols such as SLMP.	• Correct the target station number at the own station, and retry the operation. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E212H	When there was no control station, "Present Control Station" was specified for transient transmission using protocols such as SLMP.	• Correct the target station number at the own station, and retry the operation. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E213H	In transient transmission, timeout has occurred without transmission completion.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E215H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E216H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E218H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E21BH	Transient transmission was performed when the station number of the own station has not been set yet.	• Specify the station number using the UINI instruction, and retry the operation. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E21CH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E21EH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E21FH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—

Error code	Error details and causes	Action	Detailed information
E221H to E223H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E224H	Attribute code set in the CC-Link transient request frame is out of range.	• Execute the RIRD/RIWT instruction again after correcting the attribute code in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E225H	Access code set in the CC-Link transient request frame is out of range.	• Execute the RIRD/RIWT instruction again after correcting the access code in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E226H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E228H	• The request command of transient transmission is incorrect. • The CC-Link IE Controller Network diagnostics was used for the network to which the relay receiving station belongs.	• Correct the request command at the request source, and retry the operation. • Review the connection destination so that the CC-Link IE Controller Network diagnostics is used for the network to which the relay sending station belongs.	—
E229H	The control station does not exist.	Add the control station to the network.	—
E22AH	A transient transmission error was detected.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool, and take action. • Check if the switching hub and the cables are connected properly. • If the request source is on another network, check if the routing parameters are set correctly, and take action. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E22BH	Baton pass has not been performed.	Check the communication status.	—
E22CH	A transient transmission error was detected.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool, and take action. • Check if the switching hub and the cables are connected properly. • If the request source is on another network, check if the routing parameters are set correctly, and take action. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E22DH	A transient transmission error was detected.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool, and take action. • Check if the switching hub and the cables are connected properly. • If the request source is on another network, check if the routing parameters are set correctly, and take action. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E236H	The TTL of the IP data is incorrect.	Correct the TTL at the IP request source and retry the operation.	—
E237H	The IP address setting is not correctly set.	Correct the IP address of the control station.	—
E241H to E245H	The hardware of the target network module for dedicated instruction has failed.	Please consult your local Mitsubishi representative.	—
E24FH	When the dedicated instruction is executed, the target station number setting is not correct.	• Execute again after correcting the target station number in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E251H	Transient data for the same dedicated instruction have been received two times or more.	Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool.	—
E254H	The target station's CPU type specified for the dedicated instruction is out of range.	• Execute again after correcting the target station's CPU type in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E255H	The data size specified for the dedicated instruction is out of range.	• Execute again after correcting the data length in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—

Error code	Error details and causes	Action	Detailed information
E256H	The arrival monitoring time specified for the dedicated instruction is out of range.	• Execute again after correcting the arrival monitoring time in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E257H	The number of resends specified for the dedicated instruction is out of range.	• Execute again after correcting the number of resends in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E258H	The network number specified for the dedicated instruction is out of range.	• Execute again after correcting the target station No. in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E259H	The channel used in the dedicated instruction is incorrect.	• Set 1 to 8 for the target channel number in the control data when executing the SEND instruction. • Execute again after correcting the channel number used by own station in the control data.	—
E25AH	The modification specification specified for the UINI instruction is out of range.	• Execute again after correcting the modification specification in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E25BH	The own station No. specified for the dedicated instruction is out of range.	• Execute again after correcting the own station number in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E262H	When the target station specified for the dedicated instruction is "Group" or "All stations", "With arrival confirmation" is specified for execution type. For the REQ instruction, the specified request type is incorrect.	• Execute again after changing the execution type in the control data to "No arrival confirmation". • For the REQ instruction, execute again after correcting request type. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E264H	Transmission did not completed after execution of the dedicated instruction, and timeout has occurred.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E265H	No response was received after execution of the dedicated instruction, and timeout has occurred.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool. • When the dynamic routing function is used, check the buffer memory area of Communication path determination status and check if communication to the target network number is possible. • For the RECV instruction, execute again after correcting the channels used by own station 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. • Execute the transient transmission again after the dedicated instruction completed with an error. • If the request destination is on another network, check if the CPU module of the relay station supports the routing setting, and take an action. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E266H	The SEND instruction was received from other network.	• Change the target station at the station that executed the SEND instruction. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E267H	The own station number was set as the target station number.	• Execute again after correcting the target station number in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E268H	In the execution/abnormal completion type specification, the bit in the area fixed to 0 is turned on.	• Execute again after correcting the execution/abnormal completion type in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E269H	The request type or sub-request type specified in the REQ instruction is incorrect.	• Execute again after correcting the request or sub-request type in the request data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—

Error code	Error details and causes	Action	Detailed information
E26AH	When there was no control station on the network, the dedicated instruction was executed specifying the specified control station or current control station.	• Execute again after correcting the target station number in the control data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E26CH	The channel specified is being used for another instruction.	• Retry the operation after a while. • Change the channels used by own station or the target station's channel in the control data.	—
E26DH	The channel specified is being used for event parameters.	• Execute again after correcting the channel used by own station in the control data. • Execute again after correcting the channel used in "Interrupt Settings" of "Application Setting". • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E26EH	The device range specified for the ZNRD/ZNWR instruction is not correct.	• Execute again after correcting the setting data for the ZNRD/ZNWR instruction. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E26FH	The device range specified for the ZNRD/ZNWR instruction is not correct.	• Execute again after correcting the setting data for the ZNRD/ZNWR instruction. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E271H	The operation mode specified in the REQ instruction (remote RUN/STOP) is incorrect.	• Execute again after correcting the operation mode in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E272H	When the remote RUN is specified in the REQ instruction (remote RUN/STOP), the specified clear mode is not correct.	• Execute again after correcting the clear mode in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E273H	The control data specified for the RRUN instruction is not correct.	• Execute again after correcting the mode in the setting data. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E274H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E277H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E278H	The request data size of transient transmission is out of range.	• Correct the request command at the request source, and retry the operation. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E279H	The routing setting is not correctly set.	• Correct the network number at the request source, and retry the operation. • If the request source is on another network, check if the routing parameters are correctly set.	—
E27AH	Dedicated instructions which cannot be executed simultaneously were executed.	• Other dedicated instructions are in execution. Execute again after a while. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E27BH	The target station type specification of the dedicated instruction is incorrect.	• Execute again after correcting the station type of the target station at the request source. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E27CH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E27DH	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E286H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E2A0H	The receive buffer for the CC-Link dedicated instruction is full.	Too many transient requests have been received from CC-Link IE Controller Network devices. Adjust the timing of transient requests from CC-Link IE Controller Network devices so that each request will issued at certain intervals.	—

Error code	Error details and causes	Action	Detailed information
E2A1H	The send buffer for the CC-Link dedicated instruction is full.	Too many transient requests have been received from CC-Link IE Controller Network devices. Adjust the timing of transient requests from CC-Link IE Controller Network devices so that each request will issued at certain intervals.	—
E2A2H	The hardware of the network module has failed.	• Check the network status using the CC-Link IE Controller Network diagnostics of the engineering tool. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E2A3H	The frame length (L) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2A4H	The gate count (GCNT) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2A5H	The destination station number (DA) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2A6H	The source station number (SA) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2A7H	The destination application type (DAT) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2A8H	The source application type (SAT) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2A9H	The destination network number (DNA) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2AAH	The destination station number (DS) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2ABH	The source network number (SNA) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2ACH	The source station number (SS) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2ADH	The data length (L1) in the transient transmission frame is incorrect.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2AEH	The destination station number (DA) in the transient transmission frame of the received data matches the own station, but the destination network number (DNA) or the destination station number (DS) does not match the own station.	An invalid transient frame was received from a CC-Link IE Controller Network device. Correct the contents of the transient frame on the external device side. For details, please consult the manufacturer of the CC-Link IE Controller Network device.	—
E2AFH	The own station number was set as the target station number of the CC-Link dedicated instruction.	Check that the target station in the send data is not the own station.	—
E2B0H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—

Error code	Error details and causes	Action	Detailed information
E501H to E503H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E504H	Transient transmission (dedicated instruction, engineering tool connection) was executed while the own station did not perform baton pass.	• Execute the dedicated instruction interlocking with 'Baton pass error status of own station' (SB0047) and 'Baton pass status of each station' (SW00A0 to SW00A7). • Check the 'Cause of baton pass interruption' (SW0048) at the own station and restart baton pass before executing the transient transmission. • Execute the transient transmission again after the dedicated instruction completed with an error. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E505H	Transient transmission (dedicated instruction, engineering tool connection) was executed with the own station number duplicated.	Remove the duplication of the own station numbers before executing the transient transmission.	—
E521H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
E5F0H	Transient transmission (dedicated instruction, engineering tool connection) was executed while the target station did not perform baton pass.	• Return the target station. • Execute the dedicated instruction interlocking with 'Baton pass error status of own station' (SB0047) and 'Baton pass status of each station' (SW00A0 to SW00A7). • Check the 'Cause of baton pass interruption' (SW0048) at the target station and restart baton pass before executing the transient transmission. • If the error occurs again even after taking the above, please consult your local Mitsubishi representative.	—
E5F1H	The target station number of transient transmission is already in use.	Change the target station number.	—
E5F8H	There is a station that does not support the IP packet transfer function on the communication path when the IP packet transfer function is used.	Check the station on the communication path, and check whether the module in the station supports the IP packet transfer function.	—
E840H	Number of transient request exceeded the upper limit of simultaneously processable requests.	• Pause the transient transmission temporarily, and retry the operation. • Lower the transient transmission usage frequency, and then perform again.	—
E841H	The request data size of memory read/ write command is out of range.	Correct the read or write size specification at the transient request source, and retry the operation.	—
E842H	• Routing information to the destination network number is not registered. • In transient transmission, the number of relay to other networks exceeded seven.	• Correct the target network number at the request source, and retry the operation. • Correct the communication path from the transient request source to the destination, and retry the operation. • 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 may be seven or less.	—
E843H	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 operation.	—
E844H	Incorrect frame is received. • Unsupported pre-conversion protocol • Unsupported frame type • Application header variable part • Application header HDS • Application header RTP • Read command not requiring response	Correct the request data at the transient request source, and retry the operation.	—
EA00H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—
EA01H	An error was detected in the network module.	Please consult your local Mitsubishi representative.	—

3.6 List of Parameter Numbers

This section lists the parameter numbers displayed in the module diagnostics.

Item			Parameter No.
Required Settings	Station Type		7100H
	Network Number		7100H
	Station Number		7100H
	Network Range Assignment	Total No. of Stations	A060H
		LB/LW Setting (1)	A061H
		LB/LW Setting (2)	A062H
		LX/LY Setting (1)	A063H
		LX/LY Setting (2)	A064H
		I/O Master Station	A063H A064H
		Reserved Station	A001H
		Pairing	A003H
		Shared Group	A000H
Basic Settings	Refresh Setting		7401H
	Network Topology		A060H
Application Settings	Supplementary Cyclic Settings		A060H
	Link points extended setting		A071H
	Interrupt Settings		A014H A015H
	Transient Transmission Group No.		A010H
	Dynamic Routing		A050H
	IP Address		A012H
	Parameter Name		7310H
	Event Reception from Other Stations		A016H
	Module Operation Mode		7100H
	Interlink Transmission Settings		7500H
	Redundant System Settings		7110H

3.7 Event List

This section lists the events which occur in CC-Link IE Controller Network.

Event code	Event type	Overview	Cause
00100	System	Link-up	Link-up has occurred when the network cable connected to the external device was connected.
00130		Receive frame error	Receive frame error was detected.
00500		<<Own station>> Baton pass return	Baton pass of the own station was returned from interruption status to normal status.
00501		<<Another station>> Baton pass return	Baton pass of another station was returned from interruption status to normal status.
00502		All stations baton pass normalization	Baton pass was returned to normal status at all stations.
00510		<<Own station>> Data link restart	Data link of the own station was restarted.
00511		<<Another station>> Data link restart	Data link of another station was restarted.
00512		All stations data link normalization	Data link was returned to normal status at all stations.
00513		<<Own station>> Data link start instruction acceptance	Data link startup of the own station instruction was received.
00514		<<Own station>> Data link stop instruction acceptance	Data link stop instruction of the own station was received.
00540		Loopback resolution	Loopback execution status was resolved when using a ring topology (using the loopback function).
00541		Receive parameter error resolution	A parameter error received from control station was resolved. (Normal parameter was received.)
00700		Power applied from the external power supply	The power applied from the external power supply was detected.
00800		Link-down	Link-down occurred when network cable connected to the external device was disconnected.
00A00		System switching request issued	A system switching request occurred.
00C00		<<Own station>> Baton pass interruption	Baton pass of the own station was interrupted.
00C01		<<Another station>> Baton pass interruption	Baton pass of another station was interrupted.
00C02		Response error from/to 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.
00C10		<<Own station>> Data link stop	Data link of the own station was stopped.
00C11		<<Another station>> Data link stop	Data link of another station was stopped.
00C20		<<Another station>> Parameter error occurrence	A parameter error has occurred in another station.
00C21		<<Another station>> CPU error occurrence	An error has occurred in the CPU module on another station.
00C23		Loopback occurrence	Path switching has occurred when using a ring topology (using the loopback function).
00C24		<<Another station>> Receive frame error occurrence	A receive frame error has occurred at another station.
00C25		Receive parameter error occurrence	A parameter error received from the control station has been detected.
00F00		Interrupt of power from the external power supply	Interrupt of power from the external power supply was detected.
24000	Operation	Data link startup instruction	Data link startup to the own station or another station was instructed.
24001		Data link stop instruction	Data link stop to the own station or another station was instructed.
24031		Network number, station number setting/change execution	Setting or change of the network number or station number of the own station was executed.
24100		<<Own station>> Parameter change/new parameter acceptance	Parameter was changed. Or new parameter was received at power-on.
24F00		<<Another station>> CPU operating status change detection	Operating status of the programmable controller CPU on another station was changed.

APPENDICES

Appendix 1 Module Label

The link special relay (SB) and link special register (SW) of the CC-Link IE Controller Network-equipped module 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.

GP21_1.bDetect_DataLinkError

■Instance name

The following is the instance name of the RJ71GP21(S)-SX.

Model	Instance name
RJ71GP21-SX	GP21
RJ71GP21S-SX	GP21

For the instance name of the RJ71EN71 and RnENCPU when the CC-Link IE Controller Network function is used, refer to the following.

MELSEC iQ-R Ethernet User's Manual (Application)

■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. For the instruction processing time, refer to the following. MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)	At writing to or reading from the module label

Point

When multiple CC-Link IE Controller Network-equipped modules of the same network number are mounted and the module labels of link special relay (SB) and link special register (SW) is used for direct access, the access target is the module which has the smallest slot number.

Appendix 2 I/O Signals

This section describes the I/O signals for the CPU module when Ethernet cables are used. The I/O signal assignment of when the start I/O number of the RJ71EN71 and RnENCPU (when the CC-Link IE Controller Network function is used) is "0" is listed below.
When optical fiber cables are used, the I/O signals cannot be used.

List of I/O signals

The following table lists I/O signals. The device X is an input signal from the RJ71EN71 or the RnENCPU (network part) to the CPU module. The device Y is an output signal from the CPU module to the RJ71EN71 or the RnENCPU (network part).

Input signals

Device No.	Signal name
X0 to XE	Use prohibited
XF	Module ready
X10 to X1F	Use prohibited

Output signals

Device No.	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 malfunction of the programmable controller system.

Details of I/O signals

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

Appendix 3 Buffer Memory

The buffer memory is used to exchange data between the CC-Link IE Controller Network-equipped module and the CPU module. Buffer memory values are defaulted when the CPU module is reset or the system is powered off.

Point

For the RJ71EN71 and RnENCPU, add the following value to the buffer memory addresses when setting "Port 1 Network Type" to "Ethernet" and "Port 2 Network Type" to "CC-Link IE Control".

- Address (decimal): 2000000
- Address (hexadecimal): 1E8480H

List of buffer memory addresses

Address (decimal)	Address (hexadecimal)	Name			Initial value	Read, write
0 to 2591	0H to A1FH	System area				
2592	A20H	Transient transmission error log information area	Transient transmission error count		0	Read
2593	A21H		Error log pointer			
2594	A22H		Error log block 1	Error code		
2595	A23H			System area		
2596	A24H			Target station network No.	0	Read
2597	A25H			Target station number		
2598	A26H			Own station's network No.		
2599	A27H			Own station's station No.		
2600 to 2603	A28H to A2BH			Time of error occurrence		
2604 to 2613	A2CH to A35H		Error log block 2	Same as in Error log block 1		
2614 to 2623	A36H to A3FH		Error log block 3	Same as in Error log block 1		
2624 to 2633	A40H to A49H		Error log block 4	Same as in Error log block 1		
2634 to 2643	A4AH to A53H		Error log block 5	Same as in Error log block 1		
2644 to 2653	A54H to A5DH		Error log block 6	Same as in Error log block 1		
2654 to 2663	A5EH to A67H		Error log block 7	Same as in Error log block 1		
2664 to 2673	A68H to A71H		Error log block 8	Same as in Error log block 1		
2674 to 2683	A72H to A7BH		Error log block 9	Same as in Error log block 1		
2684 to 2693	A7CH to A85H		Error log block 10	Same as in Error log block 1		
2694 to 2703	A86H to A8FH		Error log block 11	Same as in Error log block 1		
2704 to 2713	A90H to A99H		Error log block 12	Same as in Error log block 1		
2714 to 2723	A9AH to AA3H		Error log block 13	Same as in Error log block 1		
2724 to 2733	AA4H to AADH		Error log block 14	Same as in Error log block 1		
2734 to 2743	AAEH to AB7H		Error log block 15	Same as in Error log block 1		
2744 to 2753	AB8H to AC1H		Error log block 16	Same as in Error log block 1		
2754 to 2783	AC2H to ADFH	System area				

A

Address (decimal)	Address (hexadecimal)	Name			Initial value	Read, write
2784	AE0H	Transmission path switching history (only when optical fiber cables are used)	Transmission path switching count		0	Read
2785	AE1H		Transmission path switching history pointer			
2786	AE2H		History 1	Post-switching status		
2787	AE3H			Number of connected modules		
2788	AE4H			IN-side loopback station No.		
2789	AE5H			OUT-side loopback station No.		
2790 to 2791	AE6H to AE7H			System area		
2792 to 2795	AE8H to AEBH			Time of occurrence	0	Read
2796 to 2805	AECH to AF5H		History 2	Same as in History 1		
2806 to 2815	AF6H to AFFH		History 3	Same as in History 1		
2816 to 2825	B00H to B09H		History 4	Same as in History 1		
2826 to 2835	B0AH to B13H		History 5	Same as in History 1		
2836 to 2845	B14H to B1DH		History 6	Same as in History 1		
2846 to 2855	B1EH to B27H		History 7	Same as in History 1		
2856 to 2865	B28H to B31H		History 8	Same as in History 1		
2866 to 2875	B32H to B3BH		History 9	Same as in History 1		
2876 to 2885	B3CH to B45H		History 10	Same as in History 1		
2886 to 2895	B46H to B4FH		History 11	Same as in History 1		
2896 to 2905	B50H to B59H		History 12	Same as in History 1		
2906 to 2915	B5AH to B63H		History 13	Same as in History 1		
2916 to 2925	B64H to B6DH		History 14	Same as in History 1		
2926 to 2935	B6EH to B77H		History 15	Same as in History 1		
2936 to 2945	B78H to B81H		History 16	Same as in History 1		
2946 to 8191	B82H to 1FFFH	System area				

Address (decimal)	Address (hexadecimal)	Name			Initial value	Read, write
8192	2000H	System configuration information	Own station (network card) information	Manufacturer code	0	Read
8193	2001H			Model type		
8194	2002H			Model code		
8195	2003H			Version		
8196 to 8199	2004H to 2007H			System area		
8200	2008H		Own station (controller) information	Controller information valid/ invalid flag	0	Read, write
8201	2009H			Manufacturer code		
8202	200AH			Model type		
8203	200BH			Model code		
8204	200CH			Version		
8205 to 8214	200DH to 2016H			Model name string		
8215 to 8216	2017H to 2018H			Vendor-specific device information		
8217 to 8223	2019H ~201FH			System area		
8224	2020H		Other station (station No.1) (network card) information	Manufacturer code	0	Read
8225	2021H			Model type		
8226	2022H			Model code		
8227	2023H			Version		
8228 to 8231	2024H to 2027H			System area		
8232	2028H		Other station (station No.1) (controller) information	Controller information valid/ invalid flag	0	Read
8233	2029H			Manufacturer code		
8234	202AH			Model type		
8235	202BH			Model code		
8236	202CH			Version		
8237 to 8246	202DH to 2036H			Model name string		
8247 to 8248	2037H to 2038H			Vendor-specific device information		
8249 to 8255	2039H to 203FH			System area		
8256 to 12063	2040H to 2F1FH		Other station information (station No.2 to 120)	Same as Other station information (station No.1)		
12064 to 12079	2F20H to 2F2FH	System area				
12080	2F30H	Communication path determination status	Communication path determination status (network No.1 to 16)		0	Read
12081 to 12095	2F31H to 2F3FH		Communication path determination status (network No.17 to 239)			
12096 to 65535	2F40H to FFFFH	System area				

Point

- Do not write data to "System area". Doing so may cause malfunction of the programmable controller system.
- If the value in an area of one word in size becomes equal to or higher than 65536, the count stops at 65535 (FFFFH).

A

Transient transmission error log

■Transient transmission error count (Un\G2592)

The cumulative number of errors saved in the error log blocks is stored.

■Error log pointer (Un\G2593)

The error log block number of the latest error log is stored.

- 0: No error (No error log data)
- 1 or more: Error log block number of the latest error log

Ex.

When the pointer value is "16", the latest error log is registered to Error log block 16.

The 17th and subsequent errors will be registered to the error log from Error log block 1 again.

■Error log blocks 1 to 16 (Un\G2594 to Un\G2753)

Transient transmission error logs are stored.

Error log blocks 1 to 16 are composed of data in the same arrangement.

- Error code: An error code is stored. (☞ Page 145 List of Error Codes)
- Target station network No./Target station No.: Network number and station number of an error-detected station are stored.
- Own station's network No./Own station's station No.: Network number and station number of the own station are stored.
- Time of error occurrence: Time of transient transmission error is stored as a BCD code.

Name	Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Error log block 1	Un\G2594	Error code															
	Un\G2595	System area															
	Un\G2596	Target station network No.															
	Un\G2597	Target station number															
	Un\G2598	Own station's network No.															
	Un\G2599	Own station's station No.															
	Un\G2600*1	Month (01H to 12H)								Year (00H to 99H), last 2 digits							
	Un\G2601*1	Hour (00H to 23H)								Day (01H to 31H)							
	Un\G2602*1	Second (00H to 59H)								Minute (00H to 59H)							
	Un\G2603*1	Year (00H to 99H), first 2 digits								Day of week (0H: Sunday to 6H: Saturday)							
Error log blocks 2 to 16	Un\G2604 to Un\G2753	Information on Error log blocks 2 to 16 is stored in the same order as Error log block 1.															

*1 Indicates the time of error occurrence.

Point

Transient transmission error logs can be cleared by the following.

- Turning on 'Clear transient transmission error count' (SB000A). (☞ Page 166 List of Link Special Relay (SB) Areas)
- Powering off and on the system or resetting the CPU module.

If a transient transmission error is detected at start of the CC-Link IE Controller Network-equipped module, the time of error occurrence may be left blank.

Transmission path switching history (only when optical fiber cables are used)

The transmission path switching history data are cleared at the time the module is first placed in the loop status after power-on.

■Transmission path switching count (Un\G2784)

The cumulative number of transmission path switching saved in the transmission path switching history is stored.

■Transmission path switching history pointer (Un\G2785)

History number of the latest history is stored.

- 0: No history (No history data)
- 1 or more: History number of the latest history

Ex.

When the pointer value is "16", the latest history is registered to History 16.

The 17th and subsequent switching will be registered to the histories from History 1 again.

■Histories 1 to 16 (Un\G2786 to Un\G2945)

Transmission path switching history data are stored.

Histories 1 to 16 are composed of data in the same arrangement.

- Post-switching status: The loop status after transmission path switching is stored. (0: Normal, 1: Loopback, 2: Error on all the stations)
- Number of connected modules: The number of modules connected to the network is stored.
- IN-side loopback station No.: Station number of the station where a loopback has occurred on its IN-side is stored.
- OUT-side loopback station No.: Station number of the station where a loopback has occurred on its OUT-side is stored.
- Time of occurrence: Time of transmission path switching is stored as a BCD code.

Name	Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
History 1	Un\G2786	Post-switching status															
	Un\G2787	Number of connected modules															
	Un\G2788	IN-side loopback station No.															
	Un\G2789	OUT-side loopback station No.															
	Un\G2790 to Un\G2791	System area															
	Un\G2792*1	Month (01H to 12H)								Year (00H to 99H), last 2 digits							
	Un\G2793*1	Hour (00H to 23H)								Day (01H to 31H)							
	Un\G2794*1	Second (00H to 59H)								Minute (00H to 59H)							
	Un\G2795*1	Year (00H to 99H), first 2 digits								Day of week (0H: Sunday to 6H: Saturday)							
Histories 2 to 16	Un\G2796 to Un\G2945	Information on Histories 2 to 16 is stored in the same order as History 1.															

*1 Indicates the transmission path switching occurrence time.

Point

Transmission path switching history can be cleared by the following.

- Turning on 'Clear loop switching count' (SB0009). (☞ Page 166 List of Link Special Relay (SB) Areas)
- Powering off and on the system or resetting the CPU module.

System configuration information

The information of the own station and other stations on the network is stored. The other station information areas can be used in a control station only.

■Own station (network card) information (Un\G8192 to Un\G8195)

Address	Name	Description
Un\G8192	Manufacturer code	The information on the CC-Link IE Controller Network-equipped module of the own station is stored.
Un\G8193	Model type	
Un\G8194	Model code	
Un\G8195	Version	

■Own station (controller) information (Un\G8200 to Un\G8216)

Address	Name	Description
Un\G8200	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\G8201	Manufacturer code	The information on the CC-Link IE Controller Network-equipped module of the own station is stored.
Un\G8202	Model type	
Un\G8203	Model code	
Un\G8204	Version	
Un\G8205 to Un\G8214	Model name string	
Un\G8215 to Un\G8216	Vendor-specific device information	

■Other station (network card) information (station No.1) (Un\G8224 to Un\G8231)

Address	Name	Description
Un\G8224	Manufacturer code	The information of the other station (station No.1) is stored.
Un\G8225	Model type	
Un\G8226	Model code	
Un\G8227	Version	
Un\G8228 to Un\G8231	System area	

■Other station (controller) information (station No.1) (Un\G8232 to Un\G8255)

Address	Name	Description
Un\G8232	Controller information valid/invalid flag	Whether the value stored in Other station (controller) information (station No.1) is valid or invalid is stored. 0: Invalid 1: Valid
Un\G8233	Manufacturer code	The information on the CC-Link IE Controller Network-equipped module of another station is stored.
Un\G8234	Model type	
Un\G8235	Model code	
Un\G8236	Version	
Un\G8237 to Un\G8246	Model name string	
Un\G8247 to Un\G8248	Vendor-specific device information	
Un\G8249 to Un\G8255	System area	

■Other station information (station No.2 to 120) (Un\G8256 to Un\G12063)

The information on station number 2 to station number 120 is stored in the same order as Other station (network card) information (station No.1) and Other station (controller) information (station No.1).

Communication path determination status

The determination status on the communication path for each network number of the destination station is stored.

- 0: Route undetermined
- 1: Route determined

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G12080	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Un\G12081	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
⋮																
Un\G12094	Empty	239	238	237	236	235	234	233	232	231	230	229	228	227	226	225
Un\G12095	Empty															

The numbers in the table indicate network numbers.

Appendix 4 List of Link Special Relay (SB) Areas

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 the link special relay (SB)

By using the link special relay (SB), the status of CC-Link IE Controller Network can be checked from HMI (Human Machine Interfaces) as well as the engineering tool.

Refresh of the link special relay (SB)

To use the 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 84 Refresh Setting)

Mounting multiple network modules

The link special relay (SB) of each network module is refreshed by the link special relay (SB) of the CPU module shown below when the refresh parameters of each network module remain default.

Item	Module 1	Module 2	Module 3	Module 4
Device No.	SB0000 to SB01FF	SB0200 to SB03FF	SB0400 to SB05FF	SB0600 to SB07FF

Ranges turned on/off by users and by the system

The following ranges correspond to when the link special relay (SB) areas are assigned from SB0000 to SB01FF.

- Turned on/off by users: SB0000 to SB001F
- Turned on/off by the system: SB0020 to SB01FF

List of link special relay (SB) areas

The following table lists the link special relay (SB) areas when they are assigned from SB0000 to SB01FF.

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.

No.	Name	Description	Availability	
			Control station	Normal station
SB0000	Link startup of own station	Starts cyclic transmission of the own station. Off: Startup not requested On: Startup requested (valid at rising edge) On state will be held even after completion of the startup command. Turn on 'link startup completion status of own station' (SB004D), then turn off SB0000. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. • For SB0000 to SB0003, only one of the areas can be turned on.	○	○
SB0001	Link stop of own station	Stops cyclic transmission of the own station. Off: Stop not requested On: Stop requested (valid at rising edge) On state will be held even after completion of the stop command. Turn on 'Link stop completion status of own station' (SB004F), then turn off SB0001. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. • For SB0000 to SB0003, only one of the areas can be turned on.	○	○
SB0002	System link startup	Starts cyclic transmission of the entire system. The station where cyclic transmission is started is specified in 'Link startup/stop direction' (SW0000) and 'Link startup/stop station specification' (SW0001 to SW0008). Off: Startup not requested On: Startup requested (valid at rising edge) On state will be held even after completion of the stop command. Turn on 'System link startup completion status' (SB0051), turn off SB0002. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. • For SB0000 to SB0003, only one of the areas can be turned on.	○	○
SB0003	System link stop	Stops cyclic transmission of the entire system. The station where cyclic transmission is stopped is specified in 'Link startup/stop direction' (SW0000) and 'Link startup/stop station specification' (SW0001 to SW0008). Off: Stop not requested On: Stop requested (valid at rising edge) On state will be held even after completion of the stop command. Turn on 'System link stop completion status' (SB0053), then turn off SB0003. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. • For SB0000 to SB0003, only one of the areas can be turned on.	○	○
SB0007	■When optical fiber cables are used Clear IN-side transmission error count	Clears the IN-side line error detection area (SB006E, SB0140, SW0068, SW0069, SW0074, SW0140 to SW0147) to 0. Off: Clear not requested On: Clear requested (valid while on)	○	○
	■When Ethernet cables are used Clear PORT1 transmission error count	Clears the P1-side line error detection area (SB006E, SB0140, SW0068, SW0069, SW0074, SW0120 to SW0127, SW0140 to SW0147) to 0. Off: Clear not requested On: Clear requested (valid while on)	○	○
SB0008	■When optical fiber cables are used Clear OUT-side transmission error count	Clears the OUT-side line error detection area (SB006F, SB0150, SW006A, SW006B, SW0084, SW0150 to SW0157) to 0. Off: Clear not requested On: Clear requested (valid while on)	○	○
	■When Ethernet cables are used Clear PORT2 transmission error count	Clears the P2-side line error detection area (SB006F, SB0150, SW006A, SW006B, SW0084, SW0130 to SW0137, SW0150 to SW0157) to 0. Off: Clear not requested On: Clear requested (valid while on)	○	○
SB0009	■Only when optical fiber cables are used Clear loop switching count	Clears the path switching detection area of the own station (SB008E, SB0160, SW006E, SW0160 to SW0167) and Transmission path switching history (Un\G2784 to Un\G2945) to 0. Off: Clear not requested On: Clear requested (valid while on)	○	○
SB000A	Clear transient transmission error count	Clears the transient transmission error area of the own station (SB008F, SB0170, SW006F, SW0170 to SW0177) and Transient transmission error log (Un\G2592 to Un\G2753) to 0. Off: Clear not requested On: Clear requested (valid while on)	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB0017	■Only when optical fiber cables are used Flag for disabling system switching due to data link error	Disables system switching due to data link error. Off: Enabled (A system switching request will be issued to the control system CPU module) On: Disabled (A system switching request will not be issued to the control system CPU module)	○	○
SB0020	Communication status with the CPU module	Stores the communication status between a CC-Link IE Controller Network-equipped module and a CPU module. Off: Normal On: Error	○	○
SB0030	RECV execution request flag CH1	Stores the data reception status of own station channel 1. Off: No data received On: Data received (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on, data prior to error is held.	○	○
SB0031	RECV execution request flag CH2	Stores the data reception status of own station channel 2. Off: No data received On: Data received (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on, data prior to error is held.	○	○
SB0032	RECV execution request flag CH3	Stores the data reception status of own station channel 3. Off: No data received On: Data received (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on, data prior to error is held.	○	○
SB0033	RECV execution request flag CH4	Stores the data reception status of own station channel 4. Off: No data received On: Data received (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on, data prior to error is held.	○	○
SB0034	RECV execution request flag CH5	Stores the data reception status of own station channel 5. Off: No data received On: Data received (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on, data prior to error is held.	○	○
SB0035	RECV execution request flag CH6	Stores the data reception status of own station channel 6. Off: No data received On: Data received (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on, data prior to error is held.	○	○
SB0036	RECV execution request flag CH7	Stores the data reception status of own station channel 7. Off: No data received On: Data received (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on, data prior to error is held.	○	○
SB0037	RECV execution request flag CH8	Stores the data reception status of own station channel 8. Off: No data received On: Data received (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on, data prior to error is held.	○	○
SB0040	Network type of own station	Stores the network type of the own station Off: Controller Network	○	○
SB0041	Redundant function information of own station	Stores the redundant system support information of own station. Off: Redundant function not supported On: Redundant function supported	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB0042	Power status of own station	Stores the external power supply status of own station. Off: External power supply not applied (EXT PW LED is off) On: External power supply applied (EXT PW LED is on) The SB0042 is always off for the CC-Link IE Controller Network module that does not have the external power supply function.	○	○
SB0043	Module operation mode of own station	Stores the module operation mode of the own station. Off: Online On: Other than online	○	○
SB0044	Station setting of own station	Stores the station type of the own station. Off: Normal station On: Control station	○	○
SB0047	Baton pass error status of own station	Stores the baton pass status (transient transmission availability) of the own station. Off: Normal On: Error When this relay is turned on, the cause of the error can be checked with 'Baton pass status of own station' (SW0047) and 'Cause of baton pass interruption' (SW0048). Depending on the link refresh timing, the update of 'Baton pass status of own station' (SW0047) and 'Cause of baton pass interruption' (SW0048) may be offset by one sequence scan.	○	○
SB0048	Station status of own station	Stores the station type (current status) of the own station. Off: Normal station On: Control station (when SB0044 is turned on)/sub-control station (when SB0044 is turned off) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0049	Data link error status of own station	Stores the data link 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.	○	○
SB004A	CPU minor error status of own station	Stores the minor error occurrence 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 occurrence status of the CPU module on own station. Off: No moderate/major error On: Moderate/major error	○	○
SB004C	Link startup request accept status of own station	Stores the acceptance status of 'Link startup of own station' (SB0000). Off: Not accepted (SB0000 is off.) On: Accepted (SB0000 is on.) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB004D	Link startup completion status of own station	Stores the status of link startup processing requested with 'Link startup of own station' (SB0000). Off: Link startup not completed (SB0000, SB0050 are off.) On: Link startup completed (SB0000, SB0050 are on.) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB004E	Link stop request accept status of own station	Stores the acceptance status of 'Link stop of own station' (SB0001). Off: Not accepted (SB0001 is off.) On: Accepted (SB0001 is on.) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB004F	Link stop completion status of own station	Stores the link stop processing status requested with 'Link stop of own station' (SB0001). Off: Not completed (SB0001, SB0052 are off.) On: Completed (SB0001, SB0052 are on.) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0050	System link startup request accept status	Stores the acceptance status of 'System link startup' (SB0002). Off: Not accepted (SB0002 is off.) On: Accepted (SB0002 is on.) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0051	System link startup completion status	Stores the status of link startup processing requested with 'System link startup' (SB0002). Off: Not completed (SB0002, SB0054 are off.) On: Completed (SB0002, SB0054 are on.) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0052	System link stop request accept status	Stores the acceptance status of 'System link stop' (SB0003). Off: Not accepted (SB0003 is off.) On: Accepted (SB0003 is on.) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0053	System link stop completion status	Stores the status of link stop processing requested with 'System link stop' (SB0003). Off: Not completed (SB0003, SB0056 are off.) On: Completed (SB0003, SB0056 are on.) (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0054	Parameter reception status	Stores the status of parameter reception. For the control station, this relay stores the status of parameter reception from the CPU module. For the normal station, this relay stores the status of parameter reception from the control station. Off: Reception completed On: Reception not completed	○	○
SB0055	Received parameter error	Stores the status of received parameter. (Own parameter status is stored for the control station.) Off: Parameters normal On: Parameter error	○	○
SB0056	Communication status	Stores the transient transmission status. Off: Transient transmission by the control station On: Transient transmission by the sub-control station (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB005A	Parameter type of control station	Stores the station type (mode) of the control station. Off: Control station On: Extended mode (control station)	○	○
SB005B	CPU operating status of own station	Stores the operating status of the CPU module on the own station. Off: RUN On: STOP, PAUSE, or moderate/major error	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB005C	Block 1 I/O master station	Stores the I/O master station settings status of block 1 (LX/LY setting (1)). Off: No setting On: Set When this relay is turned on, the station number is stored in 'Block 1 I/O master station' (SW005C). (Conditions) • This relay is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SB005D	Block 2 I/O master station	Stores the I/O master station settings status of block 2 (LX/LY setting (2)). Off: No setting On: Set When this relay is turned on, the station number is stored in 'Block 2 I/O master station' (SW005D). (Conditions) • This relay is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SB005E	CPU type of own station	Stores the CPU type of the own station. Off: RCPU	○	○
SB0060	Constant link scan status	Stores the constant link scan status. Off: No constant link scan time setting On: Set (Conditions) • This relay is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SB0061	Cyclic transmission punctuality assurance	Stores the status of cyclic transmission punctuality assurance. Off: Not assured On: Assured (Conditions) • This relay is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SB0063	Link points extended setting	Stores the status of link points extended setting. Off: Not to Extend On: Extend	○	○
SB0064	■When optical fiber cables are used Loop status of own station	Stores the transmission path status of the own station. When this relay is turned on, the error definition can be checked with 'Loop status of own station' (SW0064). Off: Normal On: Error (Conditions) • 'This relay is turned on when 'Loop status of own station' (SW0064) is not 00H.	○	○
	■When Ethernet cables are used Connection status of own station	Stores the transmission path status of the own station. When this relay is turned on, the error definition can be checked with 'Connection status of own station' (SW0064). Off: Normal On: Error (Conditions) • 'Connection status of own station' (SW0064) is turned on except when the status is normal and loopback is being performed.	○	○
SB0065	Loopback status	■When optical fiber cables are used Stores the loopback status for the loopback function. The station number of the loopback station can be checked with 'IN-side loopback station number' (SW0070) and 'OUT-side loopback station number' (SW0080). Off: Normal (no loopback stations) On: Loopback being performed (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
		■When Ethernet cables are used Stores the loopback status for the loopback function. The station number of the loopback station can be checked with 'Loopback station number 1' (SW0070) and 'Loopback station number 2' (SW0080). Off: Normal (no loopback stations) On: Loopback being performed (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB0066	■When optical fiber cables are used IN-side link-up status of own station	Stores the IN-side link-up status of the own station. Off: Link-up On: Link-down	○	○
	■When Ethernet cables are used PORT1 link-up status of own station	Stores the P1-side link-up status of the own station. Off: Link-up On: Link-down	○	○
SB0067	■When optical fiber cables are used OUT-side link-up status of own station	Stores the OUT-side link-up status of the own station. Off: Link-up On: Link-down	○	○
	■When Ethernet cables are used PORT2 link-up status of own station	Stores the P2-side link-up status of the own station. Off: Link-up On: Link-down	○	○
SB0068	■When optical fiber cables are used IN-side link establishing status of own station	Stores the IN-side link establishing status of the own station. Off: Link establishment completed On: Link establishing	○	○
	■When Ethernet cables are used PORT1 link establishing status of own station	Stores the P1-side link establishing status of the own station. Off: Link establishment completed On: Link establishing	○	○
SB0069	■When optical fiber cables are used OUT-side link establishing status of own station	Stores the OUT-side link establishing status of the own station. Off: Link establishment completed On: Link establishing	○	○
	■When Ethernet cables are used PORT2 link establishing status of own station	Stores the P2-side link establishing status of the own station. Off: Link establishment completed On: Link establishing	○	○
SB006A	■Only when optical fiber cables are used IN-side cabling status of own station	Stores the IN-side cabling status of the own station. Off: Normal On: Inserted incorrectly	○	○
SB006B	■Only when optical fiber cables are used OUT-side cabling status of own station	Stores the OUT-side cabling status of the own station. Off: Normal On: Inserted incorrectly	○	○
SB006C	■When optical fiber cables are used IN-side current error frame reception status of own station	Stores whether the error frame is currently received at the IN side of the own station. Off: Not received On: Currently receiving	○	○
	■When Ethernet cables are used PORT1 current error frame reception status of own station	Stores whether the error frame is currently received at the P1 side of the own station. Off: Not received On: Currently receiving	○	○
SB006D	■When optical fiber cables are used OUT-side current error frame reception status of own station	Stores whether the error frame is currently received at the OUT side of the own station. Off: Not received On: Currently receiving	○	○
	■When Ethernet cables are used PORT2 current error frame reception status of own station	Stores whether the error frame is currently received at the P2 side of the own station. Off: Not received On: Currently receiving	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB006E	■When optical fiber cables are used IN-side error frame detection of own station	Stores whether the error frame was received at the IN side of the own station from power-on to the present. Off: Not received On: Received When 'Clear IN-side transmission error count' (SB0007) is turned on, the stored value is cleared.	○	○
	■When Ethernet cables are used PORT1 error frame detection of own station	Stores whether the error frame was received at the P1 side of the own station from power-on to the present. Off: Not received On: Received When 'Clear PORT1 transmission error count' (SB0007) is turned on, the stored value is cleared.	○	○
SB006F	■When optical fiber cables are used OUT-side error frame detection of own station	Stores whether the error frame was received at the OUT side of the own station from power-on to the present. Off: Not received On: Received When 'Clear OUT-side transmission error count' (SB0008) is turned on, the stored value is cleared.	○	○
	■When Ethernet cables are used PORT2 error frame detection of own station	Stores whether the error frame was received at the P2 side of the own station from power-on to the present. Off: Not received On: Received When 'Clear PORT2 transmission error count' (SB0008) is turned on, the stored value is cleared.	○	○
SB0070	Station number setting status of own station	Stores the station number setting status. Off: Station number set On: Station number not set (When the station number is set by the parameters, this relay is always off.)	×	○
SB0078	■Only when Ethernet cables are used Network topology setting	Stores the setting status of "Network Topology" in "Basic Settings" for the own station (control station). Off: Line topology, star topology, or coexistence of star and line topologies On: Ring topology	○	○
SB007F	IP address setting status	Stores the status of the IP address setting by parameter. Off: No setting On: Set For normal stations, this relay stores the reception status of an IP address from the control station.	○	○
SB008E	■Only when optical fiber cables are used Path switching detection flag	Stores the path switching detection status. Off: Path switching not detected On: Path switching detected When 'Clear loop switching count' (SB0009) is turned on, the stored value is cleared.	○	○
SB008F	Transient error	Stores the transient transmission error detection status. Off: Error not detected On: Error detected When this relay is turned on, the number of errors can be checked with 'Transient transmission error count' (SW006F).	○	○
SB0098	■Only when Ethernet cables are used Network configuration mismatch occurrence status	Stores the match or mismatch status of the actual network configuration and the network map of the CC-Link IE Controller Network diagnostics. Off: Match On: Mismatch After return or addition of the normal station, SB0098 may be turned on regardless of the actual match/mismatch status.	○	×
SB0099	■Only when Ethernet cables are used Number of connected modules over occurrence status	Stores whether the number of normal stations connected is 119 or less, or 120 or more. Off: 119 or less On: 120 or more Number of connected modules is the total of the normal stations which are currently connected and the disconnected stations (normal stations which were previously connected).	○	×

No.	Name	Description	Availability	
			Control station	Normal station
SB00A0	Baton pass error status of each station	Stores the baton pass 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 'Baton pass status of each station' (SW00A0 to SW00A7). Depending on the link refresh timing, the update of 'Baton pass status of each station' (SW00A0 to SW00A7) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held. • Reserved stations and stations higher than the maximum station number are ignored.	○	○
SB00B0	Data link error status of each station	Stores the data link status of each station. Off: All stations normal On: Faulty station exists When this relay is turned on, the status of each station can be checked with 'Data link status of each station' (SW00B0 to SW00B7). Depending on the link refresh timing, the update of 'Data link status of each station' (SW00B0 to SW00B7) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. • Reserved stations and stations higher than the maximum station number are ignored.	○	○
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. (Conditions) • This relay is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SB00D0	Parameter communication status of each station	Stores the parameter communication status of each station. Off: Parameter communication is completed or not executed in all stations On: Station where parameter communication is in execution exists When this relay is turned on, the status of each station can be checked with 'Parameter communication status of each station' (SW00D0 to SW00D7). Depending on the link refresh timing, the update of 'Parameter communication status of each station' (SW00D0 to SW00D7) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held. • Reserved stations and stations higher than the maximum station number are ignored.	○	×
SB00E0	Parameter error status of each station	Stores the parameter error 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 'Parameter error status of each station' (SW00E0 to SW00E7). Depending on the link refresh timing, the update of 'Parameter error status of each station' (SW00E0 to SW00E7) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held. • Reserved stations and stations higher than the maximum station number are ignored.	○	×
SB00F0	CPU operating status of each station	Stores the operating status of the CPU module on each station. (Including own station) Off: All stations are at RUN or STEP-RUN state On: Station at STOP or PAUSE state, or station with a moderate/major error exists. When this relay is turned on, the status of each station can be checked with 'CPU operating status of each station' (SW00F0 to SW00F7). Depending on the link refresh timing, the update of 'CPU operating status of each station' (SW00F0 to SW00F7) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB0100	CPU moderate/major error status of each station	Stores the moderate/major error occurrence status of the CPU module on each station. Off: No 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. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0110	CPU minor error status of each station	Stores the minor error occurrence status of the CPU module on each station. Off: All stations normal or station with a moderate/major error exists. On: Station with a minor error exists. When this relay is turned on, the status of each station can be checked with 'CPU minor error status of each station' (SW0110 to SW0117). Depending on the link refresh timing, the update of 'CPU minor error status of each station' (SW0110 to SW0117) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0120	■When optical fiber cables are used IN-side current error frame reception status of each station	Stores whether the error frame is currently received at the IN side of each station. Off: Not received at all stations When this relay is turned on, the status of each station can be checked with 'IN-side current error frame reception status of each station' (SW0120 to SW0127). Depending on the link refresh timing, the update of 'IN-side current error frame reception status of each station' (SW0120 to SW0127) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
	■When Ethernet cables are used PORT1 current error frame reception status of each station	Stores whether the error frame is currently received at the P1 side of each station. Off: Not received at all stations On: Error frame is being received at one or more stations. When this relay is turned on, the status of each station can be checked with 'PORT1 current error frame reception status of each station' (SW0120 to SW0127). Depending on the link refresh timing, the update of 'PORT1 current error frame reception status of each station' (SW0120 to SW0127) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0130	■When optical fiber cables are used OUT-side current error frame reception status of each station	Stores whether the error frame is currently received at the OUT side of each station. Off: Not received at all stations On: Error frame is being received at one or more stations. When this relay is turned on, the status of each station can be checked with 'OUT-side current error frame reception status of each station' (SW0130 to SW0137). Depending on the link refresh timing, the update of 'OUT-side current error frame reception status of each station' (SW0130 to SW0137) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
	■When Ethernet cables are used PORT2 current error frame reception status of each station	Stores whether the error frame is currently received at the P2 side of each station. Off: Not received at all stations On: Error frame is being received at one or more stations. When this relay is turned on, the status of each station can be checked with 'PORT2 current error frame reception status of each station' (SW0130 to SW0137). Depending on the link refresh timing, the update of 'PORT2 current error frame reception status of each station' (SW0130 to SW0137) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB0140	■When optical fiber cables are used IN-side error frame detection status of each station	Stores the status that has received an error frame from power-on until the present at the IN side of each station. Off: Not received at all stations On: Error frame has been received at one or more stations. When this relay is turned on, the status of each station can be checked with 'IN-side error frame detection status of each station' (SW0140 to SW0147). Depending on the link refresh timing, the update of 'IN-side error frame detection status of each station' (SW0140 to SW0147) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
	■When Ethernet cables are used PORT1 error frame detection of each station	Stores whether the error frame was received at the P1 side of each station from power-on to the present. Off: Not received at all stations On: Error frame has been received at one or more stations. When this relay is turned on, the status of each station can be checked with 'PORT1 error frame detection of each station' (SW0140 to SW0147). Depending on the link refresh timing, the update of 'PORT1 error frame detection of each station' (SW0140 to SW0147) may be offset by one sequence scan. When 'Clear PORT1 transmission error count' (SB0007) is turned on, the stored value is cleared. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0150	■When optical fiber cables are used OUT-side error frame detection status of each station	Stores the status that has received an error frame from power-on until the present at the OUT side of each station. Off: Not received at all stations On: Error frame has been received at one or more stations. When this relay is turned on, the status of each station can be checked with 'OUT-side error frame detection status of each station' (SW0150 to SW0157). Depending on the link refresh timing, the update of 'OUT-side error frame detection status of each station' (SW0150 to SW0157) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
	■When Ethernet cables are used PORT2 error frame detection of each station	Stores whether the error frame was received at the P2 side of the station No.0 from power-on to the present. Off: Not received at all stations On: Error frame has been received at one or more stations. When this relay is turned on, the status of each station can be checked with 'PORT2 error frame detection of each station' (SW0150 to SW0157). Depending on the link refresh timing, the update of 'PORT2 error frame detection of each station' (SW0150 to SW0157) may be offset by one sequence scan. When 'Clear PORT2 transmission error count' (SB0008) is turned on, the stored value is cleared. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0160	■Only when optical fiber cables are used Path switching detection flag of each station	Stores the detection status of path switching of each station. (Including own station) Off: Path switching not detected On: Path switching detected When this relay is turned on, the status of each station can be checked with 'Path switching detection status of each station' (SW0160 to SW0167). Depending on the link refresh timing, the update of 'Path switching detection status of each station' (SW0160 to SW0167) may be offset by one sequence scan. The path switching detection status is cleared when 'Clear loop switching count' (SB0009) is turned on. The stored value is cleared when 'Clear loop switching count' (SB0009) is turned on in each station and the path switching detection status for all stations is cleared. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB0170	Transient error of each station	Stores the transient transmission error detection status for all stations. (Including own station) Off: Error not detected On: Error detected When this relay is turned on, the status of each station can be checked with 'Transient error detection status of each station' (SW0170 to SW0177). Depending on the link refresh timing, the update of 'Transient error detection status of each station' (SW0170 to SW0177) may be offset by one sequence scan. The transient error detection status of the own station is cleared when 'Clear transient transmission error count' (SB000A) is turned on. The stored value is cleared when 'Clear transient transmission error count' (SB000A) is turned on in each station and the transient error detection status for all stations is cleared. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0180	External power supply information of each station	Stores the external electrical supply status of the CC-Link IE Controller Network module for each station. (Including own station) Off: No external power supplied to any station On: External power supplied to station(s) When this relay is turned on, the status of each station can be checked with 'External power supply status of each station' (SW0180 to SW0187). Depending on the link refresh timing, the update of 'External power supply status of each station' (SW0180 to SW0187) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB0190	External power supply error information of each station	Stores the external power supply error status of the CC-Link IE Controller Network module with external power supply function on each station. (Including own station) Off: All stations normal or no stations providing external power supply On: Faulty station exists When this relay is turned on, the status of each station can be checked with 'External power supply error status of each station' (SW0190 to SW0197). Depending on the link refresh timing, the update of 'External power supply error status of each station' (SW0190 to SW0197) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB01A0	Group cyclic transmission station information	Stores shared group setting information on the stations. (Including own station) Off: Station in shared group different from the own station not exist. On: Station in shared group different from the own station exists. When this relay is turned on, the status of each station can be checked with 'Group cyclic transmission station information' (SW01A0 to SW01A7). Depending on the link refresh timing, the update of 'Group cyclic transmission station information' (SW01A0 to SW01A7) may be offset by one sequence scan.	○	○
SB01B0	CPU type information of each station	Stores the CPU type information of each station. (Including own station) Off: No basic model QCPU or safe CPU On: Basic model QCPU or safe CPU present When this relay is turned on, the status of each station can be checked with 'CPU type information of each station' (SW01B0 to SW01B7). Depending on the link refresh timing, the update of 'CPU type information of each station' (SW01B0 to SW01B7) may be offset by one sequence scan.	○	○
SB01C0	Redundant system information	Stores the redundant system information of each station. (Including own station) Off: No redundant system station On: Redundant system station exists. When this relay is turned on, the status of each station can be checked with 'Redundant function information of each station' (SW01C0 to SW01C7). Depending on the link refresh timing, the update of 'Redundant function information of each station' (SW01C0 to SW01C7) may be offset by one sequence scan.	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SB01D0	Separate-mode station exists information	Stores the CPU operation mode status of each station. (Including own station) Off: No separate mode station On: Separate mode station exists. This relay is turned off for a station other than a redundant system station. When this relay is turned on, the status of each station can be checked with 'Separate mode status of each station' (SW01D0 to SW01D7). Depending on the link refresh timing, the update of 'Separate mode status of each station' (SW01D0 to SW01D7) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB01E0	Pairing-set station exists information	Stores the pairing setting status of each station. (Including own station) Off: No pairing-set station On: Pairing-set station exists. When this relay is turned on, the status of each station can be checked with 'Pairing setting status of each station' (SW01E0 to SW01E7). Depending on the link refresh timing, the update of 'Pairing setting status of each station' (SW01E0 to SW01E7) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SB01F0	Station of standby system exists information	Stores the CPU operation status (control/standby system) of each station. (Including own station) Off: No station of standby system CPU On: Station of standby system CPU exists. This relay is turned off for a station other than a redundant system station. When this relay is turned on, the status of each station can be checked with 'Redundant CPU system status of each station' (SW01F0 to SW01F7). Depending on the link refresh timing, the update of 'Redundant CPU system status of each station' (SW01F0 to SW01F7) may be offset by one sequence scan. (Conditions) • This relay is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○

Appendix 5 List of Link Special Register (SW) Areas

The link special register (SW) stores the information during data link as a numerical value. Error locations and causes can be checked by using or monitoring the link special register (SW) in programs.

Application of the link special register (SW)

By using the link special register (SW), the status of CC-Link IE Controller Network can be checked from HMI (Human Machine Interfaces) as well as the engineering tool.

Refresh of the link special register (SW)

To use the link special register (SW), set them in "Refresh Setting" under "Basic Settings" so that they are refreshed to the devices or labels of the CPU module. (☞ Page 84 Refresh Setting)

Mounting multiple network modules

The link special register (SW) of each network module is refreshed by the link special register (SW) of the CPU module shown below when the refresh parameters of each network module remain default.

Item	Module 1	Module 2	Module 3	Module 4
Device No.	SW0000 to SW01FF	SW0200 to SW03FF	SW0400 to SW05FF	SW0600 to SW07FF

Range where data are stored by users and range where data are stored by the system

The following ranges correspond to when the link special register (SW) areas are assigned from SW0000 to SW01FF.

- Stored by users: SW0000 to SW001F
- Stored by the system: SW0020 to SW01FF

List of link special register (SW) areas

The following table lists the link special register (SW) areas when they are assigned from SW0000 to SW01FF.

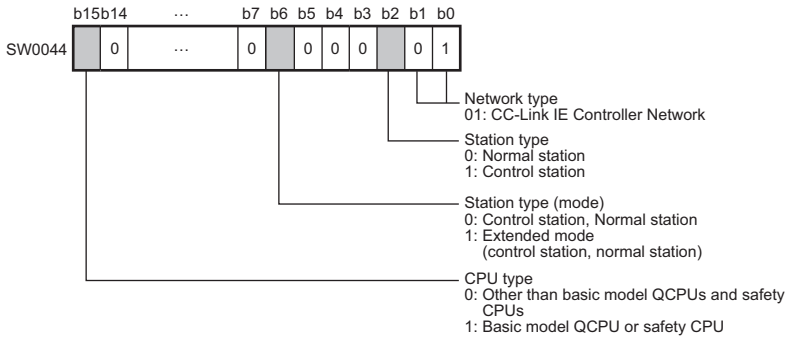
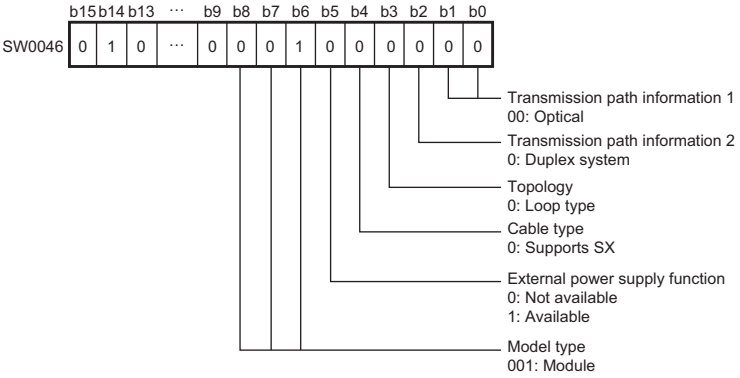
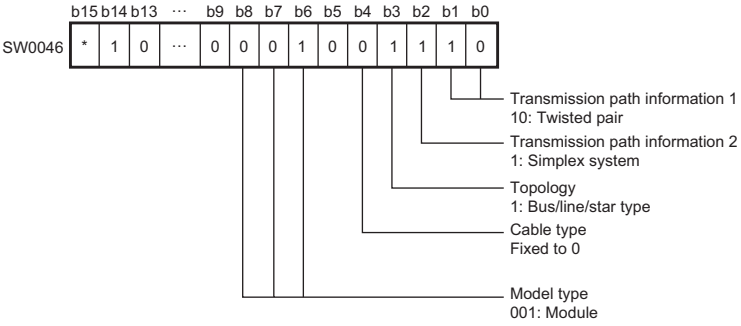
Point

Do not write any data to an area whose number is not on the following list or ranges where data are stored by the system. Doing so may cause malfunction of the programmable controller system.

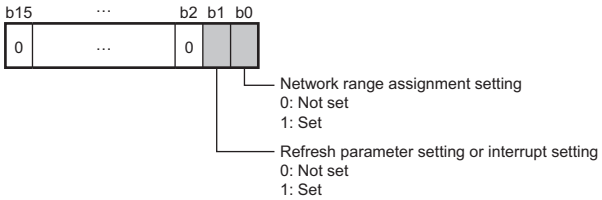
A

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0000</td><td>Link startup/stop direction</td><td>Set the content of link startup/stop directions.
00H: Own station
01H: All stations
02H: Specified stations
03H: Specified group
80H: Own station enforced (enabled only for link startup)
81H: All stations enforced (enabled only for link startup)
82H: Specified stations enforced (enabled only for link startup)
83H: Specified group enforced (enabled only for link startup)
• Link startup is performed by 'System link startup' (SB0002) or 'System link stop' (SB0003).</td><td>○</td><td>○</td></tr>
<tr><td>SW0001 to SW0008</td><td>Link startup/stop station specification</td><td>Set the station number to start or stop data link when 02H or 82H is set in 'Link startup/stop direction' (SW0000).
0: Startup or stop not requested
1: Startup or stop requested
<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>SW0001</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>SW0002</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>SW0003</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>SW0004</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>SW0005</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>SW0006</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>SW0007</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>SW0008</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents a station number. — is fixed to 0.</td><td>○</td><td>○</td></tr>
<tr><td>SW0009</td><td>RIRD/RIWT instruction arrival monitoring time</td><td>Specify the monitoring time until the instruction completion.
If the instruction is not completed within the time, it will be resent the number of times specified in 'RIRD/RIWT instruction resend count' (SW000B).
0: 10 seconds (default)
1 to 360: 1 to 360 seconds
If a value other than the above is specified, 360 seconds will be applied.</td><td>○</td><td>○</td></tr>
<tr><td>SW000B</td><td>RIRD/RIWT instruction resend count</td><td>Specify the number of times the instruction is to be resent when it is not completed within the monitoring time specified in 'RIRD/RIWT instruction arrival monitoring time' (SW0009).
0: Not resent (default)
1 to 7: 1 to 7 times
If a value other than the above is specified, 7 times will be applied.</td><td>○</td><td>○</td></tr>
<tr><td>SW0012 to SW0013</td><td>Link startup/stop group specification</td><td>Set the transient transmission group number to start or stop data link when 03H or 83H is set in 'Link startup/stop direction' (SW0000).
0: Startup or stop not requested
1: Startup or stop requested
<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>SW0012</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>SW0013</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></table>Each number in the table represents a transient transmission group number.</td><td>○</td><td>○</td></tr>
<tr><td>SW0020</td><td>Communication status with the CPU module</td><td>Stores the status of communications between a CC-Link IE Controller Network-equipped module and a CPU module.
0: Normal
1 or greater: Error (An error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW0030</td><td>Link dedicated instructions processing result CH1</td><td>Stores the processing results of the link dedicated instruction that used channel 1 of the own station.
0: Completed normally
1 or greater: Completed with an error (An error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW0031</td><td>Link dedicated instructions processing result CH2</td><td>Stores the processing results of the link dedicated instruction that used channel 2 of the own station.
0: Completed normally
1 or greater: Completed with an error (An error code is stored.)</td><td>○</td><td>○</td></tr>
<tr><td>SW0032</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 normally
1 or greater: Completed with an error (An error code is stored.)</td><td>○</td><td>○</td></tr>
</table>

No.	Name	Description	Availability	
			Control station	Normal station
SW0033	Link dedicated instructions processing result CH4	Stores the processing results of the link dedicated instruction that used channel 4 of the own station. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW0034	Link dedicated instructions processing result CH5	Stores the processing results of the link dedicated instruction that used channel 5 of the own station. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW0035	Link dedicated instructions processing result CH6	Stores the processing results of the link dedicated instruction that used channel 6 of the own station. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW0036	Link dedicated instructions processing result CH7	Stores the processing results of the link dedicated instruction that used channel 7 of the own station. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW0037	Link dedicated instructions processing result CH8	Stores the processing results of the link dedicated instruction that used channel 8 of the own station. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW0038	■Only when optical fiber cables are used Link dedicated instructions processing result CH9	Stores the processing results of the link dedicated instruction that used channel 9 of the own station. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW0039	■Only when optical fiber cables are used Link dedicated instructions processing result CH10	Stores the processing results of the link dedicated instruction that used channel 10 of the own station. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW003A	ZNRD processing result	Stores the processing result of the ZNRD instruction. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW003B	ZNWR processing result	Stores the processing result of the ZNWR instruction. 0: Completed normally 1 or greater: Completed with an error (An error code is stored.)	○	○
SW0040	Network number	Stores the network number of the own station. Range: 1 to 239	○	○
SW0041	Transient transmission group number	Stores the transient transmission group number of the own station. 0: No group specification 1 to 32: Transient transmission group number	○	○
SW0042	Station number	Stores the station number of the own station. 1 to 120: Station number of own station ('Station number setting status of own station' (SB0070) is off) 255: Station number not determined ('Station number setting status of own station' (SB0070) is on)	○	○
SW0043	Mode status of own station	Stores the module operation mode of the own station. 0: Online mode 2: Offline mode B: Module communication test mode	○	○

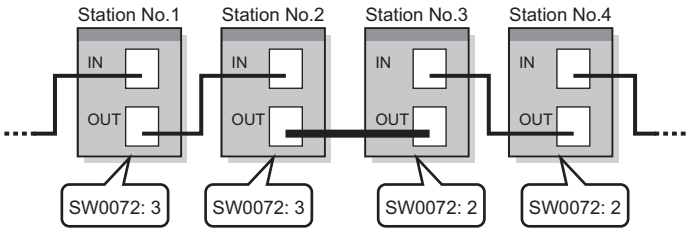
No.	Name	Description	Availability	
			Control station	Normal station
SW0044	Station setting	Stores the settings status of the own station.  	○	○
SW0046	Module type	■When optical fiber cables are used Stores the hardware status of the own station.  b14: Fixed to 1 (used in the system)	○	○
		■When Ethernet cables are used Stores the hardware status of the own station.  b14: Fixed to 1 (used in the system) b15: Variable (used in the system)	○	○
SW0047	Baton pass status of own station	Stores the baton pass status (transient transmission availability) of the own station. 0: Data link in progress 1: Data link stop 2: Baton pass in progress 3: Baton pass being terminated 4: Test in progress 5: Offline	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SW0048	Cause of baton pass interruption	■When optical fiber cables are used Stores the cause of interruption in the communication (baton pass) of the own station. 00H: Normal communication 30H: At cable disconnection or power-on 31H: Cable insertion error 32H: Cable IN-OUT checking 33H: Disconnection or return in progress 40H: Offline mode 50H: Self-diagnostics in execution	○	○
		■When Ethernet cables are used Stores the cause of interruption in the communication (baton pass) of the own station. 00H: Normal communication 30H: At cable disconnection or power-on 33H: Disconnection or return in progress 40H: Offline mode	○	○
SW0049	Cause of data link stop	■When optical fiber cables are used Stores the cause which stopped the data link of the own station. 00H: Normal communication 01H: Stop direction 02H: Monitoring time timeout 10H: Parameter unreceived 11H: Station number of the own station out of the range 12H: Own station reserved 13H: Own station number duplication 14H: Control station duplication 15H: Control station duplication and own station number duplication 16H: Station number not set 17H: Network number irregularity 18H: Parameter error 19H: Parameter communication in progress 20H: CPU module stop error 21H: CPU module power stop error A CPU module power stop error (21H) is detected in the RJ71GP21S-SX. This error is detected when the CPU module is powered off.	○	○
		■When Ethernet cables are used Stores the cause which stopped the data link of the own station. 00H: Normal communication 01H: Stop direction 02H: Monitoring time timeout 10H: Parameter unreceived 11H: Station number of the own station out of the range 12H: Own station reserved 13H: Own station number duplication 14H: Control station duplication 15H: Control station duplication and own station number duplication 16H: Station number not set 17H: Network number irregularity 18H: Parameter error 19H: Parameter communication in progress 20H: CPU module stop error 60H: The network is incorrectly configured in ring topology (only for control station).	○	○
SW004A	Data link stop request station	Stores the station number of the station that performed the data link stop request for the own station. Range: 1 to 120 The data link stop request is performed by 'System link stop' (SB0003). (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○

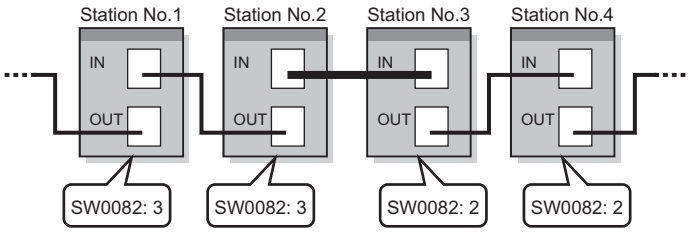
No.	Name	Description	Availability	
			Control station	Normal station
SW004B	CPU status of own station	Stores the status of the CPU module of the own station. 00H: No module mounted 01H: STOP (normal) 02H: STOP (moderate/major error) 03H: STOP (minor error) 04H: RUN (normal) 05H: RUN (minor error) 07H: PAUSE 0EH: Reset in progress 0FH: Initial processing	○	○
SW004C	Shared group number	Stores the shared group number of the own station. 0: No shared group setting 1 to 120: Shared group number	○	○
SW004D	Link startup result of own station	Stores the results when link is started by 'Link startup of own station' (SB0000). 0: Normal 1 or greater: Error (An error code is stored.) (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW004F	Link stop result of own station	Stores the results when link is stopped by 'Link stop of own station' (SB0001). 0: Normal 1 or greater: Error (An error code is stored.) (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0051	System link startup result	Stores the results when link is started by 'System link startup' (SB0002). 0: Normal 1 or greater: Error definition in own station (An error code is stored.) (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0053	System link stop result	Stores the results when link is stopped by 'System link stop' (SB0003). 0: Normal 1 or greater: Error definition in own station (An error code is stored.) (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0054	Parameter information	Stores parameter information.  (Conditions) • This register is enabled when 'Received parameter error' (SB0055) is off.	○	○
SW0055	Parameter setting status	Stores the parameter status. 0: Normal 1 or greater: Error (An error code is stored.) (Conditions) • This register is enabled when 'Received parameter error' (SB0055) is on.	○	○
SW0056	Current control station number	Stores the station number of the station which is actually operating as a control station. (Including sub-control station) Range: 1 to 120	○	○
SW0057	Specified control station number	Stores the control station number that has been set using a parameter. 0: Control station or sub-control station does not exist in a network. 1 to 120: Station number of the control station	○	○
SW0059	Total number of link stations	Stores the total number of stations which is set by a parameter. Range: 2 to 120	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SW005A	Maximum baton pass station number	Stores the maximum station number of the stations where the baton pass is normally performed. Range: 2 to 120 (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
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 (Conditions) • This register is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SW005C	Block 1 I/O master station	Stores the I/O master station number of block 1 (LX/LY setting (1)). 0: No I/O master station 1 to 120: Station number (Conditions) • This register is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SW005D	Block 2 I/O master station	Stores the I/O master station number of block 2 (LX/LY setting (2)). 0: No I/O master station 1 to 120: Station number (Conditions) • This register is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SW0060	Maximum link scan time	Stores the maximum value of the link scan time during cyclic transmission. (Unit: ms) (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0061	Minimum link scan time	Stores the minimum value of the link scan time during cyclic transmission. (Unit: ms) (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0062	Current link scan time	Stores the present value of the link scan time during cyclic transmission. (Unit: ms) The stored value contains a maximum error of 1ms. (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0063	Constant link scan time setting value	Stores the setting value of the constant link scan which is set by a parameter. 0: No setting 1 to 500: Setting value of constant link scan (Unit: ms) (Conditions) • This register is enabled when 'Data link error status of own station' (SB0049) is off.	○	○
SW0064	■When optical fiber cables are used Loop status of own station	Stores the transmission path status of the own station. 00H: Normal 12H: IN side loopback (OUT side cable disconnection) 13H: IN side loopback (OUT-side cable insertion error) 14H: IN side loopback (OUT-side line establishing) 21H: OUT side loopback (IN-side cable disconnection) 31H: OUT side loopback (IN-side cable insertion error) 41H: OUT side loopback (IN-side line establishing) 22H: Disconnecting (IN-side or OUT-side cable disconnection) 23H: Disconnecting (IN-side cable disconnection, OUT-side cable insertion error) 24H: Disconnecting (IN-side cable disconnection, OUT-side line establishing) 32H: Disconnecting (IN-side cable insertion error, OUT-side cable disconnection) 33H: Disconnecting (IN-side or OUT-side cable insertion error) 34H: Disconnecting (IN-side cable insertion error, OUT-side line establishing) 42H: Disconnecting (IN-side line establishing, OUT-side cable disconnection) 43H: Disconnecting (IN-side line establishing, OUT-side cable insertion error) 44H: Disconnecting (IN-side or OUT-side line establishing)	○	○
	■When Ethernet cables are used Connection status of own station	Stores the connection status of the own station. 00H: Normal (communication in progress on P1 and P2) 02H: Normal (communication in progress on P1, cable disconnected on P2) 20H: Normal (cable disconnected on P1, communication in progress on P2) 12H: Loopback on P1 (cable disconnected on P2) 21H: Loopback on P2 (cable disconnected on P1) 22H: Disconnecting (cable disconnected on P1 and P2) 24H: Disconnecting (cable disconnected on P1, establishing line on P2) 42H: Disconnecting (establishing line on P1, cable disconnected on P2) 44H: Disconnecting (establishing line on P1 and P2)	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SW0065	Loopback information	Stores the network loop status. 0: Normal 1: Loopback (enabled only when "Network Topology" under "Basic Settings" of the control station is set to "Ring" for Ethernet cables) 2: Errors on all stations	○	○
SW0068	■When optical fiber cables are used IN-side line error occurrence rate maximum value	Stores the occurrence rate (maximum value) of received error frames at the IN side of the own station. (Unit: %) When 'Clear IN-side transmission error count' (SB0007) is turned on, the stored value for the occurrence rate is cleared.	○	○
	■When Ethernet cables are used PORT1 line error occurrence rate maximum value	Stores the occurrence rate (maximum value) of received error frames at the P1 side of the own station. (Unit: %) When 'Clear PORT1 transmission error count' (SB0007) is turned on, the stored value for the occurrence rate is cleared.	○	○
SW0069	■When optical fiber cables are used IN-side line error occurrence rate present value	Stores the occurrence rate (present value) of received error frames at the IN side of the own station. (Unit: %) When 'Clear IN-side transmission error count' (SB0007) is turned on, the stored value for the occurrence rate is cleared.	○	○
	■When Ethernet cables are used PORT1 line error occurrence rate present value	Stores the occurrence rate (present value) of received error frames at the P1 side of the own station. (Unit: %) When 'Clear PORT1 transmission error count' (SB0007) is turned on, the stored value for the occurrence rate is cleared.	○	○
SW006A	■When optical fiber cables are used OUT-side line error occurrence rate maximum value	Stores the occurrence rate (maximum value) of received error frames at the OUT side of the own station. (Unit: %) When 'Clear OUT-side transmission error count' (SB0008) is turned on, the stored value for the occurrence rate is cleared.	○	○
	■When Ethernet cables are used PORT2 line error occurrence rate maximum value	Stores the occurrence rate (maximum value) of received error frames at the P2 side of the own station. (Unit: %) When 'Clear PORT2 transmission error count' (SB0008) is turned on, the stored value for the occurrence rate is cleared.	○	○
SW006B	■When optical fiber cables are used OUT-side line error occurrence rate present value	Stores the occurrence rate (present value) of received error frames at the OUT side of the own station. (Unit: %) When 'Clear OUT-side transmission error count' (SB0008) is turned on, the stored value for the occurrence rate is cleared.	○	○
	■When Ethernet cables are used PORT2 line error occurrence rate present value	Stores the occurrence rate (present value) of received error frames at the P2 side of the own station. (Unit: %) When 'Clear PORT2 transmission error count' (SB0008) is turned on, the stored value for the occurrence rate is cleared.	○	○
SW006E	■Only when optical fiber cables are used Number of loop switches	Stores the number of switches (cumulative) of the communication path. When 'Clear loop switching count' (SB0009) is turned on, the stored value for the number of errors is cleared. When FFFFH (maximum value 65535) is counted, counting stops.	○	○
SW006F	Transient transmission error count	Stores the cumulative count of transient transmission errors. When 'Clear transient transmission error count' (SB000A) is turned on, the stored value for the number of errors is cleared. Range: 0 to 16 If count reaches the maximum value 16, the count stops.	○	○

No.	Name	Description	Availability	
			Control station	Normal station
SW0070	■When optical fiber cables are used IN-side loopback station number	Stores the number of the station where loopback is being performed on the IN side. 0: No loopback stations 1 to 120: Station number 255: Station number not set (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
	■When Ethernet cables are used Loopback station number 1	Stores the number of the station where loopback is being performed. The other station numbers where loopback is being performed can be checked with 'Loopback station number 2' (SW0080). 0: No loopback stations 1 to 120: Station number 255: Station number not set (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off and 'Network configuration mismatch occurrence status' (SB0098) is off. • When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0071	■Only when optical fiber cables are used IN-side loopback factor	Stores the cause of loopback on the IN side. 00H: No loopback stations 02H: OUT-side cable disconnection 03H: OUT-side cable insertion error 04H: OUT-side line settling (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0072	■Only when optical fiber cables are used OUT-side mis-cabling station number	Stores the station number of the station where the OUT side cable is incorrectly inserted. The station number stored is the number for the other station the cable is connected to.  0: No station connects cable incorrectly 1 to 120: Station number (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held. • This register is enabled when 'IN-side loopback factor' (SW0071) is 03H (OUT side cable inserted incorrectly).	○	○
SW0074	■When optical fiber cables are used IN-side cable disconnection detection count	Stores the cumulative count that was detected for cable disconnections at the IN side. When 'Clear IN-side transmission error count' (SB0007) is turned on, the stored detection count is cleared. When FFFFH (maximum value 65535) is counted, counting stops.	○	○
	■When Ethernet cables are used PORT1 cable disconnection detection count	Stores the cumulative count that was detected for cable disconnections at the P1 side. When 'Clear PORT1 transmission error count' (SB0007) is turned on, the stored detection count is cleared. When FFFFH (maximum value 65535) is counted, counting stops.	○	○

A

No.	Name	Description	Availability	
			Control station	Normal station
SW0080	■When optical fiber cables are used OUT-side loopback station number	Stores the number of the station where loopback is being performed on the OUT side. 0: No loopback stations 1 to 120: Station number 255: Station number not set (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
	■When Ethernet cables are used Loopback station number 2	Stores the number of the station where loopback is being performed. The other station numbers where loopback is being performed can be checked with 'Loopback station number 1' (SW0070). 0: No loopback stations 1 to 120: Station number 255: Station number not set (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off and 'Network configuration mismatch occurrence status' (SB0098) is off. • When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0081	■Only when optical fiber cables are used OUT-side loopback factor	Stores the cause of loopback on the OUT side. 00H: No loopback stations 20H: IN-side cable disconnection 30H: IN-side cable insertion error 40H: IN-side line establishing (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.	○	○
SW0082	■Only when optical fiber cables are used IN-side mis-cabling station number	Stores the station number of the station where the IN side cable is incorrectly inserted. The station number stored is the number for the other station the cable is connected to.  0: No station connects cable incorrectly 1 to 120: Station number (Conditions) • This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held. • This register is enabled when 'OUT-side loopback factor' (SW0081) is 30H (IN side cable inserted incorrectly).	○	○
SW0084	■When optical fiber cables are used OUT-side cable disconnection detection count	Stores the cumulative count that was detected for cable disconnections at the OUT side. When 'Clear OUT-side transmission error count' (SB0008) is turned on, the stored detection count is cleared. When FFFFH (maximum value 65535) is counted, counting stops.	○	○
	■When Ethernet cables are used PORT2 cable disconnection detection count	Stores the cumulative count that was detected for cable disconnections at the P2 side. When 'Clear PORT2 transmission error count' (SB0008) is turned on, the stored detection count is cleared. When FFFFH (maximum value 65535) is counted, counting stops.	○	○

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW00A0 to SW00A7</td><td>Baton pass status of each station</td><td>Stores the baton pass status of each station.
0: Baton pass normal station
1: Baton pass 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>SW00A0</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>SW00A1</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>SW00A2</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>SW00A3</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>SW00A4</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>SW00A5</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>SW00A6</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>SW00A7</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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW00B0 to SW00B7</td><td>Data link status of each station</td><td>Stores the data link status for each station.
0: Data link normal station
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>
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<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.
When group cyclic transmission is used, a station whose shared group is different from the group of the own station is detected as a cyclic transmission error station. (Including reserved stations)
(Conditions)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• Stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW00C0 to SW00C7</td><td>Reserved station setting status</td><td>Stores the reserved station setting status for each station.
0: A 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. — is fixed to 0.
(Conditions)
• This register is enabled when 'Data link error status of own station' (SB0049) is off.
• Stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW00D0 to SW00D7</td><td>Parameter communication status of each station</td><td>Stores the parameter communication status of each station.
0: Parameter communication completed or not executed
1: Parameter communication in progress

<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>
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</table>

Each number in the table represents a station number. — is fixed to 0.
(Conditions)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>×</td></tr>
<tr><td>SW00E0 to SW00E7</td><td>Parameter error status of each station</td><td>Stores the parameter error status of each station.
0: No error
1: Errors

<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>SW00E0</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>SW00E1</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>SW00E2</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>SW00E3</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>SW00E4</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>
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<tr><td>SW00E7</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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>×</td></tr>
<tr><td>SW00F0 to SW00F7</td><td>CPU operating status of each station</td><td>Stores the status of the CPU module for each station. (Including own station)
0: RUN, STEP-RUN
1: STOP, PAUSE, or a moderate or serious 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>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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0100 to SW0107</td><td>CPU moderate/major error status of each station</td><td>Stores the moderate/major error occurrence status of the CPU module on each station. (Including own station)
0: No moderate/major error
1: Moderate or serious 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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW0110 to SW0117</td><td>CPU minor error status of each station</td><td>Stores the minor error occurrence status of the CPU module on each station. (Including own station)
0: Normal operation, 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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

A

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0120 to SW0127</td><td>■When optical fiber cables are used
IN-side current error frame reception status of each station</td><td>Stores whether the error frame is currently received at the IN side of each station.
0: Not receiving
1: Currently receiving
<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>SW0120</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>SW0121</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>SW0122</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>SW0123</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>SW0124</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>SW0125</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>SW0126</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>SW0127</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.
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• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
<tr><td></td><td>■When Ethernet cables are used
PORT1 current error frame reception status of each station</td><td>Stores whether the error frame is currently received at the P1 side of each station.
0: Not receiving
1: Currently receiving
When 'Clear PORT1 transmission error count' (SB0007) is turned on, the stored value is cleared.
<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>SW0190</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>SW0191</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>SW0192</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>SW0193</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>SW0194</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>SW0195</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>SW0196</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>SW0197</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.
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• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0130 to SW0137</td><td>■When optical fiber cables are used OUT-side current error frame reception status of each station</td><td>Stores whether the error frame is currently received at the OUT side of each station.
0: Not receiving
1: Currently receiving

<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>SW0130</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>SW0131</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>SW0132</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>SW0133</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>SW0134</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>SW0135</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>SW0136</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>SW0137</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)
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• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
<tr><td></td><td>■When Ethernet cables are used PORT2 current error frame reception status of each station</td><td>Stores whether the error frame is currently received at the P2 side of each station.
0: Not receiving
1: Currently receiving
When 'Clear PORT2 transmission error count' (SB0008) is turned on, the stored value is cleared.

<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>SW0130</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>SW0131</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>SW0132</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>SW0133</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>SW0134</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>SW0135</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>SW0136</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>SW0137</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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<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0140 to SW0147</td><td>■When optical fiber cables are used
IN-side error frame detection status of each station</td><td>Stores the status that has received an error frame from power-on until the present at the IN side of each station.
0: Not received
1: Received
When 'Clear IN-side transmission error count' (SB0007) is turned on, the stored value is cleared.
<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>SW0140</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>SW0141</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>SW0142</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>SW0143</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>SW0144</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>SW0145</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>SW0146</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>SW0147</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.
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<tr><td></td><td>■When Ethernet cables are used
PORT1 error frame detection of each station</td><td>Stores whether the error frame was received at the P1 side of each station from power-on to the present.
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When 'Clear PORT1 transmission error count' (SB0007) is turned on, the stored value is cleared.
<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>SW0140</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>SW0141</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>SW0142</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>SW0143</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>SW0144</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>SW0145</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>SW0146</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>SW0147</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.
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<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0150 to SW0157</td><td>■When optical fiber cables are used OUT-side error frame detection status of each station</td><td>Stores the status that has received an error frame from power-on until the present at the OUT side of each station.
0: Not received
1: Received
When 'Clear OUT-side transmission error count' (SB0008) is turned on, the stored value is cleared.
<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>SW0150</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>SW0151</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>SW0152</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>SW0153</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>SW0154</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>SW0155</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>SW0156</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>SW0157</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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
<tr><td></td><td>■When Ethernet cables are used PORT2 error frame detection of each station</td><td>Stores whether the error frame was received at the P2 side of the station No.0 from power-on to the present.
0: Not received
1: Received
When 'Clear PORT2 transmission error count' (SB0008) is turned on, the stored value is cleared.
<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>SW0150</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>SW0151</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>SW0152</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>SW0153</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>SW0154</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>SW0155</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>SW0156</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>SW0157</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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
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<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0160 to SW0167</td><td>■Only when optical fiber cables are used
Path switching detection status of each station</td><td>Stores the path switching detection status of each station from power-on to the present.
0: Not received
1: Detected
The path switching detection status is cleared when 'Clear loop switching count' (SB0009) is turned on.
Turn on 'Clear loop switching count' (SB0009) when clearing the path switching detection status of other stations.
<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.
(Conditions)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.</td><td>○</td><td>○</td></tr>
<tr><td>SW0170 to SW0177</td><td>Transient error detection status of each station</td><td>Stores the transient transmission error detection status of each station from power-on to the present.
0: Not received
1: Detected
The transient error detection status of the own station is cleared when 'Clear transient transmission error count' (SB000A) is turned on.
Turn on 'Clear transient transmission error count' (SB000A) at other station side when clearing the transient error detection status of other stations.
<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>SW0170</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>SW0171</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>SW0172</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>SW0173</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>SW0174</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>SW0175</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>SW0176</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>SW0177</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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th>No.</th><th>Name</th><th>Description</th><th colspan="2">Availability</th></tr>
<tr><th></th><th></th><th></th><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW0180 to SW0187</td><td>External power supply status of each station</td><td>Stores the power supply status for external power supply by the CC-Link IE Controller Network module with external power supply function of each station. (Including own station)
0: Not supplied
1: Supplied
This register is always off when the CC-Link IE Controller Network module does not have the external power supply function.
<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>SW0180</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>SW0181</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>SW0182</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>SW0183</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>SW0184</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>SW0185</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>SW0186</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>SW0187</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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW0190 to SW0197</td><td>External power supply error status of each station</td><td>Stores the power supply error status for external power supply by the CC-Link IE Controller Network module with external power supply function of each station. (Including own station)
0: Normal
1: Error
This register is always off when the CC-Link IE Controller Network module does not have the external power supply function.
<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>SW0190</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>SW0191</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>SW0192</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>SW0193</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>SW0194</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>SW0195</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>SW0196</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>SW0197</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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW01A0 to SW01A7</td><td>Group cyclic transmission station information</td><td>Stores shared group setting information of each station. (Including own station)
0: Station in same shared group as own station or station with no shared group setting
1: Station in shared group different from own station
Cyclic data from stations in different shared groups are not received.
<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 higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW01B0 to SW01B7</td><td>CPU type information of each station</td><td>Stores the CPU type information of each station. (Including own station)
0: Other than basic model QCPU and safe CPU
1: Basic model QCPU or safe CPU
<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>SW01B0</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>SW01B1</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>SW01B2</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>SW01B3</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>SW01B4</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>SW01B5</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>SW01B6</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>SW01B7</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)
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW01C0 to SW01C7</td><td>Redundant function information of each station</td><td>Stores redundant system support information of Redundant CPU or CC-Link IE Controller Network module of each station. (Including own station)
0: Redundant function not supported
1: Redundant function supported
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW01C0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW01C1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW01C2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW01C3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW01C4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW01C5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW01C6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW01C7</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents a station number. — is fixed to 0.
(Conditions)
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW01D0 to SW01D7</td><td>Separate mode status of each station</td><td>Stores the redundant system CPU operating mode of each station. (Including own station)
0: Backup mode
1: Separate mode
Stores 0 for a station other than a redundant system 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>SW01D0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW01D1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW01D2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW01D3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW01D4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW01D5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW01D6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW01D7</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents a station number. — is fixed to 0.
(Conditions)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).
• Reserved stations and stations with a number equal to or greater than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Control station</th><th>Normal station</th></tr>
<tr><td>SW01E0 to SW01E7</td><td>Pairing setting status of each station</td><td>Stores the pairing setting status for each station. (Including own station)
0: No pairing setting
1: Pairing-set
If pairing is set, the bit corresponding to the system B station is turned on.
Stores 0 for a station other than a redundant system 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>SW01E0</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>SW01E1</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>SW01E2</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>SW01E3</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>SW01E4</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>SW01E5</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>SW01E6</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>SW01E7</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)
• This register is enabled when 'Baton pass error status of own station' (SB0047) is off. When 'Baton pass error status of own station' (SB0047) is turned on (error), data prior to error is held.
• This register is enabled only for normally operating stations in 'Baton pass status of each station' (SW00A0 to SW00A7).
• Stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW01F0 to SW01F7</td><td>Redundant CPU system status of each station</td><td>Stores the redundant CPU system status (control/standby system) of each station. (Including own station)
0: Control system
1: Standby system
Stores 0 for a station other than a redundant system 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>SW01F0</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>SW01F1</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>SW01F2</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>SW01F3</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>SW01F4</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>SW01F5</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>SW01F6</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>SW01F7</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.
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</table>

Appendix 6 Dedicated Instruction

This section describes dedicated instructions that can be used in the CC-Link IE Controller Network-equipped modules.

Point

For details on dedicated instructions, refer to the following.

MELSEC iQ-R Programming Manual (Module Dedicated Instructions)

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 Controller Network.

Instruction	Description
READ	Reads data from the word device of another station.
SREAD	Reads data from the word device of another station. (with completion device)
WRITE	Writes data in the word device of another station.
SWRITE	Writes data in the word device of another station. (with completion device)
SEND	Sends data to another station.
RECV	Reads the receive data from another station. (for main program)
RECVS	Reads the receive data from another station. (for interrupt program)
REQ	Requests the remote RUN/STOP to the CPU module on another station.
	Reads/writes clock data from/to another station.
ZNRD	Reads data from the word device of another station. (for A series)
ZNWR	Writes data in the word device of another station. (for A series)
RRUN	Sends the request of remote RUN to another station.
RSTOP	Sends the request of remote STOP to another station.
RTMRD	Reads the clock data from another station.
RTMWR	Writes the clock data to another station.

■Transient transmission range of the link dedicated instruction

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

CC-Link dedicated instructions

The following table lists the instructions used for transient transmission with CC-Link IE Controller Network-compliant devices.

Instruction	Description
RIRD	Reads the specified points of data from the target station device.
RIWT	Writes the specified points of data to the target station device.

■Transient transmission range of CC-Link dedicated instructions

Communication with all stations in the same network is possible.

Communication is not available with stations in other networks.

Other dedicated instructions

This instruction is for setting the parameter on the CC-Link IE Controller Network-equipped module of the own station.

Instruction	Description
UINI	Sets a station number for a normal station.

■Transient transmission range of other dedicated instructions

Only the CC-Link IE Controller Network-equipped module of the own station can be accessed.

Precautions for dedicated instructions

This section describes precautions when using dedicated instructions.

Precautions for dedicated instructions (common)

■When changing data specified by dedicated instructions

Do not change any data (such as control data) until execution of the dedicated instruction is completed.

■When the dedicated instruction is not completed

Check whether the mode of the CC-Link IE Controller Network-equipped module is online.
A dedicated instruction cannot be executed when the mode is offline or module communication test.

Precautions for dedicated instructions (when used in a redundant system)

■System switching during execution of a dedicated instruction

When systems are switched during execution of a dedicated instruction, the dedicated instruction may not be completed.
Execute the dedicated instruction again from the control system CPU module after system switching.

■Specification of the target station CPU type in dedicated instructions

For a dedicated instruction in which the target station CPU type can be specified with a control data, the control system CPU, standby system CPU, system A CPU, or system B CPU can be accessed by this instruction when the target station CPU type is specified in it. (MELSEC iQ-R Programming Manual (Module Dedicated Instructions))

■Processing at abnormal end of a dedicated instruction

When the dedicated instruction is executed by specifying the access destination CPU module, it may be completed with an error if systems are switched in the target station. If the dedicated instruction was completed with an error, execute it again.

■SEND instruction

- When the target station is in a redundant system, the communication request source station must identify that the target station is the control system to execute the SEND instruction. When the target station is the standby system, the RECV instruction is not executed at the target station after data is sent by the SEND instruction, and the target station storage channel becomes occupied and unable to be used.
- When a redundant system exists in a network where broadcast communications are performed, the RECV instruction is not executed at the standby system, and the storage channel becomes occupied and unable to be used.

■RECV and RECVS instructions

- When the SEND instruction is executed for the control system, if the systems are switched before execution of the RECV instruction and interrupt program, the control system retains RECV instruction execution request area (SB0030 to SB0037) and the interrupt program interrupt factor (interrupt pointer). If system switching occurs again, and the standby system is switched to the control system, the RECV instruction and interrupt program will be executed by the data retained in RECV instruction execution request area (SB0030 to SB0037) and the retained interrupt program interrupt factor.
- When the SEND instruction is executed for the standby system, and the standby system receives data from the sending station, the standby system retains RECV instruction execution request area (SB0030 to SB0037) and the interrupt program interrupt factor (interrupt pointer). Therefore, when the standby system is switched to the control system due to system switching, the RECV instruction and interrupt program will be executed by the data retained in RECV instruction execution request area (SB0030 to SB0037) and the retained interrupt program interrupt factor.

■REQ, RRUN, and RSTOP instructions

When performing remote STOP or remote RUN on a redundant system, do as follows: Perform STOP on the standby system → STOP on the control system → RUN on the control system → RUN on the standby system.

■UINI instruction

The station number cannot be set by the UINI instruction in a redundant system.

Precautions for link dedicated instructions

The following describes precautions when executing multiple link dedicated instructions simultaneously.

■Channel of the link dedicated instructions

When executing multiple link dedicated instructions simultaneously, check that the channels for the instructions are not duplicated. When the same channel is to be set for different tasks, access to one of other stations first and after completion of the access, access to another. The completion status of a dedicated instruction can be checked with the completion device of the instruction.

■Simultaneous execution of a link dedicated instruction

The following table lists operations when link dedicated instructions are executed at the same time.

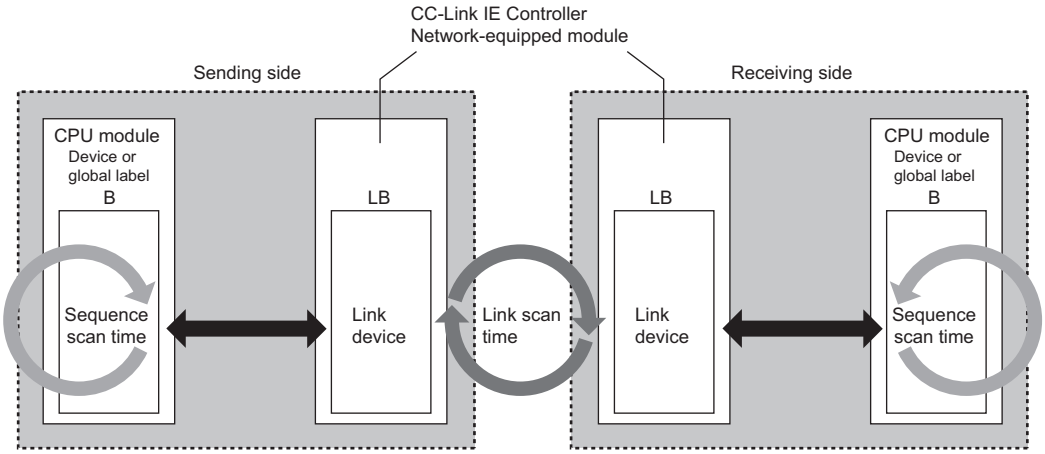
○: Executable, △: Executable if not using the same channel (When the same channel is used, the latter instruction is not executed.), ×: Not executable (The latter one is not executed.)

Link dedicated instructions	Instruction to be executed concurrently		
	READ/SREAD/WRITE/SWRITE/SEND/ RECV/RECVS/REQ/RRUN/RSTOP/ RTMRD/RTMWR	ZNRD	ZNWR
READ/SREAD/WRITE/SWRITE/SEND/ RECV/RECVS/REQ/RRUN/RSTOP/ RTMRD/RTMWR	△	△	△
ZNRD	△	×	○
ZNWR	△	○	×

Appendix 7 Processing Time

The processing time of the CC-Link IE Controller Network-equipped module consists of the time components below.

Sending-side sequence scan time + Link scan time + Receiving-side sequence scan time = Transmission delay time



- Sequence scan time: MELSEC iQ-R CPU Module User's Manual (Application)
- Link scan time: Page 203 Link scan time
- Transmission delay time: Page 204 Cyclic transmission delay time

Link scan time

The following is the formula to calculate the time required for all the stations on the network to transmit data.

Case of other than extended mode

■Case of assigning LB/LW setting (1) and LX/LY setting (1)

$LS = [KB + (n \times 56) + \{LB + LY + (LW \times 16)\} \div 8 \times 0.016 + (N_T \times T \times 30)] \div 1000 + Nc$ [ms]*1

KB (constant): Total number of stations: 1 to 32 → 1100, Total number of stations: 33 to 64 → 2100, Total number of stations: 65 to 120 → 3100

■In addition to above, case of assigning LB/LW setting (2) or LX/LY setting (2)

$LS = [1100 + (n \times 116) + \{LB + LY + (LW \times 16)\} \div 8 \times 0.016 + (N_T \times T \times 30)] \div 1000 + Nc$ [ms]*1

Case of extended mode

$LS = [1100 + (n \times 116) + \{LB + LY + (LW \times 16)\} \div 8 \times 0.017 + (N_T \times T \times 30)] \div 1000 + Nc$ [ms]*1

*1 The meaning of the variables in the equation are as follows.

Variable	Meaning
n	Total number of stations (stations actually connected, not including reserved stations)
LB	Total number of LB points set using LB/LW setting (1) and LB/LW setting (2) (excluding reserved stations) (Page 76 Network Range Assignment)
LW	Total number of LW points set using LB/LW setting (1) and LB/LW setting (2) (excluding reserved stations) (Page 76 Network Range Assignment)
LY	Total number of LY points set using LX/LY setting (1) and LX/LY setting (2) (excluding reserved stations) (Page 76 Network Range Assignment)
N_T	Number of stations transient is being executed on (total number of stations if number of transient transmissions is specified) (Page 33 Cyclic transmission punctuality assurance)
T	Maximum number of transients for one station (Page 90 Supplementary Cyclic Settings)
Nc	Line control time for one station (normal value: 50ms, worst case: 100ms) The time for reconfiguring the data link if the CC-Link IE Controller Network-equipped module is disconnected or reset by cable disconnection or powering off and on the system. (0ms if the module is not disconnected or reset) Causes an error on all stations for cyclic transmission status and baton pass status if during line control. If the constant link scan time setting value is large, it takes a lot of time before the start of line control, and there are cases where the time required for completion of reconfiguration of the data link exceeds 100ms. If several cable disconnections or power off → on instances occur at the same time, line control processing overlaps one another, and the line control time may exceed 100ms.

Cyclic transmission delay time

The following are the formulas to calculate cyclic transmission delay time.

In the case of a single network system

■When a redundant system is not used

Condition				Calculation formula
For S_T > LS	Station-based block data assured	Other than extended mode	Normal value	TD1 = $(S_T + \alpha_T) \times 1.5 + LS \times 0.5 + (S_R + \alpha_R) \times 1.5$
			Maximum value	TD1max = $(S_T + \alpha_T) \times 2 + LS \times 1 + (S_R + \alpha_R) \times 2$
		Extended mode used	Normal value	TD1 = $(S_T + \alpha_T) \times 1.5 + LS \times 0.5 + (S_R + \alpha_R) \times 2.5$
			Maximum value	TD1max = $(S_T + \alpha_T) \times 2 + LS \times 1 + (S_R + \alpha_R) \times 3$
	Station-based block data not assured	Other than extended mode	Normal value	TD2 = $(S_T + \alpha_T) + LS \times 0.5 + (S_R + \alpha_R) \times 1.5$
			Maximum value	TD2max = $(S_T + \alpha_T) + LS + (S_R + \alpha_R) \times 2$
		Extended mode used	Normal value	TD2 = $(S_T + \alpha_T) + LS \times 0.5 + (S_R + \alpha_R) \times 1.5$
			Maximum value	TD2max = $(S_T + \alpha_T) + LS + (S_R + \alpha_R) \times 2$
For S_T < LS	Station-based block data assured	Other than extended mode	Normal value	TD3 = $(S_T + \alpha_T) + LS + (S_R + \alpha_R) \times 1.5$
			Maximum value	TD3max = $(S_T + \alpha_T) + LS \times 2 + (S_R + \alpha_R) \times 2$
		Extended mode used	Normal value	TD3 = $(S_T + \alpha_T) + LS \times 2 + (S_R + \alpha_R) \times 2.5$
			Maximum value	TD3max = $(S_T + \alpha_T) + LS \times 3 + (S_R + \alpha_R) \times 3$
	Station-based block data not assured	Other than extended mode	Normal value	TD4 = $(S_T + \alpha_T) + LS \times 0.5 + (S_R + \alpha_R) \times 1.5$
			Maximum value	TD4max = $(S_T + \alpha_T) + LS + (S_R + \alpha_R) \times 2$
		Extended mode used	Normal value	TD4 = $(S_T + \alpha_T) + LS + (S_R + \alpha_R) \times 1.5$
			Maximum value	TD4max = $(S_T + \alpha_T) + LS \times 2 + (S_R + \alpha_R) \times 2$

TD1 to TD4: Transmission delay time (normal value)

TD1max to TD4max: Transmission delay time (maximum value)

S_T: Sequence scan time on sending side (excluding link refresh time)

S_R: Sequence scan time on receiving side (excluding link refresh time)

α_T: Link refresh time on sending side (total number of mountable network modules)

α_R: Link refresh time on receiving side (total number of mountable network modules)

LS: Link scan time

■When a redundant system is used

Condition				Calculation formula
For S_T > LS	Station-based block data assured	Other than extended mode	Normal value	TDr1 = TD1 + Ts × 1.5
			Maximum value	TDr1max = TD1max + Ts × 2
		Extended mode used	Normal value	TDr1 = TD1 + Ts × 1.5
			Maximum value	TDr1max = TD1max + Ts × 2
	No station-based block data assurance	Other than extended mode	Normal value	TDr2 = TD2 + Ts × 1.5
			Maximum value	TDr2max = TD2max + Ts × 2
		Extended mode used	Normal value	TDr2 = TD2 + Ts × 1.5
			Maximum value	TDr2max = TD2max + Ts × 2
For S_T < LS	Station-based block data assured	Other than extended mode	Normal value	TDr3 = TD3 + Ts × 1.5
			Maximum value	TDr3max = TD3max + Ts × 2
		Extended mode used	Normal value	TDr3 = TD3 + Ts × 1.5
			Maximum value	TDr3max = TD3max + Ts × 2
	No station-based block data assurance	Other than extended mode	Normal value	TDr4 = TD4 + Ts × 1.5
			Maximum value	TDr4max = TD4max + Ts × 2
		Extended mode used	Normal value	TDr4 = TD4 + Ts × 1.5
			Maximum value	TDr4max = TD4max + Ts × 2

TDr1 to TDr4: Transmission delay time (normal value)

TDr1max to TDr4max: Transmission delay time (maximum value)

TD1 to TD4: Transmission delay time when a redundant system is not used (normal value)

TD1max to TD4max: Transmission delay time when a redundant system is not used (maximum value)

S_T: Sequence scan time on sending side (excluding link refresh time)

LS: Link scan time

Ts: Extended scan time due to tracking (MELSEC iQ-R CPU Module User's Manual (Application))

In the case of a multi-network system

The following shows the cyclic transmission delay time for the case where link device data are transferred to another network with the interlink transmission function.

$TD = (ST + \alpha T) + LST + LSR + (SR \times 2 + \alpha_R)$ [ms]

TD: Transmission delay time

S_T: Sequence scan time on sending side (excluding link refresh time)

S_R: Sequence scan time on receiving side (excluding link refresh time)

α_T: Link refresh time on sending side (total number of mountable network modules)

α_R: Link refresh time on receiving side (total number of mountable network modules)

LS_T: Link scan time on sending side

LS_R: Link scan time on receiving side

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 × (LB ÷ 16 + LW)[ms]

α_{DL}: Interlink transmission time

LB: Total number of LB points set in "Interlink Transmission Settings" of "Application Settings".

LW: Total number of LW points set in "Interlink Transmission Settings" of "Application Settings".

- Constant (KM4)

Base unit to which the network module is mounted		KM4($\times 10^{-3}$)
Transfer source	Transfer destination	
Main base unit	Main base unit	0.470
Main base unit	Extension base unit	0.478
Extension base unit	Main base unit	0.483
Extension base unit	Extension base unit	0.489

Precautions

The interlink transmission time may become longer due to the following causes.

- Communication with the engineering tool (such as CC-Link IE Controller diagnostics or module diagnostics)
- Execution of a link dedicated instruction
- Link refresh
- Interlink transmission between other units

Cyclic data holding time when system switching occurs

This section describes cyclic data holding time when system switching occurs.

Calculation formula

The following are the formulas to calculate cyclic data holding time when system switching occurs.*1

Pattern No.	System switching cause	Condition	Cyclic data holding time (T_H) [ms]	Timing chart
1	• Power-off of the control system • Failure of the control system CPU module • Failure of the control system base unit	• The control station is in a redundant system. • Tjo < Csw	Delay time until detection of the system switching cause*2 + Tsw + Csw + SS	☞ Page 208 Pattern 1
2		• The control station is redundant. • Tjo > Csw	Delay time until detection of the system switching cause*2 + Tsw + Tjo + SS	☞ Page 209 Pattern 2
3		A normal station is redundant.		☞ Page 210 Pattern 3
4	• Stop error of the control system CPU module • Execution of the system switching instruction • System switching request from the engineering tool • System switching request from another network module	—	Delay time until detection of the system switching cause*2 + Tsw + Tjo + SS	☞ Page 211 Pattern 4
5	System switching request from the CC-Link IE Controller Network-equipped module (own station).	—	150 + Td + Tc + Delay time until detection of the system switching cause*2 + Tsw + Tjo + SS	☞ Page 212 Pattern 5

*1 The meanings of the variables in the equation are as follows.

Variable	Meaning
Tjo	Delay time until initial output after system switching [ms] (📖 MELSEC iQ-R CPU Module User's Manual (Application))
Tsw	CPU module system switching time [ms] (📖 MELSEC iQ-R CPU Module User's Manual (Application))
Tc	System switching monitoring time setting value (☞ Page 90 Supplementary Cyclic Settings)
Td	Data link monitoring time setting value (☞ Page 90 Supplementary Cyclic Settings)
Csw	Control station switching time [ms] = 20 + Constant link scan time setting value (☞ Page 90 Supplementary Cyclic Settings)
SS	CPU module sequence scan time [ms] (📖 MELSEC iQ-R CPU Module User's Manual (Application))
Nc	Line control time for one station (normal value: 50ms, worst case: 100ms). The time for reconfiguring the data link if the CC-Link IE Controller Network-equipped module is disconnected or reset by cable disconnection or powering off and on the system. (0ms if the module is not disconnected or reset) Cyclic transmission status and baton pass status will be error on all stations during line control. If the constant link scan time setting value is large, it takes a lot of time before the start of line control, and there are cases where the time required for completion of reconfiguration of the data link exceeds 100ms. If several cable disconnections or power off → on instances occur at the same time, line control processing overlaps one another, and the line control time may exceed 100ms.

*2 For delay time until detection of the system switching cause, refer to the following.
📖 MELSEC iQ-R CPU Module User's Manual (Application)

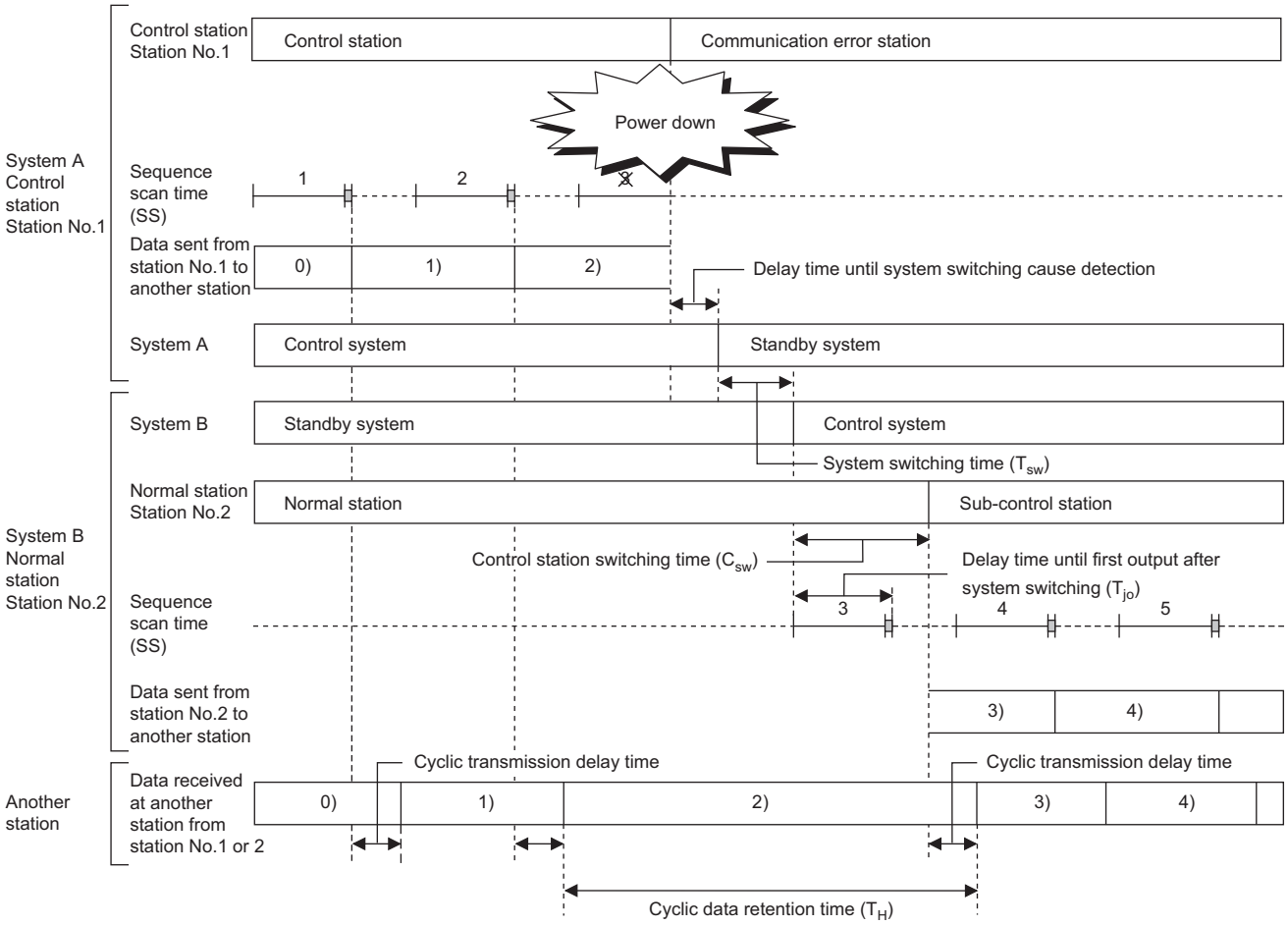
A

Timing chart

This section describes a timing chart for each system switching cause.

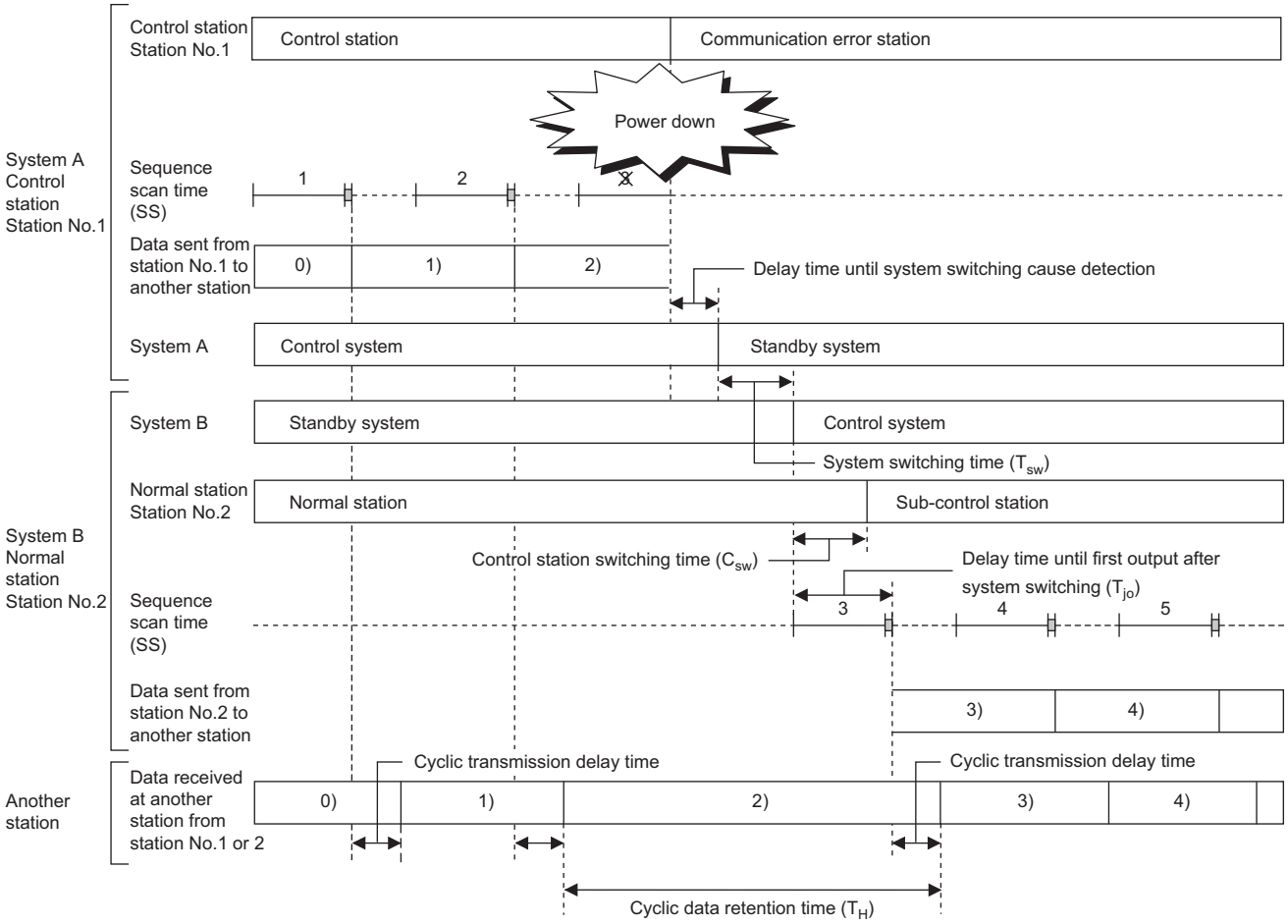
■Pattern 1

The following figure shows a timing chart for normal value.



■Pattern 2

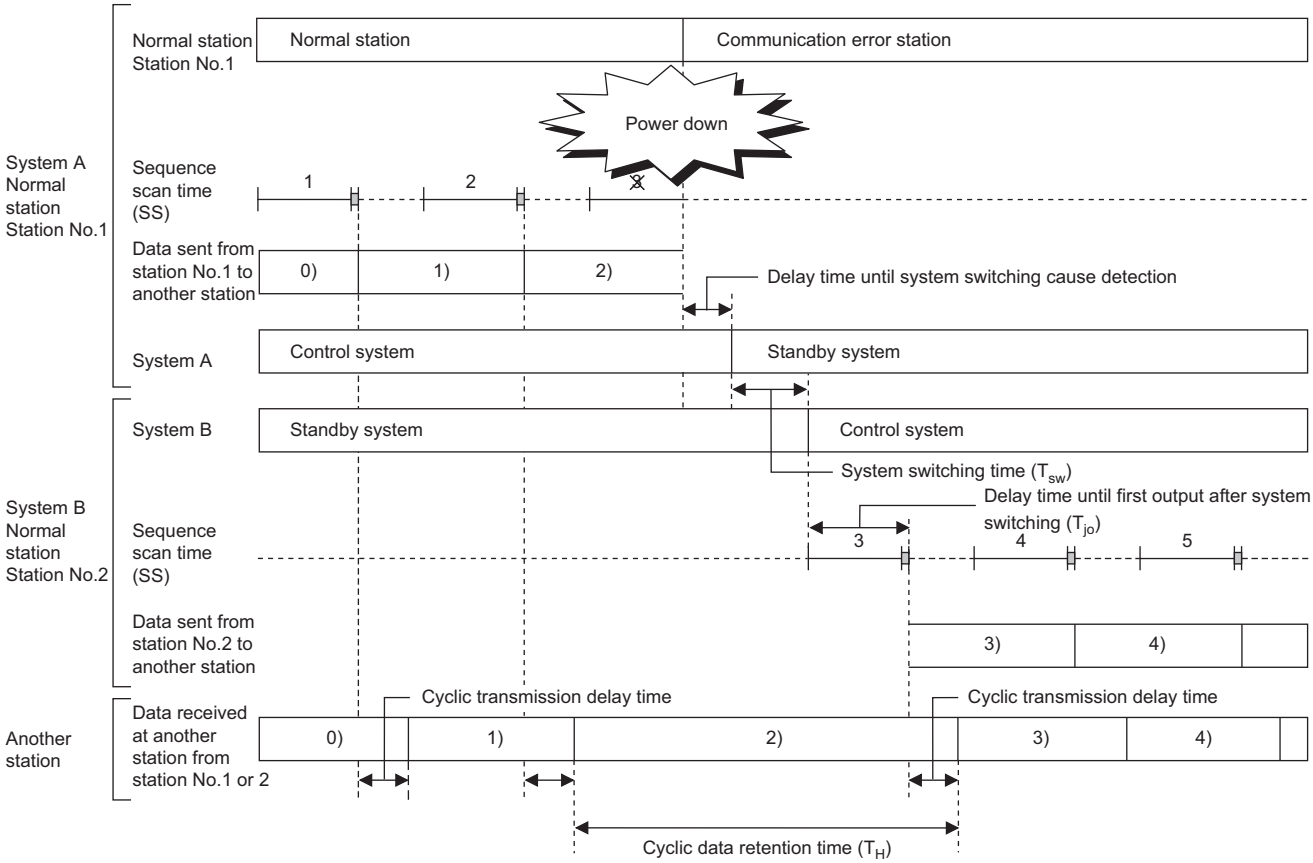
The following figure shows a timing chart for normal value.



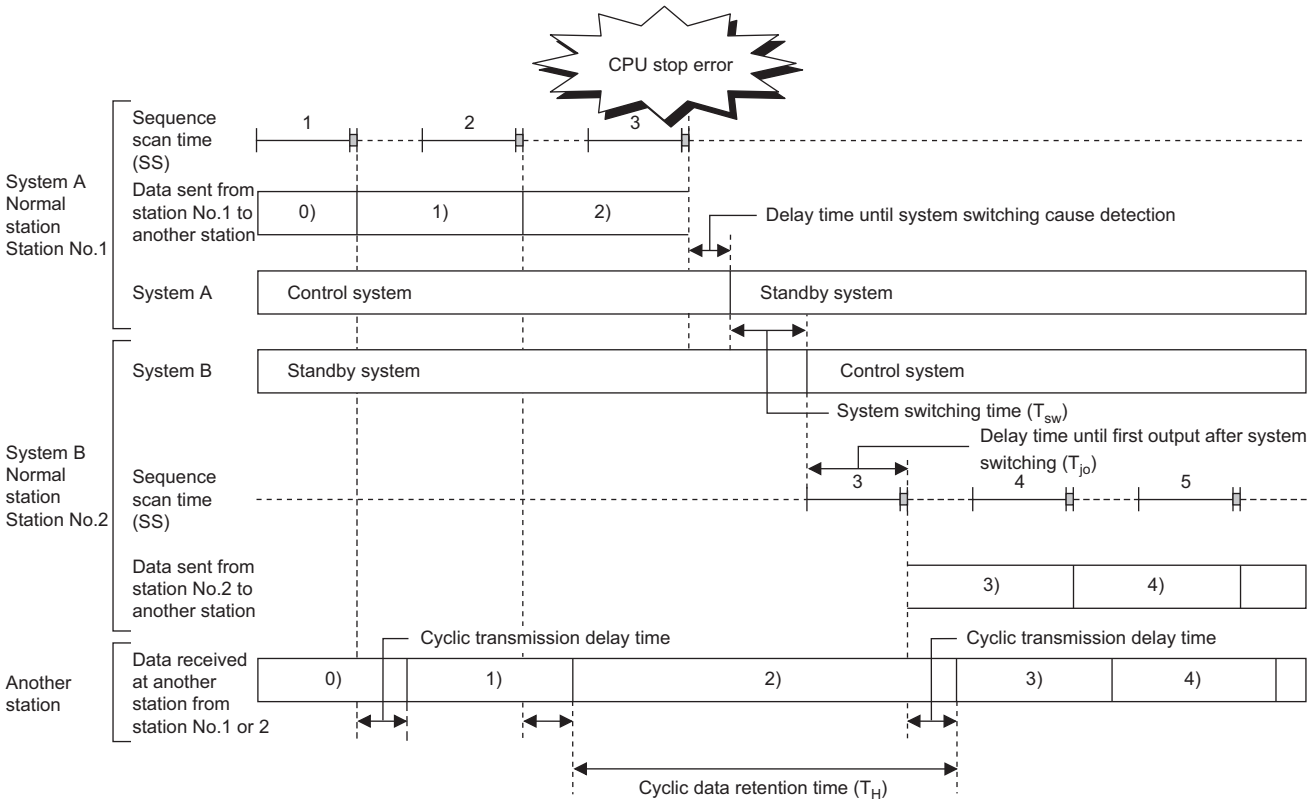
A

■Pattern 3

The following figure shows a timing chart for normal value.

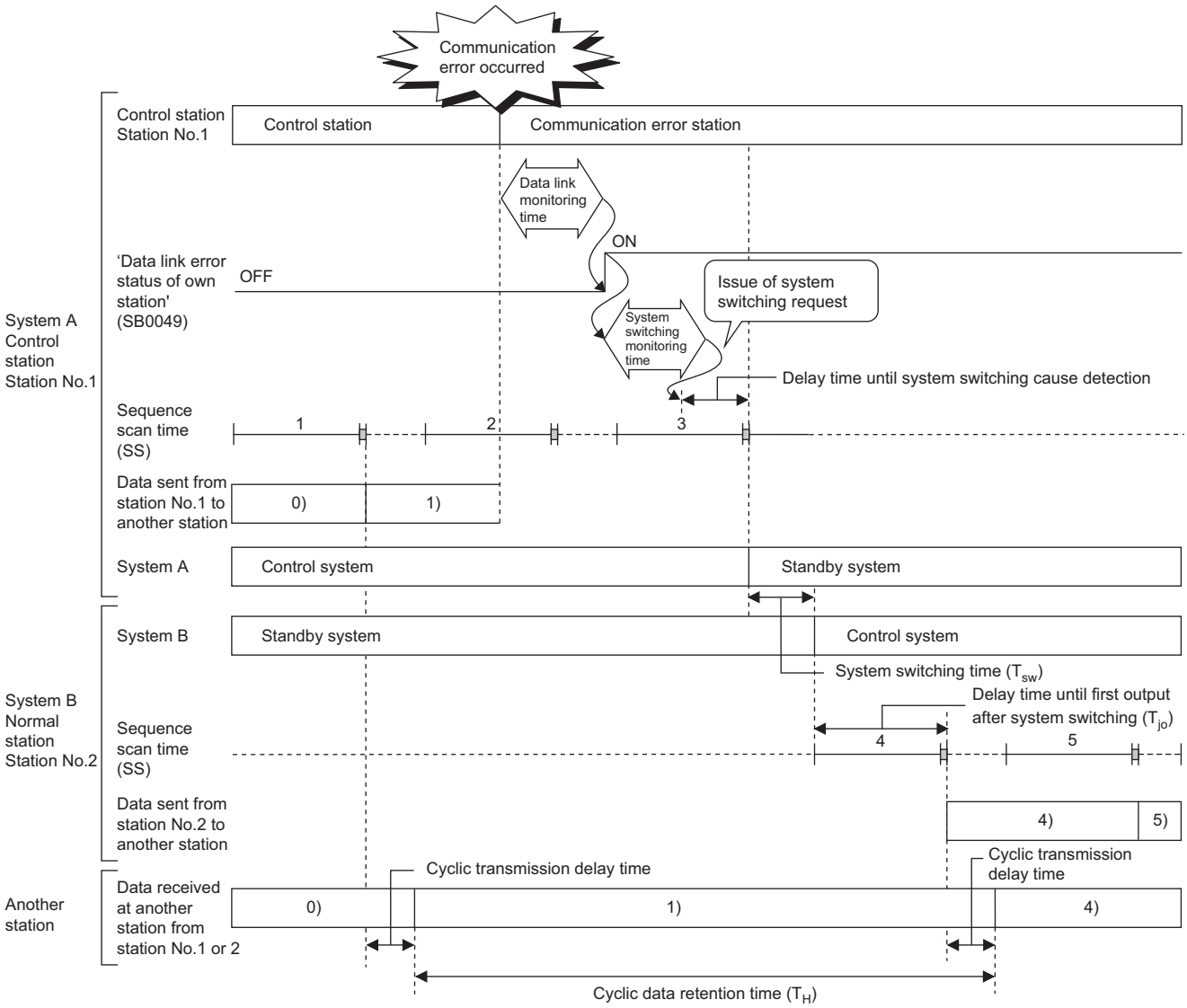


■Pattern 4


CPU stop error
Sequence scan time (SS)
1
2
3
System A Normal station Station No.1
Data sent from station No.1 to another station
0)
1)
2)
Delay time until system switching cause detection
System A
Control system
Standby system
System B
Standby system
Control system
System switching time (T_{sw})
Delay time until first output after system switching (T_{jo})
System B Normal station Station No.2
Sequence scan time (SS)
3
4
5
Data sent from station No.2 to another station
3)
4)
Cyclic transmission delay time
Cyclic transmission delay time
Another station
Data received at another station from station No.1 or 2
0)
1)
2)
3)
4)
Cyclic data retention time (T_H)

A

■Pattern 5


Communication error occurred
Control station Station No.1
Control station
Communication error station
Data link monitoring time
ON
'Data link error status of own station' (SB0049)
OFF
Issue of system switching request
System switching monitoring time
Delay time until system switching cause detection
System A Control station Station No.1
Sequence scan time (SS)
1
2
3
Data sent from station No.1 to another station
0)
1)
System A
Control system
Standby system
System B
Standby system
Control system
System switching time (T_{sw})
Delay time until first output after system switching (T_{jo})
System B Normal station Station No.2
Sequence scan time (SS)
4
5
Data sent from station No.2 to another station
4)
5)
Cyclic transmission delay time
Cyclic transmission delay time
Another station
Data received at another station from station No.1 or 2
0)
1)
4)
Cyclic data retention time (T_H)

Appendix 8 Added and Enhanced Functions

The following table lists the added and enhanced functions in the CC-Link IE Controller Network-equipped module.

○: Available (No version restriction), ×: Not available

Added and enhanced function	Firmware version			
	RJ71GP21-SX	RJ71GP21S-SX	RJ71EN71	RnENCPU
CC-Link IE Controller Network function*1	○	○	"03" or later	○
Network map update in the CC-Link IE Controller Network diagnostics	"05" or later	○	"05" or later	○
Redundant system function*1	"12" or later	○	×	×
External power supply function	×	○	×	×
Link points extended setting*2	"36" or later	"36" or later	"39" or later	"39" or later*3
"Link points extended setting" when the Process CPU is used*2	"56" or later	"56" or later	×	×

*1 There are restrictions on the CPU module to be used. For details, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

*2 There are restrictions on the CPU module to be used. For CPU modules that support the link points extended setting, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

*3 The firmware version is for the network part.

INDEX

MEMO

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REVISIONS

*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Description
June 2014	SH(NA)-081258ENG-A	First edition
November 2014	SH(NA)-081258ENG-B	■Added model RJ71EN71 ■Added function CC-Link IE Controller Network function of the RJ71EN71 ■Added or modified parts SAFETY PRECAUTIONS, INTRODUCTION, TERMS, Section 1.2, 1.3, 1.5, 2.2, 2.3, 2.4, Chapter 3, Appendix 1, 2, 3, 4, 5, 8
February 2015	SH(NA)-081258ENG-C	■Added function Network map update in the CC-Link IE Controller Network diagnostics of the RJ71EN71 ■Added or modified parts Section 3.1, 3.3, 3.5, 3.7, Appendix 4, 5, 7
July 2015	SH(NA)-081258ENG-D	■Added model R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU ■Added or modified parts INTRODUCTION, TERMS, Section 1.3, 1.5, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4, Appendix 1, 2, 3, 8
May 2016	SH(NA)-081258ENG-E	■Added function Redundant system function ■Added or modified parts TERMS, Section 1.1, 1.2, 1.6, 2.2, 2.3, 2.4, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, Appendix 4, 5, 6, 7, 8
April 2017	SH(NA)-081258ENG-F	■Added function Improvements on CC-Link IE Controller Network diagnostics ■Added or modified parts SAFETY PRECAUTIONS, INTRODUCTION, RELEVANT MANUALS, TERMS, Section 3.3
May 2018	SH(NA)-081258ENG-G	■Added model RJ71GP21S-SX ■Added function External Power Supply Function ■Added or modified parts INTRODUCTION, TERMS, Section 1.6, 1.7, 2.2, 2.3, 2.4, 3.1, 3.2, 3.7, Appendix 4, 5, 7, 8
April 2019	SH(NA)-081258ENG-H	■Added function Link points extended setting ■Added or modified parts Section 1.1, 2.2, 2.3, 2.4, 3.3, 3.5, 3.6, Appendix 4, 8
April 2021	SH(NA)-081258ENG-I	■Added or modified parts SAFETY PRECAUTIONS, CONDITIONS OF USE FOR THE PRODUCT, Section 1.1
July 2021	SH(NA)-081258ENG-J	■Added function "Link points extended setting" when the Process CPU is used ■Added or modified parts RELEVANT MANUALS, Section 1.1, 1.2, 1.3, 1.7, 2.4, 3.1, Appendix 7, 8
April 2022	SH(NA)-081258ENG-K	■Added or modified parts SAFETY PRECAUTIONS, TERMS, GENERIC TERMS AND ABBREVIATIONS, Section 3.5, Appendix 1
October 2023	SH(NA)-081258ENG-L	■Added or modified parts SAFETY PRECAUTIONS, Section 2.4

Japanese manual number: SH-081254-M

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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SH(NA)-081258ENG-L(2310)MEE
MODEL: R-CCIEC-U-OU-E
MODEL CODE: 13JX17

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